

**Predicting and Preventing Breakoff in Web Surveys**

by

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Für meinen Papa.

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# Abstract

Due to recent general shifts from mail to the web in survey data collection modes, respondents who break off prior to completing web surveys have become a more prevalent problem in data collection. Given the already lower response rates in web surveys as compared to more traditional modes, such as face-to-face interviewing, it is crucial to keep as many diverse respondents in a web survey as possible. This action will help prevent breakoff bias, and thus maintain high data quality and produce more accurate survey estimates. To prevent and reduce web survey breakoffs, Chapter 4 of this dissertation aimed to understand the breakoff process and its associated variables. The typical breakoff respondent: tended to be female; was non-white; was a student; waited for email reminders to start the questionnaire; and answered on a mobile device. Respondents who had broken off the questionnaire in previous waves were more likely to quit the questionnaire again very early on.

Based on the findings from Chapter 4, predictions were then made about breakoff timing at the page-level in the second paper. In addition to well-known factors associated with breakoff, such as using a mobile device, Chapter 5 examined the relationships of previous response behaviors like speeding and item nonresponse with breakoff timing. This allowed for predictions about the risk of quitting for each respondent at the page-level using Cox survival models. Male respondents tended to quit at the beginning of the questionnaire, while female respondents had a higher risk of quitting toward the end of the questionnaire. There was no significant difference in breakoff risks between mobile respondents and non-mobile respondents at the beginning of the questionnaire. This quickly changed with every page completed by mobile respondents. Item nonresponse and extensive scrolling behavior were both positively associated with the risk of breaking off. Short response times and response time changes (speeding up and slowing down) both increased the risk of quitting the questionnaire.

Finally, in a real-time experiment implemented for Chapter 6, interventions were conducted

with respondents who had a high predicted probability of breaking off from a web survey. For this approach, a prediction model was implemented in the next wave of a panel study, and this model evaluated the risk of breaking off on every page for each respondent in addition to comparing the estimated risk with an established threshold. If the estimated risk exceeded the threshold, then the respondents saw a motivational pop-up message reminding them of their commitment to completing the questionnaire. Females, students, Blacks, and respondents on mobile devices reacted positively when assigned to the treatment group and showed less undesirable response behavior than respondents in the control group.

The dissertation concludes with recommendations for practice and suggested directions for future work in this area.

# Chapter 1

## Introduction

Breakoff, a form of survey nonresponse, is gaining more attention in survey research (Callegaro, Lozar Manfreda, and Vehovar 2015; Eck et al. 2015; Metzler and Fuchs 2016; Peytchev 2009; Platinovšek 2013; Sakshaug and Crawford 2010; Steinbrecher, Roßmann, and Blumenstiel 2015; Vehovar and Čehovin 2014). In traditional survey modes, such as interviewer administered modes, breakoffs are relatively rare when compared to web surveys, where such behavior occurs at substantial rates (Galesic 2006; McGonagle 2013; Peytchev 2009; Platinovšek 2013; Stussman, Taylor, and Riddick 2003). Due to the proliferation of web surveys (Buchanan and Hvizdak 2009; Callegaro, Lozar Manfreda, and Vehovar 2015; Couper 2011), this behavior poses a significant threat to generating accurate survey estimates (Steinbrecher, Roßmann, and Blumenstiel 2015).

Breakoff<sup>1</sup> refers to survey respondents who start a questionnaire but do not finish it – they never answer or even see the last question in the questionnaire. These are also known as *dropouts*, *incomplete*, or *partial* interviews.<sup>2</sup> The goal of this dissertation is to understand the underlying process of breakoff decisions, to predict breakoff before it occurs, and,

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<sup>1</sup>One can distinguish between *terminate breakoff* and *intermediate breakoff*: the term *intermediate breakoffs* refers to respondents who stop answering a questionnaire at any point in time but eventually resume the questionnaire (likely through interventions, such as phone calls or email reminders). Respondents who are *terminate breakoff respondents* are lost for the study. They do not resume the questionnaire. In this dissertation, I use the term *breakoff* for terminate breakoffs. Additionally, I use the term *quitting* the questionnaire interchangeably with *breakoff*.

<sup>2</sup>Partial interviews are unfinished interviews, meaning the respondent broke off at one point. If the respondent answered pre-defined key questions or the majority of the questionnaire (The American Association for Public Opinion Research 2015) these unfinished interviews are defined as partial interviews, which can still be used to adjust the response rate calculation. For my purposes, partial interviews are a special kind of breakoff (the respondents who almost completed the survey and/or answered key questions) and will not be handled differently.

finally, to successfully intervene with the behavior to achieve lower breakoff rates during surveys.<sup>3</sup>

Breakoffs are a source of nonsampling error in surveys, and they (1) decrease the number of usable cases for further analyses and, therefore, (2) decrease the statistical power of the survey estimates, increasing their variances, and (3) potentially introduce breakoff bias to survey estimates if the breakoff behavior is not randomly distributed among survey participants.

Breakoff rates for general invitation-based web surveys<sup>4</sup> can be as high as 80% (Galesic 2006; O’Neil and Penrod 2001; O’Neil, Penrod, and Bornstein 2003), while breakoffs for targeted web surveys<sup>5</sup> show an average breakoff rate of 40% (Vehovar and Čehovin 2014). Academic surveys and panel surveys seem to have lower breakoff rates: the European Social Survey (ESS) reports only 7% breakoff in a web experiment (Ainsaar et al. 2013) and 40% response rate, and the LISS panel (a probability-based online panel) reports breakoff rates between 10% and 15% and response rates between 70% and 80% (LISS 2010; Scherpenzeel 2011). Steinbrecher, Roßmann, and Blumenstiel (2015) note that breakoffs can bias univariate and multivariate analyses. For these reasons, investigating breakoff – and preventing it – is crucial for accurate and unbiased web survey estimates.

This dissertation addresses the following three research questions:

1. Who is likely to break off from answering a questionnaire?
2. When will respondents quit a questionnaire?
3. Is it possible to intervene with breakoff candidates?

To answer these research questions, Chapter 2 begins with a theoretical overview and detailed literature review on web survey breakoff. First, I define survey breakoff as a form of nonresponse by considering it within the *response continuum* theory developed by Yan

---

<sup>3</sup>Breakoff as a form of nonresponse cannot be viewed independently of unit nonresponse (in fact, Chapter 5 of this dissertation makes the point that unit nonresponse and breakoff are connected through the underlying response propensity of each respondent). If response rates are low, the respondents who do start the questionnaire might be very motivated and therefore less likely to quit the questionnaire. If response rates are high breakoff rates could show higher values as there could be many unmotivated respondents starting the questionnaire as well.

<sup>4</sup>Recruitment through web-based advertisement, i.e., “river sampling” (Baker et al. 2010). Response rate calculation for these surveys can be challenging as there is no frame available. Therefore, researchers often provide the number of exposed individuals instead and compute the rate of individuals who accessed the questionnaire after being exposed to the invitation.

<sup>5</sup>Targeted web surveys use lists for respondent recruitment (e.g., email list from a university) (Couper 2000).



and Curtin (2010). I then explain the framework on web survey breakoff developed by Peytchev (2009) and extend it with three additional dimensions: the response behavior, the answering device, and the breakoff moment. For each extension, I provide detailed literature, supporting the significance of these dimensions for web survey breakoff. Two of these extensions, response behavior and answering device, manifest in *paradata*: data about the data collection process (Couper 1998). Thus, I include an extensive literature review on paradata, its ability to capture response behavior during web surveys, and its relationship to web survey breakoffs. The literature review concludes with establishing the research gaps, restating the research questions, and providing evidence for all underlying hypotheses.

Chapter 3 focuses on the data set used throughout this dissertation: the annual web survey of the Sustainability and Cultural Indicators Program (SCIP) at the University of Michigan. I explain the sampling design, include details on the survey instrument, and indicate which paradata information is captured with this instrument. Additionally, I describe the access to the administrative records of all sample members, which includes gender, race, and affiliation with the university. I also explain all data cleaning and manipulation steps I conducted in order to analyze the provided data sets. The cleaning steps include dealing with missing demographic information, such as gender and race, missing information about the answering device, and trimming the response time per questionnaire page.

Chapter 4 turns to the first research question, which grapples with which type of respondent is likely to break off from a questionnaire. I first investigate whether breakoff respondents differ from complete respondents and unit nonrespondents. As a result of access to administrative records, I investigate differences on critical demographic information, such as gender, race, university affiliation, and their response history.

After finding that breakoff respondents differ significantly from other sample members, I perform logistic regression analyses in order to understand which respondents quit the questionnaire. For these analyses, I separate introduction breakoff (i.e., respondents who quit very early in the questionnaire) and questionnaire breakoff (i.e., respondents who quit the questionnaire at a later stage), since the available information differs for both groups (e.g., no response behavior information available for introduction breakoff). Because the ultimate goal of this dissertation is to predict questionnaire breakoff in order to intervene, I assess the predictive power of these logistic regression models using ROC analyses. Chapter 4 focuses on who is likely to quit the questionnaire and informs decisions made in

the following chapter. Therefore, the contribution of this chapter concerns the number of respondent factors I was able to control for simultaneously and the fact that all variables included in my models are based on a well-defined theory and hypothesis.

After analyzing and understanding breakoff at the respondent level in Chapter 4, Chapter 5 turns to research question two and focuses on predicting breakoff at the page level. To intervene appropriately, I must predict breakoff at the page level before it occurs. For this prediction, I make use of the results in Chapter 4 and use similar variables. I first fit dynamic Cox survival models using page invariant covariates, such as gender and race, as well as page variant covariates like response time per page or item nonresponse. To account for the violation of the proportional hazard assumption, some coefficients also vary by page – the effect of certain covariates changes throughout the questionnaire. Once established, the coefficients of the Cox survival model were used for the prediction of page-level breakoff.

To assess the predictive power of this final model, I performed ROC analyses, which confirms the effective performance of the prediction model. As a result, this model is used in the following chapter to predict upcoming web survey breakoff. To my knowledge, these analyses have not been done before. Researchers usually focus on predicting breakoff in the next wave using response behavior of the previous wave. Using response behavior within the current questionnaire to predict upcoming response behavior while respondents are answering the questionnaire is a new and promising approach in creating interactive surveys and questionnaires.

Chapter 6 focuses on the question of whether one can intervene with breakoff candidates in order to reduce breakoff rates in web surveys (research question three). I first provide evidence for a potentially successful intervention message and establish the wording of that intervention message based on findings from previous research projects (e.g., Cibelli Hibben 2016; Oksenberg, Vinokur, and Cannell 1979). I then describe the data collection process in detail, including the implementation process of the prediction model from Chapter 5 and the determination of the intervention timing. In order to assess the success of the intervention, I introduce three experimental groups of which only one receives the intervention based on the implemented model (treatment group 1: tailored intervention). The control group does not receive any intervention, while the second treatment group receives the intervention message after the very first question page (treatment group 2: generically-timed intervention). I then test the intervention success using Cox survival models, generalized linear regression models, and negative binomial regression. I found

that tailored interventions can decrease breakoff rates for student respondents, while generically-timed interventions decrease breakoff rates for female respondents. To my knowledge, there has not been a study focusing on predicting future breakoff within the same questionnaire based on a prediction model, nor a study trying to intervene with web survey breakoff before it occurs. This study represents the first attempt to engage and interact with a web survey respondent based on their entire previous response behavior. This dissertation concludes with Chapter 7, which discusses the findings in a broader context, points out limitations, and concludes with directions for future research.

# Chapter 2

## Previous research on web survey breakoff

### 2.1 Theoretical overview

According to Yan and Curtin's (2010) *response continuum* theory, unit and item nonresponse are connected: the authors claim that the underlying *response propensity* of each sample member is responsible for both forms of nonresponse – unit and item nonresponse. A person with low response propensity becomes a unit nonrespondent, whereas a respondent with a medium response propensity will take part in the study but might produce some item nonresponse. Meanwhile, respondents with very high response propensities will answer almost all questionnaire items. Yan and Curtin do not mention breakoff in particular, but breakoff can easily exist as part of this continuum: respondents with lower response propensity have a higher risk of breakoff (i.e., high breakoff propensity).<sup>6</sup>

Other than *unit nonresponse*, where survey researchers fail to obtain measurements of the entire sampled unit (Groves et al. 2011) (e.g., through refusal or noncontact), breakoff respondents provide some sort of information even if they chose to quit the web questionnaire on the very first page. For example, they may have seen the invitation and clicked on the link to access the questionnaire but gone no further. Thus, breakoff respondents have exposure to the questionnaire, whereas unit nonrespondents have

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<sup>6</sup>This suggests that response rates, breakoff rates, and item nonresponse rates are not independent of each other and need to be considered simultaneously.

(typically)<sup>7</sup> have never seen the questionnaire.

But breakoff is also different from *item nonresponse*, which occurs when the sampled person agrees to take the survey but fails to give a valid answer to specific items within the questionnaire (Groves et al. 2011). This scenario suggests that item nonresponse is mainly determined by the specific question the respondent encounters when they choose to skip, while breakoff is determined by the cumulative experience throughout the questionnaire and not solely by the specific breakoff question. Thus, breakoff likely follows a different mechanism of accumulated experience and burden within the questionnaire. Therefore, when investigating a respondent's breakoff behavior, previous experience and response behavior needs to be taken into account.

## 2.2 Framework for breakoff in web surveys

Survey participation and questionnaire completion can be understood as a series of reactions to a survey's design leading to a constant re-evaluation of the participation decision. Furse and Stewart (1984) illustrated the decision sequence for mail survey participation in a decision tree.<sup>8</sup> Peytchev (2009) expanded on this idea to create a framework for web survey breakoff in which respondents constantly re-evaluate their decision to participate in the survey:

- (1) the decision to click on the link in the email invitation and visit the website of the study,<sup>9</sup>
- (2) the decision to start the web questionnaire,
- (3) the decision to continue with the survey after seeing the first survey question, and
- (4) the decision to answer this particular question.

Steps three and four repeat until the respondent answers the last question or quits the questionnaire before full completion (Figure 2.1).

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<sup>7</sup>This is not true for panel unit-nonresponse, also known as attrition. These respondents were exposed to the questionnaire in previous waves and attrition might be affected by previous experience.

<sup>8</sup>The participation decision tree was later expanded to other survey modes by Albaum and Smith (2012).

<sup>9</sup>Other modes of web survey invitations, like mail or text message, are possible. This study focuses on web surveys with an email invitation, but this framework can easily be expanded for other invitation modes.

In the first step, the sampled person decides between starting the study or not (i.e., *unit nonresponse*).<sup>10</sup> This framework assumes that the sampled person makes an active decision about being a non-respondent because they see the invitation and read it, thus, all following response decisions, such as breaking off, are conditioned on survey response.<sup>11</sup> In the second step, the respondent visits the first page of the questionnaire, which usually contains introduction text (information about the questionnaire and the study), eligibility checks, and consent requests. Respondents who break off at this stage are referred to as *introduction breakoff* because they break off before answering any substantial survey questions. If the respondent decides to continue, they enter the third step and see the first page with actual survey questions. After seeing these initial questions, they can, again, decide to quit<sup>12</sup> or to continue with the questionnaire. Once they decide to continue, they enter the fourth step: the decision to answer a particular question<sup>13</sup> or to skip the question and engage in item nonresponse.<sup>14</sup> The process then continues with the respondent seeing the next page of the questionnaire, where they can decide to continue with the survey or to engage in *questionnaire breakoff* in which a respondent breaks off after answering at least one substantial survey question. They then face the same decision: respond to a particular question or engage in item nonresponse. These steps are repeated until the respondent either performs questionnaire breakoff or finishes the survey to become a *complete respondent*.<sup>15</sup>

The possible outcomes (unit nonresponse, introduction and questionnaire breakoff, and complete response) are evaluated using five different indicators: participation rate (PR), introduction breakoff rate (IBR), questionnaire breakoff rate (QBR), total breakoff rate

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<sup>10</sup>As the original decision framework by Furse and Stewart (1984) focuses on mail surveys, the framework ends at the decision point of unit nonresponse – not taking the decision of breaking off the questionnaire into account. With web surveys, and in particular the paging format, a survey researcher can track the exact behavior of each respondent on every page while they are answering the questionnaire.

<sup>11</sup>Non-contact due to coverage error is not covered in this framework or in this dissertation.

<sup>12</sup>This results in an introduction breakoff as they did not answer any substantial questions.

<sup>13</sup>A question is seen as answered once the respondents provide a valid response to the question and hit the next or submit button. Only this action sends the responses to the study server and are then available for further analyses. Actions taken or responses provided on pages that have not been submitted and sent to the server are lost and not available for data analyses (e.g., expired pages or breakoff pages).

<sup>14</sup>Respondents who complete the questionnaire but did not answer any questions would fall into a separate group of respondents: so-called lurkers (Bosnjak and Tuten 2001). They do not have any intention of answering the questionnaire but are seemingly interested in the topic to spend some time clicking through the questionnaire. As this dissertation is focusing on *breakoff*, I do not account for this group of respondents and excluded them in my analyses.

<sup>15</sup>This framework assumes that breakoff is based on an active decision of the respondents, thus, connection loss or technical problems are seen as events that occur randomly and will not be investigated further in this project.

(TBR), and completion rate (CR):

$$PR = \frac{\text{Nb of sample members starting the questionnaire}}{\text{Nb of all (eligible) sample members}},$$

$$IBR = \frac{\text{Nb of introduction breakoffs}}{\text{Nb of sample members starting the questionnaire}},$$

$$QBR = \frac{\text{Nb of questionnaire breakoffs}}{\text{Nb of sample members starting the questionnaire} - \text{Nb of introduction breakoffs}},$$

$$TBR = \frac{\text{Nb of breakoffs (introduction + questionnaire)}}{\text{Nb of sample members starting the questionnaire}}, \text{ and}$$

$$CR = \frac{\text{Nb of completes}}{\text{Nb of sample members starting the questionnaire}} = 1 - TBR.$$

One can usually expect a completion rate of between 30% and 40% for list-based web surveys using email invites (Anseel et al. 2010; Berzelak et al. 2012; Mitra et al. 2008). IBR usually ranks above QBR with an average of 33% for IBR, 11% for QBR, and 40% for TBR (Vehovar and Čehovin 2014).

The values of these indicators are influenced by multiple factors as outlined in the bottom section of Figure 2.1: *survey design factors, page and question characteristics, and respondent characteristics*. *Survey design factors* are factors experienced by all sample members irrespective of whether they become unit nonrespondents, breakoff respondents, or complete respondents. These factors include aspects like the sampling and recruitment process, the topic of the survey, incentive structure, or announced questionnaire length. *Page and question characteristics* refer to question content, question type, the number of question items per page, and actual survey length. These characteristics only refer to respondents who started the questionnaire. Thus, unit nonrespondents are (typically) not affected by these factors. *Respondent characteristics*, originally, include socio-demographics like gender, race, and age.

My first extension of Peytchev’s (2009) original framework involves explicitly including previous response behavior (behavior up to this point in the questionnaire) and item nonresponse in the dimension of respondent factors (dimension 3a). Informed by previous research (Antoun 2015), I expand the framework and the respondent characteristics by including the *answering device factor* (dimension 3b). This captures which device (smartphone, tablet or PC) the respondent chose to use to answer the questionnaire. Additionally, I add the dimension of *breakoff timing/location in the survey* (dimension 4), which differs between *introduction breakoff* and *questionnaire breakoff*.

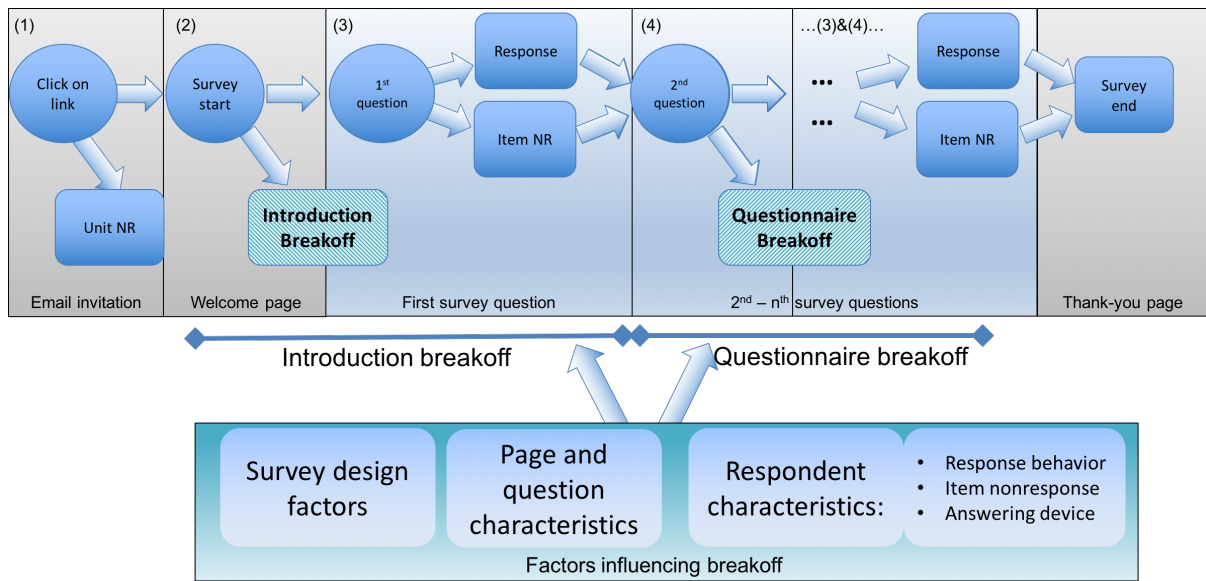


Figure 2.1: Framework for web survey breakoff

Unlike other studies, I use all dimensions simultaneously to investigate, predict, and prevent possible breakoff outcomes.

## 2.3 Previous findings on web survey breakoff

This section describes previous research findings on breakoff in web surveys categorized by dimension.

### Dimension 1: Survey design factors

As mentioned in Section 2.2, *survey design factors* affect all sample members regardless of their response outcome (unit nonrespondents, breakoff respondents, or complete respondents). This dimension includes factors such as survey topic, sponsorship, sampling, and recruitment procedures, as well as announced survey length and incentive structure. Most of these factors affect participation rate rather than breakoff rate. Similar to more traditional survey modes (Groves, Presser, and Dipko (2004) for telephone surveys), respondents tend to participate at a higher rate (Adams and Umbach 2012; Keusch 2013) and break off less (Galesic 2006; Lozar Manfreda, Batagelj, and Vehovar 2002; Marcus et al. 2007; Porter and Whitcomb 2005a) in web surveys when the topic is of interest to



them.<sup>16</sup>

The reputation of and the trust in the survey sponsor have positive effects on participation rates in web surveys (Dillman, Smyth, and Christian 2009; Fang, Shao, and Lan 2009; Fang and Wen 2012) but do not seem to have an impact on breakoff rates (Allen and Roberts 2016; Heerwegh and Loosveldt 2006a; exception: Boulianne, Klofstad, and Basson 2010). Studies on special populations and list-based samples show higher response rates and lower breakoff rates than studies on the general population (Comley 2000; Heerwegh 2005b ; Lozar Manfreda and Vehovar 2002; Pratesi et al. 2004).<sup>17</sup> Personalization (Heerwegh and Loosveldt 2006b; Sauermann and Roach 2013), and content (Keusch 2013; Mavletova, Deviatko, and Maloshonok 2014) of the invitation message, as well as how the questionnaire can be accessed (personalized link versus password) (Crawford, Couper, and Lamias 2001; Heerwegh and Loosveldt 2003) primarily impact participation and response rates rather than breakoff rates. Though Heerwegh and Loosveldt (2003) found lower breakoff rates when the burden of accessing the questionnaire was low, (e.g., personalized link). Meanwhile, Mavletova, Deviatko, and Maloshonok (2014) found slightly lower breakoff rates when invitation emails were longer.

Sending reminder emails increases response rates but can increase breakoff rates (Görizt and Crutzen 2012; Görizt and Stieger 2009). Announced survey length seems to have a strong negative relationship on survey participation (Crawford, Couper, and Lamias 2001; Galesic and Bosnjak 2009; Kaplowitz et al. 2012; Yan et al. 2010), while incentives have a positive impact on completion rates, especially when completing the survey is a requirement to receive the incentive (Gajic, Cameron, and Hurley 2012; Görizt 2006; Görizt and Luthe 2013a; LaRose and Tsai 2014; Patrick et al. 2013). This effect is stronger for guaranteed incentives than for lotteries (Görizt 2014; Görizt and Luthe 2013b; Tuten, Galešić, and Bošnjak 2008).

## **Dimension 2: Page and question characteristics**

*Page and question characteristics* are factors that only impact respondents, and, therefore, affect breakoff rates rather than participation and response rates. This dimension includes paging versus scrolling formats, the actual questionnaire length, progress indicators, number of questions – per page and cumulative, question type (e.g., grid question, open-

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<sup>16</sup>It should be noted that stressing the survey topic too much can have negative effects for respondents with low interest in the topic, leading to self-selection and potential biases (Chang and Krosnick 2009; Faas and Schoen 2006; Keusch 2013).

<sup>17</sup>This effect is even stronger if the survey topic is of interest to the special population (Chang and Krosnick 2009; Faas and Schoen 2006; Grim, Semali, and Maretzki 2005; Yeaworth 2001).

ended questions), and question sensitivity and complexity.

Lozar Manfreda, Batagelj, and Vehovar (2002) and Peytchev et al. (2006) did not find differences in breakoff rates between a paging or scrolling survey design.<sup>18</sup> The longer the actual questionnaire length, the higher the breakoff rates (Deutskens et al. 2004; Galesic and Bosnjak 2009; Göritz 2014; Marcus et al. 2007; Mavletova and Couper 2015; Yan et al. 2010).<sup>19</sup> This effect is even stronger if the announced survey length underestimates the actual survey length (Crawford, Couper, and Lamias 2001; Ganassali 2008; Walston, Lissitz, and Rudner 2006; Yan et al. 2010).

Progress indicators show the progress of respondent within a questionnaire.<sup>20</sup> Findings on the impact of progress bars are mixed, as they depend on the expected versus the actual length of the survey and how fast the bar progresses: fast-to-slow-timed progress bars reduce breakoffs, while slow-to-fast-timed bars increase breakoff rates. Linear-timed progress bars seem to have no effect (Heerwegh and Loosveldt 2006a; Villar, Callegaro, and Yang 2013). For longer questionnaires, progress bars seem to be harmful in respect to breakoff rates, as the respondent realizes how burdensome and long the task will be (Crawford, Couper, and Lamias 2001; Galesic 2006; Galesic and Bosnjak 2009; Yan et al. 2010). There does not seem to be a relationship between the number of questions or items per page and breakoff rates (Peytchev 2009). But pages with no questions at all (e.g., transition pages that introduce a new section of the questionnaire) seem to be a natural break in the questionnaire and result in higher rates of breakoff than other pages (Peytchev 2009). Pages with more burdensome question types like open-ended questions (Knapp and Heidingsfelder 1999; Peytchev 2009) or grid questions (Jeavons 1999; Peytchev 2009) show higher breakoff rates than other pages. Overly complex or sensitive questions seem to have higher breakoff rates as well (Ganassali 2008; Lozar Manfreda, Batagelj, and Vehovar 2002; Peytchev 2009).

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<sup>18</sup>In the paging format, the respondents see a small number of questions on subsequent pages or screens. Once the current questions are answered, the respondent needs to click a next or continue button to see the next set of questions. In this format, survey designers can easily include automated skips and filters or real-time answer validation. In the scrolling format, the respondent can see all questions on one screen and submits all answers at the same time. This format allows respondents to see how many more questions remain unanswered.

<sup>19</sup>This effect even holds if it is only the perceived length that is longer due to complex question wording (Ganassali 2008).

<sup>20</sup>Including a progress bar is a popular way to give a respondent more information about the length of the questionnaire and their progress within the paging format.

### **Dimension 3: Respondent characteristics**

*Respondent characteristics* are often used as proxies to measure other characteristics. For example, age and education often serve as a proxy to measure a respondent's cognitive ability – the higher the education and the lower the age, the higher the cognitive ability. At the same time, age has been associated with commitment to finish a task. Breakoff research is in line with these theories: respondents with lower education levels and who spend more time on the first survey question have a higher likelihood of quitting (Peytchev 2009; Steinbrecher, Roßmann, and Blumenstiel 2015). These respondents might have a harder time understanding the questions. Older respondents show a lower propensity for breaking off, suggesting that they might be more committed to finishing a survey (Galesic 2006; McGonagle 2013; Peytchev et al. 2006; Steinbrecher, Roßmann, and Blumenstiel 2015; Stussman, Taylor, and Riddick 2003).

Faculty and staff respondents are more likely to participate in a campus-wide study compared to students but seem to have higher breakoff rates (Boulianne, Klofstad, and Basson 2010; Kaplowitz et al. 2012; Mavletova, Deviatko, and Maloshonok 2014). There are mixed findings on gender, which does not seem to be associated with the likelihood of breaking off (Galesic 2006; Peytchev 2009), though some studies find a significant effect. Peytchev (2011) found that more men break off than women, while Steinbrecher, Roßmann, and Blumenstiel (2015) found the opposite. At the same time, women are more likely to participate in surveys (Dykema et al. 2013; Patrick et al. 2013; Porter and Whitcomb 2005b). Peytchev (2009) found that non-white respondents break off at higher rates than white respondents. Patrick et al. (2013) found that black respondents are less likely to complete questionnaires.

#### **Extension 1: Previous response behavior (dimension 3a)**

Respondents who wait for reminder emails to start the questionnaire are more likely to quit the questionnaire than respondents who start the questionnaire promptly after the first email invitation (Göritz and Crutzen 2012; Göritz and Stieger 2009). The more experienced respondents are in taking surveys, the lower the breakoff risk (Matzat, Snijders, and Horst 2009). Panel members of longitudinal studies are more likely to participate and complete the next wave if they have participated in the previous wave (Brennan and Hoek 1992; Göritz 2014; Göritz and Wolff 2007; Keusch 2013; Matzat, Snijders, and Horst 2009; Peytchev 2011) and had low item nonresponse (Loosveldt, Pickery, and Billiet 2002; Lugtig 2014). Little research exists about how response behavior and breakoff behavior are related; however, we know that respondents with item nonresponse and long

response times on the first survey page are more likely to break off (Galesic 2006; Peytchev 2011; Platinovšek 2013; Roßmann and Gummer 2015). This dissertation will investigate how other response behaviors and their changes are associated with breakoff, including respondents speeding up during a questionnaire.

### **Extension 2: Answering device (dimension 3b)**

The second extension of the original framework (Peytchev 2009) is dimension 3b, the answering device. Previous research suggests that web surveys started on mobile devices, such as smartphones, suffer from higher breakoff rates than web surveys started on PCs (Buskirk and Andrus 2014; Couper, Antoun, and Mavletova 2017; Guidry 2012; Mavletova 2013; Mavletova and Couper 2013; Mavletova and Couper 2016a; Peterson et al. 2013). In some cases, the breakoff rates are up to eight times higher on mobile web than PC web (Antoun 2015).<sup>21</sup> This effect can be moderated by optimizing the questionnaire for mobile devices, but the breakoff rates remain higher among mobile web (Barker-Previtt 2013; Mavletova and Couper 2015; Peterson et al. 2013).

Though mobile web has some clear disadvantages when compared to PC web, like connection issues and smaller screens, the reasons for higher breakoff rates still remain unclear. To investigate this further, I define *mobile web* and *PC web* in greater depth. With *mobile web*, respondents use a mobile, wireless, hand-held device, such as a smartphone with a relatively small touchscreen. The term does not refer to the Internet connection – wifi versus 4G – the respondents use while taking the survey or whether they are mobile themselves while responding to the questions. In contrast, *PC web* refers to all desktop and laptop computers with larger screens, a physical keyboard, and a mouse or touch pad (Antoun 2015). This categorization is not mutually exclusive, since as phone screens become larger, laptops lighter, and touchscreens more prevalent. Tablets are a hybrid between phones and laptops, but research suggests that data collection on tablets is more similar to data collection on a desktop or laptop than a smartphone (Guidry 2012; Lugtig and Toepoel 2015).

In general, findings for mobile web are consistent with PC web: studies offering incentives have lower breakoff rates – especially those that offer higher incentives for mobile web respondents (Buskirk and Andrus 2014; Johnson, Kelly, and Stevens 2012; Mavletova and

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<sup>21</sup>This is even the case for studies where the answering device was randomly assigned to sample members to avoid confounding selection effects (Mavletova and Couper 2015). A more recent study by Schlosser and Mays (2018) shows no differences in breakoff rates between mobile devices and PCs when respondents were assigned randomly to the answering device, which suggests an additional self-selection bias in many studies.

Couper 2014; Mavletova and Couper 2015; Mavletova and Couper 2016b; Wells, Bailey, and Link 2014). Longer questionnaires have higher breakoff rates than shorter studies (Lattery, Park Bartolone, and Saunders 2013; Mavletova and Couper 2015). Jue and Luck (2014) and Peterson et al. (2013) found higher breakoff rates on mobile devices for more complex question types, like grid questions and drop-down menus.

Differences between mobile web and PC web exist for the paging versus scrolling format. Mavletova and Couper (2014), Mavletova and Couper (2016b), and McGeeney and Marlal (2013), found lower breakoff rates for scrolling formats than paging for questionnaires started on mobile web. This finding might be due to longer page loading times on mobile devices.

### **Extension 3: Breakoff timing/location in the survey (dimension 4)**

The third extension of Peytchev's framework is distinguishing between introduction breakoff and questionnaire breakoff. Vehovar and Cehovin's meta-analysis (2014) found that the highest rates of breakoff occur on the first few pages. Known as introduction breakoff, it accounts for up to 80% of all breakoffs. Often these pages do not contain any questions, only introductory text about the study purpose and consent requests like acknowledgement of eligible age. The respondent only needs to continue to the next pages without providing answers to survey questions. This seems like a relatively easy task, thus researchers are puzzled by this phenomenon.

What is it about the first page(s) that results in such high breakoff rates? The respondent clearly showed interest in the study by visiting the survey website but then does not continue with the study. Perhaps the respondent was still deciding whether to participate in the study? These breakoffs seem to be driven more by outside factors like time pressure, survey topic, sponsor, or incentive structure (Callegaro, Lozar Manfreda, and Vehovar 2015) rather than the actual questions on the questionnaire.

Oppositely, questionnaire breakoffs may be driven by inside factors: question types, content, length, and respondent situations, such as distraction or fatigue (Callegaro, Lozar Manfreda, and Vehovar 2015). According to Steinbrecher and colleagues (2015), introduction and questionnaire breakoff differ significantly from a demographic standpoint.<sup>22</sup> For example, Steinbrecher, Roßmann, and Blumenstiel (2015) found that older respondents

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<sup>22</sup>Steinbrecher and colleagues (2015) distinguish between early breakoff (breakoff before page 15 in the questionnaire leading to 48.7% early breakoffs among all breakoff respondents) and late breakoff (respondents who have answered at least one set of core questions between pages 15 and 19 leading 51.3% late breakoff respondents).

and females tend to break off early in questionnaires.

Returning to Yan and Curtin’s (2010) research on the response propensity continuum, it seems unit nonrespondents and respondents with introduction breakoff have similarly low response propensity. Thus, introduction breakoffs may be more related to unit nonresponse, including refusal, than questionnaire breakoffs are as evidenced by the following: (1) introduction breakoff respondents have only minimally more information about the questionnaire than unit nonrespondents, and (2) actual survey length does not affect refusal nor introduction breakoff (Vehovar and Čehovin 2014).

## 2.4 Web paradata framework

As mentioned in Chapter 1, this dissertation focuses on investigating respondents’ answering behavior in web surveys, behavior changes throughout the questionnaire, and the relationship of web survey breakoff and response behavior. This can be achieved using *paradata*. Couper (1998; 2000) defines paradata as data that provide information about the data collection process itself. This includes information researchers have before the survey takes place, like response behavior of previous surveys and contacting days, as well as information that can be collected while a respondent answers a questionnaire, including time of survey access or question response time. McClain and colleagues (2018) provide a framework to categorize paradata. They define web survey paradata as information that is generated and captured in the act of fielding a web survey. This means that the data should not be available before the data collection, so sampling frame information (socio-demographics) and fixed design decisions (paging versus scrolling) are excluded.

On the other hand, this definition includes decisions that are (usually) within the control of web survey respondents, like the choice of answering device. External monitoring, like eye-tracking, is considered *indirect paradata* (Callegaro, Lozar Manfreda, and Vehovar 2015) and is not included in the web survey paradata framework (McClain et al. 2018).

McClain et al. (2018) categorize web survey paradata by the *phase* in which the information is obtained: prior to survey, recruitment, access, and response phase. The first phase, *prior to survey*, captures paradata information about respondents that is available through prior surveys or prior waves for panel respondents.<sup>23</sup> This phase includes information

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<sup>23</sup>This information might also be used to inform design decisions for next survey waves.

about previous responses or previous response behavior.<sup>24</sup> The second phase – *recruitment* – includes times and days of contact (email invitation and reminder), the number of contact attempts (number of email reminders), and the exposure level of each respondent in intercept surveys.

Paradata of the *access* phase includes information about the access attempt of each respondent and every session: number of login attempts, access time and device. The last phase – *response* – describes information that is collected on the action level. This includes response time, answering device, keystrokes, mouse movements, and scrolling, as well as information that identifies undesired behavior like speeding. The next paragraph provides examples of paradata used in the literature and embedded in every study in the web paradata framework proposed by McClain et al. (2018), as well as in the extended web survey breakoff framework (Figure 2.1).<sup>25</sup>

Paradata are often used to manage data collection throughout the field period using productivity measures (Durand 2005; Link 2006; Guterbock et al. 2011), to investigate nonresponse error using call and contact histories (Durrant et al. 2010; Durrant, D'Arrigo, and Mueller 2013; Kreuter and Kohler 2009; Kreuter and Olson 2013; Laflamme and St-Jean 2011; Sakshaug and Kreuter 2011), and to investigate measurement error using response latencies and completion times (Draisma and Dijkstra 2004; Lenzner, Kaczmirek, and Lenzner 2010; Malhotra 2008; Yan and Tourangeau 2008). Only a few studies use paradata to investigate nonresponse in web surveys. Using paradata from prior to the survey phase, Roßmann and Gummer (2015) used panel participation history, item nonresponse, and completion times of the previous wave to successfully predict participation in the next wave. Similarly, and also using paradata collected prior to the survey, McLauchlan and Schonlau (2016) found that the length of the answer provided to the final open-ended question is positively related to panel participation in the next wave. So the longer the answer, the higher the likelihood of participating in the next wave. These examples – participation history, item nonresponse, completion times, and answer length – are all classified within the dimension of response behavior (dimension 3a).

Studies using paradata from the recruitment phase mainly focused on the day on which the email invitation should be sent in order to achieve higher response rates. Andreasson

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<sup>24</sup>Note the difference between response behavior of *prior* surveys and waves and the previous response behavior *within* one questionnaire.

<sup>25</sup>As there is only limited research on web survey breakoff including paradata of all four phases, I include studies focusing on unit nonresponse and panel attrition. Due to the response continuum theory (Yan and Curtin 2010), these forms of nonresponse are linked and findings on unit nonresponse and panel attrition can be relevant for studying breakoff.

(2014) found response rates were the lowest for emails sent out on the weekend but also found that this advantage only holds for very short fielding periods of less than 24 hours. At the same time, Faught, Whitten, and Green Jr. (2004) found that invitations sent on Wednesday mornings achieve the highest response rates, which is confirmed by Trouteaud (2004). Zheng (2011) found the highest response rates for invites sent out on Mondays. However, other studies (Sauermaun and Roach 2013; Shinn, Baker, and Briers 2007) did not find any significant difference between invites sent on different days and times. Researchers did consistently find that respondents who do not begin the questionnaire promptly after the first email invitation but instead wait for reminders are more likely to quit the questionnaire (Görizt and Crutzen 2012; Görizt and Stieger 2009). Paradata about the time the invites were sent and how many reminders each individual receives are classified within the dimension of survey design (dimension 1).

Using paradata from the accessing phase usually includes the device choice of the respondent and finds that respondents using mobile devices are more likely to quit the questionnaire (e.g., Antoun, Couper, and Conrad 2017). Sood (2011) found evidence of higher breakoff rates when browsers are old or outdated. As mentioned before, the information on device, as well as the installed operating system or web browser is categorized in the dimension of answering device (dimension 3b).

Most studies use paradata from the response phase and are usually focused on measurement error.<sup>26</sup> Response times are probably the most studied form of web paradata since they are relatively easy to capture (see Matjašič, Vehovar, and Lozar Manfreda 2018). For example, Malhotra (2008) found that respondents with lower education and short response times are more prone to primary effects in web surveys. This is confirmed by Zhang and Conrad (2014), whose study found that respondents who speed through the questionnaire, known as “speeders,” are more likely to straightline. While this is true for all respondents, the effect is stronger for less educated respondents (Zhang and Conrad 2014). Couper and Peterson (2016) and others (e.g., Mavletova and Couper 2016a; Schlosser and Mays 2018) found significantly higher response times for completing the questionnaire on a mobile device than on a non-mobile device. Schlosser and Mays (2018) reported that for respondents using technically advanced mobile devices and high-speed internet, the response time differences decreased.

Response changes, as well as excessive mouse clicking or mouse movements, are associated

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<sup>26</sup>The studies using web paradata, such as item nonresponse and response times and focusing on web survey breakoff, are already mentioned above in defining dimension 3a.



with lower response quality and indicated higher response difficulty (Stieger and Reips 2010; Horwitz, Kreuter, and Conrad 2016). With new software, researchers are now also able to detect inactivity within browser windows, indicating multitasking or cheating in knowledge questions (Diedenhofen and Musch 2017; Sendelbah et al. 2016). All these paradata are part of the response behavior dimension (dimension 3a).

## 2.5 Research gaps and hypotheses

As this extensive literature review indicates, using response behavior in the form of paradata tends to focus researchers on nonresponse error or measurement error. Nonresponse mainly includes panel attrition of the next survey wave, while measurement error focuses on data quality within the same questionnaire. Studies that combine a nonresponse focus and response behavior within the same questionnaire are rare (e.g., Galesic 2006; Metzler 2016; Peytchev 2011; Platinovšek 2013; Roßmann and Gummer 2015). As a result, I have identified three critical research gaps within the web survey breakoff research. The first gap focuses on how response behavior and breakoff behavior are linked and which response behavior and behavior change is associated with web survey breakoff to address who is quitting surveys. The second gap focuses on the prediction of web survey breakoff. Is it possible to predict future breakoff based on previous response behavior while respondents are taking the survey and determine when respondents will quit the questionnaire? The third and last gap I investigate is whether it is possible to intervene with respondents who are likely to break off soon.

This dissertation does not address the question of why respondents break off in the first place. Even though this a crucial part of this problem, it would require qualitative research with focus groups and possibly a follow-up survey for all respondents who broke off to ask them why they quit. These steps would certainly go beyond the scope of this dissertation, since I am trying to predict and intervene with breakoff using information that is already collected within most web surveys. The findings of this research can be implemented in almost all targeted web surveys without additional respondent burden or additional costs for the survey institute.

To address research gaps, I tested several hypotheses throughout this thesis for each of the three research questions introduced in Chapter 1. In the following section, I re-state the research questions, describe all underlying hypotheses related to each research question, and point out all variables used throughout this thesis that are associated with web survey

breakoff.<sup>27</sup>

### 2.5.1 Research Question 1: who is likely to break off from answering a questionnaire?

Chapter 4 focuses on research question 1: who engages in web survey breakoffs and which respondent factors are associated with this behavior. All analyses are completed on the respondent level and investigate the differences between unit nonrespondents, complete respondents, and breakoff respondents. Every respondent is classified as one of the three. I make use of the rich sampling frame information and all available paradata to investigate breakoff at the respondent level. Page-level information, like page response time, is aggregated at the respondent level. Unless noted otherwise, all the included variables are embedded in the respondent characteristics and response behavior dimension. The hypotheses are ordered by the type of (para-) data.

**Non-paradata: frame and auxiliary data.**

**Hypothesis I.1: Women are less likely than men to quit the questionnaire.**

Even though studies on web survey breakoff are not consistent in their findings regarding the relationship of gender and breakoff (Peytchev 2011; Steinbrecher, Roßmann, and Blumenstiel 2015), women are often seen as more reliable and committed in many survey tasks (e.g., higher response rates) (Dykema et al. 2013; Patrick et al. 2013; Porter and Whitcomb 2005b).

**Hypothesis I.2: Non-white respondents are more likely to break off the questionnaire than White respondents.** As found by Peytchev (2009) and Patrick et al. (2013) non-white respondents, and in particular black respondents are more likely to quit the questionnaire.

**Hypothesis I.3: Younger respondents have a higher breakoff propensity compared to older respondents.** Younger respondents are less motivated to finish tasks than older respondents (Galesic 2006; McGonagle 2013; Peytchev et al. 2006; Steinbrecher, Roßmann, and Blumenstiel 2015; Stussman, Taylor, and Riddick 2003). I used the proxy information on the affiliation with the University of Michigan (student versus faculty/staff) for my analyses.

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<sup>27</sup>A detailed definition of all variables is available in the respective chapters in which they are used.

**Hypothesis I.4: Panel respondents are less likely to quit the questionnaire as compared to non-panel members.** If respondents are in a panel condition and they know they will be asked to participate in future waves, they are less likely to quit (Brennan and Hoek 1992; Göritz and Wolff 2007; Göritz 2014; Keusch 2013; Matzat, Snijders, and Horst 2009; Peytchev 2011).

**Web paradata: prior survey phase.**

**Hypothesis I.5: Respondents with a positive response history (i.e., previous complete respondents) are more likely to complete the questionnaire compared to respondents with a negative response history (i.e., previous breakoff respondents).** If respondents have participated and completed similar studies in previous years, they are less likely to quit (Petrova, Cialdini, and Sills 2007; Roßmann and Gummer 2015; Svensson et al. 2012). Due to the relatively small number of the finite population of the University of Michigan, it is likely that respondents are asked to participate in the study each year even if they are not part of the panel.

**Web paradata: recruitment phase.**

**Hypothesis I.6: Waiting for reminder emails to enter to the questionnaire increases breakoff propensity.** Reacting promptly to the first email invitation is an indication for high response propensity (Yan and Curtin 2010), thus respondents who start the questionnaire after the reminder emails were sent are more likely to quit the questionnaire (Göritz and Crutzen 2012; Göritz and Stieger 2009).

**Web paradata: access phase.**

**Hypothesis I.7: Accessing (and responding) to the questionnaire on a mobile device as compared to non-mobile device increases breakoff propensity.** Respondents who choose to start the questionnaire on a mobile device have a higher propensity to quit the questionnaire (e.g., Antoun 2015; Couper, Antoun, and Mavletova 2017).<sup>28</sup>

**Hypothesis I.8: Having multiple sessions as compared to answering within on session decreases breakoff propensity .** Respondents who have to access the questionnaire multiple times might have trouble with display, connection, or time pressure. The fact that they return to the questionnaire after abandoning it indicates high motivation and interest in the survey (Galesic 2006; Lozar Manfreda, Batagelj, and Vehovar 2002;

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<sup>28</sup>Unlike than the previous variables, this hypothesis targets the dimension of answering device factors as opposed to the respondent characteristic factors in Figure 2.1.

Marcus et al. 2007; Porter and Whitcomb 2005a). Therefore, I expect these respondents to have lower breakoff propensity. This page-level information (starting a new session at the current page: yes/no) needs to be aggregated at the respondent level. I investigated the overall session count that a respondent experienced.

**Web paradata: response phase.**

**Hypothesis I.9: Hitting the previous button as opposed to the next button decreases breakoff propensity.** Hitting the previous button to see the previous page of the questionnaire to check or change answers can be an indicator of high motivation (Galesic 2006). Thus, it could be an indicator of lower breakoff risk. This variable captures page-level information and is aggregated at the respondent level whether the respondent ever hit the previous button (yes/no).

**Hypothesis I.10: Higher item nonresponse rates indicate higher breakoff propensity.** Not responding to all question items provided in the questionnaire is a sign of low response propensity (Yan and Curtin 2010), which is an indication of high breakoff propensity (Galesic 2006; Peytchev 2011; Platinovšek 2013; Roßmann and Gummer 2015). This variable captures page-level information and is aggregated at the respondent level, focusing on the total item nonresponse during the entire questionnaire.

**Hypothesis I.11: Long response times per questionnaire page results in higher breakoff propensity.** Respondents who take a long time on the first questionnaire page might have trouble understanding the task. This might be an indication of higher breakoff likelihood (Peytchev 2009).

**Hypothesis I.12: Becoming faster or slower during the questionnaire compared to a steady response time indicates higher breakoff propensity.** Respondents with consistent behavior are more likely to stay with the task they are currently engaging in (Brennan and Hoek 1992). Thus, if respondents change their response speed during the questionnaire, they are more likely to quit. Response time change was aggregated at the respondent level in order to use it for these analyses. I investigated the overall tendency to speed up or slow down throughout the questionnaire (Chapter 4 for more detailed information).

**Dimension 4: breakoff timing/location in the survey.**

**Hypothesis I.13: Breakoff respondents are different from unit nonrespondents and complete respondents on frame data information.** Breakoff respondents differ from unit nonrespondents because breakoff respondents are exposed to the questionnaire

and are able to make a more informed decision about whether to continue the survey or not (Steinbrecher, Roßmann, and Blumenstiel 2015; Vehovar and Čehovin 2014).

**Hypothesis I.14: Introduction breakoff and questionnaire breakoff respondents differ from one another on frame data and early response behavior.**

Introduction breakoff might be more related to unit nonresponse since these breakoff respondents were not exposed to the survey questions, only to the welcome and consent page. Thus, similar to unit nonresponse, this form of nonresponse might be driven through outside factors, such as time pressure, no interest in the topic etc., which are beyond the control of researchers. Questionnaire breakoff respondents were exposed to some survey questions and might be influenced by inside factors, such as question complexity or sensitivity (Peytchev et al. 2006; Vehovar and Čehovin 2014).

## **2.5.2 Research Question 2: when will respondents quit a questionnaire?**

Chapter 5 examines the second research question when respondents quit the questionnaire and whether the respondent characteristics of Chapter 4 predict breakoff at the page level. All analyses are on the page level and investigate differences between breakoff respondents and complete respondents. Thus, all respondents and all the pages they have seen during the questionnaire are included in the analyses. Complete respondents have seen all possible pages, while breakoff respondents stop at one point. I call this the *breakoff-page*. Therefore, I investigate the relationship of response behavior of the previous pages and risk of breaking off on the page level. At the same time, I can now explore whether the relationship between response behavior and breakoff changes while the respondents are taking the questionnaire. For example, item nonresponse might be worse in the beginning of the questionnaire than in the end of it. If respondents choose to skip question items in the beginning of the questionnaire, their motivation to finish might be low. Again, I include all available frame information and web paradata.

Most hypotheses are similar to those for research question 1 with slight changes. Because these analyses are on the page level, I do not aggregate information like session count, backing up, item nonresponse, or response time. Thus, I now investigate the relationship between, for example, the paging behavior and breakoff at the page level. Additionally, I add two new response behavior variables: (1) scrolling behavior on every page, and (2) the answer variability of grid questions (i.e., straightlining). Again, most included variables

are embedded in the respondent characteristics and response behavior dimension and the hypotheses are ordered by the type of (para-) data.

As the number of question items and the question topic varies by page, I control for this variation in my analyses by including the information about the number of question items of the current and the next page and the topic section of the questionnaire in all analyses (dimension 2: page and question characteristics).

**Non-paradata: frame and auxiliary data.**

**Hypothesis II.1: Women have lower breakoff risks than men.**

**Hypothesis II.2: Non-white respondents are more at risk of breaking off the questionnaire than White respondents.**

**Hypothesis II.3: Younger respondents have a higher breakoff risk than older respondents.**

**Hypothesis II.4: Panel respondents are less at risk of quitting the questionnaire than non-panel members.**

**Web paradata: prior survey phase.**

**Hypothesis II.5: Respondents with a positive response history (i.e., previous complete respondents) have a lower risk from breaking off the questionnaire than respondents with a negative response history (i.e., previous breakoff respondents).**

**Web paradata: recruitment phase.**

**Hypothesis II.6: Waiting for reminder emails to react to the questionnaire increases the risk of breaking off.**

**Web paradata: access phase.**

**Hypothesis II.7: Accessing (and responding to) the questionnaire on a mobile device compared to a non-mobile device increases the breakoff risk.**

**Hypothesis II.7a: The longer the questionnaire, the higher the breakoff risk of mobile web respondents.** One of the theories about why mobile device respondents break off at a higher rate than non-mobile respondents is higher response burden (Couper, Antoun, and Mavletova 2017). If this is true, the longer and more burdensome, the questionnaire the stronger the effect of mobile devices.

**Hypothesis II.8: Starting a new session decreases the breakoff risk compared to continuing the session.** This variable is now included in its non-aggregated form: if the respondents start a new session (yes/no), they are less at risk of quitting the questionnaire.

**Web paradata: response phase.**

**Hypothesis II.9: Hitting the previous button as opposed to the next button decreases the breakoff risk.** This variable is now included in its non-aggregated form: if the respondent hits the previous button (yes/no), they are less at risk of quitting the questionnaire.

**Hypothesis II.10: Higher item nonresponse rates indicate higher breakoff risk.** This variable now indicates the item nonresponse on each page rather than the item nonresponse across the entire questionnaire.

**Hypothesis II.11: Being faster or slower than the majority of respondents on a given question indicates higher breakoff risk.** Outlier response times (fast and slow) indicate out of the norm response behavior. So-called *speeders* are more likely to engage in undesired behavior (Zhang and Conrad 2014). Respondents who are exceedingly slow might have problems understanding or displaying the questions and might quit the questionnaire (Peytchev 2009).

**Hypothesis II.12: Becoming faster or slower across the questionnaire indicates increasing breakoff risk.** This variable now used in its non-aggregated form, representing the net response time change over the past three pages seen from the respondents. See Chapter 5 for more detailed information.

**Hypothesis II.13: Excessive scrolling behavior indicates increased breakoff risk.** Research has found small advantages regarding breakoff rates on mobile devices for surveys in the scrolling format (Mavletova and Couper 2014; Mavletova and Couper 2016b; and McGeeney and Marlar 2013), while Lozar Manfreda, Batagelj, and Vehovar (2002) and Peytchev et al. (2006) do not find differences in breakoff rates between scrolling and paging formats. At the same time, scrolling behavior within a questionnaire using the paging format indicates questions that are too long and too complex to be displayed on one screen. Therefore, higher breakoff risks are expected for respondents who have to engage in scrolling.

**Hypothesis II.14: Straightlining and lower answer variability have a positive association with the risk of breaking off.** Straightlining is seen as a satisficing

behavior, indicating loss of interest and motivation (Krosnick 1991). Unmotivated and uninterested respondents engage in breakoff behavior more often than motivated and interested respondents (Galesic 2006). Higher breakoff risks for respondents who show straightlining behavior is expected.

### **2.5.3 Research Question 3: is it possible to intervene with breakoff candidates?**

Chapter 6 focuses on the last research question whether it is possible to intervene with breakoff candidates. In a real-time experiment respondents see intervention messages once they engage in risky response behavior indicating that they are likely to quit the questionnaire. The analyses are usually carried out at the respondent level and focus on intervention success in order to decrease breakoff rates. When respondents engage in risky behavior, possibly resulting in breakoff, a motivational pop-up message appears while they are taking the survey. The implemented algorithm that flags risky behavior is based on the findings in Chapter 4 and Chapter 5 and includes all previously tested variables: frame information, which can be pre-loaded for the algorithm and web paradata, which need to be collected and computed in real-time.

**Hypothesis III.1: Respondents can be stopped before undesirable response behavior occurs.** Recent research projects have explored personalized feedback in web surveys and found positive results for reducing speeding behavior, item nonresponse, and increasing answers to open-ended questions (Al Baghal and Lynn 2015; Cibelli Hibben and Conrad 2016; Clifford and Jerit 2015; Zhang and Conrad 2016).

**Hypothesis III.2: Interventions given at the right moment (right before the undesired behavior) can decrease breakoff rates.** Recent research findings suggest that tailored interventions can change undesired response behavior, if given at the right moment (Cibelli Hibben and Conrad 2016; Clifford and Jerit 2015; Conrad et al. 2017).

**Hypothesis III.3: Unnecessary interventions (generic interventions) can increase breakoff rates.** Generic interventions increase response burden and therefore can increase higher rates (Galesic 2006).

In Table 2.1, I display all variables used in this dissertation, categorized within the web survey breakoff framework as well as in the web survey paradata framework. The rows of this table are grouped by the factors impacting web survey breakoff (dimensions 1 to 3)



while the columns two to five represent the four paradata phases. Column one displays all variables used which are not classified as paradata.<sup>29</sup>

This concludes the literature review and exploration of the research gaps. The next section explores in detail the survey used throughout the dissertation and explains the data cleaning steps used to perform all future analyses.

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<sup>29</sup>Throughout the dissertation, the variable order within the tables and figures is based on this table.

Table 2.1: Paradata framework with framework for web survey breakoff

| Non-paradata                             | Prior to survey          | Recruitment phase | Access phase        | Response phase     |
|--|--------------------------|-------------------|---------------------|--------------------|
| <b>Question and page characteristics</b> |                          |                   |                     |                    |
|  | Question topic           |                   |                     |                    |
|  | Number of question items |                   |                     |                    |
| <b>Respondent characteristics</b>        |                          |                   |                     |                    |
|  | Gender                   | Response history  | Response latency    | Answering device   |
|  | Race                     |                   | Session count       | Navigation         |
|  | U of M affiliation       |                   |                     | Item nonresponse   |
|  |                          |                   |                     | Answer variability |
|  |                          |                   |                     | Scrolling          |
|  |                          |                   |                     | Response times     |
| <b>Survey design</b>                     |                          |                   |                     |                    |
|  | Panel membership         |                   | Number of reminders |                    |

# Chapter 3

## SCIP Dataset

For this dissertation, I used a dataset provided by the Sustainability and Cultural Indicators Program (SCIP, <http://graham.umich.edu/campus/scip>). The survey was conducted by the University of Michigan's Institute for Social Research in collaboration with the University of Michigan Graham Sustainability Institute and funded by the Office of the Provost (Hupp 2015). SCIP is a multi-year, cross-sectional web survey for students, faculty, and staff at the University of Michigan. The questionnaire covers topics on travel behavior, attitudes toward climate change, and commitment to environmental issues. It was programmed in DatStat's Illume data collection system (<http://www.datstat.com>).

Every fall, since 2012, students, faculty, and staff have been sampled and invited to participate in the 10-20 minute web survey. Sampled individuals were reminded up to four times via email to participate in the survey. Each invitation and reminder included a personalized link to the survey instrument. This link was deactivated once the respondent answered the questionnaire. After completing the questionnaire, respondents had the chance to win a \$50 token of appreciation.

Each year, between 5,000 and 7,000 people responded to the survey, while about 1,000 respondents quit. Over the years, mobile devices have become more prominent: starting with 5% of respondents answering on mobile devices in 2012, this proportion rose to almost 20% in 2015.

Since 2014, SCIP has turned toward mobile friendly designs like presenting grids vertically as single items, and the current version of the SCIP has been optimized for mobile

devices.<sup>30</sup> In response to these new designs, SCIP experienced a drop in breakoff rates on mobile devices between the years 2013 and 2014 (from 30% to 20%). For my research project, it was crucial to keep the instrument as stable as possible, thus, I only focused on the survey years after SCIP became mobile friendly (2014 and 2015).

### 3.1 Sampling frame and survey design

Approximately 21,000 active members of the University of Michigan (U of M) are invited via email to participate in the SCIP survey each year (the sample excludes alumni, and campuses outside Ann Arbor, MI). Eligible students are drawn from the U of M Office of the Registrar, while faculty and staff members are drawn by the U of M Human Resources Records and Information Services.

SCIP includes a rotating panel for undergraduate students. The panel consists of a simple random sample of 3,000 undergraduates who responded to the survey in the prior year. To account for outgoing students, the panel sample is refreshed with new undergraduate students each year. Thus, the SCIP panel of 2014 contained student respondents from 2012 and 2013, minus the 2012 panel respondents who were no longer enrolled in the university. This process leads to around 3,000 panel invites and to 1,000 panel respondents each year.

The survey is usually fielded in the fall semester, beginning with data collection in October, and takes 40-50 days. Due to funding issues, there was no survey in fall 2016 or 2017. The survey resumed in the winter semester of 2018 with data collection starting in January.

Once sampled, individuals receive one pre-notification email, one invitation when the survey is online and up to three reminder emails if they have not reacted to the invitation after one week. These emails contain information about questionnaire content, expected length, and the incentive lottery. Approximately 1 in 100 respondents have the chance to win a \$50 gift card for survey completion.

The sample was based on the administrative lists from the university, and, therefore I had access to key characteristics for all individuals – both respondents and nonrespondents. These characteristics are gender, race, and university status (student versus faculty/staff). With the help of administrative data, I was able to compare nonrespondents to respondents,

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<sup>30</sup>Couper and Peterson (2016) found that grid presentation is associated with longer survey response times among mobile device users.

investigate differences between these groups, and I use this information as independent variables in the models explicated in Chapter 4 and Chapter 5. Table 3.1 describes the sample composition for 2014 and 2015.

Table 3.1: Full sample by demographics and year

|                           | Survey year 2014 |                | Survey year 2015 |                |
|---------------------------|------------------|----------------|------------------|----------------|
|                           | Freq.            | Perc.          | Freq.            | Perc.          |
| <b>Gender</b>             |                  |                |                  |                |
| Female                    | 10,652           | 50.59%         | 10,946           | 51.36%         |
| Male                      | 10,403           | 49.41%         | 10,367           | 48.64%         |
| Missing gender            | 1                | 0.00%          | 0                | 0.00%          |
| <b>Race/ethnicity</b>     |                  |                |                  |                |
| Asian                     | 3,475            | 16.50%         | 3,422            | 16.06%         |
| Black                     | 980              | 4.65%          | 1,047            | 4.91%          |
| Hispanic                  | 870              | 4.13%          | 876              | 4.11%          |
| White                     | 13,575           | 64.47%         | 13,796           | 64.73%         |
| Other race                | 579              | 2.75%          | 645              | 3.03%          |
| Missing race              | 1,577            | 7.49%          | 1,527            | 7.16%          |
| <b>U of M affiliation</b> |                  |                |                  |                |
| Faculty/staff             | 4,968            | 23.59%         | 4,981            | 23.37%         |
| Student                   | 16,088           | 76.41%         | 16,332           | 76.63%         |
| <b>Panel membership</b>   |                  |                |                  |                |
| Non-panel member          | 18,306           | 86.94%         | 18,266           | 85.70%         |
| Panel member              | 2,750            | 13.06%         | 3,047            | 14.30%         |
| <b>Total sample</b>       | <b>21,056</b>    | <b>100.00%</b> | <b>21,313</b>    | <b>100.00%</b> |

The general sample composition did not change across years: about half of all invited individuals were male. In 2014, one sample member had missing gender information. About 64% of all sampled individuals were White, 16% were Asian, and 3% were Black or Hispanic. Due to low frequencies, I combined people with multiple races and ethnicities and people of Hawaiian or Native American descent to the “other” category. Overall, 3% of all sample members belonged in this category each year. Seven percent of sample members had missing race information. Based on the sampling design, about 75% of all sample members were students, and 25% were faculty and staff (Table 3.1).<sup>31</sup>

<sup>31</sup>Because the purpose of Chapter 4 and Chapter 5 are to explain and predict web survey breakoff and not to draw conclusions for the entire U of M population, I used unweighted analyses for these chapters. In Chapter 6, I tested the necessity of weighted analyses in detail.

## 3.2 Response types

Table 3.2 illustrates the different response types (unit nonresponse, introduction breakoff, questionnaire breakoff, and complete respondents) for the entire sample by survey year.

Table 3.2: Full sample by response type and year

|                        | Survey year 2014 |                | Survey year 2015 |                |
|------------------------|------------------|----------------|------------------|----------------|
|                        | Freq.            | Perc.          | Freq.            | Perc.          |
| Unit nonresponse       | 13,763           | 65.36%         | 15,011           | 70.43%         |
| Introduction breakoff  | 242              | 1.15%          | 259              | 1.22%          |
| Questionnaire breakoff | 682              | 3.24%          | 611              | 2.87%          |
| Complete response      | 6,369            | 30.25%         | 5,432            | 25.49%         |
| <b>Total sample</b>    | <b>21,056</b>    | <b>100.00%</b> | <b>21,313</b>    | <b>100.00%</b> |

As mentioned in Section 2.2, I classify all sample members into one of the four response types: unit nonresponse, introduction breakoffs, questionnaire breakoffs, and complete response. Sample members who failed to enter the survey (never click on the survey link provided in the invitation and reminder emails) are classified as *unit nonrespondents*. Sample members who clicked on the link to enter the questionnaire but broke off during the introduction section, defined by the first three pages of the questionnaire, are classified as *introduction breakoffs*. Respondents who quit the questionnaire any time after the introduction section and never saw the last questionnaire page are defined as *questionnaire breakoffs*. All other respondents who saw the last questionnaire page even if they did not submit the questionnaire are considered as *complete respondents*. This classification is irrespective of the amount of item nonresponse of each respondent.<sup>32</sup>

In 2014, out of the 21,056 invited individuals, 13,763 were unit nonrespondents (65%) and 6,369 respondents completed the questionnaire (30%). In 2015, of the 21,313 individuals invited to participate in the survey, 15,011 (70%) of the sample members were unit nonrespondents and 5,432 (25%) were complete respondents. This resulted in participation rates (PR) of 35% and 30% in 2014 and 2015, respectively (with  $PR = \frac{\text{Intro breakoffs} + \text{Qnr breakoffs} + \text{Completes}}{\text{Total sample}}$ ). There were 924 breakoff respondents (242 introduction breakoffs and 682 questionnaire breakoffs) in 2014 and 870 breakoff respondents in 2015 (259 introduction breakoffs and 611 questionnaire breakoffs). Thus,

<sup>32</sup>Only respondents who did not answer any of the question items, so-called *lurkers*, are excluded from the data. This had already been done before I received the data. I was not able to restore this any information about these respondents.

the total breakoff rates (TBR) varied from 13% in 2014 to 14% in 2015 (with  $TBR = \frac{\text{Intro breakoffs} + \text{Qnr breakoffs}}{\text{Intro breakoffs} + \text{Qnr breakoffs} + \text{Completes}}$ ).<sup>33</sup>

### 3.3 Survey instrument

SCIP used one questionnaire for faculty and staff and one for students. These two questionnaires were nearly identical with only slight differences in wording and question order. In 2014, the questionnaire for students was up to 70 web pages long and up to 71 web pages for faculty and staff respondents. In 2015, there were three survey pages added to both questionnaires, leading to 73 survey pages for students and 74 survey pages to faculty. Many pages were only displayed conditionally to previous responses leading to a median of 58 to 59 pages seen by the respondents (Table 3.3). The welcome page, consent page, and the first question page are referred to as the *introduction section* of the questionnaire from here forward. The last page of the questionnaire reminded respondents of the chance to win the \$50 token of appreciation. I refer to this page as the *last survey page* or the *thank-you page*. Instead of a next button, the last survey page showed a submit button, which sent the completed questionnaire to the study server. The questionnaire was divided into nine different topic sections: introduction, transportation, conservation, environment, food, climate, general sustainability, sustainability at U of M, and demographics. There were no “transition” pages (i.e., pages with no question items).

The number of question items shown on one page varied between one item and 19 (e.g., “In the past week, how often did you ride the bus?” and “What collage or school are you in enrolled in? Check all that apply: Architecture and Urban Planning; Art and Design; Business; Dentistry; Education; Engineering; Information; Kinesiology; Law; Literature, Science, and the Arts; Medicine; Music, Theater and Dance; Natural Resources and Environment; Nursing; Pharmacy; Public Health; Public Policy; Social Work”). The total number of question items for faculty ranged from 258 and 275 for the survey years 2014 and 2015, respectively. For students the number of question items ranged from 248 and 263 for the survey years 2014 and 2015, respectively. Again, many question items were only displayed conditionally to previous responses for both affiliation groups. Thus, the median for the number of question items presented to one respondent ranged from 187 in 2014 and 199 in 2015 (Table 3.3). Respondents stayed 13-14 minutes in the survey

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<sup>33</sup>As mentioned earlier, breakoff is conditioned on survey response. Thus, breakoff rates need to be evaluated in relation to response rates of a particular survey.

instrument in both years. The full questionnaires for students and faculty/staff for survey years 2014 and 2015 can be found in Appendix D.

Respondents navigated the survey pages using a next and a previous button at the bottom of the web page. Respondents moved to the next questionnaire page by hitting the next button. If respondents used the previous button they again saw the page they had seen before. Respondents could make use of this feature to revise or change their answers on previous question items. It was also possible to leave the survey and continue the questionnaire in a new session on the survey page the respondents have left off.

The survey instrument used the standard U of M Survey Research Center design and was programmed in Illume 5.1.



Table 3.3: Descriptive analyses for the survey instrument

|                              | <b>Min.</b> | <b>25% quantile</b> | <b>Median</b> | <b>Mean</b> | <b>75% quantile</b> | <b>Max.</b> |
|------------------------------|-------------|---------------------|---------------|-------------|---------------------|-------------|
| <b>Survey year 2014</b>      |             |                     |               |             |                     |             |
| Number of pages seen         | 1           | 50                  | 58            | 53          | 62                  | 195         |
| Number of question items     | 1           | 147                 | 187           | 167         | 197                 | 629         |
| Total response time (in min) | 0           | 10                  | 13            | 15          | 18                  | 78          |
| <b>Survey year 2015</b>      |             |                     |               |             |                     |             |
| Number of pages seen         | 1           | 51                  | 59            | 53          | 64                  | 114         |
| Number of question items     | 1           | 150                 | 199           | 177         | 209                 | 404         |
| Total response time (in min) | 0           | 10                  | 14            | 15          | 19                  | 76          |

## 3.4 Paradata

In addition to the administrative data, I had access to a rich set of paradata for survey respondents. Table 3.4, outlines basic paradata information like response history, response latency, answering device, and session count.

Table 3.4: Paradata information for respondents only by year

|                            | Survey year 2014 |                | Survey year 2015 |                |
|----------------------------|------------------|----------------|------------------|----------------|
|                            | Freq.            | Perc.          | Freq.            | Perc.          |
| <b>Response history</b>    |                  |                |                  |                |
| No previous participation  | 6,132            | 84.08%         | 4,877            | 77.39%         |
| Previous complete response | 1,045            | 14.33%         | 1,354            | 21.49%         |
| Previous breakoff          | 116              | 1.59%          | 71               | 1.13%          |
| <b>Response latency</b>    |                  |                |                  |                |
| Official invitation        | 3,861            | 52.94%         | 3,390            | 53.79%         |
| First reminder             | 1,984            | 27.20%         | 1,550            | 24.60%         |
| Second reminder            | 935              | 12.82%         | 773              | 12.27%         |
| Third reminder             | 513              | 7.03%          | 589              | 9.35%          |
| <b>Device used</b>         |                  |                |                  |                |
| PC                         | 6,054            | 83.01%         | 5,035            | 79.90%         |
| Smartphone                 | 1,111            | 15.23%         | 1,192            | 18.91%         |
| Tablet                     | 91               | 1.25%          | 57               | 0.90%          |
| Missing device             | 37               | 0.51%          | 18               | 0.29%          |
| <b>Session count</b>       |                  |                |                  |                |
| One session                | 6,630            | 90.91%         | 5,614            | 89.11%         |
| Two sessions               | 571              | 7.83%          | 618              | 9.81%          |
| Three sessions             | 74               | 1.01%          | 57               | 0.90%          |
| Four sessions              | 14               | 0.19%          | 8                | 0.13%          |
| Five sessions              | 4                | 0.05%          | 1                | 0.02%          |
| Six sessions               | 0                | 0.00%          | 2                | 0.03%          |
| <b>Total respondents</b>   | <b>7,293</b>     | <b>100.00%</b> | <b>6,302</b>     | <b>100.00%</b> |

The variable response history represents which response type respondents received in the previous survey year (e.g., whether respondents of the survey year 2014 participated in the 2013 survey). Eighty-four percent of the 2014 respondents did not participate in 2013, and 77% of all 2015 respondents did not participate in 2014.<sup>34</sup> I refer to this category as

<sup>34</sup>I was not able to distinguish between respondents who were not invited in the previous year (i.e., new panel members) and respondents who were invited but chose not to respond to the survey (i.e., previous unit nonrespondents). Therefore, I combined both groups into “no response history.”

“no previous participation” or “no response history.” Only 14% of the 2014 respondents completed the survey in 2013, and 21% of the 2015 respondents completed the survey in 2014 further referred to as “positive response history.” Only about 1-2% of all respondents were breakoff respondents in the previous years further referred to as “negative response history.”

More than half of all respondents started the survey after the first email invitation without additional reminder emails. About one quarter of respondents needed to be prompted with one reminder email, while the last quarter of respondents needed up to three reminder emails to start the questionnaire. Most respondents chose to answer the questionnaire via PC (about 80%), but the use of smartphones rose across the two survey years (15% to almost 19% respectively), continuing the rising trend of mobile device usage in SCIP (Hupp 2015). Only 1% of all respondents used a tablet to respond to the survey. For 55 respondents (37+18), it was unclear which device they used. This can happen occasionally, when respondents use uncommon devices, like iPods.

As mentioned before, it was possible to interrupt the questionnaire and come back at a later moment. Most respondents (about 90%) did not make use of this option. There were about 600 respondents responding to the questionnaire in two sessions each survey year, and 80-90 respondents taking up to five or six sessions to respond to the questionnaire.

## **3.5 Data cleaning and manipulation**

### **3.5.1 Data cleaning**

Based on the descriptive numbers in the tables above, I decided on the following data cleaning steps:

1. Deal with sample members with missing demographic information.
2. Exclude respondents without answering device information.
3. Exclude respondents with very high page counts.
4. Exclude time out pages.
5. Trim page response times.

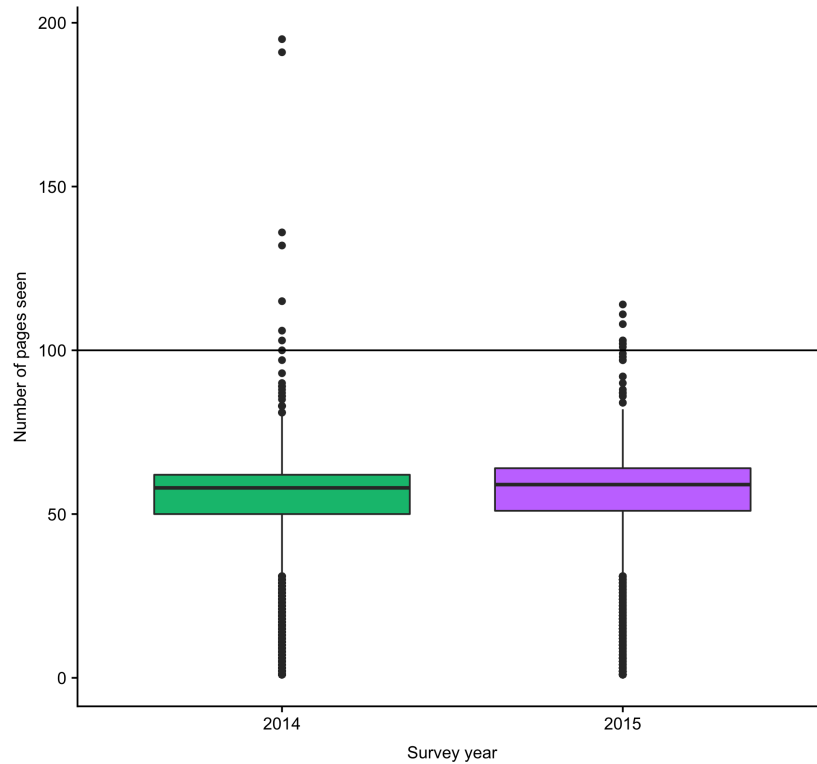


Figure 3.1: Box plots for maximal pages seen by year

**1. Missing demographic information.** As Table 3.1 shows, there is only one sample member who did not have information about their gender. I decided to exclude this case from any further analyses. At the same time, 7% of all sample members have missing race/ethnicity information. I decided to keep these individuals in their own category, since they are the third biggest group after Whites and Asians. In addition, I did not have enough auxiliary information about these respondents to impute their missing race information. Therefore, I included a “missing race” category in the analyses.

**2. Answering device.** For 55 respondents, I did not have any information about their answering device (Table 3.4). As this variable was crucial to further analyses I decided to exclude these cases.

**3. Maximum pages seen.** The maximum pages seen while responding to the survey was 195. I excluded respondents who had a higher page count than the 99.5 percentile (more than 80 pages, see Figure 3.1). Due to this decision, 51 respondents were excluded.

**4. Time-out pages.** If respondents stayed at one page longer than 20 minutes, their session expired (time-out). Even though the session was inactive, the time stamps on the

specific page was not. The paradata script was still recording the page response time. This led to very high response times per page – up to 11,160 minutes. I decided to exclude pages with a response time more than 20 minutes as the respondent did not experience them in a conventional way. More likely, the respondent went to another website and forgot about the questionnaire running in the background. If time out occurred on the very first page, I excluded the respondent, resulting in the exclusion of 60 respondents.

**5. Trimming page response times.** Occasionally, page response times were negative or zero. For 86 web pages, page response times were negative, and in 7,833 web pages, page response times were zero. This occurred mainly on the introduction page of the survey (the welcome page accounted for 85% of all negative or zero response time pages). This means that capturing response time in paradata did not always work on the first survey page. Further investigation in the survey instrument and the programming tool would be necessary to resolve this issue.

Because of the right skewness of response time despite excluding the expired pages in the step before, I decided to trim the page times at their 1% and 99% percentile (Ratcliff 1993). This was done for each page separately across all respondents. See Figure 3.2 for the differences in the distribution .

This procedure accounted for very high page response times, as well as for negative and zero response times: shifting the minimum page time from -0.016min to +0.016min and the maximum page time from 20min to 5min.

Based on these data cleaning steps, 42,368 sample members were invited and 13,427 individuals responded to the survey across both years. In total, 167 sample members were excluded due to the data cleaning process.

### 3.5.2 Variable manipulation

**Device type.** The paradata of SCIP captured all possible devices used to complete the questionnaire: computer, smartphone, and tablet. As mentioned in Chapter 2, tablets seem to be more similar to desktop computers and laptops rather than smartphones (Guidry 2012; Lugtig and Toepoel 2015). Due to the low number of tablet users (about 1%, see Table 3.4), I combined the categories of computer and tablet into a “non-mobile” category.

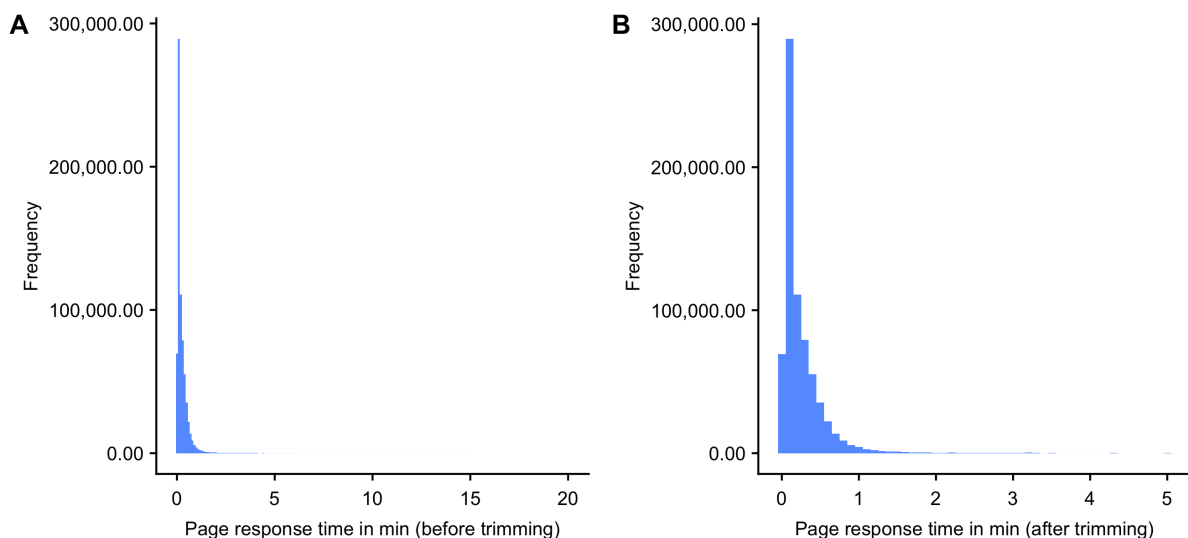


Figure 3.2: Histogram of page response time in minutes (A = before trimming, B = after trimming)

**Question response time comparisons.** To make accurate statements about (a) response time changes while respondents were taking the questionnaire (whether or not they slowed down or sped up) and (b) respondents' individual response speed (whether they responded particularly fast or slow compared to other respondents), I must account for three points:

1. Variable number of question items and question complexity on each page.
2. Different answering devices.
3. Different cognitive abilities.

This can be done by accounting for the specific page  $p$ , the device  $d$ , and U of M affiliation  $a$ :

1. The number of question items shown on one page varied between one and 19. Obviously, pages covering more question items tended to take longer than pages with fewer items. Thus, comparing page time of page  $p - 1$  with page time of page  $p$  was not sufficient to judge whether respondents were changing their answering speed. Therefore, I divided the page response time ( $PageTime_{ip}$ ) by the number of question items on each page ( $NbQuestion_p$ ) for each respondent  $i$  on every questionnaire page  $p$  (Equation 3.1).<sup>35</sup> Additionally, treating response time separately by each questionnaire page  $p = \{1, \dots, P\}$  accounts for the varying question complexity across

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<sup>35</sup>This approach assumes that each question item takes exactly the same amount of time to respond.

the questionnaire.

$$QuestionTime_{ip} = \frac{PageTime_{ip}}{NbQuestion_p} \quad (3.1)$$

2. Previous research has shown that respondents using mobile devices take longer to respond than respondents who choose a PC (Couper and Peterson 2016). When comparing response time across respondents, I needed to account for this finding by grouping response time by answering device  $d = \{\text{non-mobile, mobile}\}$ .
3. Answering speed in surveys is dependent on age, education, and question complexity (Yan and Tourangeau 2008). Thus, respondent  $i$  might have lower response times compared to respondent  $j$  but that does not necessarily mean that respondent  $i$  was a so-called *speeder*. Respondent  $i$  might have higher cognitive abilities than respondent  $j$ , leading to faster response times. To account for this, I stratified response time using the proxy variable U of M affiliation  $a = \{\text{faculty/staff, student}\}$ .
  - a) Response time changes for respondent  $i$  while answering the questionnaire

To be able to compare response times of respondent  $i$  between page  $p$  and the previous page ( $p - 1$ ), I standardized question response times ( $QuestionTime_{i,p,d,a}$ ). I first calculated the page-specific mean question time ( $MeanQuestionTime_{p,d,a}$ ) by adding up all individual question response times separately by page, device, and affiliation and divided by the number of respondents on the specific page  $p$ , with device  $d$ , and affiliation  $a$  ( $n_{p,d,a}$ ):

$$MeanQuestionTime_{p,d,a} = \frac{\sum_{i=1}^{n_{p,d,a}} QuestionTime_{i,p,d,a}}{n_{p,d,a}}$$

Then, I calculated the page-specific standard deviation ( $SdQuestionTime_{p,d,a}$ ) separately by page, device, and affiliation.

$$SdQuestionTime_{p,d,a} = \sqrt{\frac{1}{n_{p,d,a} - 1} \sum_{i=1}^{n_{p,d,a}} (QuestionTime_{i,p,d,a} - MeanQuestionTime_{p,d,a})^2},$$

where  $n_{p,d,a}$  refers to the number of respondents answering questions on a particular page  $p$ , using the device  $d$ , and with affiliation  $a$  and  $MeanQuestionTime_{p,d,a}$  refers to the page-specific mean question response time.

Next, I calculated the standardized question response time ( $zQuestionTime_{i,p,d,a}$ ) for each respondent  $i$ , on page  $p$ , using device  $d$ , and with affiliation  $a$  by subtracting the

page-specific mean question time ( $MeanQuestionTime_{p,d,a}$ ) from the individual question time ( $QuestionTime_{i,p,d,a}$ ) then dividing by the page-specific standard deviation ( $SdQuestionTime_{p,d,a}$ ):

$$zQuestionTime_{i,p,d,a} = \frac{QuestionTime_{i,p,d,a} - MeanQuestionTime_{p,d,a}}{SdQuestionTime_{p,d,a}} \quad (3.2)$$

In a last step, I created an indicator showing whether a respondent was speeding up or slowing down from one page to another by subtracting the standardized question response time of the previous page ( $zQuestionTime_{i,(p-1),d,a}$ ) from the standardized question response time of the current page ( $zQuestionTime_{i,p,d,a}$ ), Equation 3.3). If this difference was negative, the respondent took less time to respond to each item on the current page  $p$  than they took on the previous page ( $p - 1$ ). Thus, the respondent  $i$  was *speeding up* if  $RT.Change_{i,p} < 0$ . If the difference was positive, the respondent  $i$  took more time to respond to each question item on the current page  $p$  than they took on the previous page ( $p - 1$ ). Thus, the respondent *slowed down* if  $RT.Change_{i,p} > 0$ . The respondent had a *constant response time* if the difference was close to 0 (Equation 3.4).

$$RT.Change_{i,p} = zQuestionTime_{i,p,d,a} - zQuestionTime_{i,(p-1),d,a} \quad (3.3)$$

$$RT.Change_{i,p} \begin{cases} < 0 & \text{then } i \text{ is speeding up} \\ = 0 & \text{then } i \text{ has constant response time} \\ > 0 & \text{then } i \text{ is slowing down} \end{cases} \quad (3.4)$$

b) Comparing response times between respondents

To compare question response times between respondents, I chose to categorize respondents as *very fast*, *very slow*, and *normal response time* ( $RT$ ) respondents (Equation 3.5). To do this, I calculated the 25<sup>th</sup> and 75<sup>th</sup> percentile of the question response time, separately for each page  $p$ , device  $d$ , and affiliation  $a$  ( $Q_{p,d,a}(0.25)$  and  $Q_{p,d,a}(0.75)$ ). I then compared the individual question response time ( $QuestionTime_{i,p,d,a}$ ) of respondent  $i$  to the percentiles. If the question response time of respondent  $i$  was below the 25<sup>th</sup> page-specific percentile, the respondent took less time on each question item than 75% of all  $n_{p,d,a}$  respondents.<sup>36</sup> Thus, I classified this respondent as a *very fast* respondent. If the question response time of respondent  $i$  was above the 75<sup>th</sup> question response time percentile, the respondent

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<sup>36</sup> $n_{p,d,a}$  refers to the number of respondents on page  $p$ , using device  $d$ , with affiliation  $a$ .



took more time to answer each question item than 75% of all  $n_{p,d,a}$  respondents. Thus, this respondent was classified as a *very slow* respondent. If the question response time fell between the two percentiles, the respondent was classified as *normal response time* respondent.

$$Extreme.RT_{i,p} = \begin{cases} -1 & \text{if } QuestionTime_{i,p,d,a} < Q_{p,d,a}(0.25) \text{ (} i \text{ is very fast)} \\ 0 & \text{if } Q_{p,d,a}(0.25) \leq QuestionTime_{i,p,d,a} \leq Q_{p,d,a}(0.75) \\ +1 & \text{if } Q_{p,d,a}(0.75) < QuestionTime_{i,p,d,a} \text{ (} i \text{ is very slow)} \end{cases} \quad (3.5)$$

Thus, I was able to compare response times within the questionnaire for the same respondent ( $RT.Change_{i,p}$ ), as well as across respondents on page  $p$  ( $Extreme.RT_{i,p}$ ). Both indicators are used in further analyses.

All analyses in this dissertation were carried out in R 3.4.1 (R Core Team 2018).

## Chapter 4

# Understanding web survey breakoff: who is likely to break off from a questionnaire?

In this chapter, I analyzed breakoff at the respondent level in order to find an answer to the first research question: “Who is likely to break off a questionnaire?” First, I investigated the differences between the response types: unit nonrespondents, breakoff respondents, and complete respondents by fitting multinomial logistic regression models with frame information as independent variables (*frame analyses*). In a second step, I focused on respondents only (complete and breakoff cases) to investigate which response behavior is linked to breakoff behavior (*breakoff analyses*). I fitted logistic regression models to both breakoff types (introduction and questionnaire breakoff) separately. For the introduction breakoff logistic regression model the dependent variable signaled whether the respondent engaged in introduction breakoff or not. For the questionnaire breakoff logistic regression model the dependent variable showed which respondent engaged in questionnaire breakoff and who completed the questionnaire.<sup>37</sup> I controlled for respondent characteristics, which, according to previous literature, are related to breakoff (Section 2.3). The last step contains the *prediction analyses* in which I investigate the prediction power of response behavior associated with breakoff respondents. The chapter ends with a conclusion and discussion section.

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<sup>37</sup>Note that for the questionnaire breakoff model introduction breakoff respondents were excluded.

## 4.1 Variables and methods

### 4.1.1 Variables used in multinomial and logistic regression models

In this section, I describe all remaining variables used for the following analyses. Variables used for the frame analyses were already described in Section 3.1, Table 3.1. Table 4.1 shows the frequencies of all binary and categorical variables used in the logistic regression models separately by survey year. Table 4.2 shows the distributions of all continuous variables used. Data cleaning and manipulation were performed as described in Section 3.5. In addition, I performed the data manipulation steps described below.

Table 4.1: Frequencies for binary and categorical variables used in logistic regression models separated by survey year

|                                 | Survey year 2014 |                | Survey year 2015 |                |
|---------------------------------|------------------|----------------|------------------|----------------|
|                                 | Freq.            | Perc.          | Freq.            | Perc.          |
| <b>Total respondents</b>        | <b>7,195</b>     | <b>100.00%</b> | <b>6,232</b>     | <b>100.00%</b> |
| <b>Response type</b>            |                  |                |                  |                |
| Introduction breakoff           | 206              | 2.86%          | 235              | 3.77%          |
| Questionnaire breakoff          | 678              | 9.42%          | 608              | 9.76%          |
| Complete response               | 6,311            | 87.71%         | 5,389            | 86.47%         |
| <b>Non-paradata information</b> |                  |                |                  |                |
| <b>Gender</b>                   |                  |                |                  |                |
| Female                          | 4,040            | 56.15%         | 3,625            | 58.17%         |
| Male                            | 3,155            | 43.85%         | 2,607            | 41.83%         |
| <b>Race/ethnicity</b>           |                  |                |                  |                |
| Asian                           | 1,054            | 14.65%         | 931              | 14.94%         |
| Black                           | 267              | 3.71%          | 263              | 4.22%          |
| Hispanic                        | 249              | 3.46%          | 246              | 3.95%          |
| White                           | 4,893            | 68.01%         | 4,146            | 66.53%         |
| Other race                      | 182              | 2.53%          | 184              | 2.95%          |
| Missing race                    | 550              | 7.64%          | 462              | 7.41%          |
| <b>U of M affiliation</b>       |                  |                |                  |                |

Table 4.1: Frequencies for binary and categorical variables used in logistic regression models separated by survey year (*continued*)

|                             | <b>Freq.</b> | <b>Perc.</b> | <b>Freq.</b> | <b>Perc.</b> |
|-----------------------------|--------------|--------------|--------------|--------------|
| Faculty/staff               | 2,300        | 31.97%       | 2,198        | 35.27%       |
| Student                     | 4,895        | 68.03%       | 4,034        | 64.73%       |
| <b>Panel membership</b>     |              |              |              |              |
| Non-panel member            | 6,068        | 84.34%       | 5,237        | 84.03%       |
| Panel member                | 1,127        | 15.66%       | 995          | 15.97%       |
| <b>Paradata information</b> |              |              |              |              |
| <b>Response history</b>     |              |              |              |              |
| No previous participation   | 6,047        | 84.04%       | 4,823        | 77.39%       |
| Previous complete           | 1,032        | 14.34%       | 1,340        | 21.50%       |
| Previous breakoff           | 116          | 1.61%        | 69           | 1.11%        |
| <b>Response latency</b>     |              |              |              |              |
| No reminder                 | 3,813        | 53.00%       | 3,367        | 54.03%       |
| Reminder sent               | 3,382        | 47.00%       | 2,865        | 45.97%       |
| <b>Answering device</b>     |              |              |              |              |
| Non-mobile                  | 6,091        | 84.66%       | 5,048        | 81.00%       |
| Mobile                      | 1,104        | 15.34%       | 1,184        | 19.00%       |
| <b>Multiple sessions</b>    |              |              |              |              |
| One session                 | 6,543        | 90.94%       | 5,561        | 89.23%       |
| Multiple sessions           | 652          | 9.06%        | 671          | 10.77%       |
| <b>Navigation</b>           |              |              |              |              |
| Next button                 | 4,860        | 67.55%       | 4,195        | 67.31%       |
| Previous button             | 2,335        | 32.45%       | 2,037        | 32.69%       |

Table 4.2: Distributions for continuous variables used in logistic regression models by survey year

|   | Min.  | 25% quantile | Median | Mean  | 75% quantile | Max.  |
|---|-------|--------------|--------|-------|--------------|-------|
| <b>Survey year 2014</b>                     |       |              |        |       |              |       |
| <b>Item nonresponse</b>                     |       |              |        |       |              |       |
| Item nonresponse rate (in %)                | 0.00  | 0.57         | 1.47   | 2.83  | 2.59         | 98.34 |
| <b>Standardized response times on...</b>    |       |              |        |       |              |       |
| Welcome page                                | -0.33 | -0.25        | -0.23  | -0.23 | -0.23        | 11.18 |
| Consent page                                | -0.63 | -0.42        | -0.29  | 0.01  | -0.04        | 8.65  |
| First question                              | -1.56 | -0.55        | -0.20  | 0.03  | 0.22         | 6.75  |
| <b>Average response time change when...</b> |       |              |        |       |              |       |
| Slowing down                                | 0.00  | 0.42         | 0.59   | 0.69  | 0.86         | 8.90  |
| Speeding up                                 | -7.81 | -0.83        | -0.57  | -0.68 | -0.41        | 0.00  |
| <b>Survey year 2015</b>                     |       |              |        |       |              |       |
| <b>Item nonresponse</b>                     |       |              |        |       |              |       |
| Item nonresponse rate (in %)                | 0.00  | 0.53         | 1.39   | 3.01  | 2.86         | 98.96 |
| <b>Standardized response times on...</b>    |       |              |        |       |              |       |
| Welcome page                                | -0.31 | -0.16        | -0.08  | 0.25  | 0.08         | 14.39 |
| Consent page                                | -0.63 | -0.43        | -0.32  | 0.00  | -0.04        | 8.65  |
| First question                              | -1.85 | -0.54        | -0.23  | 0.00  | 0.19         | 6.75  |
| <b>Average response time change when...</b> |       |              |        |       |              |       |
| Slowing down                                | 0.00  | 0.39         | 0.55   | 0.65  | 0.80         | 7.15  |
| Speeding up                                 | -5.19 | -0.79        | -0.55  | -0.64 | -0.39        | 0.00  |

### Questionnaire outcome

**Response type.** Categorical. Respondents were either categorized as complete respondents or as breakoff respondents: complete respondents refer to respondents who saw the last questionnaire page, the thank-you page, even if they did not submit the questionnaire. About 87% of all respondents were categorized as complete respondents in both survey years. All other respondents were considered breakoff respondents. These were further separated into introduction and questionnaire breakoff: introduction breakoff refers to all respondents who quit the questionnaire within the introduction section which includes the welcome page of the questionnaire as well as the consent page and the first question page. About 3-4% of all respondents were categorized as introduction breakoff, and about 10% fell into the questionnaire breakoff category.

The variable "response type" is considered as the dependent variable for the logistic regression models for introduction and questionnaire breakoff. The dependent variable of the logistic regression model for introduction breakoff equaled 1 if the respondent quit the questionnaire during the introduction and 0 otherwise (i.e., if this variable was equal to 0 the respondent either completed the questionnaire or quit after the introduction section). The dependent variable of the logistic regression model for questionnaire breakoff was equal to 1 if the respondent quit the questionnaire after the introduction and was 0 if the respondent completed the questionnaire. Thus, for the questionnaire breakoff logistic regression model, introduction breakoff respondents were excluded.

### Non-paradata information

**Gender.** Binary. Respondents' gender was available through the university's administrative data (Section 3.1). The majority of the respondents were female (56-58%).

**Race/ethnicity.** Categorical. Race information was provided in the administrative data and was categorized into five race categories (Black, Asian, Hispanic, White, other race), and one "missing race" category. The majority of all respondents were White (66-68%), followed by Asian (15%), and Black, Hispanic or "other race" (each about 3%). About 7% of all respondents had missing race information.

**U of M affiliation.** Binary. The information about the affiliation with the University of Michigan was provided in the administrative data. Students made up about 65% of respondents and faculty/staff respondents composed about 35%.

**Panel membership.** Binary. Whether a respondent was a member of the annual SCIP panel is indicated in the sample frame. I separated "panel member" (about 16%) and

“non-panel member” (about 84%).<sup>38</sup>

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<sup>38</sup>Note that only students are eligible to be in the panel condition of the study.

### Paradata information: prior survey phase

**Response history.** Categorical. This variable indicates the response type of each respondent in the previous survey year (i.e., whether respondents of the survey year 2014 broke off in 2013). The majority of respondents did not participate in the previous survey. About 14% of all 2014 respondents and 22% of the 2015 respondents had a positive response history (previous complete respondents). Only about 1-2% of all respondents had a negative response history, meaning they broke off in the previous year.

### Paradata information: recruitment phase

**Response latency.** Binary. If respondents did not start the survey after the first email invitation, they received up to three email reminders asking again for their participation. I categorized this variable into whether respondents received at least one email reminder (46-47%) or not (53-54%).

### Paradata information: access phase

**Answering device.** Binary. Once the questionnaire was started, the paradata script recorded the information about the answering device used to answer the survey. This variable has the outcome “mobile” (15-19%) versus “non-mobile” (81-85%).

**Multiple sessions.**<sup>39</sup> SCIP can be completed in multiple sessions, meaning respondents could interrupt the questionnaire and come back to the survey page where they left off. Thus, I included a variable indicating whether a respondent answered the questionnaire within one session (89-91%) or in multiple sessions (9-11%).

### Paradata information: response phase

**Navigation.** Binary. This indicator shows whether the respondent ever made use of the previous button to visit previous pages of the questionnaire (yes=33% versus no=67%).

**Item nonresponse.** Continuous. Item nonresponse represents the proportion of all answers provided by the respondents divided by all question items presented to them during the questionnaire. This variable is a percentage ranging between 0% (no answers given throughout the questionnaire) and 100% (the respondent answered every question item they were presented). The median of this variable was about 1.4% item nonresponse for both survey years (Table 4.2).

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<sup>39</sup>For the following variables, introduction breakoffs are excluded, as these do not experience any of the following response behaviors.



**Standardized question response times.** Continuous. As described in Section 3.5.2, I standardized the response time for every respondent by survey page, device, and U of M affiliation. As I analyzed breakoff at the respondent level, I selected specific pages that might be associated with breakoff. Previous research shows that the very first pages can be indicators for such behavior. At the same time, these pages were observed by all respondents (completes and questionnaire breakoffs).<sup>40</sup>

**Average speeding up/slowing down time.** Continuous. This variable averages the time each respondent either slowed down or sped up during the questionnaire. Respondents with relatively stable response times during the questionnaire have lower values on these variables, whereas respondents with unsteady response times across the questionnaire have higher values in these variables. See Section 4.1.2 for more details.

#### 4.1.2 Variable manipulation

The average speeding up/slowing down time was based on the response time change variable ( $RT.Change_{ip} = zQuestionTime_{ip} - zQuestionTime_{i(p-1)}$ ) in Section 3.5.2, Equation 3.3. This variable was negative if the respondent sped up, 0 if the response time stayed constant, and positive if the respondent slowed down from page  $(p - 1)$  to page  $p$ . Thus, this variable was page dependent, changing its value constantly. Because the breakoff analyses are aggregated at the respondent level, I needed to transform this information. I averaged all “speeding up” times and all “slowing down” times separately for each respondent, leading to a mean response time change when the respondent  $i$  was speeding up ( $Mean.RT.Change_i^{speed}$ ) and to a mean response time change when respondent  $i$  was slowing down ( $Mean.RT.Change_i^{slow}$ ). Equation 4.1 and Equation 4.2 show the calculation of these variables:  $P_i$  represents the maximum number of pages a respondent  $i$  experienced, and  $RT.Change_{ip}$  refers to the response time change of Equation 3.3. For example,  $Mean.RT.Change_i^{speed}$  was calculated by adding all response time changes, given these changes were negative (shorter response times on page  $p$  than on page  $p - 1$ ) and dividing this number by the number of pages the respondent was speeding up on (the number of pages seen by a respondent  $i$  given that they were speeding up from page  $p - 1$  to the next  $p$ ). The same was done for the variable  $Mean.RT.Change_i^{slow}$ . Thus, I created an overall estimate of whether respondents tended to speed up during the questionnaire (high (negative) values in the speed indicator), or if they were slowing down (high values

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<sup>40</sup>Introduction breakoff respondents were excluded.

in the slowing down indicator). To be able to interpret both indicators in the same way, I multiplied the variable  $Mean.RT.Change_i^{speed}$  with  $(-1)$ . Thus, high values in either the speed or the slowing down indicator represented inconsistent response speed.

$$Mean.RT.Change_i^{speed} = (-1) * \frac{\sum_{p=2}^{P_i}(RT.Change_{ip})|(RT.Change_{ip} < 0)}{P_i|(RT.Change_{ip} < 0)} \quad (4.1)$$

$$Mean.RT.Change_i^{slow} = \frac{\sum_{p=2}^{P_i}(RT.Change_{ip})|(RT.Change_{ip} > 0)}{P_i|(RT.Change_{ip} > 0)} = +1) \quad (4.2)$$

Table 4.3 shows the first ten survey pages seen by respondent with ID 94. This respondent was a faculty or staff member and responded to the questionnaire using a PC.<sup>41</sup> The question response time on the first page (first row) indicates that the respondent took 10827ms to pass the welcome page. The welcome message was the only item displayed on this page, so the page response time and question response time were identical. The standardized question response time (column four, Equation 3.2) was 0.11, indicating that this respondent was a little slower than the average faculty and staff member using a PC in answering the welcome page (i.e., the standardized question response time was positive). Because there was no page prior to the welcome page, the response time change was set to 0 in column five.

The second row shows the question response time of the second questionnaire page, which was the consent page. Again, because there was only one item on this page (passing the consent), page and question response times were identical (29828ms). The standardized question response time for the second page (0.85) indicates again that respondent 94 took longer than the average respondent with the same affiliation and answering device. This also shows in the response time change: the difference between the standardized question RT for page 1 and standardized question RT for page 2 ( $0.85 - 0.11 = 0.75$ ) was positive, indicating that the respondent was slowing down.

This procedure was repeated for all pages until the respondent either reached the end of the questionnaire or quit.

If respondent 94 saw in total these displayed ten survey pages the average response time change was computed. This was done by separating between speeding up times and slowing down times: to compute the average response time change when speeding up (Equation 4.1) all negative response time changes were added together ( $(-1.13) + (-0.12) + (-0.67) =$

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<sup>41</sup>This information is not displayed in the Table 5.3.

-1.92) and divided by the number of pages on which the respondent was speeding up – here 3 pages:<sup>42</sup>

$$Mean.RT.Change_{94}^{speed} = (-1) * \frac{-1.92}{3} = (-1) * (-0.64) = 0.64.$$

The average response time change when slowing down (Equation 4.2) was calculated by adding up all positive response time changes ( $0.75 + 0.04 + 0.14 + 0.24 + 0.47 + 0.02 = 1.66$ ) and dividing by the number of pages on which the respondents was slowing down – here 6:

$$Mean.RT.Change_{94}^{slow} = \frac{1.66}{6} = 0.28$$

Since  $Mean.RT.Change_{94}^{speed} > Mean.RT.Change_{94}^{slow}$ , respondent 94 was speeding up more throughout the questionnaire than they were slowing down.

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<sup>42</sup>To be able to interpret all variables in the same direction, I multiplied this variable with (-1).

Table 4.3: Example for calculations of average response time change

| <b>ID</b> | <b>Pages seen</b> | <b>Question items</b> | <b>Question RT</b> | <b>Std. question RT</b> | <b>RT change</b> |
|-----------|-------------------|-----------------------|--------------------|-------------------------|------------------|
| 94        | 1                 | 1                     | 10827.00           | 0.11                    | 0.00             |
| 94        | 2                 | 1                     | 29828.00           | 0.85                    | 0.75             |
| 94        | 3                 | 7                     | 6917.43            | 0.89                    | 0.04             |
| 94        | 4                 | 11                    | 3299.73            | -0.24                   | -1.13            |
| 94        | 5                 | 1                     | 9890.00            | -0.10                   | 0.14             |
| 94        | 6                 | 1                     | 11984.00           | 0.13                    | 0.24             |
| 94        | 7                 | 1                     | 11938.00           | 0.60                    | 0.47             |
| 94        | 8                 | 1                     | 7891.00            | 0.48                    | -0.12            |
| 94        | 9                 | 1                     | 14156.00           | -0.19                   | -0.67            |
| 94        | 10                | 3                     | 6797.00            | -0.17                   | 0.02             |

### 4.1.3 Analysis methods

#### 4.1.3.1 Frame analysis: do unit nonrespondents, breakoff respondents, and complete respondents differ from one another?

First, I investigated whether there were differences between the different response types: unit nonrespondents, breakoff respondents, and complete respondents.<sup>43</sup> To be able to compare unit nonrespondents to respondents, I focused on information available before the survey. That is, information from the administrative data such as gender, race/ethnicity, and U of M affiliation, as well as paradata, such as response history. Thus, I compared the frame information and response history between complete respondents, breakoff respondents (introduction and questionnaire breakoffs combined), and unit nonrespondents by fitting multinomial logistic regression models. This was done separately for the 2014 and 2015 survey years.

These analyses were based on all 42,368 invited sample members. Equation 4.3 shows the complete model I fitted to find differences between the three response types (unit nonresponses, completes, and breakoffs). Multinomial logistic regression models are similar to logistic regression models, the difference being that the outcome variable is not binary but categorical. In this case, there were three outcome categories: unit nonrespondents, complete respondents, and breakoff respondents. The model compares the probability of being in one category ( $p_{i,k}$ , where  $k \in \{1, 2\}$  : 1 = unit nonrespondent, 2 = breakoff respondent) with the probability of being in the reference category ( $p_{i,0}$ , where 0 = complete respondent). The intercept of the model is denoted by  $\alpha_{k0}$  and  $R_i$  includes all available characteristics of a respondent  $i$ : gender, race/ethnicity, U of M affiliation, and response history.

The multinomial logistic regression models were fitted using the R command `multinom` in the `nnet` package (Venables and Ripley 2002). Additionally, I displayed the predicted probabilities for the model result, to interpret the relationship between the different response types and each covariate more easily. This was done using the `ggpredict` command in the `ggeffects` package (Luedecke 2018), adjusting for the reference categories of each covariate. In order to assess the quality of fit, I performed generalized Hosmer-Lemeshow tests using the `logitgof` command of the `generalhoslem` package (Jay 2018).

Essentially, the Hosmer-Lemeshow test compares observed with expected frequencies of

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<sup>43</sup>Due to the low number of introduction breakoff respondents (about 250 cases each survey year), I combined both breakoff categories into one “breakoff” category. See Table 3.2 for more details.

the outcome and computes a chi-squared test statistic. Based on the test statistic, one can decide whether there is evidence that the observed and the expected frequencies differ, concluding that the model does not fit well (Hosmer and Lemeshow 1980).

$$\ln\left(\frac{p_{i,k}}{p_{i,0}}\right) = \alpha_{k0} + R_i\gamma_k \quad (4.3)$$

In a second step of the frame analyses, I compared introduction and questionnaire breakoff respondents, given that the respondent is a breakoff respondent: Steinbrecher, Roßmann, and Blumenstiel (2015) found differences in demographics and response behavior between early and late breakoff respondents. Therefore, I investigated possible differences between introduction breakoff and questionnaire breakoff using logistic regression models with questionnaire breakoff being the reference category. In this model, I compared the probability of being a questionnaire breakoff respondent ( $p_{i,qnr}$ , reference category) to the probability of being an introduction breakoff respondent ( $p_{i,intro}$ ). Equation 4.4 shows the formula used for this model:  $\alpha_0$  denotes the intercept and  $R_i$  refers to the same respondent characteristics as before. To fit the logistic regression models, I used the R command `glm` of the package `stats` (R Core Team 2018). Again, I investigated the predicted breakoff probabilities using `ggpredict` and the model fit with the Hosmer-Lemeshow test using `logitgof`.

$$\ln\left(\frac{p_{i,intro}}{p_{i,qnr}}\right) = \alpha_0 + R_i\gamma^* \quad (4.4)$$

All models were fitted separately for each of the two survey years.

#### 4.1.3.2 Breakoff analysis: who is likely to break off the questionnaire?

The next step of the analyses was to investigate web survey breakoff at the respondent level. I restricted the analyses to respondents only (introduction and questionnaire breakoff, and complete respondents) and included response behavior and paradata in the models (Section 4.1.1). I used two separate logistic regression models for introduction and questionnaire breakoff to predict the probability of breaking off at any point in the questionnaire.<sup>44</sup> Again, I used the R command `glm` of the package `stats` (R Core

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<sup>44</sup>I chose this approach over using multinomial logistic regression models (modeling introduction and questionnaire breakoff simultaneously) because I did not have information on response behavior for introduction breakoff respondents.

Team 2018) to fit the logistic regression models and assessed the model fit using Hosmer-Lemeshow tests.

In the introduction breakoff model (Equation 4.5), I used all 13,427 respondents who started the questionnaire (introduction and questionnaire breakoffs, and completes) and included all available respondent characteristics ( $R_i$ ): gender, race/ethnicity, U of M affiliation, panel membership, response history, response latency, and answering device.<sup>45</sup> The reference category was defined as “no introduction breakoff” (questionnaire breakoff respondents and complete respondents combined) was compared to the category “introduction breakoff.”

The intercept in the logistic regression model for introduction breakoff is denoted by  $\alpha_0$ . This model was used to estimate the probability of quitting the questionnaire within the introduction section ( $p_{i,\text{intro}}$ ) for every respondent  $i$ .

$$\ln\left(\frac{p_{i,\text{intro}}}{1 - p_{i,\text{intro}}}\right) = \alpha_0 + R_i\beta \quad (4.5)$$

In Equation 4.6, I estimated the probability of breaking off any time after the introduction ( $p_{i,\text{qnr}}$ ). In this model, complete respondents were defined as the reference category. The model was only applied to completes and questionnaire breakoffs and excluded introduction breakoff respondents. Thus, only 12,986 respondents were included in the analyses, since 441 respondents broke off during the introduction. The intercept of the questionnaire breakoff model is represented by  $\alpha_0^*$ , and  $R_i$  denotes the same characteristics as in Equation 4.5. In this model, I was able to include the response behavior of each respondent  $Z_i$ : whether the respondent answered in one or multiple sessions, whether the respondent ever used the previous button, total item nonresponse rate, standardized response times for the introduction pages (i.e., welcome page, consent page, first question page), and the average response time changes when the respondent was either slowing down or speeding up.

All models were fitted separately for both survey years. As before, I displayed the predicted probabilities for the all models using the `ggpredict` command in the `ggeffects` package (Lueddecke 2018). The predicted probabilities were adjusted for the reference categories of each categorical variable and for zero for continuous variables.

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<sup>45</sup>Since I was focusing on introduction breakoff, I was unable to include any response behavior like speeding up or slowing down.

$$\ln\left(\frac{p_{i,\text{qnr}}}{1 - p_{i,\text{qnr}}}\right) = \alpha_0^* + R_i\beta^* + Z_i\delta \quad (4.6)$$

#### 4.1.3.3 Prediction analysis: who will quit the questionnaire?

The ultimate goal of this dissertation is to predict and prevent breakoff behavior. Therefore, I tested the initial logistic regression models for their predictive power. I used the resulting coefficients of the logistic regression models and estimated the probability  $\hat{p}_{i,\text{intro}}$  or  $\hat{p}_{i,\text{qnr}}$  of breaking off for each respondent.<sup>46</sup> Based on the Receiver Operating Characteristic (ROC) curve analyses I determined a threshold  $k_0$  to categorize each case as a predicted breakoff case or a predicted completion case:<sup>47</sup> if  $k_0 < \hat{p}_{i,\text{intro}}$  or  $k_0 < \hat{p}_{i,\text{qnr}}$  respondent  $i$  was flagged as a predicted breakoff case (positive), and as a predicted complete case (negative) if  $k_0 \geq \hat{p}_{i,\text{intro}}$  or  $k_0 \geq \hat{p}_{i,\text{qnr}}$ .

There were four possible outcomes for each case: the respondent was truly a breakoff case and was classified as a breakoff case (true positive, TP); the respondent was truly a breakoff case but was classified as a complete case (false negative, FN); the respondent was a complete case and was classified as a complete case (true negative, TN); and the respondent was a complete case but was classified as a breakoff case (false positive, FP) (Table 4.4).

Table 4.4: Confusion Matrix

|                   |                     | True outcome         |                      |
|-------------------|---------------------|----------------------|----------------------|
|                   |                     | Event (breakoff)     | No event (complete)  |
| Predicted outcome | Event (breakoff)    | True positives (TP)  | False positives (FP) |
|                   | No event (complete) | False negatives (FN) | True negatives (TN)  |

<sup>46</sup>This prediction model is only exploratory as the data sets were not divided into training and test data.

<sup>47</sup>The following explanation of ROC curve analyses is inspired by Kleinbaum and Klein (2006) and Fawcett (2006).



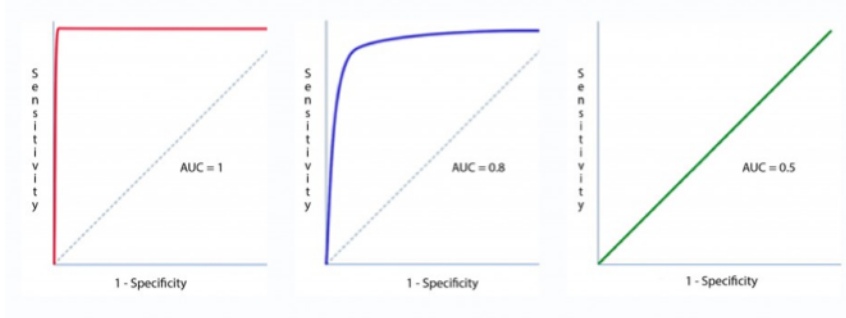


Figure 4.1: Examples for ROC curves

Based on these (mis-)classifications, various indicators can be calculated to evaluate the goodness-of-fit of the prediction model: sensitivity, specificity, precision, and accuracy:

$$\text{Sensitivity} = \frac{TP}{TP + FN}$$

$$\text{Specificity} = \frac{TN}{TN + FP}$$

$$\text{Precision} = \frac{TP}{TP + FP}$$

$$\text{Accuracy} = \frac{TP + TN}{P + N}$$

*Sensitivity* refers to the proportion of cases that had a positive outcome (breakoff) and were classified as positive (breakoff). *Specificity* is the proportion of instances that had a negative outcome (complete) and were classified as negative (complete). *Precision* represents the proportion of instances that were classified correctly as positive, while *accuracy* represents the proportion of instances that were classified correctly (either positive-positive or negative-negative).

To evaluate how well the prediction model worked, I plotted a so-called *ROC curve*, which plots 1 minus specificity on the x-axis and the sensitivity on the y-axis, for a given threshold  $k_0$  ranging between 0 and 1. Figure 4.1 shows examples of possible ROC curves: the larger the area between the ROC and the diagonal (the area under the curve, AUC), the better the prediction. The first graph shows a perfect categorization, while the last graph represents a classification that is as good as random and does not add any additional information.

The goal in this study was to maximize AUC. Thus, the ROC curve can be used to select

a certain threshold  $k_0$ . This threshold should maximize both specificity and sensitivity, which can be done with the Youden index (YI) (Youden 1950) shown in Equation 4.7.

$$k_{\text{YI}} = \max(\text{Sensitivity} + \text{Specificity}) \quad (4.7)$$

All predictions were evaluated separately for each year and each breakoff type.

## 4.2 Results

### 4.2.1 Results of the frame analyses: do unit nonrespondents, breakoff respondents, and complete respondents differ from one another?

First, I focused on the multinomial logistic regression models to investigate differences on respondent characteristics between unit nonresponse, breakoff and complete response, with the category “complete respondent” as the reference category. For the 2014 data, this includes 21,055 sample members, and in 2015 it includes 21,313. Table 4.5 shows the results of the two multinomial regression models, one for each year: the coefficients, their standard errors, and their significance levels. The second and third columns compare complete respondents with unit nonrespondents for 2014, and columns four and five compare complete respondents with breakoff respondents in 2014. Columns six to nine show the same comparisons for the year 2015.

The results of the Hosmer-Lemeshow test indicated a good model fit for the 2014 model (with a  $\chi^2_{df=12} = 14, p = 0.28$ ) but a relatively bad fit for 2015 (with a  $\chi^2_{df=12} = 23, p = 0.02$ ). Given the limited information available included in these models, this outcome is not surprising. Because these analyses focused on differentiating between the three response types only, as opposed to prediction purposes, and only the 2015 model showed indication of a bad model fit, I chose to interpret the models carefully and focused mainly on the 2014 results.

Table 4.5: Frame analysis: coefficients and standard errors of multinomial logistic regression models with 'response type' (unit nonresponse and breakoff response) as the dependent variable separated by survey year (reference: complete respondents)

|  | Survey year 2014 |            |                   |            | Survey year 2015 |            |                   |            |
|--|------------------|------------|-------------------|------------|------------------|------------|-------------------|------------|
|  | Unit nonresponse |            | Breakoff response |            | Unit nonresponse |            | Breakoff response |            |
|  | Coefficients     | Std. error | Coefficients      | Std. error | Coefficients     | Std. error | Coefficients      | Std. error |
| Intercept  | 0.3755***        | 0.0351     | -2.3629           | 0.0860     | 0.5895***        | 0.0363     | -2.3480*          | 0.0894     |
| <b>Gender (reference: male)</b>                                |                  |            |                   |            |                  |            |                   |            |
| Female   | -0.3330***       | 0.0314     | -0.0083           | 0.0714     | -0.3787***       | 0.0332     | 0.0766            | 0.0750     |
| <b>Race/ethnicity (reference: white)</b>                       |                  |            |                   |            |                  |            |                   |            |
| Asian  | 0.2332***        | 0.0446     | 0.4278.           | 0.0936     | 0.0715***        | 0.0469     | 0.3292***         | 0.1002     |
| Black  | 0.5048           | 0.0807     | 0.5016            | 0.1673     | 0.3982           | 0.0831     | 0.7112**          | 0.1569     |
| Hispanic   | 0.3323***        | 0.0846     | 0.4757***         | 0.1713     | -0.0540          | 0.0853     | 0.2994***         | 0.1754     |
| Other race   | 0.1282***        | 0.0995     | 0.3146***         | 0.2062     | -0.2045**        | 0.0962     | -0.1159***        | 0.2255     |
| Missing race   | -0.1131***       | 0.0599     | -0.0678***        | 0.1408     | -0.2276***       | 0.0653     | 0.3893***         | 0.1285     |
| <b>U of M affiliation (reference: faculty)</b>                 |                  |            |                   |            |                  |            |                   |            |
| Student  | 0.8395**         | 0.0355     | 0.5902***         | 0.0844     | 1.0655***        | 0.0366     | 0.6332***         | 0.0858     |
| <b>Response history (reference: no previous participation)</b> |                  |            |                   |            |                  |            |                   |            |
| Previous complete  | -1.0914***       | 0.0510     | -0.9099***        | 0.1331     | -0.9617          | 0.0433     | -0.6030.          | 0.1040     |
| Previous breakoff  | -0.6611**        | 0.1317     | -0.3445           | 0.2976     | 0.2633.          | 0.1542     | 0.5247.           | 0.2820     |

Note: Significance levels: \*\*\* p < 0.001, \*\* p < 0.01, \* p < 0.05, . p < 0.1

For both years, there were multiple significant differences between the different response types.<sup>48</sup>

**Complete response versus unit nonresponse.** In both years, female sample members were significantly less likely to become unit nonrespondents compared to complete respondents (women had a  $(1 - \exp(-0.3330)) * 100\% = 28\%$  lower estimated relative probability to become unit nonrespondents than complete respondents when compared to men). This means that women were more likely to complete the questionnaire than men. Compared to Whites, non-white sample members were more likely to be unit nonrespondents. This was more prominent in the 2014 survey year with a  $(\exp(0.1282) - 1) * 100\% = 14\%$  (for other race) to  $(\exp(0.3323) - 1) * 100\% = 39\%$  (for Hispanics) increase in the estimated relative probability of becoming a unit nonrespondent compared to being a complete respondent. Students were more likely to be unit nonrespondents when compared to faculty/staff (with an increase in the relative probability of  $(\exp(0.8395) - 1) * 100\% = 132\%$  in 2014 and  $(\exp(1.0655) - 1) * 100\% = 190\%$  in 2015).

Respondents with a positive response history, meaning they were complete respondents in the previous year, were half as likely to become unit nonrespondents in the following year (with a decrease in the estimated relative probability of  $(1 - \exp(-1.0914))100\% = 66\%$  in 2014 and  $(1 - \exp(-0.9617))100\% = 62\%$  in 2015). Respondents who were breakoff respondents in the previous year (negative response history) also showed a significant decrease in the estimated relative probability of becoming a unit nonrespondent as compared to complete respondents. In 2014, this probability decreased by  $(1 - \exp(-0.6611))100\% = 48\%$ .<sup>49</sup> When it came to unit nonresponse versus complete response, it only mattered that the respondent participated in the previous years but not necessarily whether they completed the previous surveys. Thus, respondents who had participated in previous survey years (completed the previous survey or previously engaged in breakoff) were more likely to participate again in the current year.

**Complete response versus breakoff response.** In both years, gender did not matter when comparing complete respondents to breakoff respondents. Both men and women were equally as likely to quit the questionnaire. Compared to Whites, all sample members of other race categories were more likely to break off from the questionnaire with an increase in the estimated relative probability to become a breakoff respondent as opposed

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<sup>48</sup>The interpretation of each covariate assumes that all remaining variables are held constant.

<sup>49</sup>This was not the case in 2015. Here, the estimated relative probability to become a unit nonrespondent compared to a complete respondent increased by  $(\exp(0.2633) - 1)100\% = 30\%$ . As the 2015 model failed the Hosmer-Lemeshow test, I am focusing on the 2014 survey year.

to a complete respondent between  $(\exp(0.3146) - 1) * 100\% = 37\%$  for “other” races to  $(\exp(0.4757) - 1) * 100\% = 61\%$  for Hispanics). Only sample members in the category “missing” race had lower breakoff probabilities compared to Whites.<sup>50</sup>

Students had an increase in the estimated relative probability to become a breakoff respondent as opposed to a complete respondent by  $(\exp(0.5902) - 1) * 100\% = 80\%$  in 2014 and  $(\exp(0.6332) - 1) * 100\% = 88\%$  in 2015 when compared to faculty/staff.

Sample members with a positive response history (complete respondents in the previous survey year) were only half as likely to quit the questionnaire when compared to sample members who have not participated in the previous year a decrease of the estimated relative probability by  $(1 - \exp(-0.9099)) * 100\% = 60\%$  in 2014 and by  $(1 - \exp(-0.6030)) * 100\% = 45\%$  in 2015. A negative response history was not related to the relative breakoff probability.<sup>51</sup> Thus, when focusing on breakoff as compared to complete response, only a positive response history showed a significant relationship with the estimated relative probability compared to respondents with no response history. A negative response history did not impact the relative breakoff probability compared to respondents with no response history.

**Complete response versus unit nonresponse versus breakoff response.** To make the information in Table 4.5 more accessible, I displayed the predicted probabilities of all covariates in Figure 4.2. In each figure panel (A-D), one of the independent variables used in the model, their predicted probabilities for each response type (complete, breakoff, and unit nonresponse), and the 95% confidence intervals of the prediction are displayed. The green lines (95% confidence interval) and green circles (predicted probability) represent the results in the 2014 survey year, while the purple lines (95% confidence interval) and purple triangles (predicted probability) represent the 2015 survey year.

Figure 4.2A shows the predicted probabilities for gender. One clearly sees that the predicted completion probability for females was higher (42-46%) than the predicted completion probability for males (35-39%). The opposite was true for the predicted unit nonresponse probability; females were less likely to be unit nonrespondents than males. There was no difference between genders when focusing on the predicted breakoff

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<sup>50</sup>This finding is not confirmed in the 2015 model as the category “missing” showed higher relative breakoff probabilities compared to Whites.

<sup>51</sup>In the 2015 model, this coefficient I found a  $(\exp(0.5247) - 1) * 100\% = 69\%$  increase in the relative breakoff probability compared to respondents with no response history. Since this coefficient was not significant at the 0.05 level and the 2015 model failed the Hosmer-Lemeshow test, this result should be considered with great care.

probability, confirming the findings in Table 4.5.

Figure 4.2B shows the predicted probabilities for race. White sample members had higher completion probabilities (35-39%) compared to most other races, especially when compared to Blacks who had predicted completion probabilities ranging from 26-28%. On the other hand, White sample members had one of the lowest unit nonresponse probability rates (55-62%), especially compared to Black sample members (67-69%). Sample members in the race categories other and missing showed similar unit nonresponse probabilities as Whites but the wider confidence intervals suggest higher uncertainty of these estimates. Only small differences existed between race categories and their predicted breakoff probabilities.<sup>52</sup>

The next panel (Figure 4.2C) focuses on U of M affiliation and related predicted response type probabilities. Clearly, faculty and staff respondents had a higher completion probability compared to students (35-39% for faculty and staff and 16-22% for students), while the opposite was true when focusing on unit nonresponse probability. Students had higher predicted probabilities compared to faculty and staff respondents. Even though there were significant differences between students and faculty and staff respondents, as illustrated in Table 4.5, it is very hard to see this in the panel because of the low breakoff proportion in general. This will be investigated more closely in the next section (Questionnaire breakoff response versus introduction breakoff response).

The last figure (Figure 4.2D), shows the variable response history and the predicted probabilities. It is clear that respondents with a positive response history had the highest completion probability in the following year (57-65%). For respondents with a negative response history, the results were not consistent: in 2014, the completion probability of these respondents was comparable to former completers (about 55%). In 2015, the completion probability for former breakoff respondents was much lower at about 28%.<sup>53</sup> A higher breakoff probability existed for former breakoff respondents compared to respondents with a positive response history: 4% versus 2%.

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<sup>52</sup>Note the difference of the coefficients for Hispanic sample members across both survey years is likely due to the low numbers of Hispanics in this sampling frame (Table 3.1).

<sup>53</sup>Note that the model fit for the 2015 survey year was not good. Thus, this result has to be evaluated with care.

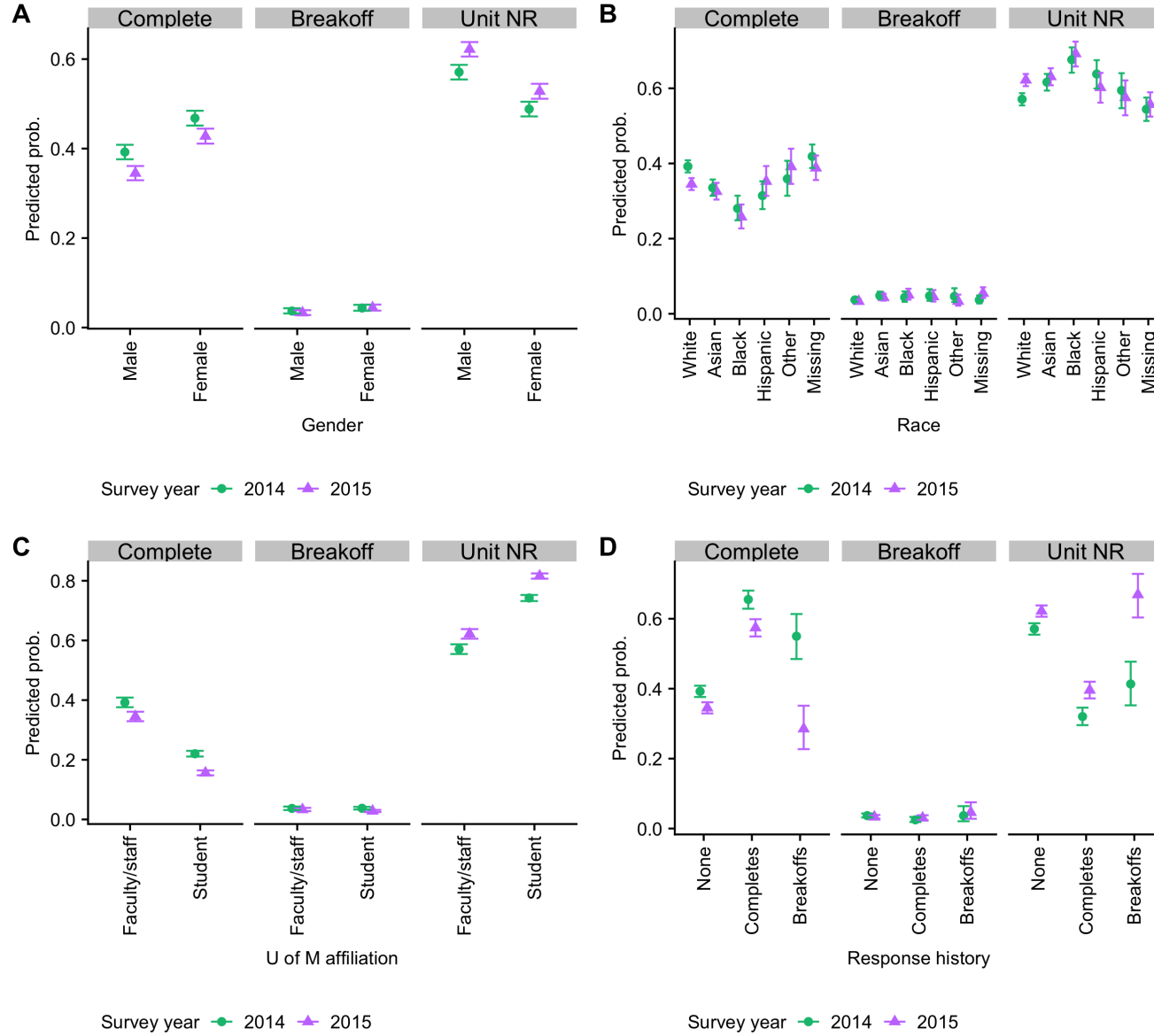


Figure 4.2: Predicted probabilities for all response types by survey year

In summary, being classified as female as compared to male was associated with being a complete respondent. Sample members of other race categories compared to Whites showed an increase in the probability of being a unit nonrespondent. These sample members also showed an increase in the relative and predicted probability of being a breakoff respondent over being a complete respondent. Students compared to faculty/staff sample members were associated with an increase in the relative and predicted probabilities of unit nonresponse as compared to complete response, as well as with an increased breakoff probability compared to complete response. Sample members who completed the questionnaire in the previous year, compared to sample members who have not participated in the previous year, had a decrease in their estimated relative probability of becoming a unit nonresponse and in their estimated relative probability of becoming a breakoff respondents. Additionally, they showed an increase in their predicted completion probabilities. Thus, previous completers were more likely to become complete respondents again in the current year. Sample members who quit the questionnaire in the previous year, as compared to non-participants, had a lower estimated relative probability of becoming unit nonrespondents as opposed of becoming complete respondents. There was no significant association between a negative response history and the relative breakoff probability when compared to respondents with no response history. Thus, previous completers and previous breakoffs (compared to no previous participation) were less likely to be unit nonrespondents. But only previous completes were less likely to engage in breakoff in the current survey, since there was no association between previous breakoffs and current breakoffs.<sup>54</sup>

These findings support the hypothesis that different response types (unit nonrespondents, complete respondents, and breakoff respondents) differ significantly from one another.<sup>55</sup>

**Questionnaire breakoff response versus introduction breakoff response.** Next, I investigated the differences between introduction and questionnaire breakoff respondents

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<sup>54</sup>Additionally, all multinomial logistic regression models were fitted accounting for all possible two-way interactions (not displayed). The general findings were consistent for all models. There was indication that female sample members who were previous complete respondents were more likely to be unit nonrespondents compared to male sample members who were former completers. This might indicate that using response history to predict future questionnaire outcome is more useful for male sample members than for female sample members.

<sup>55</sup>For completion, I fitted two more multinomial logistic regression models, using all four response types (unit nonresponse, introduction and breakoff response, and complete response) with complete response being the reference category. See Appendix A, Table A.1 for the results which confirm the findings of this section.



using the same independent variables and logistic regression models.<sup>56</sup> To do this, I restricted the analyses to breakoff respondents: 441 introduction and 1,286 questionnaire breakoff respondents. The results of the logistic regression models in which questionnaire breakoff was the reference category are displayed in Table 4.6. The table shows the estimated coefficients, their standard errors, and their significance levels. The year 2014 is shown on the left side, while 2015 is shown on the right side of the table. The Hosmer-Lemeshow was rejected for both models, not giving any evidence of a poor model fit ( $\chi^2_{df=7} = 7, p = 0.39$  in 2014, and  $\chi^2_{df=7} = 8, p = 0.32$  in 2015).

Table 4.6: Frame analysis: coefficients and standard errors of logistic regression models with 'introduction breakoff' as the dependent variable separated by survey year (reference: questionnaire breakoff)

|  | Survey year 2014 |            | Survey year 2015 |            |
|--|------------------|------------|------------------|------------|
|  | Coefficients     | Std. error | Coefficients     | Std. error |
| Intercept  | -0.9475***       | 0.1863     | -0.8375***       | 0.1862     |
| <b>Gender (reference: male)</b>  |                  |            |                  |            |
| Female   | -0.1640          | 0.1530     | -0.2962.         | 0.1517     |
| <b>Race/ethnicity (reference: white)</b>   |                  |            |                  |            |
| Asian  | 0.2372           | 0.1934     | 0.0589           | 0.2014     |
| Black  | -0.0223          | 0.3599     | 0.1175           | 0.3024     |
| Hispanic   | -0.2582          | 0.3895     | 0.0297           | 0.3506     |
| Other race   | 0.6345           | 0.3988     | -0.1912          | 0.4860     |
| Missing race   | 0.5689*          | 0.2797     | 0.1996           | 0.2479     |
| <b>U of M affiliation (reference: faculty)</b>   |                  |            |                  |            |
| Student  | -0.2070          | 0.1799     | 0.1405           | 0.1790     |
| <b>Response history (reference: no previous participation)</b>                                 |                  |            |                  |            |
| Previous complete  | 0.3887           | 0.2798     | -0.0652          | 0.2203     |
| Previous breakoff  | 1.6123**         | 0.5820     | 0.7717           | 0.4951     |
| <i>Note:</i> Significance levels: *** $p < 0.001$ , ** $p < 0.01$ , * $p < 0.05$ , . $p < 0.1$ |                  |            |                  |            |

There were only a few significant differences between introduction and questionnaire breakoff respondents, especially in 2015. Gender did not differ between introduction and questionnaire breakoff since the coefficients were not significant at the 0.05 level. Thus, women were as likely as men to perform introduction breakoff and questionnaire breakoff. Only breakoff respondents with missing race showed significant differences with

<sup>56</sup>Due to the low numbers of introduction breakoff respondents compared to unit nonrespondents, I investigated the difference between the breakoff types (introduction breakoff versus questionnaire breakoff) separately.

higher introduction breakoff probabilities than Whites (a  $(\exp(0.5689) - 1) * 100\% = 76\%$  increase in the probability of breaking off during the introduction as opposed to quitting the questionnaire after the introduction). No significant difference showed between positive response history and no response history when focusing on the introduction breakoff probability. Previous breakoff respondents compared to respondents with no response history were five times more likely to quit the current questionnaire during the introduction section when compared to engaging in questionnaire breakoff (with an increase of  $(\exp(1.6123) - 1) * 100\% = 401\%$  in 2014.<sup>57</sup>

In Figure 4.3, looking at the predicted introduction breakoff probabilities as compared to questionnaire breakoff one sees these findings confirmed. Figure 4.3 shows each independent covariate separately in one panel (A-D), the predicted probabilities on the y-axis, and their 95% confidence intervals. Again, the green lines and points represent the 2014 survey year, while the purple lines and triangles represent the 2015 survey year. There were only subtle differences between the two breakoff types: females had lower introduction breakoff probabilities than males (Figure 4.3A), and there were no differences for the predicted probabilities across races (Figure 4.3B). Students had higher introduction breakoff probabilities than faculty and staff respondents in 2015 (Figure 4.3C). Respondents with a negative response history had higher introduction breakoff probabilities than respondents with a positive response history or respondents who did not participate in the previous year (Figure 4.3D).

Overall, the main difference between introduction and questionnaire breakoff respondents was their response history. If respondents were previous breakoff respondents, they were more likely to become introduction breakoff respondents than questionnaire breakoff respondents in the current survey year.

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<sup>57</sup>The finding was not significant in 2015.

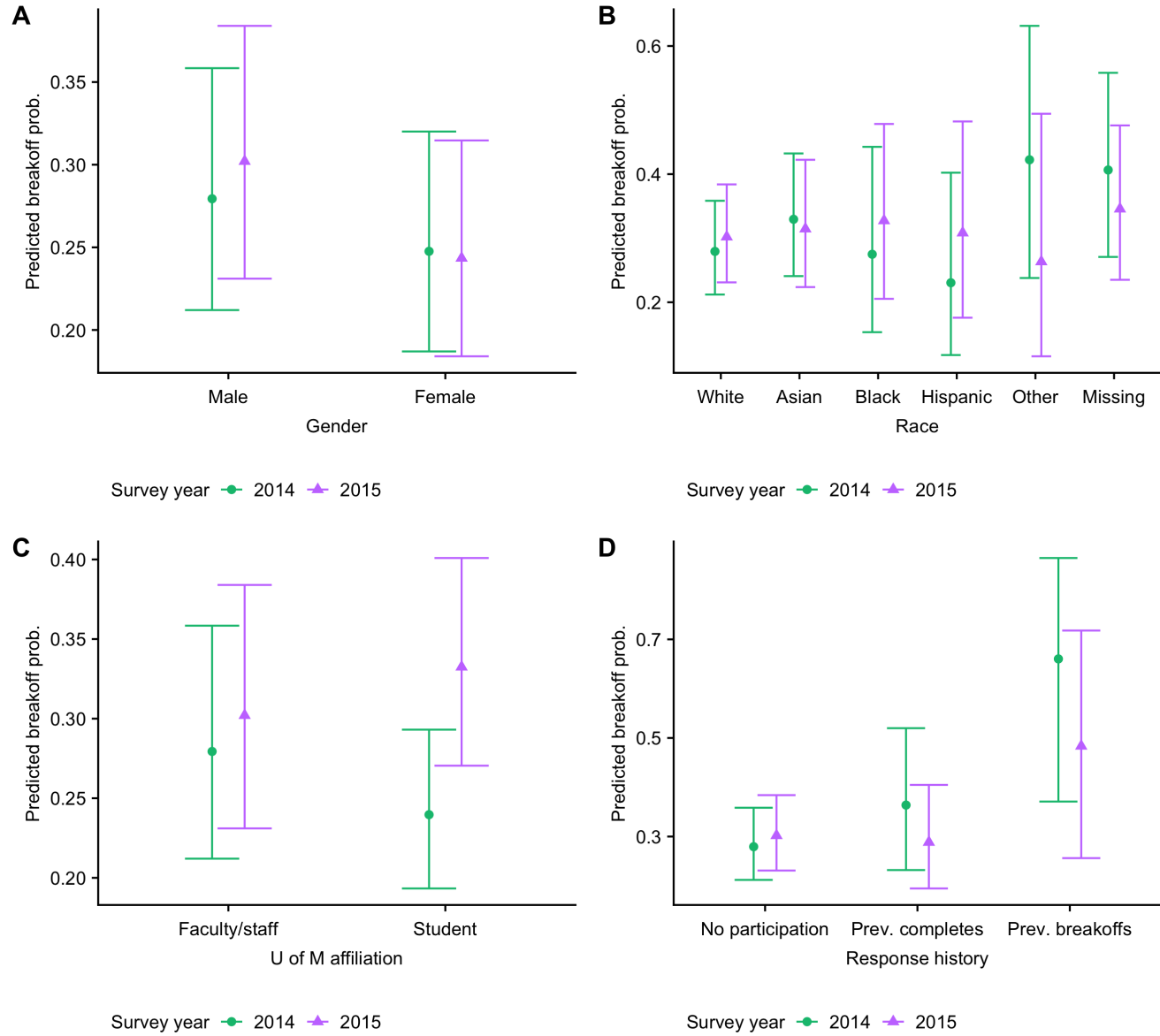


Figure 4.3: Predicted probabilities for introduction versus questionnaire breakoff by survey year

## 4.2.2 Results of the breakoff analyses: who is breaking off the questionnaire?

After investigating the differences between the four response types (unit nonresponse, introduction and questionnaire breakoff, and complete respondents), I focused on two questions: who is breaking off from the questionnaire and what response behavior is associated with that breakoff? Table 4.7 and Table 4.8 display the estimated coefficients of all logistic regression models, estimating the probability of introduction and questionnaire breakoff given that the sample member responded to the questionnaire. Thus, the logistic regression models (Equation 4.5) for introduction breakoff were based on all 13,427 respondents and “no introduction breakoff” was defined as the reference category. However, the logistic regression models for questionnaire breakoff (Equation 4.6) were based on 12,986 respondents (complete and questionnaire breakoff respondents only) where complete respondents were defined as the reference category.<sup>58</sup> Both tables (Table 4.7 and Table 4.8) were organized in the same way: the estimated coefficients for each variable are displayed in columns two and five (for 2014 and 2015, respectively) and their standard errors in columns three and six (for 2014 and 2015, respectively). The Hosmer-Lemeshow was rejected for all four models, not giving evidence of a poor model fit ( $\chi^2_{df=8} = 6, p = 0.66$  for the introduction breakoff model in 2014,  $\chi^2_{df=8} = 8, p = 0.47$  for the one in 2015, while the questionnaire breakoff models showed an  $\chi^2_{df=8} = 7, p = 0.50$  in 2014 and an  $\chi^2_{df=8} = 7, p = 0.51$  in 2015).<sup>59</sup>

Even though the coefficients differed between 2014 (Table 4.7) and 2015 (Table 4.8), they still told a similar story, which is summarized below.<sup>60</sup>

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<sup>58</sup>Based on the previous analyses (Table 4.6), I split the models for introduction and questionnaire breakoff, as many response behavior variables, like item nonresponse or speeding up, were not available for introduction breakoff respondents. This led to two different logistic regression models investigating each breakoff type, fitted separately to each survey year.

<sup>59</sup>Note that all coefficients in the breakoff models are conditioned on responding to the survey.

<sup>60</sup>For completion, I fitted four more models: 1. Two logistic regression models in which I combined both breakoff types. The results for these models, where complete response was the reference category are displayed in Appendix A, Table A.2. 2. Two multinomial logistic regression models where I modeled introduction breakoff, questionnaire breakoff, and complete response (reference category) simultaneously. The results of the multinomial logistic regression model are displayed in Appendix A, Table A.3. The general interpretation of all covariates stayed the same in all four models. Additionally, all models were fitted again including all possible two-way interactions (not displayed). The general findings of the models stayed consistent and most coefficients of the interactions were not significant at the 0.05 level.

### Introduction breakoff (Table 4.7)

Table 4.7: Breakoff analysis: coefficients and standard errors of the logistic regression models for 'introduction breakoff' separated by survey year (reference: no introduction breakoff)

|  | Introduction breakoff |            |                  |            |
|--|-----------------------|------------|------------------|------------|
|  | Survey year 2014      |            | Survey year 2015 |            |
|  | Coefficients          | Std. error | Coefficients     | Std. error |
| Intercept  | -3.9172***            | 0.1843     | -3.7575***       | 0.1785     |
| <b>Gender (reference: male)</b>  |                       |            |                  |            |
| Female   | -0.2162               | 0.1430     | -0.1962          | 0.1356     |
| <b>Race/ethnicity (reference: white)</b>   |                       |            |                  |            |
| Asian  | 0.5490**              | 0.1825     | 0.2891           | 0.1823     |
| Black  | 0.3791                | 0.3535     | 0.6997**         | 0.2705     |
| Hispanic   | 0.3925                | 0.3539     | 0.2607           | 0.3126     |
| Other race   | 0.7828*               | 0.3434     | -0.1624          | 0.4282     |
| Missing race   | 0.2990                | 0.2554     | 0.4445*          | 0.2203     |
| <b>U of M affiliation (reference: faculty)</b>   |                       |            |                  |            |
| Student  | 0.3395.               | 0.1749     | 0.7467***        | 0.1702     |
| <b>Panel membership (reference: non-panel member)</b>  |                       |            |                  |            |
| Panel member   | -0.7470**             | 0.2853     | -1.4191***       | 0.3373     |
| <b>Response history (reference: no previous participation)</b>                                 |                       |            |                  |            |
| Previous complete  | -0.2242               | 0.2860     | -0.0428          | 0.2429     |
| Previous breakoff  | 1.1936**              | 0.3949     | 1.1071**         | 0.4134     |
| <b>Response latency (reference: no reminder sent)</b>  |                       |            |                  |            |
| Reminder sent  | 0.1906                | 0.1424     | 0.0683           | 0.1349     |
| <b>Answering device (reference: non-mobile)</b>  |                       |            |                  |            |
| Mobile   | 0.4079*               | 0.1769     | 0.2791.          | 0.1578     |
| <i>Note:</i> Significance levels: *** $p < 0.001$ , ** $p < 0.01$ , * $p < 0.05$ , . $p < 0.1$ |                       |            |                  |            |

**Gender.** Gender (reference category male) did not have a significant relationship on the likelihood of introduction breakoff. Even though women had a lower likelihood for introduction breakoff, the coefficients were not significant in either year.

**Race/ethnicity.** All races other than White (reference category) had a higher likelihood of breaking off in the introduction. Even though only the coefficients of Asians and the category other race respondents in 2014 and Blacks and missing race respondents in 2015 were significant, the tendency was clear. This confirms the previous finding in Table 4.5.

**U of M affiliation.** Student respondents were up to two times more likely (with a probability increase of  $(\exp(0.3395) - 1) * 100\% = 40\%$  in 2014 and  $(\exp(0.7467) - 1) * 100\% = 111\%$  in 2015) to quit within the introduction of the questionnaire than faculty and staff. This difference was significant in both years.

**Panel membership.** Panel members were less likely to quit the questionnaire during the introduction (with a probability decrease of  $(1 - \exp(-0.7470)) * 100\% = 52\%$  in 2014 and of  $(1 - \exp(-1.4191)) * 100\% = 76\%$  in 2015) than non-panel members. Only students were part of the panel, which indicated that being a panel member could moderate the higher likelihood of quitting for students. This variable was significant in both years.

**Response history.** Having completed the questionnaire in the previous years (compared to no previous participation) was not associated with the probability of quitting the current questionnaire during the introduction section. But if respondents were breakoff respondents in the previous year, the probability of quitting the current questionnaire increased by  $(\exp(1.1936) - 1) * 100\% = 230\%$  in 2014 and by  $(\exp(1.1071) - 1) * 100\% = 203\%$  in 2015, indicating that these respondents were three times more likely to quit the current questionnaire during the introduction section than not to engage in introduction breakoff. This finding was significant in both survey years.

**Response latency.** Reminders did not matter in terms of introduction breakoff, since the coefficients were not significant in both survey years.

**Answering device.** Using a mobile device as compared to using a non-mobile device was positively related with quitting the questionnaire during the introduction section. The probability increase ranged from  $(\exp(0.4079) - 1) * 100\% = 50\%$  in 2014 to  $(\exp(0.2791) - 1) * 100\% = 32\%$  in 2015.

Figure 4.4 displays the predicted probabilities for introduction breakoff. Each panel (A-G) shows one independent variable used in the introduction breakoff model (Equation 4.5): gender, race, U of M affiliation, panel membership, response history, response latency, and answering device. The y-axes show the predicted introduction breakoff probabilities with the 95% confidence intervals. Again, the green lines and points represent the 2014 survey year, while the purple lines and triangles represent the 2015 survey year.

Most predicted probabilities were very small, ranging from 1% to 4%.<sup>61</sup> Only the variable response history showed higher predicted probabilities up to 10-15%, indicating the biggest

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<sup>61</sup>This was due to the low number of introduction breakoffs as compared to other response types. See Table 3.2 for more details.

impact on introduction breakoff (Figure 4.4E).

There were no differences between predicted probabilities for gender (Figure 4.4A), race (Figure 4.4B). Students (Figure 4.4C) had higher breakoff probabilities than faculty and staff respondents, was especially true for the 2015 survey year. Respondents in the panel condition had lower introduction breakoff probabilities (0.6%) than respondents who were no panel members (2%) (Figure 4.4D).

Respondents with a negative response history had a higher introduction breakoff probability than other response history categories at about 6% as compared to 2% for other response history types. Respondents with a positive response history had similar predicted breakoff probabilities as respondents with no response history (Figure 4.4E). There was no differences in the predicted introduction breakoff probabilities between respondents waiting for email reminders or answering promptly after the first email invitation (Figure 4.4F). Additionally, Respondents on mobile devices had higher predicted probabilities for introduction breakoff than respondents on non-mobile devices (3% versus 2%).

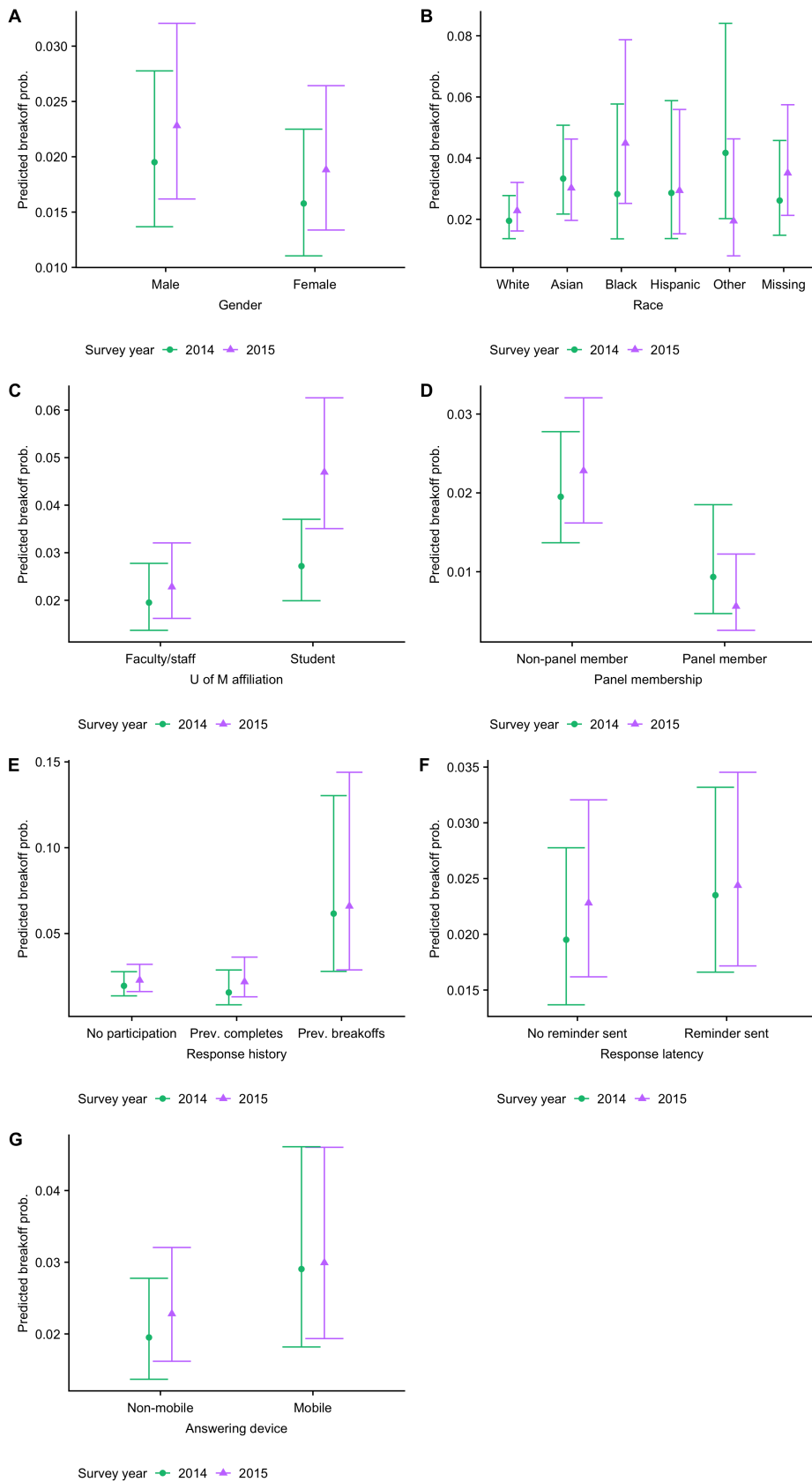


Figure 4.4: Predicted probabilities for introduction breakoff model by survey year



### Questionnaire breakoff (Table 4.8)

Next, I investigated questionnaire breakoff based on the logistic regression model in Equation 4.6. The results of this model are in Table 4.8.

Table 4.8: Breakoff analysis: coefficients and standard errors of logistic regression models for 'questionnaire breakoff' separated by survey year (reference: complete response)

|  | <b>Questionnaire breakoff</b> |            |                         |            |
|--|-------------------------------|------------|-------------------------|------------|
|  | <b>Survey year 2014</b>       |            | <b>Survey year 2015</b> |            |
|  | Coefficients                  | Std. error | Coefficients            | Std. error |
| Intercept  | -3.4152***                    | 0.1477     | -3.4732***              | 0.1503     |
| <b>Gender (reference: male)</b>                                |                               |            |                         |            |
| Female   | 0.0630                        | 0.0872     | 0.2173*                 | 0.0942     |
| <b>Race/ethnicity (reference: white)</b>                       |                               |            |                         |            |
| Asian  | 0.4591***                     | 0.1142     | 0.3891**                | 0.1242     |
| Black  | 0.2794                        | 0.2088     | 0.5814**                | 0.1936     |
| Hispanic   | 0.4657*                       | 0.2011     | 0.3123                  | 0.2139     |
| Other race   | 0.0063                        | 0.2698     | -0.0468                 | 0.2738     |
| Missing race   | -0.2107                       | 0.1783     | 0.3073.                 | 0.1641     |
| <b>U of M affiliation (reference: faculty)</b>                 |                               |            |                         |            |
| Student  | 0.6545***                     | 0.1077     | 0.6818***               | 0.1122     |
| <b>Panel membership (reference: non-panel member)</b>          |                               |            |                         |            |
| Panel member   | -0.7321***                    | 0.1674     | -0.9630***              | 0.1841     |
| <b>Response history (reference: no previous participation)</b> |                               |            |                         |            |
| Previous complete  | -0.6285***                    | 0.1841     | -0.0617                 | 0.1547     |
| Previous breakoff  | -0.6489                       | 0.4754     | 0.3150                  | 0.4017     |
| <b>Response latency (reference: no reminder sent)</b>          |                               |            |                         |            |
| Reminder sent  | 0.3103***                     | 0.0865     | 0.2444**                | 0.0912     |
| <b>Answering device (reference: non-mobile)</b>                |                               |            |                         |            |
| Mobile   | 0.7869***                     | 0.1029     | 0.6758***               | 0.1043     |
| <b>Multiple sessions (reference: one session)</b>              |                               |            |                         |            |
| Multiple sessions  | -0.3564*                      | 0.1557     | -0.7925***              | 0.1713     |
| <b>Navigation (reference: next button)</b>                     |                               |            |                         |            |

Table 4.8: Breakoff analysis: coefficients and standard errors of logistic regression models for 'questionnaire breakoff' separated by survey year (reference: complete response) (continued)

|   | Coefficients | Std. error | Coefficients | Std. error |
|---|--------------|------------|--------------|------------|
| Previous button                             | -1.3661***   | 0.1189     | -1.3421***   | 0.1244     |
| <b>Item nonresponse</b>                     |              |            |              |            |
| Item nonresponse in %                       | 0.0493***    | 0.0047     | 0.0479***    | 0.0047     |
| <b>Standardized response times on</b>       |              |            |              |            |
| Welcome page                                | 0.2952.      | 0.1521     | -0.0123      | 0.0366     |
| Consent page                                | -0.2361***   | 0.0568     | -0.2473***   | 0.0681     |
| First question                              | -0.0547      | 0.0441     | -0.0847.     | 0.0505     |
| <b>Average response time change when...</b> |              |            |              |            |
| Slowing down                                | 1.5750***    | 0.1957     | 0.6411***    | 0.1771     |
| Speeding up                                 | -0.6787***   | 0.2025     | 0.2887       | 0.1918     |

Note: Significance levels: \*\*\* p < 0.001, \*\* p < 0.01, \* p < 0.05, . p < 0.1

**Gender.** Gender (reference category male), only had a significant association with questionnaire breakoff in 2015. Interestingly, women had a higher likelihood of questionnaire breakoff compared to men (a  $(\exp(0.2173) - 1) * 100\% = 24\%$  higher probability for women in 2015). This was the opposite relationship expected per the hypothesis introduced in Section 2.5.1.

**Race/ethnicity.** As with introduction breakoff, all races other than White had a higher likelihood of breaking off. Though only the coefficients for Asian and Hispanic respondents in 2014 and the coefficients for Asian and Black respondents in 2015 were significant at the 0.05 level, the tendency was clear.

**U of M affiliation.** Students were almost twice as likely to experience questionnaire breakoff when compared to faculty/staff. This finding was significant and constant across both years with an breakoff probability increase of  $(\exp(0.6545) - 1) * 100\% = 92\%$  in 2014 and of  $(\exp(0.6818) - 1) * 100\% = 98\%$  in 2015.

**Panel membership.** As in Table 4.7, being a panel member was negatively associated with the likelihood of breaking off in both years (a decreased breakoff probability by  $(1 - \exp(-0.7321)) * 100\% = 52\%$  in 2014 and by  $(1 - \exp(-0.9630)) * 100\% = 62\%$ ).

**Response history.** Interestingly, response history had exactly the opposite association with questionnaire breakoff than it had with introduction breakoff: being a complete respondent in the previous year as compared to no response history decreased the probability of engaging in questionnaire breakoff in the current year by  $(1 - \exp(-0.6285)) * 100\% = 47\%$  (e.g., being a complete respondent in 2013 decreases the probability of quitting the questionnaire in 2014), while being a previous breakoff respondents did not show any association with questionnaire breakoff.

**Response latency.** Not reacting to the very first email invitation increased the likelihood of quitting the questionnaire by an increase of  $(\exp(0.3103) - 1) * 100\% = 36\%$  in 2014 and  $(\exp(0.2444) - 1) * 100\% = 28\%$  in 2015. This was strongly significant in both years as opposed to the introduction breakoff in Table 4.7).

**Answering device.** As expected, using a mobile device, as compared to using a non-mobile device, doubled the likelihood of breakoff in both survey years. This device choice increased breakoff probability by  $(\exp(0.7869) - 1) * 100\% = 120\%$  in 2014 and by  $(\exp(0.6758) - 1) * 100\% = 97\%$  in 2015. The magnitude of this relationship was even higher than that for introduction breakoff in Table 4.7.

**Multiple sessions.** If respondents came back to the questionnaire and started a new session, as opposed to staying within one session only, they were less likely to quit the questionnaire. This action decreased questionnaire breakoff probability by  $(1 - \exp(-0.3564)) * 100\% = 30\%$  in 2014 and by  $(1 - \exp(-0.7925)) * 100\% = 55\%$  in 2015.

**Navigation.** Respondents who backed up at least once within the questionnaire, as opposed to never, were less likely to quit the questionnaire. This led to a decreased questionnaire breakoff probability by 74% in 2014 and 2015.

**Item nonresponse.** The more item nonresponse respondents had during the questionnaire, the more likely they were to quit the survey. The breakoff probability increased by about  $(\exp(0.0479) - 1) * 100\% = 5\%$  for each percentage point increase in the item nonresponse rate in both survey years.

**Standardized response time per page.** This variable is defined by three measures: standardized response time on the welcome page, on the consent page, and the very first question page. The relationship to questionnaire breakoff was different for all three parts. The longer respondents stayed on the welcome page, the more likely they were

to quit the questionnaire by an increase of  $(\exp(0.2952) - 1) * 100\% = 34\%$ .<sup>62</sup> This was only significant in 2014. Interestingly, the longer respondents stayed on the consent page the less likely they were to quit the questionnaire by a breakoff probability decrease of  $(1 - \exp(-0.2361)) * 100\% = 21\%$  in 2014 and  $(1 - \exp(-0.2473)) * 100\% = 22\%$  in 2015. This finding was strongly significant in both survey years. Apparently, this relationship was only valid for the consent page, as time spent on the first question page was not significant at the 0.05 level in both years.

**Average slowing down/speeding up time.** This variable indicated the association of questionnaire Benacerraf and the average response time change when respondents were slowing down or speeding up. The closer to 0 these variables were, the more stable was the response time of a given respondent. Slowing down had an enormous impact on the likelihood of breaking off. If respondents were getting slower, they were up to 5 times more likely to quit the questionnaire (an increase in breakoff probability by  $(\exp(1.5750) - 1) * 100\% = 383\%$  in 2014 and by  $(\exp(0.6411) - 1) * 100\% = 90\%$  in 2015). Speeding up decreased the likelihood of quitting the breakoff by  $(1 - \exp(-0.6787)) * 100\% = 49\%$  in 2014. This finding was not significant in 2015.

Next, I focused on the predicted probabilities of the questionnaire breakoff model (Equation 4.6). The results for categorical variables are displayed in Figure 4.5, while the results for continuous variables are shown in Figure 4.6.

Gender (Figure 4.5A) and race (Figure 4.5B) did not show different breakoff probabilities across the categories. At the same time, student respondents showed higher questionnaire breakoff probabilities than faculty and staff respondents (6% versus 3%) in both survey years (Figure 4.5C). Panel members showed lower predicted probabilities than non-panel members (1% versus 3%, Figure 4.5D). Respondents with a negative response history showed higher questionnaire breakoff probability in 2015 than respondents with no response history. This was not true for the 2014 survey year (Figure 4.5E). Late respondents (Figure 4.5F) showed higher breakoff probability than respondents who answered the questionnaire right after the first email invitation (4% versus 3%). Respondents on mobile devices had higher questionnaire breakoff probabilities than respondents on non-mobile devices (6% versus 3%, Figure 4.5G), and respondents who started a new session had lower predicted breakoff probabilities than respondents who responded to the survey within one session (1.5% to 3%, Figure 4.5H).

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<sup>62</sup>There were some indications that the response time might not be accurate for this page. Therefore, this finding should be carefully consider. See Section 3.5.1 for more details.

Figure 4.6 shows the predicted probabilities for continuous variables. In Figure 4.6A, the positive association between item nonresponse and breakoff probability is evident: the more item nonresponse, the higher the predicted questionnaire breakoff probability.

Panels B-D show the association of questionnaire breakoff and the standardized time on the first three questionnaire pages (welcome page, consent page, and first question page). In 2014, respondents with longer response times on the welcome page showed a higher breakoff probability. This finding did not hold for 2015 (Figure 4.6B).<sup>63</sup> Figure 4.6C shows a more consistent finding: the longer the respondents took on the consent page, the lower their breakoff probability. The same but more subtle tendency was found in Figure 4.6D for the response times on the first question page.

Figure 4.6E and Figure 4.6F focus on the response time changes across the entire questionnaire. If respondents had higher values in the “slowing down” variable than in the “speeding up” variable, they had a stronger tendency to slow down during the questionnaire than to speed up. Respondents with values close to zero on both variables showed a consistent answering speed throughout the questionnaire. Both variables, slowing down and speeding up, showed a positive association with the breakoff probability. When respondents slowed down during the questionnaire, their breakoff probability increased, especially in 2015. The finding was more subtle for the variable speeding up, but this tendency was still clear in 2015. However, breakoff probability decreased for the 2014 survey year (Table 4.8) but Figure 4.6F shows only small effects of this variable in 2014. This contradictory finding might be due to the high aggregation of response time changes in these analyses (page-level information was aggregated at the respondent level). Thus, these findings need to be considered with care.

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<sup>63</sup>Note the problems reported for the response time on the welcome page in Section 3.5.1. Thus, this finding should be considered with care.

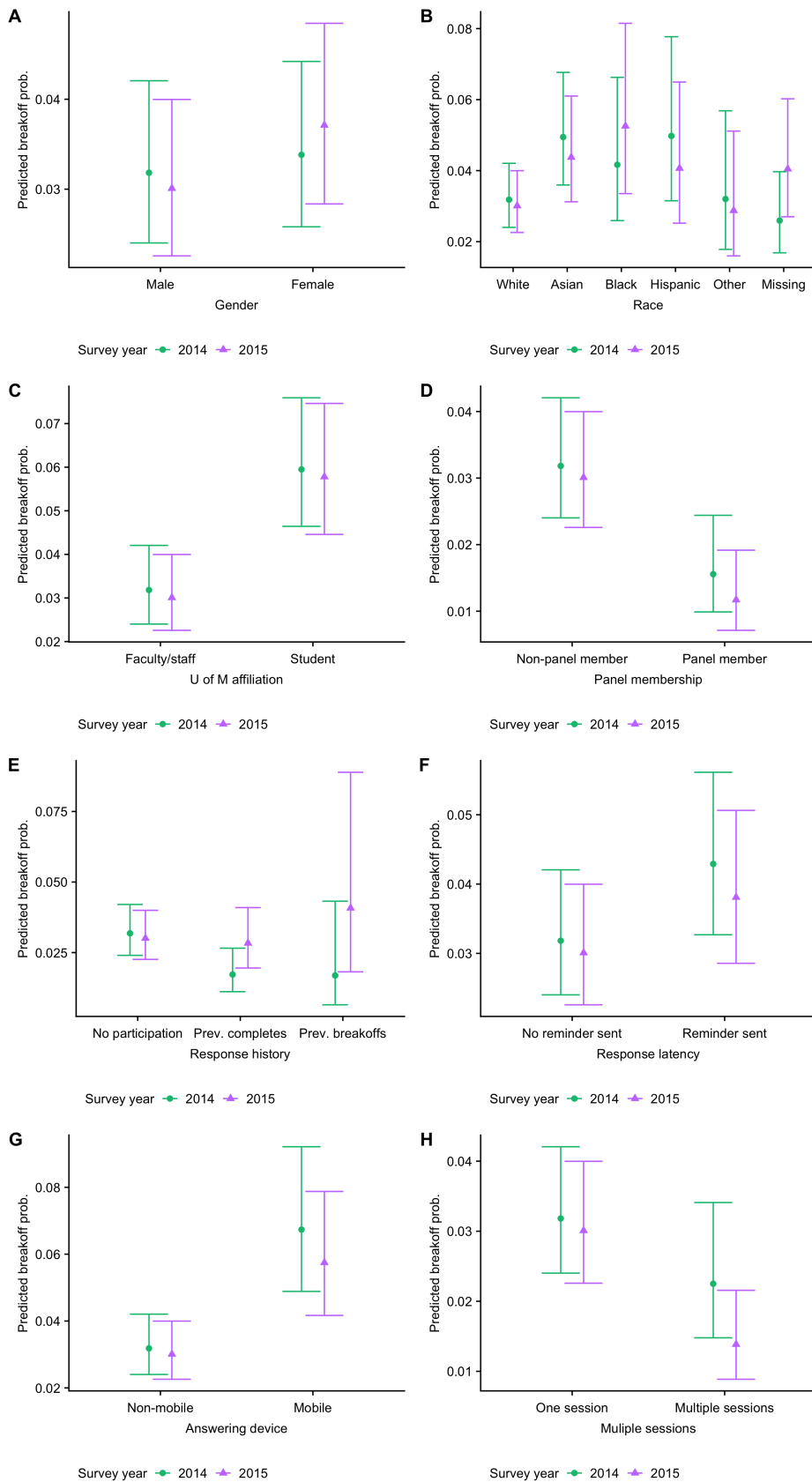


Figure 4.5: Predicted probabilities for questionnaire breakoff by survey year (categorical variables)

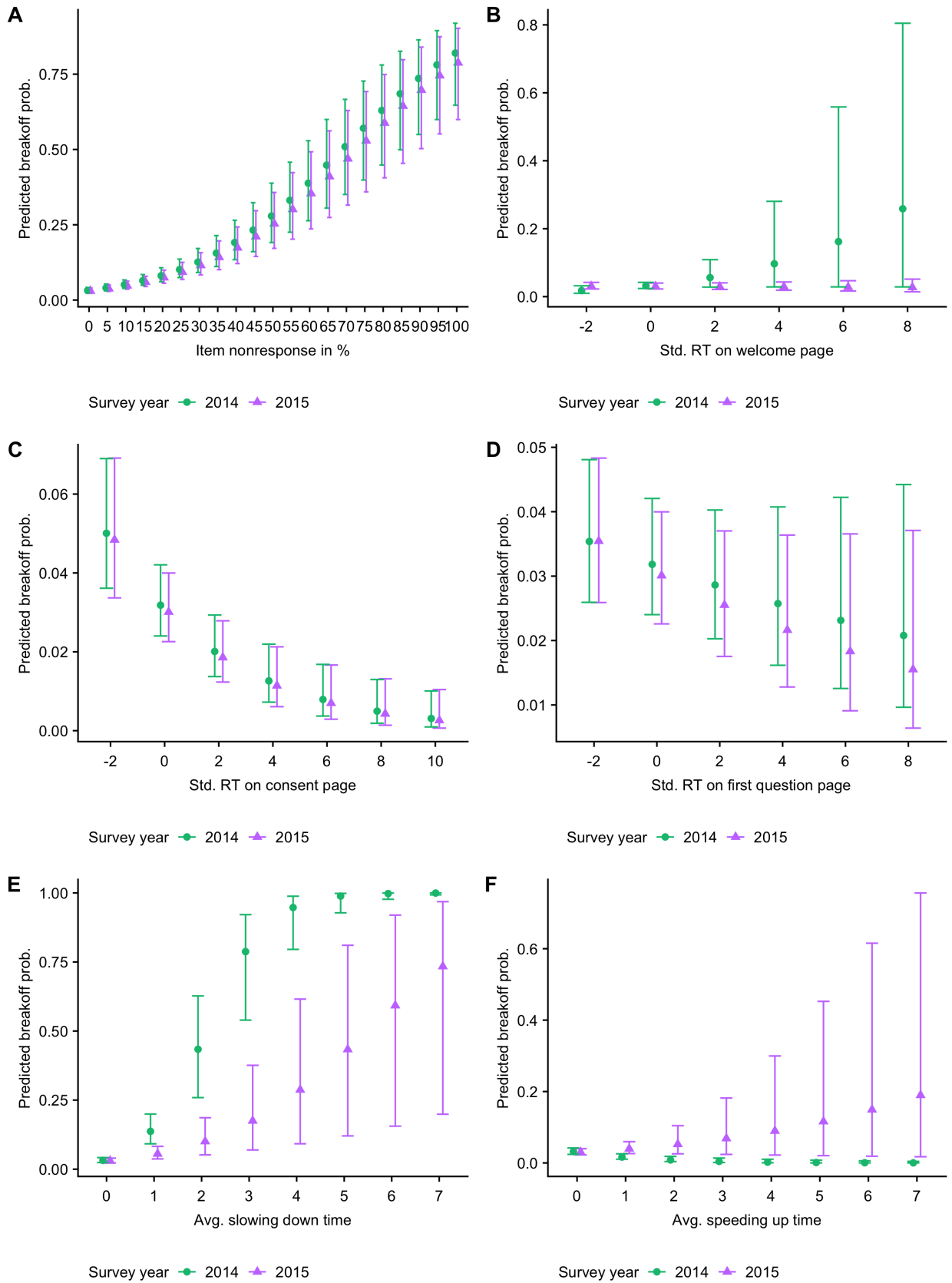


Figure 4.6: Predicted probabilities for questionnaire breakoff by survey year (continuous variables)

In summary, there were only slight differences for introduction breakoff and questionnaire breakoff probabilities between women and men and between different races. Students showed an increased breakoff probability for introduction and questionnaire breakoff when compared to faculty and staff respondents, while panel membership resulted in a decreased breakoff probability for both introduction and questionnaire breakoff when compared to non-members. A positive response history as opposed to no response history was not associated with introduction breakoff but decreased the probability of engaging in questionnaire breakoff. Respondents with a negative response history compared to respondents with no response history were twice as likely to quit the questionnaire during the introduction. This relationship disappeared for questionnaire breakoffs. Thus, a positive response history impacted questionnaire breakoff, while a negative response history impacted introduction breakoff. There was no relationship between the probability of engaging in introduction breakoff and response latency, but late respondents were more likely to conduct questionnaire breakoff compared to respondents reacting promptly to the first email invitation. Respondents on mobile devices were more likely to quit the questionnaire at one point when compared to respondents on non-mobile devices, resulting in either introduction or questionnaire breakoff.

Responding to the questionnaire in multiple survey sessions was related to lower probabilities to engage in questionnaire breakoff while high item nonresponse rates were resulted in higher breakoff probabilities. The longer the respondent stayed on the consent page the lower the breakoff probability. There were no clear relationships between response times on the welcome page or on the first question page and breakoff probabilities. Respondents with unstable response times were more likely to quit the questionnaire.

### **4.2.3 Results of the prediction analyses: who will quit the questionnaire?**

In the last step, I predicted the breakoff probability for each respondent based on the results in Table 4.7 and Table 4.8. Thus, I predicted  $\hat{p}^{i,\text{intro}}$  and  $\hat{p}^{i,\text{qnr}}$  separately for 2014 and 2015. I then performed ROC analyses as described in Section 4.1.3.3 to evaluate the predictive power of all four models. Figure 4.7 shows the results of the ROC analyses for both survey years 2014 sits in the left panel (Figure 4.7A), and 2015 is plotted in the right panel (Figure 4.7B). The red lines represent the ROC curve for the introduction breakoff models, and the blue lines represent the curve for the questionnaire breakoff models.



Clearly, the blue lines are always well above the red lines, meaning the prediction power was higher for questionnaire breakoff than for the introduction breakoff model. Figure 4.7 shows what is confirmed analytically: the so-called Area Under the Curve (AUC) is always higher for the questionnaire breakoff model than for the introduction breakoff model. The AUC across the two different years are similar for each model:  $AUC_{\text{intro}}^{2014} = 0.64$ ,  $AUC_{\text{qnr}}^{2014} = 0.76$ ,  $AUC_{\text{intro}}^{2015} = 0.67$ ,  $AUC_{\text{qnr}}^{2015} = 0.75$ .

Using the Youden index (YI, see Equation 4.7), I classified all cases as either predicted breakoffs or predicted completes. Figure 4.8 illustrates the added specificity and sensitivity on the y-axis and the Youden index on the x-axis for the 2014 and 2015 survey years. The red lines represent the introduction breakoff models and the blue lines the questionnaire breakoff models. The thresholds did not change much across the years:  $k_{\text{YI,intro}}^{2014} = 0.027$  and  $k_{\text{YI,intro}}^{2015} = 0.03$  for introduction breakoff models and  $k_{\text{YI,qnr}}^{2014} = 0.092$  and  $k_{\text{YI,qnr}}^{2015} = 0.093$  for the questionnaire breakoff models.

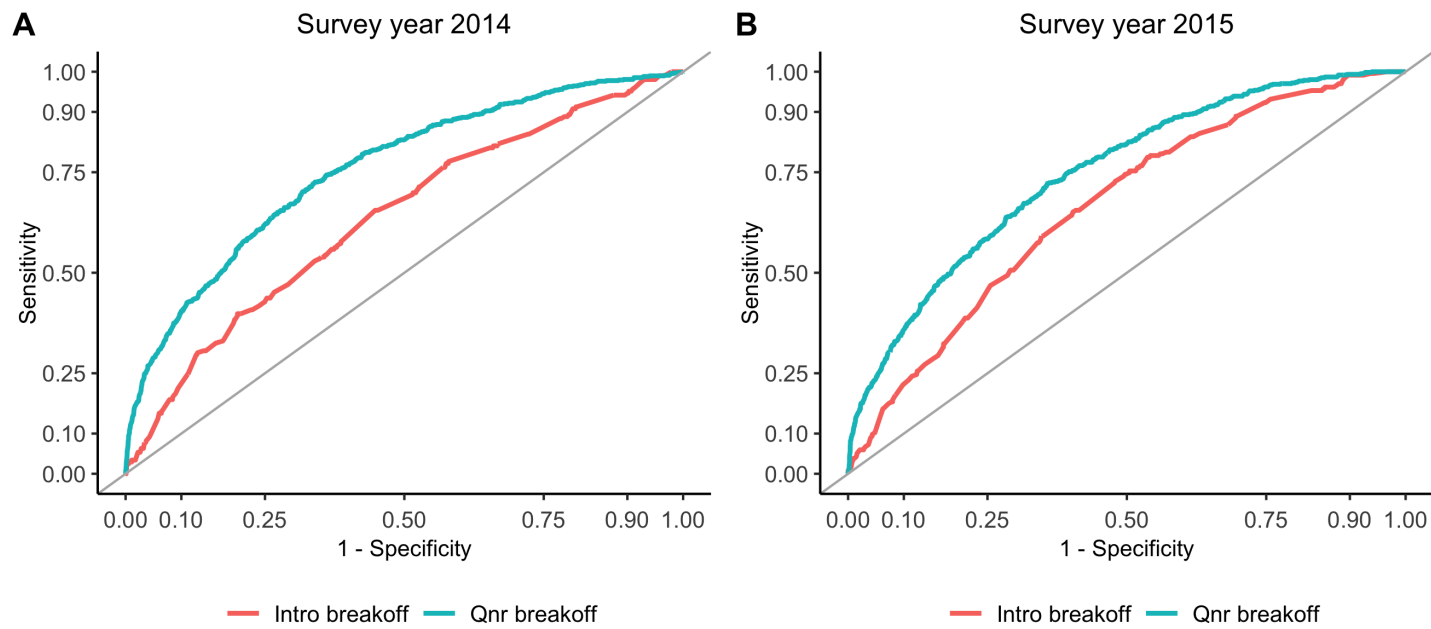


Figure 4.7: ROC curves by breakoff type and survey year (A = survey year 2014, B = survey year 2015)

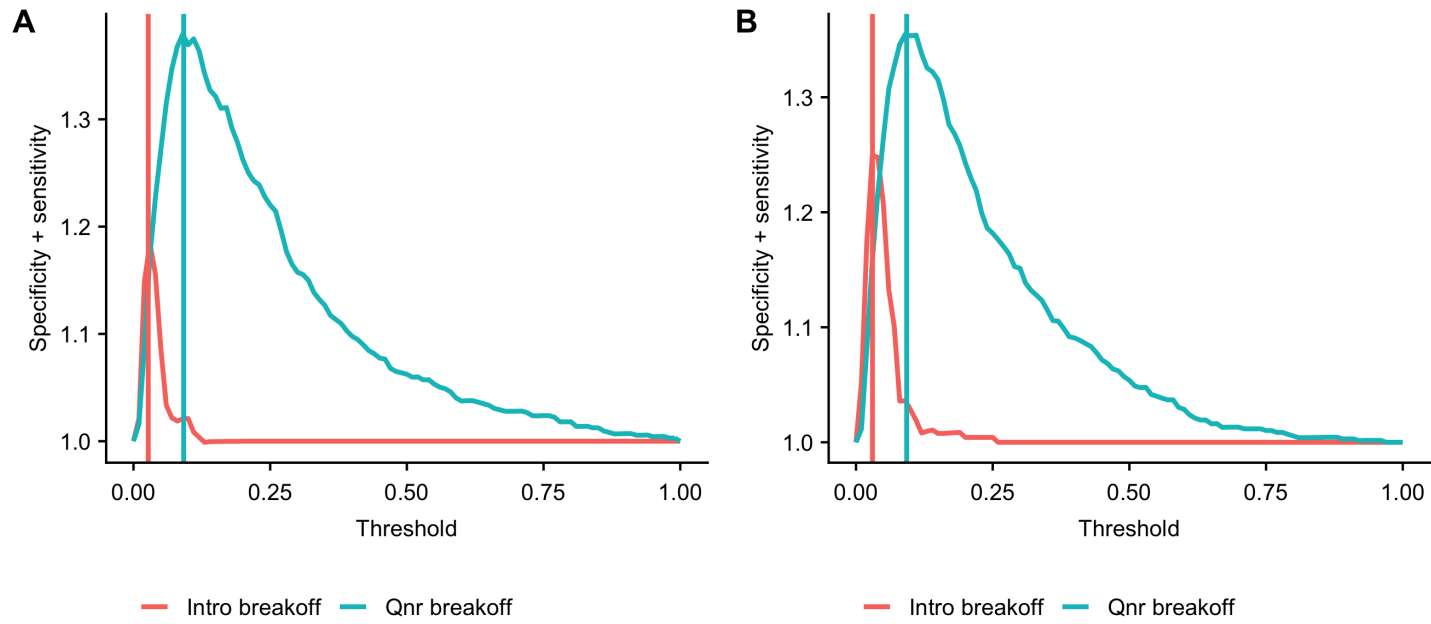


Figure 4.8: Youden index by breakoff type and survey year (A = survey year 2014, B = survey year 2015)

Next, I classified every respondent case as a breakoff case – separately for each model – if the predicted breakoff probability was higher than the corresponding threshold (e.g., in the introduction model for 2014, I compared the threshold  $k_{YI, \text{intro}}^{2014} = 0.027$  to the predicted introduction breakoff probability  $\hat{p}_{i, \text{intro}}^{2014}$ ). In the questionnaire model for 2015, I compared the threshold  $k_{YI, \text{qnr}}^{2015} = 0.093$  to  $\hat{p}_{i, \text{qnr}}^{2015}$ ). Based on these classifications, I was able to compute the key indicators introduced earlier (sensitivity, specificity, precision, and accuracy) shown in Table 4.9 separately for both survey years and both breakoff types.

When looking to maximize all key indicators, and in particular sensitivity and specificity, it is clear that the questionnaire breakoff models had higher predictive power than the introduction models. This confirms the finding of the ROC and AUC analyses in Figure 4.7. Overall, the prediction accuracy was around 0.65 for the questionnaire breakoff models which indicates that the variables used in the model are associated with web survey breakoff.

Table 4.9: Key indicators and AUC for prediction power by year and breakoff model

|             | Survey year 2014 |           | Survey year 2015 |           |
|-------------|------------------|-----------|------------------|-----------|
|             | Intro model      | Qnr model | Intro model      | Qnr model |
| Sensitivity | 0.66             | 0.73      | 0.79             | 0.72      |
| Specificity | 0.55             | 0.66      | 0.46             | 0.64      |
| Precision   | 0.04             | 0.19      | 0.05             | 0.19      |
| Accuracy    | 0.56             | 0.67      | 0.48             | 0.65      |
| AUC         | 0.64             | 0.76      | 0.67             | 0.75      |

### 4.3 Conclusion

#### Frame analyses.

When comparing all different response types, I found that breakoff respondents differed from unit nonrespondents and complete respondents significantly in many aspects: female sample members (compared to males) were less likely to be unit nonrespondents but did not differ from male sample members when focusing on breakoff behavior – both introduction and questionnaire breakoff. All races compared to White sample members had a higher likelihood of either becoming unit nonrespondents or breakoff respondents. But there was no difference across race categories regarding introduction or questionnaire breakoff. Students as compared to faculty and staff respondents were more likely to

be unit nonrespondents and to be breakoff respondents – but there was no difference between the likelihoods of introduction or questionnaire breakoff when focusing on U of M affiliation. Previous completers and previous breakoff respondents compared to previous non-participants were less likely to be unit nonrespondents in the current survey. Previous completers compared to previous non-participants were also less likely to quit during the questionnaire, while previous breakoff respondents compared to previous non-participants were more likely to quit during the introduction section of the questionnaire. Thus, response history can help distinguishing between future unit nonrespondents and introduction breakoff respondents. This is an important finding, as this information is available before respondents enter the questionnaire and different respondents can be targeted differently via invitation or incentives. Besides the differences in response history, I found little evidence to support the hypothesis about different frame characteristics between introduction and questionnaire breakoff.<sup>64</sup>

**Breakoff analyses.** I did find differences in response behavior between introduction and questionnaire breakoff: respondents who did not start the questionnaire right after the invitation but waited for reminder emails were more likely to engage in questionnaire breakoff but there was no relationship between response latency and introduction breakoff. Respondents on a mobile device compared to respondents on non-mobile devices were more likely to quit the questionnaire (introduction and questionnaire breakoff), but the coefficient for questionnaire breakoff was almost twice as high, indicating that mobile devices had a stronger relationship with breakoff likelihood later in the questionnaire. Having multiple sessions and using the previous button seemed to be an indication of survey engagement and decreased the probability of quitting the questionnaire. Item nonresponse as part of the nonresponse continuum showed a positive association with questionnaire breakoff and increased the breakoff probability.

Interestingly and contrary to the hypotheses, respondents with longer page response times on the consent page and the first question page were less likely to engage in questionnaire breakoff, which was an unexpected finding per the hypothesis in Section 2.5. Respondents who slowed down or sped up during the questionnaire as compared to respondents with steady response times were more likely to quit the questionnaire.

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<sup>64</sup>I was not able to replicate the findings of Steinbrecher, Roßmann, and Blumenstiel (2015), possibly because of the definition differences between “early” and “late” breakoff and “introduction” and “questionnaire” breakoff or due to the low number of introduction breakoffs (441 respondents). Late breakoff referred to all respondents who have at least answered a set of core questions. Early breakoff included all respondents who broke off before this point. This led to more equal group sizes, and, therefore cell sizes.

Considering the prediction power of all models, I saw a moderate ability in the models to effectively predict introduction and questionnaire breakoffs, based on AUC and key indicators like accuracy and precision. As the goal of this chapter was to explore relevant variables associated with breakoff, I was not too worried about the relatively low prediction power of the logistic regression models. Because the models were on a respondent level, the high aggregation of certain variables might be the reason for the low prediction power. However, I think that these predictions were a good indication that the variables used are relevant and help to inform the later question level prediction of breakoff in the next chapters.

In this chapter, I focused on finding the “typical” breakoff candidate: they tended to be female, not white, students, and previous break off respondents. They entered the study after email reminders, on mobile devices, engaged in item nonresponse, and had an inconsistent response speed. Most of these findings were confirmations of previous literature. However, I was able to include all covariates simultaneously to all models, and, therefore, could investigate respondent characteristics in more depth than many of the previous studies. Additionally, the association between response history and breakoff respondents has not been observed before. Previous completers were more likely to complete the current questionnaire, and previous breakoff respondents were more likely to quit the questionnaire during the introduction but they did not show higher questionnaire breakoff likelihood. To investigate this further, Chapter 5 focuses on breakoff timing, which looks at when respondents quit the questionnaire, and what response behavior preceded the breakoff.

### **4.3.1 Limitations and future research**

As a first limitation, the variables for the frame analyses were very limited. Therefore, there was some indication for bad model fit in the survey year 2015. Ideally, one would have richer information and paradata available before the start of the survey. With this, respondents could be classified as likely introduction or questionnaire breakoffs even before the questionnaire is started.

Additionally, I was not able to separate between sample members who were invited in previous years and did not respond (previous unit nonrespondents) and new sample members (individuals who have not been invited in the previous years). That means, that the variable response history only differed between respondents who had previously

completed or broke off the questionnaire, and respondents who have not participated.

Next, the measurement of page and question response times on the welcome page seemed to be unreliable, occasionally measuring negative response times (Section 3.5.1). Thus, findings regarding response times on the first question page had to be interpreted with great care. Additionally, the response time changes had to be aggregated to the respondent level. Therefore, this information is not as detailed as it could have been. To account for this more detailed information I investigated breakoff at the page level in the next chapter (Chapter 5).

# Chapter 5

## Predicting web survey breakoff: when will respondents quit a questionnaire?

Chapter 4 investigated breakoff on the respondent level: respondents were either classified as breakoff cases or complete cases. But these analyses did not make use of all the available information because I did not have access to page-level information, which reveals every respondent's answering process for every page they saw. Thus, this chapter focuses on the second research question: "When will respondents quit the questionnaire?" and includes all underlying hypotheses mentioned in Section 2.5. I investigate page-level breakoff for every respondent, so I can now account for variables that change on every page, as well as predict breakoff at the page level. To accomplish this, I first performed descriptive analyses for all survey pages seen by the respondents and then fitted survival models to find a typical breakoff behavior that indicated future breakoff. I then investigated the predictive power of these models based on ROC and AUC analyses.

### 5.1 Variables and methods

#### 5.1.1 Variables used in survival models

Similar to the previous chapter, I performed data cleaning and manipulation as described in Section 3.5. The variables used here were based on the variables described and used in



Section 4.1.1. However, unlike in Chapter 4, all page-level variables were not aggregated at the respondent level, meaning that every respondent was represented by multiple lines in the data set. The number of lines represents the number of pages seen by the respondent. Page invariant information like gender and race remained constant throughout the data set for each respondent, while page variant variables like response time and item nonresponse changed from one line to the next. The page invariant variables used in this chapter have been described already in the previous chapter, Table 4.1. Table 5.1 and Table 5.2 show the frequency and distribution of page variant variables.

Table 5.1: Frequency of categorical page variant variables used in survival models by survey year

|                                | Survey year 2014 |        | Survey year 2015 |        |
|--------------------------------|------------------|--------|------------------|--------|
|                                | Freq.            | Perc.  | Freq.            | Perc.  |
| <b>Next page response type</b> |                  |        |                  |        |
| Non-breakoff page              | 377,672          | 99.77% | 330,375          | 99.75% |
| Breakoff page                  | 884              | 0.23%  | 843              | 0.25%  |
| <b>Topic section</b>           |                  |        |                  |        |
| Introduction                   | 14,561           | 3.85%  | 12,567           | 3.79%  |
| Transportation                 | 58,176           | 15.37% | 56,153           | 16.95% |
| Conservation                   | 37,799           | 9.99%  | 32,719           | 9.88%  |
| Environment                    | 15,436           | 4.08%  | 13,053           | 3.94%  |
| Food                           | 34,615           | 9.14%  | 29,449           | 8.89%  |
| Climate                        | 33,084           | 8.74%  | 28,302           | 8.54%  |
| General sustainability         | 47,091           | 12.44% | 39,935           | 12.06% |
| Sustainability at U of M       | 19,788           | 5.23%  | 22,817           | 6.89%  |
| Demographics                   | 118,006          | 31.17% | 96,223           | 29.05% |
| <b>New topic section</b>       |                  |        |                  |        |
| Continue topic section         | 324,327          | 85.67% | 284,879          | 86.01% |
| Begin new topic section        | 54,229           | 14.33% | 46,339           | 13.99% |
| <b>Answering device</b>        |                  |        |                  |        |
| Non mobile                     | 325,781          | 86.06% | 273,855          | 82.68% |
| Mobile                         | 52,775           | 13.94% | 57,363           | 17.32% |
| <b>New session</b>             |                  |        |                  |        |

Table 5.1: Frequency of categorical page variant variables used in survival models by survey year (*continued*)

|                   | <b>Freq.</b> | <b>Perc.</b> | <b>Freq.</b> | <b>Perc.</b> |
|-------------------|--------------|--------------|--------------|--------------|
| Continue session  | 377,803      | 99.80%       | 330,471      | 99.77%       |
| Start new session | 753          | 0.20%        | 747          | 0.23%        |
| <b>Navigation</b> |              |              |              |              |
| Next button       | 374,447      | 98.91%       | 327,597      | 98.91%       |
| Previous button   | 4,109        | 1.09%        | 3,621        | 1.09%        |

Table 5.2: Distribution for continuous page variant variables used in survival models by survey year

|                                   | <b>Min.</b> | <b>25% quantile</b> | <b>Median</b> | <b>Mean</b> | <b>75% quantile</b> | <b>Max.</b> |
|-----------------------------------|-------------|---------------------|---------------|-------------|---------------------|-------------|
| <b>Survey year 2014</b>           |             |                     |               |             |                     |             |
| Number of question items per page | 1.00        | 1.00                | 1.00          | 3.18        | 5.00                | 19.00       |
| Item nonresponse rate (in %)      | 0.00        | 0.00                | 0.00          | 2.74        | 0.00                | 100.00      |
| Answer variability                | 0.00        | 0.67                | 1.00          | 0.87        | 1.00                | 12.50       |
| Number of scrolls per page        | 0.00        | 0.00                | 0.00          | 0.47        | 0.00                | 19.00       |
| Question response time (in ms)    | 105.26      | 3,000.00            | 5,000.00      | 6,535.64    | 7,000.00            | 300,270.32  |
| Response time change              | -18.03      | -0.33               | 0.00          | 0.01        | 0.34                | 18.29       |
| <b>Survey year 2015</b>           |             |                     |               |             |                     |             |
| Number of question items per page | 1.00        | 1.00                | 1.00          | 3.31        | 6.00                | 19.00       |
| Item nonresponse rate (in %)      | 0.00        | 0.00                | 0.00          | 2.82        | 0.00                | 100.00      |
| Answer variability                | 0.00        | 0.57                | 1.00          | 0.85        | 1.00                | 8.33        |
| Number of scrolls per page        | 0.00        | 0.00                | 0.00          | 0.59        | 0.00                | 19.00       |
| Question response time (in ms)    | 105.26      | 3,156.00            | 4,687.00      | 6,652.27    | 7,328.00            | 300,270.32  |
| Response time change              | -26.50      | -0.32               | 0.00          | -0.01       | 0.31                | 26.78       |

### 5.1.1.1 Page invariant variables (Table 4.1).

The page invariant variables used in this chapter did not differ from the previous chapter. Thus, information on gender, race/ethnicity, U of M affiliation, panel membership (all were classified as non-paradata information), response history (paradata of the prior to the survey phase), and response latency (paradata of the recruitment phase) are in Section 4.1.1 and Table 4.1.

### 5.1.1.2 Page variant variables (Table 5.1 and Table 5.2).

#### Breakoff on next page (Table 5.1)

**Next page response type.** Binary. In this chapter, each survey page was categorized as either a *breakoff page* or a *non-breakoff page* (reference category). If respondents did not complete the questionnaire (i.e., saw the last questionnaire page), the last page they submitted to the server was flagged as the breakoff page, indicating that respondents broke off on the next page.<sup>65</sup> Otherwise, the page was flagged as a non-breakoff page (i.e., the respondents did not quit the questionnaire on the next page they saw).<sup>66</sup> Most pages were classified as non-breakoff pages, and only about 0.3% of all pages were classified as breakoff pages, indicating that the respondents broke off the questionnaire at the next survey page they saw.

#### Non-paradata: page and question characteristics (Table 5.1)

**Topic section.** Categorical. The questionnaire was divided into 9 different topic sections: introduction (reference category), transportation, conservation, environment, food, climate, general sustainability, sustainability at the University of Michigan, and demographics. There were no transition pages (i.e., pages with no question items). Most pages seen by the respondents fell within the demography topic (about 30%), followed by the transportation section (about 15%), and the topic on general sustainability (about 12%). The sections on conservation, food, and climate all covered about 10% of the pages, while the topics about sustainability at the University of Michigan and environment covered about 5% of all survey pages. The introduction section accounted for the smallest fraction with about 1% of all pages.

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<sup>65</sup>Unfortunately, the actual last page respondents saw when they quit the questionnaire, that is, the one they broke off on, was not sent to the server, since the respondents never hit the next button for this page. Therefore, I do not have any information about response behavior on the actual breakoff page.

<sup>66</sup>Note that I did not distinguish between introduction and questionnaire breakoff.

**New topic section.** Binary. This variable indicates whether the next page respondents saw started a new topic section or continued the current topic (reference category). About 85% of all pages continued the current topic while about 15% of all pages seen by respondents started a new topic section.<sup>67</sup>

**Number of question items.** Continuous. This variable (Table 5.2) represented the number of question items presented on each page. Respondents saw up to 19 question items on one survey page (e.g., “What college or school are you in enrolled in? Check all that apply: Architecture and Urban Planning; Art and Design; Business; Dentistry; Education; Engineering; Information; Kinesiology; Law; Literature, Science, and the Arts; Medicine; Music, Theater and Dance; Natural Resources and Environment; Nursing; Pharmacy; Public Health; Public Policy; Social Work”) with a median of three question items on each page. There were no pages without questions other than the introduction pages with the welcome page and the consent page. For the analysis, I included the information about the number of question items on the current page as well as the number of question items on the next page seen (i.e., the number of question items respondents would see on the next survey page).<sup>68</sup>

#### **Paradata: access phase (Table 5.1)**

**Answering device.** Binary. Some respondents switched devices (e.g., from mobile to PC) while taking the survey. This occurred 241 times. Thus, answering device was a page variant variable. The majority of all survey pages were answered on non-mobile devices (reference category) and about 14-17% of all pages were answered on mobile devices.

**New session.** Binary. As SCIP could be completed in multiple sessions. This variable indicates whether or not the current page started a new session. The majority of pages continued current sessions (99.8%, reference category), while only 0.2% of all pages started new sessions.

#### **Paradata information: response phase (Table 5.1 and Table 5.2)**

**Navigation.** Binary. This indicator (Table 5.1) showed whether the respondent hit the previous or the next button (reference category) on the current page to continue with the

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<sup>67</sup>As I was analyzing the data set retrospectively, I knew whether the respondents hit the next or the previous button and was able to obtain the information about the next page seen for complete respondents and breakoff respondents. This means that even though I do not have any information about the response behavior of the actual breakoff page I know whether that page started a new topic section.

<sup>68</sup>Similar to the variable “new topic section,” I was able to include the information about the next page because I analyzed the data set retrospectively and knew whether respondents hit the next or the previous button.

questionnaire. If they hit the previous button, the next page they saw was one they had seen previously. Most of the time, respondents hit the next button (99%), and in only 1% of all navigation actions respondents made use of the previous button.

**Item nonresponse rate.** Continuous. Item nonresponse (Table 5.2) represents the proportion of the answers the respondent provided divided by the number of question items presented on a given page. This variable is a percentage ranging between 0% (no question item was answered on a given page) and 100% (the respondents answered all presented question items on a given page). The mean was 3% for both survey years.

**Answer variability.** Continuous. This variable describes the variance of responses in grid questions. The smaller the variance, the less variation there was in the answers provided in the grid. Thus, an answer variability of 0 indicates perfect straightlining. If there was only one question item on a page, the answer variability was set to 1.

**Scrolling.** Continuous. This variable describes how many times one respondent scrolled on a given page. Scrolling refers to every action taken to see the full content of a web page vertically or horizontally, using a mouse, or a touch pad.<sup>69</sup> Scrolling ranged from no scrolling to up to 19 scrolls on a given page.

**Question response times.** Continuous. As described in Section 3.5.2, I divided the page response time by the number of question items on a given page. This resulted in the question item response time in milliseconds, which varied between 105ms (~0.1s) and 300,270ms (~5min) with a median of 5,000ms (~5s). For the analysis, I included the categorical variable “extreme question response time.” This variable describes whether the question response time was below the 25th percentile of all respondents (very fast respondent), above the 75th percentile (very slow respondent), or somewhere in between (normal respondent reference category). This concept was introduced in Section 3.5.2, Equation 3.5.

**Response time change.** Continuous. As described in Section 3.5.2, I standardized the question response time by page, device, and U of M affiliation (Equation 3.2). The response time change represents the differences of the standardized question time between the current page  $p$  and the previous page ( $p - 1$ ) (Equation 3.3). By definition, this variable is unstable, because no respondent shows the exact same standardized question response time from one page to the next. Therefore, I computed the moving average over

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<sup>69</sup>In 89% of these scrolls, respondents scrolled only horizontally. In 1% of instances, respondents scrolled only vertically, and in 10% of the pages, respondents scrolled horizontally and vertically.

the past three pages seen by the respondent (Equation 5.1), indicating the net response time change over the past three pages.

$$RT.Change(p - 3)_{i,p} = \frac{1}{3}(RT.Change_{i,p} + RT.Change_{i,(p-1)} + RT.Change_{i,(p-2)}) \quad (5.1)$$

The following section provides a detailed example of the response time calculation changes.

Table 5.3: Example for calculations of response time change variable

| ID | Pages seen | Question items | Question RT | Std. question RT | RT change | RT change (p-3) |
|----|------------|----------------|-------------|------------------|-----------|-----------------|
| 94 | 1          | 1              | 10827.00    | 0.11             | 0.00      | 0.00            |
| 94 | 2          | 1              | 29828.00    | 0.85             | 0.75      | 0.00            |
| 94 | 3          | 7              | 6917.43     | 0.89             | 0.04      | 0.26            |
| 94 | 4          | 11             | 3299.73     | -0.24            | -1.13     | -0.12           |
| 94 | 5          | 1              | 9890.00     | -0.10            | 0.14      | -0.32           |
| 94 | 6          | 1              | 11984.00    | 0.13             | 0.24      | -0.25           |
| 94 | 7          | 1              | 11938.00    | 0.60             | 0.47      | 0.28            |
| 94 | 8          | 1              | 7891.00     | 0.48             | -0.12     | 0.19            |
| 94 | 9          | 1              | 14156.00    | -0.19            | -0.67     | -0.11           |
| 94 | 10         | 3              | 6797.00     | -0.17            | 0.02      | -0.26           |



Table 5.3 shows the first ten survey pages seen by respondent with ID 94.<sup>70</sup> The question response time on the first page (first row) indicates that the respondent took 10827ms to pass the welcome page. The standardized question response time (column four, Equation 3.2) was 0.11.<sup>71</sup> Because there was no page prior to the welcome page, the response time change was set to 0 in column five.<sup>72</sup>

The second row shows the question response time of the second questionnaire page, which was the consent page with a standardized question response time for the second page of 0.85. The difference between the standardized question RT for page 1 and standardized question RT for page 2 ( $0.85 - 0.11 = 0.75$ ) was positive, indicating that the respondent was slowing down. Since there was only one previous page, it was still not possible to compute the average of the response time change over the past three pages, thus this variable was set to 0.

Respondent 94 took 6917ms to respond to each of the seven question items on the third questionnaire page. This led to a standardized question response time of 0.89. The response time change between page 3 and page 2 was  $0.89 - 0.85 = 0.04$ , indicating that the respondent slowed down even more when answering page 3. The average response time change over the previous three pages was computed by averaging the last three response time changes:  $\frac{0.04+0.75+0}{3} = 0.26$ , indicating that, on average, the respondent was slowing down over those three pages.

On the fourth survey page, the respondent took 3299ms to respond to each of the eleven question items presented. This resulted in a standardized question response time of -0.24, indicating that the respondent spent less time on this page than the average respondent on the same survey page. The response time change resulted in  $-0.24 - 0.89 = -1.13$ . The average response time change over the past three pages can be calculated by averaging the RT change over the past three pages:  $\frac{(-1.13)+0.04+0.75}{3} = -0.12$ . Thus, this respondent, on average, sped up over the previous three pages. This procedure was repeated for all pages until the respondent either reached the end of the questionnaire or quit. To separate between speeding up behavior and slowing down, I included two variables in the model:  $RT.Change(p-3)_{i,p}^{speed}$  indicating if the respondent was speeding up over the past three pages, and  $RT.Change(p-3)_{i,p}^{slow}$  indicating if the respondent was slowing down over the past three survey pages with

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<sup>70</sup>This respondent was a faculty or staff member and responded to the questionnaire using a PC.

<sup>71</sup>This indicated that this respondent was a little slower than the average faculty and staff member using a PC in answering the welcome page (i.e., the standardized question response time was positive).

<sup>72</sup>For the same reason the variable RT change (p-3) was set to 0 on the first survey page.

$$RT.Change(p-3)_{i,p}^{speed} = \begin{cases} (-1) * RT.Change(p-3)_{i,p} & \text{if } RT.Change(p-3)_{i,p} < 0 \\ 0 & \text{otherwise} \end{cases}$$

and

$$RT.Change(p-3)_{i,p}^{slow} = \begin{cases} RT.Change(p-3)_{i,p} & \text{if } RT.Change(p-3)_{i,p} > 0 \\ 0 & \text{otherwise.} \end{cases}$$

## 5.1.2 Analysis methods

### 5.1.2.1 Descriptive analysis

To understand the data set, I performed descriptive analysis by first investigating whether there were questionnaire pages that were particularly prone to breakoffs (besides the pages of the introduction section). To do this, I plotted the number of breakoffs for every survey page in the order they occurred in the questionnaire.<sup>73</sup> Because the questionnaire order differed slightly between U of M affiliation I displayed the number of breakoffs on each survey page separately by affiliation. To account for the individual experience of each respondent (i.e.,  $p_{survey} \neq p_i$ ), I performed Kaplan-Meier analysis and investigated the survival rate by the number of pages seen.

### 5.1.2.2 Survival analysis

To investigate breakoff at the page level, I used survival models. Survival models are used specifically for analyzing “time to a certain event.” The event – here breakoff – is usually considered a terminal event, which can only occur once for each individual in the study. Since I was interested in how long respondents *survive* before they quit the questionnaire, if they ever do so, the number of pages seen by the respondents served as the time measure. Not all respondents were breakoff respondents, thus not all respondents experience the event before they completed the questionnaire. These cases are so-called (*right-*)*censored* observations: even though every individual is at risk of quitting the questionnaire at

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<sup>73</sup>This approach disregards the experience the respondents actually had during the questionnaire, as it does not account for using the previous button. For example, respondents who made use of the previous button will not see the fourth survey page  $p_{survey} = 4$  on the fourth page they see ( $p_i = 4$ ).

some point, most respondents complete the questionnaire. Survival analysis can account for such right-censoring and is, therefore, the perfect method to investigate web survey breakoff at the page level.<sup>74</sup>

**Survival function.** The survival function  $S(t)$  reflects the expected proportion of individuals for which the event has not happened at time  $t$ : thus, it denotes the unconditional probability that a specific individual survives longer than time  $t$ . See Equation 5.2, with  $T$  being a random variable denoting a person's survival time. In this study, pages  $p_i = 1, \dots, P$  denoted the time passed for each respondent  $i$ .

$$S(t) = P(T > t) \tag{5.2}$$

All survival functions follow two rules: first, at time  $t = 0$ , the probability of surviving is 1 ( $S(0) = 1$ ). Since no time has passed, all individuals are in the study. Second, if the study time is infinite, the event would have happened to all individuals in the study ( $S(\infty) = 0$ ). This leads to the (rightful) assumption that if the questionnaire is long enough, in other words, infinite long ( $p = \infty$ ) every respondent would break off eventually.

To estimate the survival functions for censored data, the Kaplan-Meier method is used, which computes the probability of surviving past time  $t$ , taking the conditional probability of surviving at least until time  $t$  into account.

**Hazard rate.** The hazard rate  $h(t)$  is equivalent to a conditional probability of failing/experiencing the event at time  $t$ , given that a certain individual survived up until this time point. When  $T$  is continuous, one evaluates the probability of experiencing the event in a very small time window  $[t, t + \Delta t)$ , which then results in  $h(t)$  (Equation 5.3).

$$h(t) = \lim_{\Delta t \rightarrow 0} \frac{P(t \leq T < t + \Delta t | T \geq t)}{\Delta t} \tag{5.3}$$

The hazard rate is *not* a probability; rather it is the *risk* of quitting at page  $p$  given that the respondent did not quit the survey until then.

**Cox proportional hazards models.** Cox survival models are widely used for censored survival data. They estimate the risk of *dying* at the next point in time. The simple version of this model assumes that the hazard rate for a certain individual with covariates

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<sup>74</sup>The following explanation of survival analyses curve analyses is inspired by Kleinbaum and Klein (2006).

$X$  at time  $t$  takes the form in Equation 5.4.

$$h(t, X) = h_0(t) * \exp(\beta X), \quad (5.4)$$

where  $h_0(t)$  denotes the baseline hazard, which is time dependent, while the second part of the formula (*relative risk*) does not contain time  $t$ . In this case, all covariates  $X$  need to be time independent (page invariant), which reflects the so-called *proportional hazards assumption* over time. This means that the hazard of a given individual is proportional to any other individual and independent of time (Kleinbaum and Klein 2006; Thomas and Reyes 2014). As explained in Section 5.1, the covariates I used for this model were observed over time (e.g., response time changes across pages). Thus, the proportional hazards assumption was violated. Therefore, I used the extended Cox model Equation 5.4, which allows for time dependent (or page variant) covariates (Equation 5.5):

$$h(t, X) = h_0(t) * \exp(\beta X(t)) \quad (5.5)$$

Again,  $h_0(t)$  denotes the time dependent baseline hazard. But now, the relative risk is a function of time  $\exp(\beta X(t))$ . This model assumes that the effect of  $X(t)$  on  $h(t, X)$  depends only on the value of  $X$  at time  $t$  and not on the value at an earlier ( $t - 1$ ) or later ( $t + 1$ ) time.

As seen in Section 4.2.2, the relationship of answering device and breakoff probability was stronger for questionnaire breakoff than for introduction breakoff. This finding indicated the possibility of time dependent, here page variant, coefficients in the model. These can be incorporated in a second extension of the Cox model (Equation 5.6).

$$h(t, X) = h_0(t) * \exp(g(\beta, t)X), \quad (5.6)$$

where  $g$  is a function of time  $t$  and the coefficient vector  $\beta$ . This function is specified by the analyst (e.g.,  $g(\beta, t) = \beta * \log(t)$ ).

Combining all of these extensions into one model (*dynamic Cox survival model*), the risk of breaking off on the next page can be estimated by Equation 5.7.<sup>75</sup>

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<sup>75</sup>Because the last page of a breakoff respondent was not sent to the server, the actual breakoff page was not included in the data set. Therefore, I estimated on page  $p$  the risk of quitting the questionnaire on the next page ( $p + 1$ ).

$$h(p, W, X, Y, Z) = h_0(p) * \exp(\beta_W W + g(\beta_X, p)X + \beta_Y Y(p) + g(\beta_Z, p)Z(p)), \quad (5.7)$$

where  $W$  denotes page invariant covariates (e.g., gender, race) with page invariant coefficients ( $\beta_W$ ).  $X$  refers to page invariant covariates with page variant coefficients ( $g(\beta_X, p)$ ). While  $Y$  and  $Z$  both denote page variant covariates with page invariant coefficients ( $\beta_Y$ ) and page variant coefficients ( $g(\beta_Z, p)$ ), respectively.

In the analyses, I first fitted the more simplified model without page variant coefficients (i.e.,  $h(p, W, X, Y, Z) = h_0(p) * \exp(\beta_W W + \beta_X X + \beta_Y Y(p) + \beta_Z Z(p))$ , further referred to as the *simple model*). I then tested each coefficient on page dependency, using Schoenfeld residuals (Schoenfeld 1982; Harrell and Lee 1986). For each covariate and every individual who experienced the event, I calculated Schoenfeld residuals. If the proportional hazards assumption held, the residuals were not related to the survival time. For all covariates that failed this test, I introduced the page variant coefficients, resulting in the *final model* of Equation 5.7.<sup>76</sup>

In this chapter, I only present the final result. The results of the previous models and the test of the Schoenfeld residuals are in Appendix A, Table A.4 and Table A.5. All models were fitted by using the `coxph` command of the `survival` package (Therneau and Grambsch 2000). To interpret the relationship between breakoff risk and each covariate, I displayed the predicted survival probabilities for the model results. This was done using the `ggpredict` command in the `ggeffects` package (Luedecke 2018), adjusted at the reference categories of all categorical covariate and at zero for all continuous variables. I fitted the models to both survey years separately.

### 5.1.2.3 Predicting breakoff

Next, I used the final model to predict breakoff on the page level, assess the prediction power of the model, and decide whether the thresholds for classifying pages as breakoff pages should vary between different subgroups (e.g., different thresholds for different answering devices or U of M affiliations). For this, I used the model fitted to the 2014 data set (training data set) to predict breakoff pages in the 2015 data set (test data set).

- (1) The breakoff risk for every 2015 respondent on every page was estimated using the

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<sup>76</sup>In all analyses I assume a linear relationship between time and the coefficient, that is,  $g(\beta, p) = \beta * p$ .

coefficients of the 2014 model. This was done by using the `predict` command in the `stats` package (Lüdecke 2018) with the option `type = 'expected'`.

- (2) The 2015 data was then stratified in three ways: by answering device  $d = \{\text{non-mobile, mobile}\}$ , by U of M affiliation  $a = \{\text{faculty/staff, student}\}$ , and by topic section  $t\{\text{introduction, transportation, conservation, environment, food, climate, general sustainability, sustainability at U of M, and demographics}\}$ . Different thresholds were computed based on the Youden index as introduced in Chapter 4 ( $k_{YI} = \max(\text{Sensitivity} + \text{Specificity})$ ).
  - (a) I first computed the different thresholds separately for each strata,  $k_d$ ,  $k_a$ , and  $k_t$ , and then computed the thresholds for the interaction between affiliation and answering device ( $k_{d,a}$ ), leading to four stratification groups.
- (3) After calculating the different thresholds, I was able to classify each page seen by every 2015-respondent into *predicted non-breakoff page* and *predicted breakoff page*: if the risk of one respondent  $i$  on a given page  $p$   $risk_{i,p,d,a,t}$  was higher than the group-specific threshold  $k$ , page  $p$  was flagged as a predicted breakoff page, indicating that the respondent might quit the questionnaire on the next page. Otherwise the page was flagged as predicted non-breakoff page.
- (4) Next, I evaluated the prediction power of the 2014 model by comparing the outcome of the different confusion matrices for all four stratification groups. I compared the key indicators introduced in Chapter 4 (sensitivity, specificity, precision and accuracy) to choose the optimal thresholds. As AUC is not affected by any threshold choice, I also presented the mean AUC for each stratification group to investigate the overall prediction power of the model. And finally, I computed Cohen's kappa Equation 5.8 to identify which stratification and, ultimately, which thresholds were optimal:

$$\text{Cohen's kappa} = \frac{\text{Accuracy} - \text{Expected accuracy}}{1 - \text{Expected accuracy}}, \quad (5.8)$$

where

$$\text{Accuracy} = \frac{TP + TN}{P + N}$$

and

$$\text{Expected accuracy} = \frac{(TP + FN) * (TP + FP) + (TN + FP) * (TN + FN)}{(P + N)^2}.$$

The classification of TP, FN, etc. was based on ROC analyses described in Section 4.1.3.3,

Table 4.4. Expected accuracy takes the rate of randomly correct classification into account (Cohen 1960; Ben-David 2008). The higher Cohen’s kappa, the higher the agreement between the true outcome and the predicted classification.

Due to the imbalance of the data set,<sup>77</sup> I also performed data balancing using the Random Over-Sampling Examples (ROSE) method. This method deals with data imbalance for binary classification by generating a synthetic balanced sample. This is done by combining over- and undersampling techniques and generating an augmented training data set.<sup>78</sup>

After creating a balanced training data set, the training model, here the 2014 model, was fitted to the balanced data. The outcome of this model was then tested on the (imbalanced) test data set, here the 2015 data. The same key indicators and Cohen’s kappa were computed based on the (mis-) classification of the new predicted risks. This was done by using the R package `ROSE` with the command `ROSE` (Lunardon, Menardi, and Torelli 2014).

## 5.2 Results

### 5.2.1 Descriptive analysis

In this section, I presented the results of the descriptive analysis. First, I displayed the number of breakoffs by survey page, separately by U of M affiliation and survey year. In Figure 5.1, one sees the number of breakoffs on the y-axis and the survey page in questionnaire order on the x-axis.<sup>79</sup> The green lines represent the 2014 survey year, and the purple line represent the 2015 survey year. Figure 5.1A shows the number of breakoffs for faculty and staff, and Figure 5.1B shows the number of breakoffs for students in each survey year. Unsurprisingly, for both affiliations and both survey years, the highest number of breakoffs occurred after the first three survey pages: there were about 30 breakoffs each year for faculty and staff respondents after the welcome page; about 23 breakoffs after the consent page; and about 14 breakoffs after the first question page. For students, the numbers are even more striking: up to 150 respondents quit the questionnaire after the first survey page (welcome page); up to 50 respondents quit after the consent

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<sup>77</sup>Only 0.3% of all questionnaire pages are breakoff pages. See Table 5.1 for details.

<sup>78</sup>See Lunardon, Menardi, and Torelli (2014) and Menardi and Torelli (2014) for more details.

<sup>79</sup>Note that due to the data collection process the actual breakoff page was not included in the data set. Therefore, the graphs show the survey page number of the page the breakoff respondent saw right before they quit.

page; and up to 40 after the first question page. One can clearly see how the number of breakoffs decreased over time for both affiliations in both survey years, while none of the other question pages stood out in the graphs. Clearly, students broke off in much higher numbers than faculty and staff respondents, but based on Table 4.1, there were also twice as many student respondents. To account for this unbalanced sample design, one needs to focus on the breakoff rate, rather than the breakoff frequency.



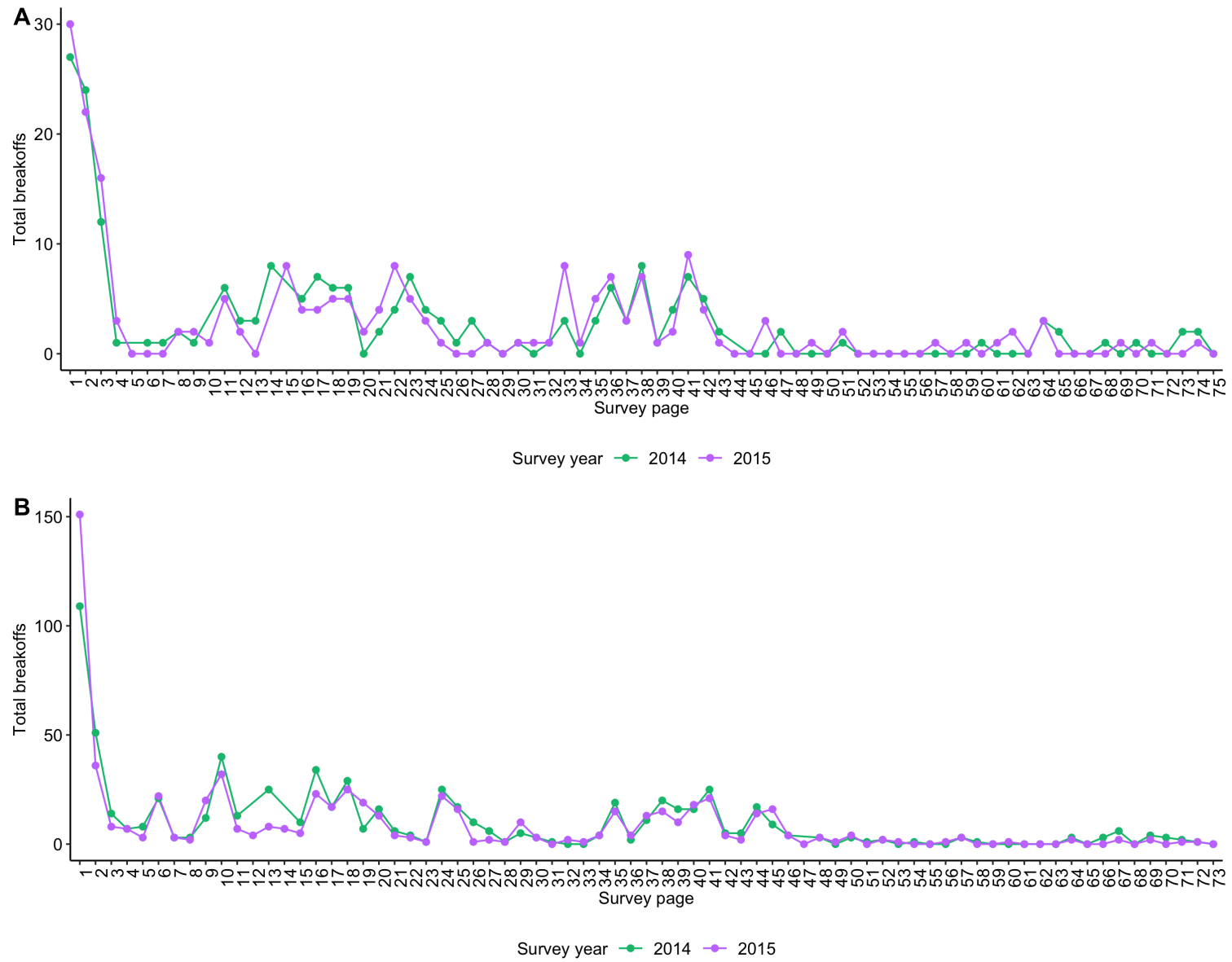


Figure 5.1: Number of breakoffs by survey page, survey year, and U of M affiliation (A = faculty/staff, B = student)

Therefore, I displayed the survival rate based on the Kaplan-Meier estimation in Figure 5.2. Kaplan-Meier estimations focus on rates rather than frequencies, and account for the individual page sequencing of each respondent  $p_i$ , rather than the survey page number  $p_{survey}$ . Thus, Figure 5.2 shows the number of pages seen by the respondent on the x-axis, while the y-axis shows the survival probability.<sup>80</sup> Once again, this was separated by U of M affiliation with the red line representing faculty and staff respondents, and the blue line representing student respondents. The whiskers in each line represent the censored observations (i.e., respondents who completed the questionnaire). Thus, the first respondent completed the questionnaire after seeing 39 survey pages.<sup>81</sup> The shading of each line represents the 95% confidence band indicating the uncertainty of the Kaplan-Meier estimation at each page. One clearly sees that the confidence bands become wider throughout the questionnaire suggesting higher uncertainty for the estimated survival probabilities. This rise in uncertainty is because there were less respondents answering the questionnaire at pages 60-80 than there were at pages 1-20 (due to breakoffs and censored observations). The survival curve (and the 95% confidence band) for faculty/staff is constantly above the curve for students, suggesting that students quit at a higher rate throughout the questionnaire.

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<sup>80</sup>Note that the y-axis in Figure 5.2 ranges between 0.7 and 1, instead of 0 to 1. This was done to better see potential differences between the two respondent groups.

<sup>81</sup>This is unusual for survival analyses, because censoring is typically possible at any point of the study.

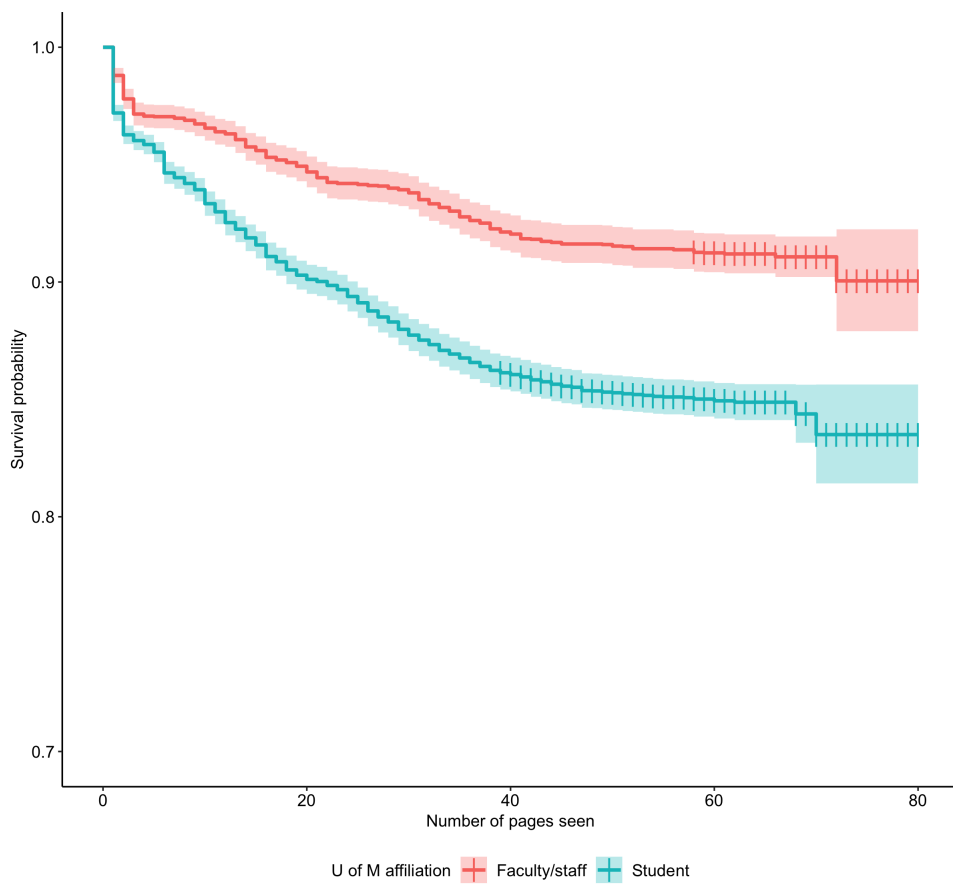


Figure 5.2: Kaplan-Meier survival curves by U of M affiliation (incl. 95% confidence bands)

## 5.2.2 Survival analysis

Next, I investigated web survey breakoff at the page level. All variables introduced in Section 5.1.1 are included in the model as independent covariates. I first fitted a Cox survival model with page variant covariates only (Equation 5.5, *simple model*) and the variable “number of pages seen until breakoff” as the dependent variable.<sup>82</sup> I then tested each covariate for the proportional hazards assumption. For all covariates that failed the test, I introduced a page variant coefficient in the extended model (Equation 5.7, *final model*). All models were fitted separately for each of the survey years 2014 and 2015. Table 5.4 displays the results of the final Cox survival models. The results of the simple models (models without page variant coefficient) are displayed in Appendix A, Table A.4. The respective test for the proportional hazards assumption can be found in the Appendix A, Table A.5.<sup>83</sup>

In Table 5.4, I displayed the results of the final model, which included page variant covariates, as well as page variant coefficients. Columns 2 and 4 show the coefficients and their levels of significance for the years 2014 and 2015, respectively. Columns 3 and 5 display the standard errors for each estimated coefficient for both survey years.<sup>84</sup>

Table 5.4: Coefficients and standard errors of the final page-level Cox survival model with page variant covariates and coefficients and the variable ‘number of pages seen until breakoff’ as the dependent variable separated by survey year

|  | Survey year 2014 |            | Survey year 2015 |            |
|--|------------------|------------|------------------|------------|
|  | Coefficients     | Std. error | Coefficients     | Std. error |
| <b>Non-paradata information</b>                |                  |            |                  |            |
| <b>Topic section (reference: introduction)</b> |                  |            |                  |            |
| Transportation                                 | -2.6399***       | 0.3908     | -2.9330***       | 0.3942     |
| Conservation                                   | -2.9031***       | 0.4168     | -2.7775***       | 0.4441     |
| Environment                                    | -3.7471***       | 0.4879     | -3.0397***       | 0.4940     |

<sup>82</sup>The variable "number of pages seen until breakoff" represents the actual number of pages the respondents have seen until they either quit the questionnaire or complete it (censored observation). It does not represent the number of unique survey pages seen by the respondent (i.e., if a respondent has used the previous button and has therefore seen one survey page twice, the variable "number of pages seen" increases by two pages – one for each time the respondent has seen the page).

<sup>83</sup>Additionally, I fitted all models including all possible two-way interactions (not displayed). All general findings stayed consistent.

<sup>84</sup>Note that all coefficients in the breakoff models are conditioned on responding to the survey.

Table 5.4: Coefficients and standard errors of the final page-level Cox survival model with page variant covariates and coefficients and the variable 'number of pages seen until breakoff' as the dependent variable separated by survey year (*continued*)

|  | Coefficients | Std. error | Coefficients | Std. error |
|--|--------------|------------|--------------|------------|
| Food   | -3.3661***   | 0.4371     | -3.1259***   | 0.4689     |
| Climate  | -3.9862***   | 0.4678     | -3.2494***   | 0.4926     |
| General sustainability   | -3.5441***   | 0.4617     | -3.1679***   | 0.5059     |
| Sustainability at U of M                                       | -5.1623***   | 0.5373     | -4.5524***   | 0.5815     |
| Demographics   | -5.9132***   | 0.5313     | -5.1135***   | 0.6053     |
| <b>New topic section (reference: continue current topic)</b>   |              |            |              |            |
| Begin new topic  | -0.5650***   | 0.1310     | -0.5839***   | 0.1372     |
| <b>Number of question items on...</b>                          |              |            |              |            |
| Current page   | 0.0350.      | 0.0179     | 0.0193       | 0.0193     |
| Next page  | 0.1014***    | 0.0126     | 0.1289***    | 0.0129     |
| <b>Gender (reference: male)</b>                                |              |            |              |            |
| Female   | -0.3230**    | 0.1008     | -0.1762.     | 0.1018     |
| <b>Race/ethnicity (reference: white)</b>                       |              |            |              |            |
| Asian  | 0.3684***    | 0.0884     | 0.2405*      | 0.0938     |
| Black  | 0.3578*      | 0.1577     | 0.5455***    | 0.1417     |
| Hispanic   | 0.4282**     | 0.1557     | 0.2483       | 0.1618     |
| Other race   | 0.2200       | 0.1918     | -0.1394      | 0.2146     |
| Missing race   | -0.1963      | 0.1368     | 0.2518*      | 0.1194     |
| <b>U of M affiliation (reference: faculty/staff)</b>           |              |            |              |            |
| Student  | 0.7757***    | 0.1322     | 1.0516***    | 0.1335     |
| <b>Panel membership (reference: non-panel member)</b>          |              |            |              |            |
| Panel member   | -0.3189.     | 0.1859     | -0.8723***   | 0.2068     |
| <b>Paradata information</b>                                    |              |            |              |            |
| <b>Response history (reference: no previous participation)</b> |              |            |              |            |
| Previous complete  | -0.5407***   | 0.1463     | -0.0844      | 0.1226     |
| Previous breakoff  | 0.1264       | 0.2865     | 0.6490*      | 0.2548     |
| <b>Response latency (reference: no reminder sent)</b>          |              |            |              |            |
| Reminder sent  | 0.2182**     | 0.0676     | 0.1510*      | 0.0693     |

Table 5.4: Coefficients and standard errors of the final page-level Cox survival model with page variant covariates and coefficients and the variable 'number of pages seen until breakoff' as the dependent variable separated by survey year (*continued*)

|   | Coefficients | Std. error | Coefficients | Std. error |
|---|--------------|------------|--------------|------------|
| <b>Answering device (reference: non-mobile)</b>                 |              |            |              |            |
| Mobile  | 0.2047       | 0.1343     | 0.1418       | 0.1255     |
| <b>New session (reference: continue current session)</b>        |              |            |              |            |
| Start new session   | 0.4757       | 0.3888     | 0.1043       | 0.4108     |
| <b>Navigation (reference: next button)</b>                      |              |            |              |            |
| Previous button   | -0.6443      | 0.6004     | 0.8652.      | 0.4877     |
| <b>Item nonresponse rate</b>                                    |              |            |              |            |
| Item nonresponse rate   | 1.8899***    | 0.1693     | 1.8655***    | 0.1786     |
| <b>Straightlining</b>   |              |            |              |            |
| Answer variability  | 0.0652       | 0.0602     | -0.0145      | 0.0685     |
| <b>Scrolling</b>  |              |            |              |            |
| Number of scrolls   | 0.0315       | 0.0223     | 0.0574*      | 0.0223     |
| <b>Extreme response times (reference: normal response time)</b> |              |            |              |            |
| Short response time   | 0.3646***    | 0.0941     | 0.2282*      | 0.0949     |
| Long response time  | 0.1566       | 0.0974     | 0.1072       | 0.0879     |
| <b>Response time changes</b>                                    |              |            |              |            |
| Speeding up   | 0.3129**     | 0.1155     | 0.2147.      | 0.1224     |
| Slowing down  | 0.6144***    | 0.0950     | 0.6482***    | 0.1003     |
| <b>Page variant coefficients</b>                                |              |            |              |            |
| Female(t)   | 0.0195***    | 0.0048     | 0.0161**     | 0.0050     |
| Student(t)  | -0.0151*     | 0.0059     | -0.0224***   | 0.0059     |
| Panel(t)  | 0.0075       | 0.0097     | 0.0219*      | 0.0095     |
| Mobile(t)   | 0.0209***    | 0.0055     | 0.0108.      | 0.0057     |
| Previous(t)   | -0.0619      | 0.0380     | -0.1225**    | 0.0413     |

Note: Significance levels: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ , .  $p < 0.1$

Next, I interpreted every estimated parameter in the model. I first focused on the results in Table 5.4 and then investigated the relationship of the risk of breaking off and each covariate based on the predicted survival probability by plotting the survival probability by the number of pages seen for each variable. Each plot shows the predicted survival probabilities on the y-axis and the number of survey pages seen on the x-axis. As I fitted two different models for 2014 and 2015, there are two different plots for each variable that display the predicted survival probabilities of each year separately.

**Topic section.** Compared to the introduction, all other topics decreased the risk of breaking off. This indicated the high frequency of breakoffs during the first survey pages (introduction breakoff). This is confirmed by the first set of predicted survival probabilities (Figure 5.3), where I displayed the association of all topic sections with the survival probability of a given respondent by the number of pages seen.<sup>85</sup> Panel A displays the results of the survey year 2014, and panel B displays the results of 2015. One can clearly see that responding to the introduction section (red lines) was negatively associated with the survival probability, especially given the more pages the respondents had seen. Respondents facing any other topic section had very stable survival probabilities throughout the questionnaire.

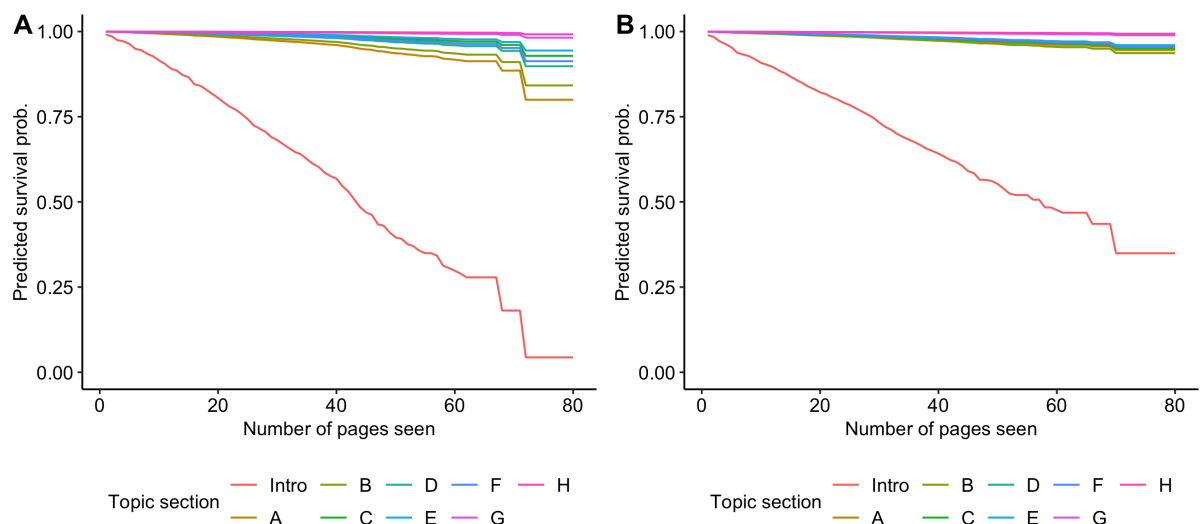


Figure 5.3: Predicted survival probabilities for topic section by survey year (A = 2014, B = 2015)

<sup>85</sup>The abbreviations in the legends represent the following topic sections: Intro = introduction, A = transportation, B = conservation, C = environment, D = food, E = climate, F = general sustainability, G = sustainability at the University of Michigan, H = demographics.

**New topic section on next page.** If respondents were about to start a new topic section (i.e., the next page they would see started a new topic), they were less at risk of quitting the questionnaire. Respondents facing a new topic on the next page were up to  $(1 - \exp(-0.5839)) * 100\% = 43\%$  at lower risk of quitting the questionnaire on the next page than respondents who continued with the same topic. This is also confirmed in Figure 5.4: respondents who continued with the topic (red lines) on the next page they saw, showed lower survival probability in both survey years, than respondents who started a new topic section (blue lines).

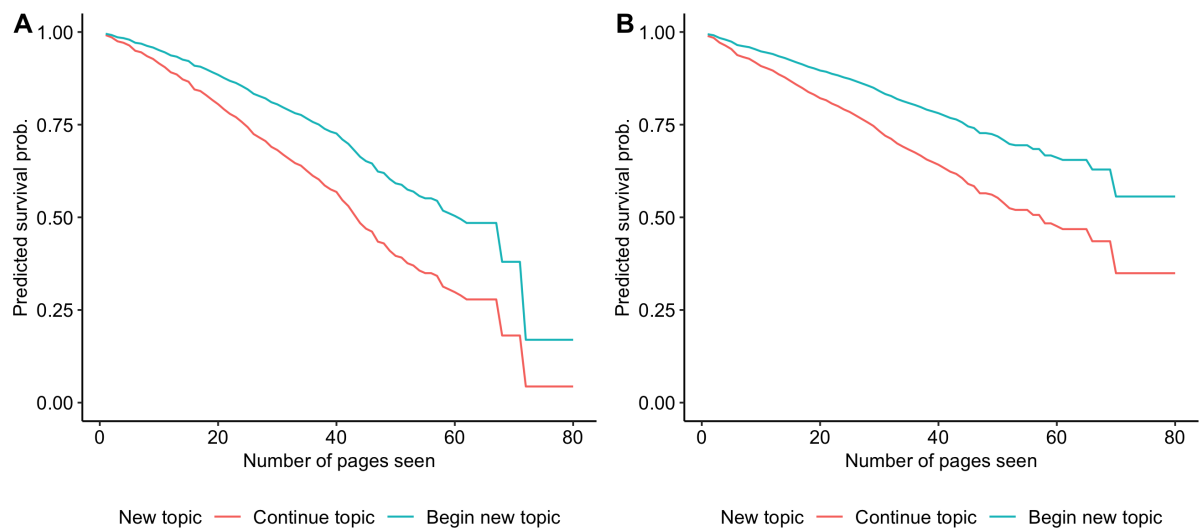


Figure 5.4: Predicted survival probabilities for starting a new topic section by survey year (A = 2014, B = 2015)



**Number of question items.** This variable has two parts: the number of items on the current page seemed and the number of items on the next page. The number of items on the current did not have a significant association with the risk of breaking off on the next page. Figure 5.5A and Figure 5.5B show the survival probabilities for the current page presenting 1, 5, 10, or 15 question times to the respondent. Even though it seems as if there is a negative relationship with the number of question items on the current page and the survival probability (the purple line indicating 15 question items on the current page is always the lowest curve), the lines are very close.

The number of question items presented on the next survey page increased the risk of quitting on the next page by up to  $(\exp(0.1289) - 1)100\% = 13\%$  for each additional question item. This is confirmed in Figure 5.5C and Figure 5.5D. The lines are relatively far apart, indicating the lowest survival probability for next pages showing 15 question items.

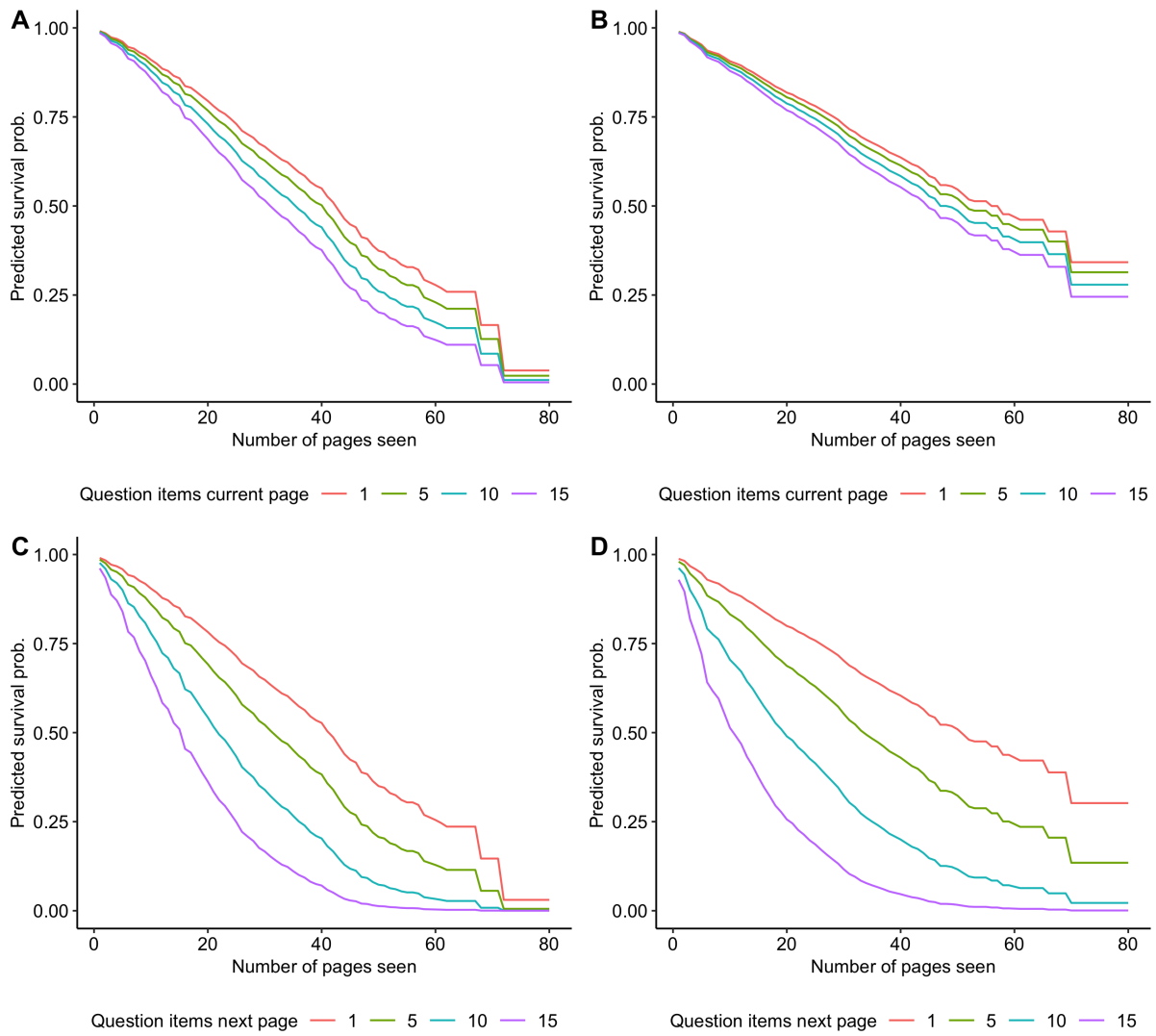


Figure 5.5: Predicted survival probabilities for number of question items on current and previous page by survey year (A/C = 2014, B/D = 2015)

**Gender.** With the reference category male, Table 5.4 indicates that females were up to  $(1 - \exp(-0.3230)) * 100\% = 27\%$  less at risk of breaking off on the next page. But looking at the page variant coefficient in Table 5.4 reveals that the coefficient of the main effect does not tell the full story: the page variant coefficient (female(t)) was positive for both years, indicating that the differences between men and women changed over the course of the questionnaire. This is confirmed when looking at Figure 5.6. Both figure panels show the clear violation of the proportional hazards assumption as the red (male) and blue (female) lines cross at one. This means that female respondents show higher survival probability at the beginning of the questionnaire (blue lines above red lines) but eventually perform worse than male respondents (blue line below red line).

This finding is confirmed by Figure 5.7, which displays the development of the estimated coefficient and the confidence band for the category female by the number of pages seen separately by survey year (green for 2014 and purple for 2015). The x-axis shows the number of pages seen, while the y-axis shows the range of the coefficient for being female over the course of the questionnaire. The dotted lines represent the estimated coefficient if the model did not include page variant coefficients for this variable (i.e., the dotted lines present the result of the simple Cox survival model in Appendix A, Table A.4). So the relationship between “female” and “next page is a breakoff page” depends on the number of pages seen. At the beginning of the questionnaire, females showed a negative association with the risk of breaking off (both solid lines start with the y-value being negative). This association decreased and even reversed by the end of the questionnaire resulting in females being more at risk of quitting the questionnaire than males.

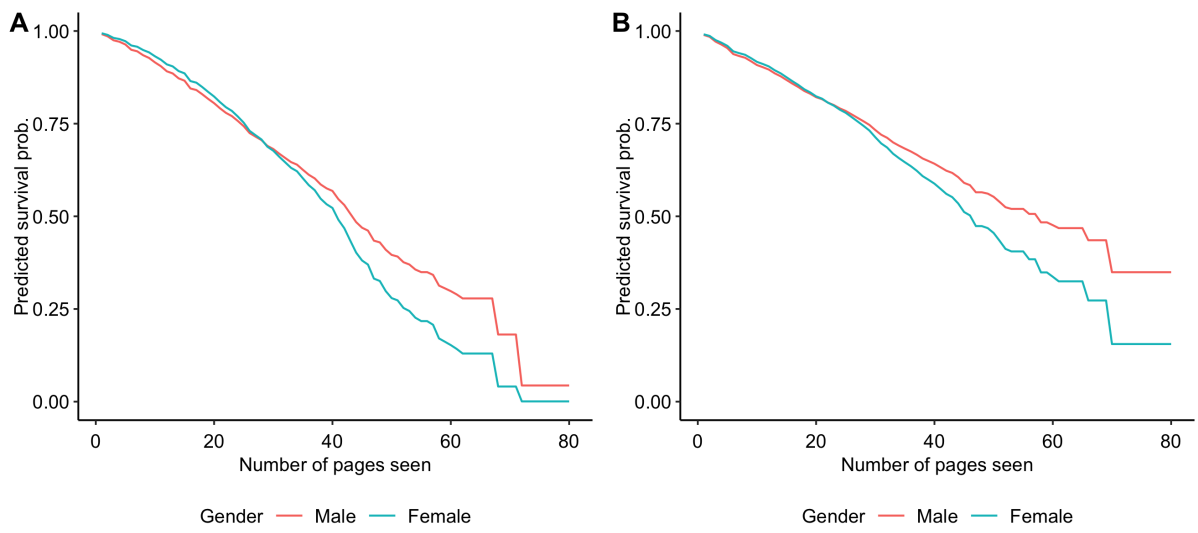


Figure 5.6: Predicted survival probabilities for gender by survey year (A = 2014, B = 2015)

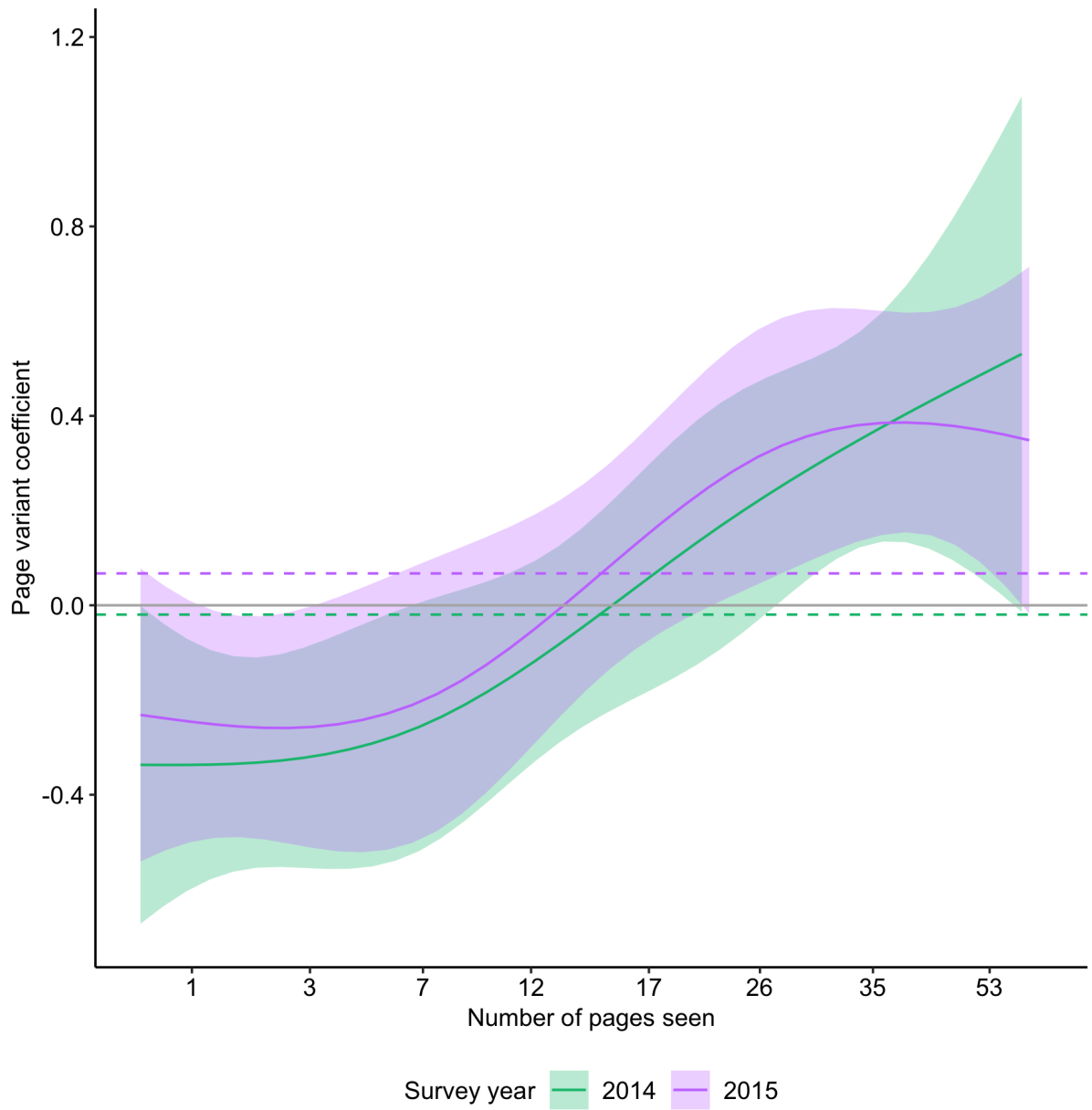


Figure 5.7: Page variant coefficient for gender by survey year (incl. 95% confidence bands)

**Race/ethnicity.** Table 5.4 shows that all other races compared to White had a higher risk of breaking off. This is confirmed by investigating the predicted survival probabilities in Figure 5.8: especially Black respondents represented by the green line showed the lowest survival probability in both survey years.

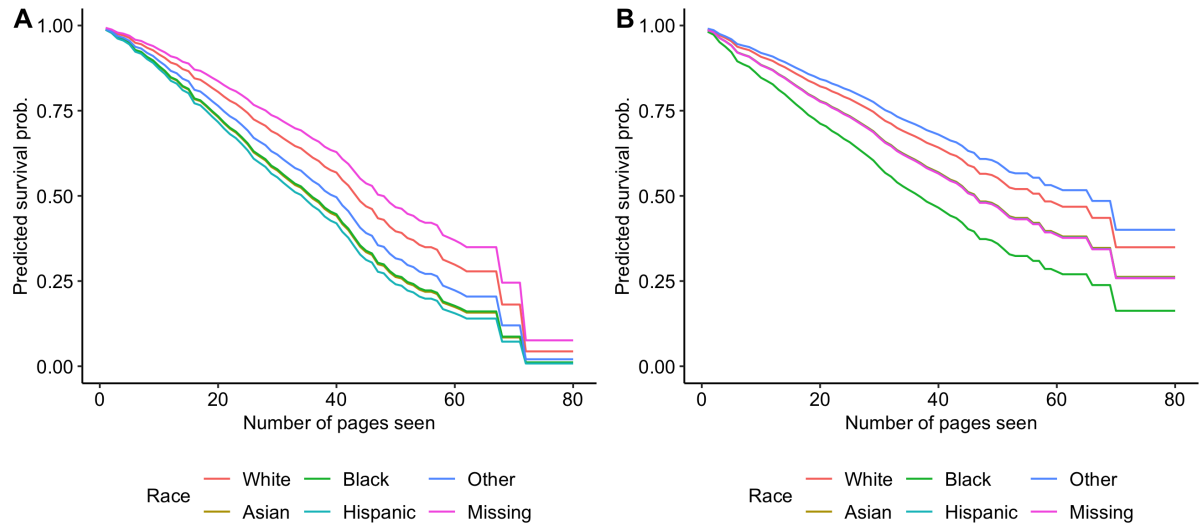


Figure 5.8: Predicted survival probabilities for race/ethnicity by survey year (A = 2014, B = 2015)

**U of M affiliation.** Students were up to  $(\exp(1.0516) - 1) * 100\% = 186\%$  more at risk of quitting the questionnaire than faculty/staff. This finding is generally confirmed in Figure 5.9: the blue line for students showed lower survival probabilities than the red line for faculty and staff respondents in both panels. But Figure 5.9 also clearly shows the violation of the proportional hazards assumption, since the blue and red lines are not parallel to one another, especially in Figure 5.9B. Over the course of the questionnaire, the negative relationship between being student respondents and the risk of breaking off became stronger, leading to ever lower survival probabilities for students when compared to faculty and staff respondents in the middle of the questionnaire. This finding is confirmed by Figure 5.10. Again, I displayed the development of the coefficient for student, and the confidence bands by the number of pages seen separately for both survey years. The green line and confidence bands represent survey year 2014, and the purple line and confidence bands present survey year 2015. The dashed lines indicate the estimated coefficient if the page dependency of the variable is ignored (Appendix A, Table A.4). So the students had higher breakoff risks at the beginning and in the middle of the questionnaire compared to faculty/staff respondents. By the end of the questionnaire, there was no breakoff risk difference between faculty and staff respondents and student respondents.

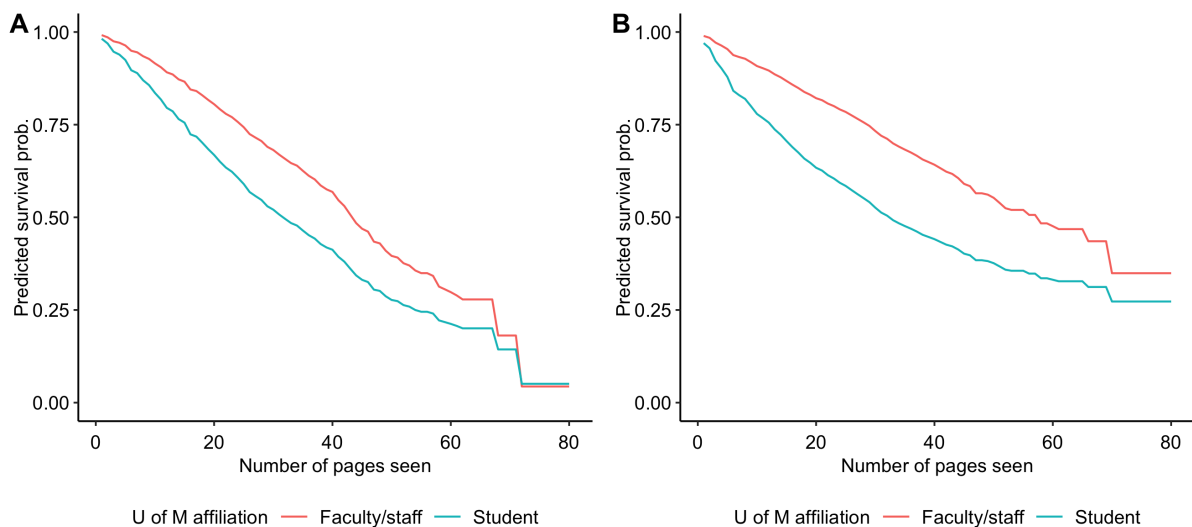


Figure 5.9: Predicted survival probabilities for U of M affiliation by survey year (A = 2014, B = 2015)

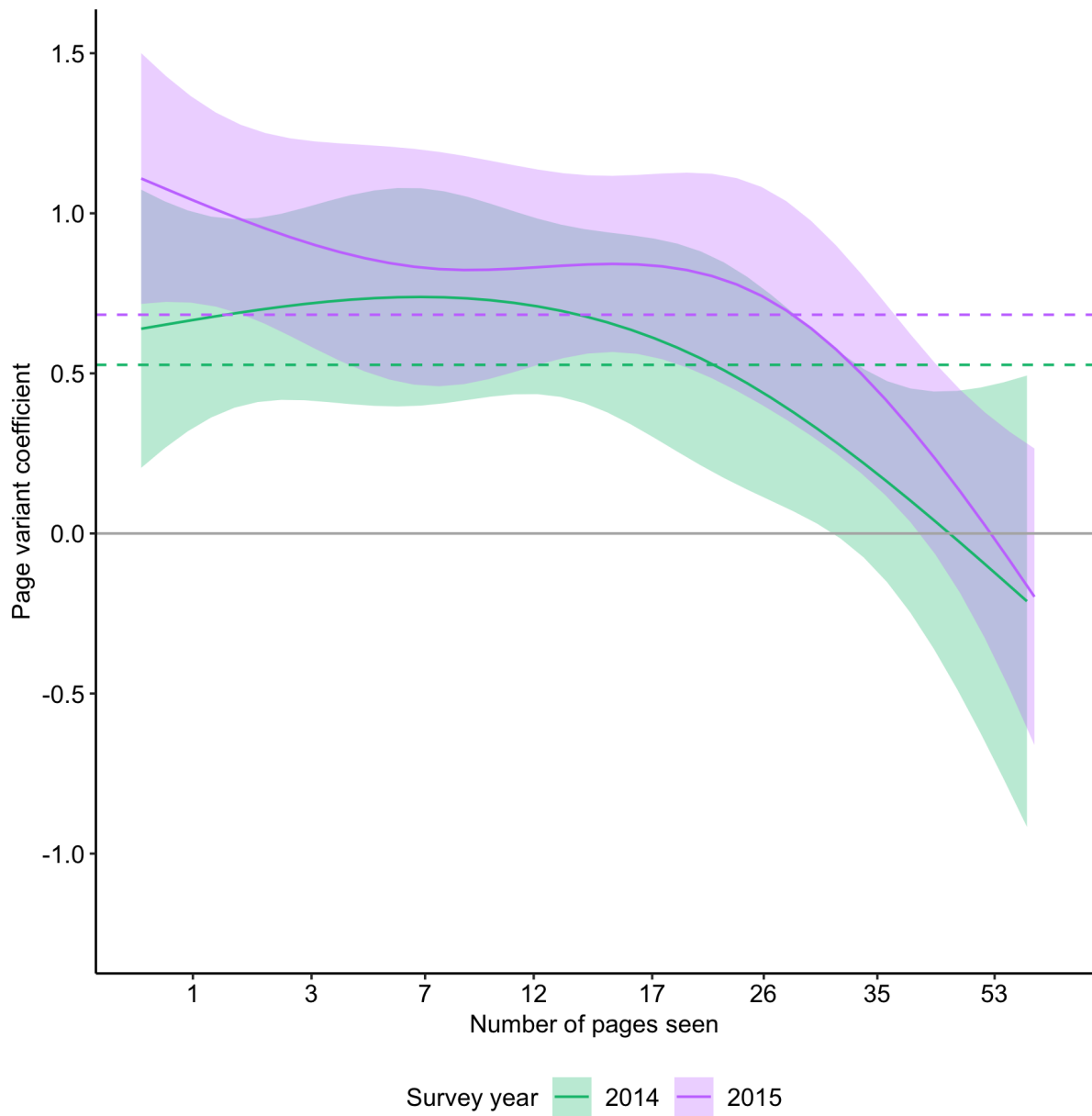


Figure 5.10: Page variant coefficient for U of M affiliation by survey year (incl. 95% confidence bands)



**Panel membership.** Being a panel member decreased the risk of breaking off significantly in both survey years. Respondents who were part of the panel condition were up to  $(1 - \exp(-0.8723)) * 100\% = 58\%$  less at risk of quitting the questionnaire on the next page than non-panel members when ignoring the page variant coefficient. As Figure 5.11 indicates the proportional hazard assumption was again violated because the blue and red lines are not parallel and eventually cross at the end of the questionnaire. This means that the negative association between panel member (blue lines) and breakoff risk decreases over time, which is confirmed by Figure 5.12. Thus, the blue lines show more decline by the end of the questionnaire than the red lines. Figure 5.12 shows the development of the coefficient for panel membership by number of pages seen separated by survey year. Even though the coefficient started out negative, indicating a negative association with breakoff risk, the estimated coefficients (green and purple solid lines) soon range around zero, indicating no breakoff risk difference between panel members and non-members by the end of the questionnaire.

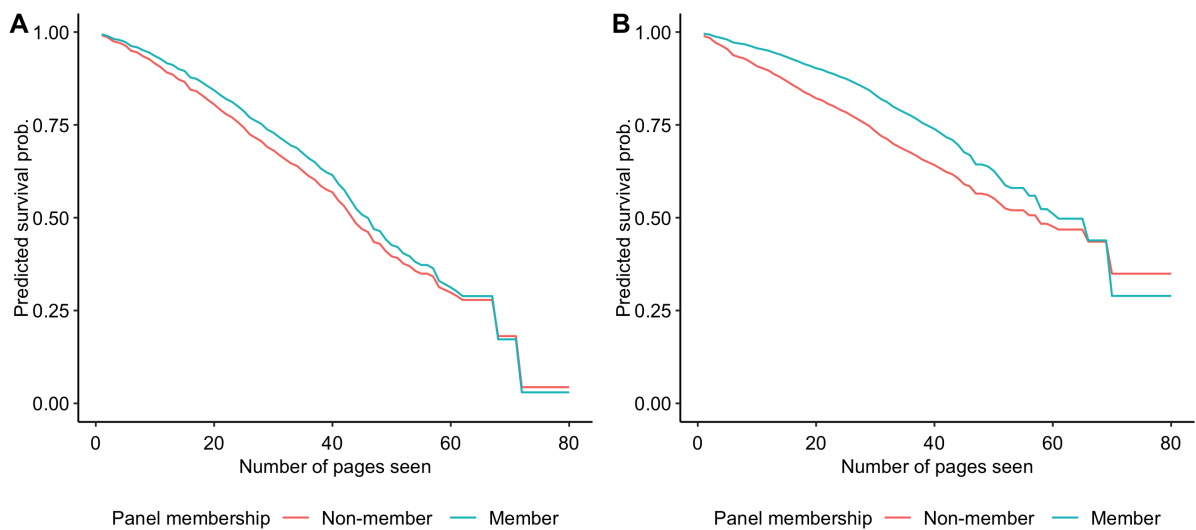


Figure 5.11: Predicted survival probabilities for panel membership by survey year (A = 2014, B = 2015)

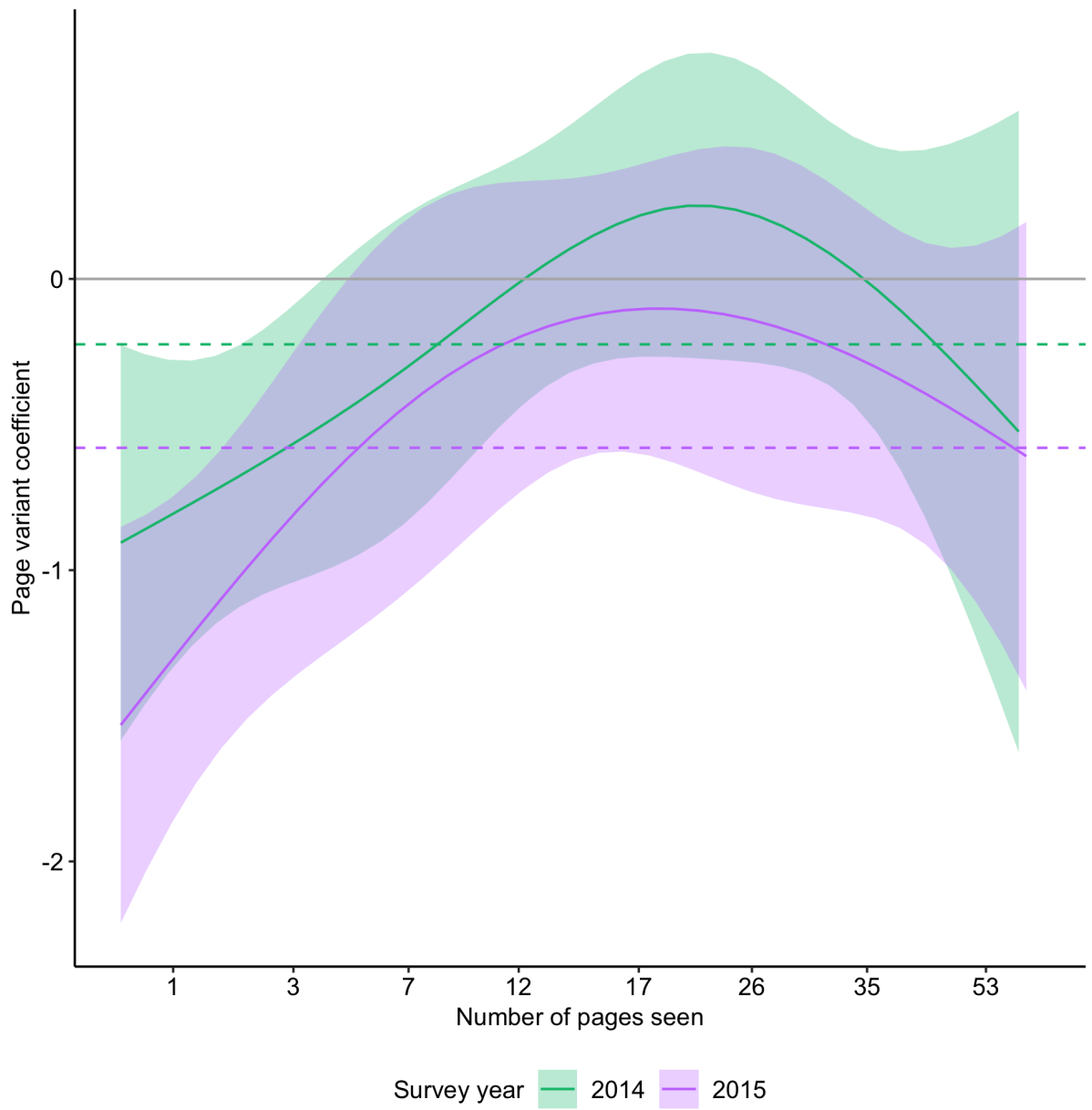


Figure 5.12: Page variant coefficient for panel membership by survey year (incl. 95% confidence bands)

**Response history.** Respondents with a positive response history were  $(1 - \exp(-0.5407)) * 100\% = 42\%$  less at risk of quitting the questionnaire on the next page compared to respondents who had not participated in the study in previous years (reference category).<sup>86</sup> Respondents who quit the questionnaire in earlier years were up to  $(\exp(0.6490) - 1) * 100\% = 91\%$  more at risk of quitting the questionnaire on the next page compared to respondents with no response history.<sup>87</sup> These findings are confirmed in Figure 5.13: the green line representing previous complete respondents showed the highest survival probability, while the blue line representing previous breakoffs showed the lowest survival probabilities in both years.

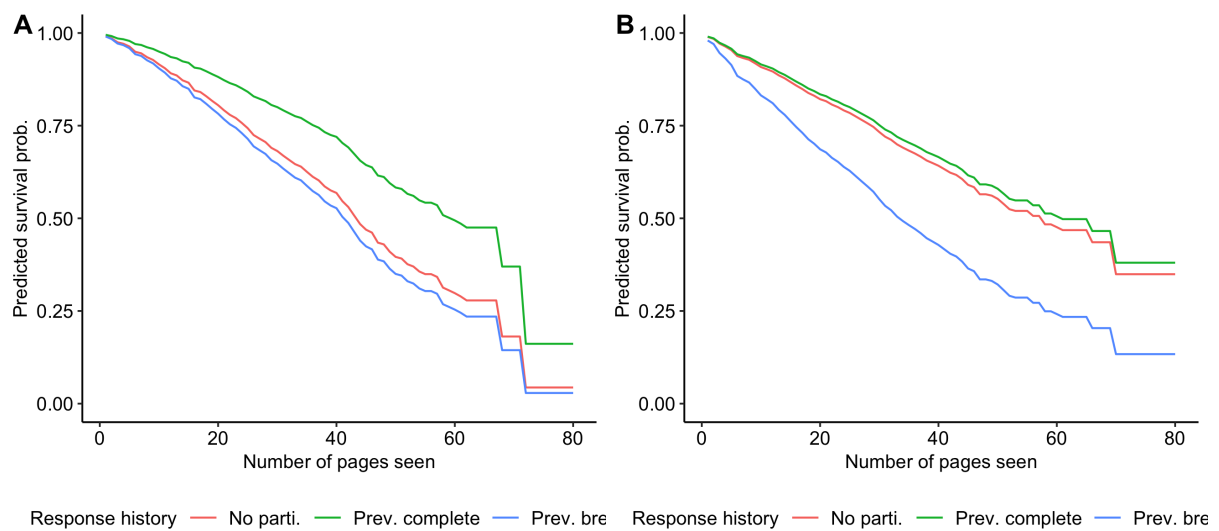


Figure 5.13: Predicted survival probabilities for response history by survey year (A = 2014, B = 2015)

<sup>86</sup>This finding was only significant in the survey year 2014.

<sup>87</sup>This finding was only significant in the survey year 2015.

**Response latency.** Not reacting to the first email invitation as opposed to reacting promptly was associated with an increased breakoff risk by up to  $(\exp(0.2182) - 1) * 100\% = 24\%$ . This finding is confirmed by Figure 5.14: respondents who had seen email reminders showed a lower survival probability in both years (blue line lower than red line).

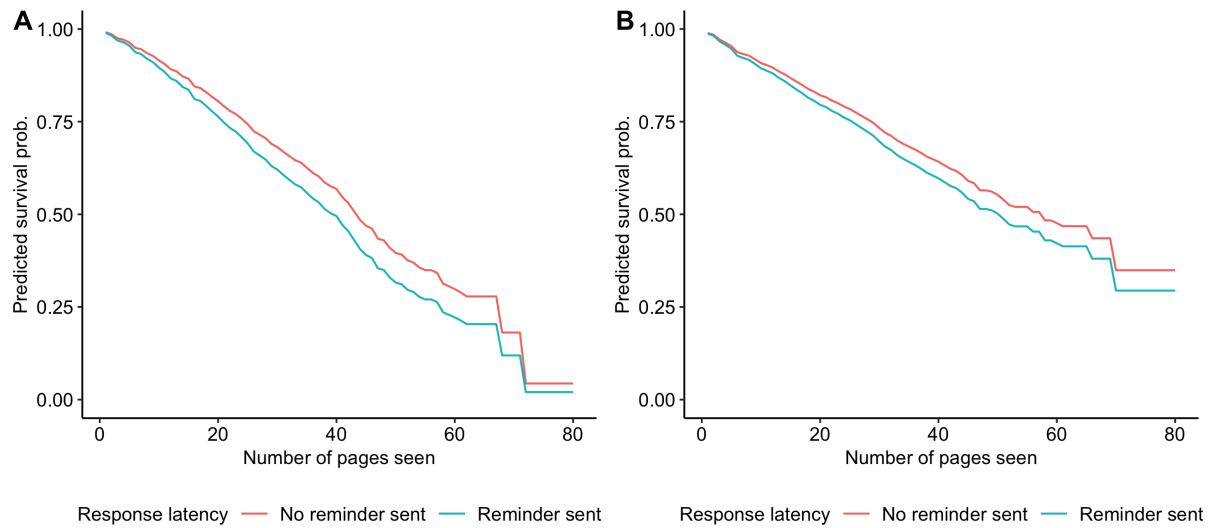


Figure 5.14: Predicted survival probabilities for response latency by survey year (A = 2014, B = 2015)

**Answering device.** As expected, using a mobile device increased the risk of breaking off on the next page in both survey years by up to  $(\exp(0.2047) - 1) * 100\% = 23\%$  when ignoring the page variant coefficient. Interestingly, this main effect was not significant at the 0.05 level. Figure 5.15 indicates that the coefficient for respondents on mobile devices increases over time which is confirmed by the page variant coefficient for mobile respondents in Table 5.4 which shows a breakoff risk increase for respondents on mobile devices of  $(\exp(0.0209) - 1) * 100\% = 2\%$  for each additional page seen. This is confirmed by Figure 5.16 where I displayed the coefficient development of “mobile” by survey page separately by survey year. At the beginning of the questionnaire, there was almost no difference between mobile and non-mobile respondents as the solid lines (green and purple) start at the zero line. By the end of the questionnaire, the coefficient for mobile devices increased. This was especially true for the survey year 2014.

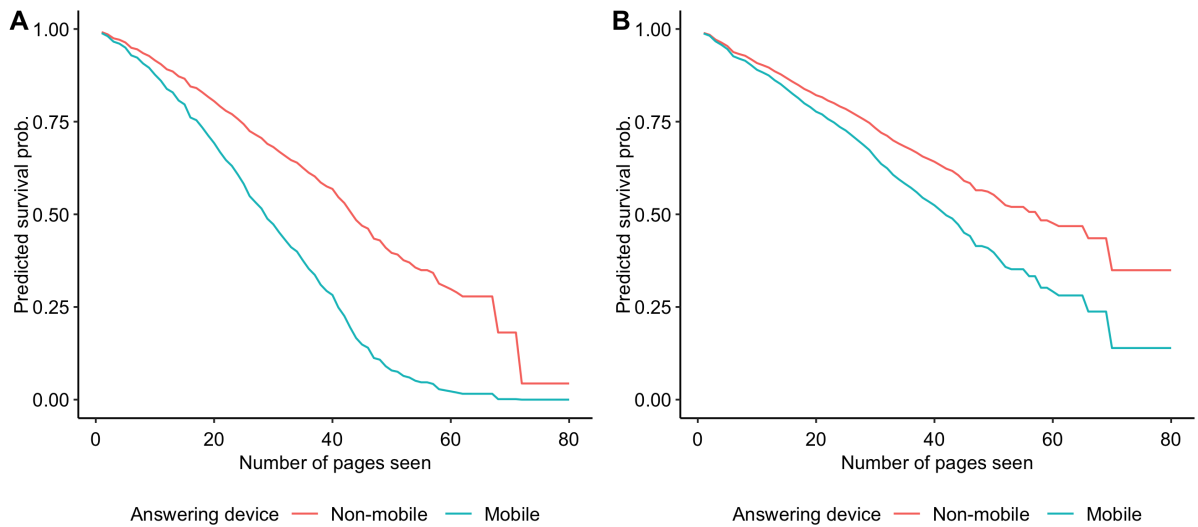


Figure 5.15: Predicted survival probabilities for answering device by survey year (A = 2014, B = 2015)

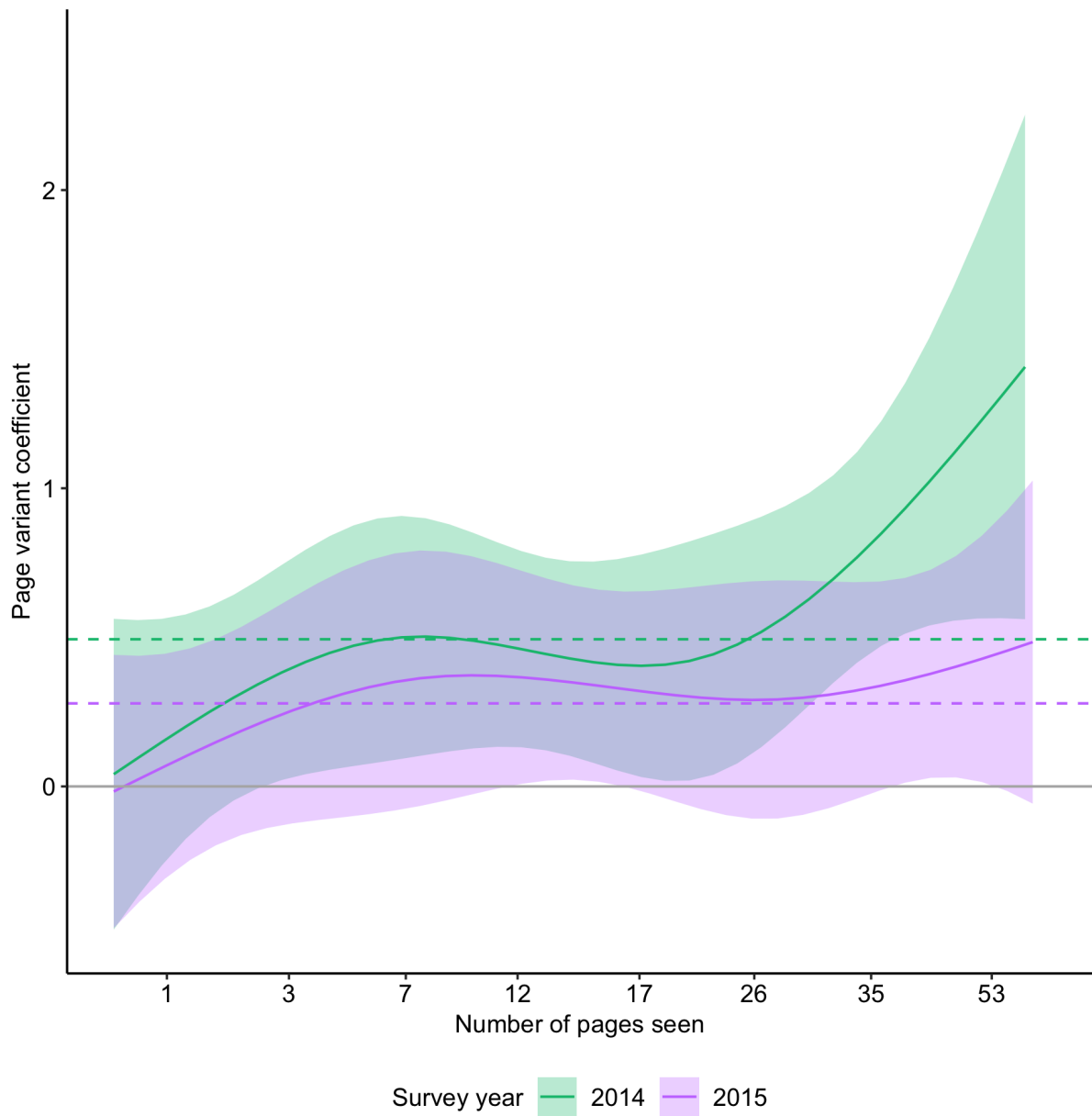


Figure 5.16: Page variant coefficient for answering device by survey year (incl. 95% confidence bands)

**New sessions.** If the current page started a new session, the respondents had a higher risk of breaking off on the next page. This coefficient is not significant at the 0.05 level in either survey year which is confirmed in Figure 5.17.

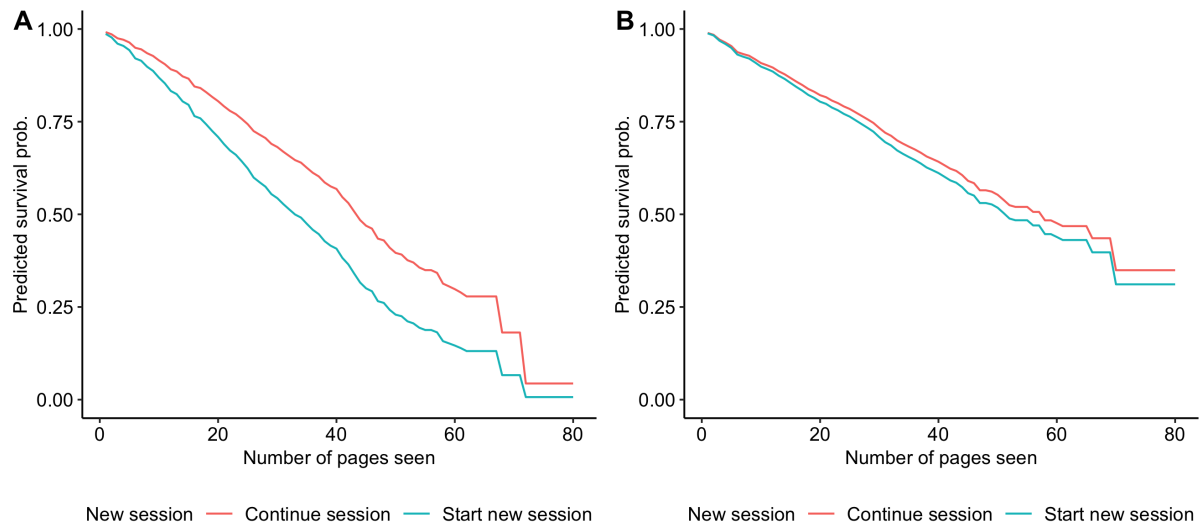


Figure 5.17: Predicted survival probabilities for starting a new session by survey year (A = 2014, B = 2015)

**Navigation.** The relationship of navigation and breakoff risk was inconsistent across years. In 2014, respondents hitting the previous button were less at risk of quitting the questionnaire on the next page, whereas in 2015, respondents hitting the previous button were more at risk of breaking off on the next page. When looking at Figure 5.18 the reasons for this become clear. In general, using the previous button was associated with higher survival probabilities (blue lines typically above red lines). But in 2015, hitting the previous button at the beginning of the questionnaire resulted in lower survival probabilities (blue line below red line). Figure 5.19 displays this result clearly. The 2015 coefficient for using the previous button starts at zero, indicating no risk differences between respondents hitting the previous button or the next button. But this quickly changes, and respondents using the previous button show higher breakoff risks. By mid-questionnaire, this association reverses indicating lower breakoff risks for respondents making use of the previous button.

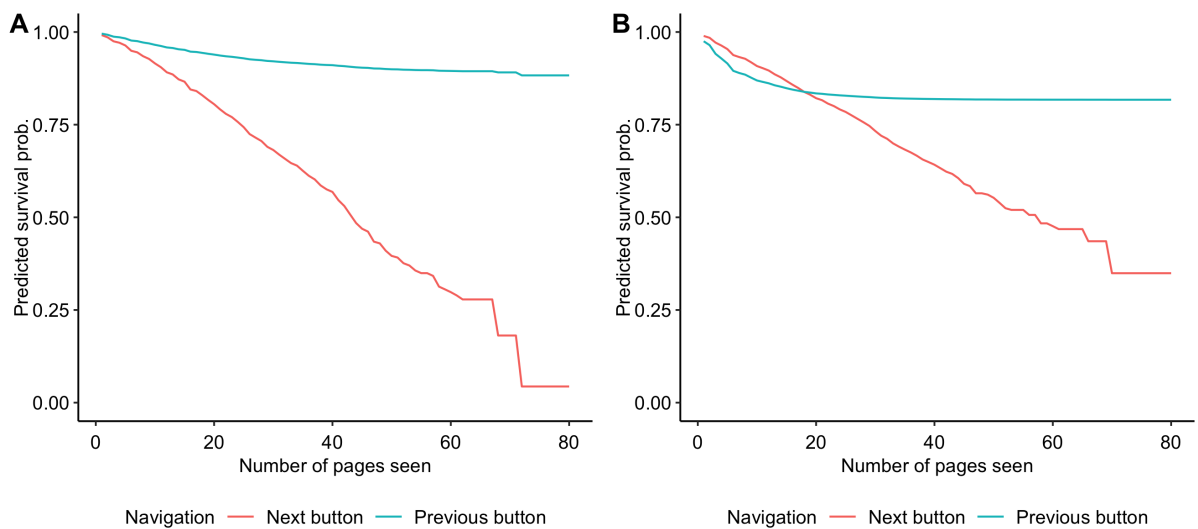


Figure 5.18: Predicted survival probabilities for using the previous button by survey year (A = 2014, B = 2015)



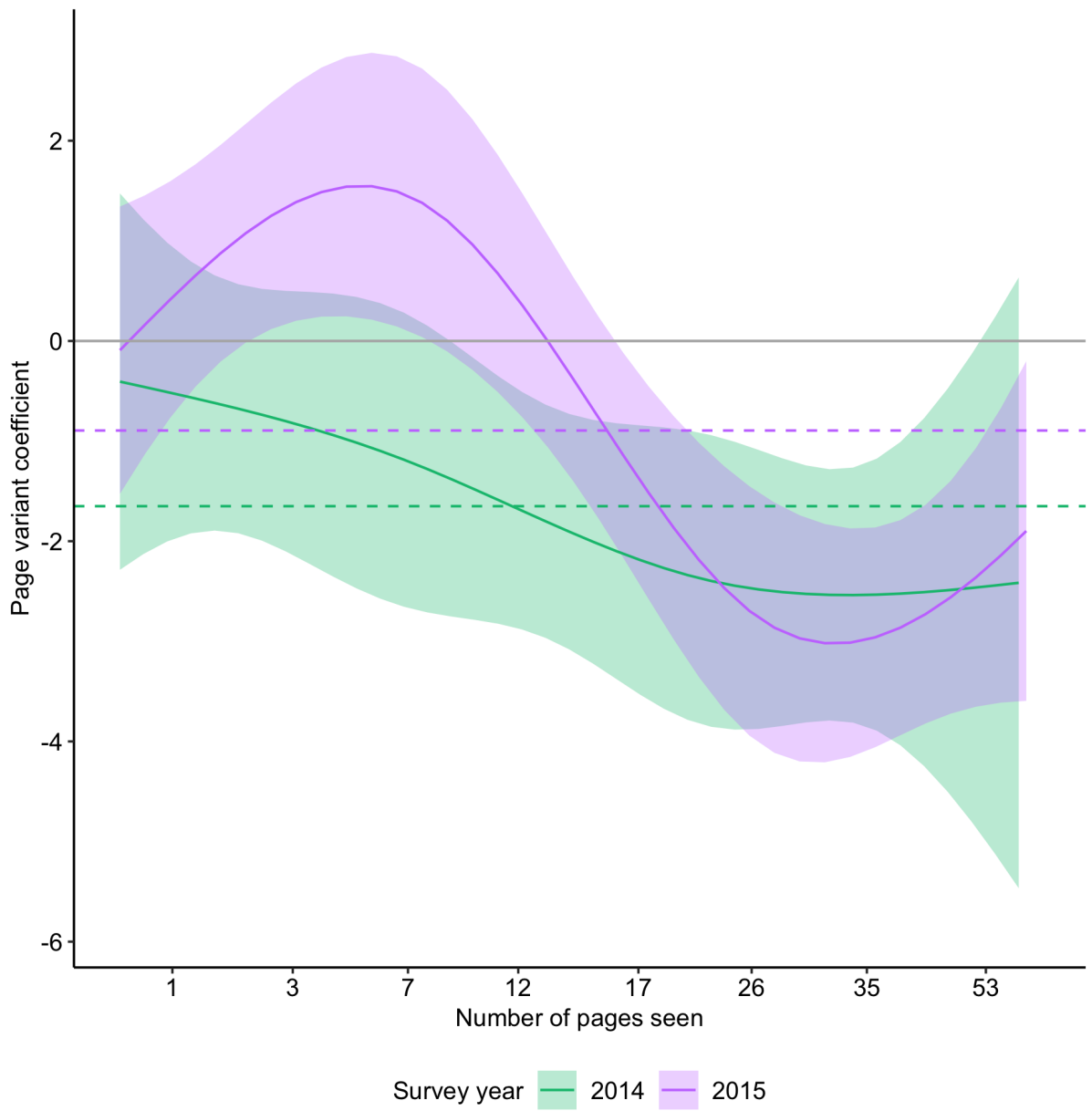


Figure 5.19: Page variant coefficient for survey navigation by survey year (incl. 95% confidence bands)

**Item nonresponse rate.** The higher the item nonresponse on the current page, the higher the risk of quitting the questionnaire on the next page. Respondents with 1% of item nonresponse increased their risk of breaking off by up to  $(\exp(1.8899) - 1) * 100\% = 562\%$ . This finding is confirmed by Figure 5.20, where the predicted survival probability constantly decreases as the item nonresponse rate increases.

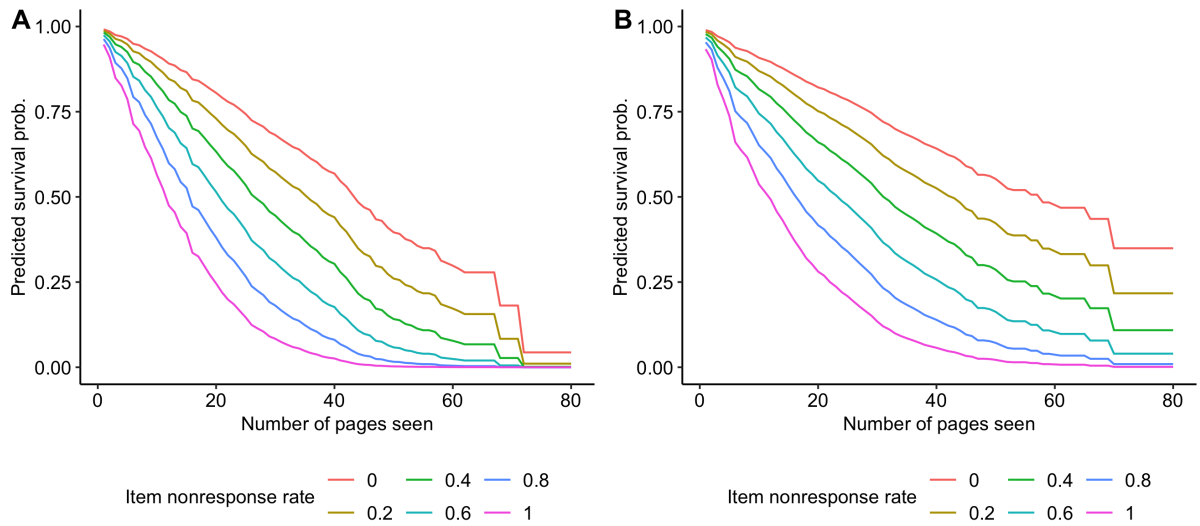


Figure 5.20: Predicted survival probabilities for item nonresponse rate by survey year (A = 2014, B = 2015)

**Answer variability.** The variability of answers on the current page was not associated with the risk of breakoff on the next page, since neither were coefficients were significant nor did the predicted survival probabilities differ in Figure 5.21.

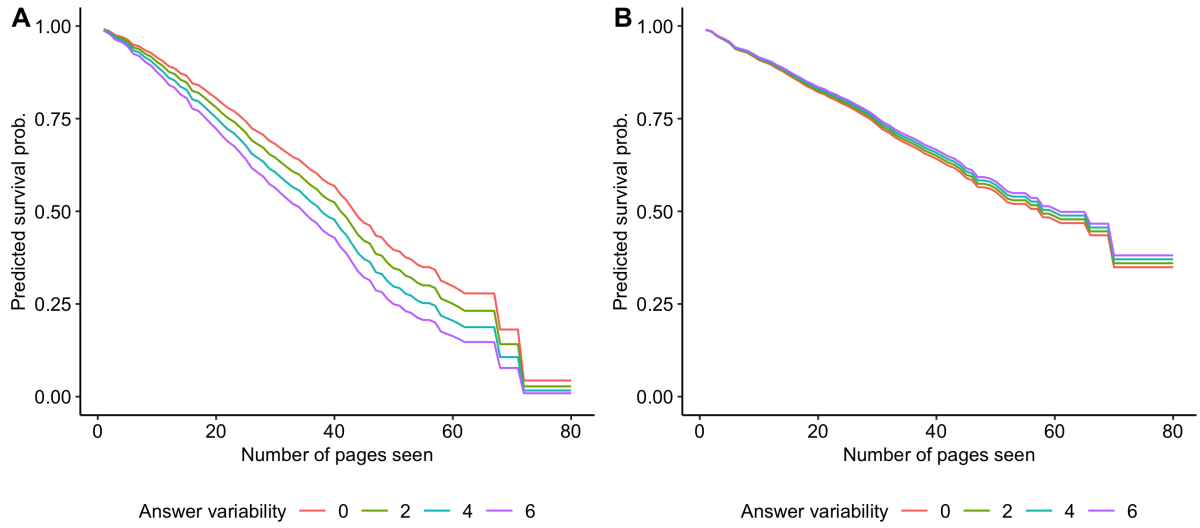


Figure 5.21: Predicted survival probabilities for answer variability by survey year (A = 2014, B = 2015)

**Scrolling.** The number of scrolls on the current page did not impact the risk of breaking off on the next page in 2014 but increased the breakoff risk in 2015 by  $(\exp(0.0574) - 1) * 100\% = 6\%$  for every additional scroll. This pattern is confirmed in Figure 5.22B in which the survival probability decreased for the every number of scrolls taken on the current page.

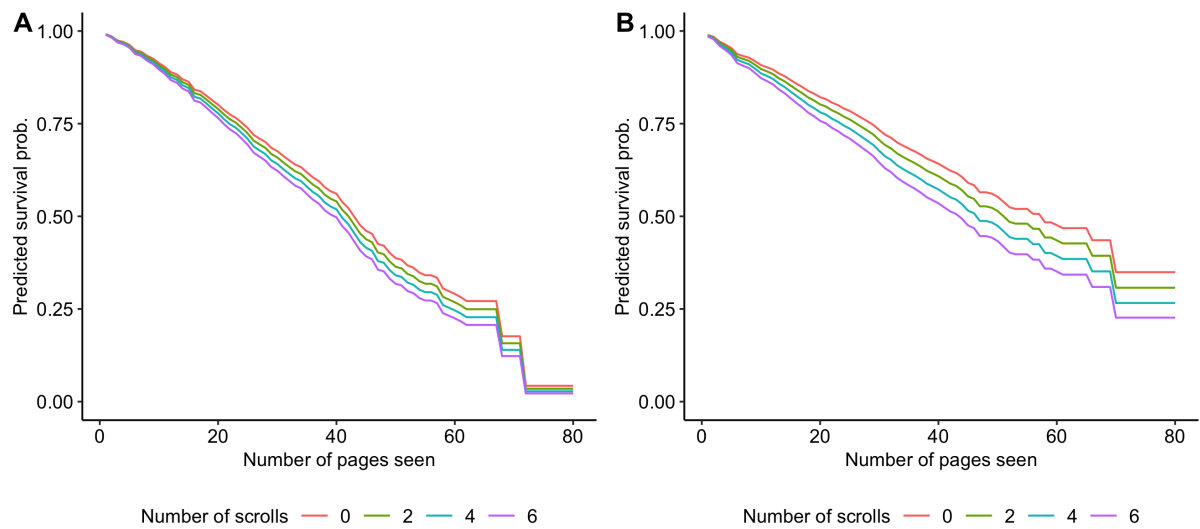


Figure 5.22: Predicted survival probabilities for number of scrolling by survey year (A = 2014, B = 2015)

**Extreme response time.** Respondents who answered the question items on the current page particularly fast were more at risk of quitting the questionnaire on the next page. Fast respondents were up to  $(\exp(0.3646) - 1) * 100\% = 44\%$  more at risk of quitting the questionnaire than respondents with “normal” response times while there was no significant difference for slow respondents. This is confirmed in Figure 5.23, which indicates that respondents with short response times (green lines) had the lowest survival probability; respondents with very long response times (blue lines) showed slightly higher survival probability; and respondents with normal response times (red lines) had the highest survival probability throughout the questionnaire in both survey years.

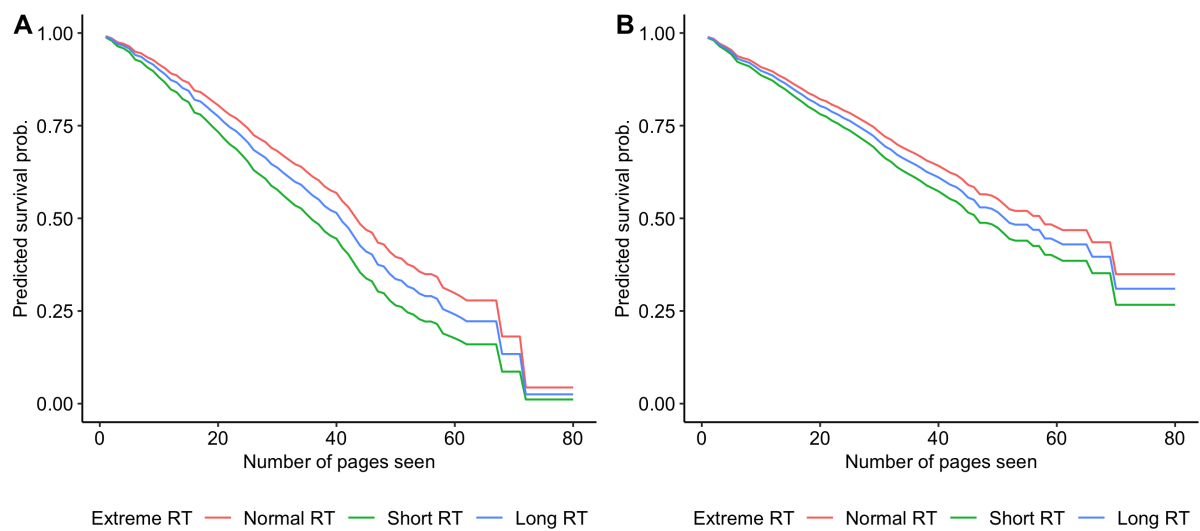


Figure 5.23: Predicted survival probabilities for extreme question response times by survey year (A = 2014, B = 2015)

**Response time change (p-3).** The more unstable the response time over the past three pages, the higher the risk of quitting the questionnaire on the next page. Respondents who slowed down over the past three pages were up to  $(\exp(0.6482) - 1) * 100\% = 91\%$  more at risk of quitting for every additional “slowing down”-unit. Respondents who sped up over the last three survey pages were up to  $(\exp(0.3129) - 1) * 100\% = 37\%$  more at risk for every additional “speeding-up”-unit. These findings are confirmed in Figure 5.24. Figure 5.24 A and B show the predicted survival probabilities for speeding up, while Figure 5.24 C and D represent the association between slowing down behavior survival probability. Respondents with the highest values in either speeding up or slowing down as represented by the pink lines had the lowest survival probability, while respondents with no response changes (red lines) had the highest survival probabilities.

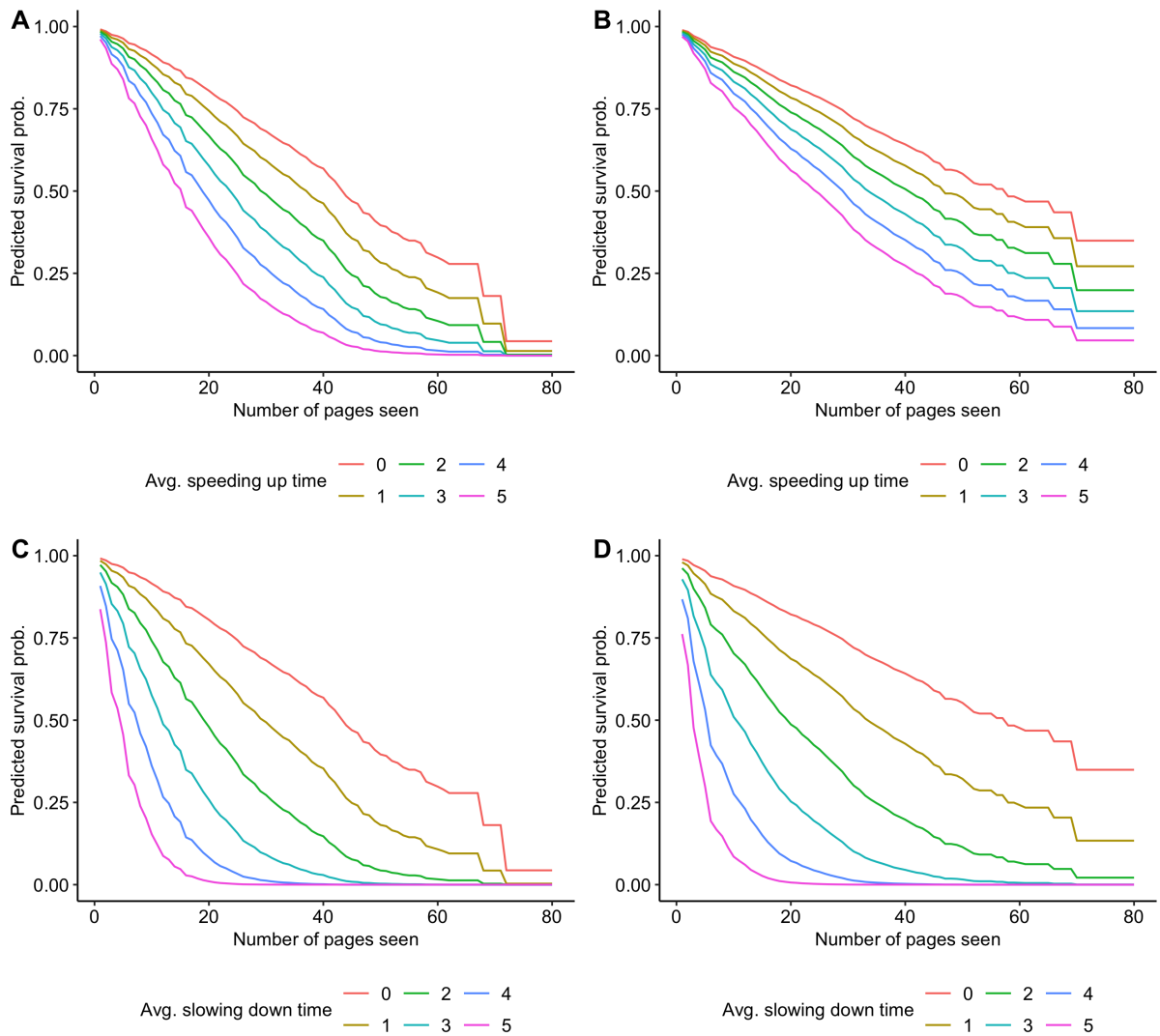


Figure 5.24: Predicted survival probabilities for speeding up (A and B) and slowing down (C and D) over the past three pages by survey year (A/C = 2014, B/D = 2015)

### 5.2.3 Predicting breakoff

Next, I evaluated the prediction power of the 2014 model by predicting page-level breakoff in the 2015 data set. As explained in Section 5.1.2.3, I first estimated the risk of breaking off on the next page for each respondent and classified each page as a *predicted breakoff page* or a *predicted non-breakoff page* using different group thresholds: one threshold for all respondents combined, two separate thresholds based on the U of M affiliation of the respondents, two separate thresholds based on the answering devices, four separate thresholds based on the interaction between affiliation and devices, and nine different thresholds based on the topic section the respondent currently faces.

Table 5.5 displays the results of the model prediction and the (mis-) classification based on the group specific Youden index. Sensitivity, or the proportion of correctly classified breakoff pages, ranged between 0.63 and 0.74. The proportion of correctly classified non-breakoff pages (specificity) ranged between 0.71 and 0.78 for the different stratification groups, indicating that non-breakoff pages were classified correctly most of the time. Trying to maximize both sensitivity and specificity rules out the stratification by topic section. Precision, or the proportion of correct positive predictions, ranged between 0.0059 and 0.0079, indicating that many pages that were classified as breakoff pages were not breakoff pages. Even though the model showed low precision, the accuracy ranged between 0.71 and 0.78, indicating that the overall classification worked fairly well – especially when I did not stratify the data set or stratified by affiliation only. When focusing on Cohen’s kappa, the conclusion of either not stratifying at all or stratifying by affiliation remains the same. This finding is confirmed by the mean AUC (the average area under the curve for all sub-groups within each stratification). No stratification or stratification by affiliation performed the best.

Table 5.5: Key indicators, Cohen’s kappa, and mean AUC for prediction power by stratification group

|               | No strata | Affiliation strata | Device strata | Affiliation*device strata | Topic strata |
|---------------|-----------|--------------------|---------------|---------------------------|--------------|
| Sensitivity   | 0.6880    | 0.6928             | 0.7295        | 0.7438                    | 0.6382       |
| Specificity   | 0.7796    | 0.7661             | 0.7258        | 0.7112                    | 0.7259       |
| Precision     | 0.0079    | 0.0075             | 0.0067        | 0.0065                    | 0.0059       |
| Accuracy      | 0.7793    | 0.7659             | 0.7258        | 0.7113                    | 0.7257       |
| Cohen’s kappa | 0.0106    | 0.0099             | 0.0084        | 0.0079                    | 0.0067       |
| Mean AUC      | 0.8089    | 0.7946             | 0.7888        | 0.7566                    | 0.6899       |

Figure 5.25 confirms the general findings: the ROC for no stratification (Figure 5.25A) and stratification by U of M affiliation (Figure 5.25B) maximized the difference between



the diagonal and the different curves, leading to higher AUCs. Especially when stratifying by affiliation\*device or by topic section, the ROC curves showed troubling results for faculty on mobile devices (red line in Figure 5.25D). The model was not able to classify breakoff and non-breakoff questions correctly when excluding this respondent group.

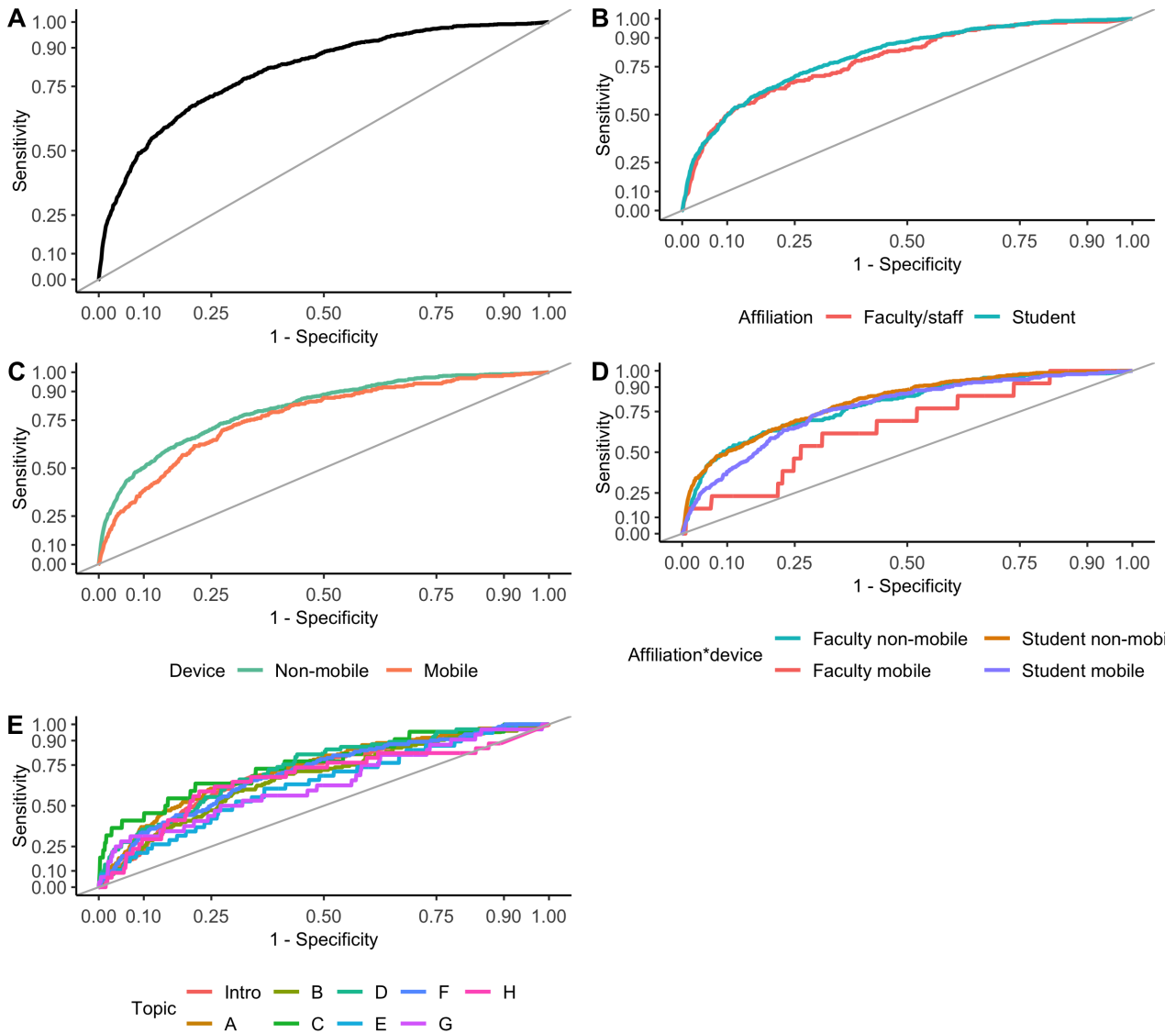


Figure 5.25: ROC curves by stratification group (A = no stratification, B = U of M affiliation, C = answering device, D = affiliation \* device, E = topic section)

As previously mentioned, I performed data balancing using the Random Over-Sampling Examples (ROSE) method, which combines over- and undersampling techniques and generates a balanced data set with a 1:1 ratio between breakoff and non-breakoff pages.<sup>88</sup>

<sup>88</sup>See Lunardon, Menardi, and Torelli (2014) and Menardi and Torelli (2014) for more details.

The training model was then fitted to the balanced data set and tested on the imbalanced testing data set. Appendix A, Table A.6 shows the key indicators of the prediction outcome. In summary, no stratification and stratification by U of M affiliation perform the best, confirming the conclusions of the unbalanced analysis.

### 5.3 Conclusion

This chapter explored web survey breakoff at the page level by first investigating breakoff behavior using descriptive analysis and finding that aside from the first three questionnaire pages, no pages showed particularly high numbers of breakoffs. For both U of M affiliation groups, the number of breakoffs decreased the further along respondents progressed in the questionnaire, though students showed a higher number of breakoffs throughout the questionnaire (Figure 5.1). This is confirmed by the Kaplan-Meier analysis (Figure 5.2), showing that student respondents had a lower survival probability than faculty respondents.

The largest contribution to the growing literature in web survey breakoff was to evaluate respondents' characteristics and, most significantly, their response behavior right before the breakoff occurred. To achieve this goal, I used the extended Cox survival model, allowing for page variant covariates and page variant coefficients at the same time (Table 5.4). To my knowledge, methods allowing for page varying associations across the questionnaire have never been used before to investigate web survey breakoff at the page level.

**Non-paradata: page and question characteristics.** I found that respondents facing the introduction section had the highest risk of quitting the questionnaire on the next page, and the lowest survival probability (Figure 5.3). Respondents who were about to start a new topic section were less at risk of quitting the questionnaire than respondents who continued with the same questionnaire topic on the next page. This is an unexpected finding, since previous research has shown that the number of breakoffs increases on pages that introduce a new topic section (Peytchev 2009). It is possible that respondents who were starting a new section were motivated by the apparent progress in topics of the questionnaire. At the same time, the number of question items on the next page increased the risk of quitting the questionnaire on the next page and decreased their survival probability (Figure 5.5). However, the number of question items on the current page was not related with the risk of quitting the questionnaire on the next page.

**Non-paradata: administrative and auxiliary data.** Females when compared to

males were less at risk of quitting the questionnaire but this relationship changed over time, leading to an increased breakoff risk by the end of the questionnaire. See Figure 5.6 and Figure 5.7. The benefit of using the extended Cox survival model is evident: the main coefficient of the variable gender would have concluded that females are less at risk of quitting on the next page which does not tell the full story. This finding of page-variant coefficient for gender is completely new to the survey literature and might explain many contradictory findings in which females were either more or less likely to break off a questionnaire. For example, Peytchev (2011) found that more men break off than women, while Steinbrecher, Roßmann, and Blumenstiel (2015) found the opposite.

Compared to White respondents, all other races had a lower survival probability and were more at risk of quitting the questionnaire on the next page. Black respondents were particularly affected by this (Figure 5.8). Students showed lower survival probability and higher risks of quitting the questionnaire than faculty and staff respondents (Figure 5.9). This relationship was page dependent, leading to even higher breakoff risks for students mid-questionnaire and to almost no differences between students and faculty by the end of the questionnaire (Figure 5.10). Panel members showed lower breakoff risks than non-panel members. But looking at Figure 5.12, this relationship was at its extreme beginning to mid-questionnaire, while by the end of the questionnaire, the breakoff risk did not differ between both groups.

**Paradata: prior survey phase.** Respondents with a positive response history showed lower breakoff risks than respondents who had not participated in previous years. At the same time, respondents with a negative response history showed increased breakoff risks and lower survival probability (Figure 5.13). This confirms the finding in the previous chapter regarding the complex relationship between response history and breakoff behavior.

**Paradata: recruitment phase.** Respondents who did not respond to the questionnaire immediately after the first email invitation were more at risk of quitting the questionnaire and showed slightly lower survival probability when compared to respondents reacting promptly on the first email invitation (Figure 5.14).

If a respondent chose to access the questionnaire with a mobile device, their risk of quitting on the next page increased by 23% as compared to respondents on non-mobile devices. Surprisingly, this association was not significant at the 0.05 level in both survey years (Table 5.4), indicating that there was no significant difference in breakoff risks between mobile and non-mobile respondents at the beginning of the questionnaire. This changed with increasing page number: respondents on mobile devices increased their risk of quitting

the questionnaire by 2% with every additional survey page they saw (Figure 5.16). This means that the differences between mobile and non-mobile regarding breakoff behavior developed over time by the number of pages viewed, which is a new and important finding in the web survey breakoff literature.

**Paradata: response phase.** The findings for respondents using the previous button was unexpected. Particularly in 2015, the breakoff risks increased for respondents using the previous button at the very beginning of the questionnaire. This relationship changed quickly and even reversed for this group, showing a decreased breakoff risk (Figure 5.19). This finding is confirmed in Figure 5.18, where respondents hitting the previous button showed an overall higher survival probability but had a lower survival probability at the beginning of the 2015 questionnaire compared to respondents hitting the next button. Again, this finding clearly shows how response behavior at different stages of the questionnaire can indicate different future behavior. At the beginning of the questionnaire, backing up was an indicator for breakoff, while by the end of the questionnaire, backing up was an indicator for completing the questionnaire.

High rates of item nonresponse indicated higher breakoff risks for both survey years. At the same time, straightlining and answer variability did not affect the risk of breaking off the questionnaire.

The amount of scrolling on the current page and the risk of breaking off on the next page were positively related: the more often respondents scrolled, the more at risk they were of quitting the questionnaire.

Respondents who answered the current page very quickly showed an increased breakoff risk and lower survival probabilities as compared to respondents who answered the question page with “normal” response speed (Figure 5.23), while respondents with long response times on the current page did not show different breakoff risks compared to “normal” speed respondents. This might be because fast respondents were not motivated enough to complete the questionnaire and had lower response propensities. Thus, the finding of Chapter 4 in which long response times showed lower breakoff probabilities only held for the consent page of the questionnaire. At the same time, both variables – slowing down and speeding up – increased the breakoff risk and showed lower survival probabilities (Figure 5.24). Thus, the change of the response speed was crucial rather than the actual response time on the current page.

To investigate the prediction power of the final Cox survival model in Table 5.4, I predicted

the breakoff outcome on the page level of the 2015 data set with the 2014 model by estimating the breakoff risk on each page. To be able to classify each page as a predicted breakoff page or as a predicted non-breakoff page, I established different thresholds for different stratification groups. This was done to investigate whether there were different risk thresholds for different groups. Due to the results in Table 5.5 and Figure 5.25, I concluded that either no stratification or stratifying by U of M affiliation delivered the best prediction results.

### 5.3.1 Limitations and future research

One clear limitation of this study is that I did not have information about response behavior of the actual breakoff page. Therefore, I was not able to include information such as item nonresponse and number of scrolls on the actual breakoff page in the final model.

In addition, I did not investigate why respondents chose to hit the previous button. This could be done by investigating answer changes or scrolling behavior on the survey pages the respondents were seeing a second time. Changing answers could indicate high response propensity, since the respondent seems very motivated. In addition, I only investigated the change of response time, but I did not account for other changes in response behavior, such as more or less item nonresponse during the questionnaire, more or less answer variability, and more or less scrolling. Similar to response time change, these behavior changes could be indicators for decreased motivation and higher breakoff risks. In future studies, it would be interesting to investigate this response behavior and the association with web survey breakoff.

Additionally, I included page variant coefficients using a linear function of time only. Clearly, variables such as hitting the previous button in Figure 5.19 show a more complex relationship with the number of pages seen. As all page variant associations showed a general trend, either increasing or decreasing over time, using a linear function for time showed effective results. Despite this, a closer investigation and possibly different time functions for different variables could result in even better prediction accuracy.

Lastly, due to the imbalanced data set, the prediction precisions are relatively low, which means that many pages that were classified as breakoff pages were incorrectly classified. Even though, I performed data balancing using the ROSE method, there are other methods to account for this severe data set imbalance. A thorough investigation of these methods,

their advantages, and disadvantages is necessary to fully understand the effect of such imbalanced data.

## Chapter 6

# Preventing web survey breakoff: is it possible to intervene with breakoff candidates?

This dissertation’s final focus is on preventing breakoff in web surveys and addresses the third research question: “Is it possible to intervene with breakoff candidates?”

The goals of this study was real-time interventions for potential breakoff candidates based on the evaluated breakoff risk. If the estimated risk of breaking off crossed a certain threshold, an intervention message was shown. The message reminded respondents about their commitment to completing the questionnaire and the importance of their answers, all with the goal of preventing them from quitting. First, the prediction model from the previous chapter (Chapter 5) was implemented in the 2018 SCIP wave. While respondents were answering the questionnaire, this model ran in the background, estimating their risk of quitting on the next page. The algorithm constantly compared the estimated breakoff risk to a pre-defined and page-varying threshold. If the estimated breakoff risk of a respondent on a specific page was higher than the page threshold, they saw an intervention message after hitting the next or previous button and before they saw the next questionnaire page.

To assess the prediction power of the model and the effect of the intervention message, I randomized SCIP respondents into three experimental groups. Section 6.1 describes in detail the intervention message and its timing, followed in Section 6.2 by a description of the study and experimental design, the model implementation, threshold calculations, and

data collection timeline. The chapter continues with a methods section (Section 6.3), the results of the experiment (Section 6.4), and concludes with a discussion and the limitations of the study (Section 6.5).

## 6.1 Feedback and intervention

In interviewer-administered surveys, the interviewer's interactions with respondents are critical factors in keeping the respondents engaged and motivated while answering a questionnaire (Cannell and Axelrod 1956; Dijkstra 1987; Garbarski, Schaeffer, and Dykema 2016; Houtkoop-Steenstra 1997). Respondents who are motivated are more likely to finish the questionnaire and do so more accurately than unmotivated respondents (Dijkstra 1987). In interviewer-administered surveys, the interviewer usually provides feedback and probes further if the respondents volunteer "don't know" responses or refusals. Interviewers can react to this undesired answer and either encourage respondents or help them to understand the question. This form of personalized and instant feedback (or intervention) is not usually available in self-administered modes like mail or web surveys.

While it is impossible to give instant feedback in mail surveys, it is relatively easy to include interventions in the context of web surveys. One can program interactive feedback according to response behaviors, such as speeding, item nonresponse, or very short answers to open-ended questions. Recent research projects have explored such feedback in web surveys and found positive results, reducing this undesired answer behavior without introducing additional biases (Cibelli Hibben and Conrad 2016; Clifford and Jerit 2015; Conrad et al. 2005; Crawford, Couper, and Lamias 2001; Holland and Christian 2009; Zhang and Conrad 2014).

Feedback can be categorized into *positive feedback* (e.g., "Thanks for taking your time", "That's helpful") and *negative feedback* (e.g., "You answered that quickly") (O'Neil, Groves, and Cannell 1979; Oksenberg, Vinokur, and Cannell 1979). O'Neil and his colleagues found that positive feedback paired with commitment statements have the highest effects on response accuracy and completion rates (O'Neil, Groves, and Cannell 1979); these findings are consistent with Cannell's theory on the complementary nature of commitment and feedback (Cannell, Miller, and Oksenberg 1981).

Following O'Neil's and Cannell's findings, I focused on one generic, positive intervention, reminding respondents of their commitment to finish the questionnaire and the importance



of their answers to the survey. The message stated: “Your answers are very important and helpful to us. Please stay committed to answering every question truthfully and thoughtfully.” In order to minimize response burden, the intervention message showed at most once during the questionnaire.

Two types of interventions were used in this study: (1) one intervention at the introduction, also called enhanced introduction, and (2) one intervention message later on in the questionnaire. For the latter, I used two timing strategies for when to show the intervention message – after the first question page, regardless of the predicted breakoff risk, or when the established risk threshold was surpassed. The next section provides more details about the two intervention types and the two timing strategies.

### 6.1.1 Enhanced introduction

As mentioned in Chapter 4, one of the biggest challenges of web surveys are introduction breakoffs.<sup>89</sup> Since no response behavior has been captured at the beginning of the questionnaire it is not possible to predict breakoff. For this reason, I decided to include a similar statement as the intervention message at the very beginning of the questionnaire (i.e., on the welcome page): “Thank you for participating in the survey. Your answers are very important and helpful to us. Please answer every question truthfully and thoughtfully.” This message was displayed on the welcome page for all respondents, regardless of their response behavior.

### 6.1.2 Intervention timing

The implemented, dynamic Cox model predicted the risk of quitting the questionnaire on the next page ( $p+1$ ) based on the response behavior until page  $p$ . This estimation was done when the respondents hit the next or previous button and while page  $p+1$  was loading. If the risk of breaking off exceeded the threshold  $k$  of page  $p$ , the intervention message was displayed above the next page  $p+1$ . The respondents had to close the message by hitting the OK button on the pop-up window to continue with the questionnaire (Figure 6.1).<sup>90</sup> In order to collect enough response behavior information to estimate the breakoff risk

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<sup>89</sup>In previous waves of SCIP, about 25% of all breakoffs were classified as introduction breakoffs.

<sup>90</sup>Due to the default setting in java script, the programming team and I were not able to increase the size of the intervention message.

correctly, the intervention message was suppressed during the first three questionnaire pages – the welcome, consent, and first question pages.<sup>91</sup>

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<sup>91</sup>As part of the experimental design, respondents were split into three groups, one of which always saw the intervention message regardless of their breakoff risk (generic intervention). I provide more details about the experimental design in Section 6.2.

Sustainability Cultural Indicators Program (SCIP)

SHOW\_WARNING: 1  
SHOW\_WARNING\_GROUP: 1  
SHOW\_WARNING\_COUNTER: 1

The first set of questions is about **travel and transportation**.

How much do you know about travel by:

|   |                       | A fair                |                       | Not much/             |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| Bus, AAATA/"The Ride" (Ann Arbor Area Transportation)     |                       |                       |                       |                       |
| U-M buses (schedules, routes, etc.)                       |                       |                       |                       |                       |
| Biking in Ann Arbor (bike lanes, rules of the road, etc.) |                       |                       |                       |                       |
| Renting a car by the hour (e.g. Zipcar)                   |                       |                       |                       |                       |
| U-M Vanpools (VanRide)                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| U-M Greenride/iShareaRide                                 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Arbor Bike  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Your answers are very important and helpful to us. Please stay committed to answering every question truthfully and thoughtfully.

OK

Next >>

<< Back

Figure 6.1: Display of pop-up intervention message

## 6.2 Study design

This section describes the study design in detail by starting with the experimental design, then explaining the implementation of the Cox survival model and the threshold calculations, and concluding with the timeline of the data collection.

### 6.2.1 Experimental design

To test my hypotheses, I introduced three equal-sized, randomized, experimental groups in this study:

1. Treatment group 1 (TG1) - *tailored intervention*: The respondents in this group received the intervention message when their breakoff risk was higher than the established threshold.
2. Treatment group 2 (TG2) - *generic intervention*: The respondents in this group saw the intervention message after the first question page, independently of their risk of breaking off.
3. Control group (CG) - *no intervention*: The respondents in this group did not receive an intervention message, regardless of their breakoff risk.<sup>92</sup>

To ensure equal performance of the survey instrument, the implemented model ran in the background for all three experimental groups – even though only TG1 used its outcome (i.e., estimated breakoff risk). This design enabled me to separate *model success* from *intervention success*. Model success predicts future breakoff correctly (i.e., higher breakoff risks for respondents who broke off). This could be tested in the control group, since there was no intervention, regardless of the breakoff risk. Thus, I investigated the relationship between the estimated breakoff risk on each page and future breakoff in the CG (see Section 6.3 for more details). I defined intervention success as respondents who were expected to break off but stayed in the questionnaire after seeing the intervention. Comparing data from TG1 to CG allowed me to examine the success of the tailored intervention. Comparing TG2 to CG enabled me to test whether the tailored intervention was necessary or if it could be replaced by a generically-timed message, reminding the respondent of their commitment to completing the questionnaire.

I expected my results to support the following hypotheses:

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<sup>92</sup>Although no intervention was used on the question pages, the enhanced introduction was included for these respondents.

1. The dynamic survival model is able to predict breakoff in all experimental groups.
  - a. Previous response behavior can predict future breakoff (Callegaro et al. 2009; Lugtig 2014; Peytchev 2009; Schouten, Calinescu, and Luiten 2013). This can be tested in the control group, since there was no intervention message displayed to the respondent.
2. Interventions given at the right time can decrease breakoff rates.
  - a. TG1 (tailored intervention) has the lowest number of breakoffs of all three experimental groups (Cibelli Hibben and Conrad 2016; Clifford and Jerit 2015; Zhang and Conrad 2016).
3. Unnecessary interventions can increase breakoff rates.
  - a. TG2 (generic intervention) increases response burden and therefore has higher breakoff rates than the first treatment group and possibly even higher than the control group (Galesic 2006).

The previous chapters have shown that the variables “answering device” and “U of M affiliation” are strong predictors of breakoff behavior. To make sure that the experimental groups were equally balanced on these factors, I stratified the sample with the interaction of “device” and “affiliation” and assigned each respondent at random to an experimental group based on their stratum. Table 6.1 shows the first seven rows of the stratification table: this first column represents the assignment block. Within each assignment block and stratification group, the experimental groups were randomly ordered. For example, column two assigns faculty and staff respondents who chose to respond with a non-mobile device.

The first faculty/staff respondent who accessed the questionnaire using a non-mobile device was assigned to the control group (CG). The second faculty/staff respondent on a non-mobile device was assigned to treatment group 1 (TG1). The third faculty/staff respondent who logged onto the study server was assigned to treatment group 2 (TG2). At the same time, the first student who logged on to the study server using a mobile device was assigned to TG2, while the second student on a mobile device was assigned to the CG. The third mobile student was assigned to TG1.

Table 6.2 shows an example of the first ten survey respondents and their group assignments. The respondent with ID 1 was the first person to log onto the study server. This respondent was a student using a mobile device to answer the questionnaire. They were therefore assigned to TG2. The respondent with ID 2 was the second person to access the questionnaire and the second student on a mobile device. Thus, they were assigned to the

control group (Table 6.1, column 5, row 2). The respondent with ID 3 was the third person who accessed the questionnaire but the first faculty who used a mobile device (the fourth column in Table 6.2). Therefore, they were assigned to the control group as suggested in Table 6.1, column 3, row 1. This procedure was performed for each respondent who logged on to the study server, where the log-on time was used to order the respondents.<sup>93</sup>

To assess sample sizes for the experimental groups power analyses were performed. This lead to a minimum group size of 1,442 individuals to detect a 4 percentage point difference in breakoff rates with a significance level of  $\alpha = 0.05$  and a power of 0.8 (i.e.,  $\beta = 0.2$ ) (Appendix B).

Table 6.1: Table for random assignment of each respondent to experimental group

| Block | Faculty/staff |        | Student    |        |
|-------|---------------|--------|------------|--------|
|       | Non-Mobile    | Mobile | Non-Mobile | Mobile |
| 1     | CG            | CG     | CG         | TG2    |
| 1     | TG1           | TG2    | TG2        | CG     |
| 1     | TG2           | TG1    | TG1        | TG1    |
| 2     | TG2           | TG1    | TG1        | TG1    |
| 2     | TG1           | CG     | CG         | CG     |
| 2     | CG            | TG2    | TG2        | TG2    |
| 3     | CG            | TG2    | TG2        | CG     |

Table 6.2: Example table for randomly assigned cases

| ID | Affiliation | Device | Strata.id | Group |
|----|-------------|--------|-----------|-------|
| 1  | Student     | PC     | 1         | TG2   |
| 2  | Faculty     | Mobile | 2         | CG    |
| 3  | Faculty     | Mobile | 1         | CG    |
| 4  | Student     | Mobile | 1         | CG    |
| 5  | Student     | Mobile | 2         | TG2   |
| 6  | Faculty     | PC     | 2         | TG1   |
| 7  | Faculty     | PC     | 3         | TG2   |
| 8  | Student     | PC     | 4         | TG2   |
| 9  | Student     | Mobile | 3         | TG1   |
| 10 | Faculty     | Mobile | 3         | TG1   |

<sup>93</sup>To identify whether respondents were accessing the questionnaire on a mobile device, it was necessary that they submit the first questionnaire page to the study server. Thus, group assignment was not possible on the first questionnaire page (welcome page).

## 6.2.2 Model implementation

The first step in this study was to implement the predictive models for the 2018 SCIP wave. As the order of questions differed for students and faculty/staff, I decided to implement two different models for both groups. To stabilize the implemented coefficients, I performed analyses similar to those in Chapter 5 on a randomly drawn training data set (80% of the full 2014/15 data set).<sup>94</sup> In order to implement the model, I worked closely with the survey managers of SCIP and a team of programmers from Survey Research Operations (SRO) at the University of Michigan (referred to as the “programming team” from here forward). Due to the computing power required, I had to alter the final model of Chapter 5 to a new, altered model, referred to subsequently as the *implemented model*. First, in Section 6.2.2.1, I explain all variables used in the implemented model. I then provide details about the model alterations in Section 6.2.2.2. Finally, I provide the results of the implemented Cox survival model in Table 6.3.

### 6.2.2.1 Variables used in the implemented model

Each variable I used in the implemented model was either provided by the administrative data, the survey design (non-paradata), the paradata, or needed to be calculated while respondents were answering the questionnaire. In the next section, each variable used in the implemented model is described. I distinguish between page count,  $p_i$ , representing the individual number of pages seen by every respondent  $i$  and the survey page count,  $p_{\text{survey}}$ , representing the actual page number within the questionnaire. Thus,  $p_{\text{survey}} = 1$  and  $p_{\text{survey}} = 2$  denote the welcome and consent pages and  $p_{\text{survey}} = 3$  refers to the first question page. On the other hand,  $p_i = 3$  indicates that the respondent  $i$  saw three questionnaire pages. Due to the previous button in the questionnaire, the respondent  $i$  did not necessarily see the first question page at  $p_i = 3$ , but could see the consent or welcome page (again).<sup>95</sup>

#### Non-paradata: page and question characteristics

**Topic section.** The programming team used a java script to inform the implemented model about the questionnaire topic the respondents were currently facing. This infor-

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<sup>94</sup>I split the 2014/15 data set into training and test data in order to receive generalizable performance measures for the implemented model and generalizable thresholds across survey years.

<sup>95</sup>Note that for the welcome page the survey page number and the number of pages seen is identical ( $p_{\text{survey}} = p_i$ ).

mation was available at the very first question page for all respondents (i.e.,  $p_i = 1$ , introduction section).

**Number of question items on previous page.** Due to flexible matrix questions, the number of question items on a specific page varied for each respondent, based on their previous answers. For this reason, page characteristics like number of question items could be only included for the current and the previous survey page – but not for the next survey page. As there were no question items on the first two survey pages, this information was available from  $p_{\text{survey}} = 3$  forward, so after the first question page.

### Non-paradata: administrative data

**Demographics.** Demographic information, such as gender, race, and U of M affiliation from administrative records was linked to the records of all sample members. The U of M Office of the Registrar provided the administrative data for students, while the administrative data for faculty and staff members came from the U of M Human Resources Records and Information Services (Section 3.1).

**Panel membership.** Panel membership was assigned by the survey managers and is, therefore, classified as a survey design feature rather than paradata. The information on panel membership was included in the sampling frame. Thus, this information was available from page  $p_i = 1$ .

### Paradata: recruitment phase

**Response latency.** The programming team knew how many reminders had been sent to each respondent before that respondent entered the survey. Thus, this information was included starting with the first page the respondent saw ( $p_i = 1$ , the welcome page).

### Paradata: access phase

**Answering device.** Once sample members decided to click on the invitation link, the survey system received the information about whether the respondents answered by mobile web or PC web, using an implemented java script. This information was available for the implemented model after the respondents passed the welcome page (i.e.,  $p_i = 2$ ).

### Paradata: response phase

**Navigation.** The java script was informed when the respondent hit the next or previous button. Thus, the programming team added this information in the model after the welcome page in the implemented model (i.e.,  $p_i = 2$ ).



**Item nonresponse rate.** Since the programming team knew the number of question items displayed on each page for every respondent, they were able to evaluate the item nonresponse rate after the respondent left the current page  $p$ . This information was available only after the respondent had passed the first question page (i.e.,  $p_{\text{survey}} = 3$ ). This variable was computed while respondents answered the questionnaire.

**Page response time.**<sup>96</sup> The page response time for every respondent was available as soon as the respondent submitted the current page  $p$ . As mentioned in Chapter 5, the number of question items varied by page  $p$ . Therefore, the question response time  $QuestionTime_{ip}$  was calculated by dividing the page response time ( $PageTime_{ip}$ ) by the number of question items  $NbQuestion_p$  (Equation 6.1).<sup>97</sup> This information was then used to include an indicator for very fast or slow respondents.

$$QuestionTime_{ip} = \frac{PageTime_{ip}}{NbQuestion_p} \quad (6.1)$$

**Extreme response time.** Once the programming team and I calculated the “question response time” for each respondent, we classified the respondent as a very fast ( $Extreme.RT_{i,p}^{2018} = -1$ ) respondent if the question response time fell below the 25th percentile of all previous respondents (using the 2014/15 data set), or as a very slow ( $Extreme.RT_{i,p}^{2018} = +1$ ) respondent (i.e., question response time above the 75th percentile of all previous respondents), or as a respondent with normal response time (RT,  $Extreme.RT_{i,p}^{2018} = 0$ ), following the same logic already applied in Section 3.5.2 (Equation 6.2). Because this variable was computed while the survey was taken, I compared the question time of each 2018 respondent to the typical question time of 2014/15 for the same question when answered by the same U of M affiliation (student vs. faculty/staff) using the same device (mobile vs. non-mobile).<sup>98</sup>

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<sup>96</sup>This variable was not included directly in the implemented model but used for the variable calculation of the variable “extreme response time.”

<sup>97</sup>This approach assumes that each question item takes exactly the same amount of time to respond. This could result in faster question times for larger grid questions.

<sup>98</sup>For all time variables, I compared the response times of the 2018 wave with the aggregated response times (i.e., mean, variance, percentile) of the survey years 2014 and 2015. I included a superscript to each variable in order to indicate the source year (i.e., “2014/15” to indicate aggregated response times of the previous survey years and “2018” to indicate individual response times of the current respondents in 2018). This approach assumes constant response times for the same questions across years and is only possible because the survey instrument stayed mostly constant across years. About 18% of all 2018 survey pages were classified as extremely fast pages, about 30% of all survey pages were classified as extremely slow, and about 52% of all pages were classified as normal pages indicating that the question response times were comparable across years (one can expect approximately 25% of all survey pages in each extreme category).

$$Extreme.RT_{i,p}^{2018} = \begin{cases} -1 & \text{if } QuestionTime_{i,p}^{2018} < Q_{p,d,a}^{2014/15}(0.25) \text{ (} i \text{ is very fast)} \\ 0 & \text{if } Q_{p,d,a}^{2014/15}(0.25) \leq QuestionTime_{i,p}^{2018} \leq Q_{p,d,a}^{2014/15}(0.75) \\ +1 & \text{if } Q_{p,d,a}^{2014/15}(0.75) < QuestionTime_{i,p}^{2018} \text{ (} i \text{ is very slow)} \end{cases} \quad (6.2)$$

This was done separately, by page  $p = \{1, \dots, P\}$ , device type  $d = \{\text{mobile, non-mobile}\}$ , and U of M affiliation  $a = \{\text{student, faculty/staff}\}$ .

**Standardized question response time.**<sup>99</sup> To compare response times across respondents and the questionnaires, they need to be standardized. To accomplish this, I followed the same logic described in Section 3.5.2. Question response time standardization was done separately for each page  $p = \{1, \dots, P\}$ , device type  $d = \{\text{mobile, non-mobile}\}$ , and U of M affiliation  $a = \{\text{student, faculty/staff}\}$ . Because this variable was calculated while respondents were answering the questionnaire, I used the page-specific mean ( $MeanQT_{p,d,a}^{2014/15}$ ) and page-specific standard deviation ( $SdQT_{p,d,a}^{2014/15}$ ) of the 2014 and 2015 survey years combined:

$$zQuestionTime_{i,p}^{2018} = \frac{QuestionTime_{i,p}^{2018} - MeanQT_{p,d,a}^{2014/15}}{SdQT_{p,d,a}^{2014/15}}, \quad (6.3)$$

where

$$MeanQT_{p,d,a}^{2014/15} = \frac{\sum_{i=1}^{n_{p,d,a}^{2014/15}} QuestionTime_{i,p,d,a}^{2014/15}}{\#Respondents_{p,d,a}^{2014/15}}$$

and

$$SdQT_{p,d,a}^{2014/15} = \sqrt{\frac{1}{n_{p,d,a}^{2014/15} - 1} \sum_{i=1}^{n_{p,d,a}^{2014/15}} (QuestionTime_{i,p,d,a}^{2014/15} - MeanQT_{p,d,a}^{2014/15})^2}.$$

With  $n_{p,d,a}^{2014/15}$  being the number of respondents answering questions on a particular page  $p$ , with the device  $d$ , and having the affiliation  $a$  in the survey years 2014 and 2015.

**Response time change over the past 2 pages.** Similar to Chapter 5, the programming team and I included a variable indicating whether the respondent was speeding up or

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<sup>99</sup>This variable was not included directly in the implemented model but was used for the variable calculation of response time change.

slowing down over the previous question pages. This information ( $RT.Change_{i,p}^{2018}$ ) was based on comparing the standardized question time of the current question page  $p$  and the previous question page ( $p - 1$ ) (Equation 6.4). Thus, this variable was not available for the first survey page of the questionnaire.

$$RT.Change_{i,p}^{2018} = zQuestionTime_{i,p}^{2018} - zQuestionTime_{i,(p-1)}^{2018} \quad (6.4)$$

To stabilize this variable I chose to use a moving average of the past two pages.<sup>100</sup> Taking the absolute value of this variable ensured that the magnitude of response time change was included in the model:

$$RT.Change(p-2)_{i,p}^{2018} = abs(\frac{1}{2}(RT.Change_{i,p}^{2018} + RT.Change_{i,(p-1)}^{2018})) \quad (6.5)$$

**Interaction with page count.** If the proportional hazards assumption of the Cox survival model was violated, I included linear interactions between the individual page count of each respondent  $p_i$  and the variables violating the assumption.<sup>101</sup>

### 6.2.2.2 Alteration of the implemented model

Since the model runs on the client-side, the programming team and I were worried about model performance and questionnaire page loading times on mobile devices in particular. Thus, we decided to alter certain variables and leave others out: due to the high computational demand of storing previous response behavior, the programming team and I chose to change the variable “response time change over the past three pages” to “response time change over the past two pages.” For the same reason, we did not include the variables “answer variability” and “scrolling” in the model. The former would indicate

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<sup>100</sup>Due to the high computational demand, the programming team and I decided to limit the moving average to two previous pages only (Section 6.2.2.2). Additionally, I included the absolute value of the variable  $RT.Change(p-2)_{i,p}$  instead of two separate variables for speeding up and slowing down (see Section 5.1 for more details) to further enhance performance of the implemented model.

<sup>101</sup>I was able to use this simple interaction term, because all time intervals had the same length for all respondents (i.e., one survey page). This is usually not possible when using time-varying Cox survival models because time intervals might differ across individuals (Therneau, Crowson, and Atkinson 2017).

current straightlining behavior for each respondent, while the latter captured current scrolling behavior for all respondents.

Due to the option of hitting the previous button, as well as page skipping due to filtering, the programming team and I were not able to include information about the next page seen in the implemented model, such as new topic on the next page, or number of question items on the next page seen. Instead, I included the number of question items on the current and the previous page. Additionally, it was not possible to include response history in the implemented model. This altered model is further referred as the *implementation model*.<sup>102</sup>

I first fitted the implementation Cox survival model from Chapter 5 separately for students and faculty/staff on the 2014/15 training data set of. The result of this altered Cox survival model can be seen in Appendix A, Table A.7. Similar to Chapter 5, I tested the proportional hazards assumption for each variable in these two models to include the correct page-varying coefficients in the implementation models. The results of these tests are in Appendix A, Table A.8. For model simplicity and to further enhance model performance, I chose to include only variables with significant coefficients in the implemented model.<sup>103</sup> Table 6.3 contains all variable coefficients of the implemented models (students and faculty/staff separately). Seven differences between the two models follow:

- (1) There was no missing gender for the faculty/staff group, thus no coefficient for missing gender was included in the implemented faculty/staff model.
- (2) Only students were eligible to be panel members. For this reason, there was no coefficient for panel membership in the implemented faculty/staff model.
- (3) The information on response latency had not significant coefficient for the faculty/staff model in Appendix A, Table A.7. Thus, I did not include this variable in the implemented faculty/staff model.
- (4) The information on response time changes over the last 2 pages showed no significant coefficient for the faculty/staff model in Appendix A, Table A.7. Therefore, I did not include this variable in the implemented faculty/staff model.

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<sup>102</sup>When comparing the implemented model with the final model in Chapter 5, I found a significant difference in the likelihoods of these nested models indicating that the final model from Chapter 5 had a better model fit than the implemented model ( $\chi^2_{\text{Student}} = 89.9, p_{\text{Student}} < 0.001$  and  $\chi^2_{\text{Faculty}} = 27.8, p_{\text{Faculty}} = 0.003$ ).

<sup>103</sup>Likelihood ratio tests comparing the models in Appendix A, Table A.8 (i.e., models including non-significant variables) and the implemented models showed that there were no significant differences between them ( $\chi^2_{\text{Student}} = 6.5, p_{\text{Student}} = 0.49$  and  $\chi^2_{\text{Faculty}} = 0.3, p_{\text{Faculty}} = 0.96$ ).

- (5) The coefficient for the variable “number of question items on previous page” was not significant for faculty/staff in Appendix A, Table A.7 and was, therefore, not included in the implemented faculty/staff model.
- (6) The information on response latency was not page variant in the faculty/staff model (Appendix A, Table A.8) and was not included in the implementation.
- (7) The coefficient for answering devices did not fail the proportional hazards assumption in the faculty/staff model (Appendix A, Table A.8) and was not included in the implementation model.

Table 6.3: Coefficients and standard errors of the implemented Cox survival model for breakoff with page-varying covariates and coefficients separated by U of M affiliation

|  | Student    |            | Faculty/staff |            |
|--|------------|------------|---------------|------------|
|  | Coeff.     | Std. error | Coeff.        | Std. error |
| <b>Non-paradata information</b>                |            |            |               |            |
| <b>Topic section (reference: introduction)</b> |            |            |               |            |
| Transportation                                 | -2.1823*** | 0.3337     | -2.1725***    | 0.5461     |
| Conservation                                   | -1.6419*** | 0.3546     | -2.0683**     | 0.6548     |
| Environment                                    | -2.7184*** | 0.4412     | -2.8151***    | 0.7367     |
| Food   | -2.0123*** | 0.3795     | -2.8831***    | 0.7184     |
| Climate  | -2.8911*** | 0.4108     | -4.0417***    | 0.7190     |
| General sustainability                         | -1.7913*** | 0.4021     | -3.6157***    | 0.6660     |
| Sustainability at U of M                       | -2.5683*** | 0.4550     | -5.2048***    | 0.7462     |
| Demographics                                   | -3.6741*** | 0.4712     | -5.6739***    | 0.8119     |
| <b>Number of question items on...</b>          |            |            |               |            |
| Previous page                                  | -0.0309*   | 0.0151     | NA            | NA         |
| <b>Gender (reference: male)</b>                |            |            |               |            |
| Female   | -0.2240*   | 0.0911     | -0.4098*      | 0.1697     |
| Missing gender                                 | -0.0260    | 0.2189     | NA            | NA         |
| <b>Race/ethnicity (reference: white)</b>       |            |            |               |            |
| Asian  | 0.2257**   | 0.0840     | 0.5199***     | 0.1512     |
| Black  | 0.4378**   | 0.1392     | 0.9390***     | 0.2030     |
| Hispanic                                       | 0.2790*    | 0.1390     | 0.6200*       | 0.2880     |
| Other race                                     | 0.0187     | 0.1062     | 0.7808**      | 0.2656     |

Table 6.3: Coefficients and standard errors of the implemented Cox survival model for breakoff with page-varying covariates and coefficients separated by U of M affiliation (continued)

|  | Student    |            | Faculty/staff |            |
|--|------------|------------|---------------|------------|
|  | Coeff.     | Std. error | Coeff.        | Std. error |
| Missing race   | -0.0887    | 0.1790     | -14.4345      | 1100.2112  |
| <b>Panel membership (reference: non-panel member)</b>          |            |            |               |            |
| Panel member   | -0.7934*** | 0.1195     | NA            | NA         |
| <b>Paradata information</b>                                    |            |            |               |            |
| <b>Response latency (reference: no reminder sent)</b>          |            |            |               |            |
| Reminder sent  | 0.0289     | 0.0895     | NA            | NA         |
| <b>Answering device (reference: non-mobile)</b>                |            |            |               |            |
| Mobile   | 0.2658**   | 0.0956     | 0.5058*       | 0.2216     |
| <b>Navigation (reference: next button)</b>                     |            |            |               |            |
| Previous button  | -0.1707    | 0.5582     | 1.0903.       | 0.5809     |
| <b>Item nonresponse rate</b>                                   |            |            |               |            |
| Item nonresponse rate  | 1.4727***  | 0.1822     | 2.3698***     | 0.2261     |
| <b>Extreme response time (reference: normal response time)</b> |            |            |               |            |
| Short response time  | 0.3366***  | 0.0834     | 0.1035        | 0.1560     |
| Long response time   | 0.3072***  | 0.0747     | 0.3579**      | 0.1338     |
| <b>Response time change</b>                                    |            |            |               |            |
| Absolut RT change  | 0.1035*    | 0.0409     | NA            | NA         |
| <b>Page-varying coefficients</b>                               |            |            |               |            |
| Female(t)  | 0.0131**   | 0.0045     | 0.0233**      | 0.0072     |
| Reminder sent(t)   | 0.0105*    | 0.0044     | NA            | NA         |
| Mobile(t)  | 0.0180***  | 0.0045     | NA            | NA         |
| Previous(t)  | -0.0698.   | 0.0370     | -0.1156*      | 0.0459     |

Table 6.3: Coefficients and standard errors of the implemented Cox survival model for breakoff with page-varying covariates and coefficients separated by U of M affiliation (*continued*)

| Student |            | Faculty/staff |            |
|---------|------------|---------------|------------|
| Coeff.  | Std. error | Coeff.        | Std. error |

*Note:*

Significance levels: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ , .  $p < 0.1$

Note the large standard error in the race category 'other' for the implemented faculty model. I compared the model fit for the implemented model and a model with collapsed race category (white vs. non-white vs. missing race) in Appendix A, Table A9.

In this comparison, the implemented model showed better performance.

### 6.2.2.3 Risk calculation

After calculating all required variables, the risk of breaking off on the next page ( $h(p, W, X, Y, Z)$ ) was established using the coefficients in Table 6.3 and the Cox survival model presented in Equation 6.6, where  $h_0(p)$  represents a page-varying baseline hazard, i.e., the baseline risk of breaking off on each page.  $W$  denotes page-invariant covariates (e.g., gender, race) with page-invariant coefficients ( $\beta_W$ ).  $X$  refers to page-invariant covariates with page-varying coefficients ( $g(\beta_X, p)$ , e.g., female).  $Y$  and  $Z$  both denote page-varying covariates with page-invariant coefficients ( $\beta_Y$ , e.g., item nonresponse rate) and page-varying coefficients ( $g(\beta_Z, p)$ , e.g., previous button), respectively.<sup>104</sup>

$$h(p, W, X, Y, Z) = h_0(p) * \exp(\beta_W W + g(\beta_X, p)X + \beta_Y Y(p) + g(\beta_Z, p)Z(p)) \quad (6.6)$$

### 6.2.2.4 Establishing thresholds

To show the intervention message at the correct time, I had to establish a threshold  $k$  indicating risky response behavior and a potential breakoff. I closely followed the methods

<sup>104</sup>As mentioned before, the decision between  $W$  and  $X$  for page-invariant covariates and the decision between  $Y$  and  $Z$  for page-variant covariates was made by testing the proportional hazards assumption for each covariate (page-invariant and page variant). If the proportional hazard assumption was rejected, the covariates were assigned to matrix  $X$  or  $Z$  indicating that their coefficients were page-variant. If the proportional hazard assumption was not rejected the covariates were assigned to matrix  $W$  or  $Z$ .

established in Section 5.1.2.3 in four steps:

- (1) The breakoff risk for every respondent on every page was estimated with the remaining test data set (i.e., the remaining 20% of the 2014/15 data set) using the coefficients in Table 6.3. The mean estimated risk of breaking off for students equaled 0.0030 and 0.0015 for faculty/staff, with a maximum of 0.0813 for students and 0.1156 for faculty/staff respondents.<sup>105</sup>
- (2) The data were then stratified in two ways (i.e., answering device and topic section) and different thresholds were computed based on the Youden index, introduced in Chapter 4 ( $k_{YI} = \max(\text{Sensitivity} + \text{Specificity})$ ).<sup>106</sup>
- (3) Table 6.4 contains the results of these threshold calculations. The first row shows the threshold that only differentiates between affiliations: if the predicted breakoff risk for a student was higher than or equal to 0.0036, the current page was flagged as a breakoff page, indicating potential breakoff on the next page. For faculty and staff, the predicted breakoff risk needed to be higher than (or equal to) 0.0015 in order to flag the current page as a breakoff page. In the second and third row of Table 6.4, the thresholds differed for answering devices and affiliation. For example, a student on a non-mobile device needed to cross the threshold of 0.0058 in order to flag the current page as a breakoff page; however, a faculty/staff member on a mobile device had to have a breakoff risk higher than 0.0017. The last nine rows indicate the thresholds for the different survey topics. A student currently answering the introduction section needed to cross the threshold of 0.024 to flag the current page as a breakoff page, while faculty/staff needed to cross 0.0109. When a student moved forward in the questionnaire and answered the transportation section, they needed to cross the threshold of 0.0024, while faculty needed to cross 0.0041 and so on.
- (4) Using the thresholds determined in Table 6.4 for the cross-classification, I evaluated the prediction power of both implemented models (student and faculty/staff). Comparing the six resulting confusion matrices based on their key indicators introduced in Chapter 4 (sensitivity, specificity, precision and accuracy) as well as on Cohen's kappa and the mean AUC, I chose the optimal thresholds. The outcomes

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<sup>105</sup>I was able to determine the risk thresholds based on the 2014/15 data as the survey instrument and the features of the questionnaire stayed constant across years. For new questions and new sections I did not determine the threshold through the 2014/15 data (Section 6.4.1.3).

<sup>106</sup>Note that the data set was already stratified by U of M affiliation due to the model separation for faculty and students.



of these key indicators are displayed in Table 6.5. The second column shows the key indicators, Cohen’s kappa statistic and the AUC value for the implemented student model with no stratification. The third and fourth columns represent all key indicators and the kappa statistics for the prediction power of the implemented student model, using the stratified thresholds by device (mobile/non-mobile) and by topic section. Columns five to seven follow the same logic, representing the implemented faculty/staff model. The prediction when stratifying by topic section clearly had the worst results (lowest kappa and lowest mean AUC for both groups). The results for no stratification and by device were quite similar (similar precision, kappa statistic, and mean AUC). Therefore, I chose the simplest approach and did not stratify within the U of M affiliation group. Thus, the intervention for students was triggered after a predicted risk of 0.0036, while the intervention for faculty/staff was triggered once their predicted risk crossed 0.0015.

Table 6.4: Different thresholds by stratification group

|  | <b>Student</b> | <b>Faculty/staff</b> |
|--|----------------|----------------------|
| <b>Stratification by U of M affiliation only</b> |                |                      |
| U of M affiliation                               | 0.0036         | 0.0015               |
| <b>Stratification by answering device</b>        |                |                      |
| Non-mobile                                       | 0.0037         | 0.0015               |
| Mobile   | 0.0058         | 0.0017               |
| <b>Stratification by topic section</b>           |                |                      |
| Introduction                                     | 0.0240         | 0.0109               |
| Transportation                                   | 0.0024         | 0.0041               |
| Conservation                                     | 0.0042         | 0.0015               |
| Environment                                      | 0.0025         | 0.0015               |
| Food   | 0.0050         | 0.0008               |
| Climate  | 0.0012         | 0.0002               |
| General sustainability                           | 0.0036         | 0.0023               |
| Sustainability at U of M                         | 0.0012         | 0.0012               |
| Demographics                                     | 0.0004         | 0.0008               |

Table 6.5: Key indicators, Cohen’s kappa, and mean AUC for prediction power by stratification group separated by U of M affiliation

|               | Prediction power for student |               |              | Prediction power for faculty/staff |               |              |
|---------------|------------------------------|---------------|--------------|------------------------------------|---------------|--------------|
|               | No strata                    | Device strata | Topic strata | No strata                          | Device strata | Topic strata |
| Sensitivity   | 0.683                        | 0.618         | 0.730        | 0.728                              | 0.728         | 0.605        |
| Specificity   | 0.768                        | 0.817         | 0.619        | 0.744                              | 0.745         | 0.718        |
| Precision     | 0.009                        | 0.010         | 0.006        | 0.004                              | 0.004         | 0.003        |
| Accuracy      | 0.768                        | 0.816         | 0.620        | 0.744                              | 0.745         | 0.718        |
| Cohen’s kappa | 0.011                        | 0.014         | 0.005        | 0.006                              | 0.006         | 0.003        |
| Mean AUC      | 0.802                        | 0.773         | 0.696        | 0.798                              | 0.787         | 0.709        |

### 6.2.2.5 Introduction section and new questions

Due to the variable measuring the response time change over the past two pages, the breakoff risk was not calculated for the first two pages (the introduction section). Since respondents have not yet seen any questions, I decided to set the thresholds for this section to 100 to prevent any intervention messages. In addition, it is impossible to standardize response times for question sections that were new in the SCIP wave of 2018. Therefore, I decided that during new sections, the intervention should not be triggered and set the threshold to 100.<sup>107</sup>

### 6.2.3 Invitation process and timeline

The invitation process and incentive structure for the 2018 SCIP wave was similar to previous waves: sample members received a pre-notification email, including a link to the questionnaire, one official invitation email, and up to five email reminders.<sup>108</sup> Reminders were only sent to sample members who had not yet completed the questionnaire at the time of the reminder. After completing the questionnaire, respondents had a chance to win a \$50 gift card from Amazon.com. About 2,000 undergraduate students were invited as part of the SCIP panel. This group was eligible to win a \$100 Amazon gift card. Due to low response rates among students, the incentive structure for students changed mid-data collection (March 5th, 2018). Instead of entering a lottery, all students received a guaranteed \$5 Amazon gift card upon completing the questionnaire.<sup>109</sup>

In total, 20,583 sample members were invited to participate in the 2018 SCIP wave, starting on January 18th and ending March 19th. Table 6.6 summarizes the data collection process.

After sending the official invitation on January 30th, the programming team received complaints from some respondents about extremely long page loading times. We investigated this problem and found that it was connected to the high user load during peak times (e.g., in the morning after the invitation was sent out and many sample members entered the survey instrument). This problem was solved in three steps:

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<sup>107</sup>There was one new topic section for students focused on environment questions. This topic section was not included for faculty/staff. See Section 6.4.1.3 for more details.

<sup>108</sup>Unlike previous years, the pre-notification email included a link to start the questionnaire. Therefore, I treated the pre-notification email as the initial contact (i.e., invitation) and the official invitation as the first reminder.

<sup>109</sup>To control for this change in incentive structure I added a variable flagging all respondents affected by these changes (i.e., all student respondents starting the questionnaire after March 5th, 2018) in all models.

- (1) increasing server capacity for SCIP to handle a larger number of users at the same time,
- (2) assigning more efficient keys to the relevant tables for the implemented model, which resulted in faster look-ups, and
- (3) slowing down the release of reminder emails by using three independent sample replicates.

As a result of item number three, reminders one to four were sent on up to three sequential days. All these changes went into effect by February 1st. To control for the speed issues, all models included a variable flagging all respondents affected by these issues (i.e., respondents who started the survey before February 1st, 2018).

Table 6.6: Important dates during data collection

| <b>Dates</b>     | <b>Action</b>   |
|------------------|---|
| 1/18             | 200 pre-notification email: test of implemented models and bug fixes (due to implementation bugs, these cases were excluded from the analyses)                                    |
| 1/22             | 500 pre-notification emails: second implementation test, risk calculation was now correct   |
| 1/24             | Remaining 19,883 cases receive pre-notification email   |
| 1/30             | Official invitation to 19,375 (i.e., cases who have not yet reacted to pre-notification email)  |
| 1/30             | Long loading times reported (Section 6.2.3.1)   |
| 2/1              | Resolved loading time issues by (1) increased server capacity, (2) higher efficiency in look-ups, (3) slowed down release of email reminders (see section above for more details) |
| 2/6, 2/7, 2/8    | 1st reminder  |
| 2/14, 2/15, 2/16 | 2nd reminder  |
| 3/5, 3/6, 3/7    | 3rd reminder: change of incentive structure for students (introduction of guaranteed \$5 Amazon gift card upon survey completion)   |
| 3/12/, 3/13      | 4th reminder  |
| 3/19             | 5th reminder  |
| 3/21             | End of data collection  |

## 6.3 Analysis methods

To analyze the collected data, I first performed descriptive analyses for survey respondents, breakoff respondents, and unit nonrespondents.

After this step, I investigated model success: I focused on respondents assigned to the control group (CG) only, since they did not see an intervention message at any point. I expected to see higher estimated breakoff risks for respondents who, in fact, did quit the questionnaire. I used the average risk of breaking off within every topic section and performed t-tests to see differences between the two groups (breakoffs vs. completes).

Additionally, I fitted generalized linear models using GEE (Generalized Estimating Equations) with the estimated breakoff risk on each page as a dependent variable, controlling for all available administrative data and paradata information (Equation 6.7):

$$g(E(z.Risk_{ip})) = x'_{ip}\beta, \tag{6.7}$$

where  $g(\cdot)$  is defined as the identity link ( $g(E(z.Risk_{ij})) = E(z.Risk_{ij})$ ),  $z.Risk_{ij}$  represents the standardized risk of respondent  $i$  on page  $p$ , and  $x_{ip}$  represents the covariates included in the model, such as administrative data, information about the survey design, and whether the information about the response outcome of the next survey page (“next page is breakoff” (yes/no)). An exchangeable structure was specified for the correlation among standardized risks within subjects.<sup>110</sup>

I investigated the relationship between the estimated breakoff risk and whether the next page was in fact a breakoff page. I expected the variables “risk of breaking off” and “next page is breakoff” (yes/no) to be positively related. This was done separately for students and faculty/staff because the risk calculation differed between both groups (Table 6.3). These models were fitted using the R command `geeglm` in the `geepack` package (Yan 2002), using an exchangeable correlation structure.<sup>111</sup> I then used descriptive analyses to investigate how often and when the estimated breakoff risks surpassed the thresholds regardless of experimental group.

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<sup>110</sup>An exchangeable structure assumes that all standardized risks of one respondent are equally correlated. When the unstructured and exchangeable correlation structures were applied, the quasi-likelihood information criteria for model fit QIC (independence model information criterion) was lower in the exchangeable than in the unstructured correlation structure (Pan 2001; Ekstrom 2018).

<sup>111</sup>These models were fitted without accounting for the sampling weights as the focus was on the individual risk calculation rather than drawing inference to the survey population.

In the next step, I investigated intervention success. First, I focused on the effect of the enhanced introduction and whether the statement was able to prevent introduction breakoffs. I compared introduction breakoff respondents from 2014 and 2015 to introduction breakoff respondents from 2018. If the enhanced introduction was effective, I expected to see lower introduction breakoff rates in the 2018 SCIP wave than in previous years.

Next, I investigated the effect of the intervention message by focusing on three different treatment measurements:

- (1) The breakoff rate across all three experimental groups.
- (2) The number of times respondents are crossing the threshold, potentially triggering an intervention.
- (3) The number of pages seen.

The first measurement focuses on the direct effect of the intervention – the lower the breakoff rate and the risks of breaking off, the more effective the intervention. The second measure looks at behavioral changes for treated respondents—do respondents who see the intervention engage in less risky behavior? Again, the lower the number of threshold crossings, the more effective the intervention. The last measurement focuses on breakoff respondents only and explores a more subtle effect of the intervention: if respondents still choose to quit the questionnaire was the intervention able to keep them in the instrument longer? Here, the higher the individual number of pages seen, the more effective the interventions.

**Treatment measure 1: breakoff rates.** I expected that showing the intervention message in Treatment Group 1 (TG1, tailored intervention) and Treatment Group 2 (TG2, generic intervention) would have negative effects on the breakoff risk. To investigate this hypothesis, I first used descriptive analyses and Kaplan-Meier survival curves comparing the breakoff rates on a respondent level by treatment group using the `Surv` command in the R package `survival` (Therneau 2015). I then fitted logistic regression models with the binary variable “respondent is breakoff respondent” as the dependent variable and estimated the probability of breakoff for each respondent  $i$  ( $p_i$ , Equation 6.8):

$$\ln\left(\frac{p_i}{1-p_i}\right) = \alpha_0 + X_i\beta + z_i\delta + z_i * X_i\gamma \quad (6.8)$$

The model includes all available information (i.e., administrative data and paradata ( $X_i$ ))

for each respondent  $i$ , the experimental group assignment  $z_i$  and all first-order interactions with the experimental group.<sup>112</sup> I used the R command `glm(family = binomial(link = "logit"))` of the package `stats` (R Core Team 2018) to fit the logistic regression models. Additionally, I performed Hosmer-Lemeshow tests using the `logitgof` command of the `generalhoslem` package (Jay 2018) to assess model fit (Hosmer and Lemeshow 1980).

**Treatment measure 2: average threshold crossings.** I then explored whether respondents who saw the intervention altered their response behavior compared to respondents who never saw the intervention. I expected that respondents in TG1 would engage in less risky behavior after they saw the intervention compared to respondents in the CG. Due to the different length of the questionnaire for all respondents (e.g., between 1 and 80 pages), I chose to use the average number of threshold crossings during the questionnaire (Average number of threshold crossings $_i = \frac{\text{Total number of threshold crossings}_i}{\text{Total number of pages seen}_i}$ ) to normalize the exposure time across all respondents.<sup>113</sup> I fitted a respondent-level linear regression model with the “average number of threshold crossings” as the dependent variable (Ave.Crossings $_i$ ) and the treatment group as the independent variable  $z_i$  (Equation 6.9):

$$E(\text{Ave.Crossings}_i) = X_i\beta + z_i\delta + z_i * X_i\gamma, \quad (6.9)$$

I controlled for administrative and paradata information ( $X_i$ ) and included all first-order interactions with the treatment groups. In order to fit this model, I used the R command `glm(family = "gaussian")` of the package `stats` (R Core Team 2018).

**Treatment measure 3: total number of pages seen.** As a last step, I studied whether breakoff respondents who saw the intervention remained in the instrument longer than breakoff respondents who did not see the intervention (i.e., breakoff respondents of TG1 and TG2 vs. breakoff respondents of CG). I fitted Poisson and negative binomial regression models to the total number of pages seen by breakoff respondents as the dependent variable, controlling for all available administrative and paradata information ( $X_i$ ), investigating the effect of the experimental group assignment ( $z_i$ , Equation 6.10):

$$\lambda(\text{PageCount}_i) = \exp(\alpha + X_i\beta + z_i\delta + z_i * X_i\gamma), \quad (6.10)$$

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<sup>112</sup>As there was no intervention in the introduction section, I excluded introduction breakoff respondents from these analyses.

<sup>113</sup>As there was no threshold set for the introduction section I excluded introduction breakoff respondents in these analyses.

In order to fit this model, I used the R command `glm(family = "poisson")` of the package `stats` (R Core Team 2018). Additionally, I used the slightly more flexible negative binomial distribution to account for *overdispersion*. This was done with the `glm.nb` command in the R package MASS (Venables and Ripley 2002). I expected to see higher page counts for breakoff respondents in the treatment groups than in the control group, since these respondents were motivated by the intervention message. This would suggest a more subtle effect of the intervention message. Even if the intervention message failed to keep respondents from quitting the questionnaire, they would stay in the instrument longer.

For all analyses, I displayed the marginal effects for the model results (predicted breakoff probabilities, predicted average number of threshold crossings, and predicted total number of pages seen), to interpret the effects of each covariate more easily. This was done using the `ggpredict` command in the `ggeffects` package (Luedecke 2018), adjusting for the reference categories of each covariate.

Following Valliant and Dever (2017), I tested all models for the use of sampling weights. For most models, the test indicated that accounting for the sampling weights mainly added variance rather than changing the outcome or increasing model fit. Therefore, I share the non-weighted model results in this chapter. The results of the formal tests proposed by Valliant and Dever (2017) and the weighted models are displayed in Appendix A, Table A.11, Table A.12, and Table A.13. These models were fitted using the `svyglm` command of the `survey` package (Lumley 2016), and using the `svyglm.nb` command of the `sjstats` package (Lüdecke 2018).

## 6.4 Results

### 6.4.1 Descriptive analyses

In the following section, I examined the sampling frame and the collected data with descriptive analyses. This section also presents all descriptive analyses by experimental group, evaluating the randomization across the three experimental groups (Appendix A, Table A.10).



#### 6.4.1.1 Sampling frame

The composition of the 2018 SCIP wave sampling frame was similar to the sampling frames in previous years (2014/15): 52% female, mainly White (63%), followed by Asian (16%), Hispanic, and Black (both about 5% of the sample frame) sample members. A small fraction (4%) of the sampling frame were classified as “other,” indicating multiple races and ethnicities or sample members of Hawaiian or Native American descent. The amount of missing race information decreased over time with only 6% of sample members in this category (instead of 7.5% in 2014). By design, three quarters of all sample members were students and about 2,000 students were invited as panel members (Table 6.7).

Table 6.7: Full 2018 sample by demographics

|                           | <b>Freq.</b>  | <b>Perc.</b>   |
|---------------------------|---------------|----------------|
| <b>Gender</b>             |               |                |
| Female                    | 10,659        | 51.79%         |
| Male                      | 9,924         | 48.21%         |
| <b>Race/ethnicity</b>     |               |                |
| Asian                     | 3,322         | 16.14%         |
| Black                     | 1,070         | 5.20%          |
| Hispanic                  | 1,207         | 5.86%          |
| White                     | 12,979        | 63.06%         |
| Other race                | 775           | 3.77%          |
| Missing race              | 1,230         | 5.98%          |
| <b>U of M affiliation</b> |               |                |
| Faculty/staff             | 4,715         | 22.91%         |
| Student                   | 15,868        | 77.09%         |
| <b>Panel membership</b>   |               |                |
| Non-panel member          | 18,418        | 89.48%         |
| Panel member              | 2,165         | 10.52%         |
| <b>Total sample</b>       | <b>20,583</b> | <b>100.00%</b> |

#### 6.4.1.2 Response type

Of the 20,583 invited individuals, 14,017 (68%) were unit nonrespondents, 5,441 (26%) respondents completed the questionnaire, and 1,125 (=386+739, or 5%) quit the questionnaire before finishing it (Table 6.8).

Table 6.8: Full sample by response type

|                        | <b>Freq.</b>  | <b>Perc.</b>   |
|------------------------|---------------|----------------|
| Unit nonresponse       | 14,017        | 68.10%         |
| Introduction breakoff  | 386           | 1.88%          |
| Questionnaire breakoff | 739           | 3.59%          |
| Complete response      | 5,441         | 26.43%         |
| <b>Total sample</b>    | <b>20,583</b> | <b>100.00%</b> |

These numbers resulted in a participation rate of  $PR = 32\%$  and a total breakoff rate of  $TBR = 17\%$  in the 2018 SCIP wave (with  $PR = \frac{\text{Intro breakoffs} + \text{Qnr breakoffs} + \text{Completes}}{\text{Total sample}}$  and  $TBR = \frac{\text{Intro breakoffs} + \text{Qnr breakoffs}}{\text{Intro breakoffs} + \text{Qnr breakoffs} + \text{Completes}}$ ). The 2018 breakoff rate was slightly higher than in previous years (13% and 14% breakoff rates in 2014 and 2015, respectively).

#### 6.4.1.3 Survey instrument

The general structure of the questionnaires for students and faculty/staff respondents stayed the same compared to previous survey years. The questionnaire for students had up to 73 survey pages, and the faculty questionnaire contained up to 63 survey pages. Note that many of these pages were only displayed conditional to previous responses, leading to an average of 57 survey pages and 160 question items seen by the respondents.

The biggest change in the questionnaire occurred for the student subgroup. Instead of multiple choice behavioral questions on environment, students were given knowledge questions on environmental issues (e.g., “What is the most common cause of pollution of streams and rivers?”) at the end of the questionnaire before the demography section.<sup>114</sup> No environment section was included for faculty and staff. Thus, there were nine topic sections for students (introduction, transportation, conservation, food, climate, general sustainability, sustainability at U of M, environment, and demographics), and only eight topic sections for faculty and staff respondents (environment section was excluded). The full 2018 questionnaire for students and faculty/staff can be seen in Appendix D. Respondents stayed, on average, 17 minutes in the survey instrument (Table 6.9).

<sup>114</sup>Due to the lack of prior response behavior on these questions, I decided not to intervene during this new environment section.

Table 6.9: Descriptive analyses for the survey instrument

|                        | Min. | 25% quantile | Median | Mean | 75% quantile | Max. |
|------------------------|------|--------------|--------|------|--------------|------|
| Page count             | 1    | 53           | 58     | 57   | 63           | 184  |
| Question count         | 1    | 145          | 161    | 160  | 179          | 554  |
| Response time (in min) | 0    | 11           | 14     | 17   | 20           | 105  |

#### 6.4.1.4 Data cleaning

Similar to Section 3.5, data cleaning was performed in order to analyze the data. Detailed information about this step is included in Appendix C. Based on these data cleaning steps, I excluded 69 respondents due to extremely high number of pages seen (e.g., up to 184 pages), and expired welcome pages. This led to 6,497 individuals that were included in further analyses.

**6.4.1.4.1 Trimming breakoff risk** Extreme breakoff risks (higher than 100) occurred for students in seven cases. These values were the result of extreme response time changes due to very high response times on the current page.<sup>115</sup> Therefore, I decided to trim the upper end of the estimated risk separately for each questionnaire topic and U of M affiliation to the 99th percentile. Figure 6.2 shows the differences in risk distribution by topic section before and after trimming the risk. Note the different range in the y-axis between Figure 6.2A and Figure 6.2B, in particular the outlier in Figure 6.2A within the demographics section.<sup>116</sup> Additionally, I standardized the trimmed risk by topic section and U of M affiliation, subtracting the appropriate mean of each topic-affiliation combination and dividing by its standard deviation.

#### 6.4.1.5 Survey design, administrative data, and paradata

Of all 6,497 respondents analyzed, 359 (or 6%) were introduction breakoff respondents, 737 (11%) questionnaire breakoff respondents, and 5,401 (83%) were complete respondents.

<sup>115</sup>The mean response time change for cases with extreme risk estimations was 133.6, compared to -0.428 for non-extreme cases. These response time changes were particularly influential when they happened within the first 60 questionnaire pages seen, since the baseline hazard after visiting more than 60 pages ( $p_i > 60$ ) decreased to almost 0 (Appendix A, Figure A.1). Because the faculty/staff model did not include response time changes as a variable (Section 6.2.2.2), faculty/staff respondents were not impacted by these extreme risk values.

<sup>116</sup>Due to the risk trimming the risk outlier in the demography section was set to 0.0055 instead of 204,413.2500.

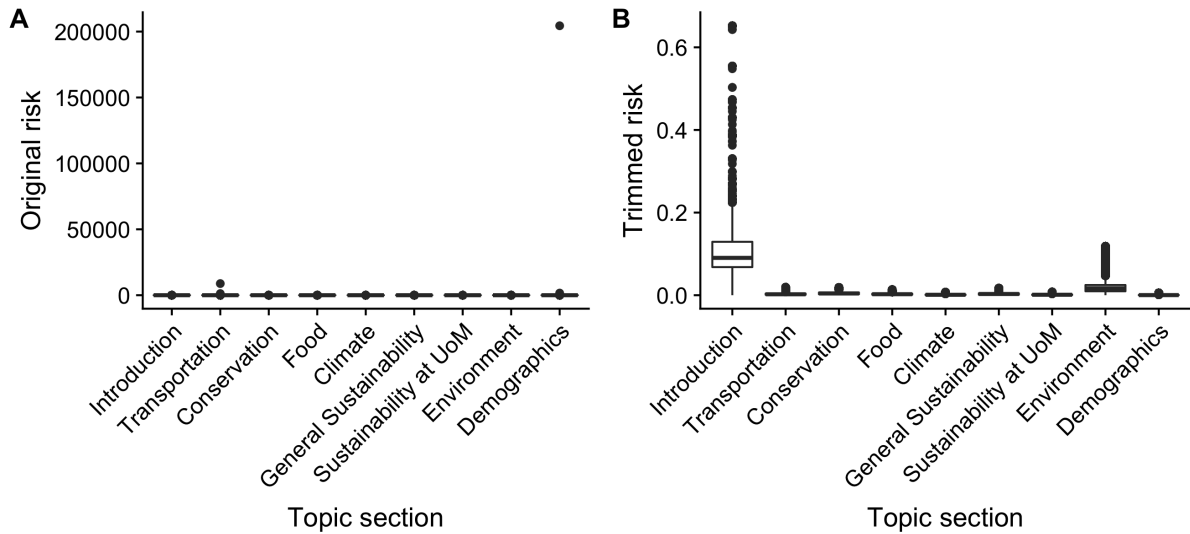


Figure 6.2: Boxplots showing the estimated risk by topic (A = before breakoff risk trimming, B = after breakoff risk trimming)

Almost half of all respondents (45%) were affected by the speed issues in the beginning of the data collection period, meaning almost half of all respondents started the questionnaire before February 1st, 2018 – the day the speed issues were fixed. Eleven percent of all respondents were part of the new incentive structure, which came into effect after the third email reminder (students only). See the summary in Table 6.10. The assignment to experimental groups was perfectly balanced across the respondents (with about 2,000 respondents in each group). 234 respondents were not assigned to one of the experimental groups as they broke off before the assignment was conducted (before the third survey page). Sixty-one percent of all respondents were females. As in previous years, the majority of all respondents were White (64%), followed by Asian respondents (15%), and Hispanics (6%). Black respondents and respondents in the “other” category each accounted for about 4% of the respondents. About 7% of all respondents had a missing race information. Twenty-seven percent of all respondents were faculty and staff respondents, and 73% were students. Most respondents (84%) were not part of the panel condition.<sup>117</sup>

Only 18% of all respondents reacted promptly after the first email invitation and entered the study; the majority of all respondents waited for at least one email reminder (82%). Most respondents chose to answer the questionnaire using a non-mobile device (83%) and only 17% of respondents answered on mobile devices.

<sup>117</sup>Note that only students were eligible to be in the panel condition of the study.

Table 6.10: Paradata information, respondents only

|  | <b>Freq.</b> | <b>Perc.</b>   |
|--|--------------|----------------|
| <b>Total respondents</b>                             | <b>6,497</b> | <b>100.00%</b> |
| <b>Response type</b>                                 |              |                |
| Introduction breakoff                                | 359          | 5.53%          |
| Questionnaire breakoff                               | 737          | 11.34%         |
| Complete response                                    | 5,401        | 83.13%         |
| <b>Non-paradata information: survey design</b>       |              |                |
| <b>Speed issues indicator</b>                        |              |                |
| No speed issues                                      | 3,559        | 54.78%         |
| Speed issues   | 2,938        | 45.22%         |
| <b>New incentive structure for students</b>          |              |                |
| Old incentive structure                              | 5,785        | 89.04%         |
| New incentive structure                              | 712          | 10.96%         |
| <b>Treatment group</b>                               |              |                |
| CG   | 2,082        | 32.05%         |
| TG1: tailored intervention                           | 2,090        | 32.17%         |
| TG2: generic intervention                            | 2,091        | 32.18%         |
| No group assigned                                    | 234          | 3.60%          |
| <b>Non-paradata information: administrative data</b> |              |                |
| <b>Gender</b>  |              |                |
| Female   | 3,941        | 60.66%         |
| Male   | 2,556        | 39.34%         |
| <b>Race/ethnicity</b>                                |              |                |
| Asian  | 1,002        | 15.42%         |
| Black  | 292          | 4.49%          |
| Hispanic   | 374          | 5.76%          |
| White  | 4,170        | 64.18%         |
| Other race   | 275          | 4.23%          |
| Missing race   | 384          | 5.91%          |
| <b>U of M affiliation</b>                            |              |                |

Table 6.10: Paradata information, respondents only (*continued*)

|                             | <b>Freq.</b> | <b>Perc.</b> |
|-----------------------------|--------------|--------------|
| Faculty/staff               | 1,774        | 27.30%       |
| Student                     | 4,723        | 72.70%       |
| <b>Panel membership</b>     |              |              |
| Non-panel member            | 5,429        | 83.56%       |
| Panel member                | 1,068        | 16.44%       |
| <b>Paradata information</b> |              |              |
| <b>Response latency</b>     |              |              |
| No reminder sent            | 1,171        | 18.02%       |
| Reminder sent               | 5,326        | 81.98%       |
| <b>Answering device</b>     |              |              |
| Non-mobile                  | 5,394        | 83.02%       |
| Mobile                      | 1,103        | 16.98%       |

## 6.4.2 Results of the experiment

### 6.4.2.1 Model success

As described in Section 6.3, I first evaluated whether the risk estimation was related to breakoff behavior. This was done by focusing only on the control group. I expected to see lower breakoff risks for respondents who completed the questionnaire. Table 6.11 displays the t-test comparisons results of the average breakoff risk for complete respondents and breakoff respondents by questionnaire topic and U of M affiliation in columns two and four. Columns three and five show the number of breakoffs in every questionnaire topic by affiliation, showing a clear tendency for positive differences with seven significant differences, indicating lower breakoff risks for complete respondents, especially in the beginning of the questionnaire.<sup>118</sup> The differences between the average risk seemed to be bigger for those questionnaire sections where many respondents broke off. This suggests a positive relationship between the estimated breakoff risk and the variable “next page is breakoff.”

<sup>118</sup>Note that faculty/staff did not answer the environment section.

Table 6.11: Average risk differences for breakoff respondents versus complete respondents by topic section and U of M affiliation (CG only)

|                          | Students         |                        | Faculty/staff    |                        |
|--------------------------|------------------|------------------------|------------------|------------------------|
|                          | Risk differences | # Breakoff respondents | Risk differences | # Breakoff respondents |
| Introduction             | 177.72.          | 28                     | 85.70            | 18                     |
| Transportation           | 6.13***          | 97                     | 11.13*           | 20                     |
| Conservation             | 7.24**           | 25                     | 2.70             | 3                      |
| Food                     | 8.24**           | 18                     | 2.77.            | 3                      |
| Climate                  | 3.20*            | 7                      | -0.19            | 5                      |
| General sustainability   | 0.52             | 9                      | 4.39             | 6                      |
| Sustainability at U of M | 2.55             | 12                     | -1.49.           | 5                      |
| Environment              | 36.05            | 31                     | NA               | NA                     |
| Demographics             | 0.53             | 16                     | -0.03            | 6                      |

*Note:*

Significance levels: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ , .  $p < 0.1$

Due to their low values, the average risk differences were multiplied by 10,000.

To confirm this finding, I evaluated the relationship of the variable “next page is breakoff” and the standardized risk (dependent variable) on a page level for students and faculty/staff assuming a standard normal distribution for the dependent variable. To account for the correlation of repeated measurements, I fitted generalized linear regression models using GEE assuming a compound-symmetric (exchangeable) correlation structure.<sup>119</sup> For this, I only used the control group, since this group did not receive any intervention. I expected the indicator “next page is breakoff” and the estimated breakoff risk to have a positive relationship. I controlled for respondents’ gender, race, U of M affiliation, panel membership, whether they received a reminder email, their answering device, and the number of pages seen. Additionally, I added indicators about whether the speed issues in the beginning of data collection affected the respondents (binary: yes/no), or if they were part of the incentive structure change (binary: yes/no). The findings in Table 6.12 confirm the implemented model: most relationships were significant.<sup>120</sup>

**Intercept.** On average, male, white students and non-panel members who responded after the first email invitation on a non-mobile device after the coding issues were resolved but before the new incentive structure was in place had a standardized risk of -0.4318 if the next page was not a breakoff page. If this respondent was a faculty/staff member, their standardized risk was -0.1969.

#### **Non-paradata information.**

**Next page is breakoff.** If the next page was a breakoff page, the estimated risk for students was significantly higher (by 0.2751) than if the next page was not a breakoff page (reference category). This finding is not confirmed for faculty/staff respondents.

**Speed issues.** If respondents started the questionnaire before the programming team and I fixed the speed issues, the estimated risks of breaking off tended to be lower (reference category: no speed issues). This relationship was not significant.

**New incentive structure.** Students who started the questionnaire after the incentive structure changed (reference category: old incentive structure) had lower estimated risk of quitting the questionnaire. This variable was not applicable for faculty/staff respondents.

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<sup>119</sup>This correlation structure assumes that all standardized risks of one respondent are equally correlated. When the unstructured and exchangeable correlation structures were applied, the quasi-likelihood information criteria for model fit QIC (independence model information criterion) was lower in the exchangeable than in the unstructured correlation structure (Pan 2001; Ekstrom 2018).

<sup>120</sup>Interpretation of each coefficient assumes that all other variables stay constant. Additionally, all coefficients are conditioned on responding to the questionnaire in the first place.



**Gender.** In this wave of SCIP female respondents seemed to have higher standardized risks of breaking off on the next page than male respondents. This was true for both affiliation groups (0.1259 more for students and 0.1220 more risk for faculty/staff).

**Race/ethnicity.** In both affiliation groups, all other races and ethnicities (reference category: white) had a higher risk of breaking off on the next page. Only respondents categorized as “other” (i.e., multiple races and ethnicities, Hawaiian and Native American) had lower risks of breaking off.

**Panel membership.** Respondents who were part of the panel condition as compared to non-panel members, had a -0.6402 lower risk of quitting the questionnaire. This variable was not applicable for faculty/staff respondents.

**Paradata information.**

**Response latency.** For respondents who received a reminder email the mean breakoff risk was 0.2217 units higher than for respondents who answered promptly to the first email invitation. This was not the case for faculty/staff respondents as the coefficient was not significant.

**Answering device.** Answering the questionnaire on a mobile device resulted in higher estimated breakoff risks when compared to non-mobile (reference category) for both affiliation groups (the mean breakoff risk was 1.0879 units higher for mobile students, and 0.5511 units higher for mobile faculty/staff).

**Number of pages seen.** With every page, the estimated risk of breaking off increased by 0.0013 units for faculty/staff respondents. This variable was not significant for students.

Table 6.12: Coefficients and standard errors of the page-level generalized linear regression models for 'standardized breakoff risk' as dependent variable separated by U of M affiliation (CG only)

|   | Students   |            | Faculty/staff |            |
|---|------------|------------|---------------|------------|
|   | Coeff.     | Std. error | Coeff.        | Std. error |
| Intercept   | -0.4318*** | 0.0292     | -0.1969***    | 0.0391     |
| <b>Non-paradata information</b>                             |            |            |               |            |
| <b>Breakoff page (reference: next page is non-breakoff)</b> |            |            |               |            |
| Next page is breakoff                                       | 0.2751***  | 0.0830     | 0.1667        | 0.1829     |
| <b>Data collection flags</b>                                |            |            |               |            |
| Speed issues (reference: no speed issues)                   | -0.0131    | 0.0196     | -0.0417       | 0.0358     |
| New incentive structure (reference: old incentive)          | -0.0056    | 0.0146     | NA            | NA         |
| <b>Gender (reference: male)</b>                             |            |            |               |            |
| Female  | 0.1259***  | 0.0140     | 0.1220***     | 0.0256     |
| <b>Race/ethnicity (reference: white)</b>                    |            |            |               |            |
| Asian   | 0.2727***  | 0.0193     | 0.5230***     | 0.0510     |
| Black   | 0.5816***  | 0.0428     | 1.0376***     | 0.0773     |
| Hispanic  | 0.3569***  | 0.0365     | 0.5657***     | 0.0770     |
| Other race  | -0.0853*** | 0.0226     | -0.1419       | 0.4364     |
| Missing race  | 0.0509*    | 0.0233     | 0.8593***     | 0.1274     |
| <b>Panel membership (reference: non-panel member)</b>       |            |            |               |            |
| Panel member  | -0.6402*** | 0.0153     | NA            | NA         |
| <b>Paradata information</b>                                 |            |            |               |            |
| <b>Response latency (reference: no reminder sent)</b>       |            |            |               |            |
| Reminder sent   | 0.2217***  | 0.0240     | -0.0211       | 0.0301     |
| <b>Answering device (reference: non-mobile)</b>             |            |            |               |            |
| Mobile  | 1.0879***  | 0.0240     | 0.5511***     | 0.0866     |
| <b>Individual page count</b>                                |            |            |               |            |
| Number of pages seen  | 0.0000     | 0.0002     | 0.0013*       | 0.0006     |

*Note:*

Significance levels: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ , .  $p < 0.1$

The estimated correlations among observations for the same respondent were

0.0508 (Std. error = 0.0097) for the student model 0.0685 (Std. error = 0.0172) for the faculty model.

The pseudo  $R^2$  (Zheng 2000) equaled 0.308 for the student model and 0.087 for the faculty/staff model, indicating a better overall fit for students than for faculty/staff. This suggests that the implemented model was better at detecting upcoming breakoff pages for student respondents.

#### 6.4.2.2 Descriptive analyses of thresholds

After investigating the success of the implemented model in predicting breakoff behavior, I turned to the effect of the intervention message. I first performed descriptive analyses on who crossed the threshold and how often. As the introduction section had no intervention messages, I excluded introduction breakoff respondents from all further analyses.

Most respondents crossed the threshold at one point of the questionnaire. Only 3% of respondents never crossed the threshold. The model detected most questionnaire breakoff respondents. Only 8% of all breakoff respondents (61) were not detected (i.e., never crossed the threshold).<sup>121</sup> Figure 6.3 shows that some respondents crossed the threshold up to 40 times (with a mean of 8) while they were responding to the questionnaire.<sup>122</sup>

Often, the threshold was crossed for the first time quite early in the questionnaire with a median of five pages seen (50% of all respondents crossed the threshold before or at page  $p_i = 5$ , if they ever did so). However, some respondents crossed the threshold for the first time as late as page  $p_i = 47$  and  $p_i = 65$ , as seen in Figure 6.4.<sup>123</sup>

#### 6.4.2.3 Intervention success

##### 6.4.2.3.1 Introduction breakoff

To assess the success of the enhanced introduction, I compared the introduction breakoff rates between the years 2014, 2015, and 2018. In total, there were 359 (6%) introduction breakoffs in 2018 (accounting for about 1/3 of all breakoff respondents; see Section 6.4.1). These numbers were slightly lower in the years 2014 and 2015 – 206

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<sup>121</sup>Fifty-two of those were students who quit the questionnaire early, i.e., at page  $p_i = 4$ .

<sup>122</sup>Note that despite this high number the intervention message was only shown once – after the first time the estimated breakoff risk crossed the threshold.

<sup>123</sup>Note that only respondents assigned to TG1 (tailored intervention), saw the intervention at this point (the first threshold crossing) of the first time crossing the threshold. Members of CG did not see any intervention, and TG2 (generic intervention) saw the intervention message after the first question page  $p_{survey} = 3$ , regardless of their estimated risk of breaking off.

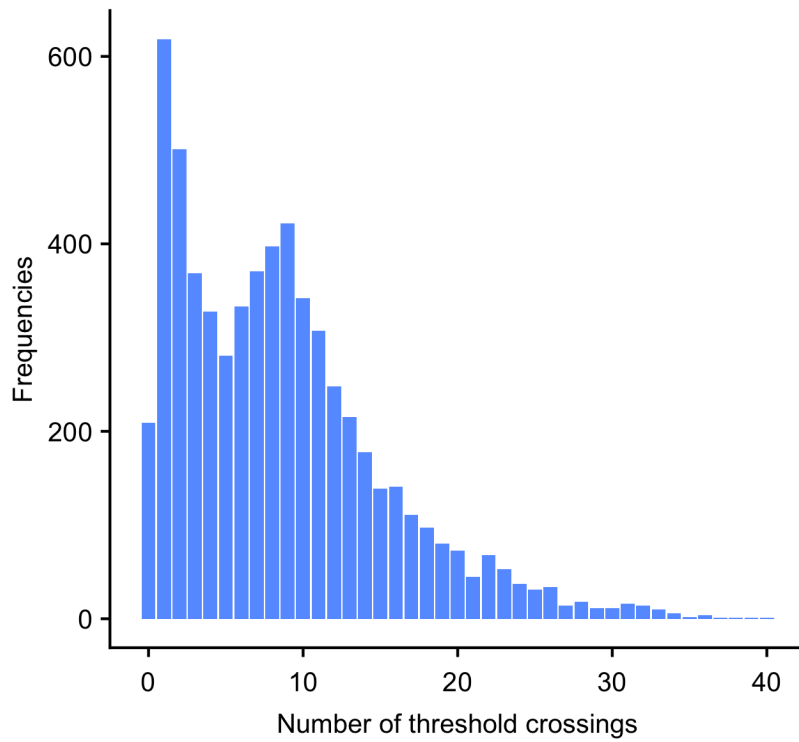


Figure 6.3: Number of times respondents crossed the threshold

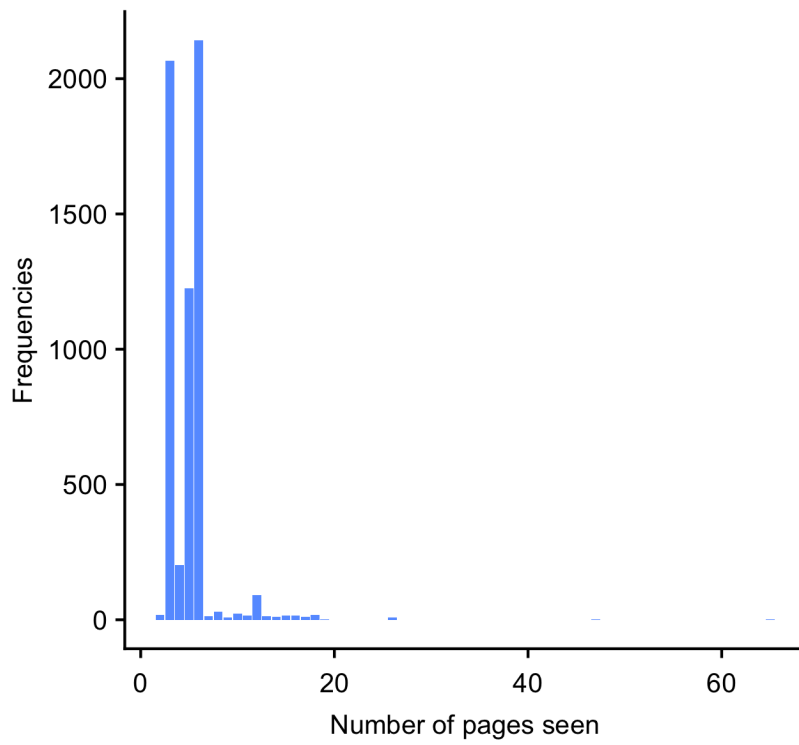


Figure 6.4: Number of pages seen before first threshold crossing

(3%) and 235 (4%), respectively. Once I restricted the 2018 SCIP wave to respondents who were not affected by the speed issues in the beginning of the data collection, I saw introduction breakoff rates similar to those in 2014 and 2015: 127 (4%), suggesting a relatively significant effect of the speed issues on introduction breakoffs and almost no effect of the enhanced introduction to reduce introduction breakoff.

#### 6.4.2.3.2 Questionnaire breakoff

##### **Treatment measure 1: breakoff rates.**

After excluding all introduction breakoff respondents, the control group showed a 13% (questionnaire) breakoff rate, TG1 (tailored intervention) had an 12% breakoff rate, and TG2 (generic intervention) only showed an 11% rate of questionnaire breakoff. I compared these differences using Kaplan-Meier survival curves to detect differences across the questionnaire in Figure 6.5. The y-axis displays the survival rate, and the x-axis shows the number of pages seen.<sup>124</sup> The green line represents the control group. The orange line represents the tailored intervention group (TG1), and the grey line the generic intervention group (TG2).

There were no significant differences in breakoff rates between these three groups, since the three lines overlap in the Kaplan-Meier survival curves presented in Figure 6.5.

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<sup>124</sup>Note that the y-axis in Figure 6.5 ranges between 0.7 and 1 instead of 0 to 1. This was done to better see potential differences between the experimental groups.

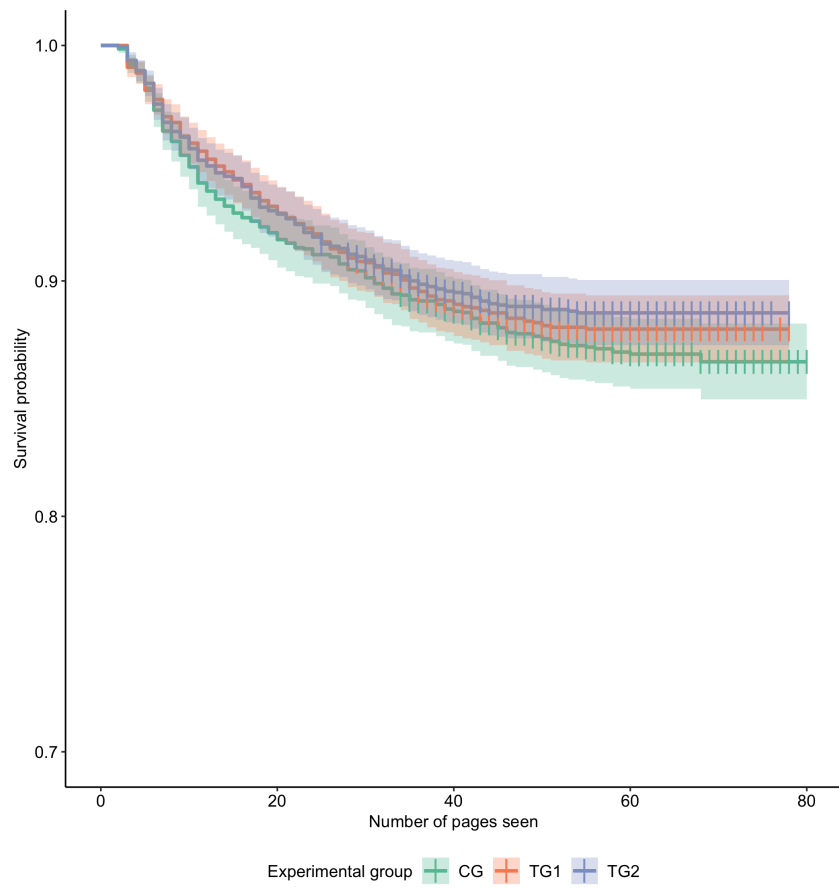


Figure 6.5: Kaplan-Meier survival curves by experimental group

To investigate this further, I fitted a respondent-level logistic regression model with the variable “respondent is breakoff respondent” (yes/no) as a dependent variable, controlling for all available information (i.e., administrative data and paradata), and exploring the effect of the treatment group with all possible first-order interactions (introduction breakoff respondents excluded) on a respondent level. The Hosmer-Lemeshow test was not significant ( $\chi^2 = 7, p = 0.5$ ) and did not give any indication of a bad model fit. Most findings in Table 6.13 confirm previous findings and, therefore, the implemented model.<sup>125</sup>

Due to the interactions, the interpretation of the net effect for each variable regarding the probability of breaking off is more complex. Therefore, I included Figure 6.6, which displays the predicted probabilities for all variables and their interactions with the experimental groups. The control group is displayed in green. The tailored intervention group (TG1) is orange. The generic intervention group (TG2) in grey.

Table 6.13: Coefficients and standard errors of the respondent-level logistic regression model with ‘questionnaire breakoff’ as the dependent variable to investigate the effect of treatment group (reference: complete response)

|  | <b>Coeff.</b> | <b>Std. error</b> |
|--|---------------|-------------------|
| Intercept  | -3.1847***    | 0.2655            |
| <b>Non-paradata information</b>                    |               |                   |
| <b>Data collection flags</b>                       |               |                   |
| Speed issues (reference: no speed issues)          | 0.7025***     | 0.1645            |
| New incentive structure (reference: old incentive) | -0.3823       | 0.2589            |
| <b>Treatment group (reference: control group)</b>  |               |                   |
| TG1: tailored intervention                         | 0.3040        | 0.3750            |
| TG2: generic intervention                          | 0.0343        | 0.3763            |
| <b>Gender (reference: male)</b>                    |               |                   |
| Female   | 0.1167        | 0.1397            |
| <b>Race/ethnicity (reference: white)</b>           |               |                   |
| Asian  | 0.0633        | 0.1900            |
| Black  | 0.3571        | 0.2860            |
| Hispanic   | -0.3487       | 0.3248            |

<sup>125</sup>Due to the test suggested by Valliant and Dever (2017), I chose to report the unweighted model in this section. For more information please see Valliant and Dever (2017), Chapter 7 and Appendix A, Section 3.5. For the result of the weighted model please see Appendix A, Table A.11.

Table 6.13: Coefficients and standard errors of the respondent-level logistic regression model with 'questionnaire breakoff' as the dependent variable to investigate the effect of treatment group (reference: complete response) (*continued*)

|   | <b>Coeff.</b> | <b>Std. error</b> |
|---|---------------|-------------------|
| Other race  | 0.1505        | 0.3463            |
| Missing race  | -0.1032       | 0.2821            |
| <b>U of M affiliation (reference: faculty/staff)</b>  |               |                   |
| Student   | 0.8474***     | 0.1862            |
| <b>Panel membership (reference: non-panel member)</b> |               |                   |
| Panel member  | -1.0532***    | 0.2420            |
| <b>Paradata information</b>                           |               |                   |
| <b>Response latency (reference: no reminder sent)</b> |               |                   |
| Reminder sent   | 0.4168*       | 0.1959            |
| <b>Answering device (reference: non-mobile)</b>       |               |                   |
| Mobile  | 0.2857.       | 0.1654            |
| <b>Interactions with treatment group</b>              |               |                   |
| <b>TG * Data collection flags</b>                     |               |                   |
| TG1 * Speed issues                                    | -0.0242       | 0.2378            |
| TG2 * Speed issues                                    | 0.1856        | 0.2370            |
| TG1 * New incentive structure                         | 0.1157        | 0.3758            |
| TG2 * New incentive structure                         | -0.0831       | 0.3983            |
| <b>TG * Gender</b>                                    |               |                   |
| TG1 * Female  | -0.0786       | 0.2006            |
| TG2 * Female  | -0.3964*      | 0.2012            |
| <b>TG * Race/ethnicity</b>                            |               |                   |
| TG1 * Asian   | -0.2320       | 0.2872            |
| TG2 * Asian   | -0.2701       | 0.2899            |
| TG1 * Black   | -0.0961       | 0.4433            |
| TG2 * Black   | 0.2484        | 0.4091            |
| TG1 * Hispanic  | 0.5001        | 0.4326            |
| TG2 * Hispanic  | -0.1462       | 0.4868            |
| TG1 * Other race                                      | 0.4072        | 0.4475            |



Table 6.13: Coefficients and standard errors of the respondent-level logistic regression model with 'questionnaire breakoff' as the dependent variable to investigate the effect of treatment group (reference: complete response) (*continued*)

|                                | Coeff.   | Std. error |
|--------------------------------|----------|------------|
| TG2 * Other race               | 0.0782   | 0.4764     |
| TG1 * Missing race             | 0.5420   | 0.3976     |
| TG2 * Missing race             | 0.2635   | 0.4046     |
| <b>TG * U of M affiliation</b> |          |            |
| TG1 * Student                  | -0.5190* | 0.2595     |
| TG2 * Student                  | -0.3589  | 0.2662     |
| <b>TG * Panel membership</b>   |          |            |
| TG1 * Panel member             | 0.3339   | 0.3291     |
| TG2 * Panel member             | 0.7323*  | 0.3224     |
| <b>TG * Response latency</b>   |          |            |
| TG1 * Reminder sent            | -0.0367  | 0.2780     |
| TG2 * Reminder sent            | 0.1517   | 0.2811     |
| <b>TG * Answering device</b>   |          |            |
| TG1 * Mobile                   | 0.0704   | 0.2417     |
| TG2 * Mobile                   | 0.1652   | 0.2406     |

Note: Significance levels: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ , .  $p < 0.1$

Respondents who were affected by the speed issues during the data collection were  $(\exp(0.7025) - 1) * 100\% = 102\%$  more likely to quit the questionnaire than respondents who were not affected by these issues. There was no significant differences in breakoff probability for respondents affected by the new incentive structures (as compared to respondents who were included in the old incentive structure). Respondents in the treatment groups that also belonged to the reference categories of all other predictors showed higher breakoff probabilities (an increase in the breakoff probability by  $(\exp(0.3040) - 1) * 100\% = 36\%$  for respondents in the tailored intervention group, and by  $(\exp(0.0343) - 1) * 100\% = 3\%$  for respondents in the generic intervention group) than respondents in the control group, but the effects of the treatment group for the reference categories of all of the variables interacted with the treatment were not significant (i.e., there was no significant change in breakoff rates across experimental groups for White, faculty/staff males, who started the survey after the speed issues were fixed, who had no reminder sent to them, and who

answered on a PC).

There was no significant differences in the breakoff probabilities for women compared to men respondents, but women assigned to the generic intervention group were  $(1 - \exp(0.0343 + (-0.3964))) * 100\% = 30\%$  less likely to quit the questionnaire than women assigned to the control group. This is also confirmed in Figure 6.6C where females assigned to TG2 (grey line) showed the lowest predicted breakoff probabilities.

There were no significant differences in breakoff probabilities for different races compared to White respondents.

Students assigned to the control group were  $(\exp(0.8474) - 1) * 100\% = 133\%$  more likely to quit the questionnaire than faculty/staff respondents assigned to the control group. Once students were assigned to the tailored intervention group, they were  $(1 - \exp(0.3040 + (-0.5190))) * 100\% = 19\%$  less likely to quit the questionnaire than respondents assigned to the control group. This is confirmed by Figure 6.6E where the orange line for students in TG1 indicated lower predicted breakoff probabilities than for students in the CG (green line).

Panel members assigned to the control group were  $(1 - \exp(-1.0532)) * 100\% = 65\%$  less likely than non-panel members assigned to the control group. The likelihood for panel members increased by  $(\exp(0.0343 + 0.7323) - 1) * 100\% = 115\%$  when they were assigned to TG2 compared to panel respondents assigned to the control group. This can be easily seen in Figure 6.6F where the grey line for panel members assigned to TG2 showed the highest predicted breakoff probabilities.<sup>126</sup>

In summary, the effects of the treatment group for the reference categories of all of the variables were not significant. But there were positive findings for other subgroups: females responded well to the generic intervention message (TG2), while students were affected the most by the tailored intervention (TG1) if the goal was to reduce breakoff. At the same time, students in the panel conditions reacted negatively to generic intervention messages (TG2), which led to increased chances of breaking off when they were assigned

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<sup>126</sup>The intervention message for TG2 was shown after the first question page ( $p_{survey} = 3$ ). There is indication that the negative reaction of panel members toward the generic intervention followed promptly after the intervention: comparing breakoff frequencies during same page interval ( $p_i \in [4, 5, 6, 7]$ ) for all experimental groups showed that up to twice as many panel members quit during this page interval. This difference was smaller when focusing on a wider page interval ( $p_i \in [4, 5, 6, 7, \dots, 25]$ ) where up to 60% more panel members quit the questionnaire when assigned to TG2 compared to TG1 or CG. Despite this finding one should keep the low frequencies in mind: across all experimental groups, only 14 panel members quit during the first page interval ( $p_i \in [4, 5, 6, 7]$ ) and 45 panel members quit during the second page interval ( $p_i \in [4, 5, 6, 7, \dots, 25]$ ).

to that experimental group.

The fact that the effects of the treatment group for most subgroups were not significant could be due to two main components: (1) low sample size, and (2) intervention not being intrusive enough. Women are generally speculated to be subject of higher social desirability and acquaintance (Dykema et al. 2013; Patrick et al. 2013; Porter and Whitcomb 2005b). When prompted directly, using a generic intervention given to all women – independent of their breakoff risk – they are likely to follow the request and break off at lower rates. At the same time, students have been breaking off at higher rates in previous waves of this survey (Chapter 4 and Chapter 5). Thus, decreasing their breakoff rates is particularly important. The reduced breakoff rate for students assigned to the TG1 compared to students in CG is likely due to the high numbers of treated students. Additionally, it could show increased motivation of likely breakoff respondents due to the personalized timing of the intervention. At the same time, treating already motivated respondents without it being necessary (generic intervention) showed to be harmful: panel respondents who were in general less likely to quit the questionnaire were more at risk of quitting once assigned to the generic intervention. Thus, trying to motivate already motivated respondents did not work and even reversed the desired outcome.

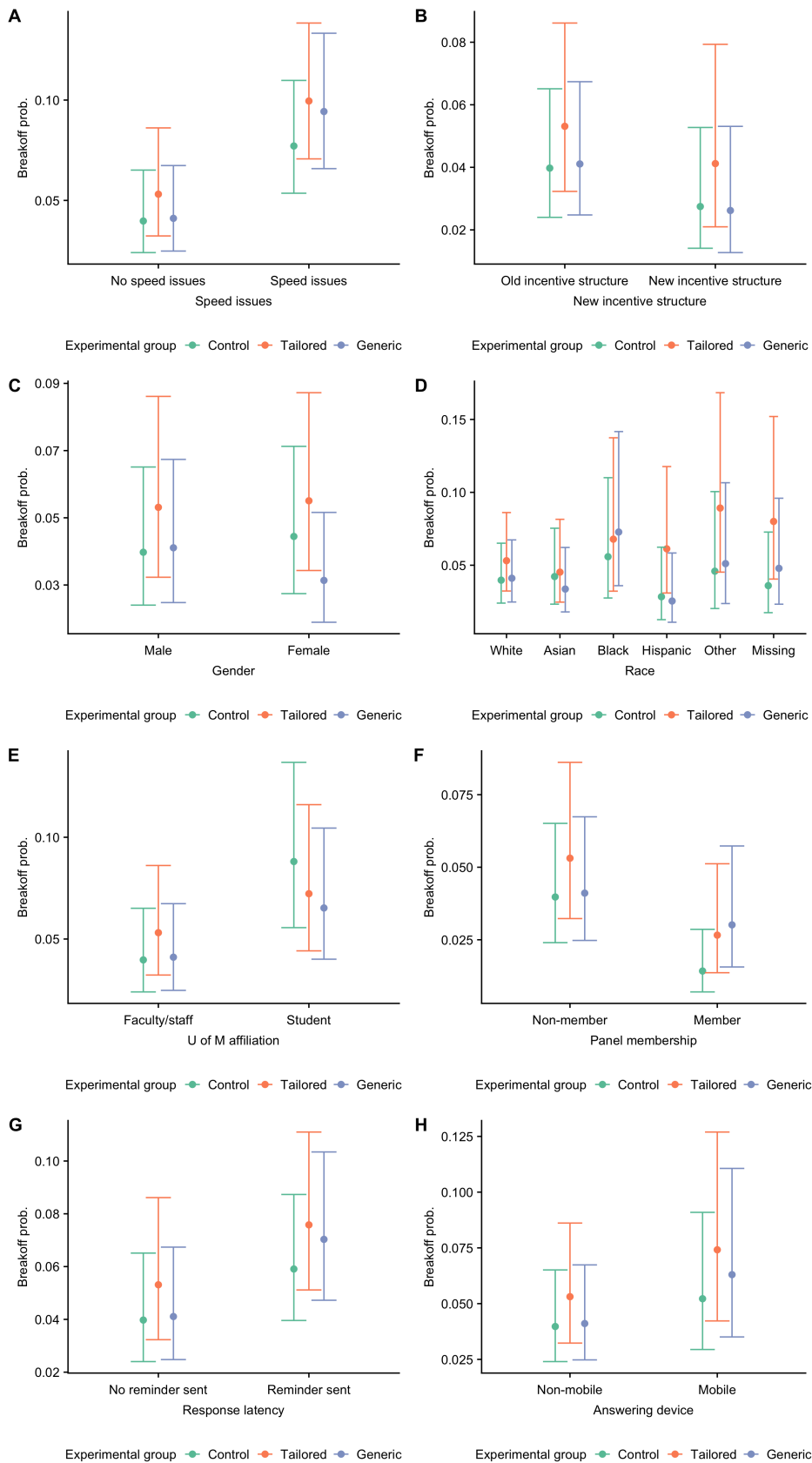


Figure 6.6: Predicted breakoff probabilities based on logistic regression model with breakoff respondent as dependent variable

## Treatment measure 2: average threshold crossings.

Next, I investigated whether the two treatment groups were able to alter the behavior of the respondents. In other words, did respondents in the treatment groups cross the thresholds less often than respondents in the control group? To determine this, I fitted a linear regression model to the average number of threshold crossings for each respondent, resulting in  $R^2 = 0.63$  indicating moderate model fit.<sup>127</sup> Table 6.14 shows that on average, white, male, faculty/staff respondents with no reminder sent and who used a non-mobile device to answer the questionnaire after the coding issues were resolved crossed the threshold 0.09 times per page. This means that on, average one, this respondent crossed the threshold every 10th page.

Table 6.14: Coefficients and standard errors of the respondent-level linear regression model with 'average number of threshold crossings' as dependent variable to investigate the effect of treatment group

|  | Coeff.    | Std. error |
|--|-----------|------------|
| Intercept  | 0.0904*** | 0.0069     |
| <b>Non-paradata information</b>                    |           |            |
| <b>Data collection flags</b>                       |           |            |
| Speed issues (reference: no speed issues)          | -0.0011   | 0.0048     |
| New incentive structure (reference: old incentive) | -0.0035   | 0.0060     |
| <b>Treatment group (reference: control group)</b>  |           |            |
| TG1: tailored intervention                         | 0.0015    | 0.0098     |
| TG2: generic intervention                          | -0.0141   | 0.0097     |
| <b>Gender (reference: male)</b>                    |           |            |
| Female   | -0.0008   | 0.0037     |
| <b>Race/ethnicity (reference: white)</b>           |           |            |
| Asian  | 0.0726*** | 0.0051     |
| Black  | 0.1219*** | 0.0084     |
| Hispanic   | 0.0910*** | 0.0081     |
| Other race   | -0.0205*  | 0.0100     |
| Missing race                                       | 0.0300*** | 0.0076     |

<sup>127</sup>Due to the test suggested by Valliant and Dever (2017), I chose to report the unweighted model in this section. For more information please see Valliant and Dever (2017), Chapter 7 and Appendix A, Section 3.5. The results of the weighted model is in Appendix A, Table A.12.

Table 6.14: Coefficients and standard errors of the respondent-level linear regression model with 'average number of threshold crossings' as dependent variable to investigate the effect of treatment group (*continued*)

|   | Coeff.     | Std. error |
|---|------------|------------|
| <b>U of M affiliation (reference: faculty/staff)</b>  |            |            |
| Student   | 0.0636***  | 0.0046     |
| <b>Panel membership (reference: non-panel member)</b> |            |            |
| Panel member  | -0.1630*** | 0.0051     |
| <b>Paradata information</b>                           |            |            |
| <b>Response latency (reference: no reminder sent)</b> |            |            |
| Reminder sent   | 0.0148**   | 0.0055     |
| <b>Answering device (reference: non-mobile)</b>       |            |            |
| Mobile  | 0.1753***  | 0.0049     |
| <b>Interactions with treatment group</b>              |            |            |
| <b>TG * Data collection flags</b>                     |            |            |
| TG1 * Speed issues                                    | 0.0109     | 0.0068     |
| TG2 * Speed issues                                    | 0.0121.    | 0.0067     |
| TG1 * New incentive structure                         | 0.0119     | 0.0085     |
| TG2 * New incentive structure                         | 0.0058     | 0.0085     |
| <b>TG * Gender</b>                                    |            |            |
| TG1 * Female  | -0.0135**  | 0.0052     |
| TG2 * Female  | -0.0108*   | 0.0052     |
| <b>TG * Race/ethnicity</b>                            |            |            |
| TG1 * Asian   | -0.0125.   | 0.0072     |
| TG2 * Asian   | -0.0018    | 0.0073     |
| TG1 * Black   | 0.0263*    | 0.0123     |
| TG2 * Black   | 0.0212.    | 0.0122     |
| TG1 * Hispanic  | -0.0171    | 0.0111     |
| TG2 * Hispanic  | -0.0177    | 0.0113     |
| TG1 * Other race                                      | -0.0045    | 0.0131     |
| TG2 * Other race                                      | -0.0130    | 0.0133     |
| TG1 * Missing race                                    | -0.0042    | 0.0112     |

Table 6.14: Coefficients and standard errors of the respondent-level linear regression model with 'average number of threshold crossings' as dependent variable to investigate the effect of treatment group (*continued*)

|                                | Coeff.   | Std. error |
|--------------------------------|----------|------------|
| TG2 * Missing race             | -0.0211. | 0.0109     |
| <b>TG * U of M affiliation</b> |          |            |
| TG1 * Student                  | 0.0030   | 0.0066     |
| TG2 * Student                  | 0.0094   | 0.0065     |
| <b>TG * Panel membership</b>   |          |            |
| TG1 * Panel member             | -0.0111  | 0.0071     |
| TG2 * Panel member             | 0.0005   | 0.0071     |
| <b>TG * Response latency</b>   |          |            |
| TG1 * Reminder sent            | 0.0129.  | 0.0078     |
| TG2 * Reminder sent            | 0.0136.  | 0.0078     |
| <b>TG * Answering device</b>   |          |            |
| TG1 * Mobile                   | -0.0145* | 0.0069     |
| TG2 * Mobile                   | -0.0162* | 0.0069     |

Note: Significance levels: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ , .  $p < 0.1$

Due to the interactions, I included Figure 6.7 to interpret the relationship between the number of threshold crossings and the covariates more easily. The y-axis reflects the predicted average threshold crossings, separated for each variable. The control group is displayed in green. The tailored intervention group is orange (TG1), and the generic intervention group is grey (TG2).

None of the data collection flags were significant, indicating that they did not affect the number of threshold crossings for the respondents in the control group. This looked different for respondents in TG2: respondents who were affected by the speed issues and who were assigned to the generic intervention showed, on average,  $(-0.0141 + 0.0121) * (-1) = 0.002$  less threshold crossings than respondents who were affected by the speed issues but were assigned to the control group.

Females in the control group showed, on average, 0.0008 less threshold crossings than male respondents in the control group.<sup>128</sup> This relationship became even stronger for

<sup>128</sup>This was not significant at the 0.05 level.

females assigned to either one of the treatment groups: women assigned to the tailored intervention showed  $(0.0015 + (-0.0135)) * (-1) = 0.012$  less average threshold crossings than females assigned to the control group. Females in the generic intervention group showed  $(-0.0141 + (-0.0135)) * (-1) = 0.0276$  less average threshold crossings than females in the control group. This is confirmed in Figure 6.7C where female respondents in TG2 showed the lowest average threshold crossings compared to females in the CG.

In general, all other races compared to White showed more average threshold crossings when assigned to the control group (up to 0.13 for Black respondents in the CG).<sup>129</sup> When Black respondents were assigned to TG1 the average threshold crossings increased by  $(0.0015 + 0.0263) = 0.0278$  compared to Black respondents in the CG. This is confirmed in Figure 6.7C where Black respondents in TG1 showed the highest average threshold crossings compared to Blacks in the CG.

Students in the CG showed 0.0636 more threshold crossings than faculty/staff respondents. This did not change if students were assigned to either treatment group. Panel members showed 0.1630 less threshold crossings than non-panel members. Again, this was not affected by the treatment groups.

Respondents with response latency showed 0.0148 higher threshold crossings than respondents reacting promptly on the first email invitation. Once these respondents were assigned to the TG1 they showed higher threshold crossings  $(0.0015 + 0.0129 = 0.0144)$  but lower threshold crossings when assigned to TG2  $((-0.0141 + 0.0136) * (-1) = 0.0005)$  compared to late respondents in the CG. This is confirmed in Figure 6.7G where late respondents assigned to TG1 showed the highest predicted average threshold crossings.

Respondents on mobile devices who were assigned to the CG showed 0.1753 more average threshold crossings than respondents on non-mobile devices. Once these respondents were assigned to either treatment group, this effect reduced: mobile respondents in TG1 showed  $((0.0015 + (-0.0145)) * (-1) = 0.013)$  lower average threshold crossings than mobile respondents in CG, and mobile respondents in TG2 showed  $(-0.0141 + (-0.0162)) * (-1) = 0.0303$  lower average threshold crossings than mobile respondents in the CG. Again, this is confirmed by Figure 6.7H where the orange and grey line for mobile devices show the lowest predicted average threshold crossings.

In summary, the interventions (either TG1 or TG2) worked particularly well for female respondents as well as respondents on mobile devices when looking at the average number

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<sup>129</sup>The race category “other” showed the opposite relationship.



of threshold crossings. At the same time, the interventions had negative effects for Black respondents and respondents who answered the questionnaire later in the data collection period.

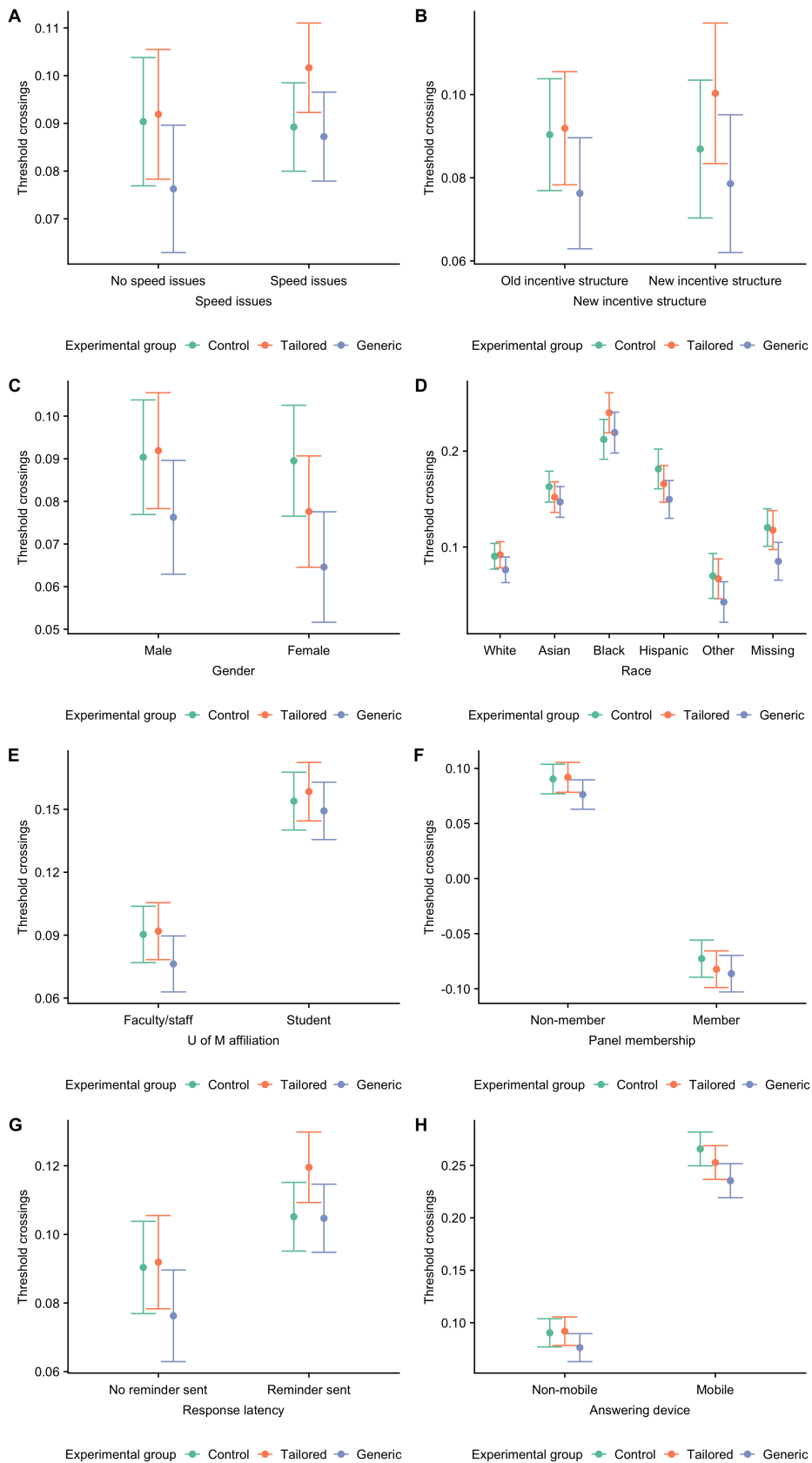


Figure 6.7: Predicted average threshold crossings based on linear regression model

### Treatment measure 3: number of pages seen.

After finding that respondents in the treatment groups showed less risky behavior but still broke off at a similar rate as the control group, I analyzed whether respondents assigned to the treatment groups showed greater effort to stay in the questionnaire. To accomplish this, I looked at questionnaire breakoff respondents only and fitted a respondent-level negative binomial regression model with the “maximum number of pages seen” as the dependent variable and the experimental groups as independent variables. Again, I controlled for administrative and paradata information, including all first-order interactions with treatment group.<sup>130</sup> Table 6.15 shows the results of the negative binomial regression model:<sup>131</sup> on average, white, male, faculty/staff breakoff respondents who answered the questionnaire before the first reminder and after the speed issues were resolved and who were assigned to the control group saw  $exp(2.9537) = 19$  pages before they broke off.

Table 6.15: Coefficients and standard errors of the respondent-level negative binomial regression with 'total number of pages seen' as dependent variable to explore the effect of treatment group (breakoff respondents only)

|  | Coeff.    | Std. error |
|--|-----------|------------|
| Intercept  | 2.9537*** | 0.1949     |
| <b>Non-paradata information</b>                    |           |            |
| <b>Data collection flags</b>                       |           |            |
| Speed issues (reference: no speed issues)          | 0.1586    | 0.1063     |
| New incentive structure (reference: old incentive) | 0.4849**  | 0.1802     |
| <b>Treatment group (reference: control group)</b>  |           |            |
| TG1: tailored intervention                         | -0.4549.  | 0.2690     |
| TG2: generic intervention                          | 0.0076    | 0.2681     |
| <b>Gender (reference: male)</b>                    |           |            |
| Female   | -0.0133   | 0.0937     |
| <b>Race/ethnicity (reference: white)</b>           |           |            |
| Asian  | -0.1226   | 0.1250     |

<sup>130</sup>Due to the overdispersion ( $\alpha = 8$ , p-Value < 0.001) in the Poisson model, I chose to present negative binomial regression models in this chapter.

<sup>131</sup>Due to the test suggested by Valliant and Dever (2017), I chose to report the unweighted model in this section. For more information please see Valliant and Dever (2017), Chapter 7 and Appendix A, Section 3.5. The results of the weighted model are in Appendix A, Table A.13.

Table 6.15: Coefficients and standard errors of the respondent-level negative binomial regression with 'total number of pages seen' as dependent variable to explore the effect of treatment group (breakoff respondents only) (*continued*)

|   | <b>Coeff.</b> | <b>Std. error</b> |
|---|---------------|-------------------|
| Black   | -0.4772*      | 0.1905            |
| Hispanic  | -0.1402       | 0.2189            |
| Other race  | 0.1335        | 0.2217            |
| Missing race  | -0.1905       | 0.1880            |
| <b>U of M affiliation (reference: faculty/staff)</b>  |               |                   |
| Student   | -0.0358       | 0.1259            |
| <b>Panel membership (reference: non-panel member)</b> |               |                   |
| Panel member  | -0.0546       | 0.1670            |
| <b>Paradata information</b>                           |               |                   |
| <b>Response latency (reference: no reminder sent)</b> |               |                   |
| Reminder sent   | -0.0086       | 0.1240            |
| <b>Answering device (reference: non-mobile)</b>       |               |                   |
| Mobile  | -0.0754       | 0.1099            |
| <b>Interactions with treatment group</b>              |               |                   |
| <b>TG * Data collection flags</b>                     |               |                   |
| TG1 * Speed issues                                    | -0.1539       | 0.1557            |
| TG2 * Speed issues                                    | -0.2112       | 0.1552            |
| TG1 * New incentive structure                         | -0.3398       | 0.2586            |
| TG2 * New incentive structure                         | -0.4234       | 0.2809            |
| <b>TG * Gender</b>                                    |               |                   |
| TG1 * Female  | 0.2693*       | 0.1371            |
| TG2 * Female  | 0.1853        | 0.1351            |
| <b>TG * Race/ethnicity</b>                            |               |                   |
| TG1 * Asian   | 0.2409        | 0.1915            |
| TG2 * Asian   | 0.0533        | 0.1945            |
| TG1 * Black   | 0.6540*       | 0.2980            |
| TG2 * Black   | 0.7037**      | 0.2655            |
| TG1 * Hispanic  | 0.3702        | 0.2879            |

Table 6.15: Coefficients and standard errors of the respondent-level negative binomial regression with 'total number of pages seen' as dependent variable to explore the effect of treatment group (breakoff respondents only) (*continued*)

|                                | <b>Coeff.</b> | <b>Std. error</b> |
|--------------------------------|---------------|-------------------|
| TG2 * Hispanic                 | -0.5242       | 0.3385            |
| TG1 * Other race               | -0.0035       | 0.2864            |
| TG2 * Other race               | -0.0459       | 0.3101            |
| TG1 * Missing race             | 0.1169        | 0.2608            |
| TG2 * Missing race             | -0.3006       | 0.2734            |
| <b>TG * U of M affiliation</b> |               |                   |
| TG1 * Student                  | 0.2986.       | 0.1725            |
| TG2 * Student                  | 0.0995        | 0.1766            |
| <b>TG * Panel membership</b>   |               |                   |
| TG1 * Panel member             | 0.1520        | 0.2254            |
| TG2 * Panel member             | 0.1308        | 0.2206            |
| <b>TG * Response latency</b>   |               |                   |
| TG1 * Reminder sent            | 0.0200        | 0.1792            |
| TG2 * Reminder sent            | -0.1919       | 0.1810            |
| <b>TG * Answering device</b>   |               |                   |
| TG1 * Mobile                   | 0.0632        | 0.1594            |
| TG2 * Mobile                   | -0.0750       | 0.1583            |

*Note:* Significance levels: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ , .  $p < 0.1$

Due to the interactions, I displayed the predicted total number of pages seen in Figure 6.8 for each variable. Each figure panel contains the predicted number of total pages seen on the y-axis and the categories for each variable on the x-axis. The control group is displayed in green. The tailored intervention group (TG1) is in orange, and the generic intervention group (TG2) is in gray.

There were no significant differences for breakoff respondents who were affected by the speed issues in the beginning of the data collection when focusing on how many pages each respondent had seen (Figure 6.8A). Breakoff respondents in the new incentive structure (guaranteed incentive) saw  $(exp(0.4849) - 1) * 100\% = 62\%$  more pages than respondents in the old incentive structure (lottery incentive). There was no difference between the

treatment groups for this variable.

In general, when respondents were assigned to TG1, they saw  $1 - \exp(-0.4549) * 100\% = 37\%$  less pages than breakoff respondents in the control group.

Male and female breakoff respondents assigned to CG saw the same number of pages before they quit the questionnaire, as the coefficient for the main effect was not significant at the 0.05 level. This changed once females were assigned to TG1: female breakoff respondents assigned to this group saw  $(1 - \exp(-0.4549 + 0.2693)) * 100\% = 17\%$  less pages than females in the control group.

Black breakoff respondents in the CG saw  $1 - \exp(-0.4772) * 100\% = 38\%$  less pages than White breakoff respondents assigned to the control group. Once assigned to one of the treatment groups this effect changed: Black breakoff respondents in TG1 saw  $(\exp(-0.4549 + 0.6540) - 1) * 100\% = 22\%$  more pages than Black respondents in the CG. At the same time, Black respondents in TG2 saw twice as many pages  $((\exp(0.0076 + 0.7037) - 1) * 100\% = 104\%)$  than Black breakoff respondents in the CG. This is also confirmed by Figure 6.8D where the grey line for Black respondents shows the highest predicted number of pages seen.

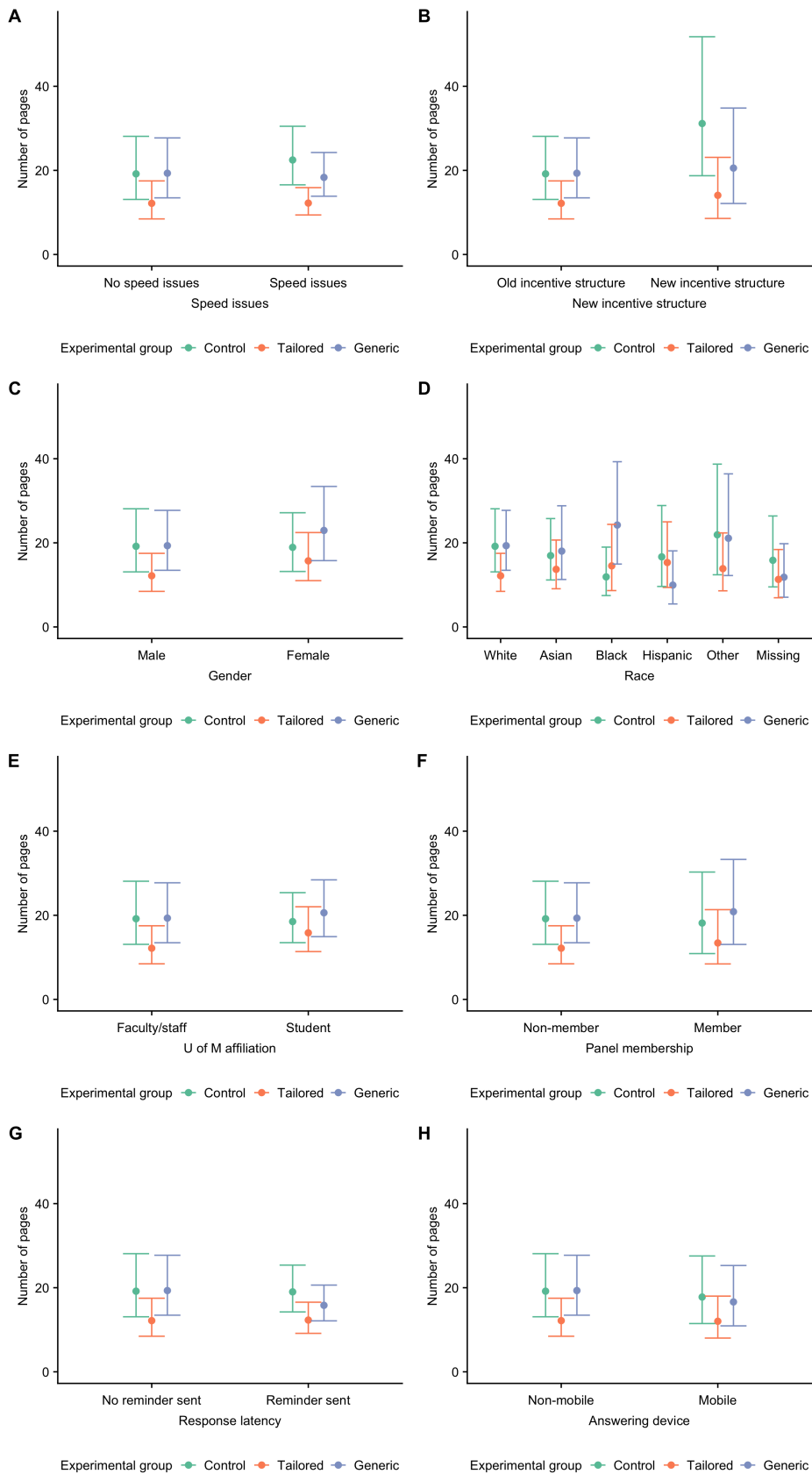


Figure 6.8: Predicted total number of pages seen based on negative binomial regression model

In summary, the effects of the treatment groups for the reference categories of all variables regarding the total number of pages seen for all breakoff respondent were low and for TG1 the effect was actually the opposite of what was expected. However, this was not true for Black respondents: when assigned to the tailored intervention group, Black respondents responded to 22% more survey pages than when assigned to the control group. At the same time, Black respondents saw to twice as many survey pages compared to the CG. This is a very promising finding: even though respondents quit the questionnaire at one point, the interventions helped to keep them longer in the survey instrument.

## 6.5 Conclusion

In summary, I was able to implement a dynamic Cox survival model for predicting hazards of breakoff in the 2018 SCIP wave. As the results of my analyses indicate, this implemented model was able to predict breakoff (Table 6.12). It seemed that the selected thresholds were set relatively low, leading to many respondents crossing the thresholds at one point during the questionnaire (Figure 6.3). At the same time, the model only missed 8% of all questionnaire breakoff respondents. There was no indication that the enhanced introduction decreased introduction breakoff. Likely due to the intervention's lack of intrusiveness and relatively low sample sizes – about 246 breakoff respondents per experimental group – there was no significant decrease in the overall breakoff rates for TG1 and TG2 (Figure 6.5). Despite this finding, respondents of certain subgroups who saw the intervention (i.e., both treatment groups) broke off at lower rates and crossed the threshold less often than respondents in the control group (Table 6.14). This is a promising finding and confirms that respondents' behavior can be altered using interventions. Lastly, I tested if breakoff respondents who saw the intervention stayed longer in the questionnaire than breakoff respondents who did not see the intervention. I found evidence that Black respondents increased the page numbers after seeing an intervention (Table 6.15).

To summarize the findings of this chapter:

- (1) Tailored interventions had the biggest effect on students' breakoff, while females seemed to react well on generically-timed interventions. At the same time, panel members had increased chances of breaking off when seeing unnecessary interventions.
- (2) Tailored and generic interventions had mixed effects on the number of threshold crossings. Females and respondents on mobile devices responded well to either treatment group and crossed the thresholds less often throughout the questionnaire.



On the other hand, Blacks and late respondents engaged in more risky behavior and crossed the thresholds more often if assigned to the tailored intervention group.

- (3) Both treatment groups had positive effects on the number of pages seen for Black breakoff respondents and they reacted particularly well on the generic intervention. This is a very promising outcome. Despite the lack of intrusion caused by the intervention, respondents did alter their behavior favorably and stayed in the questionnaire longer even if they ultimately quit.

In conclusion, I was able to find evidence for the hypotheses introduced in the beginning of this chapter. First, the dynamic survival model successfully predicted breakoff on the next page through response behavior. Second, tailored interventions helped to reduce breakoff rates for students, while females reacted well on generic interventions. At the same time, generic interventions increased breakoff chances for panel members, which provided evidence for the third hypothesis: interventions given at the wrong moment might be harmful for some respondents.

### **6.5.1 Limitations and future research**

The biggest limitations of this study were the problems in the beginning of the data collection as well as the incentive structure change mid-data collection. Even though I controlled for both changes in all analyses, the implemented models do not incorporate them into their risk calculations, nor did I account for these problems while setting the thresholds. This might be one of the reasons why so many respondents crossed the threshold at one point during the questionnaire. For example, the model did not distinguish between loading times and response times. Thus, respondents who started the questionnaire during the initial speed issues had very high breakoff risks, triggering the intervention. At the same time, respondents answering later in the data collection period had a higher breakoff risk (Chapter 5), and, therefore, both effects could not be untangled.

Additionally, changing the incentive structure mid-data collection from a lottery to a guaranteed incentive increased respondents' motivation to complete the questionnaire. Thus, respondents who would have been breakoff respondents – and were flagged as such through the implemented model – did not break off because of the increased motivation to complete the questionnaire. Ideally, the next study would not have any of these issues during data collection.

The next limitation regards the intervention. Respondents might be used to pop-up messages and might hit OK without even reading the message. Unfortunately, the java script did not capture information about how long the message was open before respondents closed it. Interventions like increasing the incentive if respondents are flagged as breakoff respondents, shortening the questionnaire to only key questions (Taylor, Cobb, and Zhang 2018) or offering a questionnaire using a modular design (West, Ghimire, and Axinn 2015) might have larger effects on breakoff rates than a simple motivational intervention message. Additionally, the intervention message was relatively small and therefore hard to read and/or easy to ignore. A bigger pop-up message could be more disruptive in the current response behavior, possibly having larger effects. Future research needs to focus on the most effective intervention to reduce breakoff – possibly continuing with qualitative research, focus groups, and small-scale lab experiments to control for most outside factors (e.g., internet connection, outside distractions, etc.).

It should be also noted that the intervention message originated from research focusing on measurement error rather than nonresponse error and was therefore directed to measurement error. I chose to use this message as it has been tested successfully in personalized and tailored intervention studies (Cibelli Hibben and Conrad 2016; Zhang and Conrad 2016). Thus, future research should investigate different message wordings targeting nonresponse error, for example, "Your participation in this survey is very important and helpful to us. Please stay committed to completing the questionnaire."

The last limitation involves the fact that the implemented models were constructed to be as efficient as possible, focusing on performance during the data collection. Hence, I decided to exclude certain variables and changed others to have less computational demand. Additionally, the implemented models only took the current and previous page characteristics into account, not next page characteristics. Due to skip patterns and the previous button option in the instrument, it was impossible to include this information in the implemented models. A study without skip patterns and previous options is necessary in order to include future page characteristics in the implemented model.

# Chapter 7

## Discussion and future research

The final chapter provides a summary of the theoretical framework of web survey breakoff and paradata, the statistical models, the methodology used, and the findings in Chapters 4 through 6. I highlight the contribution of this dissertation and its implications for practical work in survey methodology. Additionally, I conclude by acknowledging the limitations of this dissertation and suggest future research directions.

### 7.1 Summary

With the rise of web surveys, research on breakoff behavior has increased over the past decade (Callegaro, Lozar Manfreda, and Vehovar 2015; Peytchev 2009; Platinovšek 2013; Sakshaug and Crawford 2010; Steinbrecher, Roßmann, and Blumenstiel 2015; Vehovar and Čehovin 2014). Compared to more traditional data collection modes, like face-to-face surveys, breakoff is more common in web surveys with an average breakoff rate of 40% for targeted web surveys (Vehovar and Čehovin 2014).

In Chapter 2, I considered web survey breakoff in relation to the response continuum theory by Yan and Curtin (2010). This theory contends that respondents with low response propensity are likely to become unit nonrespondents or respondents with high item nonresponse rates. Respondents with high response propensity are likely to be (complete) survey respondents with low item nonresponse rates. I argued that breakoff, as a form of nonresponse, fits within this proposed theory. Breakoff respondents are likely to have a lower response propensity than complete respondents, but higher response

propensity than unit nonrespondents. Thus, breakoff represent their unique response type, separated from unit nonresponse, item nonresponse, and complete survey response.

Next, I extended the existing framework by Peytchev (2009) concerning breakoff in web surveys. This framework sees web survey participation as a sequence of constant re-evaluation about the decisions made by the respondent. Thus, decisions are always conditioned on previous response decisions.

1. The decision to visit the survey web-page (e.g., by clicking on the web link provided in an email invitation);
2. The decision to start the questionnaire after seeing the introduction pages of the questionnaire (e.g., the welcome page);
3. The decision to continue with the survey after seeing the (first) survey question;
4. The decision to answer the current question.

In making each of these decisions, the respondent can become a breakoff respondent.

My first extension of this framework focused on respondent characteristics by explicitly adding response history, response behavior, and the choice of answering device to the framework. Next, I differentiated and defined introduction and questionnaire breakoff respondents. With these extensions, I was able to investigate web survey breakoff more thoroughly and in a more complex way than researchers before me. I argued that respondents' likelihood of finishing the questionnaire can be computed by evaluating all response behaviors that are captured in web survey paradata. If the response behavior changes so might the underlying breakoff probability, indicating future breakoff. Making use of web survey paradata, I attempted to explain, predict, and prevent web survey breakoff. To accomplish this, I used the survey data of the Sustainability and Cultural Indicators Program (SCIP) of the years 2014, 2015 (Chapter 3-5) and 2018 (Chapter 6).

### **7.1.1 Summary of Chapter 4**

In Chapter 4, I focused on the first research question: “Who is likely to break off from answering a questionnaire?” To answer this research question, I first compared unit nonrespondents, introduction and questionnaire breakoff respondents, and complete respondents and investigated differences in respondent characteristics available for all sample members. I fitted multinomial logistic models on the respondent level and

found that females (compared to males), white sample members (compared to non-white sample members), and faculty/staff (compared to students) were less likely to be unit nonrespondents when compared to complete respondents.

When focusing on respondents only, I found that non-white (compared to white respondents), students (compared to faculty and staff respondents), non-panel members (compared to panel members), and respondents answering on a mobile device (compared to respondents using non-mobile devices) were more likely to quit the questionnaire during the introduction as opposed to completing the questionnaire. In particular, respondents who had broken off in previous waves (compared to respondents who had never participated in the study) showed higher chances of quitting the questionnaire during the introduction. Similarly, non-whites (compared to white respondents), students (compared to faculty and staff respondents), non-panel members (compared to panel members), and respondents on mobile devices (compared to respondents on non-mobile devices) were more likely to engage in questionnaire breakoff rather than completing the questionnaire.

At the same time, respondents who had previously completed the questionnaire (compared to respondents who had never participated in the study before) were more likely to complete the questionnaire again as opposed to breaking off. Additionally, response latency (i.e., respondents entering the study after the first email reminder compared to respondents entering the study right after the first email invitation) was an indicator for questionnaire breakoff but not for introduction breakoff.

Respondents with multiple survey sessions compared to those conducting the survey in one session, or respondents who made use of the previous button compared to those who did not were less likely to quit the questionnaire. The amount of total item nonresponse was positively related with questionnaire breakoff, while the standardized response time on the first three questionnaire pages was negatively related. Respondents with unsteady response times (speeding up or slowing down) were more likely to quit the questionnaire compared to respondents with steady response times. These findings clearly point out that the same response behavior can have different interpretations throughout the questionnaire. For example, response latency was not related with introduction breakoff but was a clear indicator for questionnaire breakoff.

### 7.1.2 Summary of Chapter 5

Therefore, in Chapter 5, I included page-level information in order to answer the research question “When will respondents quit a questionnaire?” Fitting Cox survival models allowed me to account for the finding that page variant covariates as well as page variant coefficients were necessary to model web survey breakoff on a page level. Thus, the finding in Chapter 4 that the same respondent characteristics can have different associations with web survey breakoff at different times during the questionnaire was included. I found that respondents facing the introduction section (compared to respondents facing any other questionnaire section) had the highest risk of quitting the questionnaire (i.e., introduction breakoff), but respondents facing a new topic section on the next page (compared to respondents who continued with the same topic on the next page) were less at risk of quitting on the next survey page. The number of question items on the next page was positively related with the breakoff risk.

When compared to males, females were less likely to quit the questionnaire at the beginning, but this effect decreased over time to the point where female respondents were more at risk of breaking off than male respondents. This finding explains contradictory findings in Chapter 4 in which females, as compared to males, tended to be less likely to engage in introduction breakoff, and, at the same time they were more likely to engage in questionnaire breakoff. Again, non-white respondents (compared to white respondents) were more at risk of breaking off the questionnaire on the next page. Students (compared to faculty and staff respondents) were more at risk of quitting the questionnaire, but this effect decreased over time, eventually showing similar survival probabilities for both groups. Panel members (compared to non-panel members) were less at risk of quitting the questionnaire. But this finding holds primarily during the beginning of the questionnaire, leading to very similar survival probabilities between panel members and non-members by the end of the questionnaire. Respondents with a negative response history showed higher breakoff risks, and respondents with a positive response history showed lower breakoff risks than respondents with no response history. The previous finding of potentially time dependent effects of this variable was not confirmed.

Interestingly, there were no significant differences between the breakoff risks of respondents on mobile devices and non-mobile devices at the beginning of the questionnaire. This changed while moving through the questionnaire: respondents on mobile devices became more and more at risk of quitting on the survey page than respondents on non-mobile devices. I came to similar conclusions for respondents using the previous button when

compared to respondents using the next button. At the beginning of the questionnaire, there was no significant difference between respondents hitting the previous or next button. Again, this changed over the course of the questionnaire as respondents hitting the previous button became more at risk of quitting the questionnaire and then became less at risk of quitting the questionnaire.

The more item nonresponse respondents had or the more respondents scrolled on one survey page, the more at risk they were of quitting the questionnaire. Respondents answering each page very quickly, as compared to respondents who answered the page in a “normal” time, were also more at risk of quitting. However, slow respondents, when compared to normal time respondents, did not show significantly higher risks of quitting the questionnaire. This confirmed the finding of the previous chapter: long response times were negatively associated with web survey breakoff. Respondents who sped up or slowed down, compared to those with steady response times, were both more at risk of quitting the questionnaire. Therefore, the more steady the response time was during the questionnaire, the lower the breakoff risk for each respondent.

One of the goals of this dissertation was to predict breakoff before it occurs. I investigated the prediction power of the dynamic Cox survival model by predicting breakoff on a page level for the 2015 survey data, using the 2014 Cox model. I found that stratifying by U of M affiliation and not using any stratification at all resulted in almost equal prediction performances when maximizing sensitivity and specificity as well as precision and Cohen’s kappa.

### **7.1.3 Summary of Chapter 6**

The final goal of this dissertation was to intervene with likely breakoff respondents and prevent their undesired behavior. To accomplish this, I implemented the final Cox survival model in the next wave of the SCIP study.<sup>132</sup> On every page of the questionnaire, the respondents’ characteristics, their behavior, and their response decisions were evaluated and summarized in an estimated breakoff risk. This breakoff risk was then compared to a threshold established earlier. If the estimated risk of one respondent exceeded the established threshold, the respondent was flagged as a likely breakoff respondent on the next page and was eligible to receive an intervention message. This intervention message stated the importance of all respondents and thanked them for their time, reminding them

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<sup>132</sup>In order to prevent long loading times for respondents, I altered the model slightly for implementation.

of their commitment to complete the questionnaire. In order to investigate the impact of such an intervention, I implemented a randomized experiment with three experimental groups.

Only one group saw the intervention according to the prediction model (tailored intervention). The second treatment group always saw the intervention after the first question page, independently of their estimated risk (generic intervention). The control group did not see any intervention message during the questionnaire. To reduce response burden, the intervention was shown once, at most, regardless of how often the threshold was crossed by one respondent. Additionally, I included a short message on the welcome page in order to reduce introduction breakoff. The wording of the enhanced introduction was similar to the intervention message and was displayed to all respondents regardless of their experimental group assignment.

First, I investigated whether the estimated risk of breaking off and the fact that respondents broke off were associated. To accomplish this task, I used page-level Generalized Estimating Equation (GEE) models and found that if the next page was, indeed, a breakoff page, the risk of breaking off increased, especially for student respondents. This again confirmed the predictive power of the Cox survival model and showed that previous response behavior was associated with future web survey breakoff.

I did not find differences between introduction breakoff rates for current respondents who saw the enhanced introduction or respondents of the previous waves. The interventions of the treatment groups successfully reduced questionnaire breakoff for certain subgroups: students assigned to the tailored intervention (compared to students assigned to the control group) and females assigned to the generic intervention (compared to females assigned to the control group) broke off at lower rates. This might be due to the higher breakoff rates and lower motivation of students overall leading to more treated breakoff candidates within this subgroup. Women are known to have higher social desirability and acquaintance than men are therefore more likely to follow requests prompted to them – irrespective of their breakoff risk.

Unfortunately, panel respondents broke off at higher rates when assigned to the generic intervention group (compared to panel members assigned to the control group). Female respondents assigned to either treatment group engaged in less risky behavior over time than untreated female respondents. This was also the case for mobile respondents, who showed less risky behavior when assigned to the treatment groups, as compared to untreated respondents on mobile devices. Additionally, Black breakoff respondents



answered more questionnaire pages when assigned to the tailored intervention as opposed to the control group. This means that even if the respondents broke off eventually, the intervention kept them in the survey instrument longer.

## 7.2 Contributions and implications

The work in this dissertation contributes to the literature on web survey breakoff in multiple ways:

- (1) Chapter 4 enriches the literature with knowledge regarding factors affecting web survey breakoff. I demonstrated that unit nonrespondents, breakoff respondents, and complete respondents differ from one another in key respondent characteristics such as gender, race, U of M affiliation, and response history. In particular, response history seemed to affect introduction breakoff more than questionnaire breakoff with negative response history indicating introduction breakoff. Interestingly, response latency did not affect introduction breakoff but only affected questionnaire breakoff. To my knowledge, there has not been a study that has simultaneously investigated the relationship between respondents' characteristics, such as response behavior with web survey breakoff, while also accounting for breakoff timing.
- (2) In Chapter 5, I performed page-level analyses of web survey breakoff using dynamic Cox survival models, while considering the relationships of all available respondent characteristics, such as gender and race, as well as response history, response behavior, and page and question characteristics. To my knowledge, there has not been a research project studying breakoff in such great detail without aggregating the information. This led to interesting and novel findings, such as the same response behavior or characteristic can affect breakoff in different ways, depending on the timing of said behavior or characteristic:
  - (a) At the beginning of the questionnaire, females were less at risk of breaking off the questionnaire compared to male respondents. This changed mid-questionnaire, and male respondents ended up having higher survival probabilities than females by the end of the questionnaire. This finding indicates that reducing the number of questionnaire pages by displaying multiple questions on the same page might be beneficial for female respondents if one wishes to reduce breakoff.

- (b) Student respondents were more at risk of quitting the questionnaire compared to faculty and staff respondents, but this effect decreased over time. Thus, being very explicit about questionnaire duration and the incentive was crucial for this group of respondents in order to reduce breakoff. This was evident in the reducing effect of panel membership for students. If the students knew what they were engaging in, they were less likely to quit the questionnaire.
  - (c) Respondents on mobile devices did not show significant differences in breakoff risks compared to respondents on non-mobile devices at the beginning of the questionnaire. This finding quickly changed with every page that respondents using mobile devices saw. This finding indicates how crucial it is to have short questionnaires, especially for mobile respondents and to design mobile-friendly questionnaires. Additionally, suggesting a preferred mode in the email invitation for long questionnaires might prevent respondents from entering a tedious questionnaire on their mobile devices and ultimately breaking off.
  - (d) Respondents using the previous button at the beginning of the questionnaire were more at risk of quitting the questionnaire compared to respondents using the next button. But respondents who hit the previous button at the end of the questionnaire were less at risk of quitting than respondents using the next button. This might be because respondents using the previous button at the beginning of the questionnaire had trouble understanding the questions, while respondents using the previous button at the end may have been going back to re-evaluate their answers to previous questions.
  - (e) Item nonresponse, fast response times, and unsteady response times were positively related with the risk of breaking off. If survey managers cannot implement a complicated prediction model, it might be worthwhile to include hard prompts to make respondents aware of their undesired behavior (e.g., pop-up message for unanswered question item or for extremely fast response times on previous pages).
- (3) Chapter 5 showed that when using Cox survival models, web survey breakoff can be predicted by previous response behavior (with an AUC of 0.8). This finding was used directly in Chapter 6 by implementing a dynamic Cox survival model in an on-going web survey and evaluating breakoff risks on each page for all respondents in real-time. This was a first attempt at preventing undesired response behavior based on a prediction model rather than being a hard-coded prompt following certain behaviors like speeding. If the prediction model estimated high breakoff

risks, respondents assigned to the tailored intervention group saw a motivational message. I found promising results for different subgroups:

- (a) Females and students broke off at lower rates when assigned to one of the treatment groups when compared to females and students in the control group.
- (b) Females and respondents on mobile devices engaged in less risky response behavior if assigned to the treatment groups as opposed to when assigned to the control group.
- (c) Breakoff respondents who were classified as Black answered more survey pages when assigned to the treatment groups as compared to Blacks who were assigned to the control group.

Females, students, Blacks, and respondents on mobile devices were most likely to alter their response behavior after seeing a motivational pop-up message. It is noticeable that these groups, in general, were more likely to quit the questionnaire. The fact that I was able to alter their response behavior is very promising, especially given the subtle nature of the intervention. It should be noted that the generic intervention also achieved pleasing results: especially females and respondents using mobile devices reacted well when assigned to TG2, broke off at lower rates and engaged in less risky behavior than respondents assigned to the control group.

### 7.3 Limitations and future research

This research project has a number of limitations that need to be taken into account:

**1. Investigating breakoff.** a. **Actual breakoff page.** I did not have any information about the actual breakoff page. All (para-) data collection stopped at the last page submitted to the server. Thus, I was unable to investigate response behavior, such as scrolling, item nonresponse etc., on the actual breakoff page.

b. **Questionnaire design.** The question topics of the SCIP questionnaire always followed the same order. Thus, I was unable to differentiate whether higher breakoff rates on certain pages were due to the survey page number, the page question, or the question format. Ideally, research projects on web survey breakoff would use surveys that randomize questionnaire topics to disentangle these effects.

c. **Response history.** I was unable to differentiate between previous unit nonrespon-

dents (i.e., previous invited sample members who chose not answer the questionnaire) and individuals who have never been invited to the study (i.e., new sample members). Therefore, I combined these respondent groups and classified them as “no previous participation.” Obviously, previous unit nonrespondents had already been exposed to the survey invitation and had made a decision to not participate, while new sample members faced the decision for the first time. Ideally, future research projects will have enough information about previous response waves to differentiate between both response groups.

- d. **Item nonresponse.** Respondents who provided 100% item nonresponse on all survey pages were excluded from the data set, and I was unable to restore this information. Therefore, I decided not to differentiate respondents by the amount of item nonresponse. In future research projects, this would be an interesting aspect to include, since these so-called lurkers form their own (non-) response type.
- e. **Time stamps.** This limitation focuses on the response time measurement. As mentioned before, measuring time spent on one web page often produced zero times and sometimes even negative response times, on the welcome page in particular. Therefore, response times and response time changes, especially during the first three questionnaire pages, need to be considered with care. The reason for these (clearly) false response times needs to be investigated more closely within the data collection tool.
- f. **Changes in questionnaire for experimental design.** One of the advantages of SCIP was the steady questionnaire throughout the study waves. This component made it possible to use previous response behavior and typical response time on specific pages to estimate breakoff risk in the next wave. Due to substantial changes to the questionnaire in 2018, many questions were replaced with new question items for which I did not have previous response times available. Thus, I was unable to accurately estimate breakoff risk for the new pages, and this prevented interventions on these pages. Ideally, the questionnaire would remain as consistent as possible from one wave to the next.
- g. **Skip logic and backing up.** Due to the skip logic and the option of backing up during the questionnaire, it was impossible to include information about the next page to be seen in the implemented model. Thus, information, such as number of question items on the next page, was not included, even though it was highly associated with the risk of breaking off on the next page. To be able to include such

information, the questionnaire should not make use of question skips or backing up options.

- h. **Breakoff bias evaluation and reduction.** The next step of this research includes evaluating the potential breakoff bias by following up with a sample of breakoff respondents and asking them to return to the questionnaire, while promising higher incentives. Then the survey responses can be analyzed once without the follow-up answers of the breakoff respondents and once including these answers. If there are systematic differences between these results, there is evidence for breakoff bias. A second step could include comparing survey responses of the control group and the two treatment groups. Systematic answer differences between the control group and the treatment groups could indicate breakoff bias reduction, especially due to the respondent groups who reacted positively to the interventions (females, students and respondents on mobile devices).
- i. **Qualitative research.** As mentioned in Chapter 2, follow-up studies and focus groups might be necessary to fully understand why respondents quit surveys. First, a sub sample of all breakoff respondents could be recruited (likely with high incentives) to answer a detailed questionnaire on why they quit the initial questionnaire: were there too many questions?, was the questionnaire too long?, were the questions too long and tedious?, was the design not optimal for their answering device?, were there technical issues regarding the questionnaire?, were there technical issues regarding the internet connection?, were the respondents under time pressure?, would they have been more likely to complete the questionnaire if the incentive would have been higher/the questionnaire shorter/the questions less tedious/the design more optimal for your answering device etc.? The answers to these questions could help with finding the reasons for breakoff behavior and finding the optimal intervention strategy (see below). Additionally, a small number of individuals could be invited to a focus group in which all members are taking an infinite questionnaire (a questionnaire that never ends). Thus, focus group members need to quit the questionnaire in order to exit. Each group member could explain why they chose to quit at a specific point answering similar questions as the follow-up study.

## 2. Predicting breakoff.

- a. **Model implementation.** Due to the computational demand, I was unable to implement the final Cox survival model of Chapter 5 in the experiment in Chapter 6. The model fit of the final Cox survival model was superior compared to the

implemented model, which was the best implementation possible for this study.

- b. **Speed issues during data collection.** Despite the alterations of the prediction model, respondents reported very long page loading times at the beginning of data collection. About 50% of all respondents were affected by these speed issues. These respondents were twice as likely to quit the questionnaire than unaffected respondents. Ideally, respondents would not have encountered such data collection problems, since these issues could have affected the results of the experimental study.
- c. **Changed incentive structure.** The survey manager team chose to change the incentive structure for students mid-data collection from a lottery incentive to a guaranteed incentive. Both incentives were conditioned on completing the questionnaire, but as previous research showed, guaranteed incentives can decrease breakoff rates compared to lottery incentives. This might have affected the findings of the experimental study, since respondents might have changed their response behavior because of the changed incentive.
- d. **Generalizability.** All sample members have strong ties to the survey sponsor and conductor – the University of Michigan. Thus, it is likely that sample members have a positive attitude towards the survey sponsor as well as towards the survey itself. Research has shown that the trust in and the reputation of the survey sponsor (Dillman, Smyth, and Christian 2009; Fang, Shao, and Lan 2009; Fang and Wen 2012) as well as surveys conducted on special populations (Comley 2000; Heerwegh 2005b; Lozar Manfreda and Vehovar 2002; Pratesi et al. 2004) – here the active members of the University of Michigan – have higher response rates and lower breakoff rates. Therefore, it is possible that findings regarding the demographics of sample members do not hold across other populations. For example, if this research were repeated in the general population, the findings of gender or race might be different than the current findings. Despite the special population, the relationships of response behavior and breakoff response are expected to be generalizable across studies as these findings have been consistent across all survey years and in previous studies (Chapter 2): thus, variables such as response history, panel membership, mobile answering device, item nonresponse, scrolling behavior, extreme response times, response time changes are expected to have similar relationships with web

survey breakoff in future studies.<sup>133</sup>

- e. **Small sample sizes.** If this research were to be repeated one should either consider a study with higher breakoff rates or bigger sample sizes. Even though the sample size of about 21,000 and the number of respondents (6,000-7,000 respondents) each year is not small, the number of respondents who quit the questionnaire was relatively low in all survey years (about 1,000 breakoff respondents each year). This is obviously a great outcome for the study itself, but results in lower power when modelling breakoff behavior especially once interactions are included. Most coefficients for the tested two-way interactions were not significant on the 0.05 level. This could change with higher breakoff rates or bigger sample sizes.
- f. **Limited frame information.** This dissertation focuses on demographic frame information provided in administrative data. Even though certain demographics, such as gender and age, are expected to be linked to web survey breakoff research has shown that personality traits, such as the Big Five, are highly predictive of participation in research and surveys (Rogelberg and Luong 1998; Rosnow and Rosenthal 1976). For example, previous studies found that respondents are more agreeable, more open to experience, and more conscientious than nonrespondents (Marcus and Schuetz 2005; Rogelberg et al. 2003). As survey nonresponse and breakoff response can be seen as two outcomes of the same response propensity spectrum, personality traits should be equally predictive of web survey breakoff. Thus, researchers could collect this data of respondents in panel studies in previous waves and use this information to enhance the model to predict breakoff more accurately.<sup>134</sup>
- g. **Respondents' location.** Respondents' location and their mobility might be important factors for web survey breakoff. Especially respondents on mobile devices have the opportunity to enter the questionnaire independently of their location and can also change their location while they are answering the questionnaire (e.g., while sitting on a bus). Even though previous research has shown that respondents using mobile devices tend to answer surveys at home (De Bruijne and Wijnant 2014;

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<sup>133</sup>Even though coefficients might change for different studies, the general tendencies are expected to stay consistent across studies. This was also confirmed by fitting the model without demographic information (i.e., only response behavior included in the model) resulting in a comparable model fit as well as comparable coefficients.

<sup>134</sup>As seen in this dissertation, it is possible to implement separate models for different population subgroups (here students versus faculty/staff respondents). If necessary, different prediction models could be implemented based on personality traits of the respondents.

Revilla et al. 2016) respondents who do not respond to the questionnaire from home might have a more disturbing surrounding. Thus, respondents using mobile devices and who are in fact mobile themselves might be more prone to multi-tasking (e.g., responding to the survey and looking for the right bus stop) and less attentive to their current task leading to higher breakoff probabilities. Including geolocation information in the prediction model might be therefore helpful to predict breakoff: for example, respondents who are currently changing their location might be more at risk of quitting the questionnaire.

### 3. Preventing breakoff.

- a. **Unintrusive intervention.** The motivational pop-up message was an unintrusive intervention method. Future research should investigate which intervention would be the most effective for different respondents. As seen in this project, females and students reacted positively to unintrusive interventions, while panel members reacted negatively. This is an indicator that different interventions for panel members might be necessary to avoid breakoffs in this sub-group. Thus, interventions, such as increasing the incentive, split questionnaires, or even shortening the questionnaire to only key questions for likely breakoff respondents, could deliver promising results to reduce web survey breakoff.
- b. **Intervention message.** The message of the intervention ("Your answers are very important and helpful to us. Please stay committed to answering every question truthfully and thoughtfully.") originated from research focusing on measurement error rather than nonresponse error (Cibelli Hibben and Conrad 2016; Zhang and Conrad 2016).<sup>135</sup> Messages directly linked to participation and survey completion might be more effective in preventing breakoff.
- c. **Question selection.** Lynn (2003) introduced PEDAKSI (Pre-Emptive Doorstep Administration of Key Survey Items) for face-to-face surveys. This should prevent unit-nonresponse by shortening the questionnaire to a Key Item Form (KIF), which only consisted of a couple of key questions. Interviewers should switch to KIF "as soon it becomes apparent that the interview is not going to be achieved" (Lynn 2003, 241). The interviewer should then ask whether the respondent would be willing to at least answer these few questions. Lynn found that the PEDAKSI method provides valid results and reduces nonresponse bias on these key items. Using this technique in the web survey breakoff framework, the implemented prediction model

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<sup>135</sup>Thus, this message has been tested successfully in previous studies in these studies.



would take the role of the interviewer deciding when the respondent will quit the questionnaire. Once this is determined the questionnaire could be shortened to pre-defined key questions – giving the respondent less opportunities to quit. In addition, these key questions could differ from one respondent to the next leading to a so-called *matrix sampling* where different respondents answer to different subsets of the questionnaire. Since the question selection mechanism is known (other than the breakoff mechanism) survey researchers can impute missing information of the remaining questions (Raghunathan and Grizzle 1995; Schenker et al. 2006).

- d. **Modular design.** Many respondents might quit the questionnaire because they need to switch to a different task (e.g., leaving to a meeting, getting off the bus, etc.). Thus, respondents who are likely to quit the questionnaire might not have lost their motivation to complete the questionnaire they are simply running out of time. Offering a so-called modular design could keep respondents from becoming breakoff respondents: if respondents show breakoff behavior the intervention could prompt them to complete the questionnaire at a different time (Johnson, Kelly, and Stevens 2012; Kelly, Johnson, and Stevens 2013; Smith et al. 2012; West, Ghimire, and Axinn 2015).
- e. **Adaptive design.** Personalized features in surveys mostly increase response rates (Cook, Heath, and Thompson 2000; Edwards et al. 2002; Fan and Yan 2010; Heerwegh 2005a; Johnson, Woodley, and Reips 2007; Sauermann and Roach 2013; Singer 1978). Using this information, intervention messages and intervention design could be adapted to demographic groups, personality traits or to response behavior. This dissertation showed that female respondents respond well to generic intervention with a simple motivational statement while panel members quit the questionnaire at higher rates in this condition. Thus, it is likely that panel members need their "own" personalized intervention. This could be based on a different message (e.g., mentioning the response behavior that was triggering the intervention: "We noticed that you left many questions unanswered. Your answers are very important and helpful to us. Please stay committed to answering every question truthfully and thoughtfully".) or by shortening the questionnaire through matrix sampling for respondents who are likely to quit – giving them less opportunities to quit the questionnaire or by offering a modular questionnaire design (e.g., "We noticed you were speeding up over the past three web pages. Would you like to complete the questionnaire a different time?"). Using this fully adaptive design would make the survey experience more pleasant for respondents and likely keep respondents from

quitting the questionnaire.

This research project investigated, predicted, and prevented web survey breakoff on a page level. Even though there are many future steps to take to complete this research, this first attempt at preventing web survey breakoff was promising and successful for certain sub-groups. As computers and smartphones are getting more powerful, model alterations and speed issues will not be problematic in the near future. Therefore, survey researchers will be able to predict undesired behavior with detailed models and can prevent such behavior.

# Appendix A

## Additional Tables

## A.1 Additional tables for Chapter 4

### A.1.1 Coefficients of multinomial regression models for all four response types by year

Table A.1: Frame analysis: coefficients and standard errors of multinomial regression models with 'response type' (unit nonresponse, introduction and questionnaire breakoff) as the dependent variable separated by survey year (reference: complete response)

|  | Unit nonresponse |            | Introduction breakoff |            | Questionnaire breakoff |            |
|--|------------------|------------|-----------------------|------------|------------------------|------------|
|  | Coeff.           | Std. error | Coeff.                | Std. error | Coeff.                 | Std. error |
| <b>Survey year 2014</b>  |                  |            |                       |            |                        |            |
| Intercept  | 0.3755***        | 0.0351     | -3.6336               | 0.1571     | -2.6958                | 0.0999     |
| <b>Gender (reference: male)</b>                                |                  |            |                       |            |                        |            |
| Female   | -0.3329***       | 0.0314     | -0.1176**             | 0.1319     | 0.0312***              | 0.0818     |
| <b>Race/ethnicity (reference: white)</b>                       |                  |            |                       |            |                        |            |
| Asian  | 0.2331***        | 0.0446     | 0.6144***             | 0.1669     | 0.3597**               | 0.1078     |
| Black  | 0.5049***        | 0.0807     | 0.4801                | 0.3214     | 0.5086***              | 0.1874     |
| Hispanic   | 0.3324           | 0.0846     | 0.3016**              | 0.3520     | 0.5241***              | 0.1886     |
| Other race   | 0.1279           | 0.0995     | 0.7578                | 0.3268     | 0.1247**               | 0.2501     |
| Missing race   | -0.1134***       | 0.0599     | 0.3262*               | 0.2329     | -0.2322***             | 0.1700     |
| <b>U of M affiliation (reference: faculty)</b>                 |                  |            |                       |            |                        |            |
| Student  | 0.8396***        | 0.0355     | 0.4201                | 0.1552     | 0.6518***              | 0.0976     |
| <b>Response history (reference: no previous participation)</b> |                  |            |                       |            |                        |            |
| Previous complete  | -1.0915***       | 0.0510     | -0.6551.              | 0.2322     | -1.0105                | 0.1588     |
| Previous breakoff  | -0.6613***       | 0.1317     | 0.5637                | 0.3751     | -1.0145*               | 0.4604     |
| <b>Survey year 2015</b>  |                  |            |                       |            |                        |            |
| Intercept  | 0.5895***        | 0.0363     | -3.5299**             | 0.1579     | -2.7202*               | 0.1050     |

Table A.1: Frame analysis: coefficients and standard errors of multinomial regression models with 'response type' (unit nonresponse, introduction and questionnaire breakoff) as the dependent variable separated by survey year (reference: complete response) (*continued*)

|  | Unit nonresponse |            | Introduction breakoff |            | Questionnaire breakoff |            |
|--|------------------|------------|-----------------------|------------|------------------------|------------|
|  | Coeff.           | Std. error | Coeff.                | Std. error | Coeff.                 | Std. error |
| <b>Gender (reference: male)</b>                                |                  |            |                       |            |                        |            |
| Female   | -0.3788***       | 0.0332     | -0.1363***            | 0.1286     | 0.1689***              | 0.0883     |
| <b>Race/ethnicity (reference: white)</b>                       |                  |            |                       |            |                        |            |
| Asian  | 0.0716***        | 0.0469     | 0.3729                | 0.1721     | 0.3113***              | 0.1169     |
| Black  | 0.3984***        | 0.0831     | 0.8120                | 0.2612     | 0.6688***              | 0.1823     |
| Hispanic   | -0.0541          | 0.0853     | 0.3378                | 0.2998     | 0.2833***              | 0.2043     |
| Other race   | -0.2046.         | 0.0962     | -0.2686*              | 0.4265     | -0.0586***             | 0.2564     |
| Missing race   | -0.2275          | 0.0653     | 0.5455                | 0.2083     | 0.3166***              | 0.1526     |
| <b>U of M affiliation (reference: faculty)</b>                 |                  |            |                       |            |                        |            |
| Student  | 1.0655*          | 0.0366     | 0.7066                | 0.1538     | 0.6031.                | 0.0998     |
| <b>Response history (reference: no previous participation)</b> |                  |            |                       |            |                        |            |
| Previous complete  | -0.9616**        | 0.0433     | -0.6515***            | 0.1885     | -0.5829**              | 0.1208     |
| Previous breakoff  | 0.2637***        | 0.1542     | 1.0052**              | 0.3864     | 0.2326                 | 0.3639     |

*Note:* Significance levels: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ , .  $p < 0.1$

## A.1.2 Coefficients of logistic regression model for breakoff (i.e., introduction and questionnaire breakoff combined)

Table A.2: Breakoff analyses: coefficients of logistic regression models for 'breakoff respondent' (introduction and questionnaire combined) as dependent variable by survey year (reference: complete response)

|  | Breakoff         |            |                  |            |
|--|------------------|------------|------------------|------------|
|  | Survey year 2014 |            | Survey year 2015 |            |
|  | Coefficients     | Std. error | Coefficients     | Std. error |
| Intercept  | -2.5814***       | 0.0973     | -2.5581***       | 0.0998     |
| <b>Gender (reference: male)</b>                                |                  |            |                  |            |
| Female   | -0.0201          | 0.0740     | 0.0731           | 0.0775     |
| <b>Race/ethnicity (reference: white)</b>                       |                  |            |                  |            |
| Asian  | 0.4437***        | 0.0971     | 0.3109**         | 0.1034     |
| Black  | 0.4602**         | 0.1745     | 0.6154***        | 0.1618     |
| Hispanic   | 0.4988**         | 0.1748     | 0.2683           | 0.1800     |
| Other race   | 0.2912           | 0.2122     | -0.1416          | 0.2320     |
| Missing race   | -0.1032          | 0.1462     | 0.3479**         | 0.1333     |
| <b>U of M affiliation (reference: faculty)</b>                 |                  |            |                  |            |
| Student  | 0.5275***        | 0.0911     | 0.6322***        | 0.0934     |
| <b>Panel membership (reference: non-panel member)</b>          |                  |            |                  |            |
| Panel member   | -0.6406***       | 0.1432     | -0.9728***       | 0.1611     |
| <b>Response history (reference: no previous participation)</b> |                  |            |                  |            |
| Previous complete  | -0.5672***       | 0.1546     | -0.1000          | 0.1320     |
| Previous breakoff  | 0.0553           | 0.3067     | 0.6728*          | 0.2961     |
| <b>Response latency (reference: no reminder sent)</b>          |                  |            |                  |            |
| Reminder sent  | 0.2650***        | 0.0734     | 0.2045**         | 0.0759     |
| <b>Answering device (reference: non-mobile)</b>                |                  |            |                  |            |
| Mobile   | 0.7175***        | 0.0885     | 0.5772***        | 0.0879     |

*Note:* Significance levels: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ , .  $p < 0.1$

### A.1.3 Coefficients of multinomial logistic regression model for introduction and questionnaire breakoff

Table A.3: Breakoff analysis: coefficients and standard errors of the multinomial logistic regression models for 'breakoff type' (introduction and questionnaire breakoff) as dependent variable separated by survey year (reference: complete response)

|  | Survey year 2014 |            |              |            | Survey year 2015 |            |              |            |
|--|------------------|------------|--------------|------------|------------------|------------|--------------|------------|
|  | Intro breakoff   |            | Qnr breakoff |            | Intro breakoff   |            | Qnr breakoff |            |
|  | Coeff.           | Std. error | Coeff.       | Std. error | Coeff.           | Std. error | Coeff.       | Std. error |
| Intercept  | -3.8774***       | 0.1850     | -2.9022      | 0.1112     | -3.7285***       | 0.1794     | -2.9337.     | 0.1161     |
| <b>Gender (reference: male)</b>                                |                  |            |              |            |                  |            |              |            |
| Female   | -0.2115***       | 0.1433     | 0.0396*      | 0.0833     | -0.1736***       | 0.1361     | 0.1710***    | 0.0898     |
| <b>Race/ethnicity (reference: white)</b>                       |                  |            |              |            |                  |            |              |            |
| Asian  | 0.5962           | 0.1830     | 0.3959***    | 0.1096     | 0.3267           | 0.1829     | 0.3045***    | 0.1187     |
| Black  | 0.4372           | 0.3546     | 0.4649**     | 0.1924     | 0.7831.          | 0.2722     | 0.5520***    | 0.1856     |
| Hispanic   | 0.4637**         | 0.3551     | 0.5074***    | 0.1920     | 0.2925.          | 0.3140     | 0.2594***    | 0.2068     |
| Other race   | 0.7912***        | 0.3448     | 0.1014       | 0.2530     | -0.1797*         | 0.4291     | -0.1257      | 0.2648     |
| Missing race   | 0.2725           | 0.2559     | -0.2352***   | 0.1716     | 0.4807**         | 0.2214     | 0.2899       | 0.1560     |
| <b>U of M affiliation (reference: faculty)</b>                 |                  |            |              |            |                  |            |              |            |
| Student  | 0.3942*          | 0.1749     | 0.5698**     | 0.1037     | 0.8025**         | 0.1703     | 0.5653**     | 0.1078     |
| <b>Panel membership (reference: non-panel member)</b>          |                  |            |              |            |                  |            |              |            |
| Panel member   | -0.8055          | 0.2851     | -0.5822      | 0.1613     | -1.5041          | 0.3374     | -0.8084      | 0.1803     |
| <b>Response history (reference: no previous participation)</b> |                  |            |              |            |                  |            |              |            |
| Previous complete  | -0.2756**        | 0.2858     | -0.6682      | 0.1793     | -0.0516          | 0.2431     | -0.1188      | 0.1516     |
| Previous breakoff  | 1.1396*          | 0.3957     | -0.6759***   | 0.4680     | 1.1664           | 0.4177     | 0.4104**     | 0.3703     |

Table A.3: Breakoff analysis: coefficients and standard errors of the multinomial logistic regression models for 'breakoff type' (introduction and questionnaire breakoff) as dependent variable separated by survey year (reference: complete response) (*continued*)

|   | Coeff. | Std. error | Coeff.    | Std. error | Coeff.  | Std. error | Coeff.    | Std. error |
|---|--------|------------|-----------|------------|---------|------------|-----------|------------|
| <b>Response latency (reference: no reminder sent)</b> |        |            |           |            |         |            |           |            |
| Reminder sent   | 0.2213 | 0.1427     | 0.2774**  | 0.0825     | 0.0986  | 0.1353     | 0.2442*   | 0.0872     |
| <b>Answering device (reference: non-mobile)</b>       |        |            |           |            |         |            |           |            |
| Mobile  | 0.5187 | 0.1776     | 0.7728*** | 0.0976     | 0.3763* | 0.1585     | 0.6513*** | 0.0995     |

*Note:* Significance levels: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ , .  $p < 0.1$



## A.2 Additional tables for Chapter 5

### A.2.1 Results of the full Cox survival models with page variant covariates only

Table A.4 shows the results of the simple Cox model with page dependent covariates, separated by survey year. Columns 2 and 4 show the coefficients and their levels of significance for the years 2014 and 2015, respectively. Columns 3 and 5 display the standard errors for each estimated coefficient for both survey years.

Table A.4: Coefficients and standard errors of the simple page-level Cox survival model with page variant covariates and 'number of pages seen until breakoff' as the dependent variable separated by survey year

|  | Survey year 2014 |            | Survey year 2015 |            |
|--|------------------|------------|------------------|------------|
|  | Coefficients     | Std. error | Coefficients     | Std. error |
| <b>Non-paradata information</b>                              |                  |            |                  |            |
| <b>Topic section (reference: introduction)</b>               |                  |            |                  |            |
| Transportation   | -2.6076***       | 0.3913     | -2.8830***       | 0.3927     |
| Conservation   | -2.8940***       | 0.4175     | -2.7332***       | 0.4434     |
| Environment  | -3.7560***       | 0.4887     | -3.0245***       | 0.4934     |
| Food   | -3.3551***       | 0.4381     | -3.0804***       | 0.4686     |
| Climate  | -3.9820***       | 0.4689     | -3.2100***       | 0.4927     |
| General sustainability                                       | -3.4850***       | 0.4628     | -3.0565***       | 0.5054     |
| Sustainability at U of M                                     | -5.0236***       | 0.5352     | -4.3041***       | 0.5759     |
| Demographics   | -5.7244***       | 0.5266     | -4.8506***       | 0.5989     |
| <b>New topic section (reference: continue current topic)</b> |                  |            |                  |            |
| Begin new topic  | -0.5522***       | 0.1310     | -0.5579***       | 0.1380     |
| <b>Number of question items on...</b>                        |                  |            |                  |            |
| Current page   | 0.0288           | 0.0178     | 0.0115           | 0.0191     |
| Next page  | 0.0963***        | 0.0123     | 0.1200***        | 0.0126     |
| <b>Gender (reference: male)</b>                              |                  |            |                  |            |
| Female   | -0.0196          | 0.0682     | 0.0673           | 0.0709     |
| <b>Race/ethnicity (reference: white)</b>                     |                  |            |                  |            |

Table A.4: Coefficients and standard errors of the simple page-level Cox survival model with page variant covariates and 'number of pages seen until breakoff' as the dependent variable separated by survey year (*continued*)

|  | Survey year 2014 |            | Survey year 2015 |            |
|--|------------------|------------|------------------|------------|
|  | Coefficients     | Std. error | Coefficients     | Std. error |
| Asian  | 0.3688***        | 0.0884     | 0.2360*          | 0.0938     |
| Black  | 0.3558*          | 0.1577     | 0.5388***        | 0.1416     |
| Hispanic   | 0.4308**         | 0.1557     | 0.2488           | 0.1617     |
| Other race   | 0.2248           | 0.1918     | -0.1424          | 0.2146     |
| Missing race   | -0.2019          | 0.1369     | 0.2558*          | 0.1194     |
| <b>U of M affiliation (reference: faculty/staff)</b>           |                  |            |                  |            |
| Student  | 0.5266***        | 0.0883     | 0.6831***        | 0.0896     |
| <b>Panel membership (reference: non-panel member)</b>          |                  |            |                  |            |
| Panel member   | -0.2247          | 0.1379     | -0.5798***       | 0.1557     |
| <b>Paradata information</b>                                    |                  |            |                  |            |
| <b>Response history (reference: no previous participation)</b> |                  |            |                  |            |
| Previous complete  | -0.5468***       | 0.1463     | -0.0918          | 0.1230     |
| Previous breakoff  | 0.1141           | 0.2867     | 0.6513*          | 0.2546     |
| <b>Response latency (reference: no reminder sent)</b>          |                  |            |                  |            |
| Reminder sent  | 0.2142**         | 0.0676     | 0.1505*          | 0.0693     |
| <b>Answering device (reference: non-mobile)</b>                |                  |            |                  |            |
| Mobile   | 0.4936***        | 0.1059     | 0.2785**         | 0.1049     |
| <b>New session (reference: continue current session)</b>       |                  |            |                  |            |
| Start new session  | 0.5002           | 0.3903     | 0.1355           | 0.4092     |
| <b>Navigation (reference: next button)</b>                     |                  |            |                  |            |
| Previous button  | -1.6502***       | 0.3819     | -0.8944**        | 0.3283     |
| <b>Item nonresponse rate</b>                                   |                  |            |                  |            |
| Item nonresponse rate  | 1.8919***        | 0.1694     | 1.8635***        | 0.1805     |
| <b>Straightlining</b>  |                  |            |                  |            |
| Answer variability   | 0.0643           | 0.0602     | -0.0244          | 0.0690     |
| <b>Scrolling</b>   |                  |            |                  |            |

Table A.4: Coefficients and standard errors of the simple page-level Cox survival model with page variant covariates and 'number of pages seen until breakoff' as the dependent variable separated by survey year (*continued*)

|   | Survey year 2014 |            | Survey year 2015 |            |
|---|------------------|------------|------------------|------------|
|   | Coefficients     | Std. error | Coefficients     | Std. error |
| Number of scrolls   | 0.0433*          | 0.0220     | 0.0664**         | 0.0214     |
| <b>Extreme response times (reference: normal response time)</b> |                  |            |                  |            |
| Short response time   | 0.3651***        | 0.0942     | 0.2210*          | 0.0952     |
| Long response time  | 0.1560           | 0.0974     | 0.1165           | 0.0877     |
| <b>Response time changes</b>                                    |                  |            |                  |            |
| Speeding up   | 0.3168**         | 0.1156     | 0.2129.          | 0.1224     |
| Slowing down  | 0.6131***        | 0.0949     | 0.6446***        | 0.1002     |

*Note:* Significance levels: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ , .  $p < 0.1$

## A.2.2 Results of the test for the proportional hazards assumption for the simple Cox model

After fitting the extended Cox model with page variant covariates, I tested each variable for evidence of page dependent coefficients based on Schoenfeld residuals. In Table A.5 one sees the test results separately for the survey years 2014 and 2015. The rho value indicates the *direction* of the effect changes over time (i.e., the number of pages seen by the respondent). Negative values indicate decreasing effect size, positive values indicate increasing effect size over time. The significance levels show whether the change over time was significant.

The test showed violations of the proportional hazards assumption for the variables “gender”, “U of M affiliation”, “panel membership”, and “navigation” in both survey years. Therefore, I included page variant coefficients for these five variables.

Table A.5: Results of the test for proportional hazards assumption for the simple Cox model separated by survey year

|  | Survey year 2014 | Survey year 2015 |
|--|------------------|------------------|
|  | rho              | rho              |
| <b>Non-paradata information</b>                              |                  |                  |
| <b>Topic section (reference: introduction)</b>               |                  |                  |
| Transportation   | -0.0758*         | -0.0430          |
| Conservation   | -0.0804*         | -0.0388          |
| Environment  | -0.0715*         | -0.0423          |
| Food   | -0.0857**        | -0.0396          |
| Climate  | -0.0747*         | -0.0392          |
| General sustainability                                       | -0.0795**        | -0.0346          |
| Sustainability at U of M                                     | -0.0740*         | -0.0286          |
| Demographics   | -0.0684*         | -0.0245          |
| <b>New topic section (reference: continue current topic)</b> |                  |                  |
| Begin new topic  | -0.0173          | 0.0536.          |
| <b>Number of question items on...</b>                        |                  |                  |
| Current page   | 0.0075           | 0.0196           |
| Next page  | -0.0308          | -0.0881*         |

Table A.5: Results of the test for proportional hazards assumption for the simple Cox model separated by survey year (*continued*)

|  | Survey year 2014 | Survey year 2015 |
|--|------------------|------------------|
|  | rho              | rho              |
| <b>Gender (reference: male)</b>                                |                  |                  |
| Female   | 0.1371***        | 0.1182***        |
| <b>Race/ethnicity (reference: white)</b>                       |                  |                  |
| Asian  | -0.0444          | 0.0387           |
| Black  | -0.0152          | 0.0125           |
| Hispanic   | -0.0535          | 0.0051           |
| Other race   | -0.0544          | 0.0228           |
| Missing race   | -0.0467          | 0.0050           |
| <b>U of M affiliation (reference: faculty/staff)</b>           |                  |                  |
| Student  | -0.0758*         | -0.1380***       |
| <b>Panel membership (reference: non-panel member)</b>          |                  |                  |
| Panel member   | 0.0692*          | 0.0800*          |
| <b>Paradata information</b>                                    |                  |                  |
| <b>Response history (reference: no previous participation)</b> |                  |                  |
| Previous complete  | -0.0472          | 0.0016           |
| Previous breakoff  | -0.0679*         | -0.0497          |
| <b>Response latency (reference: no reminder sent)</b>          |                  |                  |
| Reminder sent  | 0.0282           | 0.0173           |
| <b>Answering device (reference: non-mobile)</b>                |                  |                  |
| Mobile   | 0.0789*          | 0.0435           |
| <b>New session (reference: continue current session)</b>       |                  |                  |
| Start new session  | -0.0110          | 0.0209           |
| <b>Navigation (reference: next button)</b>                     |                  |                  |
| Previous button  | -0.0620*         | -0.1040***       |
| <b>Item nonresponse rate</b>                                   |                  |                  |
| Item nonresponse rate  | 0.0269           | 0.0448           |
| <b>Straightlining</b>  |                  |                  |

Table A.5: Results of the test for proportional hazards assumption for the simple Cox model separated by survey year (*continued*)

|   | Survey year 2014 | Survey year 2015 |
|---|------------------|------------------|
|   | rho              | rho              |
| Answer variability  | 0.0082           | 0.0169           |
| <b>Scrolling</b>  |                  |                  |
| Number of scrolls   | -0.0039          | 0.0037           |
| <b>Extreme response times (reference: normal response time)</b> |                  |                  |
| Short response time   | 0.0273           | -0.0042          |
| Long response time  | 0.0415           | -0.0064          |
| <b>Response time changes</b>                                    |                  |                  |
| Speeding up   | 0.0223           | 0.0475           |
| Slowing down  | 0.0022           | 0.0080           |

*Note:* Significance levels: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ , .  $p < 0.1$

### A.2.3 Results of the key indicators for prediction based on balanced data set

To account for the imbalanced data set, I performed data balancing using the Random Over-Sampling Examples (ROSE) method. This creates a balanced data set with equal number of breakoff pages and non-breakoff pages.

Table A.6: Key indicators, Cohen’s kappa, and mean AUC for prediction power by stratification group based on balanced data set

|               | No strata | Affiliation strata | Device strata | Affiliation*device strata | Topic strata |
|---------------|-----------|--------------------|---------------|---------------------------|--------------|
| Sensitivity   | 0.7177    | 0.6382             | 0.7082        | 0.6928                    | 0.6323       |
| Specificity   | 0.7492    | 0.8022             | 0.7572        | 0.7567                    | 0.6879       |
| Precision     | 0.0072    | 0.0082             | 0.0074        | 0.0072                    | 0.0051       |
| Accuracy      | 0.7491    | 0.8018             | 0.7570        | 0.7565                    | 0.6877       |
| Cohen’s kappa | 0.0094    | 0.0112             | 0.0096        | 0.0093                    | 0.0052       |
| Mean AUC      | 0.8045    | 0.7867             | 0.7913        | 0.7664                    | 0.6870       |

## A.3 Additional tables for Chapter 6

### A.3.1 Test for proportional hazard assumption for the implementation model in Chapter 6

Even though the categories of the variable “topic section” showed all significant page-varying effects (Table A.8), I decided not to include page-varying effects for this variable to the implemented models of Table 6.3. First, this would have expanded the model with eight more variables and the programming team and I were concerned with the model performance. Second, the variable “topic section” represents a page-varying variable, changing while respondents are moving through the questionnaire.

Table A.7: Coefficients and standard errors of the page-level Cox survival implementation model with page variant covariates only and ‘number of pages seen until breakoff’ as dependent variable separated by U of M affiliation

|  | Student    |            | Faculty/staff |            |
|--|------------|------------|---------------|------------|
|  | Coeff.     | Std. error | Coeff.        | Std. error |
| <b>Non-paradata information</b>                              |            |            |               |            |
| <b>Topic section (reference: introduction)</b>               |            |            |               |            |
| Transportation   | -2.1322*** | 0.3439     | -1.9569**     | 0.5991     |
| Conservation   | -1.7237*** | 0.3686     | -1.7389*      | 0.7601     |
| Environment  | -2.8684*** | 0.4543     | -2.6042**     | 0.7922     |
| Food   | -2.1022*** | 0.3893     | -2.6372***    | 0.7935     |
| Climate  | -2.9323*** | 0.4202     | -3.8802***    | 0.7505     |
| General sustainability                                       | -1.9150*** | 0.4138     | -3.3495***    | 0.7326     |
| Sustainability at U of M                                     | -2.8319*** | 0.4830     | -4.7295***    | 0.9025     |
| Demographics   | -3.7816*** | 0.4814     | -5.4628***    | 0.8553     |
| <b>New topic section (reference: continue current topic)</b> |            |            |               |            |
| New topic section  | 0.1909.    | 0.1100     | 0.1638        | 0.2014     |
| <b>Number of question items on...</b>                        |            |            |               |            |
| Current page   | 0.0153     | 0.0157     | -0.0207       | 0.0372     |
| Previous page  | -0.0246    | 0.0154     | -0.0412       | 0.0314     |
| <b>Gender (reference: male)</b>                              |            |            |               |            |



Table A.7: Coefficients and standard errors of the page-level Cox survival implementation model with page variant covariates only and 'number of pages seen until breakoff' as dependent variable separated by U of M affiliation (*continued*)

|  | Student    |            | Faculty/staff |            |
|--|------------|------------|---------------|------------|
|  | Coeff.     | Std. error | Coeff.        | Std. error |
| Female   | -0.0303    | 0.0633     | 0.0030        | 0.1140     |
| Missing gender   | -0.0110    | 0.2189     | NA            | NA         |
| <b>Race/ethnicity (reference: white)</b>                       |            |            |               |            |
| Asian  | 0.2222**   | 0.0840     | 0.4942**      | 0.1519     |
| Black  | 0.4368**   | 0.1392     | 0.9001***     | 0.2040     |
| Hispanic   | 0.2818*    | 0.1390     | 0.6071*       | 0.2875     |
| Other race   | -0.0891    | 0.1790     | -14.4797      | 1102.2414  |
| Missing race   | 0.0177     | 0.1062     | 0.7199**      | 0.2676     |
| <b>Panel membership (reference: non-panel member)</b>          |            |            |               |            |
| Panel member   | -0.7705*** | 0.1205     | NA            | NA         |
| <b>Paradata information</b>                                    |            |            |               |            |
| <b>Response latency (reference: no reminder sent)</b>          |            |            |               |            |
| Reminder sent  | 0.1819**   | 0.0614     | 0.1840        | 0.1137     |
| <b>Answering device (reference: non-mobile)</b>                |            |            |               |            |
| Mobile   | 0.5340***  | 0.0648     | 0.4958*       | 0.2218     |
| <b>New session (reference: continue current session)</b>       |            |            |               |            |
| Start new session  | -0.0852    | 0.4720     | 0.4553        | 0.6808     |
| <b>Navigation (reference: next button)</b>                     |            |            |               |            |
| Previous button  | -1.2630*** | 0.3683     | -0.6315       | 0.4020     |
| <b>Item nonresponse rate</b>                                   |            |            |               |            |
| Item nonresponse rate  | 1.4719***  | 0.1831     | 2.3412***     | 0.2276     |
| <b>Extreme response time (reference: normal response time)</b> |            |            |               |            |
| Short response time  | 0.3337***  | 0.0834     | 0.1127        | 0.1559     |
| Long response time   | 0.3038***  | 0.0746     | 0.3428*       | 0.1360     |
| <b>Response time change</b>                                    |            |            |               |            |
| Absolut RT change MA(2)  | 0.1087**   | 0.0400     | 0.0113        | 0.0624     |

Note: Significance levels: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ , .  $p < 0.1$

Table A.8: Results for the test of the proportional hazard assumption by U of M affiliation for the implemented model

|  | Student   | Faculty/staff |
|--|-----------|---------------|
|  | rho       | rho           |
| <b>Non-paradata information</b>                              |           |               |
| <b>Topic section (reference: introduction)</b>               |           |               |
| Transportation   | -0.0528.  | -0.1458*      |
| Conservation   | -0.0441   | -0.1191*      |
| Environment  | -0.0335   | -0.1150*      |
| Food   | -0.0481.  | -0.1160*      |
| Climate  | -0.0417   | -0.1080*      |
| General sustainability                                       | -0.0463.  | -0.1046*      |
| Sustainability at U of M                                     | -0.0381   | -0.0863*      |
| Demographics   | -0.0429   | -0.0879*      |
| <b>New topic section (reference: continue current topic)</b> |           |               |
| New topic section  | -0.0053   | 0.0719        |
| <b>Number of question items on...</b>                        |           |               |
| Current page   | -0.0254   | 0.0224        |
| Previous page  | -0.0425   | -0.0491       |
| <b>Gender (reference: male)</b>                              |           |               |
| Female   | 0.1029*** | 0.1900***     |
| Missing gender   | 0.0388    | NA            |
| <b>Race/ethnicity (reference: white)</b>                     |           |               |
| Asian  | -0.0163   | -0.0070       |
| Black  | -0.0131   | 0.0164        |
| Hispanic   | -0.0327   | -0.0338       |
| Other race   | -0.0107   | -0.0493       |
| Missing race   | -0.0378   | -0.0032       |
| <b>Panel membership (reference: non-panel member)</b>        |           |               |
| Panel member   | 0.0328    | NA            |
| <b>Paradata information</b>                                  |           |               |

Table A.8: Results for the test of the proportional hazard assumption by U of M affiliation for the implemented model (*continued*)

|  | Student   | Faculty/staff |
|--|-----------|---------------|
|  | rho       | rho           |
| <b>Response latency (reference: no reminder sent)</b>          |           |               |
| Reminder sent  | 0.0668*   | -0.0338       |
| <b>Answering device (reference: non-mobile)</b>                |           |               |
| Mobile   | 0.1175*** | 0.0542        |
| <b>New session (reference: continue current session)</b>       |           |               |
| Start new session  | 0.0080    | -0.1109.      |
| <b>Navigation (reference: next button)</b>                     |           |               |
| Previous button  | -0.0643*  | -0.1319**     |
| <b>Item nonresponse rate</b>                                   |           |               |
| Item nonresponse rate  | 0.0377    | 0.0266        |
| <b>Extreme response time (reference: normal response time)</b> |           |               |
| Short response time  | -0.0095   | 0.0340        |
| Long response time   | 0.0181    | 0.0284        |
| <b>Response time change</b>                                    |           |               |
| Absolut RT change MA(2)  | -0.0377   | 0.0832        |

*Note:* Significance levels: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ , .  $p < 0.1$

### A.3.2 Comparing model fit for the implemented model and a model with collapsed race/ethnicity category

Table A.9 shows the result of the page-level Cox model with a collapsed race/ethnicity category: white, non-white, and missing race. One sees that there are no substantial differences between the implemented model Table 6.3 and Table A.9 in the coefficients nor in the standard errors. When comparing the nested models separately for students and faculty/staff using a likelihood ratio test there was no significant difference between the implemented and collapsed model for students ( $\chi^2 = 6.16, p = 0.1$ ), but a significant difference for the faculty/staff model ( $\chi^2 = 8.82, p = 0.03$ ) indicating a better fit for the implemented model with all available race categories – despite the high standard error in Table 6.3.

Table A.9: Coefficients and standard errors of page-level Cox survival model with page-varying covariates and coefficients and collapsed race/ethnicity category with 'number of pages seen until breakoff' as dependent variable separated by U of M affiliation

|  | Student    |            | Faculty/staff |            |
|--|------------|------------|---------------|------------|
|  | Coeff.     | Std. error | Coeff.        | Std. error |
| <b>Non-paradata information</b>                |            |            |               |            |
| <b>Topic section (reference: introduction)</b> |            |            |               |            |
| Transportation                                 | -2.1840*** | 0.3336     | -2.1676***    | 0.5452     |
| Conservation                                   | -1.6428*** | 0.3546     | -2.0711**     | 0.6547     |
| Environment                                    | -2.7208*** | 0.4413     | -2.8215***    | 0.7363     |
| Food   | -2.0135*** | 0.3796     | -2.9047***    | 0.7173     |
| Climate  | -2.8918*** | 0.4109     | -4.0642***    | 0.7190     |
| General sustainability                         | -1.7918*** | 0.4022     | -3.6461***    | 0.6668     |
| Sustainability at U of M                       | -2.5699*** | 0.4551     | -5.2345***    | 0.7470     |
| Demographics                                   | -3.6733*** | 0.4713     | -5.7051***    | 0.8120     |
| <b>Number of question items on...</b>          |            |            |               |            |
| Previous page                                  | -0.0309*   | 0.0151     | NA            | NA         |
| <b>Gender (reference: male)</b>                |            |            |               |            |
| Female   | -0.2250*   | 0.0910     | -0.3966*      | 0.1691     |
| Missing gender                                 | -0.0245    | 0.2189     | NA            | NA         |

Table A.9: Coefficients and standard errors of page-level Cox survival model with page-varying covariates and coefficients and collapsed race/ethnicity category with 'number of pages seen until breakoff' as dependent variable separated by U of M affiliation (*continued*)

|  | Student    |            | Faculty/staff |            |
|--|------------|------------|---------------|------------|
|  | Coeff.     | Std. error | Coeff.        | Std. error |
| <b>Race/ethnicity (reference: white)</b>                       |            |            |               |            |
| Non-white  | 0.2307***  | 0.0686     | 0.6077***     | 0.1238     |
| Missing race   | 0.0186     | 0.1062     | 0.7811**      | 0.2657     |
| <b>Panel membership (reference: non-panel member)</b>          |            |            |               |            |
| Panel member   | -0.7945*** | 0.1195     | NA            | NA         |
| <b>Paradata information</b>                                    |            |            |               |            |
| <b>Response latency (reference: no reminder sent)</b>          |            |            |               |            |
| Reminder sent  | 0.0321     | 0.0895     | NA            | NA         |
| <b>Answering device (reference: non-mobile)</b>                |            |            |               |            |
| Mobile   | 0.2716**   | 0.0954     | 0.4933*       | 0.2215     |
| <b>Navigation (reference: next button)</b>                     |            |            |               |            |
| Previous button  | -0.1674    | 0.5586     | 1.0864.       | 0.5762     |
| <b>Item nonresponse rate</b>                                   |            |            |               |            |
| Item nonresponse rate  | 1.4819***  | 0.1821     | 2.3668***     | 0.2260     |
| <b>Extreme response time (reference: normal response time)</b> |            |            |               |            |
| Short response time  | 0.3330***  | 0.0833     | 0.0965        | 0.1560     |
| Long response time   | 0.3111***  | 0.0746     | 0.3631**      | 0.1337     |
| <b>Response time change</b>                                    |            |            |               |            |
| Absolut RT change  | 0.1028*    | 0.0410     | NA            | NA         |
| <b>Page-varying coefficient</b>                                |            |            |               |            |
| Female(t)  | 0.0131**   | 0.0045     | 0.0233**      | 0.0072     |
| Reminder sent(t)   | 0.0105*    | 0.0044     | NA            | NA         |
| Mobile(t)  | 0.0180***  | 0.0045     | NA            | NA         |
| Previous(t)  | -0.0701.   | 0.0371     | -0.1144*      | 0.0453     |

Note: Significance levels: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ , .  $p < 0.1$

### A.3.3 Assessing randomization success of experimental design

Performing descriptive analyses and chi-squared tests for all available demographics and paradata information I did not find any significant differences between the three experimental groups.

Table A.10: Evaluation of randomization success of experimental design by demographics and paradata information

|   | Control group |        | Treatment group 1 |        | Treatment group 2 |        |
|---|---------------|--------|-------------------|--------|-------------------|--------|
|   | Freq.         | Perc.  | Freq.             | Perc.  | Freq.             | Perc.  |
| <b>Speed issues indicator</b>               |               |        |                   |        |                   |        |
| No speed issues                             | 1,147         | 18.31% | 1,158             | 18.49% | 1,162             | 18.55% |
| Speed issues                                | 935           | 14.93% | 932               | 14.88% | 929               | 14.83% |
| <b>New incentive structure for students</b> |               |        |                   |        |                   |        |
| Old incentive structure                     | 1,848         | 29.51% | 1,858             | 29.67% | 1,856             | 29.63% |
| New incentive structure                     | 234           | 3.74%  | 232               | 3.70%  | 235               | 3.75%  |
| <b>Gender</b>                               |               |        |                   |        |                   |        |
| Female                                      | 1,262         | 20.15% | 1,292             | 20.63% | 1,266             | 20.21% |
| Male  | 820           | 13.09% | 798               | 12.74% | 825               | 13.17% |
| <b>Race/ethnicity</b>                       |               |        |                   |        |                   |        |
| Asian                                       | 321           | 5.13%  | 324               | 5.17%  | 308               | 4.92%  |
| Black                                       | 100           | 1.60%  | 89                | 1.42%  | 93                | 1.48%  |
| Hispanic                                    | 113           | 1.80%  | 126               | 2.01%  | 119               | 1.90%  |
| White                                       | 1,346         | 21.49% | 1,340             | 21.40% | 1,355             | 21.63% |
| Other race                                  | 70            | 1.12%  | 101               | 1.61%  | 91                | 1.45%  |
| Missing race                                | 132           | 2.11%  | 110               | 1.76%  | 125               | 2.00%  |
| <b>U of M affiliation</b>                   |               |        |                   |        |                   |        |
| Faculty/staff                               | 569           | 9.09%  | 573               | 9.15%  | 573               | 9.15%  |
| Student                                     | 1,513         | 24.16% | 1,517             | 24.22% | 1,518             | 24.24% |
| <b>Panel membership</b>                     |               |        |                   |        |                   |        |
| Non-panel member                            | 328           | 5.24%  | 369               | 5.89%  | 359               | 5.73%  |
| Panel member                                | 1,754         | 28.01% | 1,721             | 27.48% | 1,732             | 27.65% |
| <b>Response latency</b>                     |               |        |                   |        |                   |        |
| No reminder sent                            | 383           | 6.12%  | 396               | 6.32%  | 392               | 6.26%  |
| Reminder sent                               | 1,699         | 27.13% | 1,694             | 27.05% | 1,699             | 27.13% |
| <b>Device used</b>                          |               |        |                   |        |                   |        |

Table A.10: Evaluation of randomization success of experimental design by demographics and paradata information (*continued*)

|            | Control group |        | Treatment group 1 |        | Treatment group 2 |        |
|------------|---------------|--------|-------------------|--------|-------------------|--------|
|            | Freq.         | Perc.  | Freq.             | Perc.  | Freq.             | Perc.  |
| PC/Tablet  | 1,724         | 27.53% | 1,745             | 27.86% | 1,741             | 27.80% |
| Smartphone | 358           | 5.72%  | 345               | 5.51%  | 350               | 5.59%  |

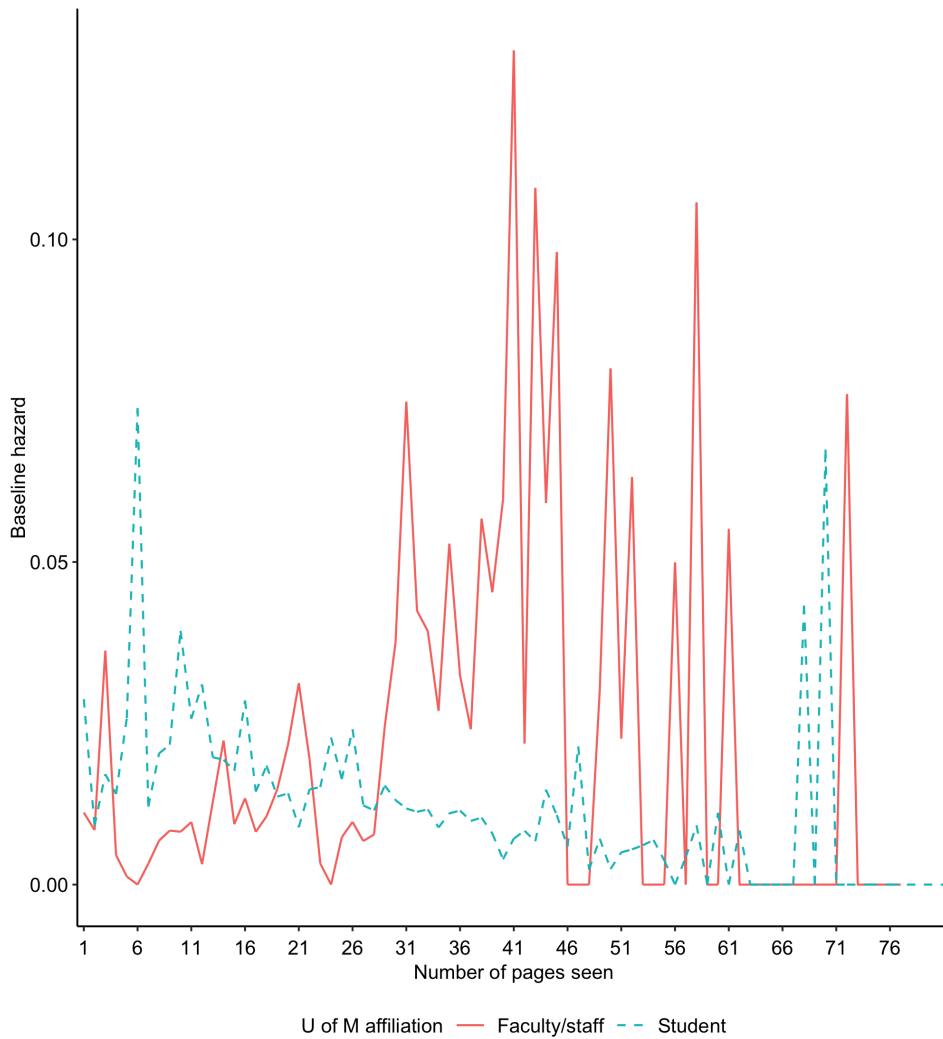


Figure A.1: Baseline hazard development throughout the questionnaire by U of M affiliation

### A.3.4 Development of baseline hazard by number of pages seen and by U of M affiliation

Figure A.1 shows the development of the baseline hazard of the implemented models by U of M affiliation. One clearly sees the blue dotted line, representing the baseline hazards for students starts with higher baselines than faculty/staff (red, solid line). After seeing about 30 pages the faculty/staff baseline hazard exceeds the values of the students. Once both groups have seen about 60 pages the baseline hazards are mostly close to 0.



### A.3.5 Test whether to use weights

In chapter 7 of their book, Valliant and Dever (2017), touch on the discussion of whether to use weights when fitting models as the focus is not on estimating descriptive parameters for a finite population but rather describing the data structure which can be generalized to a finite population. They suggest two approaches to compare unweighted and weighted models:

- (1) Following Korn and Graubard (2011) Valliant and Dever suggest the so-called inefficiency measure defined as:

$$\text{Ineff} = 1 - \frac{\text{var}(\hat{\beta}_{\text{unweight},j})}{\text{var}(\hat{\beta}_{\text{weight},j})},$$

where  $\text{var}(\hat{\beta}_{\text{unweight},j})$  denotes the estimated variance of the  $j$ th coefficient in the unweighted model and  $\text{var}(\hat{\beta}_{\text{weight},j})$  represents the estimated variance in the weighted model. The measure Ineff usually lies within  $[0, 1]$  (i.e., if the unweighted estimate has a smaller variance than the weighted estimates), representing the inefficiencies introduced through the weighting process. If Ineff ranges between  $[0.5, 1]$  the advantages of using unweighted models can be big.

- (2) Next, Valliant and Dever suggest to compare an extended model and an unweighted model (following Pfeffermann and Sverchkov (2009)) and check whether these models are statistically significant from each other. For example, for linear regression models the extended model is defined by :

$$\mathbf{y} = \gamma\mathbf{X} + \tau\mathbf{XW} + \epsilon,$$

where  $\mathbf{X}$  includes all covariates and the intercept. Thus, the extended model includes the survey weights and the weighted covariates through  $\mathbf{XW}$ . One can then test if  $H_0 : \tau = 0$  to determine whether the weights are necessary. Additionally, Valliant and Dever (2017) include measures of model fit like the (pseudo)  $R^2$ , AIC and BIC to compare the unweighted, the extended, and the weighted models.

### A.3.6 Weighted logistic regression model for breakoff

In this section, I tested the need of sampling weights in the respondent level logistic regression model with respondent is breakoff respondent (yes/no) as a dependent variable (Table 6.13). The results of the weighted logistic regression model were displayed in Table A.11, including the inefficiency measure introduced by Valliant and Dever (2017). The Ineff variable ranges between [0.2966, 0.6072], indicating big potential gains when the unweighted model is used. By comparing the extended model (not displayed) and the unweighted model, one finds statistically differences between the two models, indicating slightly better fit of the extended model, but higher BIC for the extended model (4,924 vs. 4,665, respectively).

Table A.11: Coefficients, standard errors, and inefficiency measure of the weighted respondent-level logistic regression model with 'breakoff respondent' as the dependent variable (reference: complete response)

|   | Coeff.     | Std. error | Ineff  |
|---|------------|------------|--------|
| Intercept   | -3.6737*** | 0.3454     | 0.4090 |
| <b>Non-paradata information</b>                       |            |            |        |
| <b>Data collection flags</b>                          |            |            |        |
| Speed issues (reference: no speed issues)             | 0.4821.    | 0.2481     | 0.5604 |
| New incentive structure (reference: old incentive)    | -0.7471*   | 0.3522     | 0.4595 |
| <b>Treatment group (reference: control group)</b>     |            |            |        |
| TG1: tailored intervention                            | 0.0750     | 0.5101     | 0.4596 |
| TG2: generic intervention                             | 0.0492     | 0.5375     | 0.5098 |
| <b>Gender (reference: male)</b>                       |            |            |        |
| Female  | 0.1307     | 0.2032     | 0.5272 |
| <b>Race/ethnicity (reference: white)</b>              |            |            |        |
| Asian   | 0.4130     | 0.2942     | 0.5830 |
| Black   | 0.9000*    | 0.4035     | 0.4978 |
| Hispanic  | -0.2600    | 0.4324     | 0.4359 |
| Other race  | 0.4601     | 0.4129     | 0.2966 |
| Missing race  | -0.1126    | 0.3478     | 0.3424 |
| <b>U of M affiliation (reference: faculty/staff)</b>  |            |            |        |
| Student   | 0.4672*    | 0.2348     | 0.3710 |
| <b>Panel membership (reference: non-panel member)</b> |            |            |        |
| Panel member  | -1.1460*** | 0.3019     | 0.3574 |

Table A.11: Coefficients, standard errors, and inefficiency measure of the weighted respondent-level logistic regression model with 'breakoff respondent' as the dependent variable (reference: complete response) (*continued*)

|   | Coeff.    | Std. error | Ineff  |
|---|-----------|------------|--------|
| <b>Paradata information</b>                           |           |            |        |
| <b>Response latency (reference: no reminder sent)</b> |           |            |        |
| Reminder sent   | 1.4984*** | 0.2957     | 0.5613 |
| <b>Answering device (reference: non-mobile)</b>       |           |            |        |
| Mobile  | -0.0191   | 0.2327     | 0.4947 |
| <b>Interactions with treatment group</b>              |           |            |        |
| <b>TG * Data collection flags</b>                     |           |            |        |
| TG1 * Speed issues                                    | 0.2389    | 0.3555     | 0.5526 |
| TG2 * Speed issues                                    | 0.2970    | 0.3561     | 0.5570 |
| TG1 * New incentive structure                         | 0.6749    | 0.4906     | 0.4134 |
| TG2 * New incentive structure                         | 0.4409    | 0.5097     | 0.3893 |
| <b>TG * Gender</b>                                    |           |            |        |
| TG1 * Female  | 0.2835    | 0.2965     | 0.5423 |
| TG2 * Female  | -0.2176   | 0.2996     | 0.5491 |
| <b>TG * Race/ethnicity</b>                            |           |            |        |
| TG1 * Asian   | -0.3242   | 0.4582     | 0.6072 |
| TG2 * Asian   | -0.5301   | 0.4429     | 0.5717 |
| TG1 * Black   | -0.2507   | 0.6283     | 0.5022 |
| TG2 * Black   | -0.3376   | 0.5889     | 0.5174 |
| TG1 * Hispanic  | 0.8515    | 0.5862     | 0.4556 |
| TG2 * Hispanic  | -0.5480   | 0.6236     | 0.3906 |
| TG1 * Other race                                      | 0.0965    | 0.6409     | 0.5125 |
| TG2 * Other race                                      | -0.3409   | 0.7425     | 0.5883 |
| TG1 * Missing race                                    | 0.6672    | 0.4922     | 0.3476 |
| TG2 * Missing race                                    | 0.4384    | 0.4842     | 0.3017 |
| <b>TG * U of M affiliation</b>                        |           |            |        |
| TG1 * Student   | -0.2626   | 0.3365     | 0.4051 |
| TG2 * Student   | -0.2371   | 0.3384     | 0.3811 |
| <b>TG * Panel membership</b>                          |           |            |        |
| TG1 * Panel member                                    | 0.2722    | 0.4154     | 0.3724 |
| TG2 * Panel member                                    | 0.8139*   | 0.4043     | 0.3639 |
| <b>TG * Response latency</b>                          |           |            |        |

Table A.11: Coefficients, standard errors, and inefficiency measure of the weighted respondent-level logistic regression model with 'breakoff respondent' as the dependent variable (reference: complete response) (*continued*)

|                              | <b>Coeff.</b> | <b>Std. error</b> | <b>Ineff</b> |
|------------------------------|---------------|-------------------|--------------|
| TG1 * Reminder sent          | -0.5617       | 0.4301            | 0.5822       |
| TG2 * Reminder sent          | -0.2453       | 0.4423            | 0.5961       |
| <b>TG * Answering device</b> |               |                   |              |
| TG1 * Mobile                 | 0.6325        | 0.3573            | 0.5425       |
| TG2 * Mobile                 | 0.5173        | 0.3585            | 0.5496       |

*Note:* Significance levels: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ , .  $p < 0.1$

### A.3.7 Weighted GLM for average intervention count

In this section, I compare the unweighted and weighted respondent-level linear models with the average number of threshold crossings as a dependent variable (Table 6.14 for the unweighted result). Table A.12 shows the results of the weighted linear regression model, including the inefficiency measure introduced by Valliant and Dever (2017). For most coefficients, the variances of the unweighted model are smaller than the variances of the weighted model (inefficiencies range between  $[0.2333, 0.780]$ ). Only for the variable “panel member” and its interaction with treatment group the weighted model has smaller or almost equal variances (i.e.,  $\text{Ineff}_{\text{Panel member}} = -0.1191$ ,  $\text{Ineff}_{\text{TG1} * \text{Panel member}} = -0.0007$ ,  $\text{Ineff}_{\text{TG2} * \text{Panel member}} = -0.0558$ ). Most inefficiencies range between  $[0.5, 0.8]$ , indicating big advantages when using the unweighted model. Next, I compared the extended model (not displayed) with the unweighted model, finding very small (but significant) differences between both models, with a slightly higher  $R^2$  for the extended model ( $R^2_{\text{extend}} = 0.63$  and  $R^2_{\text{unweighted}} = 0.62$ ). Adjusted for higher complexity, the BIC shows better results for the unweighted model ( $\text{BIC}_{\text{extend}} = -13,576$  vs.  $\text{BIC}_{\text{unweight}} = -13,494$ ).

Table A.12: Coefficients, standard errors, and inefficiency measure of the weighted respondent-level linear regression with ‘average number of threshold crossings’ as dependent variable and treatment group as independent variable

|  | Coeff.    | Std. error | Ineff  |
|--|-----------|------------|--------|
| Intercept  | 0.1015*** | 0.0087     | 0.3845 |
| <b>Non-paradata information</b>                    |           |            |        |
| <b>Data collection flags</b>                       |           |            |        |
| Speed issues (reference: no speed issues)          | -0.0077   | 0.0073     | 0.5678 |
| New incentive structure (reference: old incentive) | -0.0134.  | 0.0070     | 0.2741 |
| <b>Treatment group (reference: control group)</b>  |           |            |        |
| TG1: tailored intervention                         | -0.0081   | 0.0131     | 0.4418 |
| TG2: generic intervention                          | -0.0082   | 0.0124     | 0.3893 |
| <b>Gender (reference: male)</b>                    |           |            |        |
| Female   | 0.0066    | 0.0054     | 0.5300 |
| <b>Race/ethnicity (reference: white)</b>           |           |            |        |
| Asian  | 0.0877*** | 0.0096     | 0.7133 |
| Black  | 0.1574*** | 0.0139     | 0.6290 |
| Hispanic   | 0.1068*** | 0.0120     | 0.5433 |
| Other race   | -0.0613** | 0.0198     | 0.7466 |

Table A.12: Coefficients, standard errors, and inefficiency measure of the weighted respondent-level linear regression with 'average number of threshold crossings' as dependent variable and treatment group as independent variable (*continued*)

|   | <b>Coeff.</b> | <b>Std. error</b> | <b>Ineff</b> |
|---|---------------|-------------------|--------------|
| Missing race  | 0.0453**      | 0.0152            | 0.7506       |
| <b>U of M affiliation (reference: faculty/staff)</b>  |               |                   |              |
| Student   | 0.0679***     | 0.0071            | 0.5696       |
| <b>Panel membership (reference: non-panel member)</b> |               |                   |              |
| Panel member  | -0.1722***    | 0.0048            | -0.1191      |
| <b>Paradata information</b>                           |               |                   |              |
| <b>Response latency (reference: no reminder sent)</b> |               |                   |              |
| Reminder sent   | 0.0005        | 0.0074            | 0.4420       |
| <b>Answering device (reference: non-mobile)</b>       |               |                   |              |
| Mobile  | 0.1578***     | 0.0097            | 0.7468       |
| <b>Interactions with treatment group</b>              |               |                   |              |
| <b>TG * Data collection flags</b>                     |               |                   |              |
| TG1 * Speed issues                                    | 0.0163        | 0.0110            | 0.6206       |
| TG2 * Speed issues                                    | 0.0124        | 0.0103            | 0.5701       |
| TG1 * New incentive structure                         | 0.0269*       | 0.0121            | 0.5135       |
| TG2 * New incentive structure                         | 0.0142        | 0.0097            | 0.2333       |
| <b>TG * Gender</b>                                    |               |                   |              |
| TG1 * Female  | -0.0134       | 0.0085            | 0.6254       |
| TG2 * Female  | -0.0184*      | 0.0075            | 0.5182       |
| <b>TG * Race/ethnicity</b>                            |               |                   |              |
| TG1 * Asian   | -0.0216.      | 0.0126            | 0.6687       |
| TG2 * Asian   | -0.0033       | 0.0155            | 0.7799       |
| TG1 * Black   | 0.0236        | 0.0198            | 0.6134       |
| TG2 * Black   | 0.0061        | 0.0176            | 0.5217       |
| TG1 * Hispanic  | -0.0130       | 0.0187            | 0.6468       |
| TG2 * Hispanic  | -0.0321*      | 0.0142            | 0.3751       |
| TG1 * Other race                                      | 0.0109        | 0.0225            | 0.6637       |
| TG2 * Other race                                      | -0.0028       | 0.0212            | 0.6082       |
| TG1 * Missing race                                    | -0.0087       | 0.0214            | 0.7275       |
| TG2 * Missing race                                    | -0.0203       | 0.0193            | 0.6820       |
| <b>TG * U of M affiliation</b>                        |               |                   |              |
| TG1 * Student   | 0.0038        | 0.0097            | 0.5387       |

Table A.12: Coefficients, standard errors, and inefficiency measure of the weighted respondent-level linear regression with 'average number of threshold crossings' as dependent variable and treatment group as independent variable (*continued*)

|                              | <b>Coeff.</b> | <b>Std. error</b> | <b>Ineff</b> |
|------------------------------|---------------|-------------------|--------------|
| TG2 * Student                | 0.0034        | 0.0095            | 0.5230       |
| <b>TG * Panel membership</b> |               |                   |              |
| TG1 * Panel member           | -0.0102       | 0.0071            | -0.0007      |
| TG2 * Panel member           | 0.0112        | 0.0069            | -0.0558      |
| <b>TG * Response latency</b> |               |                   |              |
| TG1 * Reminder sent          | 0.0180        | 0.0117            | 0.5554       |
| TG2 * Reminder sent          | 0.0148        | 0.0106            | 0.4591       |
| <b>TG * Answering device</b> |               |                   |              |
| TG1 * Mobile                 | 0.0038        | 0.0135            | 0.7378       |
| TG2 * Mobile                 | 0.0023        | 0.0131            | 0.7214       |

*Note:* Significance levels: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ , .  $p < 0.1$

### A.3.8 Weighted negative binomial regression model for maximum pages seen

In this section, I compare the weighted and unweighted respondent-level negative binomial regression model with the maximal number of pages seen as the dependent variable (Table 6.15 and Table A.13). For most coefficients, the variances of the unweighted model are smaller than the variances of the weighted model (inefficiencies range between  $[0.0816, 0.684]$ ). Only for the variables "TG1 \* Black" and "TG2 \* Other race" the weighted model has smaller variances (i.e.,  $\text{Ineff}_{\text{TG1} * \text{Black}} = -0.1169$ ,  $\text{Ineff}_{\text{TG2} * \text{Other race}} = -0.0200$ ). Most inefficiencies range between  $[0.2, 0.5]$ , indicating only small advantages when using the unweighted model. When comparing these models, there is no significant differences between them (p-Value = 0.18). Additionally, the adjusted  $R^2$  BIC of the extended model shows worse results ( $R^2_{\text{extend, adj}} = 0.0086$  and  $\text{BIC}_{\text{extend}} = 6,093$ ) than the unweighted model ( $R^2_{\text{unweighted, adj}} = 0.0278$  and  $\text{BIC}_{\text{unweighted}} = 5,883$ ).

Table A.13: Coefficients, standard errors, and inefficiency measure of the weighted respondent-level negative binomial regression with 'maximal number of pages seen' as dependent variable to explore the effect of treatment group (breakoff respondents only)

|  | Coeff.  | Std. error | Ineff  |
|--|---------|------------|--------|
| Intercept  | 3.136** | 0.232      | 0.2945 |
| <b>Non-paradata information</b>                    |         |            |        |
| <b>Data collection flags</b>                       |         |            |        |
| Speed issues (reference: no speed issues)          | 0.075   | 0.146      | 0.4695 |
| New incentive structure (reference: old incentive) | 0.532** | 0.188      | 0.0816 |
| <b>Treatment group (reference: control group)</b>  |         |            |        |
| TG1: tailored intervention                         | -0.760* | 0.366      | 0.4599 |
| TG2: generic intervention                          | -0.194  | 0.292      | 0.1569 |
| <b>Gender (reference: male)</b>                    |         |            |        |
| Female   | -0.123  | 0.129      | 0.4720 |
| <b>Race/ethnicity (reference: white)</b>           |         |            |        |
| Asian  | -0.206  | 0.198      | 0.6012 |
| Black  | -0.493* | 0.233      | 0.3318 |
| Hispanic   | -0.435. | 0.243      | 0.1886 |



Table A.13: Coefficients, standard errors, and inefficiency measure of the weighted respondent-level negative binomial regression with 'maximal number of pages seen' as dependent variable to explore the effect of treatment group (breakoff respondents only) (*continued*)

|   | <b>Coeff.</b> | <b>Std. error</b> | <b>Ineff</b> |
|---|---------------|-------------------|--------------|
| Other race  | -0.287        | 0.279             | 0.3685       |
| Missing race  | -0.292        | 0.214             | 0.2285       |
| <b>U of M affiliation (reference: faculty/staff)</b>  |               |                   |              |
| Student   | -0.034        | 0.156             | 0.3491       |
| <b>Panel membership (reference: non-panel member)</b> |               |                   |              |
| Panel member  | 0.042         | 0.206             | 0.3432       |
| <b>Paradata information</b>                           |               |                   |              |
| <b>Response latency (reference: no reminder sent)</b> |               |                   |              |
| Reminder sent   | -0.022        | 0.158             | 0.3841       |
| <b>Answering device (reference: non-mobile)</b>       |               |                   |              |
| Mobile  | 0.060         | 0.131             | 0.2960       |
| <b>Interactions with treatment group</b>              |               |                   |              |
| <b>TG * Data collection flags</b>                     |               |                   |              |
| TG1 * Speed issues                                    | -0.067        | 0.226             | 0.5255       |
| TG2 * Speed issues                                    | -0.119        | 0.209             | 0.4484       |
| TG1 * New incentive structure                         | -0.390        | 0.276             | 0.1222       |
| TG2 * New incentive structure                         | -0.260        | 0.363             | 0.4014       |
| <b>TG * Gender</b>                                    |               |                   |              |
| TG1 * Female  | 0.584**       | 0.194             | 0.5007       |
| TG2 * Female  | 0.390*        | 0.183             | 0.4549       |
| <b>TG * Race/ethnicity</b>                            |               |                   |              |
| TG1 * Asian   | 0.073         | 0.309             | 0.6160       |
| TG2 * Asian   | 0.280         | 0.346             | 0.6840       |
| TG1 * Black   | 0.740**       | 0.282             | -0.1169      |
| TG2 * Black   | 0.730**       | 0.283             | 0.1201       |
| TG1 * Hispanic  | 0.775*        | 0.311             | 0.1430       |
| TG2 * Hispanic  | -0.553        | 0.370             | 0.1632       |

Table A.13: Coefficients, standard errors, and inefficiency measure of the weighted respondent-level negative binomial regression with 'maximal number of pages seen' as dependent variable to explore the effect of treatment group (breakoff respondents only) (continued)

|                                | <b>Coeff.</b> | <b>Std. error</b> | <b>Ineff</b> |
|--------------------------------|---------------|-------------------|--------------|
| TG1 * Other race               | 0.266         | 0.320             | 0.1992       |
| TG2 * Other race               | 0.153         | 0.307             | -0.0200      |
| TG1 * Missing race             | 0.121         | 0.305             | 0.2690       |
| TG2 * Missing race             | -0.165        | 0.293             | 0.1292       |
| <b>TG * U of M affiliation</b> |               |                   |              |
| TG1 * Student                  | 0.375         | 0.216             | 0.3626       |
| TG2 * Student                  | 0.145         | 0.217             | 0.3374       |
| <b>TG * Panel membership</b>   |               |                   |              |
| TG1 * Panel member             | -0.040        | 0.273             | 0.3183       |
| TG2 * Panel member             | -0.003        | 0.270             | 0.3327       |
| <b>TG * Response latency</b>   |               |                   |              |
| TG1 * Reminder sent            | 0.082         | 0.223             | 0.3545       |
| TG2 * Reminder sent            | -0.179        | 0.210             | 0.2573       |
| <b>TG * Answering device</b>   |               |                   |              |
| TG1 * Mobile                   | -0.130        | 0.222             | 0.4843       |
| TG2 * Mobile                   | -0.304        | 0.210             | 0.4316       |

Note: Significance levels: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ , .  $p < 0.1$

# Appendix B

## Power Analyses

### B.1 Power analyses for Chapter 6

In order to detect even small changes within breakoff rates in each experimental group I performed power analyses to ensure large enough sample sizes in each group. Using a two-sided proportions test for two independent groups I tested whether the proportions in group  $A(= p_A)$  and group  $B(= p_B)$  are different from one another:

$$H_0 : p_A - p_B = 0 H_1 : p_A - p_B \neq 0$$

The sample size of both groups A and B shall be equal  $n_A = n_B$ , with the standard level of significance ( $\alpha = 0.05$ ) and a power of 0.8 ( $\beta = 0.2$ ). Therefore, the critical values are  $z_{1-\frac{\alpha}{2}} = 1.96$  and  $z_{1-\beta} = 0.84$ . I expected  $p_A$  (i.e., the breakoff rate) to be around 16% if there were no intervention ( $p_A = 0.16$ )<sup>136</sup> and would like to detect a change of  $\pm 0.04$  (i.e.,  $p_B \in \{0.12; 0.20\}$ ).

The equation for sample size calculations for two proportions is given by

$$n_A = (p_A(1 - p_A) + p_B(1 - p_B)) * \left( \frac{z_{1-\frac{\alpha}{2}} + z_{1-\beta}}{p_A - p_B} \right)^2$$

This results in  $n_A \in \{1, 175; 1, 442\}$  for  $p_B \in \{0.12; 0.20\}$ . Under this scenario the sample size of group A needed to be at least equal to 1,442. For this reason, I aimed for at least

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<sup>136</sup>Conservative estimation from previous SCIP waves.

1,500 respondents in each experimental group.<sup>137</sup>

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<sup>137</sup>Even when accounting for multiple testing and adjusting the  $\alpha$  level with the Bonferroni correction to  $\alpha^* = \frac{\alpha}{3} = 0.01667$ , the group size of 1,500 still provided enough power to detect a 4.5 percentage point change in breakoff rates.

# Appendix C

## Data Cleaning

### C.1 Data cleaning steps for Chapter 6

I followed the steps introduced in Section 3.5 to clean the data of 2018 SCIP wave:

1. Analyzing dates start on 1/22
2. Excluding respondents with very high page counts
3. Excluding time out pages
4. Trimming page response times
5. Trimming breakoff risk

**1. Analyzing dates start on 1/22.** Respondents who started the questionnaire before the finalization of the model on 1/22 were excluded from further analyses. This excluded 23 respondents.

**2. Maximum pages seen.** The maximum pages seen throughout the questionnaire was 184 pages (due to the “previous page” option). I excluded respondents who had a higher page count than the 99.5 percentile (i.e., more than 80 pages). This decision affected 18 respondents.

**3. Time out.** If a respondent stayed longer than 15 minutes on the same page, their session expired. In rare cases the paradata script still recorded the page time after 15 minutes had passed, leading to very high page response times (up to 23,694 minutes per page). I decided to exclude these pages as the respondent probably “forgot” about the questionnaire running in the background. If time out happened on the very first page (i.e., the welcome page), I excluded the respondents, leading to 28 respondents being excluded.

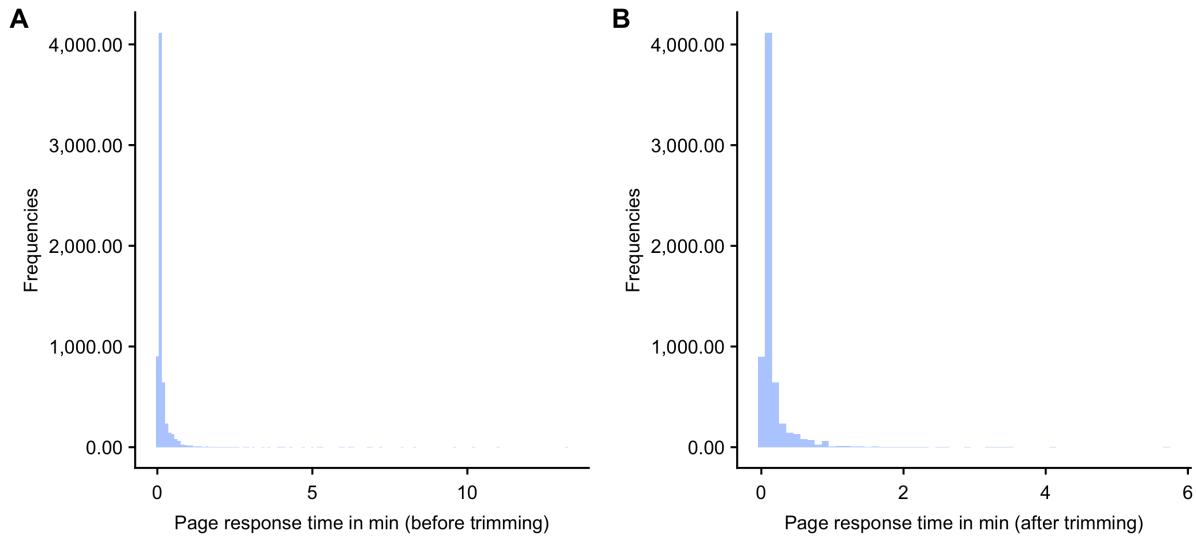


Figure C.1: Histogram of page response time in minutes (A = before response time trimming, B = after response time trimming)

**4. Trimming page response times.** Due to complications with the java script capturing page response time, the recorded page response times were occasionally negative or zero. Most of the time this happened on the very first questionnaire page. Similar to the chapters before, I trimmed the page response times by the 1% and 99% percentile (Ratcliff 1993). I did this for every page separately and across all respondents (excluding negative and zero page response times).

This procedure accounted for very high page response times as well as for negative and zero response times: shifting the minimum page time from -0.014 minutes to +0.00025 minutes and the maximum page time from 13.2 minutes to 5.7 minutes.

# Appendix D

## SCIP Questionnaires

### D.1 Student SCIP questionnaire 2014

**Sustainability Culture Indicators Program (SCIP)**

**Collection:** LOGIN  
**Contains:** DATSTAT\_ALTPID

**Question:** DATSTAT\_ALTPID  
**Required**

**Please enter your ID.**

**Collection:** SECTION\_A  
**Contains:** STUDQUES1, STUDQUES2-STUDQUES4\_SERIES, STUDQUES5, STUDQUES6, STUDQUES9\_2013, STUDQUES7\_2013, STUDQUES10, STUDQUES11\_2013

**The purpose of this questionnaire is to better understand what U-M students do and how they think about sustainability. Sustainability covers many things and this questionnaire will cover topics such as transportation, energy conservation, waste prevention, food, and environmental protection.**

**Your responses are voluntary and confidential and it is up to you whether to complete this questionnaire. You can leave and return to the questionnaire at a later time. You must be at least 18-years-old to complete the questionnaire. By completing the questionnaire, you are acknowledging that you are at least 18-years-old. Completing the questionnaire should take about minutes.**

Page Break

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## Statement of Consent

Principal Investigator: John Callewaert, Integrated Assessment Program Director  
Graham Environmental Sustainability Institute

- You were randomly selected from among all students at the University of Michigan to be invited to complete this survey.
- To evaluate the programs, outstanding needs, and current practices and beliefs regarding the issue of sustainability on the U-M campus in Ann Arbor, you will be asked questions about transportation, food, the environment, and conserving energy.
- Participating in this study is completely voluntary.
- It should take minutes to complete.
- There are no risks related to completing this survey, because the topic is not sensitive.
- The benefit to participating is that your attitudes, behaviors, and knowledge may help to shape U-M programs.
- Upon completion of the survey, your email address will be included in a drawing for a \$ Amazon gift code.
- We may ask you to complete a sustainability survey each fall for as long as you attend school at the University of Michigan in Ann Arbor.
- Your answers and personal information will be kept confidential.
- Your name will not be attached to any data, a study number will be used instead.
- You must be at least 18 years old to complete the questionnaire. By completing the questionnaire, you are acknowledging that you are at least 18 years old.
- The data for this study are being collected by the University of Michigan Survey Research Center (SRC) Survey Research Operations (SRO) in cooperation with John Callewaert, PhD, Integrated Assessment Program Director at the Graham Sustainability Institute of the University of Michigan.
- The Sustainability Cultural Indicators Program (SCIP) is funded by the University of Michigan.
- If you have any question about the study, please contact: John Callewaert, (734) 615-3752, [jcallew@umich.edu](mailto:jcallew@umich.edu).
- If you have questions about your rights as a research participant, or wish to obtain information, ask questions or discuss any concerns about this study with someone other than the researcher, please contact the University of Michigan Health Sciences and Behavioral Sciences Institutional Review Board, 2800 Plymouth Rd., Building 520, Room 1169, Ann Arbor, MI 48109-2800, (734) 936-0933, or toll-free, (866) 936-0933, [irbhsbs@umich.edu](mailto:irbhsbs@umich.edu)

**Click "Next" to continue with the survey.**

- Your answers and personal information will be kept confidential.
- Participation is voluntary and you can stop at any time.
- It should take about minutes to complete.
- There are no risks related to completing this survey, because the topic is not sensitive.
- Upon completion of the survey, your email address will be included in a drawing for a \$ Amazon gift code.

To learn more...

About the Study

Confidentiality

Your Rights

**Click "Next" to continue with the survey.**

Page Break

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**Question:** STUDQUES1

| Scale Summary |                                |         |
|---------------|--------------------------------|---------|
| Code          | Label                          | Show-If |
| 1             | A U-M resident hall            |         |
| 2             | Northwood community apartments |         |
| 3             | Off-campus apartment           |         |
| 4             | Off-campus house               |         |
| 5             | Parent's house                 |         |
| 6             | Other                          |         |

***This first set of questions is about your current residence, that is, where you have lived since the start of the fall semester.***

**Do you live in:**

- A U-M resident hall (*which one?*):
- Northwood community apartments
- Off-campus apartment
- Off-campus house
- Parent's house
- Other (*please specify*):

Page Break

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**Collection:** STUDQUES2-STUDQUES4\_SERIES  
**Contains:** STUDQUES2, STUDQUES2B, STUDQUES3  
**Show if:** (STUDQUES1 is-any-of 3:[Off-campus apartment] or 4:[Off-campus house] or 5:[Parent's house] or 6:[Other])

**Question:** STUDQUES2

**How many persons, including yourself, live in your current residence?**

*(Please include only your own apartment, condo, or house - not an entire apartment building).*

**Person(s)**

Page Break

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**Question:** STUDQUES2B

**What is the name of the city, township, or village where you currently live?**

City, township, or village name:

Page Break

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Question: STUDQUES3

**What is the zip code of your current residence?**

5-digit zip code:

Page Break

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Custom Layout Question: STUDQUES4

**The major cross streets (intersection) near my current residence are:**

Street 1:

Street 2:

Page Break

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**Question:** STUDQUES5

| <b>Scale Summary</b> |                    |         |
|----------------------|--------------------|---------|
| Code                 | Label              | Show-If |
| 1                    | Less than 3 months |         |
| 2                    | 3-11 months        |         |
| 3                    | 1-2 years          |         |
| 4                    | More than 2 years  |         |

**How long have you lived at your current residence?**

- Less than 3 months
- 3-11 months
- 1-2 years
- More than 2 years

Page Break

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**Question:** STUDQUES6

| <b>Scale Summary</b> |                                       |         |
|----------------------|---------------------------------------|---------|
| Code                 | Label                                 | Show-If |
| 1                    | First-year student (Freshman)         |         |
| 2                    | Sophomore                             |         |
| 3                    | Junior                                |         |
| 4                    | Senior                                |         |
| 5                    | Graduate student/Professional student |         |

**Are you a:**

- First-year student (Freshman)
- Sophomore
- Junior
- Senior
- Graduate student/Professional student

Page Break

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**Question Block:** STUDQUES9\_2013  
**Contains:** Q17\_2013, Q18\_2013, Q19\_2013, Q20\_2013, Q22\_2013

| Scale Summary |                              |         |
|---------------|------------------------------|---------|
| Code          | Label                        | Show-If |
| 1             | <b>A lot</b>                 |         |
| 2             | <b>A fair amount</b>         |         |
| 3             | <b>A little</b>              |         |
| 4             | <b>Not much/<br/>nothing</b> |         |

**How much do you know about the following?**

|  | <b>A lot</b>          | <b>A fair amount</b>  | <b>A little</b>       | <b>Not much/<br/>nothing</b> |
|--|-----------------------|-----------------------|-----------------------|------------------------------|
| <b>Bus, AAATA/"The Ride" (Ann Arbor Area Transportation Authority schedules, routes, etc.)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Bus, U-M</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Biking in Ann Arbor (bike lanes, rules of the road, etc.)</b>                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Renting a car by the hour (e.g. Zipcar)</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>U-M GreenRide/iShareaRide</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |

Page Break

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**Question Block:** STUDQUES7\_2013

**Contains:** Q1\_2013, Q11\_2013, Q2\_2013, Q3\_2013, Q4\_2013, Q5\_2013, Q6\_2013, Q7\_2013, Q8\_2013, Q10\_2013

Show if: (PL\_PANEL = 2)

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label                                   | Show-If |
| 1             | <b>Never</b>                            |         |
| 2             | <b>Rarely</b>                           |         |
| 3             | <b>Sometimes</b>                        |         |
| 4             | <b>Always/<br/>Most of<br/>the time</b> |         |

These questions are about **travel and transportation**.

**During the past year, how often did you do the following to travel between where you lived and campus?**

|  | <b>Never</b>          | <b>Rarely</b>         | <b>Sometimes</b>      | <b>Always/<br/>Most of<br/>the time</b> |
|--|-----------------------|-----------------------|-----------------------|---|
| <b>Drive a car and park on campus</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   |
| <b>Park and Ride (the bus)</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   |
| <b>Walk</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   |
| <b>Bike</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   |
| <b>Bus, AAATA/"The Ride" (Ann Arbor Area Transportation Authority schedules, routes, etc.)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   |
| <b>Bus, U-M</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   |
| <b>Carpool (self-organized with friends or coworkers)</b>                                      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   |
| <b>U-M Greenride/iShareaRide</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   |
| <b>Vanpool</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   |
| <b>Motorcycle, moped, or scooter</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   |

Page Break

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Question: STUDQUES10

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Drive a car                                       |         |
| 8             | Park and Ride (the bus)                           |         |
| 2             | Walk  |         |
| 3             | Bike  |         |
| 4             | Ride the bus                                      |         |
| 5             | Ride the bus and bike                             |         |
| 6             | Ride share (i.e. van/car pool, dropped off, etc.) |         |
| 7             | Motorcycle, moped, or scooter                     |         |
| 9             | Other   |         |

Since the start of the fall semester, how do you most often travel to and from campus?

- Drive a car
- Park and Ride (the bus)
- Walk
- Bike
- Ride the bus
- Ride the bus and bike
- Ride share (i.e. van/car pool, dropped off, etc.)
- Motorcycle, moped, or scooter
- Other (*please specify*):

Page Break

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**Question Block:** STUDQUES11\_2013  
**Contains:** Q24\_2013, Q26\_2013, Q28\_2013  
 Show if: (PL\_PANEL = 2)

| Scale Summary |                              |         |
|---------------|------------------------------|---------|
| Code          | Label                        | Show-If |
| 1             | <b>Very important</b>        |         |
| 2             | <b>Somewhat important</b>    |         |
| 3             | <b>Not that important</b>    |         |
| 4             | <b>Not at all important</b>  |         |
| 5             | <i>Didn't think about it</i> |         |

**When you moved to your current residence, how important were each of the following reasons?**

|   | <b>Very important</b> | <b>Somewhat important</b> | <b>Not that important</b> | <b>Not at all important</b> | <i><b>Didn't think about it</b></i> |
|---|-----------------------|---------------------------|---------------------------|-----------------------------|-------------------------------------|
| <b>Being able to walk or bike to campus</b>     | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       | <input type="radio"/>               |
| <b>Being able to take the bus to campus</b>     | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       | <input type="radio"/>               |
| <b>Having a lower impact on the environment</b> | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       | <input type="radio"/>               |

Page Break

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**Collection:** SECTION\_B  
**Contains:** STUDQUES14, STUDQUES15-PART1, STUDQUES15-PART2, STUDQUES15-PART3, STUDQUES16

**Question Block:** STUDQUES14  
**Contains:** Q32, Q33, Q34, Q35, Q36, Q43

| Scale Summary |                          |         |
|---------------|--------------------------|---------|
| Code          | Label                    | Show-If |
| 1             | <b>A lot</b>             |         |
| 2             | <b>A fair amount</b>     |         |
| 3             | <b>A little</b>          |         |
| 4             | <b>Not much/ Nothing</b> |         |

These questions are about **waste prevention and conservation**.

How much do you know about the following at **U-M**?

|   | <b>A lot</b>          | <b>A fair amount</b>  | <b>A little</b>       | <b>Not much/ Nothing</b> |
|---|-----------------------|-----------------------|-----------------------|--------------------------|
| <b>Recycling glass</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Recycling plastic</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Recycling paper</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Recycling electronic waste (i.e. computers, cell phones)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Property Disposition services</b>                            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Composting</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |

Page Break

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**Question Block:** STUDQUES15-PART1  
**Contains:** Q37, Q38, Q39, Q40, Q41, Q42, Q68

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label                                   | Show-If |
| 1             | <b>Never</b>                            |         |
| 2             | <b>Rarely</b>                           |         |
| 3             | <b>Sometimes</b>                        |         |
| 4             | <b>Always/<br/>Most of<br/>the time</b> |         |
| 5             | <b>Not<br/>applicable</b>               |         |

**During the past year, how often did you do the following when you had the opportunity?**

**How often did you:**

|  | <b>Never</b>          | <b>Rarely</b>         | <b>Sometimes</b>      | <b>Always/<br/>Most of<br/>the time</b> | <b>Not<br/>applicable</b> |
|--|-----------------------|-----------------------|-----------------------|---|---------------------------|
| <b>Set thermostat to 65 degrees or lower during cool or cold weather</b>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Set thermostat (air conditioner) to 78 degrees or higher during warm or hot weather</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Turn off lights when I leave the room</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Unplug electrical appliances when not using them</b>                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Use the power saving settings on my computer</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Turn off my computer when not using it</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Use a motion sensor / "smart" power strip</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |

Page Break

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**Question Block:** STUDQUES15-PART2  
**Contains:** Q44, Q45, Q46, Q47, Q48, Q49, Q50

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label                                   | Show-If |
| 1             | <b>Never</b>                            |         |
| 2             | <b>Rarely</b>                           |         |
| 3             | <b>Sometimes</b>                        |         |
| 4             | <b>Always/<br/>Most of<br/>the time</b> |         |
| 5             | <b>Not applicable</b>                   |         |

**During the past year, how often did you do the following when you had the opportunity?**

**How often did you:**

|  | <b>Never</b>          | <b>Rarely</b>         | <b>Sometimes</b>      | <b>Always/<br/>Most of<br/>the time</b> | <b>Not<br/>applicable</b> |
|--|-----------------------|-----------------------|-----------------------|---|---------------------------|
| <b>Print double-sided</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Run washer only when I have a full load of clothes</b>        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Limit time in the shower</b>                                  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Recycle bottles, containers, and paper products</b>           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Use a reusable water bottle, coffee cup, travel mug, etc.</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Recycle electronic waste (i.e. computers, cell phones)</b>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Bring reusable bags to the grocery store</b>                  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |

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**Question Block:** STUDQUES15-PART3

**Contains:** Q51, Q52, Q53, Q54, Q55

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label                                   | Show-If |
| 1             | <b>Never</b>                            |         |
| 2             | <b>Rarely</b>                           |         |
| 3             | <b>Sometimes</b>                        |         |
| 4             | <b>Always/<br/>Most of<br/>the time</b> |         |
| 5             | <b>Not applicable</b>                   |         |

**During the past year, how often did you do the following when you had the opportunity?**

**How often did you:**

|  | <b>Never</b>          | <b>Rarely</b>         | <b>Sometimes</b>      | <b>Always/<br/>Most of<br/>the time</b> | <b>Not<br/>applicable</b> |
|--|-----------------------|-----------------------|-----------------------|---|---------------------------|
| <b>Shop for things with minimal packaging</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Use U-M Property Disposition Services to obtain items such as computers, furniture, and equipment</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Shop in a second-hand store or online site such as eBay or Craigslist, when I have to buy something (e.g. clothing, furniture, or appliances)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Compost food scraps</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Buy products (besides food) that carry some type of eco-label or certification</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |

|  |  |  |  |  |  |
|--|--|--|--|--|--|
| <b>(e.g. lumber,<br/>organic cotton<br/>clothing,<br/>household<br/>cleaning<br/>products)</b> |  |  |  |  |  |
|--|--|--|--|--|--|

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**Question Block:** STUDQUES16

**Contains:** Q56, Q57, Q58, Q59, Q60, Q61, Q62, Q63

Show if: (PL\_PANEL = 2)

| Scale Summary |                   |         |
|---------------|-------------------|---------|
| Code          | Label             | Show-If |
| 1             | <b>Yes</b>        |         |
| 2             | <b>No</b>         |         |
| 3             | <b>Don't know</b> |         |

**Do you have any of the following at your current residence?**

|   | <b>Yes</b>            | <b>No</b>             | <b>Don't know</b>     |
|---|-----------------------|-----------------------|-----------------------|
| <b>Recycling bins</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Compost bin</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Programmable thermostat</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Water-saving items (e.g. low-flow faucets / showerheads)</b>         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Energy Star appliances</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Motion sensor / "smart" power strip for shutting off electronics</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Compact fluorescent light bulbs or LED light bulbs</b>               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Renewable energy systems, like solar or geothermal</b>               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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**Collection:** SECTION\_C  
**Contains:** STUDQUES19, STUDQUES20-STUDQUES21\_SERIES

**Question Block:** STUDQUES19  
**Contains:** Q69, Q70, Q71, Q72

| Scale Summary |                              |         |
|---------------|------------------------------|---------|
| Code          | Label                        | Show-If |
| 1             | <b>A lot</b>                 |         |
| 2             | <b>A fair amount</b>         |         |
| 3             | <b>A little</b>              |         |
| 4             | <b>Not much/<br/>nothing</b> |         |

*This set of questions is about the **natural environment**.*

**How much do you know about the following?**

|  | <b>A lot</b>          | <b>A fair amount</b>  | <b>A little</b>       | <b>Not much/<br/>nothing</b> |
|--|-----------------------|-----------------------|-----------------------|------------------------------|
| <b>Disposing of hazardous materials (i.e. engine oil, medications, etc.)</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Recognizing invasive plant species</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Taking care of residential property in an environmentally-friendly way</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Protecting rivers, streams, &amp; lakes - tributaries, habitat quality, &amp; native species (e.g. Huron River)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |

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**Collection:** STUDQUES20-STUDQUES21\_SERIES  
**Contains:** STUDQUES20, STUDQUES21  
**Show if:** (STUDQUES1 is-any-of 3:[Off-campus apartment] or 4:[Off-campus house] or 5:[Parent's house] or 6:[Other])

**Question Block:** STUDQUES20  
**Contains:** Q73, Q74, Q75

| Scale Summary |                       |         |
|---------------|-----------------------|---------|
| Code          | Label                 | Show-If |
| 1             | <b>Regularly</b>      |         |
| 2             | <b>Sometimes</b>      |         |
| 3             | <b>Rarely</b>         |         |
| 4             | <b>Never</b>          |         |
| 5             | <b>Not applicable</b> |         |

**During the past year, at your current residence, how often did you do the following?**

|  | <b>Regularly</b>      | <b>Sometimes</b>      | <b>Rarely</b>         | <b>Never</b>          | <b><i>Not applicable</i></b> |
|--|-----------------------|-----------------------|-----------------------|-----------------------|------------------------------|
| <b>Use fertilizer on your lawn</b>             | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Use commercial herbicides or pesticides</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Water your lawn</b>                         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |

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**Question Block:** STUDQUES21  
**Contains:** Q76, Q77, Q78, Q79, Q80, Q81  
 Show if: (PL\_PANEL = 2)

| Scale Summary |                       |         |
|---------------|-----------------------|---------|
| Code          | Label                 | Show-If |
| 0             | <b>Yes</b>            |         |
| 1             | <b>No</b>             |         |
| 2             | <b>Not applicable</b> |         |

**Have you done any of the following at your current residence?**

|   | <b>Yes</b>            | <b>No</b>             | <b>Not applicable</b> |
|---|-----------------------|-----------------------|-----------------------|
| <b>Installed a rain barrel</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Installed a rain garden</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Eliminated invasive species from your yard or garden</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Intentionally planted native species in your lawn or garden</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Converted all/part of lawn to native/natural plantings</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Disposed of hazardous materials i.e. engine oil, harsh cleaners, medications, by taking them to a designated disposal facility</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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**Collection:** SECTION\_D  
**Contains:** STUDQUES25, STUDQUES26, STUDQUES27-STUDQUES29\_SERIES, STUDQUES30, STUDQUES34

**Question:** STUDQUES25

| Scale Summary |                             |         |
|---------------|-----------------------------|---------|
| Code          | Label                       | Show-If |
| 1             | At home                     |         |
| 2             | In campus dining facilities |         |
| 3             | Elsewhere                   |         |

Following are questions about **food**.

**Since the start of the fall semester, do you eat most of your meals:**

- At home
- In campus dining facilities
- Elsewhere (*please specify*):

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**Question Block:** STUDQUES26

**Contains:** Q82, Q83, Q88, Q12, Q29, Q30, Q31

| Scale Summary |                              |         |
|---------------|------------------------------|---------|
| Code          | Label                        | Show-If |
| 1             | <b>A lot</b>                 |         |
| 2             | <b>A fair amount</b>         |         |
| 3             | <b>A little</b>              |         |
| 4             | <b>Not much/<br/>nothing</b> |         |

**How much do you know about each of the following kinds of food?**

|  | <b>A lot</b>          | <b>A fair amount</b>  | <b>A little</b>       | <b>Not much/<br/>nothing</b> |
|--|-----------------------|-----------------------|-----------------------|------------------------------|
| <b>Locally grown or processed</b>                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Organic</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Fair trade food</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Food from humanely-treated animals</b>                            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Food from animals that were not given hormones or antibiotics</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Grass-fed beef</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Fish from sustainable fisheries</b>                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |

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**Collection:** STUDQUES27-STUDQUES29\_SERIES  
**Contains:** STUDQUES27\_2013, STUDQUES28, STUDQUES29  
**Show if:** (STUDQUES25 is-any-of 1:[At home] or 3:[Elsewhere])

**Question Block:** STUDQUES27\_2013  
**Contains:** Q89\_2013, Q90\_2013, Q95\_2013, Q64\_2013, Q65\_2013, Q66\_2013, Q67\_2013

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label                                   | Show-If |
| 1             | <b>Always/<br/>Most of<br/>the time</b> |         |
| 2             | <b>Sometimes</b>                        |         |
| 3             | <b>Rarely</b>                           |         |
| 4             | <b>Never</b>                            |         |
| 5             | <b>Don't Know</b>                       |         |
| 6             | <b>I Don't Eat This</b>                 |         |

**During the past year, about how often did you (or other household members) buy the following?**

|  | <b>Always/<br/>Most of<br/>the time</b> | <b>Sometimes</b>      | <b>Rarely</b>         | <b>Never</b>          | <b>Don't<br/>Know</b> | <b>I Don't<br/>Eat This</b> |
|--|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------------|
| <b>Locally grown or processed</b>                                    | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>       |
| <b>Organic</b>   | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>       |
| <b>Fair trade food</b>   | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>       |
| <b>Food from humanely-treated animals</b>                            | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>       |
| <b>Food from animals that were not given hormones or antibiotics</b> | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>       |
| <b>Grass-fed beef</b>  | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>       |
| <b>Fish from sustainable fisheries</b>                               | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>       |

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**Question:** STUDQUES28

| <b>Scale Summary</b> |                     |         |
|----------------------|---------------------|---------|
| Code                 | Label               | Show-If |
| 1                    | All/most            |         |
| 2                    | More than half      |         |
| 3                    | Half                |         |
| 4                    | Less than half      |         |
| 5                    | None                |         |
| 6                    | <i>I don't know</i> |         |

**"Sustainable food"** can be defined as one or more of the following: locally-sourced, organic, from humanely-treated animals, antibiotic- and hormone-free, grass-fed, from sustainable fisheries, or fair trade food.

**During the past year, about how much of your grocery purchases were sustainable food?**

- All/most
- More than half
- Half
- Less than half
- None
  
- I don't know*

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**Question Block:** STUDQUES29

**Contains:** Q96, Q97, Q98, Q99, Q100

Show if: (STUDQUES28 is-any-of 1:[All/most] or 2:[More than half] or 3:[Half] or 4:[Less than half]) and (PL\_PANEL = 2)

| Scale Summary |                             |         |
|---------------|-----------------------------|---------|
| Code          | Label                       | Show-If |
| 1             | <b>Very important</b>       |         |
| 2             | <b>Somewhat important</b>   |         |
| 3             | <b>Not that important</b>   |         |
| 4             | <b>Not at all important</b> |         |

**How important to you are the following, when you buy *sustainable food*?**

|   | <b>Very important</b> | <b>Somewhat important</b> | <b>Not that important</b> | <b>Not at all important</b> |
|---|-----------------------|---------------------------|---------------------------|-----------------------------|
| <b>Nutrition</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Taste</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Supporting the local community</b>   | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Protecting the environment</b>   | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Avoiding things like synthetic pesticides or fertilizers, antibiotics or growth hormones</b> | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |

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**Question:** STUDQUES30

**Show if:** (PL\_PANEL = 2)

| Scale Summary |                    |         |
|---------------|--------------------|---------|
| Code          | Label              | Show-If |
| 1             | Daily/almost daily |         |
| 2             | 3-4 days           |         |
| 3             | 1-2 days           |         |
| 4             | Never              |         |

**During the past week, how often have you included meat as part of your daily diet?**

- Daily/almost daily
- 3-4 days
- 1-2 days
- Never

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**Question Block:** STUDQUES34  
**Contains:** Q101, Q102, Q103, Q104, Q105, Q106  
 Show if: (PL\_PANEL = 2)

| Scale Summary |       |         |
|---------------|-------|---------|
| Code          | Label | Show-If |
| 0             | Yes   |         |
| 1             | No    |         |

**During the past year, have you:**

|   | Yes                   | No                    |
|---|-----------------------|-----------------------|
| <b>Grown fruits/vegetables in a home garden</b>               | <input type="radio"/> | <input type="radio"/> |
| <b>Grown fruits/vegetables in a community garden</b>          | <input type="radio"/> | <input type="radio"/> |
| <b>Shopped at farmers markets or food stands</b>              | <input type="radio"/> | <input type="radio"/> |
| <b>Belonged to a CSA (Community Supported Agriculture)</b>    | <input type="radio"/> | <input type="radio"/> |
| <b>Visited U-Pick farms</b>                                   | <input type="radio"/> | <input type="radio"/> |
| <b>Raised animals for food (e.g. meat, dairy, eggs, etc.)</b> | <input type="radio"/> | <input type="radio"/> |

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**Collection:** SECTION\_E  
**Contains:** STUDQUES36\_2013, STUDQUES36A\_2013, STUDQUES36B\_2013, STUDQUES39, STUDQUES37, STUDQUES38

**Question:** STUDQUES36\_2013

| Scale Summary |              |         |
|---------------|--------------|---------|
| Code          | Label        | Show-If |
| 1             | Yes          |         |
| 2             | No           |         |
| 3             | I don't know |         |

These questions are about **climate change**, which is sometimes called global warming.

**Do you think climate change is happening?**

- Yes
- No
  
- I don't know

Page Break

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**Question:** STUDQUES36A\_2013

**Show if:** (STUDQUES36\_2013 = 1:[Yes])

| Scale Summary |                 |         |
|---------------|-----------------|---------|
| Code          | Label           | Show-If |
| 1             | Extremely sure  |         |
| 2             | Mostly sure     |         |
| 3             | Somewhat sure   |         |
| 4             | Not at all sure |         |

**How sure are you that climate change is happening?**

- Extremely sure
- Mostly sure
- Somewhat sure
- Not at all sure

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**Question:** STUDQUES36B\_2013

**Show if:** (STUDQUES36\_2013 = 2:[No])

| Scale Summary |                 |         |
|---------------|-----------------|---------|
| Code          | Label           | Show-If |
| 1             | Extremely sure  |         |
| 2             | Mostly sure     |         |
| 3             | Somewhat sure   |         |
| 4             | Not at all sure |         |

**How sure are you that climate change is not happening?**

- Extremely sure
- Mostly sure
- Somewhat sure
- Not at all sure

Page Break

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**Question:** STUDQUES39

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Caused mostly by human activities                         |         |
| 2             | Caused mostly by natural changes                          |         |
| 3             | Caused by both human activities and natural changes       |         |
| 4             | None of the above because climate change is not happening |         |

**Assuming climate change is happening, do you think it is...**

- Caused mostly by human activities
- Caused mostly by natural changes
- Caused by both human activities and natural changes
- None of the above because climate change is not happening

Page Break

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**Question:** STUDQUES37

| Scale Summary |                      |         |
|---------------|----------------------|---------|
| Code          | Label                | Show-If |
| 1             | Not at all important |         |
| 2             | Not too important    |         |
| 3             | Somewhat important   |         |
| 4             | Very important       |         |
| 5             | Extremely important  |         |

**How important is the issue of climate change to you personally?**

- Not at all important
- Not too important
- Somewhat important
- Very important
- Extremely important

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**Question:** STUDQUES38

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label                                    | Show-If |
| 1             | Very well                                |         |
| 2             | Fairly well                              |         |
| 3             | A little bit                             |         |
| 4             | I would not be able to explain it at all |         |

**How well could you explain the topic of climate change to someone who didn't know about it--what's causing it or not, what are its potential consequences, etc.?**

- Very well
- Fairly well
- A little bit
- I would not be able to explain it at all

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**Collection:** SECTION\_F  
**Contains:** STUDQUES41, STUDQUES42, STUDQUES43, STUDQUES44, STUDQUES45, STUDQUES46, STUDQUES47, STUDQUES48

**Question Block:** STUDQUES41  
**Contains:** Q107, Q108, Q109, Q110

| Scale Summary |       |         |
|---------------|-------|---------|
| Code          | Label | Show-If |
| 0             | Yes   |         |
| 1             | No    |         |

*These next questions cover **other activities and your opinions about sustainability.***

**Have you done any of the following during the past year to promote sustainability issues such as environmental protection, energy or water conservation, open space preservation, public or non-motorized transportation, etc.?**

|  | Yes                   | No                    |
|--|-----------------------|-----------------------|
| <b>Given money to an organization or advocacy group supporting one of the above issues?</b>                      | <input type="radio"/> | <input type="radio"/> |
| <b>Volunteered for an organization or advocacy group supporting one of the above issues?</b>                     | <input type="radio"/> | <input type="radio"/> |
| <b>Served in a leadership position for an organization or advocacy group supporting one of the above issues?</b> | <input type="radio"/> | <input type="radio"/> |
| <b>Voted for a candidate for public office because of her/his position on any of the above issues?</b>           | <input type="radio"/> | <input type="radio"/> |

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**Question Block:** STUDQUES42

**Contains:** Q111, Q112, Q113, Q114, Q115, Q116, Q117, Q118, Q119

Show if: (PL\_PANEL = 2)

| Scale Summary |                   |         |
|---------------|-------------------|---------|
| Code          | Label             | Show-If |
| 1             | <b>Never</b>      |         |
| 2             | <b>Rarely</b>     |         |
| 3             | <b>Sometimes</b>  |         |
| 4             | <b>Frequently</b> |         |
| 5             | <b>Don't know</b> |         |

**During the past year, how often have you encouraged your friends to do the following things?**

|   | <b>Never</b>          | <b>Rarely</b>         | <b>Sometimes</b>      | <b>Frequently</b>     | <b><i>Don't know</i></b> |
|---|-----------------------|-----------------------|-----------------------|-----------------------|--------------------------|
| <b>Walk, bike, or take the bus rather than drive</b>                              | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Buy locally sourced or sustainable food</b>                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Conserve water</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Conserve electricity</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Reuse or recycle containers or bags</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Buy fewer things</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Buy things that are better for the environment</b>                             | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Use environmentally-friendly ways of controlling insects, weeds, and pests</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Do something in order to reduce his/her greenhouse gas emissions</b>           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |

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**Question Block:** STUDQUES43  
**Contains:** Q120, Q121, Q122, Q123  
 Show if: (PL\_PANEL = 2)

| Scale Summary |                                   |         |
|---------------|-----------------------------------|---------|
| Code          | Label                             | Show-If |
| 1             | <b>Strongly support</b>           |         |
| 2             | <b>Moderately support</b>         |         |
| 3             | <b>Neither support nor oppose</b> |         |
| 4             | <b>Moderately oppose</b>          |         |
| 5             | <b>Strongly oppose</b>            |         |

**Would you support or oppose the following...**

|  | <b>Strongly support</b> | <b>Moderately support</b> | <b>Neither support nor oppose</b> | <b>Moderately oppose</b> | <b>Strongly oppose</b> |
|--|-------------------------|---------------------------|-----------------------------------|--------------------------|------------------------|
| <b>A 20 cent increase in the price per gallon of gasoline, if the extra money were used to improve local public transportation.</b>  | <input type="radio"/>   | <input type="radio"/>     | <input type="radio"/>             | <input type="radio"/>    | <input type="radio"/>  |
| <b>A requirement that electric utilities produce at least 40 percent of their electricity from wind, solar, or other renewable energy sources, even if it costs the average household an extra \$100 a year.</b> | <input type="radio"/>   | <input type="radio"/>     | <input type="radio"/>             | <input type="radio"/>    | <input type="radio"/>  |
| <b>A ban on disposable plastic bags.</b>   | <input type="radio"/>   | <input type="radio"/>     | <input type="radio"/>             | <input type="radio"/>    | <input type="radio"/>  |
| <b>A tax on fuels--like gasoline and natural gas - according to their carbon content, if the extra money were used for clean energy projects.</b>  | <input type="radio"/>   | <input type="radio"/>     | <input type="radio"/>             | <input type="radio"/>    | <input type="radio"/>  |

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**Question Block:** STUDQUES44

**Contains:** Q160, Q161, Q162

| Scale Summary |                    |         |
|---------------|--------------------|---------|
| Code          | Label              | Show-If |
| 0             | <b>Nothing</b>     |         |
| 1             | <b>\$1 - \$10</b>  |         |
| 2             | <b>\$11 - \$20</b> |         |
| 3             | <b>\$21 - \$30</b> |         |
| 4             | <b>\$31 - \$40</b> |         |
| 5             | <b>\$41 - \$50</b> |         |

**How much would you be willing to personally pay each year to...**

|  | <b>Nothing</b>        | <b>\$1 - \$10</b>     | <b>\$11 - \$20</b>    | <b>\$21 - \$30</b>    | <b>\$31 - \$40</b>    | <b>\$41 - \$50</b>    |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Expand waste prevention efforts, such as recycling and green purchasing at U-M</b>                            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Expand alternative transportation efforts such as buses, bikes, and carpools at U-M</b>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Expand efforts to lower greenhouse gas emissions at U-M through energy conservation and renewable sources</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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**Question Block:** STUDQUES45  
**Contains:** Q124, Q125, Q126, Q127, Q128  
 Show if: (PL\_PANEL = 2)

| Scale Summary |                          |         |
|---------------|--------------------------|---------|
| Code          | Label                    | Show-If |
| 1             | <b>Very likely</b>       |         |
| 2             | <b>Somewhat likely</b>   |         |
| 3             | <b>Not very likely</b>   |         |
| 4             | <b>Not at all likely</b> |         |

**Think about what you would like your life to be like in the future. How likely is it that the following things will be a priority for you, at some point in the future?**

|  | <b>Very likely</b>    | <b>Somewhat likely</b> | <b>Not very likely</b> | <b>Not at all likely</b> |
|--|-----------------------|------------------------|------------------------|--------------------------|
| <b>Being able to walk, bike, or take the bus places from where you live</b>          | <input type="radio"/> | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/>    |
| <b>Buying sustainable food</b>   | <input type="radio"/> | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/>    |
| <b>Conserving natural resources by reducing waste, reusing things, and recycling</b> | <input type="radio"/> | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/>    |
| <b>Take care of your home and property in environmentally-friendly ways</b>          | <input type="radio"/> | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/>    |
| <b>Reducing your greenhouse gas emissions as much as possible</b>                    | <input type="radio"/> | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/>    |

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**Question Block:** STUDQUES46  
**Contains:** Q129, Q130, Q131, Q132, Q133, Q134, Q135

| Scale Summary |                             |         |
|---------------|-----------------------------|---------|
| Code          | Label                       | Show-If |
| 1             | <b>Very concerned</b>       |         |
| 2             | <b>Somewhat concerned</b>   |         |
| 3             | <b>Not that concerned</b>   |         |
| 4             | <b>Not at all concerned</b> |         |

**How concerned are you about the following:**

|  | <b>Very concerned</b> | <b>Somewhat concerned</b> | <b>Not that concerned</b> | <b>Not at all concerned</b> |
|--|-----------------------|---------------------------|---------------------------|-----------------------------|
| <b>The impact that people's travel - by car and plane - has on the environment?</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Whether food is grown and produced in a way that is good for the environment?</b> | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Natural resources - like water and fossil fuels - being used up?</b>              | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>People producing too much waste?</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>The loss of open space?</b>   | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>The loss of wildlife habitat?</b>   | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Population growth?</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |

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**Question:** STUDQUES47

| Scale Summary |                      |         |
|---------------|----------------------|---------|
| Code          | Label                | Show-If |
| 1             | Very committed       |         |
| 2             | Somewhat committed   |         |
| 3             | Not very committed   |         |
| 4             | Not at all committed |         |

**Overall, how committed are you to sustainability? Are you:**

- Very committed
- Somewhat committed
- Not very committed
- Not at all committed

Page Break

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Question: STUDQUES48

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label                                    | Show-If |
| 1             | Friends or classmates                    |         |
| 2             | Parents or other family members          |         |
| 3             | K-12 teachers                            |         |
| 4             | U-M professors/instructors/courses       |         |
| 5             | Childhood experiences outdoors           |         |
| 8             | Media--readings, video, movies, TV, etc. |         |
| 6             | Other U-M activities                     |         |
| 7             | Other                                    |         |

**Who or what has been most influential in shaping your views about sustainability?**

- Friends or classmates
- Parents or other family members
- K-12 teachers
- U-M professors/instructors/courses
- Childhood experiences outdoors
- Media--readings, video, movies, TV, etc.
- Other U-M activities (*please specify*):
- Other (*please specify*):

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**Collection:** SECTION\_G  
**Contains:** STUDQUES49, STUDQUES50, STUDQUES51

**Question Block:** STUDQUES49  
**Contains:** Q136, Q137, Q138, Q139, Q140, Q141, Q142, Q143, Q91

| Scale Summary |                         |         |
|---------------|-------------------------|---------|
| Code          | Label                   | Show-If |
| 1             | <b>Very aware</b>       |         |
| 2             | <b>Somewhat aware</b>   |         |
| 3             | <b>Not too aware</b>    |         |
| 4             | <b>Not at all aware</b> |         |

*This set of questions is about **sustainability at the University of Michigan.***

**How aware are you of U-M's efforts to:**

|   | <b>Very aware</b>     | <b>Somewhat aware</b> | <b>Not too aware</b>  | <b>Not at all aware</b> |
|---|-----------------------|-----------------------|-----------------------|-------------------------|
| <b>Conserve energy?</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| <b>Encourage people to take a bus or bike?</b>                        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| <b>Promote ride sharing?</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| <b>Promote recycling?</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| <b>Promote food from sustainable sources?</b>                         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| <b>Reduce greenhouse gas emissions?</b>                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| <b>Maintain campus grounds in an environmentally-friendly manner?</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| <b>Protect the Huron River?</b>                                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| <b>Promote composting?</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |

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**Question Block:** STUDQUES50

**Contains:** Q144, Q145, Q146, Q147, Q148, Q149, Q150, Q151, Q86

| Scale Summary |                      |         |
|---------------|----------------------|---------|
| Code          | Label                | Show-If |
| 1             | <b>Very Good (A)</b> |         |
| 2             | <b>Good (B)</b>      |         |
| 3             | <b>Fair (C)</b>      |         |
| 4             | <b>Poor (D)</b>      |         |
| 5             | <b>Very Poor (F)</b> |         |

**Overall, how would you rate/grade U-M's efforts to:**

|   | <b>Very Good (A)</b>  | <b>Good (B)</b>       | <b>Fair (C)</b>       | <b>Poor (D)</b>       | <b>Very Poor (F)</b>  |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Conserve energy?</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Encourage people to take a bus or bike?</b>                        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote ride sharing?</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote recycling?</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote food from sustainable sources?</b>                         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Reduce greenhouse gas emissions?</b>                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Maintain campus grounds in an environmentally-friendly manner?</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Protect the Huron River?</b>                                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote Composting?</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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**Question Block:** STUDQUEST51

**Contains:** Q152, Q153, Q154, Q156, Q157, Q84, Q158, Q159, Q87

**Scale Summary**

| Code | Label      | Show-If |
|------|------------|---------|
| 0    | <b>Yes</b> |         |
| 1    | <b>No</b>  |         |

**Have you ever participated in any of the following at U-M?**

|   | <b>Yes</b>            | <b>No</b>             |
|---|-----------------------|-----------------------|
| <b>RecycleMania</b>                                   | <input type="radio"/> | <input type="radio"/> |
| <b>Kill-a-Watt</b>                                    | <input type="radio"/> | <input type="radio"/> |
| <b>Earthfest</b>                                      | <input type="radio"/> | <input type="radio"/> |
| <b>Zero Waste Events</b>                              | <input type="radio"/> | <input type="radio"/> |
| <b>e-Waste Recycling Event</b>                        | <input type="radio"/> | <input type="radio"/> |
| <b>Planet Blue Ambassadors Program</b>                | <input type="radio"/> | <input type="radio"/> |
| <b>A U-M organization dealing with sustainability</b> | <input type="radio"/> | <input type="radio"/> |
| <b>A U-M course that addressed sustainability</b>     | <input type="radio"/> | <input type="radio"/> |
| <b>Other</b>  | <input type="radio"/> | <input type="radio"/> |

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**Custom Layout Question:** STUDQUES51\_1

*Please specify:*

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**Collection:** SECTION\_H  
**Contains:** STUDQUES52, STUDQUES53, STUDQUES54\_2013, STUDQUES54\_LSA\_2013, STUDQUES54\_COE\_2013, STUDQUES55, STUDQUES56, STUDQUES56\_CAMPUS, STUDQUES56\_CENTRAL, STUDQUES56\_MEDICAL, STUDQUES56\_NORTH, STUDQUES56\_HILLAREA, STUDQUES56\_SOUTH, STUDQUES56\_OTHER, STUDQUES57, Q85, STUDQUES58, STUDQUES59, STUDQUES60, STUDQUES61, STUDQUES62, STUDQUES63, STUDQUES64, STUDQUES65, INCENTIVE

**Question:** STUDQUES52  
**Show if:** (PL\_PANEL = 2)

| Scale Summary |       |         |
|---------------|-------|---------|
| Code          | Label | Show-If |
| 0             | Yes   |         |
| 1             | No    |         |

**Questions about you:.**

**Have you done community service in the past year? This would be time for any type of community service - not just service related to sustainability - that was not for credit, pay or any type of mandated requirement.**

- Yes
- No

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**Question:** STUDQUES53  
**Show if:** (PL\_PANEL = 2) and (STUDQUES52 = 0:[Yes])

**About how many hours did you perform community service during the past year?**

Hours

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**What school or college are you enrolled in?**

*(Select all that apply)*

- Architecture & Urban Planning
- Art & Design
- Business
- Dentistry
- Education
- Engineering
- Information
- Kinesiology
- Law
- Literature, Science, and the Arts
- Medicine
- Music, Theatre & Dance
- Natural Resources & Environment
- Nursing
- Pharmacy
- Public Health
- Public Policy
- Social Work

Page Break

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**Question:** STUDQUES54\_LSA\_2013

**Show if:** (STUDQUES54\_2013 is-any-of [Literature, Science, and the Arts])

| Scale Summary |                  |         |
|---------------|------------------|---------|
| Code          | Label            | Show-If |
| 1             | Humanities       |         |
| 2             | Natural Sciences |         |
| 3             | Social Sciences  |         |
| 8             | Other            |         |
| 9             | Undecided        |         |

**Which of the following is your major?**

- Humanities
- Natural Sciences
- Social Sciences
- Other
- Undecided

Page Break

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**Question:** STUDQUES54\_COE\_2013

**Show if:** (STUDQUES54\_2013 is-any-of [Engineering])

| Scale Summary |                               |         |
|---------------|-------------------------------|---------|
| Code          | Label                         | Show-If |
| 1             | Electrical & Computer Science |         |
| 2             | Mechanical                    |         |
| 3             | Aerospace                     |         |
| 4             | Chemical                      |         |
| 5             | Industrial & Operations       |         |
| 6             | Biomedical                    |         |
| 7             | Materials Science             |         |
| 8             | Other                         |         |
| 9             | Undecided                     |         |

**Which of the following is your major?**

- Electrical & Computer Science
- Mechanical
- Aerospace
- Chemical
- Industrial & Operations
- Biomedical
- Materials Science
- Other
- Undecided

Page Break

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**Question:** STUDQUES55

| Scale Summary |                |         |
|---------------|----------------|---------|
| Code          | Label          | Show-If |
| 1             | Central Campus |         |
| 2             | North Campus   |         |
| 3             | Elsewhere      |         |

**Since the start of the fall semester, on what campus do you have most of your classes?**

- Central Campus
- North Campus
- Elsewhere (*please specify*):

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**Question:** STUDQUES56

| Scale Summary |       |         |
|---------------|-------|---------|
| Code          | Label | Show-If |
| 1             | Yes   |         |
| 0             | No    |         |

**Excluding campus housing, do you spend more than half of your time in one particular campus building?**

- Yes
- No

Page Break

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**Question:** STUDQUES56\_CAMPUS

**Show if:** (STUDQUES56 = 1:[Yes])

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label                                     | Show-If |
| 1             | Central Campus                            |         |
| 5             | The Hill Area of Central/Medical campuses |         |
| 4             | Medical Campus                            |         |
| 2             | North Campus                              |         |
| 6             | South Campus - between Packard & Stadium  |         |
| 3             | Elsewhere                                 |         |

**On which campus is that one particular building?**

- Central Campus
- The Hill Area of Central/Medical campuses
- Medical Campus
- North Campus
- South Campus - between Packard & Stadium
- Elsewhere

Page Break

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**Question:** STUDQUES56\_CENTRAL

**Show if:** (STUDQUES56\_CAMPUS = 1:[Central Campus])

| Scale Summary |                                    |         |
|---------------|------------------------------------|---------|
| Code          | Label                              | Show-If |
| 1             | Angell Hall                        |         |
| 2             | Central Campus Recreation Building |         |
| 3             | Chemistry                          |         |
| 4             | Clarence Cook Little Building      |         |
| 5             | Dana Building (SNRE)               |         |
| 6             | David M. Dennison Building         |         |
| 7             | Dental Building                    |         |
| 8             | East Hall                          |         |
| 23            | East Quad                          |         |
| 9             | Harlan Hatcher Graduate Library    |         |
| 10            | Health Services                    |         |
| 11            | Hutchins Hall                      |         |
| 24            | Law School (including South Hall)  |         |
| 12            | Lorch Hall                         |         |
| 13            | Mason Hall                         |         |
| 14            | Michigan Union                     |         |
| 15            | Modern Languages Building          |         |
| 16            | North Quad                         |         |
| 17            | Ross School of Business            |         |
| 18            | School of Education                |         |
| 25            | School of Public Health I or II    |         |
| 19            | School of Social Work              |         |
| 20            | Shapiro Undergraduate Library      |         |
| 26            | South Quad                         |         |
| 21            | Weill Hall                         |         |
| 22            | West Hall                          |         |
| 77            | Other                              |         |

**Listed below are several buildings on Central Campus. Sometimes buildings are known by more than one name. Please review the list of building names to find the one in which you spend more than half of your time (for activity such as work, classes, or studying). If you do not see the name of your building, select "Other" and type in the name of the building.**

**Please select the name of the building in which you spend more than half of your time:**

- Angell Hall
- Central Campus Recreation Building
- Chemistry
- Clarence Cook Little Building
- Dana Building (SNRE)
- David M. Dennison Building
- Dental Building
- East Hall
- East Quad
- Harlan Hatcher Graduate Library
- Health Services



- Hutchins Hall
- Law School (including South Hall)
- Lorch Hall
- Mason Hall
- Michigan Union
- Modern Languages Building
- North Quad
- Ross School of Business
- School of Education
- School of Public Health I or II
- School of Social Work
- Shapiro Undergraduate Library
- South Quad
- Weill Hall
- West Hall
- Other (*please specify*):

Page Break

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**Question:** STUDQUES56\_MEDICAL

**Show if:** (STUDQUES56\_CAMPUS = 4:[Medical Campus])

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Biomedical Science Research Building              |         |
| 2             | C. S. Mott Children's Hospital                    |         |
| 3             | Children's Psychiatric Hospital                   |         |
| 4             | Kellogg Eye Center                                |         |
| 5             | Kresge Hearing Research Institute                 |         |
| 6             | Learning Resource Center, Taubman Medical Library |         |
| 7             | Medical Science Research, Building III            |         |
| 8             | Medical Science, Building I                       |         |
| 9             | Medical Science, Building II                      |         |
| 10            | Mental Health Research Institute                  |         |
| 11            | North Ingalls Building                            |         |
| 12            | School of Nursing (North Ingalls Building)        |         |
| 15            | School of Public Health I or II                   |         |
| 13            | University Hospital                               |         |
| 14            | Women's Hospital                                  |         |
| 77            | Other   |         |

**Listed below are several buildings on the Medical Campus. Sometimes buildings are known by more than one name. Please review the list of building names to find the one in which you spend more than half of your time (for activity such as work, classes, or studying). If you do not see the name of your building, select "Other" and type in the name of the building.**

**Please select the name of the building in which you spend more than half of your time:**

- Biomedical Science Research Building
- C. S. Mott Children's Hospital
- Children's Psychiatric Hospital
- Kellogg Eye Center
- Kresge Hearing Research Institute
- Learning Resource Center, Taubman Medical Library
- Medical Science Research, Building III
- Medical Science, Building I
- Medical Science, Building II
- Mental Health Research Institute
- North Ingalls Building
- School of Nursing (North Ingalls Building)
- School of Public Health I or II
- University Hospital
- Women's Hospital
- Other (*please specify*):

Page Break

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**Question:** STUDQUES56\_NORTH

**Show if:** (STUDQUES56\_CAMPUS = 2:[North Campus])

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label  | Show-If |
| 1             | Art & Architecture Building                          |         |
| 2             | Blanch Anderson Moore Hall, School of Music          |         |
| 3             | Bob and Betty Beyster Building (formerly CSE)        |         |
| 4             | Bursley Hall   |         |
| 5             | Charles R. Walgreen, Jr. Drama Center                |         |
| 6             | Chrysler Center                                      |         |
| 7             | Cooley Building                                      |         |
| 8             | Dow Engineering Building                             |         |
| 9             | Duderstadt Center                                    |         |
| 10            | Earl V. Moore Building, School of Music              |         |
| 11            | Electrical Engineering and Computer Science Building |         |
| 12            | Engineering Research Building 1                      |         |
| 13            | Engineering Research Building 2                      |         |
| 14            | Environmental & Water Resources Engineering Building |         |
| 15            | Ford Library   |         |
| 16            | Francois-Xavier Bagnoud Building                     |         |
| 17            | G. G. Brown Laboratory                               |         |
| 18            | Gorguze Family Laboratory (formerly EPB)             |         |
| 19            | Industrial and Operations Engineering Building       |         |
| 20            | Lurie Biomedical Engineering Building                |         |
| 21            | Lurie Engineering Center                             |         |
| 22            | Naval Architecture and Marine Engineering Building   |         |
| 23            | North Campus Recreation Building                     |         |
| 24            | Phoenix Memorial Laboratory                          |         |
| 25            | Pierpont Commons                                     |         |
| 26            | Space Research Building                              |         |
| 27            | Stamps Auditorium                                    |         |
| 28            | Sterns Building                                      |         |
| 29            | Walter E. Lay Automotive Lab                         |         |
| 77            | Other  |         |

**Listed below are several buildings on North Campus. Sometimes buildings are known by more than one name. Please review the list of building names to find the one in which you spend more than half of your time (for activity such as work, classes, or studying). If you do not see the name of your building, select "Other" and type in the name of the building.**

**Please select the name of the building in which you spend more than half of your time:**

- Art & Architecture Building
- Blanch Anderson Moore Hall, School of Music
- Bob and Betty Beyster Building (formerly CSE)
- Bursley Hall
- Charles R. Walgreen, Jr. Drama Center
- Chrysler Center
- Cooley Building
- Dow Engineering Building

- Duderstadt Center
- Earl V. Moore Building, School of Music
- Electrical Engineering and Computer Science Building
- Engineering Research Building 1
- Engineering Research Building 2
- Environmental & Water Resources Engineering Building
- Ford Library
- Francois-Xavier Bagnoud Building
- G. G. Brown Laboratory
- Gorguze Family Laboratory (formerly EPB)
- Industrial and Operations Engineering Building
- Lurie Biomedical Engineering Building
- Lurie Engineering Center
- Naval Architecture and Marine Engineering Building
- North Campus Recreation Building
- Phoenix Memorial Laboratory
- Pierpont Commons
- Space Research Building
- Stamps Auditorium
- Sterns Building
- Walter E. Lay Automotive Lab
- Other (*please specify*):

Page Break

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**Question:** STUDQUES56\_HILLAREA

**Show if:** (STUDQUES56\_CAMPUS = 5:[The Hill Area of Central/Medical campuses])

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label  | Show-If |
| 1             | Alice Lloyd Hall                                       |         |
| 2             | Central Campus Recreation Building                     |         |
| 3             | Couzens Hall   |         |
| 4             | Dance Building, 1310 N University Court                |         |
| 6             | Margaret Bell Pool, Central Campus Recreation Building |         |
| 7             | Mary Markley Hall                                      |         |
| 8             | Mosher Jordan Hall                                     |         |
| 9             | Observatory Lodge, 1402 Washington Heights             |         |
| 10            | Stockwell Hall   |         |
| 12            | School of Public Health I or II                        |         |
| 77            | Other  |         |

**Listed below are several buildings in the Hill Area of the Central and Medical Campuses. Sometimes buildings are known by more than one name. Please review the list of building names to find the one in which you spend more than half of your time (for activity such as work, classes, or studying). If you do not see the name of your building, select "Other" and type in the name of the building.**

**Please select the name of the building in which you spend more than half of your time:**

- Alice Lloyd Hall
- Central Campus Recreation Building
- Couzens Hall
- Dance Building, 1310 N University Court
- Margaret Bell Pool, Central Campus Recreation Building
- Mary Markley Hall
- Mosher Jordan Hall
- Observatory Lodge, 1402 Washington Heights
- Stockwell Hall
- School of Public Health I or II
- Other (*please specify*):

Page Break

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**Question:** STUDQUES56\_SOUTH

**Show if:** (STUDQUES56\_CAMPUS = 6:[South Campus - between Packard & Stadium])

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label                                      | Show-If |
| 1             | Campus Safety Services Building            |         |
| 2             | Crisler Arena                              |         |
| 3             | Donald B. Canham Natatorium                |         |
| 4             | Institute of Continuing Legal Ed           |         |
| 6             | Intramural Sports Building                 |         |
| 7             | John P. Weidenbach Hall                    |         |
| 8             | Schembechler Hall                          |         |
| 5             | Stephen M. Ross Academic Center            |         |
| 9             | William D. Revelli Hall                    |         |
| 10            | William Davidson Player Development Center |         |
| 11            | Yost Ice Arena                             |         |
| 77            | Other                                      |         |

**Listed below are several buildings on South Campus. Sometimes buildings are known by more than one name. Please review the list of building names to find the one in which you spend more than half of your time (for activity such as work, classes, or studying). If you do not see the name of your building, select "Other" and type in the name of the building.**

**Please select the name of the building in which you spend more than half of your time:**

- Campus Safety Services Building
- Crisler Arena
- Donald B. Canham Natatorium
- Institute of Continuing Legal Ed
- Intramural Sports Building
- John P. Weidenbach Hall
- Schembechler Hall
- Stephen M. Ross Academic Center
- William D. Revelli Hall
- William Davidson Player Development Center
- Yost Ice Arena
- Other (*please specify*):

Page Break

---

**Question:** STUDQUES56\_OTHER  
**Show if:** (STUDQUES56\_CAMPUS = 3:[Elsewhere])

**Please type the name of the building on campus in which you spend more than half of your time (for activity such as work, classes, or studying).**

Name of Building:

Page Break

---

**Question:** STUDQUES57

| Scale Summary |                       |         |
|---------------|-----------------------|---------|
| Code          | Label                 | Show-If |
| 1             | US student            |         |
| 2             | International student |         |

**Are you a US student or international student?**

- US student
- International student

Page Break

---



**Question:** Q85

**Show if:** (STUDQUES57 = 2:[International student])

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | China (including Hong Kong)                           |         |
| 2             | India   |         |
| 3             | Other Asian countries (NOT China or India)            |         |
| 4             | Europe  |         |
| 5             | Mexico, Latin America, Central America, the Carribean |         |
| 6             | Other   |         |

**Which of the following best describes your country of origin?**

- China (including Hong Kong)
- India
- Other Asian countries (NOT China or India)
- Europe
- Mexico, Latin America, Central America, the Carribean
- Other

Page Break

---

**Question:** STUDQUES58  
**Show if:** (STUDQUES57 = 1:[US student])

**What was the zip code of your home address during your last year in high school?**

5-digit zip code:

Page Break

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**Question:** STUDQUES59

| Scale Summary |       |         |
|---------------|-------|---------|
| Code          | Label | Show-If |
| 0             | Yes   |         |
| 1             | No    |         |

**Do you have a car of your own at your local residence this semester?**

- Yes
- No

Page Break

---

Question: STUDQUES60

**What is your age; how old are you?**

years old

Page Break

---

**Question:** STUDQUES61

| Scale Summary |                              |         |
|---------------|------------------------------|---------|
| Code          | Label                        | Show-If |
| 1             | Female                       |         |
| 2             | Male                         |         |
| 3             | Other                        |         |
| 4             | <i>Choose not to respond</i> |         |

**Are you:**

- Female
- Male
- Other (*please specify*):
- Choose not to respond*

Page Break

---

**Question:** STUDQUES62

| Scale Summary |                                    |         |
|---------------|------------------------------------|---------|
| Code          | Label                              | Show-If |
| 1             | Very satisfied                     |         |
| 2             | Somewhat satisfied                 |         |
| 3             | Neither satisfied nor dissatisfied |         |
| 4             | Somewhat dissatisfied              |         |
| 5             | Very Dissatisfied                  |         |

**How satisfied are you with your survey experience?**

- Very satisfied
- Somewhat satisfied
- Neither satisfied nor dissatisfied
- Somewhat dissatisfied
- Very Dissatisfied

Page Break

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Question: STUDQUES63

**How long do you estimate it took you to complete the survey?**

minutes

Page Break

---

**Question:** STUDQUES64

| Scale Summary |                           |         |
|---------------|---------------------------|---------|
| Code          | Label                     | Show-If |
| 1             | Yes                       |         |
| 2             | No                        |         |
| 3             | I don't remember (unsure) |         |

**Do you remember completing a U-M survey like this in Fall 2013?**

- Yes
- No
  
- I don't remember (unsure)

Page Break

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**Question:** STUDQUES65

| Scale Summary |       |         |
|---------------|-------|---------|
| Code          | Label | Show-If |
| 1             | Yes   |         |
| 2             | No    |         |

**Would you like to receive information on U-M sustainability activities and resources?**

Yes

No

Page Break

---

**Question:** INCENTIVE

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Yes, please include me in the drawing         |         |
| 0             | No, thanks. Do not include me in the drawing. |         |

**Once you submit your completed survey, you will be eligible to win a \$ Amazon gift code. Do you wish to be included in the drawing?**

- Yes, please include me in the drawing
- No, thanks. Do not include me in the drawing.

## D.2 Faculty/staff SCIP questionnaire 2014



For questions about the survey, please email  
ISR-UMSCIP@umich.edu

### Sustainability Culture Indicators Program (SCIP)

**Collection:** LOGIN  
**Contains:** DATSTAT\_ALTPID

**Question:** DATSTAT\_ALTPID  
**Required**

**Please enter your ID.**

**Collection:** SECTION\_A  
**Contains:** FCST1, FCST2\_2013, FCST3, FCST3B\_2013, FCST4, FCST5, FCST7\_2013

**The purpose of this questionnaire is to better understand what U-M faculty and staff do and how they think about sustainability. Sustainability covers many things and this questionnaire will cover topics such as transportation, energy conservation, waste prevention, food, and environmental protection.**

**Your responses are voluntary and confidential and it is up to you whether to complete this questionnaire. You can leave and return to the questionnaire at a later time. You must be at least 18-years-old to complete the questionnaire. By completing the questionnaire, you are acknowledging that you are at least 18-years-old. Completing the questionnaire should take about 15 minutes.**

Page Break

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## Statement of Consent

Principal Investigator: John Callewaert, Integrated Assessment Program Director  
Graham Environmental Sustainability Institute

- You were randomly selected from among all faculty and staff at the University of Michigan to be invited to complete this survey.
- To evaluate the programs, outstanding needs, and current practices and beliefs regarding the issue of sustainability on the U-M campus in Ann Arbor, you will be asked questions about transportation, food, the environment, and conserving energy.
- Participating in this study is completely voluntary. Even if you decide to participate now, you may change your mind and stop at any time.
- You can choose to not answer any question.
- It should take 15 minutes to complete.
- There are no risks related to completing this survey, because the topic is not sensitive.
- The benefit to participating is that your attitudes, behaviors, and knowledge may help to shape U-M programs.
- Upon completion of the survey, your email address will be included in a drawing for a \$50 Amazon gift code.
- Your answers and personal information will be kept confidential.
- Your name will not be attached to any data, a study number will be used instead.
- You must be at least 18 years old to complete the questionnaire. By completing the questionnaire, you are acknowledging that you are at least 18 years old.
- The data for this study are being collected by the University of Michigan Survey Research Center (SRC) Survey Research Operations (SRO) in cooperation with John Callewaert, PhD, Integrated Assessment Program Director at the Graham Sustainability Institute of the University of Michigan.
- The Sustainability Cultural Indicators Program (SCIP) is funded by the University of Michigan.
- If you have any question about the study, please contact: John Callewaert, (734) 615-3752, [jcallew@umich.edu](mailto:jcallew@umich.edu).
- If you have questions about your rights as a research participant, or wish to obtain information, ask questions or discuss any concerns about this study with someone other than the researcher, please contact the University of Michigan Health Sciences and Behavioral Sciences Institutional Review Board, 2800 Plymouth Rd., Building 520, Room 1169, Ann Arbor, MI 48109-2800, (734) 936-0933, or toll-free, (866) 936-0933, [irbhsbs@umich.edu](mailto:irbhsbs@umich.edu)

**Click "Next" to continue with the survey.**

- Your answers and personal information will be kept confidential.
- Participation is voluntary and you can stop at any time.
- It should take about 15 minutes to complete.
- There are no risks related to completing this survey, because the topic is not sensitive.
- Upon completion of the survey, your email address will be included in a drawing for a \$50 Amazon gift code.

To learn more...

About the Study

Confidentiality

Your Rights

**Click "Next" to continue with the survey.**

Page Break

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**Question Block:** FCST1  
**Contains:** Q1, Q2, Q3, Q4, Q6, Q7

| Scale Summary |                              |         |
|---------------|------------------------------|---------|
| Code          | Label                        | Show-If |
| 1             | <b>A lot</b>                 |         |
| 2             | <b>A fair amount</b>         |         |
| 3             | <b>A little</b>              |         |
| 4             | <b>Not much/<br/>nothing</b> |         |

The first set of questions is about **travel and transportation**.

**How much do you know about travel by:**

|  | <b>A lot</b>          | <b>A fair amount</b>  | <b>A little</b>       | <b>Not much/<br/>nothing</b> |
|--|-----------------------|-----------------------|-----------------------|------------------------------|
| <b>Bus, AAATA/"The Ride" (Ann Arbor Area Transportation Authority schedules, routes, etc.)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>U-M buses (schedules, routes, etc.)</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Biking in Ann Arbor (bike lanes, rules of the road, etc.)</b>                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Renting a car by the hour (e.g. Zipcar)</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>U-M Vanpools (VanRide)</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>U-M Greenride/iShareaRide</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |

Page Break

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**Question Block:** FCST2\_2013

**Contains:** Q10\_2013, Q20\_2013, Q11\_2013, Q12\_2013, Q13\_2013, Q14\_2013, Q15\_2013, Q16\_2013, Q17\_2013, Q19\_2013, Q21\_2013

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label                                   | Show-If |
| 1             | <b>Never</b>                            |         |
| 2             | <b>Rarely</b>                           |         |
| 3             | <b>Sometimes</b>                        |         |
| 4             | <b>Always/<br/>Most of<br/>the time</b> |         |

**During the past year, how often did you do the following to travel between your home and your U-M workplace?**

|  | <b>Never</b>          | <b>Rarely</b>         | <b>Sometimes</b>      | <b>Always/<br/>Most of<br/>the time</b> |
|--|-----------------------|-----------------------|-----------------------|---|
| <b>Drive a car (alone or with family members) and park on campus</b>                           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   |
| <b>Park and Ride (the bus)</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   |
| <b>Walk</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   |
| <b>Bike</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   |
| <b>Bus, AAATA/"The Ride" (Ann Arbor Area Transportation Authority schedules, routes, etc.)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   |
| <b>Bus, U-M</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   |
| <b>Carpool (self-organized with friends or coworkers)</b>                                      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   |
| <b>U-M Greenride/iShareaRide</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   |
| <b>U-M Vanpools (VanRide)</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   |
| <b>Motorcycle, moped, or scooter</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   |
| <b>Did not travel (worked from home/telecommuted)</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   |

Page Break

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**Question:** FCST3

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Drive a car                                       |         |
| 7             | Park and Ride                                     |         |
| 2             | Walk  |         |
| 3             | Bike  |         |
| 4             | Ride the bus                                      |         |
| 5             | Ride the bus and bike                             |         |
| 9             | Ride share (i.e. van,car pool, dropped off, etc.) |         |
| 6             | Motorcycle, moped, or scooter                     |         |
| 8             | Other   |         |

**How do you most often travel to and from home to your work place?**

- Drive a car
- Park and Ride
- Walk
- Bike
- Ride the bus
- Ride the bus and bike
- Ride share (i.e. van,car pool, dropped off, etc.)
- Motorcycle, moped, or scooter
- Other (*please specify:*)

Page Break

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Question: FCST3B\_2013

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Drive a car                                       |         |
| 7             | Park and Ride                                     |         |
| 2             | Walk  |         |
| 3             | Bike  |         |
| 4             | Ride the bus                                      |         |
| 5             | Ride the bus and bike                             |         |
| 9             | Ride share (i.e. van,car pool, dropped off, etc.) |         |
| 6             | Motorcycle, moped, or scooter                     |         |
| 8             | Other   |         |

**And since the beginning of the fall semester, how did you most often travel to and from home to your work place?**

- Drive a car
- Park and Ride
- Walk
- Bike
- Ride the bus
- Ride the bus and bike
- Ride share (i.e. van,car pool, dropped off, etc.)
- Motorcycle, moped, or scooter
- Other (*please specify*):

Page Break

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**Question:** FCST4

**Show if:** (FCST3 is-any-of 1:[Drive a car]) or (FCST3B\_2013 is-any-of 1:[Drive a car])

**Scale Summary**

| Code | Label                | Show-If |
|------|----------------------|---------|
| 1    | Convenience          |         |
| 2    | Work schedule        |         |
| 3    | Home/family schedule |         |
| 4    | Length of commute    |         |
| 5    | Other                |         |

**What is the primary reason you drive a car to work?**

- Convenience
- Work schedule
- Home/family schedule
- Length of commute
- Other (*please specify*):

Page Break

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**Question:** FCST5

| Scale Summary |                          |         |
|---------------|--------------------------|---------|
| Code          | Label                    | Show-If |
| 1             | Gold                     |         |
| 2             | Blue                     |         |
| 3             | Yellow                   |         |
| 4             | Orange                   |         |
| 5             | Daily AVI or Scratch-off |         |
| 6             | Shared Carpool Permit    |         |
| 7             | No permit                |         |

**Which U-M parking permit do you have?**

- Gold
- Blue
- Yellow
- Orange
- Daily AVI or Scratch-off
- Shared Carpool Permit (*please specify color*):
- No permit

Page Break

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**Question Block:** FCST7\_2013  
**Contains:** Q26\_2013, Q28\_2013, Q30\_2013

| Scale Summary |                              |         |
|---------------|------------------------------|---------|
| Code          | Label                        | Show-If |
| 1             | <b>Very important</b>        |         |
| 2             | <b>Somewhat important</b>    |         |
| 3             | <b>Not that important</b>    |         |
| 4             | <b>Not at all important</b>  |         |
| 5             | <i>Didn't think about it</i> |         |

**When you moved to your current residence, how important were each of the following reasons?**

|  | <b>Very important</b> | <b>Somewhat important</b> | <b>Not that important</b> | <b>Not at all important</b> | <i><b>Didn't think about it</b></i> |
|--|-----------------------|---------------------------|---------------------------|-----------------------------|-------------------------------------|
| <b>Being able to walk or bike to <u>work</u></b> | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       | <input type="radio"/>               |
| <b>Being able to take the bus to <u>work</u></b> | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       | <input type="radio"/>               |
| <b>Having a lower impact on the environment</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       | <input type="radio"/>               |

Page Break

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**Collection:** SECTION\_B  
**Contains:** FCST10, FCST11, Q128, FCST12, FCST12\_PART2, FCST12\_PART3, FCST13

**Question Block:** FCST10  
**Contains:** Q31, Q32, Q33, Q34, Q35, Q125, Q126, Q127

| Scale Summary |                              |         |
|---------------|------------------------------|---------|
| Code          | Label                        | Show-If |
| 1             | <b>A lot</b>                 |         |
| 2             | <b>A fair amount</b>         |         |
| 3             | <b>A little</b>              |         |
| 4             | <b>Not much/<br/>nothing</b> |         |

These questions are about **waste prevention and conservation**.

**How much do you know about the following at U-M?**

|  | <b>A lot</b>          | <b>A fair amount</b>  | <b>A little</b>       | <b>Not much/<br/>nothing</b> |
|--|-----------------------|-----------------------|-----------------------|------------------------------|
| <b>Recycling glass</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Recycling plastic</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Recycling paper</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Recycling electronic waste (i.e. computers, cell phones)</b>        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Property Disposition Services</b>                                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Composting</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>The energy consumption of the building where you work</b>           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>The energy conservation features of the building where you work</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |

Page Break

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**Question Block:** FCST11

**Contains:** Q36, Q37, Q38, Q39, Q40, Q41, Q42, Q43

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label                                   | Show-If |
| 1             | <b>Never</b>                            |         |
| 2             | <b>Rarely</b>                           |         |
| 3             | <b>Sometimes</b>                        |         |
| 4             | <b>Always/<br/>Most of<br/>the time</b> |         |
| 5             | <b>Not Applicable</b>                   |         |

**During the past year, how often did you do the following at work when you had the opportunity?**

|  | <b>Never</b>          | <b>Rarely</b>         | <b>Sometimes</b>      | <b>Always/<br/>Most of<br/>the time</b> | <b>Not<br/>Applicable</b> |
|--|-----------------------|-----------------------|-----------------------|---|---------------------------|
| <b>Turn off the lights when I leave the room</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Use the power saving settings on the computer</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Turn off my computer when I leave work</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Use a motion sensor / "smart" power strip</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Print double-sided</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Recycle bottles, containers, and paper products</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Use a reusable water bottle, coffee cup, travel mug, etc.</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Use U-M Property Disposition Services to obtain items such as computers, furniture, and equipment</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |

Page Break

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**Question:** Q128

| Scale Summary |                      |         |
|---------------|----------------------|---------|
| Code          | Label                | Show-If |
| 1             | Very important       |         |
| 2             | Somewhat important   |         |
| 3             | Not that important   |         |
| 4             | Not at all important |         |

**How important is your behavior to conserving energy in the building where you work?**

- Very important
- Somewhat important
- Not that important
- Not at all important

Page Break

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**Question Block:** FCST12

**Contains:** Q44, Q45, Q46, Q47, Q48, Q49

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label                                   | Show-If |
| 1             | <b>Never</b>                            |         |
| 2             | <b>Rarely</b>                           |         |
| 3             | <b>Sometimes</b>                        |         |
| 4             | <b>Always/<br/>Most of<br/>the time</b> |         |
| 5             | <b>Not applicable</b>                   |         |

**During the past year, how often did you do the following at home?**

|  | <b>Never</b>          | <b>Rarely</b>         | <b>Sometimes</b>      | <b>Always/<br/>Most of<br/>the time</b> | <b>Not<br/>applicable</b> |
|--|-----------------------|-----------------------|-----------------------|---|---------------------------|
| <b>Set thermostat to 65 degrees or lower during cool or cold weather</b>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Set thermostat (air conditioner) to 78 degrees or higher during warm or hot weather</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Turn off lights when I leave the room</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Unplug electrical appliances when not using them</b>                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Use the power saving settings on my computer</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Turn off my home computer when not using it</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |

Page Break

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**Question Block:** FCST12\_PART2  
**Contains:** Q50, Q51, Q52, Q53, Q54, Q55

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label                                   | Show-If |
| 1             | <b>Never</b>                            |         |
| 2             | <b>Rarely</b>                           |         |
| 3             | <b>Sometimes</b>                        |         |
| 4             | <b>Always/<br/>Most of<br/>the time</b> |         |
| 5             | <b>Not applicable</b>                   |         |

**During the past year, how often did you do the following at home?**

|  | <b>Never</b>          | <b>Rarely</b>         | <b>Sometimes</b>      | <b>Always/<br/>Most of<br/>the time</b> | <b>Not<br/>applicable</b> |
|--|-----------------------|-----------------------|-----------------------|---|---------------------------|
| <b>Use a motion sensor / "smart" power strip</b>                 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Run washer only when I have a full load of clothes</b>        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Limit time in the shower</b>                                  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Recycle bottles, containers, and paper products</b>           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Use a reusable water bottle, coffee cup, travel mug, etc.</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Recycle electronic waste (i.e. computers, cell phones)</b>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |

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**Question Block:** FCST12\_PART3  
**Contains:** Q56, Q57, Q58, Q59, Q72

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label                                   | Show-If |
| 1             | <b>Never</b>                            |         |
| 2             | <b>Rarely</b>                           |         |
| 3             | <b>Sometimes</b>                        |         |
| 4             | <b>Always/<br/>Most of<br/>the time</b> |         |
| 5             | <b>Not applicable</b>                   |         |

**During the past year, how often did you do the following at home?**

|  | <b>Never</b>          | <b>Rarely</b>         | <b>Sometimes</b>      | <b>Always/<br/>Most of<br/>the time</b> | <b>Not<br/>applicable</b> |
|--|-----------------------|-----------------------|-----------------------|---|---------------------------|
| <b>Bring reusable bags to the store</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Shop for things with minimal packaging</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Shop in a second-hand store or online site such as eBay or Craigslist, when I have to buy something (e.g. clothing, furniture, or appliances)</b>       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Compost food scraps</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Buy products (besides food) that carry some type of eco-label or certification, (e.g. lumber, organic cotton clothing, household cleaning products)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |

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**Question Block:** FCST13

**Contains:** Q64, Q65, Q66, Q67, Q60, Q61, Q62, Q63

| Scale Summary |                   |         |
|---------------|-------------------|---------|
| Code          | Label             | Show-If |
| 1             | <b>Yes</b>        |         |
| 2             | <b>No</b>         |         |
| 3             | <b>Don't Know</b> |         |

**Do you have any of the following at your current residence?**

|   | <b>Yes</b>            | <b>No</b>             | <b>Don't Know</b>     |
|---|-----------------------|-----------------------|-----------------------|
| <b>Recycling bins</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Compost bin</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Programmable thermostat</b>                                | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Water-saving items (e.g. low-flow faucets/showerheads)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Energy Star appliances</b>                                 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Motion sensor for shutting off electronics</b>             | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Compact fluorescent light bulbs or LED light bulbs</b>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Renewable energy systems, like solar or geothermal</b>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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**Collection:** SECTION\_C  
**Contains:** FCST16, FCST17, FCST18

**Question Block:** FCST16  
**Contains:** Q68, Q69, Q70, Q71

| Scale Summary |                              |         |
|---------------|------------------------------|---------|
| Code          | Label                        | Show-If |
| 1             | <b>A lot</b>                 |         |
| 2             | <b>A fair amount</b>         |         |
| 3             | <b>A little</b>              |         |
| 4             | <b>Not much/<br/>nothing</b> |         |

*This set of questions is about the **natural environment**.*

**How much do you know about the following:**

|  | <b>A lot</b>          | <b>A fair amount</b>  | <b>A little</b>       | <b>Not much/<br/>nothing</b> |
|--|-----------------------|-----------------------|-----------------------|------------------------------|
| <b>Disposing of hazardous materials (i.e. engine oil, medications, etc.)</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Recognizing invasive plant species</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Taking care of residential property in an environmentally-friendly way</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Protecting rivers, streams, &amp; lakes - their tributaries, habitat quality, &amp; native species (e.g. Huron River)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |

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**Question Block:** FCST17

**Contains:** Q73, Q74, Q75

| Scale Summary |                       |         |
|---------------|-----------------------|---------|
| Code          | Label                 | Show-If |
| 1             | <b>Regularly</b>      |         |
| 2             | <b>Sometimes</b>      |         |
| 3             | <b>Rarely</b>         |         |
| 4             | <b>Never</b>          |         |
| 5             | <b>Not applicable</b> |         |

**During the past year, at your current residence, how often did you do the following?**

|  | <b>Regularly</b>      | <b>Sometimes</b>      | <b>Rarely</b>         | <b>Never</b>          | <b>Not applicable</b> |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Use fertilizer on your lawn</b>             | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Use commercial herbicides or pesticides</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Water your lawn</b>                         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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**Question Block:** FCST18

**Contains:** Q76, Q77, Q78, Q79, Q80, Q81

| Scale Summary |                       |         |
|---------------|-----------------------|---------|
| Code          | Label                 | Show-If |
| 1             | <b>Yes</b>            |         |
| 2             | <b>No</b>             |         |
| 3             | <b>Not applicable</b> |         |

**Have you done any of the following at your current residence?**

|  | <b>Yes</b>            | <b>No</b>             | <b>Not applicable</b> |
|--|-----------------------|-----------------------|-----------------------|
| <b>Installed a rain barrel</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Installed a rain garden</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Eliminated invasive species from your yard or garden</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Intentionally planted native species in your lawn or garden</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Converted all/part of your lawn to native/natural plantings</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Disposed of hazardous materials (i.e. engine oil, harsh cleaners, medications) by taking them to a designated disposal facility</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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**Collection:** SECTION\_D  
**Contains:** FCST22, FCST23\_2013, FCST24, FCST25, FCST26, FCST30

**Question Block:** FCST22  
**Contains:** Q82, Q83, Q84, Q85, Q86, Q87, Q88

| Scale Summary |                              |         |
|---------------|------------------------------|---------|
| Code          | Label                        | Show-If |
| 1             | <b>A lot</b>                 |         |
| 2             | <b>A fair amount</b>         |         |
| 3             | <b>A little</b>              |         |
| 4             | <b>Not much/<br/>nothing</b> |         |

Following are questions about **food**.

**How much do you know about each of the following kinds of food?**

|  | <b>A lot</b>          | <b>A fair amount</b>  | <b>A little</b>       | <b>Not much/<br/>nothing</b> |
|--|-----------------------|-----------------------|-----------------------|------------------------------|
| <b>Locally grown or processed</b>                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Organic</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Fair trade food</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Food from humanely-treated animals</b>                            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Food from animals that were not given hormones or antibiotics</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Grass-fed beef</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Fish from sustainable fisheries</b>                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |

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**Question Block:** FCST23\_2013

**Contains:** Q89\_2013, Q90\_2013, Q95\_2013, Q91\_2013, Q92\_2013, Q93\_2013, Q94\_2013

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label                                   | Show-If |
| 1             | <b>Always/<br/>Most of<br/>the Time</b> |         |
| 2             | <b>Sometimes</b>                        |         |
| 3             | <b>Rarely</b>                           |         |
| 4             | <b>Never</b>                            |         |
| 5             | <b>Don't Know</b>                       |         |
| 6             | <b>I Don't Eat This</b>                 |         |

**During the past year, about how often did you (or other household members) buy the following?**

|  | <b>Always/<br/>Most of<br/>the Time</b> | <b>Sometimes</b>      | <b>Rarely</b>         | <b>Never</b>          | <b>Don't<br/>Know</b> | <b>I Don't<br/>Eat This</b> |
|--|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------------|
| <b>Locally grown or processed</b>                                    | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>       |
| <b>Organic</b>   | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>       |
| <b>Fair trade food</b>   | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>       |
| <b>Food from humanely-treated animals</b>                            | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>       |
| <b>Food from animals that were not given hormones or antibiotics</b> | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>       |
| <b>Grass-fed beef</b>  | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>       |
| <b>Fish from sustainable fisheries</b>                               | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>       |

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Question: FCST24

| Scale Summary |                     |         |
|---------------|---------------------|---------|
| Code          | Label               | Show-If |
| 1             | All/most            |         |
| 2             | More than half      |         |
| 3             | Half                |         |
| 4             | Less than half      |         |
| 5             | None                |         |
| 6             | <i>I don't know</i> |         |

**"Sustainable food"** can be defined as one or more of the following: locally-sourced, organic, from humanely-treated animals, antibiotic- and hormone-free, grass-fed, from sustainable fisheries, or fair trade food.

**During the past year, about how much of your grocery purchases were sustainable food?**

- All/most
- More than half
- Half
- Less than half
- None
  
- I don't know*

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**Question Block:** FCST25

**Contains:** Q96, Q97, Q98, Q99, Q100

Show if: (FCST24 is-any-of 1:[All/most] or 2:[More than half] or 3:[Half] or 4:[Less than half])

| Scale Summary |                             |         |
|---------------|-----------------------------|---------|
| Code          | Label                       | Show-If |
| 1             | <b>Very important</b>       |         |
| 2             | <b>Somewhat important</b>   |         |
| 3             | <b>Not that important</b>   |         |
| 4             | <b>Not at all important</b> |         |

**How important to you are the following when you buy sustainable food?**

|   | <b>Very important</b> | <b>Somewhat important</b> | <b>Not that important</b> | <b>Not at all important</b> |
|---|-----------------------|---------------------------|---------------------------|-----------------------------|
| <b>Nutrition</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Taste</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Supporting the local community</b>   | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Protecting the environment</b>   | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Avoiding things like synthetic pesticides or fertilizers, antibiotics or growth hormones</b> | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |

Page Break

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**Question:** FCST26

| Scale Summary |                    |         |
|---------------|--------------------|---------|
| Code          | Label              | Show-If |
| 1             | Daily/almost daily |         |
| 2             | 3-4 days           |         |
| 3             | 1-2 days           |         |
| 4             | Never              |         |

**During the past week, how often have you included meat as part of your daily diet?**

- Daily/almost daily
- 3-4 days
- 1-2 days
- Never

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|   |            |         |
|---|------------|---------|
| <b>Question Block:</b> FCST30                       |            |         |
| <b>Contains:</b> Q101, Q102, Q103, Q104, Q105, Q106 |            |         |
| <b>Scale Summary</b>                                |            |         |
| Code  | Label      | Show-If |
| 0   | <b>Yes</b> |         |
| 1   | <b>No</b>  |         |

**During the past year, have you:**

|  | <b>Yes</b>            | <b>No</b>             |
|--|-----------------------|-----------------------|
| <b>Grown fruits/vegetables in a home garden?</b>               | <input type="radio"/> | <input type="radio"/> |
| <b>Grown fruits/vegetables in a community garden?</b>          | <input type="radio"/> | <input type="radio"/> |
| <b>Shopped at farmers markets or food stands?</b>              | <input type="radio"/> | <input type="radio"/> |
| <b>Belonged to a CSA (Community Supported Agriculture)?</b>    | <input type="radio"/> | <input type="radio"/> |
| <b>Visited U-Pick farms?</b>                                   | <input type="radio"/> | <input type="radio"/> |
| <b>Raised animals for food (e.g. meat, dairy, eggs, etc.)?</b> | <input type="radio"/> | <input type="radio"/> |

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**Collection:** SECTION\_E  
**Contains:** FCST32\_2013, FCST32A\_2013, FCST32B\_2013, FCST35, FCST33, FCST34

**Question:** FCST32\_2013

| Scale Summary |              |         |
|---------------|--------------|---------|
| Code          | Label        | Show-If |
| 1             | Yes          |         |
| 2             | No           |         |
| 3             | I don't know |         |

*These questions are about **climate change**, which is sometimes called global warming.*

**Do you think climate change is happening?**

- Yes
- No
  
- I don't know

Page Break

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**Question:** FCST32A\_2013  
**Show if:** (FCST32\_2013 = 1:[Yes])

| Scale Summary |                 |         |
|---------------|-----------------|---------|
| Code          | Label           | Show-If |
| 1             | Extremely sure  |         |
| 2             | Mostly sure     |         |
| 3             | Somewhat sure   |         |
| 4             | Not at all sure |         |

**How sure are you that climate change is happening?**

- Extremely sure
- Mostly sure
- Somewhat sure
- Not at all sure

Page Break

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**Question:** FCST32B\_2013  
**Show if:** (FCST32\_2013 = 2:[No])

| Scale Summary |                 |         |
|---------------|-----------------|---------|
| Code          | Label           | Show-If |
| 1             | Extremely sure  |         |
| 2             | Mostly sure     |         |
| 3             | Somewhat sure   |         |
| 4             | Not at all sure |         |

**How sure are you that climate change is not happening?**

- Extremely sure
- Mostly sure
- Somewhat sure
- Not at all sure

Page Break

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**Question:** FCST35

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Caused mostly by human activities                         |         |
| 2             | Caused mostly by natural changes                          |         |
| 3             | Caused by both human activities and natural changes       |         |
| 4             | None of the above because climate change is not happening |         |

**Assuming climate change is happening, do you think it is...**

- Caused mostly by human activities
- Caused mostly by natural changes
- Caused by both human activities and natural changes
- None of the above because climate change is not happening

Page Break

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**Question:** FCST33

| <b>Scale Summary</b> |                      |         |
|----------------------|----------------------|---------|
| Code                 | Label                | Show-If |
| 1                    | Not at all important |         |
| 2                    | Not too important    |         |
| 3                    | Somewhat important   |         |
| 4                    | Very important       |         |
| 5                    | Extremely important  |         |

**How important is the issue of climate change to you personally?**

- Not at all important
- Not too important
- Somewhat important
- Very important
- Extremely important

Page Break

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**Question:** FCST34

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label                                    | Show-If |
| 1             | Very well                                |         |
| 2             | Fairly well                              |         |
| 3             | A little bit                             |         |
| 4             | I would not be able to explain it at all |         |

**How well could you explain the topic of climate change to someone who didn't know about it--what's causing it or not, what are its potential consequences, etc.?**

- Very well
- Fairly well
- A little bit
- I would not be able to explain it at all

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**Collection:** SECTION\_F  
**Contains:** FCST37, FCST38, FCST39, FCST40, FCST41, FCST42, FCST43

**Question Block:** FCST37  
**Contains:** Q107, Q108, Q109, Q110

| Scale Summary |       |         |
|---------------|-------|---------|
| Code          | Label | Show-If |
| 0             | Yes   |         |
| 1             | No    |         |

These next questions cover **other activities and your opinions about sustainability.**

**Have you done any of the following during the past year to promote sustainability issues such as environmental protection, energy or water conservation, open space preservation, public or non-motorized transportation, etc.?**

|  | Yes                   | No                    |
|--|-----------------------|-----------------------|
| <b>Given money to an organization or advocacy group supporting one of the above issues?</b>                      | <input type="radio"/> | <input type="radio"/> |
| <b>Volunteered for an organization or advocacy group supporting one of the above issues?</b>                     | <input type="radio"/> | <input type="radio"/> |
| <b>Served in a leadership position for an organization or advocacy group supporting one of the above issues?</b> | <input type="radio"/> | <input type="radio"/> |
| <b>Voted for a candidate for public office because of her/his position on any of the above issues?</b>           | <input type="radio"/> | <input type="radio"/> |

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**Question Block:** FCST38

**Contains:** Q111, Q112, Q113, Q114, Q115, Q116, Q117, Q118, Q119

| Scale Summary |                   |         |
|---------------|-------------------|---------|
| Code          | Label             | Show-If |
| 1             | <b>Never</b>      |         |
| 2             | <b>Rarely</b>     |         |
| 3             | <b>Sometimes</b>  |         |
| 4             | <b>Frequently</b> |         |
| 5             | <b>Don't know</b> |         |

**During the past year, how often have you encouraged your friends to do the following things?**

|   | <b>Never</b>          | <b>Rarely</b>         | <b>Sometimes</b>      | <b>Frequently</b>     | <b><i>Don't know</i></b> |
|---|-----------------------|-----------------------|-----------------------|-----------------------|--------------------------|
| <b>Walk, bike, or take the bus rather than drive</b>                              | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Buy locally sourced or sustainable food</b>                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Conserve water</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Conserve electricity</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Reuse or recycle containers or bags</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Buy fewer things</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Buy things that are better for the environment</b>                             | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Use environmentally-friendly ways of controlling insects, weeds, and pests</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Do something in order to reduce his/her greenhouse gas emissions</b>           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |

Page Break

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**Question Block:** FCST39

**Contains:** Q120, Q121, Q122, Q123

| Scale Summary |                                   |         |
|---------------|-----------------------------------|---------|
| Code          | Label                             | Show-If |
| 1             | <b>Strongly oppose</b>            |         |
| 2             | <b>Moderately oppose</b>          |         |
| 3             | <b>Neither support nor oppose</b> |         |
| 4             | <b>Moderately support</b>         |         |
| 5             | <b>Strongly support</b>           |         |

**Would you support or oppose the following governmental policies?**

|  | <b>Strongly oppose</b> | <b>Moderately oppose</b> | <b>Neither support nor oppose</b> | <b>Moderately support</b> | <b>Strongly support</b> |
|--|------------------------|--------------------------|-----------------------------------|---------------------------|-------------------------|
| <b>A 20 cent increase in the price per gallon of gasoline, if the extra money were used to improve local public transportation.</b>  | <input type="radio"/>  | <input type="radio"/>    | <input type="radio"/>             | <input type="radio"/>     | <input type="radio"/>   |
| <b>A requirement that electric utilities produce at least 40 percent of their electricity from wind, solar, or other renewable energy sources, even if it costs the average household an extra \$100 a year.</b> | <input type="radio"/>  | <input type="radio"/>    | <input type="radio"/>             | <input type="radio"/>     | <input type="radio"/>   |
| <b>A ban on disposable plastic bags.</b>   | <input type="radio"/>  | <input type="radio"/>    | <input type="radio"/>             | <input type="radio"/>     | <input type="radio"/>   |
| <b>A tax on fuels - like gasoline and natural gas - according to their carbon content, if the extra money were used for clean energy projects.</b>   | <input type="radio"/>  | <input type="radio"/>    | <input type="radio"/>             | <input type="radio"/>     | <input type="radio"/>   |

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**Question Block:** FCST40  
**Contains:** Q160, Q161, Q162

| Scale Summary |                    |         |
|---------------|--------------------|---------|
| Code          | Label              | Show-If |
| 0             | <b>Nothing</b>     |         |
| 1             | <b>\$1 - \$10</b>  |         |
| 2             | <b>\$11 - \$20</b> |         |
| 3             | <b>\$21 - \$30</b> |         |
| 4             | <b>\$31 - \$40</b> |         |
| 5             | <b>\$41 - \$50</b> |         |

**How much would you be willing to personally pay each year to...**

|  | <b>Nothing</b>        | <b>\$1 - \$10</b>     | <b>\$11 - \$20</b>    | <b>\$21 - \$30</b>    | <b>\$31 - \$40</b>    | <b>\$41 - \$50</b>    |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Expand waste prevention efforts, such as recycling and green purchasing at U-M</b>                            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Expand alternative transportation efforts such as buses, bikes, and carpools at U-M</b>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Expand efforts to lower greenhouse gas emissions at U-M through energy conservation and renewable sources</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Page Break

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**Question Block:** FCST41

**Contains:** Q129, Q130, Q131, Q132, Q133, Q134, Q135

| Scale Summary |                             |         |
|---------------|-----------------------------|---------|
| Code          | Label                       | Show-If |
| 1             | <b>Very concerned</b>       |         |
| 2             | <b>Somewhat concerned</b>   |         |
| 3             | <b>Not that concerned</b>   |         |
| 4             | <b>Not at all concerned</b> |         |

**How concerned are you about the following things?**

|   | <b>Very concerned</b> | <b>Somewhat concerned</b> | <b>Not that concerned</b> | <b>Not at all concerned</b> |
|---|-----------------------|---------------------------|---------------------------|-----------------------------|
| <b>The impact that people's travel - by car and plane - has on the environment</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Whether food is grown and produced in a way that is good for the environment</b> | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Natural resources - like water and fossil fuels - being used up</b>              | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>People producing too much waste</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>The loss of open space</b>   | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>The loss of wildlife habitat</b>   | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Population growth</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |

Page Break

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**Question:** FCST42

| <b>Scale Summary</b> |                      |         |
|----------------------|----------------------|---------|
| Code                 | Label                | Show-If |
| 1                    | Very committed       |         |
| 2                    | Somewhat committed   |         |
| 3                    | Not very committed   |         |
| 4                    | Not at all committed |         |

**Overall, how committed are you to sustainability? Are you:**

- Very committed
- Somewhat committed
- Not very committed
- Not at all committed

Page Break

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Question: FCST43

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label                                    | Show-If |
| 1             | Friends or classmates                    |         |
| 2             | Parents or other family members          |         |
| 3             | K-12 teachers                            |         |
| 4             | U-M professors/instructors               |         |
| 5             | Childhood experiences outdoors           |         |
| 8             | Media--readings, video, movies, TV, etc. |         |
| 6             | Other U-M activities                     |         |
| 7             | Other                                    |         |

**Who or what has been most influential in shaping your views about sustainability?**

- Friends or classmates
- Parents or other family members
- K-12 teachers
- U-M professors/instructors
- Childhood experiences outdoors
- Media--readings, video, movies, TV, etc.
- Other U-M activities (*please specify*):
- Other (*please specify*):

Page Break

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**Collection:** SECTION\_G  
**Contains:** FCST44, FCST45, FCST46

**Question Block:** FCST44  
**Contains:** Q136, Q137, Q138, Q139, Q140, Q141, Q142, Q143, Q153

| Scale Summary |                         |         |
|---------------|-------------------------|---------|
| Code          | Label                   | Show-If |
| 1             | <b>Very aware</b>       |         |
| 2             | <b>Somewhat aware</b>   |         |
| 3             | <b>Not too aware</b>    |         |
| 4             | <b>Not at all aware</b> |         |

*This set of questions is about **sustainability at the University of Michigan.***

**How aware are you of U-M's efforts to:**

|   | <b>Very aware</b>     | <b>Somewhat aware</b> | <b>Not too aware</b>  | <b>Not at all aware</b> |
|---|-----------------------|-----------------------|-----------------------|-------------------------|
| <b>Conserve energy?</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| <b>Encourage people to take a bus or bike?</b>                        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| <b>Promote ride sharing?</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| <b>Promote recycling?</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| <b>Promote food from sustainable sources?</b>                         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| <b>Reduce greenhouse gas emissions?</b>                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| <b>Maintain campus grounds in an environmentally-friendly manner?</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| <b>Protect the Huron River?</b>                                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| <b>Promote composting?</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |

Page Break

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**Question Block:** FCST45

**Contains:** Q144, Q145, Q146, Q147, Q148, Q149, Q150, Q151, Q159

| Scale Summary |                      |         |
|---------------|----------------------|---------|
| Code          | Label                | Show-If |
| 1             | <b>Very Good (A)</b> |         |
| 2             | <b>Good (B)</b>      |         |
| 3             | <b>Fair (C)</b>      |         |
| 4             | <b>Poor (D)</b>      |         |
| 5             | <b>Very Poor (F)</b> |         |

**Overall, how would you rate/grade U-M's efforts to:**

|   | <b>Very Good (A)</b>  | <b>Good (B)</b>       | <b>Fair (C)</b>       | <b>Poor (D)</b>       | <b>Very Poor (F)</b>  |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Conserve energy?</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Encourage people to take a bus or bike?</b>                        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote ride sharing?</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote recycling?</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote food from sustainable sources?</b>                         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Reduce greenhouse gas emissions?</b>                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Maintain campus grounds in an environmentally-friendly manner?</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Protect the Huron River?</b>                                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote composting?</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Page Break

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**Question Block:** FCST46  
**Contains:** Q152, Q154, Q156, Q157, Q5, Q124, Q158, Q163

| Scale Summary |       |         |
|---------------|-------|---------|
| Code          | Label | Show-If |
| 0             | Yes   |         |
| 1             | No    |         |

**Have you ever participated in any of the following at U-M?**

|   | Yes                   | No                    |
|---|-----------------------|-----------------------|
| <b>RecycleMania</b>                                   | <input type="radio"/> | <input type="radio"/> |
| <b>Earthfest</b>                                      | <input type="radio"/> | <input type="radio"/> |
| <b>Zero Waste Events</b>                              | <input type="radio"/> | <input type="radio"/> |
| <b>e-Waste Recycling Event</b>                        | <input type="radio"/> | <input type="radio"/> |
| <b>Planet Blue Ambassadors Program</b>                | <input type="radio"/> | <input type="radio"/> |
| <b>Sustainable Workplace Certification Program</b>    | <input type="radio"/> | <input type="radio"/> |
| <b>A U-M organization dealing with sustainability</b> | <input type="radio"/> | <input type="radio"/> |
| <b>Other</b>  | <input type="radio"/> | <input type="radio"/> |

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**Custom Layout Question:** FCST46\_1

*Please specify:*

Page Break

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**Collection:** SECTION\_H  
**Contains:** FCST47, FCST48, FCST49-FCST50\_SERIES, FCST51, FCST52\_CAMPUS\_2013, FCST52\_MAP\_2013, FCST52\_CENTRAL, FCST52\_EAST, FCST52\_MEDICAL, FCST52\_NORTH, FCST52\_SOUTH, FCST52\_OTHER, FCST53, FCST54, FCST55, FCST55B, FCST56\_2014, FCST58, FCST59, FCST60, FCST61, FCST62, FCST63, FCST64, FCST65, FCST66, FCST67, INCENTIVE

**Question:** FCST47

| Scale Summary |         |         |
|---------------|---------|---------|
| Code          | Label   | Show-If |
| 1             | Staff   |         |
| 2             | Faculty |         |

*About you:*

**Are you:**

- Staff
- Faculty

Page Break

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**Question:** FCST48

**Show if:** (FCST47 = 1:[Staff])

| Scale Summary |                        |         |
|---------------|------------------------|---------|
| Code          | Label                  | Show-If |
| 1             | Professional           |         |
| 2             | Managerial             |         |
| 3             | Administrative support |         |
| 4             | Research               |         |
| 5             | Medical, nursing       |         |
| 6             | Service or maintenance |         |
| 7             | Other                  |         |

**Are you primarily:**

- Professional
- Managerial
- Administrative support
- Research
- Medical, nursing
- Service or maintenance
- Other (*please specify*):

Page Break

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**Collection:** FCST49-FCST50\_SERIES  
**Contains:** FCST49, FCST50  
**Show if:** (FCST47 = 2:[Faculty])

**Question:** FCST49

| Scale Summary |                     |         |
|---------------|---------------------|---------|
| Code          | Label               | Show-If |
| 1             | Tenured faculty     |         |
| 2             | Non-tenured faculty |         |

**Are you:**

- Tenured faculty
- Non-tenured faculty

Page Break

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**Question:** FCST50

| Scale Summary |                                |         |
|---------------|--------------------------------|---------|
| Code          | Label                          | Show-If |
| 1             | Teaching faculty               |         |
| 2             | Research faculty               |         |
| 3             | Clinical instructional faculty |         |
| 4             | Lecturer                       |         |
| 5             | Other                          |         |

**Are you primarily:**

- Teaching faculty
- Research faculty
- Clinical instructional faculty
- Lecturer
- Other (*please specify*):

Page Break

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**Question:** FCST51

| <b>Scale Summary</b> |                    |         |
|----------------------|--------------------|---------|
| Code                 | Label              | Show-If |
| 1                    | Less than a year   |         |
| 2                    | 1-2 years          |         |
| 3                    | 3-5 years          |         |
| 4                    | 6-10 years         |         |
| 5                    | 11-20 years        |         |
| 6                    | More than 20 years |         |

**How long have you worked at U-M?**

- Less than a year
- 1-2 years
- 3-5 years
- 6-10 years
- 11-20 years
- More than 20 years

Page Break

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Question: FCST52\_CAMPUS\_2013

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Central Campus ( <i>includes the Law School and Diag, among many others</i> ) |         |
| 2             | East Campus ( <i>includes buildings off Plymouth road, among others</i> )     |         |
| 3             | Medical Campus ( <i>U-M Hospital and surrounding medical buildings</i> )      |         |
| 4             | North Campus ( <i>between Fuller and Plymouth Roads</i> )                     |         |
| 5             | South Campus ( <i>South of Packard to Stadium</i> )                           |         |
| 6             | Other ( <i>including Wolverine Tower</i> )                                    |         |
| 7             | <i>I'm not sure - show me a map</i>   |         |

**On which campus do you mainly work?**

- Central Campus (*includes the Law School and Diag, among many others*)
- East Campus (*includes buildings off Plymouth road, among others*)
- Medical Campus (*U-M Hospital and surrounding medical buildings*)
- North Campus (*between Fuller and Plymouth Roads*)
- South Campus (*South of Packard to Stadium*)
- Other (*including Wolverine Tower*)
- I'm not sure - show me a map*

Page Break

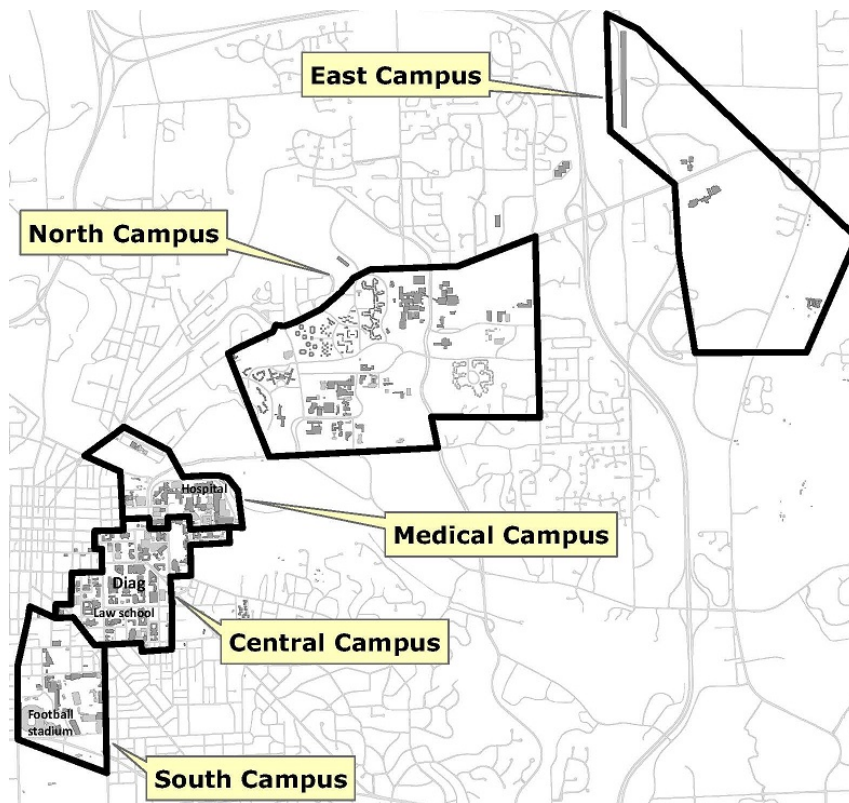
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**Question:** FCST52\_MAP\_2013

**Show if:** (FCST52\_CAMPUS\_2013 = 7:[I'm not sure - show me a map])

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Central Campus <i>(includes the Law School and Diag, among many others)</i> |         |
| 2             | East Campus <i>(includes buildings off Plymouth road, among others)</i>     |         |
| 3             | Medical Campus <i>(U-M Hospital and surrounding medical buildings)</i>      |         |
| 4             | North Campus <i>(between Fuller and Plymouth Roads)</i>                     |         |
| 5             | South Campus <i>(South of Packard to Stadium)</i>                           |         |
| 6             | Other <i>(including Wolverine Tower)</i>                                    |         |

**On which campus do you mainly work?**



- Central Campus *(includes the Law School and Diag, among many others)*
- East Campus *(includes buildings off Plymouth road, among others)*
- Medical Campus *(U-M Hospital and surrounding medical buildings)*
- North Campus *(between Fuller and Plymouth Roads)*
- South Campus *(South of Packard to Stadium)*
- Other *(including Wolverine Tower)*

Page Break

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**Question:** FCST52\_CENTRAL

**Show if:** (FCST52\_CAMPUS\_2013 = 1:[Central Campus (includes the Law School and Diag, among many others)]) or (FCST52\_MAP\_2013 = 1:[Central Campus (includes the Law School and Diag, among many others)])

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label                                     | Show-If |
| 1             | Angell Hall                               |         |
| 28            | Central Campus Recreation Building        |         |
| 26            | Central Power Plant                       |         |
| 2             | Chemistry                                 |         |
| 3             | Clarence Cook Little Building             |         |
| 4             | Dana Natural Resources Building           |         |
| 5             | Dental & W.K. Kellogg Institute           |         |
| 6             | East Hall                                 |         |
| 7             | Edward Henry Kraus Building               |         |
| 29            | Ford School of Public Policy (Weill Hall) |         |
| 8             | Harlan Hatcher Graduate Library           |         |
| 9             | Haven Hall                                |         |
| 10            | Hutchins Hall                             |         |
| 11            | Institute For Social Research             |         |
| 30            | Law School (including South Hall)         |         |
| 12            | Literature Science and the Arts           |         |
| 13            | Lorch Hall                                |         |
| 14            | Modern Languages Building                 |         |
| 15            | Museum of Natural History                 |         |
| 16            | North Quad                                |         |
| 32            | Palmer Commons                            |         |
| 17            | Randall Laboratory                        |         |
| 18            | Ross School of Business                   |         |
| 19            | School of Education                       |         |
| 31            | School of Public Health I or II           |         |
| 20            | School of Social Work Building            |         |
| 21            | Shapiro Harold & Vivian Library           |         |
| 22            | Student Activities Building               |         |
| 27            | Tisch Hall                                |         |
| 33            | Undergraduate Science Building            |         |
| 23            | University Health Services                |         |
| 24            | West Hall                                 |         |
| 77            | Other                                     |         |

**Listed below are many buildings on Central Campus. Some buildings are known by more than one name. If you do not see the name of the building where you work, please select "Other" and type in the name of the building in which you work.**

**Please select the name of the building where you mainly work.**

- Angell Hall
- Central Campus Recreation Building
- Central Power Plant
- Chemistry
- Clarence Cook Little Building
- Dana Natural Resources Building
- Dental & W.K. Kellogg Institute

- East Hall
- Edward Henry Kraus Building
- Ford School of Public Policy (Weill Hall)
- Harlan Hatcher Graduate Library
- Haven Hall
- Hutchins Hall
- Institute For Social Research
- Law School (including South Hall)
- Literature Science and the Arts
- Lorch Hall
- Modern Languages Building
- Museum of Natural History
- North Quad
- Palmer Commons
- Randall Laboratory
- Ross School of Business
- School of Education
- School of Public Health I or II
- School of Social Work Building
- Shapiro Harold & Vivian Library
- Student Activities Building
- Tisch Hall
- Undergraduate Science Building
- University Health Services
- West Hall
- Other (*name of building*):

Page Break

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**Question:** FCST52\_EAST  
**Show if:** (FCST52\_CAMPUS\_2013 = 2:[East Campus (includes buildings off Plymouth road, among others)]) or  
(FCST52\_MAP\_2013 = 2:[East Campus (includes buildings off Plymouth road, among others)])

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Arbor Lakes Building 1, 2 or 3                  |         |
| 4             | Domino's Farms                                  |         |
| 5             | East Ann Arbor Health & Geriatrics Center       |         |
| 6             | Matthaei Botanical Gardens or Nichols Arboretum |         |
| 7             | Rachel Upjohn Building                          |         |
| 77            | Other   |         |

**Listed below are buildings on East Campus. Some buildings are known by more than one name. If you do not see the name of the building where you work, please select "Other" and type in the name of the building in which you work.**

**Please select the name of the building where you mainly work.**

- Arbor Lakes Building 1, 2 or 3
- Domino's Farms
- East Ann Arbor Health & Geriatrics Center
- Matthaei Botanical Gardens or Nichols Arboretum
- Rachel Upjohn Building
- Other (*name of building*):

Page Break

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**Question:** FCST52\_MEDICAL

**Show if:** (FCST52\_CAMPUS\_2013 = 3:[Medical Campus (U-M Hospital and surrounding medical buildings)]) or (FCST52\_MAP\_2013 = 3:[Medical Campus (U-M Hospital and surrounding medical buildings)])

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label  | Show-If |
| 1             | A. Alfred Taubman Biomedical Science Research Building |         |
| 2             | A. Alfred Taubman Health Care                          |         |
| 20            | A. Alfred Taubman Health Sciences Library              |         |
| 3             | Brehm Tower  |         |
| 4             | Cancer Center  |         |
| 15            | Detroit Observatory                                    |         |
| 5             | Frankel Cardiovascular Center                          |         |
| 6             | Kellogg Eye Center                                     |         |
| 7             | Life Sciences Institute                                |         |
| 8             | Med Inn  |         |
| 9             | Medical Science Research Building I, II or III         |         |
| 10            | Medical Science Unit I or II                           |         |
| 12            | Mott Children's Hospital                               |         |
| 13            | Neuroscience Hospital                                  |         |
| 16            | Palmer Commons   |         |
| 17            | School of Nursing                                      |         |
| 18            | School of Public Health I or II                        |         |
| 21            | Undergraduate Science Building                         |         |
| 22            | University Hospital                                    |         |
| 23            | Von Voigtlander Women's Hospital                       |         |
| 77            | Other  |         |

**Listed below are buildings on the Medical Campus. Some buildings are known by more than one name. If you do not see the name of the building where you work, please select "Other" and type in the name of the building in which you work.**

**Please select the name of the building where you mainly work.**

- A. Alfred Taubman Biomedical Science Research Building
- A. Alfred Taubman Health Care
- A. Alfred Taubman Health Sciences Library
- Brehm Tower
- Cancer Center
- Detroit Observatory
- Frankel Cardiovascular Center
- Kellogg Eye Center
- Life Sciences Institute
- Med Inn
- Medical Science Research Building I, II or III
- Medical Science Unit I or II
- Mott Children's Hospital
- Neuroscience Hospital
- Palmer Commons
- School of Nursing
- School of Public Health I or II
- Undergraduate Science Building

- University Hospital
- Von Voigtländer Women's Hospital
- Other (*name of building*):

Page Break

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**Question:** FCST52\_NORTH

**Show if:** (FCST52\_CAMPUS\_2013 = 4:[North Campus (between Fuller and Plymouth Roads)]) or (FCST52\_MAP\_2013 = 4:[North Campus (between Fuller and Plymouth Roads)])

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label  | Show-If |
| 1             | Art and Architecture Building                        |         |
| 2             | Bentley Historical Library                           |         |
| 3             | Bob and Betty Beyster Building                       |         |
| 4             | Carl A. Gerstacker Building                          |         |
| 5             | Chrysler Center Engineering                          |         |
| 6             | Duderstadt Center                                    |         |
| 7             | Electrical Engineering and Computer Science Building |         |
| 8             | Engineering Research Building                        |         |
| 9             | Francois-Xavier Bagnoud Building                     |         |
| 10            | GG Brown Laboratory                                  |         |
| 11            | Gorguze Family Laboratory                            |         |
| 12            | Herbert H. Dow Building                              |         |
| 13            | Industrial and Operations Engineering Building       |         |
| 14            | Moore Building                                       |         |
| 15            | Naval Architecture and Marine Engineering Building   |         |
| 16            | North Campus Administrative Complex                  |         |
| 22            | North Campus Facilities Services Building            |         |
| 17            | North Campus Research Complex                        |         |
| 18            | Space Research Building                              |         |
| 19            | Transportation Research Institute                    |         |
| 20            | Walgreen Drama Center                                |         |
| 21            | Walter E Lay Automotive Laboratory                   |         |
| 77            | Other  |         |

**Listed below are buildings on North Campus. Some buildings are known by more than one name. If you do not see the name of the building where you work, please select "Other" and type in the name of the building in which you work.**

**Please select the name of the building where you mainly work.**

- Art and Architecture Building
- Bentley Historical Library
- Bob and Betty Beyster Building
- Carl A. Gerstacker Building
- Chrysler Center Engineering
- Duderstadt Center
- Electrical Engineering and Computer Science Building
- Engineering Research Building
- Francois-Xavier Bagnoud Building
- GG Brown Laboratory
- Gorguze Family Laboratory
- Herbert H. Dow Building
- Industrial and Operations Engineering Building
- Moore Building
- Naval Architecture and Marine Engineering Building
- North Campus Administrative Complex
- North Campus Facilities Services Building

- North Campus Research Complex
- Space Research Building
- Transportation Research Institute
- Walgreen Drama Center
- Walter E Lay Automotive Laboratory
- Other (*name of building*):

Page Break

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**Question:** FCST52\_SOUTH

**Show if:** (FCST52\_CAMPUS\_2013 = 5:[South Campus (South of Packard to Stadium)]) or (FCST52\_MAP\_2013 = 5:[South Campus (South of Packard to Stadium)])

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label                                      | Show-If |
| 2             | Administrative Services Building           |         |
| 4             | Boyer Building                             |         |
| 5             | Buhr Building                              |         |
| 6             | Campus Safety Services Building            |         |
| 7             | Donald B. Canham Natatorium                |         |
| 8             | Facility Services Building A, B or C       |         |
| 9             | Hoover Annex                               |         |
| 10            | Hoover Heating Plant                       |         |
| 11            | Institute of Continuing Legal Ed           |         |
| 12            | Intramural Sports Building                 |         |
| 13            | John P. Weidenbach Hall                    |         |
| 1             | Madison Building                           |         |
| 14            | Schembechler Hall                          |         |
| 15            | Transportation Services Building           |         |
| 16            | William D. Revelli Hall                    |         |
| 17            | William Davidson Player Development Center |         |
| 18            | Yost Ice Arena                             |         |
| 77            | Other                                      |         |

**Listed below are buildings on South Campus. Some buildings are known by more than one name. If you do not see the name of the building where you work, please select "Other" and type in the name of the building in which you work.**

**Please select the name of the building where you mainly work.**

- Administrative Services Building
- Boyer Building
- Buhr Building
- Campus Safety Services Building
- Donald B. Canham Natatorium
- Facility Services Building A, B or C
- Hoover Annex
- Hoover Heating Plant
- Institute of Continuing Legal Ed
- Intramural Sports Building
- John P. Weidenbach Hall
- Madison Building
- Schembechler Hall
- Transportation Services Building
- William D. Revelli Hall
- William Davidson Player Development Center
- Yost Ice Arena
- Other (*name of building*):

Page Break

---

**Question:** FCST52\_OTHER

**Show if:** (FCST52\_CAMPUS\_2013 = 6:[Other (including Wolverine Tower)]) or (FCST52\_MAP\_2013 = 6:[Other (including Wolverine Tower)])

| Scale Summary |                                   |         |
|---------------|-----------------------------------|---------|
| Code          | Label                             | Show-If |
| 2             | Argus Building I or II            |         |
| 5             | Briarwood Medical Group Buildings |         |
| 11            | KMS Building                      |         |
| 14            | Wolverine Tower                   |         |
| 77            | Other                             |         |

**Listed below are other U-M buildings where you may work. Some buildings are known by more than one name. If you do not see the name of the building where you work, please select "Other" and type in the name of the building in which you work.**

**Please select the name of the building where you mainly work.**

- Argus Building I or II
- Briarwood Medical Group Buildings
- KMS Building
- Wolverine Tower
- Other (*name of building*):

Page Break

---

**Question:** FCST53

| Scale Summary |                          |         |
|---------------|--------------------------|---------|
| Code          | Label                    | Show-If |
| 1             | Single family house      |         |
| 2             | 2-family house or duplex |         |
| 3             | Rowhouse or townhouse    |         |
| 4             | Apartment building       |         |
| 5             | Condominium              |         |
| 6             | Other                    |         |

**Do you live in a:**

- Single family house
- 2-family house or duplex
- Rowhouse or townhouse
- Apartment building
- Condominium
- Other (*please specify*):

Page Break

---

**Question:** FCST54

**Scale Summary**

| Code | Label | Show-If |
|------|-------|---------|
| 1    | Own   |         |
| 2    | Rent  |         |
| 3    | Other |         |

**Do you own or rent?**

Own

Rent

Other (*please specify*):

Page Break

---



**Question:** FCST55

| <b>Scale Summary</b> |                    |         |
|----------------------|--------------------|---------|
| Code                 | Label              | Show-If |
| 1                    | Less than a year   |         |
| 2                    | 1-2 years          |         |
| 3                    | 3-5 years          |         |
| 4                    | 6-10 years         |         |
| 5                    | More than 10 years |         |

**How long have you lived at your current residence?**

- Less than a year
- 1-2 years
- 3-5 years
- 6-10 years
- More than 10 years

Page Break

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**Question:** FCST55B

**What is the name of the city, township, or village where you currently live?**

City, township, or village name:

Page Break

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Question: FCST56\_2014

**What is the zip code of your current residence?**

5-digit zip code:

Page Break

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Custom Layout Question: FCST57

**The major cross streets (intersection) near my current residence are:**

Street 1:

Street 2:

Page Break

---

Question: FCST58

**Number of person(s), including yourself, who live in your current residence:**

Person(s)

Page Break

---

**Question:** FCST59

| <b>Scale Summary</b> |           |         |
|----------------------|-----------|---------|
| Code                 | Label     | Show-If |
| 0                    | None      |         |
| 1                    | 1         |         |
| 2                    | 2         |         |
| 3                    | 3         |         |
| 4                    | 4 or more |         |

**Number of cars and trucks (passenger vehicles) owned/leased by your household:**

- None
- 1
- 2
- 3
- 4 or more

Page Break

---

**Question:** FCST60

| Scale Summary |            |         |
|---------------|------------|---------|
| Code          | Label      | Show-If |
| 1             | Under 25   |         |
| 2             | 25-29      |         |
| 3             | 30-39      |         |
| 4             | 40-49      |         |
| 5             | 50-59      |         |
| 6             | 60-69      |         |
| 7             | 70 or over |         |

**How old are you?**

- Under 25
- 25-29
- 30-39
- 40-49
- 50-59
- 60-69
- 70 or over

Page Break

---

**Question:** FCST61

| Scale Summary |                              |         |
|---------------|------------------------------|---------|
| Code          | Label                        | Show-If |
| 1             | Female                       |         |
| 2             | Male                         |         |
| 5             | Other                        |         |
| 4             | <i>Choose not to respond</i> |         |

**Are you:**

- Female
- Male
- Other (*please specify*):
- Choose not to respond*

Page Break

---



**Question:** FCST62

| Scale Summary |                                 |         |
|---------------|---------------------------------|---------|
| Code          | Label                           | Show-If |
| 1             | High school graduate or less    |         |
| 2             | Some college                    |         |
| 3             | College graduate                |         |
| 4             | Graduate or professional degree |         |
| 5             | Other                           |         |

**What is the highest level of education you have completed?**

- High school graduate or less
- Some college
- College graduate
- Graduate or professional degree
- Other (*please specify*):

Page Break

---

**Question:** FCST63

| <b>Scale Summary</b> |                     |         |
|----------------------|---------------------|---------|
| Code                 | Label               | Show-If |
| 1                    | Less than \$50,000  |         |
| 2                    | \$50,000-\$74,999   |         |
| 3                    | \$75,000-\$99,999   |         |
| 4                    | \$100,000-\$149,999 |         |
| 5                    | \$150,000-\$199,999 |         |
| 6                    | \$200,000 or more   |         |

**What category best represents your 2013 annual household income?**

- Less than \$50,000
- \$50,000-\$74,999
- \$75,000-\$99,999
- \$100,000-\$149,999
- \$150,000-\$199,999
- \$200,000 or more

Page Break

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**Question:** FCST64

| Scale Summary |                                    |         |
|---------------|------------------------------------|---------|
| Code          | Label                              | Show-If |
| 1             | Very satisfied                     |         |
| 2             | Somewhat satisfied                 |         |
| 3             | Neither satisfied nor dissatisfied |         |
| 4             | Somewhat dissatisfied              |         |
| 5             | Very Dissatisfied                  |         |

**How satisfied are you with your survey experience?**

- Very satisfied
- Somewhat satisfied
- Neither satisfied nor dissatisfied
- Somewhat dissatisfied
- Very Dissatisfied

Page Break

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**Question:** FCST65

**How long do you estimate it took you to complete the survey?**

minutes

Page Break

---

**Question:** FCST66

| Scale Summary |                           |         |
|---------------|---------------------------|---------|
| Code          | Label                     | Show-If |
| 1             | Yes                       |         |
| 2             | No                        |         |
| 3             | I don't remember (unsure) |         |

**Do you remember completing a U-M survey like this in Fall 2013?**

- Yes
- No
  
- I don't remember (unsure)

Page Break

---

**Question:** FCST67

| Scale Summary |       |         |
|---------------|-------|---------|
| Code          | Label | Show-If |
| 1             | Yes   |         |
| 2             | No    |         |

**Would you like to receive information on U-M sustainability activities and resources?**

- Yes
- No

Page Break

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**Question:** INCENTIVE

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Yes, please include me in the drawing         |         |
| 0             | No, thanks. Do not include me in the drawing. |         |

**Once you submit your completed survey, you will be eligible to win a \$50 Amazon gift code. Do you wish to be included in the drawing?**

- Yes, please include me in the drawing
- No, thanks. Do not include me in the drawing.

### **D.3 Student SCIP questionnaire 2015**



**Sustainability Cultural Indicators Program (SCIP)**

**Collection:** LOGIN  
**Contains:** DATSTAT\_ALTPID

**Question:** DATSTAT\_ALTPID  
**Required**

 **Please enter your ID.**

**Collection:** SECTION\_A  
**Contains:** STUDQUES1, STUDQUES2-STUDQUES4\_SERIES, STUDQUES5, STUDQUES6, STUDQUES9\_2013, STUDQUES7\_2013, STUDQUES7A\_2015, STUDQUES10, STUDQUES10A\_2015, STUDQUES11\_2013

**The purpose of this questionnaire is to better understand what U-M students do and how they think about sustainability. Sustainability covers many things and this questionnaire will cover topics such as transportation, energy conservation, waste prevention, food, and environmental protection.**

Page Break

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### Statement of Consent

Principal Investigator: John Callewaert, Integrated Assessment Program Director  
Graham Sustainability Institute

- You were randomly selected from among all students at the University of Michigan to be invited to complete this survey.
- To evaluate the programs, outstanding needs, and current practices and beliefs regarding the issue of sustainability on the U-M campus in Ann Arbor, you will be asked questions about transportation, food, the environment, and conserving energy.
- Participating in this study is completely voluntary, you can skip any question and can stop at any time.
- It should take about minutes to complete.
- There are no risks related to completing this survey, because the topic is not sensitive.
- The benefit to participating is that your attitudes, behaviors, and knowledge may help to shape U-M programs.
- Upon completion of the survey, your email address will be included in a drawing for a \$ Amazon gift code.
- We may ask you to complete a sustainability survey each fall for as long as you attend school at the University of Michigan in Ann Arbor.
- Your answers and personal information will be kept confidential.
- Your name will not be attached to any data, a study number will be used instead.
- You must be at least 18 years old to complete the questionnaire. By completing the questionnaire, you are acknowledging that you are at least 18 years old.
- The data for this study are being collected by the University of Michigan Survey Research Center (SRC) Survey Research Operations (SRO) in cooperation with John Callewaert, PhD, Integrated Assessment Program Director at the Graham Sustainability Institute of the University of Michigan.
- The Sustainability Cultural Indicators Program (SCIP) is funded by the University of Michigan.
- If you have any question about the study, please contact: John Callewaert, (734) 615-3752, [jcallew@umich.edu](mailto:jcallew@umich.edu).
- If you have questions about your rights as a research participant, or wish to obtain information, ask questions or discuss any concerns about this study with someone other than the researcher, please contact the University of Michigan Health Sciences and Behavioral Sciences Institutional Review Board, 2800 Plymouth Rd., Building 520, Room 1169, Ann Arbor, MI 48109-2800, (734) 936-0933, or toll-free, (866) 936-0933, [irbhsbs@umich.edu](mailto:irbhsbs@umich.edu)

**Click "Next" to continue with the survey.**

- You must be at least 18 years old to complete the questionnaire.
- Your answers and personal information will be kept confidential.
- Participation is voluntary, you can skip any question and you can stop at any time.
- It should take about minutes to complete.
- There are no risks related to completing this survey, because the topic is not sensitive.
- Upon completion of the survey, your email address will be included in a drawing for a \$ Amazon gift code.

To learn more...

|                 |
|-----------------|
| About the Study |
| Confidentiality |
| Your Rights     |


**Click "Next" to continue with the survey.**

Page Break

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Question: STUDQUES1

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label  | Show-If |
| 1             | A U-M residence hall   |         |
| 2             | Northwood community apartments                               |         |
| 3             | Off-campus apartment   |         |
| 4             | Off-campus house   |         |
| 7             | Off-campus housing such as a sorority, fraternity, or co-op. |         |
| 5             | Parent's house   |         |
| 6             | Other  |         |

 This first set of questions is about your current residence, **that is, where you have lived since the start of the fall semester.**

**Do you live in:**

- A U-M residence hall (*which one?*):
- Northwood community apartments
- Off-campus apartment
- Off-campus house
- Off-campus housing such as a sorority, fraternity, or co-op.
- Parent's house
- Other (*please specify*):

Page Break

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**Collection:** STUDQUES2-STUDQUES4\_SERIES  
**Contains:** STUDQUES2, STUDQUES2B, STUDQUES3  
**Show if:** (STUDQUES1 is-any-of 3:[Off-campus apartment] or 4:[Off-campus house] or 5:[Parent's house] or 6:[Other])

**Question:** STUDQUES2



**How many persons, including yourself, live in your current residence?**

*(Please include only your own apartment, condo, or house - not an entire apartment building).*

**Person(s)**

Page Break

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Question: STUDQUES2B


 **What is the name of the city, township, or village where you currently live?**

City, township, or village name:

Page Break

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Question: STUDQUES3

 **What is the ZIP code of your current residence?**

5-digit ZIP code:

Page Break

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 **The major cross streets (intersection) near my current residence are:**

Street 1:

Street 2:

Page Break

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**Question:** STUDQUES5

| Scale Summary |                    |         |
|---------------|--------------------|---------|
| Code          | Label              | Show-If |
| 1             | Less than 3 months |         |
| 2             | 3-11 months        |         |
| 3             | 1-2 years          |         |
| 4             | More than 2 years  |         |

 **How long have you lived at your current residence?**

- Less than 3 months
- 3-11 months
- 1-2 years
- More than 2 years

Page Break

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**Question:** STUDQUES6

| Scale Summary |                                       |         |
|---------------|---------------------------------------|---------|
| Code          | Label                                 | Show-If |
| 1             | First-year student (Freshman)         |         |
| 2             | Sophomore                             |         |
| 3             | Junior                                |         |
| 4             | Senior                                |         |
| 5             | Graduate student/Professional student |         |

 **Are you a:**

- First-year student (Freshman)
- Sophomore
- Junior
- Senior
- Graduate student/Professional student

Page Break

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**Question Block:** STUDQUES9\_2013

**Contains:** Q17\_2013, Q18\_2013, Q19\_2013, Q20\_2013, Q22\_2013, Q92

| Scale Summary |                              |         |
|---------------|------------------------------|---------|
| Code          | Label                        | Show-If |
| 1             | <b>A lot</b>                 |         |
| 2             | <b>A fair amount</b>         |         |
| 3             | <b>A little</b>              |         |
| 4             | <b>Not much/<br/>nothing</b> |         |

 **How much do you know about the following?**

|  | <b>A lot</b>          | <b>A fair amount</b>  | <b>A little</b>       | <b>Not much/<br/>nothing</b> |
|--|-----------------------|-----------------------|-----------------------|------------------------------|
| <b>Bus, AAATA/"The Ride" (Ann Arbor Area Transportation Authority schedules, routes, etc.)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Bus, U-M</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Biking in Ann Arbor (bike lanes, rules of the road, etc.)</b>                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Renting a car by the hour (e.g. Zipcar)</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>U-M GreenRide/iShareaRide</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Arbor Bike</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |

Page Break


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**Question Block:** STUDQUES7\_2013

**Contains:** Q1\_2013, Q11\_2013, Q2\_2013, Q3\_2013, Q4\_2013, Q5\_2013, Q6\_2013, Q7\_2013, Q8\_2013, Q10\_2013

Show if: (PL\_PANEL = 2)

| Scale Summary |                                |             |
|---------------|--------------------------------|-------------|
| Code          | Label                          | Show-If     |
| 1             | Never                          |             |
| 2             | Rarely                         |             |
| 3             | Sometimes                      |             |
| 4             | Always/<br>Most of<br>the time |             |
| 5             | 1 day per<br>week or less      | Never Shown |
| 6             | 2 - 3 days<br>per week         | Never Shown |
| 7             | 4 or more<br>days per week     | Never Shown |

 These questions are about **travel and transportation**.

**During the past year, how often did you do the following to travel between where you lived and campus?**

|  | Never                 | Rarely                | Sometimes             | Always/<br>Most of<br>the time | 1 day<br>per<br>week<br>or less | 2 - 3<br>days<br>per<br>week | 4 or<br>more<br>days<br>per<br>week |
|--|-----------------------|-----------------------|-----------------------|--------------------------------|---------------------------------|------------------------------|-------------------------------------|
| <b>Drive a car and park on campus</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>           | <input type="radio"/>        | <input type="radio"/>               |
| <b>Park and Ride (the bus)</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>           | <input type="radio"/>        | <input type="radio"/>               |
| <b>Walk</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>           | <input type="radio"/>        | <input type="radio"/>               |
| <b>Bike</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>           | <input type="radio"/>        | <input type="radio"/>               |
| <b>Bus, AAATA/"The Ride" (Ann Arbor Area Transportation Authority schedules, routes, etc.)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>           | <input type="radio"/>        | <input type="radio"/>               |
| <b>Bus, U-M</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>           | <input type="radio"/>        | <input type="radio"/>               |
| <b>Carpool (self-organized with friends or coworkers)</b>                                      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>           | <input type="radio"/>        | <input type="radio"/>               |
| <b>U-M Greenride/iShareaRide</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>           | <input type="radio"/>        | <input type="radio"/>               |
| <b>Vanpool</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>           | <input type="radio"/>        | <input type="radio"/>               |
| <b>Motorcycle, moped, or scooter</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>           | <input type="radio"/>        | <input type="radio"/>               |

Page Break

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**Question:** STUDQUES7A\_2015

**Show if:** (PL\_PANEL = 2) and (Q4\_2013 is-any-of 2:[Rarely] or 3:[Sometimes] or 4:[Always/ Most of the time])

**Scale Summary**

| Code | Label      | Show-If |
|------|------------|---------|
| 1    | One day    |         |
| 2    | Two days   |         |
| 3    | Three days |         |
| 4    | Four days  |         |
| 5    | Five days  |         |

 **In the past week, how often did you ride the bus?**


- One day
- Two days
- Three days
- Four days
- Five days

Page Break

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Question: STUDQUES10

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Drive a car                                       |         |
| 8             | Park and Ride (the bus)                           |         |
| 2             | Walk  |         |
| 3             | Bike  |         |
| 4             | Ride the bus                                      |         |
| 5             | Ride the bus and bike                             |         |
| 6             | Ride share (i.e. van/car pool, dropped off, etc.) |         |
| 7             | Motorcycle, moped, or scooter                     |         |
| 9             | Other   |         |

 Since the start of the fall semester, how do you most often travel to and from campus?

- Drive a car
- Park and Ride (the bus)
- Walk
- Bike
- Ride the bus
- Ride the bus and bike
- Ride share (i.e. van/car pool, dropped off, etc.)
- Motorcycle, moped, or scooter
- Other (*please specify*):

Page Break

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Question: STUDQUES10A\_2015

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 0             | No university-sponsored air travel  |         |
| 1             | Less than 5,000 miles (e.g. one round trip cross-country domestic flight)   |         |
| 2             | 5,000-9,999 miles (e.g. two round trip domestic flights or one round trip flight to Europe or Latin America)                  |         |
| 3             | 10,000-24,999 miles (e.g. multiple round trip domestic flights and/or one-two long distance round trip international flights) |         |
| 4             | 25,000-49,999 miles (e.g. three-four long distance round trip international flights)  |         |
| 5             | 50,000 or more miles (frequent long distance air travel)  |         |

 **Since January 2015, what is your estimated university-sponsored air travel?**


- No university-sponsored air travel
- Less than 5,000 miles (e.g. one round trip cross-country domestic flight)
- 5,000-9,999 miles (e.g. two round trip domestic flights or one round trip flight to Europe or Latin America)
- 10,000-24,999 miles (e.g. multiple round trip domestic flights and/or one-two long distance round trip international flights)
- 25,000-49,999 miles (e.g. three-four long distance round trip international flights)
- 50,000 or more miles (frequent long distance air travel)

Page Break

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**Question Block:** STUDQUES11\_2013  
**Contains:** Q24\_2013, Q26\_2013, Q28\_2013  
 Show if: (PL\_PANEL = 2)

| Scale Summary |                              |         |
|---------------|------------------------------|---------|
| Code          | Label                        | Show-If |
| 1             | <b>Very important</b>        |         |
| 2             | <b>Somewhat important</b>    |         |
| 3             | <b>Not that important</b>    |         |
| 4             | <b>Not at all important</b>  |         |
| 5             | <i>Didn't think about it</i> |         |

 **When you moved to your current residence, how important were each of the following reasons?**

|   | <b>Very important</b> | <b>Somewhat important</b> | <b>Not that important</b> | <b>Not at all important</b> | <b><i>Didn't think about it</i></b> |
|---|-----------------------|---------------------------|---------------------------|-----------------------------|-------------------------------------|
| <b>Being able to walk or bike to campus</b>     | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       | <input type="radio"/>               |
| <b>Being able to take the bus to campus</b>     | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       | <input type="radio"/>               |
| <b>Having a lower impact on the environment</b> | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       | <input type="radio"/>               |

Page Break

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**Collection:** SECTION\_B  
**Contains:** STUDQUES14, STUDQUES15-PART1, STUDQUES15-PART2, STUDQUES15-PART3, STUDQUES16

**Question Block:** STUDQUES14  
**Contains:** Q32, Q33, Q34, Q35, Q36, Q43

| Scale Summary |                          |         |
|---------------|--------------------------|---------|
| Code          | Label                    | Show-If |
| 1             | <b>A lot</b>             |         |
| 2             | <b>A fair amount</b>     |         |
| 3             | <b>A little</b>          |         |
| 4             | <b>Not much/ Nothing</b> |         |

 These questions are about **waste prevention and conservation**.

**How much do you know about the following at U-M?**

|   | <b>A lot</b>          | <b>A fair amount</b>  | <b>A little</b>       | <b>Not much/ Nothing</b> |
|---|-----------------------|-----------------------|-----------------------|--------------------------|
| <b>Recycling glass</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Recycling plastic</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Recycling paper</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Recycling electronic waste (i.e. computers, cell phones)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Property Disposition services</b>                            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |
| <b>Composting</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>    |


Page Break

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**Question Block:** STUDQUES15-PART1  
**Contains:** Q37, Q38, Q39, Q40, Q41, Q42, Q68

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label                                   | Show-If |
| 1             | <b>Never</b>                            |         |
| 2             | <b>Rarely</b>                           |         |
| 3             | <b>Sometimes</b>                        |         |
| 4             | <b>Always/<br/>Most of<br/>the time</b> |         |
| 5             | <b>Not<br/>applicable</b>               |         |

 **During the past year, how often did you do the following when you had the opportunity?**

**How often did you:**

|  | <b>Never</b>          | <b>Rarely</b>         | <b>Sometimes</b>      | <b>Always/<br/>Most of<br/>the time</b> | <b>Not<br/>applicable</b> |
|--|-----------------------|-----------------------|-----------------------|---|---------------------------|
| <b>Set thermostat to 65 degrees or lower during cool or cold weather</b>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Set thermostat (air conditioner) to 78 degrees or higher during warm or hot weather</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Turn off lights when I leave the room</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Unplug electrical appliances when not using them</b>                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Use the power saving settings on my computer</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Turn off my computer when not using it</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Use a motion sensor / "smart" power strip</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |

Page Break

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**Question Block:** STUDQUES15-PART2  
**Contains:** Q44, Q45, Q46, Q47, Q48, Q49, Q50

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label                                   | Show-If |
| 1             | <b>Never</b>                            |         |
| 2             | <b>Rarely</b>                           |         |
| 3             | <b>Sometimes</b>                        |         |
| 4             | <b>Always/<br/>Most of<br/>the time</b> |         |
| 5             | <b>Not applicable</b>                   |         |

 **During the past year, how often did you do the following when you had the opportunity?**

**How often did you:**


|  | <b>Never</b>          | <b>Rarely</b>         | <b>Sometimes</b>      | <b>Always/<br/>Most of<br/>the time</b> | <b>Not<br/>applicable</b> |
|--|-----------------------|-----------------------|-----------------------|---|---------------------------|
| <b>Print double-sided</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Run washer only when I have a full load of clothes</b>        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Limit time in the shower</b>                                  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Recycle bottles, containers, and paper products</b>           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Use a reusable water bottle, coffee cup, travel mug, etc.</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Recycle electronic waste (i.e. computers, cell phones)</b>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Bring reusable bags to the grocery store</b>                  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |

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**Question Block:** STUDQUES15-PART3  
**Contains:** Q51, Q52, Q53, Q54, Q55

| Scale Summary |                                |         |
|---------------|--------------------------------|---------|
| Code          | Label                          | Show-If |
| 1             | Never                          |         |
| 2             | Rarely                         |         |
| 3             | Sometimes                      |         |
| 4             | Always/<br>Most of<br>the time |         |
| 5             | Not applicable                 |         |

 **During the past year, how often did you do the following when you had the opportunity?**

**How often did you:**

|   | Never                 | Rarely                | Sometimes             | Always/<br>Most of<br>the time | Not<br><i>applicable</i> |
|---|-----------------------|-----------------------|-----------------------|--------------------------------|--------------------------|
| <b>Shop for things with minimal packaging</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>    |
| <b>Use U-M Property Disposition Services to obtain items such as computers, furniture, and equipment</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>    |
| <b>Shop in a second-hand store or online site such as eBay or Craigslist, when I have to buy something (e.g. clothing, furniture, or appliances)</b>      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>    |
| <b>Compost food scraps</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>    |
| <b>Buy products (besides food) that carry some type of eco-label or certification (e.g. lumber, organic cotton clothing, household cleaning products)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>    |

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**Question Block:** STUDQUES16  
**Contains:** Q56, Q57, Q58, Q59, Q60, Q61, Q62, Q63  
 Show if: (PL\_PANEL = 2)

| Scale Summary |                   |         |
|---------------|-------------------|---------|
| Code          | Label             | Show-If |
| 1             | <b>Yes</b>        |         |
| 2             | <b>No</b>         |         |
| 3             | <b>Don't know</b> |         |

 **Do you have any of the following at your current residence?**

|   | <b>Yes</b>            | <b>No</b>             | <b>Don't know</b>     |
|---|-----------------------|-----------------------|-----------------------|
| <b>Recycling bins</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Compost bin</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Programmable thermostat</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Water-saving items (e.g. low-flow faucets / showerheads)</b>         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Energy Star appliances</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Motion sensor / "smart" power strip for shutting off electronics</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Compact fluorescent light bulbs or LED light bulbs</b>               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Renewable energy systems, like solar or geothermal</b>               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |


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**Collection:** SECTION\_C  
**Contains:** STUDQUES19, STUDQUES20-STUDQUES21\_SERIES

**Question Block:** STUDQUES19  
**Contains:** Q69, Q70, Q71, Q72

| Scale Summary |                              |         |
|---------------|------------------------------|---------|
| Code          | Label                        | Show-If |
| 1             | <b>A lot</b>                 |         |
| 2             | <b>A fair amount</b>         |         |
| 3             | <b>A little</b>              |         |
| 4             | <b>Not much/<br/>nothing</b> |         |

 This set of questions is about the **natural environment**.

**How much do you know about the following?**

|  | <b>A lot</b>          | <b>A fair amount</b>  | <b>A little</b>       | <b>Not much/<br/>nothing</b> |
|--|-----------------------|-----------------------|-----------------------|------------------------------|
| <b>Disposing of hazardous materials (i.e. engine oil, medications, etc.)</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Recognizing invasive plant species</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Taking care of residential property in an environmentally-friendly way</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Protecting rivers, streams, &amp; lakes - tributaries, habitat quality, &amp; native species (e.g. Huron River)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |

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**Collection:** STUDQUES20-STUDQUES21\_SERIES  
**Contains:** STUDQUES20, STUDQUES21  
**Show if:** (STUDQUES1 is-any-of 3:[Off-campus apartment] or 4:[Off-campus house] or 5:[Parent's house] or 6:[Other])

**Question Block:** STUDQUES20  
**Contains:** Q73, Q74, Q75

| Scale Summary |                       |         |
|---------------|-----------------------|---------|
| Code          | Label                 | Show-If |
| 1             | <b>Regularly</b>      |         |
| 2             | <b>Sometimes</b>      |         |
| 3             | <b>Rarely</b>         |         |
| 4             | <b>Never</b>          |         |
| 5             | <b>Not applicable</b> |         |

 **During the past year, at your current residence, how often did you do the following?**

|  | <b>Regularly</b>      | <b>Sometimes</b>      | <b>Rarely</b>         | <b>Never</b>          | <b>Not applicable</b> |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Use fertilizer on your lawn</b>             | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Use commercial herbicides or pesticides</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Water your lawn</b>                         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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**Question Block:** STUDQUES21  
**Contains:** Q76, Q77, Q78, Q79, Q80, Q81  
 Show if: (PL\_PANEL = 2)

| Scale Summary |                       |         |
|---------------|-----------------------|---------|
| Code          | Label                 | Show-If |
| 0             | <b>Yes</b>            |         |
| 1             | <b>No</b>             |         |
| 2             | <b>Not applicable</b> |         |

 **Have you done any of the following at your current residence?**

|   | <b>Yes</b>            | <b>No</b>             | <b>Not applicable</b> |
|---|-----------------------|-----------------------|-----------------------|
| <b>Installed a rain barrel</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Installed a rain garden</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Eliminated invasive species from your yard or garden</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Intentionally planted native species in your lawn or garden</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Converted all/part of lawn to native/natural plantings</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Disposed of hazardous materials i.e. engine oil, harsh cleaners, medications, by taking them to a designated disposal facility</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |


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**Collection:** SECTION\_D  
**Contains:** STUDQUES25, STUDQUES26, STUDQUES27-STUDQUES29\_SERIES, STUDQUES30, STUDQUES34

**Question:** STUDQUES25

| Scale Summary |                             |         |
|---------------|-----------------------------|---------|
| Code          | Label                       | Show-If |
| 1             | At home                     |         |
| 2             | In campus dining facilities |         |
| 3             | Elsewhere                   |         |

 Following are questions about **food**.

**Since the start of the fall semester, do you eat most of your meals:**

- At home
- In campus dining facilities
- Elsewhere (*please specify*):


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**Question Block:** STUDQUES26  
**Contains:** Q82, Q83, Q88, Q12, Q29, Q30, Q31

| Scale Summary |                              |         |
|---------------|------------------------------|---------|
| Code          | Label                        | Show-If |
| 1             | <b>A lot</b>                 |         |
| 2             | <b>A fair amount</b>         |         |
| 3             | <b>A little</b>              |         |
| 4             | <b>Not much/<br/>nothing</b> |         |

 **How much do you know about each of the following kinds of food?**

|  | <b>A lot</b>          | <b>A fair amount</b>  | <b>A little</b>       | <b>Not much/<br/>nothing</b> |
|--|-----------------------|-----------------------|-----------------------|------------------------------|
| <b>Locally grown or processed</b>                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Organic</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Fair trade food</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Food from humanely-treated animals</b>                            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Food from animals that were not given hormones or antibiotics</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Grass-fed beef</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Fish from sustainable fisheries</b>                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |


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**Collection:** STUDQUES27-STUDQUES29\_SERIES  
**Contains:** STUDQUES27\_2013, STUDQUES28, STUDQUES29  
**Show if:** (STUDQUES25 is-any-of 1:[At home] or 3:[Elsewhere])

**Question Block:** STUDQUES27\_2013  
**Contains:** Q89\_2013, Q90\_2013, Q95\_2013, Q64\_2013, Q65\_2013, Q66\_2013, Q67\_2013

| Scale Summary |   |                    |
|---------------|---|--------------------|
| Code          | Label                                   | Show-If            |
| 1             | <b>Always/<br/>Most of<br/>the time</b> |                    |
| 2             | <b>Sometimes</b>                        |                    |
| 3             | <b>Rarely</b>                           |                    |
| 7             | <b>4 or more times a month</b>          | <i>Never Shown</i> |
| 8             | <b>2 - 3 times a month</b>              | <i>Never Shown</i> |
| 9             | <b>Once a month or less</b>             | <i>Never Shown</i> |
| 4             | <b>Never</b>                            |                    |
| 5             | <b>Don't Know</b>                       |                    |
| 6             | <b>I Don't Eat This</b>                 |                    |

 **During the past year, about how often did you (or other household members) buy the following?**


|  | <b>Always/<br/>Most of<br/>the time</b> | <b>Sometimes</b>      | <b>Rarely</b>         | <b>4 or<br/>more<br/>times a<br/>month</b> | <b>2 - 3<br/>times<br/>a<br/>month</b> | <b>Once<br/>a<br/>month<br/>or<br/>less</b> | <b>Never</b>          | <b>Don't<br/>Know</b> | <b>I<br/>Don't<br/>Eat<br/>This</b> |
|--|---|-----------------------|-----------------------|--|--|---|-----------------------|-----------------------|-------------------------------------|
| <b>Locally<br/>grown or<br/>processed</b>  | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                      | <input type="radio"/>                  | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>               |
| <b>Organic</b>   | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                      | <input type="radio"/>                  | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>               |
| <b>Fair trade<br/>food</b>   | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                      | <input type="radio"/>                  | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>               |
| <b>Food from<br/>humanely-<br/>treated<br/>animals</b>   | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                      | <input type="radio"/>                  | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>               |
| <b>Food from<br/>animals<br/>that<br/>were not<br/>given<br/>hormones<br/>or<br/>antibiotics</b> | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                      | <input type="radio"/>                  | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>               |
| <b>Grass-fed<br/>beef</b>  | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                      | <input type="radio"/>                  | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>               |
| <b>Fish from<br/>sustainable<br/>fisheries</b>   | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                      | <input type="radio"/>                  | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>               |

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Question: STUDQUES28

| Scale Summary |                     |         |
|---------------|---------------------|---------|
| Code          | Label               | Show-If |
| 1             | All/most            |         |
| 2             | More than half      |         |
| 3             | Half                |         |
| 4             | Less than half      |         |
| 5             | None                |         |
| 6             | <i>I don't know</i> |         |

 **"Sustainable food"** can be defined as one or more of the following: locally-sourced, organic, from humanely-treated animals, antibiotic- and hormone-free, grass-fed, from sustainable fisheries, or fair trade food.

**During the past year, about how much of your grocery purchases were sustainable food?**

- All/most
- More than half
- Half
- Less than half
- None
  
- I don't know*

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**Question Block:** STUDQUES29

**Contains:** Q96, Q97, Q98, Q99, Q100, Q93

**Show if:** (STUDQUES28 is-any-of 1:[All/most] or 2:[More than half] or 3:[Half] or 4:[Less than half]) and (PL\_PANEL = 2)

| Scale Summary |                             |         |
|---------------|-----------------------------|---------|
| Code          | Label                       | Show-If |
| 1             | <b>Very important</b>       |         |
| 2             | <b>Somewhat important</b>   |         |
| 3             | <b>Not that important</b>   |         |
| 4             | <b>Not at all important</b> |         |

 **How important to you are the following, when you buy *sustainable food*?**

|   | <b>Very important</b> | <b>Somewhat important</b> | <b>Not that important</b> | <b>Not at all important</b> |
|---|-----------------------|---------------------------|---------------------------|-----------------------------|
| <b>Nutrition</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Taste</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Supporting the local community</b>   | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Protecting the environment</b>   | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Avoiding things like synthetic pesticides or fertilizers, antibiotics or growth hormones</b> | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Affordability</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |

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**Question:** STUDQUES30

**Show if:** (PL\_PANEL = 2)

**Scale Summary**

| Code | Label              | Show-If |
|------|--------------------|---------|
| 1    | Daily/almost daily |         |
| 2    | 3-4 days           |         |
| 3    | 1-2 days           |         |
| 4    | Never              |         |



**During the past week, how often have you included meat as part of your daily diet?**

- Daily/almost daily
- 3-4 days
- 1-2 days
- Never

Page Break

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**Question Block:** STUDQUES34  
**Contains:** Q101, Q102, Q103, Q104, Q105, Q106  
 Show if: (PL\_PANEL = 2)

| Scale Summary |       |         |
|---------------|-------|---------|
| Code          | Label | Show-If |
| 0             | Yes   |         |
| 1             | No    |         |

 **During the past year, have you:**

|   | Yes                   | No                    |
|---|-----------------------|-----------------------|
| <b>Grown fruits/vegetables in a home garden</b>               | <input type="radio"/> | <input type="radio"/> |
| <b>Grown fruits/vegetables in a community garden</b>          | <input type="radio"/> | <input type="radio"/> |
| <b>Shopped at farmers markets or food stands</b>              | <input type="radio"/> | <input type="radio"/> |
| <b>Belonged to a CSA (Community Supported Agriculture)</b>    | <input type="radio"/> | <input type="radio"/> |
| <b>Visited U-Pick farms</b>                                   | <input type="radio"/> | <input type="radio"/> |
| <b>Raised animals for food (e.g. meat, dairy, eggs, etc.)</b> | <input type="radio"/> | <input type="radio"/> |

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**Collection:** SECTION\_E  
**Contains:** STUDQUES36\_2013, STUDQUES36A\_2013, STUDQUES36B\_2013, STUDQUES39, STUDQUES37, STUDQUES38

**Question:** STUDQUES36\_2013

| Scale Summary |              |         |
|---------------|--------------|---------|
| Code          | Label        | Show-If |
| 1             | Yes          |         |
| 2             | No           |         |
| 3             | I don't know |         |

 These questions are about **climate change**, which is sometimes called *global warming*.

**Do you think climate change is happening?**

- Yes
- No
  
- I don't know

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**Question:** STUDQUES36A\_2013  
**Show if:** (STUDQUES36\_2013 = 1:[Yes])

| Scale Summary |                 |         |
|---------------|-----------------|---------|
| Code          | Label           | Show-If |
| 1             | Extremely sure  |         |
| 2             | Mostly sure     |         |
| 3             | Somewhat sure   |         |
| 4             | Not at all sure |         |

 **How sure are you that climate change is happening?**

- Extremely sure
- Mostly sure
- Somewhat sure
- Not at all sure

Page Break

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**Question:** STUDQUES36B\_2013  
**Show if:** (STUDQUES36\_2013 = 2:[No])

| Scale Summary |                 |         |
|---------------|-----------------|---------|
| Code          | Label           | Show-If |
| 1             | Extremely sure  |         |
| 2             | Mostly sure     |         |
| 3             | Somewhat sure   |         |
| 4             | Not at all sure |         |



**How sure are you that climate change is not happening?**

- Extremely sure
- Mostly sure
- Somewhat sure
- Not at all sure

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Question: STUDQUES39

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Caused mostly by human activities                         |         |
| 2             | Caused mostly by natural changes                          |         |
| 3             | Caused by both human activities and natural changes       |         |
| 4             | None of the above because climate change is not happening |         |

 **Assuming climate change is happening, do you think it is...**

- Caused mostly by human activities
- Caused mostly by natural changes
- Caused by both human activities and natural changes
- None of the above because climate change is not happening

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**Question:** STUDQUES37

| Scale Summary |                      |         |
|---------------|----------------------|---------|
| Code          | Label                | Show-If |
| 1             | Not at all important |         |
| 2             | Not too important    |         |
| 3             | Somewhat important   |         |
| 4             | Very important       |         |
| 5             | Extremely important  |         |

 **How important is the issue of climate change to you personally?**

- Not at all important
- Not too important
- Somewhat important
- Very important
- Extremely important

Page Break

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Question: STUDQUES38

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label                                    | Show-If |
| 1             | Very well                                |         |
| 2             | Fairly well                              |         |
| 3             | A little bit                             |         |
| 4             | I would not be able to explain it at all |         |

 **How well could you explain the topic of climate change to someone who didn't know about it--what's causing it or not, what are its potential consequences, etc.?**

- Very well
- Fairly well
- A little bit
- I would not be able to explain it at all

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**Collection:** SECTION\_F  
**Contains:** STUDQUES41, STUDQUES42, STUDQUES43, STUDQUES44, STUDQUES45, STUDQUES46, STUDQUES47, STUDQUES48

**Question Block:** STUDQUES41  
**Contains:** Q107, Q108, Q109, Q110

| Scale Summary |       |         |
|---------------|-------|---------|
| Code          | Label | Show-If |
| 0             | Yes   |         |
| 1             | No    |         |

 *These next questions cover **other activities and your opinions about sustainability.***

**Have you done any of the following during the past year to promote sustainability issues such as environmental protection, energy or water conservation, open space preservation, public or non-motorized transportation, etc.?**


|  | Yes                   | No                    |
|--|-----------------------|-----------------------|
| <b>Given money to an organization or advocacy group supporting one of the above issues?</b>                      | <input type="radio"/> | <input type="radio"/> |
| <b>Volunteered for an organization or advocacy group supporting one of the above issues?</b>                     | <input type="radio"/> | <input type="radio"/> |
| <b>Served in a leadership position for an organization or advocacy group supporting one of the above issues?</b> | <input type="radio"/> | <input type="radio"/> |
| <b>Voted for a candidate for public office because of her/his position on any of the above issues?</b>           | <input type="radio"/> | <input type="radio"/> |

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**Question Block:** STUDQUES42  
**Contains:** Q111, Q112, Q113, Q114, Q115, Q116, Q117, Q118, Q119  
**Show if:** (PL\_PANEL = 2)

| Scale Summary |                   |         |
|---------------|-------------------|---------|
| Code          | Label             | Show-If |
| 1             | <b>Never</b>      |         |
| 2             | <b>Rarely</b>     |         |
| 3             | <b>Sometimes</b>  |         |
| 4             | <b>Frequently</b> |         |
| 5             | <b>Don't know</b> |         |

 **During the past year, how often have you encouraged your friends to do the following things?**


|   | <b>Never</b>          | <b>Rarely</b>         | <b>Sometimes</b>      | <b>Frequently</b>     | <b>Don't know</b>     |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Walk, bike, or take the bus rather than drive</b>                              | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Buy locally sourced or sustainable food</b>                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Conserve water</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Conserve electricity</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Reuse or recycle containers or bags</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Buy fewer things</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Buy things that are better for the environment</b>                             | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Use environmentally-friendly ways of controlling insects, weeds, and pests</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Do something in order to reduce his/her greenhouse gas emissions</b>           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Page Break

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**Question Block:** STUDQUES43  
**Contains:** Q120, Q121, Q122, Q123  
**Show if:** (PL\_PANEL = 2)

| Scale Summary |                                   |         |
|---------------|-----------------------------------|---------|
| Code          | Label                             | Show-If |
| 1             | <b>Strongly support</b>           |         |
| 2             | <b>Moderately support</b>         |         |
| 3             | <b>Neither support nor oppose</b> |         |
| 4             | <b>Moderately oppose</b>          |         |
| 5             | <b>Strongly oppose</b>            |         |

 **Would you support or oppose the following...**

|  | <b>Strongly support</b> | <b>Moderately support</b> | <b>Neither support nor oppose</b> | <b>Moderately oppose</b> | <b>Strongly oppose</b> |
|--|-------------------------|---------------------------|-----------------------------------|--------------------------|------------------------|
| <b>A 20 cent increase in the price per gallon of gasoline, if the extra money were used to improve local public transportation.</b>  | <input type="radio"/>   | <input type="radio"/>     | <input type="radio"/>             | <input type="radio"/>    | <input type="radio"/>  |
| <b>A requirement that electric utilities produce at least 40 percent of their electricity from wind, solar, or other renewable energy sources, even if it costs the average household an extra \$100 a year.</b> | <input type="radio"/>   | <input type="radio"/>     | <input type="radio"/>             | <input type="radio"/>    | <input type="radio"/>  |
| <b>A ban on disposable plastic bags.</b>   | <input type="radio"/>   | <input type="radio"/>     | <input type="radio"/>             | <input type="radio"/>    | <input type="radio"/>  |
| <b>A tax on fuels--like gasoline and natural gas - according to their carbon content, if the extra money were used for clean energy projects.</b>  | <input type="radio"/>   | <input type="radio"/>     | <input type="radio"/>             | <input type="radio"/>    | <input type="radio"/>  |

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**Question Block:** STUDQUES44  
**Contains:** Q160, Q161, Q162

| Scale Summary |                    |         |
|---------------|--------------------|---------|
| Code          | Label              | Show-If |
| 0             | <b>Nothing</b>     |         |
| 1             | <b>\$1 - \$10</b>  |         |
| 2             | <b>\$11 - \$20</b> |         |
| 3             | <b>\$21 - \$30</b> |         |
| 4             | <b>\$31 - \$40</b> |         |
| 5             | <b>\$41 - \$50</b> |         |

 **How much would you be willing to personally pay each year to...**

|  | <b>Nothing</b>        | <b>\$1 - \$10</b>     | <b>\$11 - \$20</b>    | <b>\$21 - \$30</b>    | <b>\$31 - \$40</b>    | <b>\$41 - \$50</b>    |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Expand waste prevention efforts, such as recycling and green purchasing at U-M</b>                            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Expand alternative transportation efforts such as buses, bikes, and carpools at U-M</b>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Expand efforts to lower greenhouse gas emissions at U-M through energy conservation and renewable sources</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |


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**Question Block:** STUDQUES45  
**Contains:** Q124, Q125, Q94, Q126, Q127, Q128  
 Show if: (PL\_PANEL = 2)

| Scale Summary |                   |         |
|---------------|-------------------|---------|
| Code          | Label             | Show-If |
| 1             | Very likely       |         |
| 2             | Somewhat likely   |         |
| 3             | Not very likely   |         |
| 4             | Not at all likely |         |

 **Think about what you would like your life to be like in the future. How likely is it that the following things will be a priority for you, at some point in the future?**

|  | Very likely           | Somewhat likely       | Not very likely       | Not at all likely     |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Being able to walk, bike, or take the bus places from where you live</b>          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Buying sustainable food</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Being able to easily compost household and food leftovers</b>                     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Conserving natural resources by reducing waste, reusing things, and recycling</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Take care of your home and property in environmentally-friendly ways</b>          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Reducing your greenhouse gas emissions as much as possible</b>                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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**Question Block:** STUDQUES46  
**Contains:** Q129, Q130, Q131, Q132, Q133, Q134, Q135

| Scale Summary |                             |         |
|---------------|-----------------------------|---------|
| Code          | Label                       | Show-If |
| 1             | <b>Very concerned</b>       |         |
| 2             | <b>Somewhat concerned</b>   |         |
| 3             | <b>Not that concerned</b>   |         |
| 4             | <b>Not at all concerned</b> |         |

 **How concerned are you about the following:**

|  | <b>Very concerned</b> | <b>Somewhat concerned</b> | <b>Not that concerned</b> | <b>Not at all concerned</b> |
|--|-----------------------|---------------------------|---------------------------|-----------------------------|
| <b>The impact that people's travel - by car and plane - has on the environment?</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Whether food is grown and produced in a way that is good for the environment?</b> | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Natural resources - like water and fossil fuels - being used up?</b>              | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>People producing too much waste?</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>The loss of open space?</b>   | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>The loss of wildlife habitat?</b>   | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Population growth?</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |

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Question: STUDQUES47

| Scale Summary |                      |         |
|---------------|----------------------|---------|
| Code          | Label                | Show-If |
| 1             | Very committed       |         |
| 2             | Somewhat committed   |         |
| 3             | Not very committed   |         |
| 4             | Not at all committed |         |



**Overall, how committed are you to sustainability? Are you:**


- Very committed
- Somewhat committed
- Not very committed
- Not at all committed

Page Break

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Question: STUDQUES48

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label                                    | Show-If |
| 1             | Friends or classmates                    |         |
| 2             | Parents or other family members          |         |
| 3             | K-12 teachers                            |         |
| 4             | U-M professors/instructors/courses       |         |
| 5             | Childhood experiences outdoors           |         |
| 8             | Media--readings, video, movies, TV, etc. |         |
| 6             | Other U-M activities                     |         |
| 7             | Other                                    |         |

 **Who or what has been most influential in shaping your views about sustainability?**

- Friends or classmates
- Parents or other family members
- K-12 teachers
- U-M professors/instructors/courses
- Childhood experiences outdoors
- Media--readings, video, movies, TV, etc.
- Other U-M activities (*please specify*):
- Other (*please specify*):

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**Collection:** SECTION\_G  
**Contains:** STUDQUES49, STUDQUES50, STUDQUES51\_2015, STUDQUES51

**Question Block:** STUDQUES49  
**Contains:** Q136, Q137, Q138, Q139, Q140, Q141, Q142, Q143, Q91

| Scale Summary |                  |         |
|---------------|------------------|---------|
| Code          | Label            | Show-If |
| 1             | Very aware       |         |
| 2             | Somewhat aware   |         |
| 3             | Not too aware    |         |
| 4             | Not at all aware |         |

 This set of questions is about **sustainability at the University of Michigan**.

**How aware are you of U-M's efforts to:**

|   | Very aware            | Somewhat aware        | Not too aware         | Not at all aware      |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Conserve energy?</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Encourage people to take a bus or bike?</b>                        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote ride sharing?</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote recycling?</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote food from sustainable sources?</b>                         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Reduce greenhouse gas emissions?</b>                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Maintain campus grounds in an environmentally-friendly manner?</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Protect the Huron River?</b>                                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote composting?</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |


Page Break

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**Question Block:** STUDQUES50

**Contains:** Q144, Q145, Q146, Q147, Q148, Q149, Q150, Q151, Q86

| Scale Summary |                      |         |
|---------------|----------------------|---------|
| Code          | Label                | Show-If |
| 1             | <b>Very Good (A)</b> |         |
| 2             | <b>Good (B)</b>      |         |
| 3             | <b>Fair (C)</b>      |         |
| 4             | <b>Poor (D)</b>      |         |
| 5             | <b>Very Poor (F)</b> |         |

 Overall, how would you rate/grade U-M's efforts to:

|   | <b>Very Good (A)</b>  | <b>Good (B)</b>       | <b>Fair (C)</b>       | <b>Poor (D)</b>       | <b>Very Poor (F)</b>  |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Conserve energy?</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Encourage people to take a bus or bike?</b>                        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote ride sharing?</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote recycling?</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote food from sustainable sources?</b>                         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Reduce greenhouse gas emissions?</b>                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Maintain campus grounds in an environmentally-friendly manner?</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Protect the Huron River?</b>                                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote Composting?</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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|   |       |         |
|---|-------|---------|
| <b>Question Block:</b> STUDQUES51_2015  |       |         |
| <b>Contains:</b> Q161_2015, Q162_2015, Q163_2015, Q164_2015, Q165_2015, Q166_2015, Q167_2015, Q168_2015, Q169_2015, Q170_2015 |       |         |
| <b>Scale Summary</b>  |       |         |
| Code  | Label | Show-If |
| 0   | Yes   |         |
| 1   | No    |         |

 **During the past year did you participate in any of the following at U-M?**

|   | Yes                   | No                    |
|---|-----------------------|-----------------------|
| <b>RecycleMania</b>                                   | <input type="radio"/> | <input type="radio"/> |
| <b>Kill-a-Watt</b>                                    | <input type="radio"/> | <input type="radio"/> |
| <b>Earthfest</b>                                      | <input type="radio"/> | <input type="radio"/> |
| <b>Zero Waste Events</b>                              | <input type="radio"/> | <input type="radio"/> |
| <b>e-Waste Recycling Event</b>                        | <input type="radio"/> | <input type="radio"/> |
| <b>Planet Blue Ambassadors Program</b>                | <input type="radio"/> | <input type="radio"/> |
| <b>M Farmers Markets</b>                              | <input type="radio"/> | <input type="radio"/> |
| <b>A U-M organization dealing with sustainability</b> | <input type="radio"/> | <input type="radio"/> |
| <b>A U-M course that addressed sustainability</b>     | <input type="radio"/> | <input type="radio"/> |
| <b>Other</b>  | <input type="radio"/> | <input type="radio"/> |

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Custom Layout Question: STUDQUES51\_1

 Please specify:

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**Question Block:** STUDQUES51

**Contains:** Q152, Q153, Q154, Q156, Q157, Q84, Q160\_2015, Q158, Q159

Show if: (Q161\_2015 = 1:[No]) or (Q162\_2015 = 1:[No]) or (Q163\_2015 = 1:[No]) or (Q164\_2015 = 1:[No]) or (Q165\_2015 = 1:[No]) or (Q166\_2015 = 1:[No]) or (Q167\_2015 = 1:[No]) or (Q168\_2015 = 1:[No]) or (Q169\_2015 = 1:[No])

**Scale Summary**

| Code | Label      | Show-If |
|------|------------|---------|
| 0    | <b>Yes</b> |         |
| 1    | <b>No</b>  |         |

 **Have you ever participated in any of the following at U-M?**

|   | <b>Yes</b>            | <b>No</b>             |
|---|-----------------------|-----------------------|
| <b>RecycleMania</b>                                   | <input type="radio"/> | <input type="radio"/> |
| <b>Kill-a-Watt</b>                                    | <input type="radio"/> | <input type="radio"/> |
| <b>Earthfest</b>                                      | <input type="radio"/> | <input type="radio"/> |
| <b>Zero Waste Events</b>                              | <input type="radio"/> | <input type="radio"/> |
| <b>e-Waste Recycling Event</b>                        | <input type="radio"/> | <input type="radio"/> |
| <b>Planet Blue Ambassadors Program</b>                | <input type="radio"/> | <input type="radio"/> |
| <b>M Farmers Markets</b>                              | <input type="radio"/> | <input type="radio"/> |
| <b>A U-M organization dealing with sustainability</b> | <input type="radio"/> | <input type="radio"/> |
| <b>A U-M course that addressed sustainability</b>     | <input type="radio"/> | <input type="radio"/> |

Page Break

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**Collection:** SECTION\_H  
**Contains:** STUDQUES52, STUDQUES53, STUDQUES54\_2013, STUDQUES54\_LSA\_2013, STUDQUES54\_COE\_2013, STUDQUES55, STUDQUES56, STUDQUES56\_CAMPUS, STUDQUES56\_CENTRAL, STUDQUES56\_MEDICAL, STUDQUES56\_NORTH, STUDQUES56\_HILLAREA, STUDQUES56\_SOUTH, STUDQUES56\_OTHER, STUDQUES57, Q85, STUDQUES58, STUDQUES59, STUDQUES60, STUDQUES61, STUDQUES62, STUDQUES63, STUDQUES64, STUDQUES65, INCENTIVE

**Question:** STUDQUES52  
**Show if:** (PL\_PANEL = 2)

| Scale Summary |       |         |
|---------------|-------|---------|
| Code          | Label | Show-If |
| 0             | Yes   |         |
| 1             | No    |         |

 **Questions about you:**

**Have you done community service in the past year? This would be time for any type of community service - not just service related to sustainability - that was not for credit, pay or any type of mandated requirement.**

- Yes
- No

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**Question:** STUDQUES53  
**Show if:** (PL\_PANEL = 2) and (STUDQUES52 = 0:[Yes])

 **About how many hours did you perform community service during the past year?**

Hours

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Question: STUDQUES54\_2013

 **What school or college are you enrolled in?**

*(Select all that apply)*

- Architecture & Urban Planning
- Art & Design
- Business
- Dentistry
- Education
- Engineering
- Graduate Studies, Rackham School of
- Information
- Kinesiology
- Law
- Literature, Science, and the Arts
- Medicine
- Music, Theatre & Dance
- Natural Resources & Environment
- Nursing
- Pharmacy
- Public Health
- Public Policy
- Social Work

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**Question:** STUDQUES54\_LSA\_2013

**Show if:** (STUDQUES54\_2013 is-any-of [Literature, Science, and the Arts])

| Scale Summary |                  |         |
|---------------|------------------|---------|
| Code          | Label            | Show-If |
| 1             | Humanities       |         |
| 2             | Natural Sciences |         |
| 3             | Social Sciences  |         |
| 8             | Other            |         |
| 9             | Undecided        |         |



**Which of the following is your major?**

- Humanities
- Natural Sciences
- Social Sciences
- Other
- Undecided

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**Question:** STUDQUES54\_COE\_2013  
**Show if:** (STUDQUES54\_2013 is-any-of [Engineering])

**Scale Summary**

| Code | Label                         | Show-If |
|------|-------------------------------|---------|
| 1    | Electrical & Computer Science |         |
| 2    | Mechanical                    |         |
| 3    | Aerospace                     |         |
| 4    | Chemical                      |         |
| 5    | Industrial & Operations       |         |
| 6    | Biomedical                    |         |
| 7    | Materials Science             |         |
| 8    | Other                         |         |
| 9    | Undecided                     |         |

 **Which of the following is your major?**

- Electrical & Computer Science
- Mechanical
- Aerospace
- Chemical
- Industrial & Operations
- Biomedical
- Materials Science
- Other
- Undecided

Page Break

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Question: STUDQUES55

| Scale Summary |                |         |
|---------------|----------------|---------|
| Code          | Label          | Show-If |
| 1             | Central Campus |         |
| 2             | North Campus   |         |
| 3             | Elsewhere      |         |

 **Since the start of the fall semester, on what campus do you have most of your classes?**

- Central Campus
- North Campus
- Elsewhere (*please specify*):

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**Question:** STUDQUES56

| Scale Summary |       |         |
|---------------|-------|---------|
| Code          | Label | Show-If |
| 1             | Yes   |         |
| 0             | No    |         |

 **Excluding campus housing, do you spend more than half of your time in one particular campus building?**

- Yes
- No

Page Break

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**Question:** STUDQUES56\_CAMPUS  
**Show if:** (STUDQUES56 = 1:[Yes])

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label                                     | Show-If |
| 1             | Central Campus                            |         |
| 5             | The Hill Area of Central/Medical campuses |         |
| 4             | Medical Campus                            |         |
| 2             | North Campus                              |         |
| 6             | South Campus - between Packard & Stadium  |         |
| 3             | Elsewhere                                 |         |

 **On which campus is that one particular building?**

- Central Campus
- The Hill Area of Central/Medical campuses
- Medical Campus
- North Campus
- South Campus - between Packard & Stadium
- Elsewhere

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**Question:** STUDQUES56\_CENTRAL  
**Show if:** (STUDQUES56\_CAMPUS = 1:[Central Campus])

**Scale Summary**

| Code | Label                              | Show-If |
|------|------------------------------------|---------|
| 1    | Angell Hall                        |         |
| 2    | Central Campus Recreation Building |         |
| 3    | Chemistry                          |         |
| 4    | Clarence Cook Little Building      |         |
| 5    | Dana Building (SNRE)               |         |
| 6    | David M. Dennison Building         |         |
| 7    | Dental Building                    |         |
| 8    | East Hall                          |         |
| 23   | East Quad                          |         |
| 9    | Harlan Hatcher Graduate Library    |         |
| 10   | Health Services                    |         |
| 11   | Hutchins Hall                      |         |
| 24   | Law School (including South Hall)  |         |
| 12   | Lorch Hall                         |         |
| 13   | Mason Hall                         |         |
| 14   | Michigan Union                     |         |
| 15   | Modern Languages Building          |         |
| 16   | North Quad                         |         |
| 17   | Ross School of Business            |         |
| 18   | School of Education                |         |
| 25   | School of Public Health I or II    |         |
| 19   | School of Social Work              |         |
| 20   | Shapiro Undergraduate Library      |         |
| 26   | South Quad                         |         |
| 21   | Weill Hall                         |         |
| 22   | West Hall                          |         |
| 77   | Other                              |         |



**Listed below are several buildings on Central Campus. Sometimes buildings are known by more than one name. Please review the list of building names to find the one in which you spend more than half of your time (for activity such as work, classes, or studying). If you do not see the name of your building, select "Other" and type in the name of the building.**

**Please select the name of the building in which you spend more than half of your time:**

- Angell Hall
- Central Campus Recreation Building
- Chemistry
- Clarence Cook Little Building
- Dana Building (SNRE)
- David M. Dennison Building
- Dental Building
- East Hall
- East Quad
- Harlan Hatcher Graduate Library
- Health Services
- Hutchins Hall
- Law School (including South Hall)
- Lorch Hall
- Mason Hall
- Michigan Union
- Modern Languages Building
- North Quad
- Ross School of Business
- School of Education
- School of Public Health I or II

- School of Social Work
- Shapiro Undergraduate Library
- South Quad
- Weill Hall
- West Hall
- Other (*please specify*):

Page Break


---

**Question:** STUDQUES56\_MEDICAL

**Show if:** (STUDQUES56\_CAMPUS = 4:[Medical Campus])

**Scale Summary**

| Code | Label   | Show-If |
|------|---|---------|
| 1    | Biomedical Science Research Building              |         |
| 2    | C. S. Mott Children's Hospital                    |         |
| 3    | Children's Psychiatric Hospital                   |         |
| 4    | Kellogg Eye Center                                |         |
| 5    | Kresge Hearing Research Institute                 |         |
| 6    | Learning Resource Center, Taubman Medical Library |         |
| 7    | Medical Science Research, Building III            |         |
| 8    | Medical Science, Building I                       |         |
| 9    | Medical Science, Building II                      |         |
| 10   | Mental Health Research Institute                  |         |
| 11   | North Ingalls Building                            |         |
| 12   | School of Nursing (North Ingalls Building)        |         |
| 15   | School of Public Health I or II                   |         |
| 13   | University Hospital                               |         |
| 14   | Women's Hospital                                  |         |
| 77   | Other   |         |

 **Listed below are several buildings on the Medical Campus. Sometimes buildings are known by more than one name. Please review the list of building names to find the one in which you spend more than half of your time (for activity such as work, classes, or studying). If you do not see the name of your building, select "Other" and type in the name of the building.**

**Please select the name of the building in which you spend more than half of your time:**

- Biomedical Science Research Building
- C. S. Mott Children's Hospital
- Children's Psychiatric Hospital
- Kellogg Eye Center
- Kresge Hearing Research Institute
- Learning Resource Center, Taubman Medical Library
- Medical Science Research, Building III
- Medical Science, Building I
- Medical Science, Building II
- Mental Health Research Institute
- North Ingalls Building
- School of Nursing (North Ingalls Building)
- School of Public Health I or II
- University Hospital
- Women's Hospital
- Other (*please specify*):

Page Break

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**Question:** STUDQUES56\_NORTH  
**Show if:** (STUDQUES56\_CAMPUS = 2:[North Campus])

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label  | Show-If |
| 1             | Art & Architecture Building                          |         |
| 2             | Blanch Anderson Moore Hall, School of Music          |         |
| 3             | Bob and Betty Beyster Building (formerly CSE)        |         |
| 4             | Bursley Hall   |         |
| 5             | Charles R. Walgreen, Jr. Drama Center                |         |
| 6             | Chrysler Center                                      |         |
| 7             | Cooley Building                                      |         |
| 8             | Dow Engineering Building                             |         |
| 9             | Duderstadt Center                                    |         |
| 10            | Earl V. Moore Building, School of Music              |         |
| 11            | Electrical Engineering and Computer Science Building |         |
| 12            | Engineering Research Building 1                      |         |
| 13            | Engineering Research Building 2                      |         |
| 14            | Environmental & Water Resources Engineering Building |         |
| 15            | Ford Library   |         |
| 16            | Francois-Xavier Bagnoud Building                     |         |
| 17            | G. G. Brown Laboratory                               |         |
| 18            | Gorguze Family Laboratory (formerly EPB)             |         |
| 19            | Industrial and Operations Engineering Building       |         |
| 20            | Lurie Biomedical Engineering Building                |         |
| 21            | Lurie Engineering Center                             |         |
| 22            | Naval Architecture and Marine Engineering Building   |         |
| 23            | North Campus Recreation Building                     |         |
| 24            | Phoenix Memorial Laboratory                          |         |
| 25            | Pierpont Commons                                     |         |
| 26            | Space Research Building                              |         |
| 27            | Stamps Auditorium                                    |         |
| 28            | Sterns Building                                      |         |
| 29            | Walter E. Lay Automotive Lab                         |         |
| 77            | Other  |         |

 **Listed below are several buildings on North Campus. Sometimes buildings are known by more than one name. Please review the list of building names to find the one in which you spend more than half of your time (for activity such as work, classes, or studying). If you do not see the name of your building, select "Other" and type in the name of the building.**

**Please select the name of the building in which you spend more than half of your time:**

- Art & Architecture Building
- Blanch Anderson Moore Hall, School of Music
- Bob and Betty Beyster Building (formerly CSE)
- Bursley Hall
- Charles R. Walgreen, Jr. Drama Center
- Chrysler Center
- Cooley Building
- Dow Engineering Building
- Duderstadt Center
- Earl V. Moore Building, School of Music
- Electrical Engineering and Computer Science Building
- Engineering Research Building 1
- Engineering Research Building 2
- Environmental & Water Resources Engineering Building
- Ford Library
- Francois-Xavier Bagnoud Building
- G. G. Brown Laboratory
- Gorguze Family Laboratory (formerly EPB)

- Industrial and Operations Engineering Building
- Lurie Biomedical Engineering Building
- Lurie Engineering Center
- Naval Architecture and Marine Engineering Building
- North Campus Recreation Building
- Phoenix Memorial Laboratory
- Pierpont Commons
- Space Research Building
- Stamps Auditorium
- Sterns Building
- Walter E. Lay Automotive Lab
- Other (*please specify*):

Page Break

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**Question:** STUDQUES56\_HILLAREA

**Show if:** (STUDQUES56\_CAMPUS = 5:[The Hill Area of Central/Medical campuses])

**Scale Summary**

| Code | Label   | Show-If            |
|------|---|--------------------|
| 1    | Alice Lloyd Hall  |                    |
| 2    | Central Campus Recreation Building (including Margaret Bell Pool) |                    |
| 3    | Couzens Hall  |                    |
| 4    | Dance Building, 1310 N University Court                           |                    |
| 5    | Henry Vaughan Building, School of Public Health I                 | <i>Never Shown</i> |
| 6    | Margaret Bell Pool, Central Campus Recreation Building            | <i>Never Shown</i> |
| 7    | Mary Markley Hall   |                    |
| 8    | Mosher Jordan Hall  |                    |
| 9    | Observatory Lodge, 1402 Washington Heights                        |                    |
| 10   | Stockwell Hall  |                    |
| 11   | Thomas Francis, Jr Building, School of Public Health II           | <i>Never Shown</i> |
| 12   | School of Public Health I or II                                   |                    |
| 77   | Other   |                    |



**Listed below are several buildings in the Hill Area of the Central and Medical Campuses. Sometimes buildings are known by more than one name. Please review the list of building names to find the one in which you spend more than half of your time (for activity such as work, classes, or studying). If you do not see the name of your building, select "Other" and type in the name of the building.**

**Please select the name of the building in which you spend more than half of your time:**

- Alice Lloyd Hall
- Central Campus Recreation Building (including Margaret Bell Pool)
- Couzens Hall
- Dance Building, 1310 N University Court
- Henry Vaughan Building, School of Public Health I
- Margaret Bell Pool, Central Campus Recreation Building
- Mary Markley Hall
- Mosher Jordan Hall
- Observatory Lodge, 1402 Washington Heights
- Stockwell Hall
- Thomas Francis, Jr Building, School of Public Health II
- School of Public Health I or II
- Other (*please specify*):

Page Break

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**Question:** STUDQUES56\_SOUTH

**Show if:** (STUDQUES56\_CAMPUS = 6:[South Campus - between Packard & Stadium])

**Scale Summary**

| Code | Label                                      | Show-If |
|------|--|---------|
| 1    | Campus Safety Services Building            |         |
| 2    | Crisler Center                             |         |
| 3    | Donald B. Canham Natatorium                |         |
| 4    | Institute of Continuing Legal Ed           |         |
| 6    | Intramural Sports Building                 |         |
| 7    | John P. Weidenbach Hall                    |         |
| 8    | Schembechler Hall                          |         |
| 5    | Stephen M. Ross Academic Center            |         |
| 9    | William D. Revelli Hall                    |         |
| 10   | William Davidson Player Development Center |         |
| 11   | Yost Ice Arena                             |         |
| 77   | Other                                      |         |



**Listed below are several buildings on South Campus. Sometimes buildings are known by more than one name. Please review the list of building names to find the one in which you spend more than half of your time (for activity such as work, classes, or studying). If you do not see the name of your building, select "Other" and type in the name of the building.**

**Please select the name of the building in which you spend more than half of your time:**

- Campus Safety Services Building
- Crisler Center
- Donald B. Canham Natatorium
- Institute of Continuing Legal Ed
- Intramural Sports Building
- John P. Weidenbach Hall
- Schembechler Hall
- Stephen M. Ross Academic Center
- William D. Revelli Hall
- William Davidson Player Development Center
- Yost Ice Arena
- Other (*please specify*):

Page Break

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**Question:** STUDQUES56\_OTHER  
**Show if:** (STUDQUES56\_CAMPUS = 3:[Elsewhere])

 **Please type the name of the building on campus in which you spend more than half of your time (for activity such as work, classes, or studying).**

Name of Building:

Page Break

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**Question:** STUDQUES7

| Scale Summary |                       |         |
|---------------|-----------------------|---------|
| Code          | Label                 | Show-If |
| 1             | US student            |         |
| 2             | International student |         |

 **Are you a US student or international student?**

- US student
- International student

Page Break

---

**Question:** Q85

**Show if:** (STUDQUES57 = 2:[International student])

**Scale Summary**

| Code | Label   | Show-If |
|------|---|---------|
| 1    | China (including Hong Kong)                           |         |
| 2    | India   |         |
| 3    | Other Asian countries (NOT China or India)            |         |
| 4    | Europe  |         |
| 5    | Mexico, Latin America, Central America, the Carribean |         |
| 6    | Other   |         |



**Which of the following best describes your country of origin?**

- China (including Hong Kong)
- India
- Other Asian countries (NOT China or India)
- Europe
- Mexico, Latin America, Central America, the Carribean
- Other

Page Break

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**Question:** STUDQUES58  
**Show if:** (STUDQUES57 = 1:[US student])

 **What was the ZIP code of your home address during your last year in high school?**

5-digit ZIP code:

Page Break

---

**Question:** STUDQUES59

| Scale Summary |       |         |
|---------------|-------|---------|
| Code          | Label | Show-If |
| 0             | Yes   |         |
| 1             | No    |         |



**Do you have a car of your own at your local residence this semester?**

- Yes
- No

Page Break

---

Question: STUDQUES60

 **What is your age; how old are you?**

years old

Page Break

---

**Question:** STUDQUES61

| Scale Summary |                       |         |
|---------------|-----------------------|---------|
| Code          | Label                 | Show-If |
| 1             | Female                |         |
| 2             | Male                  |         |
| 3             | Other                 |         |
| 4             | Choose not to respond |         |



**Are you:**

- Female
- Male
- Other (*please specify*):
- Choose not to respond

Page Break

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Question: STUDQUES62

| Scale Summary |                                    |         |
|---------------|------------------------------------|---------|
| Code          | Label                              | Show-If |
| 1             | Very satisfied                     |         |
| 2             | Somewhat satisfied                 |         |
| 3             | Neither satisfied nor dissatisfied |         |
| 4             | Somewhat dissatisfied              |         |
| 5             | Very Dissatisfied                  |         |

 **How satisfied are you with your survey experience?**

- Very satisfied
- Somewhat satisfied
- Neither satisfied nor dissatisfied
- Somewhat dissatisfied
- Very Dissatisfied

Question: STUDQUES63

 **How long do you estimate it took you to complete the survey?**

minutes

Page Break

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Question: STUDQUES64

| Scale Summary |                           |         |
|---------------|---------------------------|---------|
| Code          | Label                     | Show-If |
| 1             | Yes                       |         |
| 2             | No                        |         |
| 3             | I don't remember (unsure) |         |



**Do you remember completing a U-M survey like this in Fall 2014?**

- Yes
- No
  
- I don't remember (unsure)

Page Break

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Question: STUDQUES65

| Scale Summary |       |         |
|---------------|-------|---------|
| Code          | Label | Show-If |
| 1             | Yes   |         |
| 2             | No    |         |



**Would you like to receive information on U-M sustainability activities and resources?**

- Yes
- No

Page Break

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Question: INCENTIVE

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Yes, please include me in the drawing.        |         |
| 0             | No, thanks. Do not include me in the drawing. |         |



**Once you submit your completed survey, you will be eligible to win a \$ Amazon gift code. Do you wish to be included in the drawing?**

- Yes, please include me in the drawing.
- No, thanks. Do not include me in the drawing.

## D.4 Faculty/staff SCIP questionnaire 2015



For questions about the survey, please email [ISR-UMSCIP@umich.edu](mailto:ISR-UMSCIP@umich.edu)

### Sustainability Cultural Indicators Program (SCIP)

**Collection:** LOGIN  
**Contains:** DATSTAT\_ALTPID

**Question:** DATSTAT\_ALTPID  
**Required**

 **Please enter your ID.**

**Collection:** SECTION\_A  
**Contains:** FCST1, FCST2\_2013, FCST2A\_2015, FCST3, FCST3B\_2013, FCST4, FCST5, FCST6\_2015, FCST7\_2013

**The purpose of this questionnaire is to better understand what U-M faculty and staff do and how they think about sustainability. Sustainability covers many things and this questionnaire will cover topics such as transportation, energy conservation, waste prevention, food, and environmental protection.**

Page Break

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## Statement of Consent

Principal Investigator: John Callewaert, Integrated Assessment Program Director  
Graham Sustainability Institute

- You were randomly selected from among all faculty and staff at the University of Michigan to be invited to complete this survey.
- To evaluate the programs, outstanding needs, and current practices and beliefs regarding the issue of sustainability on the U-M campus in Ann Arbor, you will be asked questions about transportation, food, the environment, and conserving energy.
- Participating in this study is completely voluntary, you can skip any question and can stop at any time.
- It should take 15 minutes to complete.
- There are no risks related to completing this survey, because the topic is not sensitive.
- The benefit to participating is that your attitudes, behaviors, and knowledge may help to shape U-M programs.
- Upon completion of the survey, your email address will be included in a drawing for a \$50 Amazon gift code.
- Your answers and personal information will be kept confidential.
- Your name will not be attached to any data, a study number will be used instead.
- You must be at least 18 years old to complete the questionnaire. By completing the questionnaire, you are acknowledging that you are at least 18 years old.
- The data for this study are being collected by the University of Michigan Survey Research Center (SRC) Survey Research Operations (SRO) in cooperation with John Callewaert, PhD, Integrated Assessment Program Director at the Graham Sustainability Institute of the University of Michigan.
- The Sustainability Cultural Indicators Program (SCIP) is funded by the University of Michigan.
- If you have any question about the study, please contact: John Callewaert, (734) 615-3752, [jcallew@umich.edu](mailto:jcallew@umich.edu).
- If you have questions about your rights as a research participant, or wish to obtain information, ask questions or discuss any concerns about this study with someone other than the researcher, please contact the University of Michigan Health Sciences and Behavioral Sciences Institutional Review Board, 2800 Plymouth Rd., Building 520, Room 1169, Ann Arbor, MI 48109-2800, (734) 936-0933, or toll-free, (866) 936-0933, [irbhsbs@umich.edu](mailto:irbhsbs@umich.edu)

**Click "Next" to continue with the survey.**

- You must be at least 18 years old to complete the questionnaire.
- Your answers and personal information will be kept confidential.
- Participation is voluntary, you can skip any question and you can stop at any time.
- It should take about 15 minutes to complete.
- There are no risks related to completing this survey, because the topic is not sensitive.
- Upon completion of the survey, your email address will be included in a drawing for a \$50 Amazon gift code.

To learn more...

|                 |
|-----------------|
| About the Study |
| Confidentiality |
| Your Rights     |


**Click "Next" to continue with the survey.**

Page Break

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**Question Block:** FCST1  
**Contains:** Q1, Q2, Q3, Q4, Q6, Q7, Q164\_2015

| Scale Summary |                              |         |
|---------------|------------------------------|---------|
| Code          | Label                        | Show-If |
| 1             | <b>A lot</b>                 |         |
| 2             | <b>A fair amount</b>         |         |
| 3             | <b>A little</b>              |         |
| 4             | <b>Not much/<br/>nothing</b> |         |

 The first set of questions is about **travel and transportation**.

**How much do you know about travel by:**


|  | <b>A lot</b>          | <b>A fair amount</b>  | <b>A little</b>       | <b>Not much/<br/>nothing</b> |
|--|-----------------------|-----------------------|-----------------------|------------------------------|
| <b>Bus, AAATA/"The Ride" (Ann Arbor Area Transportation Authority schedules, routes, etc.)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>U-M buses (schedules, routes, etc.)</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Biking in Ann Arbor (bike lanes, rules of the road, etc.)</b>                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Renting a car by the hour (e.g. Zipcar)</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>U-M Vanpools (VanRide)</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>U-M Greenride/iShareaRide</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Arbor Bike</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |

Page Break

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**Question Block:** FCST2\_2013  
**Contains:** Q10\_2013, Q20\_2013, Q11\_2013, Q12\_2013, Q13\_2013, Q14\_2013, Q15\_2013, Q16\_2013, Q17\_2013, Q19\_2013, Q21\_2013

| Scale Summary |                                |             |
|---------------|--------------------------------|-------------|
| Code          | Label                          | Show-If     |
| 1             | Never                          |             |
| 2             | Rarely                         |             |
| 3             | Sometimes                      |             |
| 4             | Always/<br>Most of<br>the time |             |
| 5             | 1 day per week or less         | Never Shown |
| 6             | 2 - 3 days per week            | Never Shown |
| 7             | 4 or more days per week        | Never Shown |

 **During the past year, how often did you do the following to travel between your home and your U-M workplace?**

|  | Never                 | Rarely                | Sometimes             | Always/<br>Most of<br>the time | 1 day<br>per<br>week<br>or less | 2 - 3<br>days<br>per<br>week | 4 or<br>more<br>days<br>per<br>week |
|--|-----------------------|-----------------------|-----------------------|--------------------------------|---------------------------------|------------------------------|-------------------------------------|
| <b>Drive a car (alone or with family members) and park on campus</b>                           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>           | <input type="radio"/>        | <input type="radio"/>               |
| <b>Park and Ride (the bus)</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>           | <input type="radio"/>        | <input type="radio"/>               |
| <b>Walk</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>           | <input type="radio"/>        | <input type="radio"/>               |
| <b>Bike</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>           | <input type="radio"/>        | <input type="radio"/>               |
| <b>Bus, AAATA/"The Ride" (Ann Arbor Area Transportation Authority schedules, routes, etc.)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>           | <input type="radio"/>        | <input type="radio"/>               |
| <b>Bus, U-M</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>           | <input type="radio"/>        | <input type="radio"/>               |
| <b>Carpool (self-organized with friends or coworkers)</b>                                      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>           | <input type="radio"/>        | <input type="radio"/>               |
| <b>U-M Greenride/iShareaRide</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>           | <input type="radio"/>        | <input type="radio"/>               |
| <b>U-M Vanpools (VanRide)</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>           | <input type="radio"/>        | <input type="radio"/>               |
| <b>Motorcycle, moped, or scooter</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>           | <input type="radio"/>        | <input type="radio"/>               |
| <b>Did not travel (worked from home/telecommuted)</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/>           | <input type="radio"/>        | <input type="radio"/>               |

Page Break

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**Question:** FCST2A\_2015

**Show if:** (Q13\_2013 = 2:[Rarely]) or (Q13\_2013 = 3:[Sometimes]) or (Q13\_2013 = 4:[Always/ Most of the time])

**Scale Summary**

| Code | Label      | Show-If |
|------|------------|---------|
| 1    | One day    |         |
| 2    | Two days   |         |
| 3    | Three days |         |
| 4    | Four days  |         |
| 5    | Five days  |         |

 **In the past week, how often did you ride the bus?**

- One day
- Two days
- Three days
- Four days
- Five days

Page Break

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Question: FCST3

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Drive a car                                       |         |
| 7             | Park and Ride (the bus)                           |         |
| 2             | Walk  |         |
| 3             | Bike  |         |
| 4             | Ride the bus                                      |         |
| 5             | Ride the bus and bike                             |         |
| 9             | Ride share (i.e. van,car pool, dropped off, etc.) |         |
| 6             | Motorcycle, moped, or scooter                     |         |
| 8             | Other   |         |



**How do you most often travel to and from home to your work place?**

- Drive a car
- Park and Ride (the bus)
- Walk
- Bike
- Ride the bus
- Ride the bus and bike
- Ride share (i.e. van,car pool, dropped off, etc.)
- Motorcycle, moped, or scooter
- Other (*please specify:*)

Page Break

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Question: FCST3B\_2013

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Drive a car                                       |         |
| 7             | Park and Ride (the bus)                           |         |
| 2             | Walk  |         |
| 3             | Bike  |         |
| 4             | Ride the bus                                      |         |
| 5             | Ride the bus and bike                             |         |
| 9             | Ride share (i.e. van,car pool, dropped off, etc.) |         |
| 6             | Motorcycle, moped, or scooter                     |         |
| 8             | Other   |         |

 **And since the beginning of the fall semester, how did you most often travel to and from home to your work place?**

- Drive a car
- Park and Ride (the bus)
- Walk
- Bike
- Ride the bus
- Ride the bus and bike
- Ride share (i.e. van,car pool, dropped off, etc.)
- Motorcycle, moped, or scooter
- Other (*please specify*):

Page Break

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**Question:** FCST4

**Show if:** (FCST3 is-any-of 1:[Drive a car]) or (FCST3B\_2013 is-any-of 1:[Drive a car])

**Scale Summary**

| Code | Label                | Show-If |
|------|----------------------|---------|
| 1    | Convenience          |         |
| 2    | Work schedule        |         |
| 3    | Home/family schedule |         |
| 4    | Length of commute    |         |
| 5    | Other                |         |



**What is the primary reason you drive a car to work?**

- Convenience
- Work schedule
- Home/family schedule
- Length of commute
- Other (*please specify*):

Page Break

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Question: FCST5

| Scale Summary |                          |         |
|---------------|--------------------------|---------|
| Code          | Label                    | Show-If |
| 1             | Gold                     |         |
| 2             | Blue                     |         |
| 3             | Yellow                   |         |
| 4             | Orange                   |         |
| 5             | Daily AVI or Scratch-off |         |
| 6             | Shared Carpool Permit    |         |
| 7             | No permit                |         |

 **Which U-M parking permit do you have?**

- Gold
- Blue
- Yellow
- Orange
- Daily AVI or Scratch-off
- Shared Carpool Permit (*please specify color*):
- No permit

Page Break

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Question: FCST6\_2015

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 0             | No university-sponsored air travel  |         |
| 1             | Less than 5,000 miles (e.g. one round trip cross-country domestic flight)   |         |
| 2             | 5,000-9,999 miles (e.g. two round trip domestic flights or one round trip flight to Europe or Latin America)                  |         |
| 3             | 10,000-24,999 miles (e.g. multiple round trip domestic flights and/or one-two long distance round trip international flights) |         |
| 4             | 25,000-49,999 miles (e.g. three-four long distance round trip international flights)  |         |
| 5             | 50,000 or more miles (frequent long distance air travel)  |         |

 **Since January 2015, what is your estimated university-sponsored air travel?**


- No university-sponsored air travel
- Less than 5,000 miles (e.g. one round trip cross-country domestic flight)
- 5,000-9,999 miles (e.g. two round trip domestic flights or one round trip flight to Europe or Latin America)
- 10,000-24,999 miles (e.g. multiple round trip domestic flights and/or one-two long distance round trip international flights)
- 25,000-49,999 miles (e.g. three-four long distance round trip international flights)
- 50,000 or more miles (frequent long distance air travel)

Page Break

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**Question Block:** FCST7\_2013  
**Contains:** Q26\_2013, Q28\_2013, Q30\_2013

| Scale Summary |                              |         |
|---------------|------------------------------|---------|
| Code          | Label                        | Show-If |
| 1             | <b>Very important</b>        |         |
| 2             | <b>Somewhat important</b>    |         |
| 3             | <b>Not that important</b>    |         |
| 4             | <b>Not at all important</b>  |         |
| 5             | <i>Didn't think about it</i> |         |

 **When you moved to your current residence, how important were each of the following reasons?**

|   | <b>Very important</b> | <b>Somewhat important</b> | <b>Not that important</b> | <b>Not at all important</b> | <b><i>Didn't think about it</i></b> |
|---|-----------------------|---------------------------|---------------------------|-----------------------------|-------------------------------------|
| <b>Being able to walk or bike to work</b>       | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       | <input type="radio"/>               |
| <b>Being able to take the bus to work</b>       | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       | <input type="radio"/>               |
| <b>Having a lower impact on the environment</b> | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       | <input type="radio"/>               |

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**Collection:** SECTION\_B  
**Contains:** FCST10, FCST11, Q128, FCST12, FCST12\_PART2, FCST12\_PART3, FCST13

**Question Block:** FCST10  
**Contains:** Q31, Q32, Q33, Q34, Q35, Q125, Q126, Q127

| Scale Summary |                              |         |
|---------------|------------------------------|---------|
| Code          | Label                        | Show-If |
| 1             | <b>A lot</b>                 |         |
| 2             | <b>A fair amount</b>         |         |
| 3             | <b>A little</b>              |         |
| 4             | <b>Not much/<br/>nothing</b> |         |

 These questions are about **waste prevention and conservation**.

**How much do you know about the following at U-M?**

|  | <b>A lot</b>          | <b>A fair amount</b>  | <b>A little</b>       | <b>Not much/<br/>nothing</b> |
|--|-----------------------|-----------------------|-----------------------|------------------------------|
| <b>Recycling glass</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Recycling plastic</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Recycling paper</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Recycling electronic waste (i.e. computers, cell phones)</b>        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Property Disposition Services</b>                                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Composting</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>The energy consumption of the building where you work</b>           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>The energy conservation features of the building where you work</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |


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**Question Block:** FCST11  
**Contains:** Q36, Q37, Q38, Q39, Q40, Q41, Q42, Q43

| Scale Summary |                                |         |
|---------------|--------------------------------|---------|
| Code          | Label                          | Show-If |
| 1             | Never                          |         |
| 2             | Rarely                         |         |
| 3             | Sometimes                      |         |
| 4             | Always/<br>Most of<br>the time |         |
| 5             | Not Applicable                 |         |

 During the past year, how often did you do the following at work when you had the opportunity?

|   | Never                 | Rarely                | Sometimes             | Always/<br>Most of<br>the time | Not<br>Applicable     |
|---|-----------------------|-----------------------|-----------------------|--------------------------------|-----------------------|
| Turn off the lights when I leave the room   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| Use the power saving settings on the computer   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| Turn off my computer when I leave work  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| Use a motion sensor / "smart" power strip   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| Print double-sided  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| Recycle bottles, containers, and paper products   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| Use a reusable water bottle, coffee cup, travel mug, etc.   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| Use U-M Property Disposition Services to obtain items such as computers, furniture, and equipment | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |

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Question: Q128

| Scale Summary |                      |         |
|---------------|----------------------|---------|
| Code          | Label                | Show-If |
| 1             | Very important       |         |
| 2             | Somewhat important   |         |
| 3             | Not that important   |         |
| 4             | Not at all important |         |



**How important is your behavior to conserving energy in the building where you work?**

- Very important
- Somewhat important
- Not that important
- Not at all important

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**Question Block:** FCST12  
**Contains:** Q44, Q45, Q46, Q47, Q48, Q49

| Scale Summary |                                |         |
|---------------|--------------------------------|---------|
| Code          | Label                          | Show-If |
| 1             | Never                          |         |
| 2             | Rarely                         |         |
| 3             | Sometimes                      |         |
| 4             | Always/<br>Most of<br>the time |         |
| 5             | Not applicable                 |         |

 **During the past year, how often did you do the following at home?**

|   | Never                 | Rarely                | Sometimes             | Always/<br>Most of<br>the time | Not<br>applicable     |
|---|-----------------------|-----------------------|-----------------------|--------------------------------|-----------------------|
| Set thermostat to 65 degrees or lower during cool or cold weather                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| Set thermostat (air conditioner) to 78 degrees or higher during warm or hot weather | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| Turn off lights when I leave the room   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| Unplug electrical appliances when not using them                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| Use the power saving settings on my computer  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| Turn off my home computer when not using it   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |

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**Question Block:** FCST12\_PART2  
**Contains:** Q50, Q51, Q52, Q53, Q54, Q55

| Scale Summary |                                |         |
|---------------|--------------------------------|---------|
| Code          | Label                          | Show-If |
| 1             | Never                          |         |
| 2             | Rarely                         |         |
| 3             | Sometimes                      |         |
| 4             | Always/<br>Most of<br>the time |         |
| 5             | Not applicable                 |         |

 **During the past year, how often did you do the following at home?**

|  | Never                 | Rarely                | Sometimes             | Always/<br>Most of<br>the time | Not<br>applicable     |
|--|-----------------------|-----------------------|-----------------------|--------------------------------|-----------------------|
| <b>Use a motion sensor / "smart" power strip</b>                 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| <b>Run washer only when I have a full load of clothes</b>        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| <b>Limit time in the shower</b>                                  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| <b>Recycle bottles, containers, and paper products</b>           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| <b>Use a reusable water bottle, coffee cup, travel mug, etc.</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| <b>Recycle electronic waste (i.e. computers, cell phones)</b>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |

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**Question Block:** FCST12\_PART3  
**Contains:** Q56, Q57, Q58, Q59, Q72

| Scale Summary |                                |         |
|---------------|--------------------------------|---------|
| Code          | Label                          | Show-If |
| 1             | Never                          |         |
| 2             | Rarely                         |         |
| 3             | Sometimes                      |         |
| 4             | Always/<br>Most of<br>the time |         |
| 5             | Not applicable                 |         |

 **During the past year, how often did you do the following at home?**

|  | Never                 | Rarely                | Sometimes             | Always/<br>Most of<br>the time | Not<br>applicable     |
|--|-----------------------|-----------------------|-----------------------|--------------------------------|-----------------------|
| <b>Bring reusable bags to the store</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| <b>Shop for things with minimal packaging</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| <b>Shop in a second-hand store or online site such as eBay or Craigslist, when I have to buy something (e.g. clothing, furniture, or appliances)</b>       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| <b>Compost food scraps</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| <b>Buy products (besides food) that carry some type of eco-label or certification, (e.g. lumber, organic cotton clothing, household cleaning products)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |

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|   |                   |         |
|---|-------------------|---------|
| <b>Question Block:</b> FCST13                           |                   |         |
| <b>Contains:</b> Q64, Q65, Q66, Q67, Q60, Q61, Q62, Q63 |                   |         |
| <b>Scale Summary</b>                                    |                   |         |
| Code  | Label             | Show-If |
| 1   | <b>Yes</b>        |         |
| 2   | <b>No</b>         |         |
| 3   | <b>Don't Know</b> |         |

 **Do you have any of the following at your current residence?**

|   | <b>Yes</b>            | <b>No</b>             | <b>Don't Know</b>     |
|---|-----------------------|-----------------------|-----------------------|
| <b>Recycling bins</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Compost bin</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Programmable thermostat</b>                                | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Water-saving items (e.g. low-flow faucets/showerheads)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Energy Star appliances</b>                                 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Motion sensor for shutting off electronics</b>             | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Compact fluorescent light bulbs or LED light bulbs</b>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Renewable energy systems, like solar or geothermal</b>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |


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**Collection:** SECTION\_C  
**Contains:** FCST16, FCST17, FCST18

**Question Block:** FCST16  
**Contains:** Q68, Q69, Q70, Q71

| Scale Summary |                              |         |
|---------------|------------------------------|---------|
| Code          | Label                        | Show-If |
| 1             | <b>A lot</b>                 |         |
| 2             | <b>A fair amount</b>         |         |
| 3             | <b>A little</b>              |         |
| 4             | <b>Not much/<br/>nothing</b> |         |

 *This set of questions is about the **natural environment**.*

**How much do you know about the following:**

|  | <b>A lot</b>          | <b>A fair amount</b>  | <b>A little</b>       | <b>Not much/<br/>nothing</b> |
|--|-----------------------|-----------------------|-----------------------|------------------------------|
| <b>Disposing of hazardous materials (i.e. engine oil, medications, etc.)</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Recognizing invasive plant species</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Taking care of residential property in an environmentally-friendly way</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Protecting rivers, streams, &amp; lakes - their tributaries, habitat quality, &amp; native species (e.g. Huron River)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |

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**Question Block:** FCST17  
**Contains:** Q73, Q74, Q75

| Scale Summary |                       |         |
|---------------|-----------------------|---------|
| Code          | Label                 | Show-If |
| 1             | <b>Regularly</b>      |         |
| 2             | <b>Sometimes</b>      |         |
| 3             | <b>Rarely</b>         |         |
| 4             | <b>Never</b>          |         |
| 5             | <b>Not applicable</b> |         |

 **During the past year, at your current residence, how often did you do the following?**

|  | <b>Regularly</b>      | <b>Sometimes</b>      | <b>Rarely</b>         | <b>Never</b>          | <b><i>Not applicable</i></b> |
|--|-----------------------|-----------------------|-----------------------|-----------------------|------------------------------|
| <b>Use fertilizer on your lawn</b>             | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Use commercial herbicides or pesticides</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Water your lawn</b>                         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |

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|   |                       |         |
|---|-----------------------|---------|
| <b>Question Block:</b> FCST18                 |                       |         |
| <b>Contains:</b> Q76, Q77, Q78, Q79, Q80, Q81 |                       |         |
| <b>Scale Summary</b>                          |                       |         |
| Code  | Label                 | Show-If |
| 1   | <b>Yes</b>            |         |
| 2   | <b>No</b>             |         |
| 3   | <b>Not applicable</b> |         |

 **Have you done any of the following at your current residence?**

|  | <b>Yes</b>            | <b>No</b>             | <b><i>Not applicable</i></b> |
|--|-----------------------|-----------------------|------------------------------|
| <b>Installed a rain barrel</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Installed a rain garden</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Eliminated invasive species from your yard or garden</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Intentionally planted native species in your lawn or garden</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Converted all/part of your lawn to native/natural plantings</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Disposed of hazardous materials (i.e. engine oil, harsh cleaners, medications) by taking them to a designated disposal facility</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |


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**Collection:** SECTION\_D  
**Contains:** FCST22, FCST23\_2013, FCST24, FCST25, FCST26, FCST30

**Question Block:** FCST22  
**Contains:** Q82, Q83, Q84, Q85, Q86, Q87, Q88

| Scale Summary |                              |         |
|---------------|------------------------------|---------|
| Code          | Label                        | Show-If |
| 1             | <b>A lot</b>                 |         |
| 2             | <b>A fair amount</b>         |         |
| 3             | <b>A little</b>              |         |
| 4             | <b>Not much/<br/>nothing</b> |         |

 Following are questions about **food**.

**How much do you know about each of the following kinds of food?**


|  | <b>A lot</b>          | <b>A fair amount</b>  | <b>A little</b>       | <b>Not much/<br/>nothing</b> |
|--|-----------------------|-----------------------|-----------------------|------------------------------|
| <b>Locally grown or processed</b>                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Organic</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Fair trade food</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Food from humanely-treated animals</b>                            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Food from animals that were not given hormones or antibiotics</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Grass-fed beef</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Fish from sustainable fisheries</b>                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |

Page Break

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**Question Block:** FCST23\_2013  
**Contains:** Q89\_2013, Q90\_2013, Q95\_2013, Q91\_2013, Q92\_2013, Q93\_2013, Q94\_2013

| Scale Summary |   |                    |
|---------------|---|--------------------|
| Code          | Label                                   | Show-If            |
| 1             | <b>Always/<br/>Most of<br/>the Time</b> |                    |
| 2             | <b>Sometimes</b>                        |                    |
| 3             | <b>Rarely</b>                           |                    |
| 7             | <b>4 or more<br/>times<br/>a month</b>  | <i>Never Shown</i> |
| 8             | <b>2 - 3 times<br/>a month</b>          | <i>Never Shown</i> |
| 9             | <b>Once a<br/>month<br/>or less</b>     | <i>Never Shown</i> |
| 4             | <b>Never</b>                            |                    |
| 5             | <b>Don't Know</b>                       |                    |
| 6             | <b>I Don't Eat This</b>                 |                    |

 **During the past year, about how often did you (or other household members) buy the following?**

|  | <b>Always/<br/>Most of<br/>the<br/>Time</b> | <b>Sometimes</b>      | <b>Rarely</b>         | <b>4 or<br/>more<br/>times<br/>a<br/>month</b> | <b>2 - 3<br/>times<br/>a<br/>month</b> | <b>Once<br/>a<br/>month<br/>or<br/>less</b> | <b>Never</b>          | <b>Don't<br/>Know</b> | <b>I<br/>Don't<br/>Eat<br/>This</b> |
|--|---|-----------------------|-----------------------|--|--|---|-----------------------|-----------------------|-------------------------------------|
| <b>Locally<br/>grown or<br/>processed</b>  | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                          | <input type="radio"/>                  | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>               |
| <b>Organic</b>   | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                          | <input type="radio"/>                  | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>               |
| <b>Fair trade<br/>food</b>   | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                          | <input type="radio"/>                  | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>               |
| <b>Food from<br/>humanely-<br/>treated<br/>animals</b>   | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                          | <input type="radio"/>                  | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>               |
| <b>Food from<br/>animals<br/>that<br/>were not<br/>given<br/>hormones<br/>or<br/>antibiotics</b> | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                          | <input type="radio"/>                  | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>               |
| <b>Grass-fed<br/>beef</b>  | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                          | <input type="radio"/>                  | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>               |
| <b>Fish from<br/>sustainable<br/>fisheries</b>   | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                          | <input type="radio"/>                  | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>               |

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Question: FCST24

| Scale Summary |                     |         |
|---------------|---------------------|---------|
| Code          | Label               | Show-If |
| 1             | All/most            |         |
| 2             | More than half      |         |
| 3             | Half                |         |
| 4             | Less than half      |         |
| 5             | None                |         |
| 6             | <i>I don't know</i> |         |



**"Sustainable food"** can be defined as one or more of the following: locally-sourced, organic, from humanely-treated animals, antibiotic- and hormone-free, grass-fed, from sustainable fisheries, or fair trade food.

**During the past year, about how much of your grocery purchases were sustainable food?**

- All/most
- More than half
- Half
- Less than half
- None
  
- I don't know*

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**Question Block:** FCST25  
**Contains:** Q96, Q97, Q98, Q99, Q100, Q165\_2015  
**Show if:** (FCST24 is-any-of 1:[All/most] or 2:[More than half] or 3:[Half] or 4:[Less than half])

| Scale Summary |                             |         |
|---------------|-----------------------------|---------|
| Code          | Label                       | Show-If |
| 1             | <b>Very important</b>       |         |
| 2             | <b>Somewhat important</b>   |         |
| 3             | <b>Not that important</b>   |         |
| 4             | <b>Not at all important</b> |         |

 **How important to you are the following when you buy sustainable food?**


|   | <b>Very important</b> | <b>Somewhat important</b> | <b>Not that important</b> | <b>Not at all important</b> |
|---|-----------------------|---------------------------|---------------------------|-----------------------------|
| <b>Nutrition</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Taste</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Supporting the local community</b>   | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Protecting the environment</b>   | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Avoiding things like synthetic pesticides or fertilizers, antibiotics or growth hormones</b> | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Affordability</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |

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Question: FCST26

| Scale Summary |                    |         |
|---------------|--------------------|---------|
| Code          | Label              | Show-If |
| 1             | Daily/almost daily |         |
| 2             | 3-4 days           |         |
| 3             | 1-2 days           |         |
| 4             | Never              |         |

 **During the past week, how often have you included meat as part of your daily diet?**

- Daily/almost daily
- 3-4 days
- 1-2 days
- Never

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|   |            |         |
|---|------------|---------|
| <b>Question Block:</b> FCST30                       |            |         |
| <b>Contains:</b> Q101, Q102, Q103, Q104, Q105, Q106 |            |         |
| <b>Scale Summary</b>                                |            |         |
| Code  | Label      | Show-If |
| 0   | <b>Yes</b> |         |
| 1   | <b>No</b>  |         |

 **During the past year, have you:**

|  | <b>Yes</b>            | <b>No</b>             |
|--|-----------------------|-----------------------|
| <b>Grown fruits/vegetables in a home garden?</b>               | <input type="radio"/> | <input type="radio"/> |
| <b>Grown fruits/vegetables in a community garden?</b>          | <input type="radio"/> | <input type="radio"/> |
| <b>Shopped at farmers markets or food stands?</b>              | <input type="radio"/> | <input type="radio"/> |
| <b>Belonged to a CSA (Community Supported Agriculture)?</b>    | <input type="radio"/> | <input type="radio"/> |
| <b>Visited U-Pick farms?</b>                                   | <input type="radio"/> | <input type="radio"/> |
| <b>Raised animals for food (e.g. meat, dairy, eggs, etc.)?</b> | <input type="radio"/> | <input type="radio"/> |

Page Break

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**Collection:** SECTION\_E  
**Contains:** FCST32\_2013, FCST32A\_2013, FCST32B\_2013, FCST35, FCST33, FCST34

**Question:** FCST32\_2013

| Scale Summary |              |         |
|---------------|--------------|---------|
| Code          | Label        | Show-If |
| 1             | Yes          |         |
| 2             | No           |         |
| 3             | I don't know |         |

 These questions are about **climate change**, which is sometimes called *global warming*.

**Do you think climate change is happening?**

- Yes
- No
  
- I don't know

Page Break

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**Question:** FCST32A\_2013

**Show if:** (FCST32\_2013 = 1:[Yes])

**Scale Summary**

| Code | Label           | Show-If |
|------|-----------------|---------|
| 1    | Extremely sure  |         |
| 2    | Mostly sure     |         |
| 3    | Somewhat sure   |         |
| 4    | Not at all sure |         |

 **How sure are you that climate change is happening?**

- Extremely sure
- Mostly sure
- Somewhat sure
- Not at all sure

Page Break

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**Question:** FCST32B\_2013

**Show if:** (FCST32\_2013 = 2:[No])

**Scale Summary**

| Code | Label           | Show-If |
|------|-----------------|---------|
| 1    | Extremely sure  |         |
| 2    | Mostly sure     |         |
| 3    | Somewhat sure   |         |
| 4    | Not at all sure |         |



**How sure are you that climate change is not happening?**

- Extremely sure
- Mostly sure
- Somewhat sure
- Not at all sure

Page Break

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Question: FCST35

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Caused mostly by human activities                         |         |
| 2             | Caused mostly by natural changes                          |         |
| 3             | Caused by both human activities and natural changes       |         |
| 4             | None of the above because climate change is not happening |         |

 **Assuming climate change is happening, do you think it is...**

- Caused mostly by human activities
- Caused mostly by natural changes
- Caused by both human activities and natural changes
- None of the above because climate change is not happening

Page Break

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Question: FCST33

| Scale Summary |                      |         |
|---------------|----------------------|---------|
| Code          | Label                | Show-If |
| 1             | Not at all important |         |
| 2             | Not too important    |         |
| 3             | Somewhat important   |         |
| 4             | Very important       |         |
| 5             | Extremely important  |         |



**How important is the issue of climate change to you personally?**

- Not at all important
- Not too important
- Somewhat important
- Very important
- Extremely important

Page Break

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Question: FCST34

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label                                    | Show-If |
| 1             | Very well                                |         |
| 2             | Fairly well                              |         |
| 3             | A little bit                             |         |
| 4             | I would not be able to explain it at all |         |

 **How well could you explain the topic of climate change to someone who didn't know about it--what's causing it or not, what are its potential consequences, etc.?**

- Very well
- Fairly well
- A little bit
- I would not be able to explain it at all

Page Break

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**Collection:** SECTION\_F  
**Contains:** FCST37, FCST38, FCST39, FCST40, FCST41, FCST42, FCST43

**Question Block:** FCST37  
**Contains:** Q107, Q108, Q109, Q110

| Scale Summary |       |         |
|---------------|-------|---------|
| Code          | Label | Show-If |
| 0             | Yes   |         |
| 1             | No    |         |

 These next questions cover **other activities and your opinions about sustainability.**

**Have you done any of the following during the past year to promote sustainability issues such as environmental protection, energy or water conservation, open space preservation, public or non-motorized transportation, etc.?**

|  | Yes                   | No                    |
|--|-----------------------|-----------------------|
| <b>Given money to an organization or advocacy group supporting one of the above issues?</b>                      | <input type="radio"/> | <input type="radio"/> |
| <b>Volunteered for an organization or advocacy group supporting one of the above issues?</b>                     | <input type="radio"/> | <input type="radio"/> |
| <b>Served in a leadership position for an organization or advocacy group supporting one of the above issues?</b> | <input type="radio"/> | <input type="radio"/> |
| <b>Voted for a candidate for public office because of her/his position on any of the above issues?</b>           | <input type="radio"/> | <input type="radio"/> |

Page Break

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**Question Block:** FCST38

**Contains:** Q111, Q112, Q113, Q114, Q115, Q116, Q117, Q118, Q119

**Scale Summary**

| Code | Label             | Show-If |
|------|-------------------|---------|
| 1    | <b>Never</b>      |         |
| 2    | <b>Rarely</b>     |         |
| 3    | <b>Sometimes</b>  |         |
| 4    | <b>Frequently</b> |         |
| 5    | <b>Don't know</b> |         |



**During the past year, how often have you encouraged your friends to do the following things?**

|   | <b>Never</b>          | <b>Rarely</b>         | <b>Sometimes</b>      | <b>Frequently</b>     | <b>Don't know</b>     |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Walk, bike, or take the bus rather than drive</b>                              | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Buy locally sourced or sustainable food</b>                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Conserve water</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Conserve electricity</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Reuse or recycle containers or bags</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Buy fewer things</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Buy things that are better for the environment</b>                             | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Use environmentally-friendly ways of controlling insects, weeds, and pests</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Do something in order to reduce his/her greenhouse gas emissions</b>           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Page Break

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**Question Block:** FCST39  
**Contains:** Q120, Q121, Q122, Q123

| Scale Summary |                                   |         |
|---------------|-----------------------------------|---------|
| Code          | Label                             | Show-If |
| 1             | <b>Strongly oppose</b>            |         |
| 2             | <b>Moderately oppose</b>          |         |
| 3             | <b>Neither support nor oppose</b> |         |
| 4             | <b>Moderately support</b>         |         |
| 5             | <b>Strongly support</b>           |         |

 **Would you support or oppose the following governmental policies?**

|  | <b>Strongly oppose</b> | <b>Moderately oppose</b> | <b>Neither support nor oppose</b> | <b>Moderately support</b> | <b>Strongly support</b> |
|--|------------------------|--------------------------|-----------------------------------|---------------------------|-------------------------|
| <b>A 20 cent increase in the price per gallon of gasoline, if the extra money were used to improve local public transportation.</b>  | <input type="radio"/>  | <input type="radio"/>    | <input type="radio"/>             | <input type="radio"/>     | <input type="radio"/>   |
| <b>A requirement that electric utilities produce at least 40 percent of their electricity from wind, solar, or other renewable energy sources, even if it costs the average household an extra \$100 a year.</b> | <input type="radio"/>  | <input type="radio"/>    | <input type="radio"/>             | <input type="radio"/>     | <input type="radio"/>   |
| <b>A ban on disposable plastic bags.</b>   | <input type="radio"/>  | <input type="radio"/>    | <input type="radio"/>             | <input type="radio"/>     | <input type="radio"/>   |
| <b>A tax on fuels - like gasoline and natural gas - according to their carbon content, if the extra money were used for clean energy projects.</b>   | <input type="radio"/>  | <input type="radio"/>    | <input type="radio"/>             | <input type="radio"/>     | <input type="radio"/>   |

Page Break

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**Question Block:** FCST40  
**Contains:** Q160, Q161, Q162

| Scale Summary |                    |         |
|---------------|--------------------|---------|
| Code          | Label              | Show-If |
| 0             | <b>Nothing</b>     |         |
| 1             | <b>\$1 - \$10</b>  |         |
| 2             | <b>\$11 - \$20</b> |         |
| 3             | <b>\$21 - \$30</b> |         |
| 4             | <b>\$31 - \$40</b> |         |
| 5             | <b>\$41 - \$50</b> |         |

 **How much would you be willing to personally pay each year to...**

|  | <b>Nothing</b>        | <b>\$1 - \$10</b>     | <b>\$11 - \$20</b>    | <b>\$21 - \$30</b>    | <b>\$31 - \$40</b>    | <b>\$41 - \$50</b>    |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Expand waste prevention efforts, such as recycling and green purchasing at U-M</b>                            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Expand alternative transportation efforts such as buses, bikes, and carpools at U-M</b>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Expand efforts to lower greenhouse gas emissions at U-M through energy conservation and renewable sources</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Page Break

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|   |                             |         |
|---|-----------------------------|---------|
| <b>Question Block:</b> FCST41                             |                             |         |
| <b>Contains:</b> Q129, Q130, Q131, Q132, Q133, Q134, Q135 |                             |         |
| <b>Scale Summary</b>                                      |                             |         |
| Code  | Label                       | Show-If |
| 1   | <b>Very concerned</b>       |         |
| 2   | <b>Somewhat concerned</b>   |         |
| 3   | <b>Not that concerned</b>   |         |
| 4   | <b>Not at all concerned</b> |         |

 **How concerned are you about the following things?**

|   | <b>Very concerned</b> | <b>Somewhat concerned</b> | <b>Not that concerned</b> | <b>Not at all concerned</b> |
|---|-----------------------|---------------------------|---------------------------|-----------------------------|
| <b>The impact that people's travel - by car and plane - has on the environment</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Whether food is grown and produced in a way that is good for the environment</b> | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Natural resources - like water and fossil fuels - being used up</b>              | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>People producing too much waste</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>The loss of open space</b>   | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>The loss of wildlife habitat</b>   | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Population growth</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |

Page Break

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**Question:** FCST42

| Scale Summary |                      |         |
|---------------|----------------------|---------|
| Code          | Label                | Show-If |
| 1             | Very committed       |         |
| 2             | Somewhat committed   |         |
| 3             | Not very committed   |         |
| 4             | Not at all committed |         |

 **Overall, how committed are you to sustainability? Are you:**

- Very committed
- Somewhat committed
- Not very committed
- Not at all committed

Page Break

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Question: FCST43

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label                                    | Show-If |
| 1             | Friends or classmates                    |         |
| 2             | Parents or other family members          |         |
| 3             | K-12 teachers                            |         |
| 4             | U-M professors/instructors               |         |
| 5             | Childhood experiences outdoors           |         |
| 8             | Media--readings, video, movies, TV, etc. |         |
| 6             | Other U-M activities                     |         |
| 7             | Other                                    |         |

 **Who or what has been most influential in shaping your views about sustainability?**

- Friends or classmates
- Parents or other family members
- K-12 teachers
- U-M professors/instructors
- Childhood experiences outdoors
- Media--readings, video, movies, TV, etc.
- Other U-M activities (*please specify*):
- Other (*please specify*):

Page Break

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**Collection:** SECTION\_G  
**Contains:** FCST44, FCST45, FCST46A1\_2015, FCST46

**Question Block:** FCST44  
**Contains:** Q136, Q137, Q138, Q139, Q140, Q141, Q142, Q143, Q153

| Scale Summary |                  |         |
|---------------|------------------|---------|
| Code          | Label            | Show-If |
| 1             | Very aware       |         |
| 2             | Somewhat aware   |         |
| 3             | Not too aware    |         |
| 4             | Not at all aware |         |

 This set of questions is about **sustainability at the University of Michigan**.

**How aware are you of U-M's efforts to:**

|   | Very aware            | Somewhat aware        | Not too aware         | Not at all aware      |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Conserve energy?</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Encourage people to take a bus or bike?</b>                        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote ride sharing?</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote recycling?</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote food from sustainable sources?</b>                         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Reduce greenhouse gas emissions?</b>                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Maintain campus grounds in an environmentally-friendly manner?</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Protect the Huron River?</b>                                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote composting?</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Page Break

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**Question Block:** FCST45

**Contains:** Q144, Q145, Q146, Q147, Q148, Q149, Q150, Q151, Q159

**Scale Summary**

| Code | Label                | Show-If |
|------|----------------------|---------|
| 1    | <b>Very Good (A)</b> |         |
| 2    | <b>Good (B)</b>      |         |
| 3    | <b>Fair (C)</b>      |         |
| 4    | <b>Poor (D)</b>      |         |
| 5    | <b>Very Poor (F)</b> |         |

 **Overall, how would you rate/grade U-M's efforts to:**

|   | <b>Very Good (A)</b>  | <b>Good (B)</b>       | <b>Fair (C)</b>       | <b>Poor (D)</b>       | <b>Very Poor (F)</b>  |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Conserve energy?</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Encourage people to take a bus or bike?</b>                        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote ride sharing?</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote recycling?</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote food from sustainable sources?</b>                         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Reduce greenhouse gas emissions?</b>                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Maintain campus grounds in an environmentally-friendly manner?</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Protect the Huron River?</b>                                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote composting?</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Page Break

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|   |       |         |
|---|-------|---------|
| <b>Question Block:</b> FCST46A1_2015  |       |         |
| <b>Contains:</b> Q168_2015, Q169_2015, Q171_2015, Q172_2015, Q173_2015, Q174_2015, Q175_2015, Q176_2015, Q177_2015, Q178_2015 |       |         |
| <b>Scale Summary</b>  |       |         |
| Code  | Label | Show-If |
| 0   | Yes   |         |
| 1   | No    |         |

 **During the past year did you participate in any of the following at U-M?**

|   | Yes                   | No                    |
|---|-----------------------|-----------------------|
| <b>RecycleMania</b>                                   | <input type="radio"/> | <input type="radio"/> |
| <b>Earthfest</b>                                      | <input type="radio"/> | <input type="radio"/> |
| <b>Zero Waste Events</b>                              | <input type="radio"/> | <input type="radio"/> |
| <b>e-Waste Recycling Event</b>                        | <input type="radio"/> | <input type="radio"/> |
| <b>Planet Blue Ambassadors Program</b>                | <input type="radio"/> | <input type="radio"/> |
| <b>Sustainable Workplace Certification Program</b>    | <input type="radio"/> | <input type="radio"/> |
| <b>Sustainable Lab Recognition Program</b>            | <input type="radio"/> | <input type="radio"/> |
| <b>M Farmers Markets</b>                              | <input type="radio"/> | <input type="radio"/> |
| <b>A U-M organization dealing with sustainability</b> | <input type="radio"/> | <input type="radio"/> |
| <b>Other</b>  | <input type="radio"/> | <input type="radio"/> |

Auto Page Break

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Custom Layout Question: FCST46\_1

 Please specify:

Page Break

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**Question Block:** FCST46

**Contains:** Q152, Q154, Q156, Q157, Q5, Q124, Q166\_2015, Q167\_2015, Q158

Show if: (Q168\_2015 = 1:[No]) or (Q169\_2015 = 1:[No]) or (Q171\_2015 = 1:[No]) or (Q172\_2015 = 1:[No]) or (Q173\_2015 = 1:[No]) or (Q174\_2015 = 1:[No]) or (Q175\_2015 = 1:[No]) or (Q176\_2015 = 1:[No]) or (Q177\_2015 = 1:[No])

**Scale Summary**

| Code | Label | Show-If |
|------|-------|---------|
| 0    | Yes   |         |
| 1    | No    |         |

 **Have you ever participated in any of the following at U-M?**

|   | Yes                   | No                    |
|---|-----------------------|-----------------------|
| <b>RecycleMania</b>                                   | <input type="radio"/> | <input type="radio"/> |
| <b>Earthfest</b>                                      | <input type="radio"/> | <input type="radio"/> |
| <b>Zero Waste Events</b>                              | <input type="radio"/> | <input type="radio"/> |
| <b>e-Waste Recycling Event</b>                        | <input type="radio"/> | <input type="radio"/> |
| <b>Planet Blue Ambassadors Program</b>                | <input type="radio"/> | <input type="radio"/> |
| <b>Sustainable Workplace Certification Program</b>    | <input type="radio"/> | <input type="radio"/> |
| <b>Sustainable Lab Recognition Program</b>            | <input type="radio"/> | <input type="radio"/> |
| <b>M Farmers Markets</b>                              | <input type="radio"/> | <input type="radio"/> |
| <b>A U-M organization dealing with sustainability</b> | <input type="radio"/> | <input type="radio"/> |

Page Break


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**Collection:** SECTION\_H  
**Contains:** FCST47, FCST48, FCST49-FCST50\_SERIES, FCST51, FCST52\_CAMPUS\_2013, FCST52\_MAP\_2013, FCST52\_CENTRAL, FCST52\_EAST, FCST52\_MEDICAL, FCST52\_NORTH, FCST52\_SOUTH, FCST52\_OTHER, FCST53, FCST54, FCST55, FCST55B, FCST56\_2014, FCST58, FCST59, FCST60, FCST61, FCST62, FCST63, FCST64\_2014, FCST65\_2014, FCST66\_2014, FCST67, INCENTIVE

**Question:** FCST47

**Scale Summary**

| Code | Label   | Show-If |
|------|---------|---------|
| 1    | Staff   |         |
| 2    | Faculty |         |

 *About you:*

**Are you:**

- Staff
- Faculty

Page Break

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**Question:** FCST48

**Show if:** (FCST47 = 1:[Staff])

**Scale Summary**

| Code | Label                  | Show-If |
|------|------------------------|---------|
| 1    | Professional           |         |
| 2    | Managerial             |         |
| 3    | Administrative support |         |
| 4    | Research               |         |
| 5    | Medical, nursing       |         |
| 6    | Service or maintenance |         |
| 7    | Other                  |         |



**Are you primarily:**

- Professional
- Managerial
- Administrative support
- Research
- Medical, nursing
- Service or maintenance
- Other (*please specify*):

Page Break

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**Collection:** FCST49-FCST50\_SERIES  
**Contains:** FCST49, FCST50  
**Show if:** (FCST47 = 2:[Faculty])

**Question:** FCST49

| Scale Summary |                     |         |
|---------------|---------------------|---------|
| Code          | Label               | Show-If |
| 1             | Tenured faculty     |         |
| 2             | Non-tenured faculty |         |



**Are you:**

- Tenured faculty
- Non-tenured faculty

Page Break

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**Question:** FCST50

| Scale Summary |                                |         |
|---------------|--------------------------------|---------|
| Code          | Label                          | Show-If |
| 1             | Teaching faculty               |         |
| 2             | Research faculty               |         |
| 3             | Clinical instructional faculty |         |
| 4             | Lecturer                       |         |
| 6             | Librarian                      |         |
| 5             | Other                          |         |

 **Are you primarily:**


- Teaching faculty
- Research faculty
- Clinical instructional faculty
- Lecturer
- Librarian
- Other (*please specify*):

Page Break

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**Question:** FCST51

| Scale Summary |                    |         |
|---------------|--------------------|---------|
| Code          | Label              | Show-If |
| 1             | Less than a year   |         |
| 2             | 1-2 years          |         |
| 3             | 3-5 years          |         |
| 4             | 6-10 years         |         |
| 5             | 11-20 years        |         |
| 6             | More than 20 years |         |

 **How long have you worked at U-M?**

- Less than a year
- 1-2 years
- 3-5 years
- 6-10 years
- 11-20 years
- More than 20 years

Page Break

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Question: FCST52\_CAMPUS\_2013

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Central Campus <i>(includes the Law School and Diag, among many others)</i> |         |
| 2             | East Campus <i>(includes buildings off Plymouth road, among others)</i>     |         |
| 3             | Medical Campus <i>(U-M Hospital and surrounding medical buildings)</i>      |         |
| 4             | North Campus <i>(between Fuller and Plymouth Roads)</i>                     |         |
| 5             | South Campus <i>(South of Packard to Stadium)</i>                           |         |
| 6             | Other <i>(including Wolverine Tower)</i>                                    |         |
| 7             | <i>I'm not sure - show me a map</i>   |         |



**On which campus do you mainly work?**

- Central Campus *(includes the Law School and Diag, among many others)*
- East Campus *(includes buildings off Plymouth road, among others)*
- Medical Campus *(U-M Hospital and surrounding medical buildings)*
- North Campus *(between Fuller and Plymouth Roads)*
- South Campus *(South of Packard to Stadium)*
- Other *(including Wolverine Tower)*
- I'm not sure - show me a map*

Page Break

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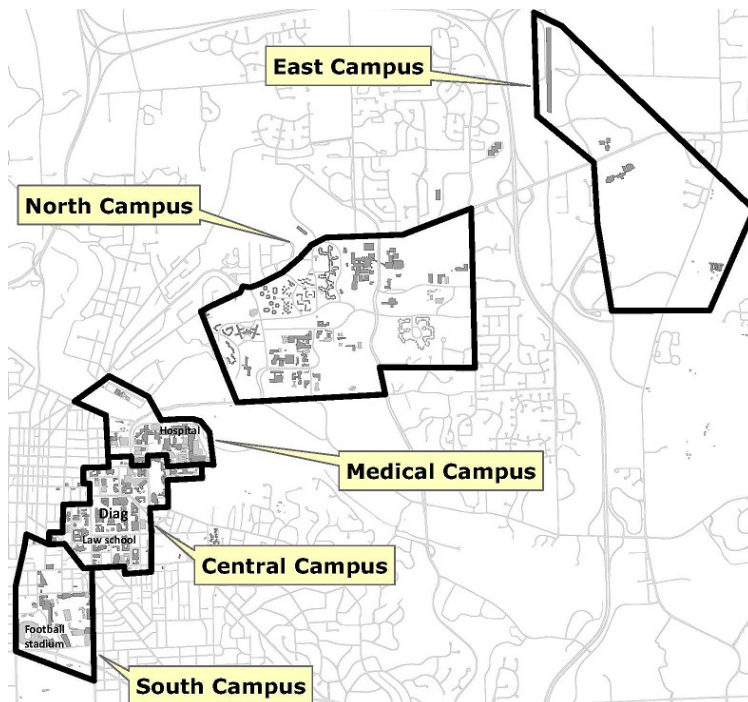
Question: FCST52\_MAP\_2013

Show if: (FCST52\_CAMPUS\_2013 = 7:[I'm not sure - show me a map])

**Scale Summary**

| Code | Label   | Show-If |
|------|---|---------|
| 1    | Central Campus <i>(includes the Law School and Diag, among many others)</i> |         |
| 2    | East Campus <i>(includes buildings off Plymouth road, among others)</i>     |         |
| 3    | Medical Campus <i>(U-M Hospital and surrounding medical buildings)</i>      |         |
| 4    | North Campus <i>(between Fuller and Plymouth Roads)</i>                     |         |
| 5    | South Campus <i>(South of Packard to Stadium)</i>                           |         |
| 6    | Other <i>(including Wolverine Tower)</i>                                    |         |

 **On which campus do you mainly work?**



- Central Campus *(includes the Law School and Diag, among many others)*
- East Campus *(includes buildings off Plymouth road, among others)*
- Medical Campus *(U-M Hospital and surrounding medical buildings)*
- North Campus *(between Fuller and Plymouth Roads)*
- South Campus *(South of Packard to Stadium)*
- Other *(including Wolverine Tower)*

Page Break

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**Question:** FCST52\_CENTRAL

**Show if:** (FCST52\_CAMPUS\_2013 = 1:[Central Campus (includes the Law School and Diag, among many others)]) or (FCST52\_MAP\_2013 = 1:[Central Campus (includes the Law School and Diag, among many others)])

| Scale Summary |   |                    |
|---------------|---|--------------------|
| Code          | Label                                     | Show-If            |
| 1             | Angell Hall                               |                    |
| 28            | Central Campus Recreation Building        |                    |
| 26            | Central Power Plant                       |                    |
| 2             | Chemistry                                 |                    |
| 3             | Clarence Cook Little Building             |                    |
| 4             | Dana Natural Resources Building           |                    |
| 5             | Dental & W.K. Kellogg Institute           |                    |
| 6             | East Hall                                 |                    |
| 7             | Edward Henry Kraus Building               |                    |
| 29            | Ford School of Public Policy (Weill Hall) |                    |
| 8             | Harlan Hatcher Graduate Library           |                    |
| 9             | Haven Hall                                |                    |
| 10            | Hutchins Hall                             |                    |
| 11            | Institute For Social Research             |                    |
| 30            | Law School (including South Hall)         |                    |
| 12            | Literature Science and the Arts           |                    |
| 13            | Lorch Hall                                |                    |
| 14            | Modern Languages Building                 |                    |
| 15            | Museum of Natural History                 |                    |
| 16            | North Quad                                |                    |
| 32            | Palmer Commons                            |                    |
| 17            | Randall Laboratory                        |                    |
| 18            | Ross School of Business                   |                    |
| 19            | School of Education                       |                    |
| 31            | School of Public Health I or II           |                    |
| 20            | School of Social Work Building            |                    |
| 21            | Shapiro Harold & Vivian Library           |                    |
| 22            | Student Activities Building               |                    |
| 27            | Tisch Hall                                |                    |
| 33            | Undergraduate Science Building            |                    |
| 23            | University Health Services                |                    |
| 24            | West Hall                                 |                    |
| 25            | 202 S. Thayer                             | <i>Never Shown</i> |
| 77            | Other                                     |                    |



**Listed below are many buildings on Central Campus. Some buildings are known by more than one name. If you do not see the name of the building where you work, please select "Other" and type in the name of the building in which you work.**

**Please select the name of the building where you mainly work.**

- Angell Hall
- Central Campus Recreation Building
- Central Power Plant
- Chemistry
- Clarence Cook Little Building
- Dana Natural Resources Building
- Dental & W.K. Kellogg Institute
- East Hall
- Edward Henry Kraus Building
- Ford School of Public Policy (Weill Hall)
- Harlan Hatcher Graduate Library
- Haven Hall
- Hutchins Hall
- Institute For Social Research

- Law School (including South Hall)
- Literature Science and the Arts
- Lorch Hall
- Modern Languages Building
- Museum of Natural History
- North Quad
- Palmer Commons
- Randall Laboratory
- Ross School of Business
- School of Education
- School of Public Health I or II
- School of Social Work Building
- Shapiro Harold & Vivian Library
- Student Activities Building
- Tisch Hall
- Undergraduate Science Building
- University Health Services
- West Hall
- 202 S. Thayer
- Other (*name of building*):

Page Break

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**Question:** FCST52\_EAST

**Show if:** (FCST52\_CAMPUS\_2013 = 2:[East Campus (includes buildings off Plymouth road, among others)]) or (FCST52\_MAP\_2013 = 2:[East Campus (includes buildings off Plymouth road, among others)])

| Scale Summary |   |                    |
|---------------|---|--------------------|
| Code          | Label   | Show-If            |
| 1             | Arbor Lakes Building 1, 2 or 3                  |                    |
| 2             | Arbor Lakes Building 2                          | <i>Never Shown</i> |
| 3             | Arbor Lakes Building 3                          | <i>Never Shown</i> |
| 4             | Domino's Farms                                  |                    |
| 5             | East Ann Arbor Health & Geriatrics Center       |                    |
| 6             | Matthaei Botanical Gardens or Nichols Arboretum |                    |
| 7             | Rachel Upjohn Building                          |                    |
| 77            | Other   |                    |



**Listed below are buildings on East Campus. Some buildings are known by more than one name. If you do not see the name of the building where you work, please select "Other" and type in the name of the building in which you work.**

**Please select the name of the building where you mainly work.**

- Arbor Lakes Building 1, 2 or 3
- Arbor Lakes Building 2
- Arbor Lakes Building 3
- Domino's Farms
- East Ann Arbor Health & Geriatrics Center
- Matthaei Botanical Gardens or Nichols Arboretum
- Rachel Upjohn Building
- Other (*name of building*):

Page Break

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**Question:** FCST52\_MEDICAL

**Show if:** (FCST52\_CAMPUS\_2013 = 3:[Medical Campus (U-M Hospital and surrounding medical buildings)]) or (FCST52\_MAP\_2013 = 3:[Medical Campus (U-M Hospital and surrounding medical buildings)])

| Scale Summary |  |                    |
|---------------|--|--------------------|
| Code          | Label  | Show-If            |
| 1             | A. Alfred Taubman Biomedical Science Research Building |                    |
| 2             | A. Alfred Taubman Health Care                          |                    |
| 20            | A. Alfred Taubman Health Sciences Library              |                    |
| 3             | Brehm Tower  |                    |
| 4             | Cancer Center  |                    |
| 15            | Detroit Observatory                                    |                    |
| 5             | Frankel Cardiovascular Center                          |                    |
| 6             | Kellogg Eye Center                                     |                    |
| 7             | Life Sciences Institute                                |                    |
| 8             | Med Inn  |                    |
| 9             | Medical Science Research Building I, II or III         |                    |
| 10            | Medical Science Unit I or II                           |                    |
| 11            | Medical Science Unit II                                | <i>Never Shown</i> |
| 19            | Medical Science Unit III                               | <i>Never Shown</i> |
| 12            | Mott Children's Hospital                               |                    |
| 13            | Neuroscience Hospital                                  |                    |
| 14            | Neuroscience Hospital Unit 2                           | <i>Never Shown</i> |
| 16            | Palmer Commons   |                    |
| 17            | School of Nursing                                      |                    |
| 18            | School of Public Health I or II                        |                    |
| 21            | Undergraduate Science Building                         |                    |
| 22            | University Hospital                                    |                    |
| 23            | Von Voigtlander Women's Hospital                       |                    |
| 77            | Other  |                    |



**Listed below are buildings on the Medical Campus. Some buildings are known by more than one name. If you do not see the name of the building where you work, please select "Other" and type in the name of the building in which you work.**

**Please select the name of the building where you mainly work.**

- A. Alfred Taubman Biomedical Science Research Building
- A. Alfred Taubman Health Care
- A. Alfred Taubman Health Sciences Library
- Brehm Tower
- Cancer Center
- Detroit Observatory
- Frankel Cardiovascular Center
- Kellogg Eye Center
- Life Sciences Institute
- Med Inn
- Medical Science Research Building I, II or III
- Medical Science Unit I or II
- Medical Science Unit II
- Medical Science Unit III
- Mott Children's Hospital
- Neuroscience Hospital
- Neuroscience Hospital Unit 2
- Palmer Commons
- School of Nursing
- School of Public Health I or II
- Undergraduate Science Building
- University Hospital
- Von Voigtlander Women's Hospital

Other (*name of building*):

Page Break

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**Question:** FCST52\_NORTH

**Show if:** (FCST52\_CAMPUS\_2013 = 4:[North Campus (between Fuller and Plymouth Roads)]) or (FCST52\_MAP\_2013 = 4:[North Campus (between Fuller and Plymouth Roads)])

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label  | Show-If |
| 1             | Art and Architecture Building                        |         |
| 2             | Bentley Historical Library                           |         |
| 3             | Bob and Betty Beyster Building                       |         |
| 4             | Carl A. Gerstacker Building                          |         |
| 5             | Chrysler Center Engineering                          |         |
| 6             | Duderstadt Center                                    |         |
| 7             | Electrical Engineering and Computer Science Building |         |
| 8             | Engineering Research Building                        |         |
| 9             | Francois-Xavier Bagnoud Building                     |         |
| 10            | GG Brown Laboratory                                  |         |
| 11            | Gorguze Family Laboratory                            |         |
| 12            | Herbert H. Dow Building                              |         |
| 13            | Industrial and Operations Engineering Building       |         |
| 14            | Moore Building                                       |         |
| 15            | Naval Architecture and Marine Engineering Building   |         |
| 16            | North Campus Administrative Complex                  |         |
| 22            | North Campus Facilities Services Building            |         |
| 17            | North Campus Research Complex                        |         |
| 18            | Space Research Building                              |         |
| 19            | Transportation Research Institute                    |         |
| 20            | Walgreen Drama Center                                |         |
| 21            | Walter E Lay Automotive Laboratory                   |         |
| 77            | Other  |         |



**Listed below are buildings on North Campus. Some buildings are known by more than one name. If you do not see the name of the building where you work, please select "Other" and type in the name of the building in which you work.**

**Please select the name of the building where you mainly work.**

- Art and Architecture Building
- Bentley Historical Library
- Bob and Betty Beyster Building
- Carl A. Gerstacker Building
- Chrysler Center Engineering
- Duderstadt Center
- Electrical Engineering and Computer Science Building
- Engineering Research Building
- Francois-Xavier Bagnoud Building
- GG Brown Laboratory
- Gorguze Family Laboratory
- Herbert H. Dow Building
- Industrial and Operations Engineering Building
- Moore Building
- Naval Architecture and Marine Engineering Building
- North Campus Administrative Complex
- North Campus Facilities Services Building
- North Campus Research Complex
- Space Research Building
- Transportation Research Institute
- Walgreen Drama Center
- Walter E Lay Automotive Laboratory
- Other (*name of building*):

Page Break

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**Question:** FCST52\_SOUTH

**Show if:** (FCST52\_CAMPUS\_2013 = 5:[South Campus (South of Packard to Stadium)]) or (FCST52\_MAP\_2013 = 5:[South Campus (South of Packard to Stadium)])

| Scale Summary |  |                    |
|---------------|--|--------------------|
| Code          | Label                                      | Show-If            |
| 2             | Administrative Services Building           |                    |
| 3             | Argus Building                             | <i>Never Shown</i> |
| 4             | Boyer Building                             |                    |
| 5             | Buhr Building                              |                    |
| 6             | Campus Safety Services Building            |                    |
| 7             | Donald B. Canham Natatorium                |                    |
| 8             | Facility Services Building A, B or C       |                    |
| 9             | Hoover Annex                               |                    |
| 10            | Hoover Heating Plant                       |                    |
| 11            | Institute of Continuing Legal Ed           |                    |
| 12            | Intramural Sports Building                 |                    |
| 13            | John P. Weidenbach Hall                    |                    |
| 1             | Madison Building                           |                    |
| 14            | Schembechler Hall                          |                    |
| 15            | Transportation Services Building           |                    |
| 16            | William D. Revelli Hall                    |                    |
| 17            | William Davidson Player Development Center |                    |
| 18            | Yost Ice Arena                             |                    |
| 77            | Other                                      |                    |



**Listed below are buildings on South Campus. Some buildings are known by more than one name. If you do not see the name of the building where you work, please select "Other" and type in the name of the building in which you work.**

**Please select the name of the building where you mainly work.**


- Administrative Services Building
- Argus Building
- Boyer Building
- Buhr Building
- Campus Safety Services Building
- Donald B. Canham Natatorium
- Facility Services Building A, B or C
- Hoover Annex
- Hoover Heating Plant
- Institute of Continuing Legal Ed
- Intramural Sports Building
- John P. Weidenbach Hall
- Madison Building
- Schembechler Hall
- Transportation Services Building
- William D. Revelli Hall
- William Davidson Player Development Center
- Yost Ice Arena
- Other (*name of building*):

Page Break

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**Question:** FCST52\_OTHER  
**Show if:** (FCST52\_CAMPUS\_2013 = 6:[Other (including Wolverine Tower)]) or (FCST52\_MAP\_2013 = 6:[Other (including Wolverine Tower)])

| Scale Summary |  |                    |
|---------------|--|--------------------|
| Code          | Label  | Show-If            |
| 1             | A. Alfred Taubman Biomedical Science Research Building | <i>Never Shown</i> |
| 2             | Argus Building I or II                                 |                    |
| 3             | Argus Building II                                      | <i>Never Shown</i> |
| 4             | Brehm Tower  | <i>Never Shown</i> |
| 5             | Briarwood Medical Group Buildings                      |                    |
| 6             | Campus Safety Services Building                        | <i>Never Shown</i> |
| 7             | Central Campus Recreation                              | <i>Never Shown</i> |
| 8             | Couzens Hall   | <i>Never Shown</i> |
| 9             | Detroit Observatory                                    | <i>Never Shown</i> |
| 10            | Kellogg Eye Center                                     | <i>Never Shown</i> |
| 11            | KMS Building   |                    |
| 12            | School of Public Health I and II                       | <i>Never Shown</i> |
| 13            | Stockwell Hall   | <i>Never Shown</i> |
| 14            | Wolverine Tower  |                    |
| 77            | Other  |                    |

 **Listed below are other U-M buildings where you may work. Some buildings are known by more than one name. If you do not see the name of the building where you work, please select "Other" and type in the name of the building in which you work.**

**Please select the name of the building where you mainly work.**

- A. Alfred Taubman Biomedical Science Research Building
- Argus Building I or II
- Argus Building II
- Brehm Tower
- Briarwood Medical Group Buildings
- Campus Safety Services Building
- Central Campus Recreation
- Couzens Hall
- Detroit Observatory
- Kellogg Eye Center
- KMS Building
- School of Public Health I and II
- Stockwell Hall
- Wolverine Tower
- Other (*name of building*):

Page Break

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**Question:** FCST53

| Scale Summary |                          |         |
|---------------|--------------------------|---------|
| Code          | Label                    | Show-If |
| 1             | Single family house      |         |
| 2             | 2-family house or duplex |         |
| 3             | Rowhouse or townhouse    |         |
| 4             | Apartment building       |         |
| 5             | Condominium              |         |
| 6             | Other                    |         |



**Do you live in a:**

- Single family house
- 2-family house or duplex
- Rowhouse or townhouse
- Apartment building
- Condominium
- Other (*please specify*):

Page Break

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**Question:** FCST54

| Scale Summary |       |         |
|---------------|-------|---------|
| Code          | Label | Show-If |
| 1             | Own   |         |
| 2             | Rent  |         |
| 3             | Other |         |



**Do you own or rent?**

Own

Rent

Other (*please specify*):

Page Break

---

**Question:** FCST55

| Scale Summary |                    |         |
|---------------|--------------------|---------|
| Code          | Label              | Show-If |
| 1             | Less than a year   |         |
| 2             | 1-2 years          |         |
| 3             | 3-5 years          |         |
| 4             | 6-10 years         |         |
| 5             | More than 10 years |         |



**How long have you lived at your current residence?**

- Less than a year
- 1-2 years
- 3-5 years
- 6-10 years
- More than 10 years

Page Break

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Question: FCST55B

 **What is the name of the city, township, or village where you currently live?**

City, township, or village name:

Page Break

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Question: FCST56\_2014

 **What is the ZIP code of your current residence?**

5-digit ZIP code:

Page Break

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Custom Layout Question: FCST57

 **The major cross streets (intersection) near my current residence are:**

Street 1:

Street 2:

Page Break

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Question: FCST58

 **Number of person(s), including yourself, who live in your current residence:**

Person(s)

Page Break

---

**Question:** FCST59

| Scale Summary |           |         |
|---------------|-----------|---------|
| Code          | Label     | Show-If |
| 0             | None      |         |
| 1             | 1         |         |
| 2             | 2         |         |
| 3             | 3         |         |
| 4             | 4 or more |         |

 **Number of cars and trucks (passenger vehicles) owned/leased by your household:**

- None
- 1
- 2
- 3
- 4 or more

Page Break

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**Question:** FCST60

| <b>Scale Summary</b> |            |         |
|----------------------|------------|---------|
| Code                 | Label      | Show-If |
| 1                    | Under 25   |         |
| 2                    | 25-29      |         |
| 3                    | 30-39      |         |
| 4                    | 40-49      |         |
| 5                    | 50-59      |         |
| 6                    | 60-69      |         |
| 7                    | 70 or over |         |



**How old are you?**

- Under 25
- 25-29
- 30-39
- 40-49
- 50-59
- 60-69
- 70 or over

Page Break

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Question: FCST61

| Scale Summary |                              |                    |
|---------------|------------------------------|--------------------|
| Code          | Label                        | Show-If            |
| 1             | Female                       |                    |
| 2             | Male                         |                    |
| 3             | Transgender                  | <i>Never Shown</i> |
| 5             | Other                        |                    |
| 4             | <i>Choose not to respond</i> |                    |



**Are you:**

- Female
- Male
- Transgender
- Other (*please specify*):
- Choose not to respond*

Page Break

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**Question:** FCST62

| Scale Summary |                                 |         |
|---------------|---------------------------------|---------|
| Code          | Label                           | Show-If |
| 1             | High school graduate or less    |         |
| 2             | Some college                    |         |
| 3             | College graduate                |         |
| 4             | Graduate or professional degree |         |
| 5             | Other                           |         |

 **What is the highest level of education you have completed?**


- High school graduate or less
- Some college
- College graduate
- Graduate or professional degree
- Other (*please specify*):

Page Break

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**Question:** FCST63

| Scale Summary |                     |         |
|---------------|---------------------|---------|
| Code          | Label               | Show-If |
| 1             | Less than \$50,000  |         |
| 2             | \$50,000-\$74,999   |         |
| 3             | \$75,000-\$99,999   |         |
| 4             | \$100,000-\$149,999 |         |
| 5             | \$150,000-\$199,999 |         |
| 6             | \$200,000 or more   |         |

 **What category best represents your 2014 annual household income?**

- Less than \$50,000
- \$50,000-\$74,999
- \$75,000-\$99,999
- \$100,000-\$149,999
- \$150,000-\$199,999
- \$200,000 or more

Page Break

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Question: FCST64\_2014

| Scale Summary |                                    |         |
|---------------|------------------------------------|---------|
| Code          | Label                              | Show-If |
| 1             | Very satisfied                     |         |
| 2             | Somewhat satisfied                 |         |
| 3             | Neither satisfied nor dissatisfied |         |
| 4             | Somewhat dissatisfied              |         |
| 5             | Very Dissatisfied                  |         |

 **How satisfied are you with your survey experience?**

- Very satisfied
- Somewhat satisfied
- Neither satisfied nor dissatisfied
- Somewhat dissatisfied
- Very Dissatisfied

Question: FCST65\_2014

 **How long do you estimate it took you to complete the survey?**

minutes

Page Break

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Question: FCST66\_2014

| Scale Summary |                           |         |
|---------------|---------------------------|---------|
| Code          | Label                     | Show-If |
| 1             | Yes                       |         |
| 2             | No                        |         |
| 3             | I don't remember (unsure) |         |



**Do you remember completing a U-M survey like this in Fall 2014?**

- Yes
- No
  
- I don't remember (unsure)

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**Question:** FCST67

| <b>Scale Summary</b> |       |         |
|----------------------|-------|---------|
| Code                 | Label | Show-If |
| 1                    | Yes   |         |
| 2                    | No    |         |



**Would you like to receive information on U-M sustainability activities and resources?**

- Yes
- No

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Question: INCENTIVE

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Yes, please include me in the drawing.        |         |
| 0             | No, thanks. Do not include me in the drawing. |         |



**Once you submit your completed survey, you will be eligible to win a \$50 Amazon gift code. Do you wish to be included in the drawing?**

- Yes, please include me in the drawing.
- No, thanks. Do not include me in the drawing.



## **D.5 Student SCIP questionnaire 2018**




For questions about the survey, please email  
ISR-UMSCIP@umich.edu

**Sustainability Cultural Indicators Program (SCIP)**

**Collection:** LOGIN  
**Contains:** DATSTAT\_ALTPID

**Question:** DATSTAT\_ALTPID  
**Required**

 **Please enter your ID.**

**Collection:** SECTION\_A  
**Contains:** STUDQUES6, STUDQUES6A, STUDQUES1, STUDQUES2-STUDQUES4\_SERIES, STUDQUES5, STUDQUES9\_2018, STUDQUES7\_2018, STUDQUES7A\_2015, STUDQUES10

**The purpose of this questionnaire is to better understand what U-M students do and how they think about sustainability. Sustainability covers many things and this questionnaire will cover topics such as transportation, energy conservation, waste prevention, food, and environmental protection.**

**Thank you for participating in the survey. Your answers are very important and helpful to us. Please answer every question truthfully and thoughtfully.**

Page Break

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**Statement of Consent**

Principal Investigator: John Callewaert  
Graham Sustainability Institute

- You were randomly selected from among all students at the University of Michigan to be invited to complete this survey.
- To evaluate the programs, outstanding needs, and current practices and beliefs regarding the issue of sustainability on the U-M campus in Ann Arbor, you will be asked questions about transportation, food, the environment, and conserving energy.
- Participating in this study is completely voluntary, you can skip any question and can stop at any time.
- It should take about minutes to complete.
- There are no risks related to completing this survey, because the topic is not sensitive.
- The benefit to participating is that your attitudes, behaviors, and knowledge may help to shape U-M programs.
- Upon completion of the survey, your email address will be included in a drawing for a \$ Amazon gift code.
- We may ask you to complete a sustainability survey again in the future for as long as you attend school at the University of Michigan in Ann Arbor.
- Your answers and personal information will be kept confidential.
- Your name will not be attached to any data, a study number will be used instead.
- You must be at least 18 years old to complete the questionnaire. By completing the questionnaire, you are acknowledging that you are at least 18 years old.
- The data for this study are being collected by the University of Michigan Survey Research Center (SRC) Survey Research Operations (SRO) in cooperation with John Callewaert for the Graham Sustainability Institute of the University of Michigan.
- The Sustainability Cultural Indicators Program (SCIP) is funded by the University of Michigan.
- If you have any question about the study, please contact: John Callewaert, (734) 615-8230, [jcallew@umich.edu](mailto:jcallew@umich.edu).
- If you have questions about your rights as a research participant, or wish to obtain information, ask questions or discuss any concerns about this study with someone other than the researcher, please contact the University of Michigan Health Sciences and Behavioral Sciences Institutional Review Board, 2800 Plymouth Rd., Building 520, Room 1169, Ann Arbor, MI 48109-2800, (734) 936-0933, or toll-free, (866) 936-0933, [irbhsbs@umich.edu](mailto:irbhsbs@umich.edu)

**Click "Next" to continue with the survey.**

- You must be at least 18 years old to complete the questionnaire.
- Your answers and personal information will be kept confidential.
- Participation is voluntary, you can skip any question and you can stop at any time.
- It should take about minutes to complete.
- There are no risks related to completing this survey, because the topic is not sensitive.
- Upon completion of the survey, your email address will be included in a drawing for a \$ Amazon gift code.

To learn more...

|                 |
|-----------------|
| About the Study |
| Confidentiality |
| Your Rights     |


**Click "Next" to continue with the survey.**

Page Break

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**Question:** STUDQUES6

| Scale Summary |                                       |         |
|---------------|---------------------------------------|---------|
| Code          | Label                                 | Show-If |
| 1             | First-year student (Freshman)         |         |
| 2             | Sophomore                             |         |
| 3             | Junior                                |         |
| 4             | Senior                                |         |
| 5             | Graduate student/Professional student |         |

 **This first set of questions is about your current status and residence, that is, where you have lived since the start of the winter semester.**

**Are you a:**

- First-year student (Freshman)
- Sophomore
- Junior
- Senior
- Graduate student/Professional student

Page Break

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**Question:** STUDQUES6A  
**Show if:** (STUDQUES6 = 2:[Sophomore])

| Scale Summary |       |         |
|---------------|-------|---------|
| Code          | Label | Show-If |
| 1             | Yes   |         |
| 2             | No    |         |

 **During your first year on campus did you live in Bursley Hall?**

- Yes
- No

Page Break

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**Question:** STUDQUES1

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label  | Show-If |
| 1             | A U-M residence hall   |         |
| 2             | Northwood community apartments                               |         |
| 3             | Off-campus apartment   |         |
| 4             | Off-campus house   |         |
| 7             | Off-campus housing such as a sorority, fraternity, or co-op. |         |
| 5             | Parent's house   |         |
| 6             | Other  |         |

 **Do you currently live in:**

- A U-M residence hall (*which one?*):
- Northwood community apartments
- Off-campus apartment
- Off-campus house
- Off-campus housing such as a sorority, fraternity, or co-op.
- Parent's house
- Other (*please specify*):

Page Break

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**Collection:** STUDQUES2-STUDQUES4\_SERIES  
**Contains:** STUDQUES2, STUDQUES2B, STUDQUES3  
**Show if:** (STUDQUES1 is-any-of 3:[Off-campus apartment] or 4:[Off-campus house] or 5:[Parent's house] or 6:[Other]) or (STUDQUES1 is-any-of 3:[Off-campus apartment] or 4:[Off-campus house] or 7:[Off-campus housing such as a sorority, fraternity, or co-op.] or 5:[Parent's house] or 6:[Other])

**Question:** STUDQUES2

 **How many persons, including yourself, live in your current residence?**

*(Please include only your own apartment, condo, or house - not an entire apartment building).*

**Person(s)**

Page Break

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Question: STUDQUES2B

 **What is the name of the city, township, or village where you currently live?**


City, township, or village name:

Page Break

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Question: STUDQUES3

 **What is the ZIP code of your current residence?**

5-digit ZIP code:

Page Break

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Custom Layout Question: STUDQUES4

 **The major cross streets (intersection) near my current residence are:**

Street 1:


Street 2:

Page Break

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**Question:** STUDQUES5

| Scale Summary |                    |         |
|---------------|--------------------|---------|
| Code          | Label              | Show-If |
| 1             | Less than 3 months |         |
| 2             | 3-11 months        |         |
| 3             | 1-2 years          |         |
| 4             | More than 2 years  |         |

 **How long have you lived at your current residence?**


- Less than 3 months
- 3-11 months
- 1-2 years
- More than 2 years

Page Break

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**Question Block:** STUDQUES9\_2018  
**Contains:** Q166, Q167, Q168, Q169, Q170, Q171, Q172, Q173, Q174

| Scale Summary |                  |         |
|---------------|------------------|---------|
| Code          | Label            | Show-If |
| 1             | A lot            |         |
| 2             | A fair amount    |         |
| 3             | A little         |         |
| 4             | Not much/nothing |         |

 **How much do you know about the following?**


|  | A lot                 | A fair amount         | A little              | Not much/nothing      |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Bus, AAATA/"The Ride" (Ann Arbor Area Transportation Authority schedules, routes, etc.)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Bus, U-M</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Biking in Ann Arbor (bike lanes, rules of the road, etc.)</b>                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Renting a car by the hour - Zipcar</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Renting a car by the hour - Maven</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>U-M GreenRide Connect</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Arbor Bike</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>U-M After Hours &amp; Emergency Transit/TapRide</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>On-demand transportation (e.g. Uber or Lyft)</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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**Question Block:** STUDQUES7\_2018  
**Contains:** STUDQUES\_2018\_Q1, STUDQUES\_2018\_Q11, STUDQUES\_2018\_Q2, STUDQUES\_2018\_Q3, STUDQUES\_2018\_Q4, STUDQUES\_2018\_Q5, STUDQUES\_2018\_Q6, STUDQUES\_2018\_Q7, STUDQUES\_2018\_Q8, STUDQUES\_2018\_Q10, STUDQUES\_2018\_Q12  
 Show if: (PL\_PANEL = 2)

| Scale Summary |                          |         |
|---------------|--------------------------|---------|
| Code          | Label                    | Show-If |
| 1             | Never                    |         |
| 2             | Rarely                   |         |
| 3             | Sometimes                |         |
| 4             | Always/ Most of the time |         |

 These questions are about **travel and transportation**.

**During the past year, how often did you do the following to travel between where you lived and campus?**

|   | Never                 | Rarely                | Sometimes             | Always/<br>Most of the<br>time |
|---|-----------------------|-----------------------|-----------------------|--------------------------------|
| Drive a car and park on campus  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          |
| Park and Ride (the bus)   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          |
| Walk  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          |
| Bike  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          |
| Bus, AAATA/"The Ride" (Ann Arbor Area Transportation Authority schedules, routes, etc.) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          |
| Bus, U-M  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          |
| Carpool (self-organized with friends or coworkers)                                      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          |
| U-M GreenRide Connect   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          |
| Vanpool   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          |
| Motorcycle, moped, or scooter   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          |
| On-demand transportation (e.g. Uber or Lyft)  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          |

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**Question:** STUDQUES7A\_2015  
**Show if:** (PL\_PANEL = 2) and (STUDQUES\_2018\_Q4 is-any-of 2:[Rarely] or 3:[Sometimes] or 4:[Always/ Most of the time])

| Scale Summary |            |         |
|---------------|------------|---------|
| Code          | Label      | Show-If |
| 1             | One day    |         |
| 2             | Two days   |         |
| 3             | Three days |         |
| 4             | Four days  |         |
| 5             | Five days  |         |

 **In the past week, how often did you ride the bus?**


- One day
- Two days
- Three days
- Four days
- Five days

Page Break

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**Question:** STUDQUES10

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Drive a car                                       |         |
| 8             | Park and Ride (the bus)                           |         |
| 2             | Walk  |         |
| 3             | Bike  |         |
| 4             | Ride the bus                                      |         |
| 5             | Ride the bus and bike                             |         |
| 6             | Ride share (i.e. van/car pool, dropped off, etc.) |         |
| 7             | Motorcycle, moped, or scooter                     |         |
| 10            | On-demand transportation (e.g. Uber or Lyft)      |         |
| 9             | Other   |         |

 **During the fall semester, how did you most often travel to and from campus?**

- Drive a car
- Park and Ride (the bus)
- Walk
- Bike
- Ride the bus
- Ride the bus and bike
- Ride share (i.e. van/car pool, dropped off, etc.)
- Motorcycle, moped, or scooter
- On-demand transportation (e.g. Uber or Lyft)
- Other (*please specify*):

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**Collection:** SECTION\_B  
**Contains:** STUDQUES14, STUDQUES15-PART1, STUDQUES15-PART2, STUDQUES15-PART3

**Question Block:** STUDQUES14  
**Contains:** Q32, Q36, Q43

| Scale Summary |                  |         |
|---------------|------------------|---------|
| Code          | Label            | Show-If |
| 1             | A lot            |         |
| 2             | A fair amount    |         |
| 3             | A little         |         |
| 4             | Not much/Nothing |         |

 These questions are about **waste prevention and conservation**.

**How much do you know about the following at U-M?**

|                                      | A lot                 | A fair amount         | A little              | Not much/Nothing      |
|--------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Recycling</b>                     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Property Disposition services</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Composting</b>                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |


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**Question Block:** STUDQUES15-PART1  
**Contains:** Q37, Q38, Q39, Q40, Q41, Q42, Q68

| Scale Summary |                                |
|---------------|--------------------------------|
| Code          | Label                          |
| 1             | Never                          |
| 2             | Rarely                         |
| 3             | Sometimes                      |
| 4             | Always/<br>Most of<br>the time |
| 5             | Not<br>applicable              |

 **During the past year, how often did you do the following when you had the opportunity?**

**How often did you:**

|  | Never                 | Rarely                | Sometimes             | Always/<br>Most of<br>the time | Not<br>applicable     |
|--|-----------------------|-----------------------|-----------------------|--------------------------------|-----------------------|
| <b>Set thermostat to 65 degrees or lower during cool or cold weather</b>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| <b>Set thermostat (air conditioner) to 78 degrees or higher during warm or hot weather</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| <b>Turn off lights when I leave the room</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| <b>Unplug electrical appliances when not using them</b>                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| <b>Use the power saving settings on my computer</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| <b>Turn off my computer when not using it</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| <b>Use a motion sensor / "smart" power strip</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |

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**Question Block:** STUDQUES15-PART2  
**Contains:** Q44, Q45, Q46, Q47, Q48, Q49, Q50

| Scale Summary |                                |         |
|---------------|--------------------------------|---------|
| Code          | Label                          | Show-If |
| 1             | Never                          |         |
| 2             | Rarely                         |         |
| 3             | Sometimes                      |         |
| 4             | Always/<br>Most of<br>the time |         |
| 5             | Not applicable                 |         |

 **During the past year, how often did you do the following when you had the opportunity?**

**How often did you:**


|  | Never                 | Rarely                | Sometimes             | Always/<br>Most of<br>the time | Not<br>applicable     |
|--|-----------------------|-----------------------|-----------------------|--------------------------------|-----------------------|
| <b>Print double-sided</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| <b>Run washer only when I have a full load of clothes</b>        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| <b>Limit time in the shower</b>                                  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| <b>Recycle</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| <b>Use a reusable water bottle, coffee cup, travel mug, etc.</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| <b>Recycle electronic waste (i.e. computers, cell phones)</b>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| <b>Bring reusable bags to the grocery store</b>                  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |

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**Question Block:** STUDQUES15-PART3  
**Contains:** Q51, Q52, Q53, Q54, Q55

| Scale Summary |                                |         |
|---------------|--------------------------------|---------|
| Code          | Label                          | Show-If |
| 1             | Never                          |         |
| 2             | Rarely                         |         |
| 3             | Sometimes                      |         |
| 4             | Always/<br>Most of<br>the time |         |
| 5             | Not applicable                 |         |

 **During the past year, how often did you do the following when you had the opportunity?**

How often did you:

|   | Never                 | Rarely                | Sometimes             | Always/<br>Most of<br>the time | Not<br>applicable     |
|---|-----------------------|-----------------------|-----------------------|--------------------------------|-----------------------|
| <b>Shop for things with minimal packaging</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| <b>Use U-M Property Disposition Services to obtain items such as computers, furniture, and equipment</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| <b>Shop in a second-hand store or online site such as eBay or Craigslist, when I have to buy something (e.g. clothing, furniture, or appliances)</b>      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| <b>Compost food scraps</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |
| <b>Buy products (besides food) that carry some type of eco-label or certification (e.g. lumber, organic cotton clothing, household cleaning products)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>          | <input type="radio"/> |


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**Collection:** SECTION\_D  
**Contains:** STUDQUES25, STUDQUES26, STUDQUES27-STUDQUES29\_SERIES, STUDQUES30, STUDQUES34

**Question:** STUDQUES25

| Scale Summary |                             |         |
|---------------|-----------------------------|---------|
| Code          | Label                       | Show-If |
| 1             | At home                     |         |
| 2             | In campus dining facilities |         |
| 3             | Elsewhere                   |         |

 Following are questions about **food**.

**During the fall semester, did you eat most of your meals:**


- At home
- In campus dining facilities
- Elsewhere (*please specify*):

Page Break

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**Question Block:** STUDQUES26  
**Contains:** Q82, Q83, Q88, Q12, Q29, Q30, Q31

| Scale Summary |                      |
|---------------|----------------------|
| Code          | Label                |
| 1             | A lot                |
| 2             | A fair amount        |
| 3             | A little             |
| 4             | Not much/<br>nothing |

 **How much do you know about each of the following kinds of food?**

|  | A lot                 | A fair amount         | A little              | Not much/<br>nothing  |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Locally grown or processed</b>                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Organic</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Fair trade food</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Food from humanely-treated animals</b>                            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Food from animals that were not given hormones or antibiotics</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Grass-fed beef</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Fish from sustainable fisheries</b>                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |


Page Break

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**Collection:** STUDQUES27-STUDQUES29\_SERIES  
**Contains:** STUDQUES27\_2013, STUDQUES28, STUDQUES29  
**Show if:** (STUDQUES25 is-any-of 1:[At home] or 3:[Elsewhere])

**Question Block:** STUDQUES27\_2013  
**Contains:** Q89\_2013, Q90\_2013, Q95\_2013, Q64\_2013, Q65\_2013, Q66\_2013, Q67\_2013

| Scale Summary |   | Show-If            |
|---------------|---|--------------------|
| Code          | Label                                   |                    |
| 1             | <b>Always/<br/>Most of<br/>the time</b> |                    |
| 2             | <b>Sometimes</b>                        |                    |
| 3             | <b>Rarely</b>                           |                    |
| 7             | <b>4 or more times a month</b>          | <i>Never Shown</i> |
| 8             | <b>2 - 3 times a month</b>              | <i>Never Shown</i> |
| 9             | <b>Once a month or less</b>             | <i>Never Shown</i> |
| 4             | <b>Never</b>                            |                    |
| 5             | <b>Don't Know</b>                       |                    |
| 6             | <b>I Don't Eat This</b>                 |                    |

 **During the past year, about how often did you (or other household members) buy the following?**


|  | <b>Always/<br/>Most of<br/>the time</b> | <b>Sometimes</b>      | <b>Rarely</b>         | <b>4 or<br/>more<br/>times a<br/>month</b> | <b>2 - 3<br/>times a<br/>month</b> | <b>Once a<br/>month<br/>or less</b> | <b>Never</b>          | <b>Don't<br/>Know</b> | <b>I Don't<br/>Eat<br/>This</b> |
|--|---|-----------------------|-----------------------|--|------------------------------------|-------------------------------------|-----------------------|-----------------------|---------------------------------|
| <b>Locally<br/>grown or<br/>processed</b>  | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                      | <input type="radio"/>              | <input type="radio"/>               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>           |
| <b>Organic</b>   | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                      | <input type="radio"/>              | <input type="radio"/>               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>           |
| <b>Fair trade<br/>food</b>   | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                      | <input type="radio"/>              | <input type="radio"/>               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>           |
| <b>Food from<br/>humanely-<br/>treated<br/>animals</b>   | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                      | <input type="radio"/>              | <input type="radio"/>               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>           |
| <b>Food from<br/>animals<br/>that<br/>were not<br/>given<br/>hormones<br/>or<br/>antibiotics</b> | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                      | <input type="radio"/>              | <input type="radio"/>               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>           |
| <b>Grass-fed<br/>beef</b>  | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                      | <input type="radio"/>              | <input type="radio"/>               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>           |
| <b>Fish from<br/>sustainable<br/>fisheries</b>   | <input type="radio"/>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                      | <input type="radio"/>              | <input type="radio"/>               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>           |

Page Break

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**Question:** STUDQUES28

| Scale Summary |                     |         |
|---------------|---------------------|---------|
| Code          | Label               | Show-If |
| 1             | All/most            |         |
| 2             | More than half      |         |
| 3             | Half                |         |
| 4             | Less than half      |         |
| 5             | None                |         |
| 6             | <i>I don't know</i> |         |

 **"Sustainable food"** can be defined as one or more of the following: locally-sourced, organic, from humanely-treated animals, antibiotic- and hormone-free, grass-fed, from sustainable fisheries, or fair trade food.

**During the past year, about how much of your grocery purchases were sustainable food?**

- All/most
- More than half
- Half
- Less than half
- None
  
- I don't know*

Page Break

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**Question Block:** STUDQUES29  
**Contains:** Q96, Q97, Q98, Q99, Q100, Q93  
**Show if:** (PL\_PANEL = 2) and (STUDQUES28 is-any-of 1:[All/most] or 2:[More than half] or 3:[Half] or 4:[Less than half] or 6:[I don't know])

| Scale Summary |                      |         |
|---------------|----------------------|---------|
| Code          | Label                | Show-If |
| 1             | Very important       |         |
| 2             | Somewhat important   |         |
| 3             | Not that important   |         |
| 4             | Not at all important |         |

 **How important to you are the following, when you buy *sustainable food*?**

|   | Very important        | Somewhat important    | Not that important    | Not at all important  |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Nutrition</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Taste</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Supporting the local community</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Protecting the environment</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Avoiding things like synthetic pesticides or fertilizers, antibiotics or growth hormones</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Affordability</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |


Page Break

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**Question:** STUDQUES30  
**Show if:** (PL\_PANEL = 2)

| Scale Summary |                    |         |
|---------------|--------------------|---------|
| Code          | Label              | Show-If |
| 1             | Daily/almost daily |         |
| 2             | 3-4 days           |         |
| 3             | 1-2 days           |         |
| 4             | Never              |         |

 **During the past week, how often have you included meat as part of your daily diet?**

- Daily/almost daily
- 3-4 days
- 1-2 days
- Never

Page Break

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**Question Block:** STUDQUES34  
**Contains:** Q101, Q102, Q103, Q104, Q105, Q106  
**Show if:** (PL\_PANEL = 2)

| Scale Summary |       |         |
|---------------|-------|---------|
| Code          | Label | Show-If |
| 0             | Yes   |         |
| 1             | No    |         |

 **During the past year, have you:**

|  | Yes                   | No                    |
|--|-----------------------|-----------------------|
| Grown fruits/vegetables in a home garden               | <input type="radio"/> | <input type="radio"/> |
| Grown fruits/vegetables in a community garden          | <input type="radio"/> | <input type="radio"/> |
| Shopped at farmers markets or food stands              | <input type="radio"/> | <input type="radio"/> |
| Belonged to a CSA (Community Supported Agriculture)    | <input type="radio"/> | <input type="radio"/> |
| Visited U-Pick farms                                   | <input type="radio"/> | <input type="radio"/> |
| Raised animals for food (e.g. meat, dairy, eggs, etc.) | <input type="radio"/> | <input type="radio"/> |

Page Break

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**Collection:** SECTION\_E  
**Contains:** STUDQUES36\_2013, STUDQUES36A\_2013, STUDQUES36B\_2013, STUDQUES39, STUDQUES37, STUDQUES38

**Question:** STUDQUES36\_2013

| Scale Summary |              |         |
|---------------|--------------|---------|
| Code          | Label        | Show-If |
| 1             | Yes          |         |
| 2             | No           |         |
| 3             | I don't know |         |

 These questions are about **climate change**, which is sometimes called global warming.

**Do you think climate change is happening?**


- Yes
- No
- I don't know

Page Break

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**Question:** STUDQUES36A\_2013  
**Show if:** (STUDQUES36\_2013 = 1:[Yes])

| Scale Summary |                 |         |
|---------------|-----------------|---------|
| Code          | Label           | Show-If |
| 1             | Extremely sure  |         |
| 2             | Mostly sure     |         |
| 3             | Somewhat sure   |         |
| 4             | Not at all sure |         |

 **How sure are you that climate change is happening?**

- Extremely sure
- Mostly sure
- Somewhat sure
- Not at all sure

Page Break

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**Question:** STUDQUES36B\_2013  
**Show if:** (STUDQUES36\_2013 = 2:[No]) or (STUDQUES36\_2013 = 3:[I don't know])

| Scale Summary |                 |         |
|---------------|-----------------|---------|
| Code          | Label           | Show-If |
| 1             | Extremely sure  |         |
| 2             | Mostly sure     |         |
| 3             | Somewhat sure   |         |
| 4             | Not at all sure |         |

 **How sure are you that climate change is not happening?**

- Extremely sure
- Mostly sure
- Somewhat sure
- Not at all sure

Page Break

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| Question: STUDQUES39 |   |         |
|----------------------|---|---------|
| Scale Summary        |   |         |
| Code                 | Label   | Show-If |
| 1                    | Caused mostly by human activities                         |         |
| 2                    | Caused mostly by natural changes                          |         |
| 3                    | Caused by both human activities and natural changes       |         |
| 4                    | None of the above because climate change is not happening |         |

 **Assuming climate change is happening, do you think it is...**


- Caused mostly by human activities
- Caused mostly by natural changes
- Caused by both human activities and natural changes
- None of the above because climate change is not happening

Page Break

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**Question:** STUDQUES37

| Scale Summary |                      |         |
|---------------|----------------------|---------|
| Code          | Label                | Show-If |
| 1             | Not at all important |         |
| 2             | Not too important    |         |
| 3             | Somewhat important   |         |
| 4             | Very important       |         |
| 5             | Extremely important  |         |

 **How important is the issue of climate change to you personally?**


- Not at all important
- Not too important
- Somewhat important
- Very important
- Extremely important

Page Break

---

**Question:** STUDQUES38

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label                                    | Show-If |
| 1             | Very well                                |         |
| 2             | Fairly well                              |         |
| 3             | A little bit                             |         |
| 4             | I would not be able to explain it at all |         |

 **How well could you explain the topic of climate change to someone who didn't know about it-- what's causing it or not, what are its potential consequences, etc.?**

- Very well
- Fairly well
- A little bit
- I would not be able to explain it at all

Page Break

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**Collection:** SECTION\_F  
**Contains:** STUDQUES41, STUDQUES47, STUDQUES48

**Question Block:** STUDQUES41  
**Contains:** STUDQUES41\_Q107, STUDQUES41\_Q108, STUDQUES41\_Q109, STUDQUES41\_Q110

| Scale Summary |       |         |
|---------------|-------|---------|
| Code          | Label | Show-If |
| 0             | Yes   |         |
| 1             | No    |         |

 *These next questions cover **other activities and your perspectives about sustainability.***

**Have you done any of the following during the past year to promote sustainability issues such as environmental protection, energy or water conservation, open space preservation, public or non-motorized transportation, etc.?**


|  | Yes                   | No                    |
|--|-----------------------|-----------------------|
| <b>Given money to an organization or advocacy group supporting one of the above issues?</b>                      | <input type="radio"/> | <input type="radio"/> |
| <b>Volunteered for an organization or advocacy group supporting one of the above issues?</b>                     | <input type="radio"/> | <input type="radio"/> |
| <b>Served in a leadership position for an organization or advocacy group supporting one of the above issues?</b> | <input type="radio"/> | <input type="radio"/> |
| <b>Voted for a candidate for public office because of her/his position on any of the above issues?</b>           | <input type="radio"/> | <input type="radio"/> |

Page Break

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**Question:** STUDQUES47

| Scale Summary |                      |         |
|---------------|----------------------|---------|
| Code          | Label                | Show-If |
| 1             | Very committed       |         |
| 2             | Somewhat committed   |         |
| 3             | Not very committed   |         |
| 4             | Not at all committed |         |

 **Overall, how committed are you to sustainability? Are you:**

- Very committed
- Somewhat committed
- Not very committed
- Not at all committed

Page Break

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**Question:** STUDQUES48

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label                                    | Show-If |
| 1             | Friends or classmates                    |         |
| 2             | Parents or other family members          |         |
| 3             | K-12 teachers                            |         |
| 4             | U-M professors/instructors/courses       |         |
| 5             | Childhood experiences outdoors           |         |
| 8             | Media--readings, video, movies, TV, etc. |         |
| 6             | Other U-M activities                     |         |
| 7             | Other                                    |         |

 **Who or what has been most influential in shaping your views about sustainability?**

- Friends or classmates
- Parents or other family members
- K-12 teachers
- U-M professors/instructors/courses
- Childhood experiences outdoors
- Media--readings, video, movies, TV, etc.
- Other U-M activities (*please specify*):
- Other (*please specify*):

Page Break

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**Collection:** SECTION\_G  
**Contains:** STUDQUES49, STUDQUES49B, STUDQUES50, STUDQUES51\_2015

**Question Block:** STUDQUES49  
**Contains:** STUDQUES49\_Q136, STUDQUES49\_Q137, STUDQUES49\_Q138, STUDQUES49\_Q139, STUDQUES49\_Q140, STUDQUES49\_Q141, STUDQUES49\_Q142, STUDQUES49\_Q143, STUDQUES49\_Q144, STUDQUES49\_Q145, STUDQUES49\_Q164, STUDQUES49\_Q146

| Scale Summary |                  | Show-If |
|---------------|------------------|---------|
| 1             | Very aware       |         |
| 2             | Somewhat aware   |         |
| 3             | Not too aware    |         |
| 4             | Not at all aware |         |

 This set of questions is about **sustainability at the University of Michigan**.

**How aware are you of U-M's efforts to:**

|  | Very aware            | Somewhat aware        | Not too aware         | Not at all aware      |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| Conserve energy?   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Encourage people to take a bus or bike?  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Promote ride sharing?  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Promote recycling?   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Promote food from sustainable sources?   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Reduce greenhouse gas emissions?   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Maintain campus grounds in an environmentally-friendly manner?                     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Protect the Huron River?   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Promote composting?  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Promote zero waste events at the Michigan Stadium?                                 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Promote other zero waste events?   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Promote sustainability culture through the Sustainability Living Experience (SLE)? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Page Break

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| Question: STUDQUES49B |           |         |
|-----------------------|-----------|---------|
| Scale Summary         |           |         |
| Code                  | Label     | Show-If |
| 1                     | NONE      |         |
| 2                     | 1-2 games |         |
| 3                     | 3-4 games |         |
| 4                     | 5-6 games |         |

 **During this past fall semester, how many U-M football games did you attend at Michigan Stadium?**

- NONE
- 1-2 games
- 3-4 games
- 5-6 games

Page Break

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**Question Block:** STUDQUES50  
**Contains:** STUDQUES50\_Q144, STUDQUES50\_Q145, STUDQUES50\_Q146, STUDQUES50\_Q147, STUDQUES50\_Q148, STUDQUES50\_Q149, STUDQUES50\_Q150, STUDQUES50\_Q151, STUDQUES50\_Q86, STUDQUES50\_Q165

| Scale Summary |               |         |
|---------------|---------------|---------|
| Code          | Label         | Show-If |
| 1             | Very Good (A) |         |
| 2             | Good (B)      |         |
| 3             | Fair (C)      |         |
| 4             | Poor (D)      |         |
| 5             | Very Poor (F) |         |

 Overall, how would you rate/grade U-M's efforts to:

|  | Very Good (A)         | Good (B)              | Fair (C)              | Poor (D)              | Very Poor (F)         |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Conserve energy?   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Encourage people to take a bus or bike?                        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Promote ride sharing?  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Promote recycling?   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Promote food from sustainable sources?                         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Reduce greenhouse gas emissions?                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Maintain campus grounds in an environmentally-friendly manner? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Protect the Huron River?                                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Promote composting?  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Promote zero waste events?                                     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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**Question Block:** STUDQUES51\_2015  
**Contains:** Q161\_2015, Q162\_2015, Q163\_2015, Q164\_2015, Q165\_2015, Q166\_2015, Q167\_2015, Q168\_2015, Q169\_2015, Q166\_2018, Q167\_2018, Q170\_2015

| Scale Summary |       |         |
|---------------|-------|---------|
| Code          | Label | Show-If |
| 0             | Yes   |         |
| 1             | No    |         |

 **During the past year did you participate in any of the following at U-M?**

|   | Yes                   | No                    |
|---|-----------------------|-----------------------|
| <b>RecycleMania</b>   | <input type="radio"/> | <input type="radio"/> |
| <b>Kill-a-Watt</b>  | <input type="radio"/> | <input type="radio"/> |
| <b>Earthfest</b>  | <input type="radio"/> | <input type="radio"/> |
| <b>Zero Waste Events</b>  | <input type="radio"/> | <input type="radio"/> |
| <b>e-Waste Recycling Event</b>  | <input type="radio"/> | <input type="radio"/> |
| <b>Planet Blue Ambassadors Program</b>  | <input type="radio"/> | <input type="radio"/> |
| <b>M Farmers Markets</b>  | <input type="radio"/> | <input type="radio"/> |
| <b>A U-M organization dealing with sustainability</b>   | <input type="radio"/> | <input type="radio"/> |
| <b>A U-M course that addressed sustainability</b>   | <input type="radio"/> | <input type="radio"/> |
| <b>Visited the Planet Blue website</b>  | <input type="radio"/> | <input type="radio"/> |
| <b>Read about U-M sustainability efforts in the Michigan Daily or on other media outlets (i.e. social media, etc)</b> | <input type="radio"/> | <input type="radio"/> |
| <b>Other</b>  | <input type="radio"/> | <input type="radio"/> |

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**Custom Layout Question:** STUDQUES51\_1

 *Other (please specify):*

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**Collection:** SECTION\_I  
**Contains:** STUDQUES66, STUDQUES67, STUDQUES68, STUDQUES69, STUDQUES70, STUDQUES71, STUDQUES72, STUDQUES73, STUDQUES74, STUDQUES75, STUDQUES76, STUDQUES77

**Question:** STUDQUES66

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label  | Show-If |
| 1             | Dumping of garbage by cities   |         |
| 2             | Surface water running off yards, city streets, paved lots, and farm fields |         |
| 3             | Litter near streams and rivers   |         |
| 4             | Waste dumped by factories  |         |
| 5             | Don't know   |         |

 **The next set of questions focuses on your understanding of sustainability issues. Please select the answer you think is correct. If you don't know the answer, select the 'Don't know' option."**

**What is the most common cause of pollution of streams and rivers?**

- Dumping of garbage by cities
- Surface water running off yards, city streets, paved lots, and farm fields
- Litter near streams and rivers
- Waste dumped by factories
- Don't know

Page Break

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**Question:** STUDQUES67

| Scale Summary |                               |         |
|---------------|-------------------------------|---------|
| Code          | Label                         | Show-If |
| 1             | Acid rain                     |         |
| 2             | Climate change                |         |
| 3             | Sudden changes in temperature |         |
| 4             | Harmful UV rays               |         |
| 5             | Don't know                    |         |

 **Ozone forms a protective layer in the earth's upper atmosphere. What does ozone protect us from?**

- Acid rain
- Climate change
- Sudden changes in temperature
- Harmful UV rays
- Don't know

Page Break

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| Question: STUDQUES68 |   |         |
|----------------------|---|---------|
| Scale Summary        |   |         |
| Code                 | Label   | Show-If |
| 1                    | Setting aside forests to be off limits to the public                |         |
| 2                    | Never harvesting more than what the forest produces in new growth   |         |
| 3                    | Producing lumber for nearby communities to build affordable housing |         |
| 4                    | Putting the local communities in charge of forest resources         |         |
| 5                    | Don't know  |         |

 Which of the following is an example of sustainable forest management?

- Setting aside forests to be off limits to the public
- Never harvesting more than what the forest produces in new growth
- Producing lumber for nearby communities to build affordable housing
- Putting the local communities in charge of forest resources
- Don't know

Page Break

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**Question:** STUDQUES69

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label                                    | Show-If |
| 1             | Recycling all recyclable packaging       |         |
| 2             | Reducing consumption of all products     |         |
| 3             | Buying products labeled "eco" or "green" |         |
| 4             | Buying the newest products available     |         |
| 5             | Don't know                               |         |

 **Of the following, which would be considered living in the most environmentally sustainable way?**

- Recycling all recyclable packaging
- Reducing consumption of all products
- Buying products labeled "eco" or "green"
- Buying the newest products available
- Don't know

Page Break

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| Question: STUDQUES70 |   |         |
|----------------------|---|---------|
| Scale Summary        |   |         |
| Code                 | Label   | Show-If |
| 1                    | Creating a government welfare system that ensures universal access to education, health care, and social services |         |
| 2                    | Setting aside resources for preservation, never to be used  |         |
| 3                    | Meeting the needs of the present without compromising the ability of future generations to meet their own needs   |         |
| 4                    | Building a neighborhood that is both socio-demographically and economically diverse                               |         |
| 5                    | Don't know  |         |

 **Which of the following is the most commonly used definition of sustainable development?**

- Creating a government welfare system that ensures universal access to education, health care, and social services
- Setting aside resources for preservation, never to be used
- Meeting the needs of the present without compromising the ability of future generations to meet their own needs
- Building a neighborhood that is both socio-demographically and economically diverse
- Don't know

Page Break

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**Question:** STUDQUES71

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label                                    | Show-If |
| 1             | The difference has increased             |         |
| 2             | The difference has stayed about the same |         |
| 3             | The difference has decreased             |         |
| 4             | Don't know                               |         |

 **Over the past 3 decades, what has happened to the difference between the wealth of the richest and poorest Americans?**

- The difference has increased
- The difference has stayed about the same
- The difference has decreased
- Don't know

Page Break

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| Question: STUDQUES72 |  |         |
|----------------------|--|---------|
| Scale Summary        |  |         |
| Code                 | Label  | Show-If |
| 1                    | They do not reflect the costs of pollution from generating the electricity |         |
| 2                    | Too many suppliers go out of business                                      |         |
| 3                    | Electric companies have a monopoly in their service area                   |         |
| 4                    | Consumers spend only a small part of their income on energy                |         |
| 5                    | Don't know   |         |

 **Many economists argue that electricity prices in the U.S. are too low because...**

- They do not reflect the costs of pollution from generating the electricity
- Too many suppliers go out of business
- Electric companies have a monopoly in their service area
- Consumers spend only a small part of their income on energy
- Don't know

Page Break

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**Question:** STUDQUES73

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Maximizing the share price of a company's stock |         |
| 2             | Long term profitability                         |         |
| 3             | When costs equal revenue                        |         |
| 4             | Continually expanding market share              |         |
| 5             | Don't know                                      |         |

 **Which of the following is the most commonly used definition of economic sustainability?**

- Maximizing the share price of a company's stock
- Long term profitability
- When costs equal revenue
- Continually expanding market share
- Don't know


Page Break

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**Question:** STUDQUES74

| Scale Summary |            |         |
|---------------|------------|---------|
| Code          | Label      | Show-If |
| 1             | China      |         |
| 2             | Sweden     |         |
| 3             | Brazil     |         |
| 4             | Japan      |         |
| 5             | Don't know |         |

 **Which of the following countries passed the U.S. to become the largest emitter of the greenhouse gas carbon dioxide?**

- China
- Sweden
- Brazil
- Japan
- Don't know

Page Break

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**Question:** STUDQUES75

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Fishermen seeking to maximize their catch           |         |
| 2             | Reduced fish fertility due to genetic hybridization |         |
| 3             | Ocean pollution                                     |         |
| 4             | Global climate change                               |         |
| 5             | Don't know  |         |

 **Which of the following is a leading cause of the depletion of fish stocks in the Atlantic Ocean?**

- Fishermen seeking to maximize their catch
- Reduced fish fertility due to genetic hybridization
- Ocean pollution
- Global climate change
- Don't know

Page Break

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| Question: STUDQUES76 |  |         |
|----------------------|--|---------|
| Scale Summary        |  |         |
| Code                 | Label  | Show-If |
| 1                    | Urban citizens win a bill to have toxic wastes taken to rural communities  |         |
| 2                    | The government dams a river, flooding Native American tribal lands to create hydro-power for large cities  |         |
| 3                    | All stakeholders from an indigenous community are involved in setting a quota for the amount of wood they can take from a protected forest next to their village |         |
| 4                    | Multi-national corporations build factories in developing countries where environmental laws are less strict   |         |
| 5                    | Don't know   |         |

 **Which of the following is the best example of environmental justice?**

- Urban citizens win a bill to have toxic wastes taken to rural communities
- The government dams a river, flooding Native American tribal lands to create hydro-power for large cities
- All stakeholders from an indigenous community are involved in setting a quota for the amount of wood they can take from a protected forest next to their village
- Multi-national corporations build factories in developing countries where environmental laws are less strict
- Don't know

Page Break

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| Question: STUDQUES77 |            |         |
|----------------------|------------|---------|
| Scale Summary        |            |         |
| Code                 | Label      | Show-If |
| 1                    | A, C, B, D |         |
| 2                    | D, A, B, C |         |
| 3                    | D, C, B, A |         |
| 4                    | D, B, C, A |         |
| 5                    | Don't know |         |

 Put the following list in order of the activities with the largest environmental impact to those with the smallest environmental impact:

- A. Keeping a cell phone charger plugged into an electrical outlet for 12 hours**
- B. Producing one McDonald's quarter-pound hamburger**
- C. Producing one McDonald's chicken sandwich**
- D. Flying in a commercial airplane from Washington D.C. to China**

- A, C, B, D
- D, A, B, C
- D, C, B, A
- D, B, C, A
- Don't know

Page Break

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**Collection:** SECTION\_J  
**Contains:** STUDQUES78, STUDQUES79

**Question:** STUDQUES78

| Scale Summary |                            |         |
|---------------|----------------------------|---------|
| Code          | Label                      | Show-If |
| 1             | Strongly agree             |         |
| 2             | Somewhat agree             |         |
| 3             | Neither agree nor disagree |         |
| 4             | Somewhat disagree          |         |
| 5             | Strongly disagree          |         |

 **How much do you agree or disagree with the following statement:**

***Sustainability and DEI (Diversity, Equity and Inclusion) are related.***

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Page Break

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Question: STUDQUES79  
Show if: (STUDQUES78 ≠ 3:[Neither agree nor disagree])

 **What are some of the reasons why you agree or disagree with the statement?**

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**Collection:** SECTION\_H  
**Contains:** STUDQUES52, STUDQUES53, STUDQUES54\_2013, STUDQUES54\_LSA\_2013, STUDQUES54\_COE\_2013, STUDQUES55, STUDQUES56, STUDQUES56\_CAMPUS, STUDQUES56\_CENTRAL, STUDQUES56\_MEDICAL, STUDQUES56\_NORTH, STUDQUES56\_HILLAREA, STUDQUES56\_SOUTH, STUDQUES56\_OTHER, STUDQUES57, Q85, STUDQUES58, STUDQUES59, STUDQUES60, STUDQUES61, STUDQUES61B\_2018, STUDQUES62, STUDQUES63, STUDQUES64, STUDQUES65

**Question:** STUDQUES52  
**Show if:** (PL\_PANEL = 2)

| Scale Summary |       |         |
|---------------|-------|---------|
| Code          | Label | Show-If |
| 0             | Yes   |         |
| 1             | No    |         |

 **Questions about you:**

**Have you done community service in the past year? This would be time for any type of community service - not just service related to sustainability - that was not for credit, pay or any type of mandated requirement.**

- Yes
- No

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**Question:** STUDQUES53  
**Show if:** (PL\_PANEL = 2) and (STUDQUES52 = 0:[Yes])

 **About how many hours did you perform community service during the past year?**

Hours

Page Break

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Question: STUDQUES54\_2013

 **What school or college are you enrolled in?**

*(Select all that apply)*

- Architecture & Urban Planning
- Art & Design
- Business
- Dentistry
- Education
- Engineering
- Graduate Studies, Rackham School of
- Information
- Kinesiology
- Law
- Literature, Science, and the Arts
- Medicine
- Music, Theatre & Dance
- Environment & Sustainability
- Nursing
- Pharmacy
- Public Health
- Public Policy
- Social Work

Page Break

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**Question:** STUDQUES54\_LSA\_2013  
**Show if:** (STUDQUES54\_2013 is-any-of [Literature, Science, and the Arts])

| Scale Summary |                  |         |
|---------------|------------------|---------|
| Code          | Label            | Show-If |
| 1             | Humanities       |         |
| 2             | Natural Sciences |         |
| 3             | Social Sciences  |         |
| 8             | Other            |         |
| 9             | Undecided        |         |

 **Which of the following is your major?**

- Humanities
- Natural Sciences
- Social Sciences
- Other
- Undecided

Page Break

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**Question:** STUDQUES54\_COE\_2013  
**Show if:** (STUDQUES54\_2013 is-any-of [Engineering])

| Scale Summary |                               |         |
|---------------|-------------------------------|---------|
| Code          | Label                         | Show-If |
| 1             | Electrical & Computer Science |         |
| 2             | Mechanical                    |         |
| 3             | Aerospace                     |         |
| 4             | Chemical                      |         |
| 5             | Industrial & Operations       |         |
| 6             | Biomedical                    |         |
| 7             | Materials Science             |         |
| 8             | Other                         |         |
| 9             | Undecided                     |         |

 **Which of the following is your major?**

- Electrical & Computer Science
- Mechanical
- Aerospace
- Chemical
- Industrial & Operations
- Biomedical
- Materials Science
- Other
- Undecided

Page Break

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**Question:** STUDQUES55

| Scale Summary |                |         |
|---------------|----------------|---------|
| Code          | Label          | Show-If |
| 1             | Central Campus |         |
| 2             | North Campus   |         |
| 3             | Elsewhere      |         |


 **During the fall semester, on what campus did you have most of your classes?**

- Central Campus
- North Campus
- Elsewhere (*please specify*):

Page Break

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|                             |       |         |
|-----------------------------|-------|---------|
| <b>Question:</b> STUDQUES56 |       |         |
| <b>Scale Summary</b>        |       |         |
| Code                        | Label | Show-If |
| 1                           | Yes   |         |
| 0                           | No    |         |

 **Excluding campus housing, do you spend more than half of your time in one particular campus building?**

- Yes
- No

Page Break

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**Question:** STUDQUES56\_CAMPUS  
**Show if:** (STUDQUES56 = 1:{Yes})

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label  | Show-If |
| 1             | Central Campus                                   |         |
| 5             | The Hill Area of Central/Medical campuses        |         |
| 4             | Medical Campus                                   |         |
| 2             | North Campus                                     |         |
| 6             | Ross Athletic Campus - between Packard & Stadium |         |
| 3             | Elsewhere  |         |

 **On which campus is that one particular building?**


- Central Campus
- The Hill Area of Central/Medical campuses
- Medical Campus
- North Campus
- Ross Athletic Campus - between Packard & Stadium
- Elsewhere

Page Break

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**Question:** STUDQUES56\_CENTRAL  
**Show if:** (STUDQUES56\_CAMPUS = 1:(Central Campus))

| Scale Summary |                                    |         |
|---------------|------------------------------------|---------|
| Code          | Label                              | Show-If |
| 1             | Angell Hall                        |         |
| 2             | Central Campus Recreation Building |         |
| 3             | Chemistry                          |         |
| 4             | Clarence Cook Little Building      |         |
| 5             | Dana Building (SEAS)               |         |
| 6             | David M. Dennison Building         |         |
| 7             | Dental Building                    |         |
| 8             | East Hall                          |         |
| 23            | East Quad                          |         |
| 9             | Harlan Hatcher Graduate Library    |         |
| 10            | Health Services                    |         |
| 11            | Hutchins Hall                      |         |
| 24            | Law School (including South Hall)  |         |
| 12            | Lorch Hall                         |         |
| 13            | Mason Hall                         |         |
| 14            | Michigan Union                     |         |
| 15            | Modern Languages Building          |         |
| 27            | Munger Graduate Residences         |         |
| 16            | North Quad                         |         |
| 17            | Ross School of Business            |         |
| 18            | School of Education                |         |
| 25            | School of Public Health I or II    |         |
| 19            | School of Social Work              |         |
| 20            | Shapiro Undergraduate Library      |         |
| 26            | South Quad                         |         |
| 21            | Weill Hall                         |         |
| 22            | West Hall                          |         |
| 77            | Other                              |         |

 **Listed below are several buildings on Central Campus. Sometimes buildings are known by more than one name. Please review the list of building names to find the one in which you spend more than half of your time (for activity such as work, classes, or studying). If you do not see the name of your building, select "Other" and type in the name of the building.**

**Please select the name of the building in which you spend more than half of your time:**

- Angell Hall
- Central Campus Recreation Building
- Chemistry
- Clarence Cook Little Building
- Dana Building (SEAS)
- David M. Dennison Building
- Dental Building
- East Hall
- East Quad
- Harlan Hatcher Graduate Library
- Health Services
- Hutchins Hall
- Law School (including South Hall)
- Lorch Hall
- Mason Hall
- Michigan Union
- Modern Languages Building
- Munger Graduate Residences
- North Quad
- Ross School of Business
- School of Education
- School of Public Health I or II
- School of Social Work
- Shapiro Undergraduate Library
- South Quad
- Weill Hall
- West Hall

Other (*please specify*):


Page Break

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**Question:** STUDQUES56\_MEDICAL  
**Show if:** (STUDQUES56\_CAMPUS = 4:[Medical Campus])

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Biomedical Science Research Building              |         |
| 2             | C. S. Mott Children's Hospital                    |         |
| 3             | Children's Psychiatric Hospital                   |         |
| 4             | Kellogg Eye Center                                |         |
| 5             | Kresge Hearing Research Institute                 |         |
| 6             | Learning Resource Center, Taubman Medical Library |         |
| 7             | Medical Science Research, Building III            |         |
| 8             | Medical Science Research, Building I              |         |
| 9             | Medical Science Research, Building II             |         |
| 10            | Mental Health Research Institute                  |         |
| 11            | North Ingalls Building                            |         |
| 12            | School of Nursing (North Ingalls Building)        |         |
| 15            | School of Public Health I or II                   |         |
| 13            | University Hospital                               |         |
| 14            | Women's Hospital                                  |         |
| 77            | Other   |         |

 **Listed below are several buildings on the Medical Campus. Sometimes buildings are known by more than one name. Please review the list of building names to find the one in which you spend more than half of your time (for activity such as work, classes, or studying). If you do not see the name of your building, select "Other" and type in the name of the building.**

**Please select the name of the building in which you spend more than half of your time:**


- Biomedical Science Research Building
- C. S. Mott Children's Hospital
- Children's Psychiatric Hospital
- Kellogg Eye Center
- Kresge Hearing Research Institute
- Learning Resource Center, Taubman Medical Library
- Medical Science Research, Building III
- Medical Science Research, Building I
- Medical Science Research, Building II
- Mental Health Research Institute
- North Ingalls Building
- School of Nursing (North Ingalls Building)
- School of Public Health I or II
- University Hospital
- Women's Hospital
- Other (please specify):

Page Break

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**Question:** STUDQUES56\_NORTH  
**Show if:** (STUDQUES56\_CAMPUS = 2:(North Campus))

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label  | Show-If |
| 1             | Art & Architecture Building                          |         |
| 2             | Blanch Anderson Moore Hall, School of Music          |         |
| 3             | Bob and Betty Beyster Building (formerly CSE)        |         |
| 4             | Bursley Hall   |         |
| 5             | Charles R. Walgreen, Jr. Drama Center                |         |
| 6             | Chrysler Center                                      |         |
| 7             | Cooley Building                                      |         |
| 8             | Dow Engineering Building                             |         |
| 9             | Duderstadt Center                                    |         |
| 10            | Earl V. Moore Building, School of Music              |         |
| 11            | Electrical Engineering and Computer Science Building |         |
| 12            | Engineering Research Building 1                      |         |
| 13            | Engineering Research Building 2                      |         |
| 14            | Environmental & Water Resources Engineering Building |         |
| 15            | Ford Library   |         |
| 16            | Francois-Xavier Bagnoud Building                     |         |
| 17            | G. G. Brown Laboratory                               |         |
| 18            | Gorguze Family Laboratory (formerly EPB)             |         |
| 19            | Industrial and Operations Engineering Building       |         |
| 20            | Lurie Biomedical Engineering Building                |         |
| 21            | Lurie Engineering Center                             |         |
| 22            | Naval Architecture and Marine Engineering Building   |         |
| 23            | North Campus Recreation Building                     |         |
| 24            | Phoenix Memorial Laboratory                          |         |
| 25            | Pierpont Commons                                     |         |
| 26            | Space Research Building                              |         |
| 27            | Stamps Auditorium                                    |         |
| 28            | Sterns Building                                      |         |
| 29            | Walter E. Lay Automotive Lab                         |         |
| 77            | Other  |         |

 **Listed below are several buildings on North Campus. Sometimes buildings are known by more than one name. Please review the list of building names to find the one in which you spend more than half of your time (for activity such as work, classes, or studying). If you do not see the name of your building, select "Other" and type in the name of the building.**

**Please select the name of the building in which you spend more than half of your time:**

- Art & Architecture Building
- Blanch Anderson Moore Hall, School of Music
- Bob and Betty Beyster Building (formerly CSE)
- Bursley Hall
- Charles R. Walgreen, Jr. Drama Center
- Chrysler Center
- Cooley Building
- Dow Engineering Building
- Duderstadt Center
- Earl V. Moore Building, School of Music
- Electrical Engineering and Computer Science Building
- Engineering Research Building 1
- Engineering Research Building 2
- Environmental & Water Resources Engineering Building
- Ford Library
- Francois-Xavier Bagnoud Building
- G. G. Brown Laboratory
- Gorguze Family Laboratory (formerly EPB)
- Industrial and Operations Engineering Building
- Lurie Biomedical Engineering Building
- Lurie Engineering Center
- Naval Architecture and Marine Engineering Building
- North Campus Recreation Building
- Phoenix Memorial Laboratory
- Pierpont Commons


- Space Research Building
- Stamps Auditorium
- Sterns Building
- Walter E. Lay Automotive Lab
- Other (*please specify*):

Page Break

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**Question:** STUDQUES56\_HILLAREA  
**Show if:** (STUDQUES56\_CAMPUS = 5:(The Hill Area of Central/Medical campuses))

| Scale Summary |   |             |
|---------------|---|-------------|
| Code          | Label   | Show-If     |
| 1             | Alice Lloyd Hall  |             |
| 2             | Central Campus Recreation Building (including Margaret Bell Pool) |             |
| 3             | Couzens Hall  |             |
| 4             | Dance Building, 1310 N University Court                           |             |
| 5             | Henry Vaughan Building, School of Public Health I                 | Never Shown |
| 6             | Margaret Bell Pool, Central Campus Recreation Building            | Never Shown |
| 7             | Mary Markley Hall   |             |
| 8             | Mosher Jordan Hall  |             |
| 9             | Observatory Lodge, 1402 Washington Heights                        |             |
| 10            | Stockwell Hall  |             |
| 11            | Thomas Francis, Jr Building, School of Public Health II           | Never Shown |
| 12            | School of Public Health I or II                                   |             |
| 77            | Other   |             |

 **Listed below are several buildings in the Hill Area of the Central and Medical Campuses. Sometimes buildings are known by more than one name. Please review the list of building names to find the one in which you spend more than half of your time (for activity such as work, classes, or studying). If you do not see the name of your building, select "Other" and type in the name of the building.**

**Please select the name of the building in which you spend more than half of your time:**

- Alice Lloyd Hall
- Central Campus Recreation Building (including Margaret Bell Pool)
- Couzens Hall
- Dance Building, 1310 N University Court
- Henry Vaughan Building, School of Public Health I
- Margaret Bell Pool, Central Campus Recreation Building
- Mary Markley Hall
- Mosher Jordan Hall
- Observatory Lodge, 1402 Washington Heights
- Stockwell Hall
- Thomas Francis, Jr Building, School of Public Health II
- School of Public Health I or II
- Other (please specify):

Page Break

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**Question:** STUDQUES56\_SOUTH  
**Show if:** (STUDQUES56\_CAMPUS = 6:[Ross Athletic Campus - between Packard & Stadium])

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label                                      | Show-If |
| 1             | Campus Safety Services Building            |         |
| 2             | Crisler Center                             |         |
| 3             | Donald B. Canham Natatorium                |         |
| 4             | Institute of Continuing Legal Ed           |         |
| 6             | Intramural Sports Building                 |         |
| 7             | John P. Weidenbach Hall                    |         |
| 8             | Schembechler Hall                          |         |
| 5             | Stephen M. Ross Academic Center            |         |
| 9             | William D. Revelli Hall                    |         |
| 10            | William Davidson Player Development Center |         |
| 11            | Yost Ice Arena                             |         |
| 77            | Other                                      |         |

 **Listed below are several buildings on the Ross Athletic Campus. Sometimes buildings are known by more than one name. Please review the list of building names to find the one in which you spend more than half of your time (for activity such as work, classes, or studying). If you do not see the name of your building, select "Other" and type in the name of the building.**


**Please select the name of the building in which you spend more than half of your time:**

- Campus Safety Services Building
- Crisler Center
- Donald B. Canham Natatorium
- Institute of Continuing Legal Ed
- Intramural Sports Building
- John P. Weidenbach Hall
- Schembechler Hall
- Stephen M. Ross Academic Center
- William D. Revelli Hall
- William Davidson Player Development Center
- Yost Ice Arena
- Other (*please specify*):

Page Break

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Question: STUDQUES56\_OTHER  
Show if: (STUDQUES56\_CAMPUS = 3:[Elsewhere])

 **Please type the name of the building on campus in which you spend more than half of your time (for activity such as work, classes, or studying).**


Name of Building:

Page Break

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Question: STUDQUES57

| Scale Summary |                       |         |
|---------------|-----------------------|---------|
| Code          | Label                 | Show-If |
| 1             | US student            |         |
| 2             | International student |         |

 **Are you a US student or international student?**


- US student
- International student

Page Break

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**Question:** Q85  
**Show if:** (STUDQUES57 = 2:[International student])

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | China (including Hong Kong)                           |         |
| 2             | India   |         |
| 3             | Other Asian countries (NOT China or India)            |         |
| 4             | Europe  |         |
| 5             | Mexico, Latin America, Central America, the Carribean |         |
| 6             | Other   |         |

 **Which of the following best describes your country of origin?**

- China (including Hong Kong)
- India
- Other Asian countries (NOT China or India)
- Europe
- Mexico, Latin America, Central America, the Carribean
- Other

Page Break

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Question: STUDQUES58  
Show if: (STUDQUES57 = 1:[US student])


 **What was the ZIP code of your home address during your last year in high school?**

5-digit ZIP code:

Page Break

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|                             |       |         |
|-----------------------------|-------|---------|
| <b>Question:</b> STUDQUES59 |       |         |
| <b>Scale Summary</b>        |       |         |
| Code                        | Label | Show-If |
| 0                           | Yes   |         |
| 1                           | No    |         |

 **Do you have a car of your own at your local residence this semester?**

- Yes
- No

Page Break

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Question: STUDQUES60

 **What is your age; how old are you?**


years old

Page Break

---

**Question:** STUDQUES61

| Scale Summary |                       |         |
|---------------|-----------------------|---------|
| Code          | Label                 | Show-If |
| 1             | Female                |         |
| 2             | Male                  |         |
| 3             | Other                 |         |
| 4             | Choose not to respond |         |

 **Are you:**

- Female
- Male
- Other *(please specify):*
- Choose not to respond

Page Break

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Question: STUDQUES61B\_2018

 **Please indicate the racial or ethnic group(s) with which you identify.**

*(Select all that apply)*

- African American/Black
- Asian American/Asian
- Hispanic/Latino/a
- Middle Eastern/North African
- Native America/Alaskan Native
- Native Hawaiian/Other Pacific Islander
- White
- Other *(please specify)*:

Page Break

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**Question:** STUDQUES62

| Scale Summary |                                    |         |
|---------------|------------------------------------|---------|
| Code          | Label                              | Show-If |
| 1             | Very satisfied                     |         |
| 2             | Somewhat satisfied                 |         |
| 3             | Neither satisfied nor dissatisfied |         |
| 4             | Somewhat dissatisfied              |         |
| 5             | Very Dissatisfied                  |         |


 **How satisfied are you with your survey experience?**

- Very satisfied
- Somewhat satisfied
- Neither satisfied nor dissatisfied
- Somewhat dissatisfied
- Very Dissatisfied

Page Break

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Question: STUDQUES63

 **How long do you estimate it took you to complete the survey?**


minutes

Page Break

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**Question:** STUDQUES64

| Scale Summary |                           |         |
|---------------|---------------------------|---------|
| Code          | Label                     | Show-If |
| 1             | Yes                       |         |
| 2             | No                        |         |
| 3             | I don't remember (unsure) |         |

 **Do you remember completing a U-M survey like this in the past?**

- Yes
- No
  
- I don't remember (unsure)

Page Break

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|                             |              |                |
|-----------------------------|--------------|----------------|
| <b>Question:</b> STUDQUES65 |              |                |
| <b>Scale Summary</b>        |              |                |
| <b>Code</b>                 | <b>Label</b> | <b>Show-If</b> |
| 1                           | Yes          |                |
| 2                           | No           |                |

 **Would you like to receive information on U-M sustainability activities and resources?**


- Yes
- No

|   |
|---|
| <b>Collection:</b> SECTION_K<br><b>Contains:</b> INCENTIVE_2018<br><b>Show if:</b> (PL_LOTTERY = 1) |
|---|

Page Break

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| Question: INCENTIVE_2018 |   |         |
|--------------------------|---|---------|
| Scale Summary            |   |         |
| Code                     | Label   | Show-If |
| 1                        | Yes, please include me in the drawing.        |         |
| 0                        | No, thanks. Do not include me in the drawing. |         |

 **Once you submit your completed survey, you will be eligible to win a \$ Amazon gift code. Do you wish to be included in the drawing?**

- Yes, please include me in the drawing.
- No, thanks. Do not include me in the drawing.

## **D.6 Faculty/staff SCIP questionnaire 2018**



For questions about the survey, please email [ISR-UMSCIP@umich.edu](mailto:ISR-UMSCIP@umich.edu)

**Sustainability Cultural Indicators Program (SCIP)**

**Collection:** LOGIN  
**Contains:** DATSTAT\_ALTPID

**Question:** DATSTAT\_ALTPID  
**Required**

**Please enter your ID.**

**Collection:** SECTION\_A  
**Contains:** FCST1\_2018, FCST2\_2018, FCST2A\_2015, FCST3\_2018, FCST3A1\_2018, FCST3A2\_2018, FCST3A3\_2018, FCST3A4\_2018, FCST3A5\_2018, FCST3A6\_2018, FCST3A6A\_2018, FCST3A6B\_2018, FCST3A6C\_2018, FCST3A6D\_2018, FCST4\_2018, FCST4B\_2018

**The purpose of this questionnaire is to better understand what U-M faculty and staff do and how they think about sustainability. Sustainability covers many things and this questionnaire will cover topics such as transportation, energy conservation, waste prevention, food, and environmental protection.**

**Thank you for participating in the survey. Your answers are very important and helpful to us. Please answer every question truthfully and thoughtfully.**

Page Break

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### Statement of Consent

Principal Investigator: John Callewaert, Emerging Opportunities Program Director  
Graham Sustainability Institute

- You were randomly selected from among all faculty and staff at the University of Michigan to be invited to complete this survey.
- To evaluate the programs, outstanding needs, and current practices and beliefs regarding the issue of sustainability on the U-M campus in Ann Arbor, you will be asked questions about transportation, food, the environment, and conserving energy.
- Participating in this study is completely voluntary, you can skip any question and can stop at any time.
- It should take 15 minutes to complete.
- There are no risks related to completing this survey, because the topic is not sensitive.
- The benefit to participating is that your attitudes, behaviors, and knowledge may help to shape U-M programs.
- Upon completion of the survey, your email address will be included in a drawing for a \$ Amazon gift code.
- Your answers and personal information will be kept confidential.
- Your name will not be attached to any data, a study number will be used instead.
- You must be at least 18 years old to complete the questionnaire. By completing the questionnaire, you are acknowledging that you are at least 18 years old.
- The data for this study are being collected by the University of Michigan Survey Research Center (SRC) Survey Research Operations (SRO) in cooperation with John Callewaert for the Graham Sustainability Institute of the University of Michigan.
- The Sustainability Cultural Indicators Program (SCIP) is funded by the University of Michigan.
- If you have any question about the study, please contact: John Callewaert, (734) 615-8230, [jcallew@umich.edu](mailto:jcallew@umich.edu).
- If you have questions about your rights as a research participant, or wish to obtain information, ask questions or discuss any concerns about this study with someone other than the researcher, please contact the University of Michigan Health Sciences and Behavioral Sciences Institutional Review Board, 2800 Plymouth Rd., Building 520, Room 1169, Ann Arbor, MI 48109-2800, (734) 936-0933, or toll-free, (866) 936-0933, [irbhsbs@umich.edu](mailto:irbhsbs@umich.edu)

**Click "Next" to continue with the survey.**

- You must be at least 18 years old to complete the questionnaire.
- Your answers and personal information will be kept confidential.
- Participation is voluntary, you can skip any question and you can stop at any time.

[http://127.0.0.1:13124/Previewer/Survey.aspx?XmlDocument=-internal-SCIP2017FS\\_V\\_4&Translati...](http://127.0.0.1:13124/Previewer/Survey.aspx?XmlDocument=-internal-SCIP2017FS_V_4&Translati...)

- It should take about 15 minutes to complete.
- There are no risks related to completing this survey, because the topic is not sensitive.
- Upon completion of the survey, your email address will be included in a drawing for a \$ Amazon gift code.

To learn more...

|                 |
|-----------------|
| About the Study |
| Confidentiality |
| Your Rights     |


**Click "Next" to continue with the survey.**

Page Break

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**Question Block:** FCST1\_2018  
**Contains:** FCST1\_2018\_A, FCST1\_2018\_B, FCST1\_2018\_C, FCST1\_2018\_D, FCST1\_2018\_E, FCST1\_2018\_F, FCST1\_2018\_G, FCST1\_2018\_H, FCST1\_2018\_I, FCST1\_2018\_J

| Scale Summary |                              |         |
|---------------|------------------------------|---------|
| Code          | Label                        | Show-If |
| 1             | <b>A lot</b>                 |         |
| 2             | <b>A fair amount</b>         |         |
| 3             | <b>A little</b>              |         |
| 4             | <b>Not much/<br/>nothing</b> |         |

 *The first set of questions is about **travel and transportation**.*

**How much do you know about travel by:**

|  | <b>A lot</b>          | <b>A fair amount</b>  | <b>A little</b>       | <b>Not much/<br/>nothing</b> |
|--|-----------------------|-----------------------|-----------------------|------------------------------|
| <b>Bus, AAATA/"The Ride" (Ann Arbor Area Transportation Authority schedules, routes, etc.)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>U-M buses (schedules, routes, etc.)</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Biking in Ann Arbor (bike lanes, rules of the road, etc.)</b>                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Renting a car by the hour - Zipcar</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Renting a car by the hour - Maven</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>U-M Vanpools (VanRide)</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>U-M Greenride Connect</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Arbor Bike</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>U-M After Hours &amp; Emergency</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |

|   |                       |                       |                       |                       |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Transit/TapRide</b>                              |                       |                       |                       |                       |
| <b>On-demand transportation (e.g. Uber or Lyft)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Page Break

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**Question Block:** FCST2\_2018  
**Contains:** FCST2\_2018\_A, FCST2\_2018\_B, FCST2\_2018\_C, FCST2\_2018\_D, FCST2\_2018\_E, FCST2\_2018\_F, FCST2\_2018\_G, FCST2\_2018\_H, FCST2\_2018\_I, FCST2\_2018\_J, FCST2\_2018\_K, FCST2\_2018\_L

| Scale Summary |                                 |         |
|---------------|---------------------------------|---------|
| Code          | Label                           | Show-If |
| 0             | <b>Never</b>                    |         |
| 1             | <b>Rarely</b>                   |         |
| 2             | <b>Sometimes</b>                |         |
| 4             | <b>Always/ Most of the time</b> |         |

 **During the past year, how often did you do the following to travel between your home and your U-M workplace?**

|  | <b>Never</b>          | <b>Rarely</b>         | <b>Sometimes</b>      | <b>Always/ Most of the time</b> |
|--|-----------------------|-----------------------|-----------------------|---------------------------------|
| <b>Drive a car (alone or with family members) and park on campus</b>                           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>           |
| <b>Park and Ride (the bus)</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>           |
| <b>Walk</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>           |
| <b>Bike</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>           |
| <b>Bus, AAATA/"The Ride" (Ann Arbor Area Transportation Authority schedules, routes, etc.)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>           |
| <b>Bus, U-M</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>           |
| <b>Carpool (self-organized with friends or coworkers)</b>                                      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>           |
| <b>U-M Greenride Connect</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>           |
| <b>U-M Vanpools (VanRide)</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>           |
| <b>Motorcycle, moped,</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>           |

|   |                       |                       |                       |                       |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>or scooter</b>   |                       |                       |                       |                       |
| <b>Did not travel<br/>(worked from<br/>home/telecommuted)</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>On-demand<br/>transportation (e.g.<br/>Uber or Lyft)</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Page Break

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**Question:** FCST2A\_2015  
**Show if:** (FCST2\_2018\_E = 1:[Rarely]) or (FCST2\_2018\_E = 2:[Sometimes]) or (FCST2\_2018\_E = 4:[Always/ Most of the time])

| Scale Summary |            |         |
|---------------|------------|---------|
| Code          | Label      | Show-If |
| 1             | One day    |         |
| 2             | Two days   |         |
| 3             | Three days |         |
| 4             | Four days  |         |
| 5             | Five days  |         |

 **In the past week, how often did you ride the bus?**

- One day
- Two days
- Three days
- Four days
- Five days

Page Break

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**Question:** FCST3\_2018

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label  | Show-If |
| 1             | Drive a car  |         |
| 2             | Park and ride (the bus)                                |         |
| 3             | Walk   |         |
| 4             | Bike   |         |
| 5             | Ride the bus   |         |
| 6             | Ride the bus and bike                                  |         |
| 7             | Ride share (e.g. vanpool, car pool, dropped off, etc.) |         |
| 8             | Motorcycle, moped, or scooter                          |         |
| 9             | On-demand transportation (e.g. Uber or Lyft)           |         |
| 10            | Other  |         |

 **How do you most often travel to and from home to your work place?**

- Drive a car
- Park and ride (the bus)
- Walk
- Bike
- Ride the bus
- Ride the bus and bike
- Ride share (e.g. vanpool, car pool, dropped off, etc.)
- Motorcycle, moped, or scooter
- On-demand transportation (e.g. Uber or Lyft)
- Other (*please specify:*)

Page Break

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**Question:** FCST3A1\_2018  
**Show if:** (FCST3\_2018 was-not-answered) or (FCST3\_2018 = 1:[Drive a car]) or (FCST3\_2018 = 2:[Park and ride (the bus)]) or (FCST3\_2018 = 7:[Ride share (e.g. vanpool, car pool, dropped off, etc.)])

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label                                  | Show-If |
| 1             | U-M gold/blue parking lot or structure |         |
| 2             | U-M yellow parking                     |         |
| 3             | U-M orange parking lot                 |         |
| 6             | U-M free Park & Ride lot               |         |
| 4             | AAATA Park & Ride lot                  |         |
| 5             | Other                                  |         |

 **Where do you most often park?**

- U-M gold/blue parking lot or structure
- U-M yellow parking
- U-M orange parking lot
- U-M free Park & Ride lot
- AAATA Park & Ride lot
- Other (*please specify:*)

Page Break

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**Question:** FCST3A2\_2018  
**Show if:** (FCST3\_2018 was-not-answered) or (FCST3\_2018 = 1:[Drive a car]) or (FCST3\_2018 = 2:[Park and ride (the bus)]) or (FCST3\_2018 = 7:[Ride share (e.g. vanpool, car pool, dropped off, etc.)])

| Scale Summary |                 |         |
|---------------|-----------------|---------|
| Code          | Label           | Show-If |
| 1             | Very easy       |         |
| 2             | Somewhat easy   |         |
| 3             | Not very easy   |         |
| 4             | Not at all easy |         |

 **On a typical day, how easy it is for you to find a parking space?**

- Very easy
- Somewhat easy
- Not very easy
- Not at all easy

Page Break

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**Question:** FCST3A3\_2018  
**Show if:** (FCST3\_2018 was-not-answered) or (FCST3\_2018 = 1:[Drive a car]) or (FCST3\_2018 = 2:[Park and ride (the bus)]) or (FCST3\_2018 = 7:[Ride share (e.g. vanpool, car pool, dropped off, etc.)])

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Save money (e.g. fuel, car repair, parking, etc.) |         |
| 2             | Reduce impact on the environment                  |         |
| 3             | Enjoy the company of others while commuting       |         |
| 4             | Get some added sleep/rest                         |         |
| 5             | Other   |         |

 **This next set of questions is about *ridesharing or carpooling*, that is driving to/from work with others who live/work close to you. U-M currently supports and promotes carpool, vanpool and other ride sharing programs.**

**What do you think is the most important benefit of carpooling?**

- Save money (e.g. fuel, car repair, parking, etc.)
- Reduce impact on the environment
- Enjoy the company of others while commuting
- Get some added sleep/rest
- Other (*please specify:*)

Page Break

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**Question:** FCST3A4\_2018  
**Show if:** (FCST3\_2018 was-not-answered) or (FCST3\_2018 = 1:[Drive a car]) or (FCST3\_2018 = 2:[Park and ride (the bus)]) or (FCST3\_2018 = 7:[Ride share (e.g. vanpool, car pool, dropped off, etc.)])

| Scale Summary |                   |         |
|---------------|-------------------|---------|
| Code          | Label             | Show-If |
| 1             | Very likely       |         |
| 2             | Somewhat likely   |         |
| 3             | Unsure/Don't know |         |
| 4             | Not very likely   |         |
| 5             | Not at all likely |         |

 **If U-M were to expand and improve a carpool service and incentivize its use, how likely would you be to use it?**

- Very likely
- Somewhat likely
- Unsure/Don't know
- Not very likely
- Not at all likely

Page Break

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**Question:** FCST3A5\_2018  
**Show if:** ((FCST3\_2018 was-not-answered) or (FCST3\_2018 = 1:[Drive a car]) or (FCST3\_2018 = 2:[Park and ride (the bus)]) or (FCST3\_2018 = 7:[Ride share (e.g. vanpool, car pool, dropped off, etc.)])) and ((FCST3A4\_2018 was-not-answered) or (FCST3A4\_2018 = 1:[Very likely]) or (FCST3A4\_2018 = 2:[Somewhat likely]) or (FCST3A4\_2018 = 3:[Unsure/Don't know]))

| Scale Summary |                  |         |
|---------------|------------------|---------|
| Code          | Label            | Show-If |
| 1             | Midnight-5:59AM" |         |
| 2             | 6:00-6:59AM      |         |
| 3             | 7:00-7:59AM      |         |
| 4             | 8:00-8:59AM      |         |
| 5             | 9:00-9:59AM      |         |
| 6             | 10:00AM-11:59PM  |         |

 **On a typical workday, when do you usually leave home for campus?**

- Midnight-5:59AM"
- 6:00-6:59AM
- 7:00-7:59AM
- 8:00-8:59AM
- 9:00-9:59AM
- 10:00AM-11:59PM

Page Break

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**Question:** FCST3A6\_2018  
**Show if:** ((FCST3\_2018 was-not-answered) or (FCST3\_2018 = 1:[Drive a car]) or (FCST3\_2018 = 2:[Park and ride (the bus)]) or (FCST3\_2018 = 7:[Ride share (e.g. vanpool, car pool, dropped off, etc.)])) and ((FCST3A4\_2018 was-not-answered) or (FCST3A4\_2018 = 1:[Very likely]) or (FCST3A4\_2018 = 2:[Somewhat likely]) or (FCST3A4\_2018 = 3:[Unsure/Don't know]))

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Willing to leave home ealier                    |         |
| 2             | Willing to leave home later                     |         |
| 3             | Willing to leave home either earlier or later   |         |
| 4             | I am not willing to leave home earlier or later |         |

 **If you were to use the U-M carpooling service, would you be willing to leave home earlier or later than when you now leave?**

- Willing to leave home ealier
- Willing to leave home later
- Willing to leave home either earlier or later
- I am not willing to leave home earlier or later

Page Break

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**Question:** FCST3A6A\_2018  
**Show if:** (FCST3A6\_2018 = 1:[Willing to leave home ealier])

| Scale Summary |                          |         |
|---------------|--------------------------|---------|
| Code          | Label                    | Show-If |
| 1             | Up to 10 minutes earlier |         |
| 2             | 10-20 minutes ealier     |         |
| 3             | 20-30 minutes earlier    |         |

 **How much earlier would you be willing to leave home?**

- Up to 10 minutes earlier
- 10-20 minutes ealier
- 20-30 minutes earlier

Page Break

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**Question:** FCST3A6B\_2018  
**Show if:** (FCST3A6\_2018 = 2:[Willing to leave home later])

| Scale Summary |                        |         |
|---------------|------------------------|---------|
| Code          | Label                  | Show-If |
| 1             | Up to 10 minutes later |         |
| 2             | 10-20 minutes later    |         |
| 3             | 20-30 minutes later    |         |

 **How much later would you be willing to leave home?**

- Up to 10 minutes later
- 10-20 minutes later
- 20-30 minutes later

Page Break

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**Question Block:** FCST3A6C\_2018  
**Contains:** FCST3A6C\_4, FCST3A6C\_5  
 Show if: (FCST3A6\_2018 = 3:[Willing to leave home either earlier or later])

| Scale Summary |                  |         |
|---------------|------------------|---------|
| Code          | Label            | Show-If |
| 5             | Up to 10 minutes |         |
| 6             | 10-20 minutes    |         |
| 7             | 20-30 minutes    |         |

 **How much earlier or later would you be willing to leave home?**

|         | Up to 10 minutes      | 10-20 minutes         | 20-30 minutes         |
|---------|-----------------------|-----------------------|-----------------------|
| Earlier | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Later   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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**Question Block:** FCST3A6D\_2018  
**Contains:** FCSTA6D\_2018\_1, FCSTA6D\_2018\_2, FCSTA6D\_2018\_3, FCSTA6D\_2018\_4, FCSTA6D\_2018\_5  
 Show if: (FCST3\_2018 was-not-answered) or (FCST3\_2018 = 1:[Drive a car]) or (FCST3\_2018 = 2:[Park and ride (the bus)]) or (FCST3\_2018 = 7:[Ride share (e.g. vanpool, car pool, dropped off, etc.)])

| Scale Summary |                            |         |
|---------------|----------------------------|---------|
| Code          | Label                      | Show-If |
| 1             | Strongly Agree             |         |
| 2             | Agree                      |         |
| 3             | Neither Agree nor Disagree |         |
| 4             | Disagree                   |         |
| 5             | Strongly Disagree          |         |

 **How much do you agree or disagree with each of the follow statements about carpool riders and drivers.**

|  | Strongly Agree        | Agree                 | Neither Agree nor Disagree | Disagree              | Strongly Disagree     |
|--|-----------------------|-----------------------|----------------------------|-----------------------|-----------------------|
| <b>Would prefer same group of riders each day</b>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/> | <input type="radio"/> |
| <b>Wouldn't mind changing riders once in a while</b>         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/> | <input type="radio"/> |
| <b>Wouldn't mind changing riders if driver was the same.</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/> | <input type="radio"/> |
| <b>Wouldn't mind different drivers if riders were the</b>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/> | <input type="radio"/> |

|  |                       |                       |                       |                       |                       |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>same.</b>   |                       |                       |                       |                       |                       |
| <b>Wouldn't mind having different riders and drivers all the time.</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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**Question:** FCST4\_2018  
**Show if:** (FCST3\_2018 is-any-of 1:[Drive a car] or 2:[Park and ride (the bus)] or 7:[Ride share (e.g. vanpool, car pool, dropped off, etc.)]) and (FCST3A4\_2018 is-any-of 1:[Very likely] or 2:[Somewhat likely] or 3:[Unsure/Don't know])

| Scale Summary |                      |         |
|---------------|----------------------|---------|
| Code          | Label                | Show-If |
| 1             | Convenience          |         |
| 2             | Work schedule        |         |
| 3             | Home/family schedule |         |
| 4             | Length of commute    |         |
| 5             | Other                |         |

 **What is the primary reason you drive a car to work?**

- Convenience
- Work schedule
- Home/family schedule
- Length of commute
- Other (*please specify*):

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Question: FCST4B\_2018

 **If you don't currently carpool to campus, what are the obstacles to carpooling?**

*(Select All That Apply)*

- Takes extra time
- Difficult to coordinate schedules
- Lack of privacy/comfort
- Lack of flexibility/freedom
- Safety issues
- Not knowing who my fellow passengers might be
- Carpooling doesn't make sense from my home location
- Other *(please specify:)*

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**Collection:** SECTION\_B  
**Contains:** FCST10\_2018, FCST11\_2018, FCST11A\_2014

**Question Block:** FCST10\_2018  
**Contains:** FCST10\_2018\_A, FCST10\_2018\_E, FCST10\_2018\_F, FCST10\_2018\_G, FCST10\_2018\_H

| Scale Summary |                              |         |
|---------------|------------------------------|---------|
| Code          | Label                        | Show-If |
| 1             | <b>A lot</b>                 |         |
| 2             | <b>A fair amount</b>         |         |
| 3             | <b>A little</b>              |         |
| 4             | <b>Not much/<br/>nothing</b> |         |

 These questions are about **waste prevention and conservation**.

**How much do you know about the following at U-M?**

|  | <b>A lot</b>          | <b>A fair amount</b>  | <b>A little</b>       | <b>Not much/<br/>nothing</b> |
|--|-----------------------|-----------------------|-----------------------|------------------------------|
| <b>Recycling</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Property Disposition Services</b>                                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Composting</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>The energy consumption of the building where you work</b>           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>The energy conservation features of the building where you work</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |

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**Question Block:** FCST11\_2018  
**Contains:** FCST11\_2018\_A, FCST11\_2018\_B, FCST11\_2018\_C, FCST11\_2018\_D, FCST11\_2018\_E, FCST11\_2018\_F, FCST11\_2018\_G, FCST11\_2018\_H, FCST11\_2018\_I

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label                                   | Show-If |
| 1             | <b>Never</b>                            |         |
| 2             | <b>Rarely</b>                           |         |
| 3             | <b>Sometimes</b>                        |         |
| 4             | <b>Always/<br/>Most of<br/>the time</b> |         |
| 5             | <b>Not Applicable</b>                   |         |

 **During the past year, how often did you do the following at work when you had the opportunity?**

|   | <b>Never</b>          | <b>Rarely</b>         | <b>Sometimes</b>      | <b>Always/<br/>Most of<br/>the time</b> | <b>Not<br/>Applicable</b> |
|---|-----------------------|-----------------------|-----------------------|---|---------------------------|
| <b>Turn off the lights when I leave the room</b>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Use the power saving settings on the computer</b>        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Turn off my computer when I leave work</b>               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Use a motion sensor / "smart" power strip</b>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Print double-sided</b>                                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Recycle</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |
| <b>Use a reusable water bottle, coffee cup, travel mug,</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>                   | <input type="radio"/>     |

|  |                       |                       |                       |                       |                       |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>etc.</b>  |                       |                       |                       |                       |                       |
| <b>Use U-M Property Disposition Services to obtain items such as computers, furniture, and equipment</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Compost food scraps</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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**Question:** FCST11A\_2014

| Scale Summary |                      |         |
|---------------|----------------------|---------|
| Code          | Label                | Show-If |
| 1             | Very important       |         |
| 2             | Somewhat important   |         |
| 3             | Not that important   |         |
| 4             | Not at all important |         |

 **How important is your behavior to conserving energy in the building where you work?**

- Very important
- Somewhat important
- Not that important
- Not at all important


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**Collection:** SECTION\_D  
**Contains:** FCST22, FCST23\_2013, FCST24, FCST25, FCST26, FCST30

**Question Block:** FCST22  
**Contains:** Q82, Q83, Q84, Q85, Q86, Q87, Q88

| Scale Summary |                              |         |
|---------------|------------------------------|---------|
| Code          | Label                        | Show-If |
| 1             | <b>A lot</b>                 |         |
| 2             | <b>A fair amount</b>         |         |
| 3             | <b>A little</b>              |         |
| 4             | <b>Not much/<br/>nothing</b> |         |

 *Following are questions about **food**.*

**How much do you know about each of the following kinds of food?**

|  | <b>A lot</b>          | <b>A fair amount</b>  | <b>A little</b>       | <b>Not much/<br/>nothing</b> |
|--|-----------------------|-----------------------|-----------------------|------------------------------|
| <b>Locally grown or processed</b>                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Organic</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Fair trade food</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Food from humanely-treated animals</b>                            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Food from animals that were not given hormones or antibiotics</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Grass-fed beef</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |
| <b>Fish from sustainable fisheries</b>                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        |

Page Break

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**Question Block:** FCST23\_2013  
**Contains:** Q89\_2013, Q90\_2013, Q95\_2013, Q91\_2013, Q92\_2013, Q93\_2013, Q94\_2013

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label                                   | Show-If |
| 1             | <b>Always/<br/>Most of<br/>the Time</b> |         |
| 2             | <b>Sometimes</b>                        |         |
| 3             | <b>Rarely</b>                           |         |
| 4             | <b>Never</b>                            |         |
| 5             | <b>Don't Know</b>                       |         |
| 6             | <b>I Don't Eat This</b>                 |         |

 **During the past year, about how often did you (or other household members) buy the following?**

|  | <b>Always/<br/>Most of<br/>the<br/>Time</b> | <b>Sometimes</b>      | <b>Rarely</b>         | <b>Never</b>          | <b>Don't<br/>Know</b> | <b>I<br/>Don't<br/>Eat<br/>This</b> |
|--|---|-----------------------|-----------------------|-----------------------|-----------------------|-------------------------------------|
| <b>Locally grown or processed</b>                                    | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>               |
| <b>Organic</b>   | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>               |
| <b>Fair trade food</b>   | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>               |
| <b>Food from humanely-treated animals</b>                            | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>               |
| <b>Food from animals that were not given hormones or antibiotics</b> | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>               |
| <b>Grass-fed beef</b>  | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>               |
| <b>Fish from sustainable</b>   | <input type="radio"/>                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>               |


|                  |  |  |  |  |  |  |  |
|------------------|--|--|--|--|--|--|--|
| <b>fisheries</b> |  |  |  |  |  |  |  |
|------------------|--|--|--|--|--|--|--|

Page Break

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| Question: FCST24 |                     |         |
|------------------|---------------------|---------|
| Scale Summary    |                     |         |
| Code             | Label               | Show-If |
| 1                | All/most            |         |
| 2                | More than half      |         |
| 3                | Half                |         |
| 4                | Less than half      |         |
| 5                | None                |         |
| 6                | <i>I don't know</i> |         |

 **"Sustainable food"** can be defined as one or more of the following: locally-sourced, organic, from humanely-treated animals, antibiotic- and hormone-free, grass-fed, from sustainable fisheries, or fair trade food.

**During the past year, about how much of your grocery purchases were sustainable food?**

- All/most
- More than half
- Half
- Less than half
- None
  
- I don't know*

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**Question Block:** FCST25  
**Contains:** Q96, Q97, Q98, Q99, Q100, Q165\_2015  
 Show if: (FCST24 is-any-of 1:[All/most] or 2:[More than half] or 3:[Half] or 4:[Less than half])

| Scale Summary |                             |         |
|---------------|-----------------------------|---------|
| Code          | Label                       | Show-If |
| 1             | <b>Very important</b>       |         |
| 2             | <b>Somewhat important</b>   |         |
| 3             | <b>Not that important</b>   |         |
| 4             | <b>Not at all important</b> |         |

 **How important to you are the following when you buy sustainable food?**

|   | <b>Very important</b> | <b>Somewhat important</b> | <b>Not that important</b> | <b>Not at all important</b> |
|---|-----------------------|---------------------------|---------------------------|-----------------------------|
| <b>Nutrition</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Taste</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Supporting the local community</b>   | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Protecting the environment</b>   | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Avoiding things like synthetic pesticides or fertilizers, antibiotics or growth hormones</b> | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |
| <b>Affordability</b>  | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/>     | <input type="radio"/>       |

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**Question:** FCST26

| Scale Summary |                    |         |
|---------------|--------------------|---------|
| Code          | Label              | Show-If |
| 1             | Daily/almost daily |         |
| 2             | 3-4 days           |         |
| 3             | 1-2 days           |         |
| 4             | Never              |         |

 **During the past week, how often have you included meat as part of your daily diet?**

- Daily/almost daily
- 3-4 days
- 1-2 days
- Never

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|   |            |         |
|---|------------|---------|
| <b>Question Block:</b> FCST30                       |            |         |
| <b>Contains:</b> Q101, Q102, Q103, Q104, Q105, Q106 |            |         |
| <b>Scale Summary</b>                                |            |         |
| Code  | Label      | Show-If |
| 0   | <b>Yes</b> |         |
| 1   | <b>No</b>  |         |

 **During the past year, have you:**

|  | <b>Yes</b>            | <b>No</b>             |
|--|-----------------------|-----------------------|
| <b>Grown fruits/vegetables in a home garden?</b>               | <input type="radio"/> | <input type="radio"/> |
| <b>Grown fruits/vegetables in a community garden?</b>          | <input type="radio"/> | <input type="radio"/> |
| <b>Shopped at farmers markets or food stands?</b>              | <input type="radio"/> | <input type="radio"/> |
| <b>Belonged to a CSA (Community Supported Agriculture)?</b>    | <input type="radio"/> | <input type="radio"/> |
| <b>Visited U-Pick farms?</b>                                   | <input type="radio"/> | <input type="radio"/> |
| <b>Raised animals for food (e.g. meat, dairy, eggs, etc.)?</b> | <input type="radio"/> | <input type="radio"/> |

Page Break

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**Collection:** SECTION\_E  
**Contains:** FCST32\_2013, FCST32A\_2013, FCST32B\_2013, FCST35, FCST33, FCST34

**Question:** FCST32\_2013

| Scale Summary |              |         |
|---------------|--------------|---------|
| Code          | Label        | Show-If |
| 1             | Yes          |         |
| 2             | No           |         |
| 3             | I don't know |         |

 *These questions are about **climate change**, which is sometimes called global warming.*

**Do you think climate change is happening?**

- Yes
- No
  
- I don't know

Page Break

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**Question:** FCST32A\_2013  
**Show if:** (FCST32\_2013 = 1:[Yes])

| Scale Summary |                 |         |
|---------------|-----------------|---------|
| Code          | Label           | Show-If |
| 1             | Extremely sure  |         |
| 2             | Mostly sure     |         |
| 3             | Somewhat sure   |         |
| 4             | Not at all sure |         |

 **How sure are you that climate change is happening?**

- Extremely sure
- Mostly sure
- Somewhat sure
- Not at all sure

Page Break

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**Question:** FCST32B\_2013  
**Show if:** (FCST32\_2013 = 2:[No]) or (FCST32\_2013 = 3:[I don't know])

| Scale Summary |                 |         |
|---------------|-----------------|---------|
| Code          | Label           | Show-If |
| 1             | Extremely sure  |         |
| 2             | Mostly sure     |         |
| 3             | Somewhat sure   |         |
| 4             | Not at all sure |         |

 **How sure are you that climate change is not happening?**

- Extremely sure
- Mostly sure
- Somewhat sure
- Not at all sure

Page Break

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**Question:** FCST35

| Scale Summary |   |         |
|---------------|---|---------|
| Code          | Label   | Show-If |
| 1             | Caused mostly by human activities                         |         |
| 2             | Caused mostly by natural changes                          |         |
| 3             | Caused by both human activities and natural changes       |         |
| 4             | None of the above because climate change is not happening |         |

 **Assuming climate change is happening, do you think it is...**

- Caused mostly by human activities
- Caused mostly by natural changes
- Caused by both human activities and natural changes
- None of the above because climate change is not happening

Page Break

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**Question:** FCST33

| Scale Summary |                      |         |
|---------------|----------------------|---------|
| Code          | Label                | Show-If |
| 1             | Not at all important |         |
| 2             | Not too important    |         |
| 3             | Somewhat important   |         |
| 4             | Very important       |         |
| 5             | Extremely important  |         |

 **How important is the issue of climate change to you personally?**

- Not at all important
- Not too important
- Somewhat important
- Very important
- Extremely important

Page Break

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| Question: FCST34 |  |         |
|------------------|--|---------|
| Scale Summary    |  |         |
| Code             | Label                                    | Show-If |
| 1                | Very well                                |         |
| 2                | Fairly well                              |         |
| 3                | A little bit                             |         |
| 4                | I would not be able to explain it at all |         |



**How well could you explain the topic of climate change to someone who didn't know about it--what's causing it or not, what are its potential consequences, etc.?**

- Very well
- Fairly well
- A little bit
- I would not be able to explain it at all


Page Break

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**Collection:** SECTION\_F  
**Contains:** FCST37, FCST42, FCST43

**Question Block:** FCST37  
**Contains:** Q107, Q108, Q109, Q110

| Scale Summary |       |         |
|---------------|-------|---------|
| Code          | Label | Show-If |
| 0             | Yes   |         |
| 1             | No    |         |

 *These next questions cover **other activities and your perspectives about sustainability.***

**Have you done any of the following during the past year to promote sustainability issues such as environmental protection, energy or water conservation, open space preservation, public or non-motorized transportation, etc.?**

|  | Yes                   | No                    |
|--|-----------------------|-----------------------|
| <b>Given money to an organization or advocacy group supporting one of the above issues?</b>                      | <input type="radio"/> | <input type="radio"/> |
| <b>Volunteered for an organization or advocacy group supporting one of the above issues?</b>                     | <input type="radio"/> | <input type="radio"/> |
| <b>Served in a leadership position for an organization or advocacy group supporting one of the above issues?</b> | <input type="radio"/> | <input type="radio"/> |
| <b>Voted for a candidate for public office because of her/his position on any of the above issues?</b>           | <input type="radio"/> | <input type="radio"/> |

Page Break

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**Question:** FCST42

| Scale Summary |                      |         |
|---------------|----------------------|---------|
| Code          | Label                | Show-If |
| 1             | Very committed       |         |
| 2             | Somewhat committed   |         |
| 3             | Not very committed   |         |
| 4             | Not at all committed |         |

 **Overall, how committed are you to sustainability? Are you:**

- Very committed
- Somewhat committed
- Not very committed
- Not at all committed

Page Break

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**Question:** FCST43

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label                                    | Show-If |
| 1             | Friends or classmates                    |         |
| 2             | Parents or other family members          |         |
| 3             | K-12 teachers                            |         |
| 4             | U-M professors/instructors               |         |
| 5             | Childhood experiences outdoors           |         |
| 8             | Media--readings, video, movies, TV, etc. |         |
| 6             | Other U-M activities                     |         |
| 7             | Other                                    |         |

 **Who or what has been most influential in shaping your views about sustainability?**

- Friends or classmates
- Parents or other family members
- K-12 teachers
- U-M professors/instructors
- Childhood experiences outdoors
- Media--readings, video, movies, TV, etc.
- Other U-M activities (*please specify*):
- Other (*please specify*):

Page Break

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**Collection:** SECTION\_G  
**Contains:** FCST44\_2018, FCST44B\_2018, FCST45\_2018, FCST46A1\_2018

**Question Block:** FCST44\_2018  
**Contains:** FCST44\_2018\_A, FCST44\_2018\_B, FCST44\_2018\_C, FCST44\_2018\_D, FCST44\_2018\_E, FCST44\_2018\_F, FCST44\_2018\_G, FCST44\_2018\_H, FCST44\_2018\_I, FCST44\_2018\_J, FCST44\_2018\_K

| Scale Summary |                         |         |
|---------------|-------------------------|---------|
| Code          | Label                   | Show-If |
| 1             | <b>Very aware</b>       |         |
| 2             | <b>Somewhat aware</b>   |         |
| 3             | <b>Not too aware</b>    |         |
| 4             | <b>Not at all aware</b> |         |

 This set of questions is about **sustainability at the University of Michigan**.

**How aware are you of U-M's efforts to:**

|   | <b>Very aware</b>     | <b>Somewhat aware</b> | <b>Not too aware</b>  | <b>Not at all aware</b> |
|---|-----------------------|-----------------------|-----------------------|-------------------------|
| <b>Conserve energy?</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| <b>Encourage people to take a bus or bike?</b>                        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| <b>Promote ride sharing?</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| <b>Promote recycling?</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| <b>Promote food from sustainable sources?</b>                         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| <b>Reduce greenhouse gas emissions?</b>                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| <b>Maintain campus grounds in an environmentally-friendly manner?</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| <b>Protect the Huron River?</b>                                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| <b>Promote composting?</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |

|  |                       |                       |                       |                       |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Promote zero waste events at the Michigan Stadium</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote other zero waste events</b>                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Page Break

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**Question:** FCST44B\_2018

| Scale Summary |           |         |
|---------------|-----------|---------|
| Code          | Label     | Show-If |
| 1             | NONE      |         |
| 2             | 1-2 games |         |
| 3             | 3-4 games |         |
| 4             | 5-6 games |         |



**During this past fall semester, how many U-M football games did you attend at Michigan Stadium?**

- NONE
- 1-2 games
- 3-4 games
- 5-6 games

Page Break

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**Question Block:** FCST45\_2018  
**Contains:** Q1, Q2, Q3, Q4, Q6, Q7, Q8, Q9, Q128, Q164

| Scale Summary |                      |         |
|---------------|----------------------|---------|
| Code          | Label                | Show-If |
| 1             | <b>Very Good (A)</b> |         |
| 2             | <b>Good (B)</b>      |         |
| 3             | <b>Fair (C)</b>      |         |
| 4             | <b>Poor (D)</b>      |         |
| 5             | <b>Very Poor (F)</b> |         |

 **Overall, how would you rate/grade U-M's efforts to:**

|   | <b>Very Good (A)</b>  | <b>Good (B)</b>       | <b>Fair (C)</b>       | <b>Poor (D)</b>       | <b>Very Poor (F)</b>  |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Conserve energy?</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Encourage people to take a bus or bike?</b>                        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote ride sharing?</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote recycling?</b>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote food from sustainable sources?</b>                         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Reduce greenhouse gas emissions?</b>                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Maintain campus grounds in an environmentally-friendly manner?</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Protect the Huron River?</b>                                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote composting?</b>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Promote zero waste events?</b>                                     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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**Question Block:** FCST46A1\_2018  
**Contains:** FCST46A1\_2018\_A, FCST46A1\_2018\_B, FCST46A1\_2018\_C, FCST46A1\_2018\_D, FCST46A1\_2018\_E, FCST46A1\_2018\_F, FCST46A1\_2018\_G, FCST46A1\_2018\_H, FCST46A1\_2018\_I, FCST46A1\_2018\_J, FCST46A1\_2018\_K, FCST46A1\_2018\_L

| Scale Summary |       |         |
|---------------|-------|---------|
| Code          | Label | Show-If |
| 0             | Yes   |         |
| 1             | No    |         |

 **During the past year did you participate in any of the following at U-M?**

|   | Yes                   | No                    |
|---|-----------------------|-----------------------|
| <b>RecycleMania</b>   | <input type="radio"/> | <input type="radio"/> |
| <b>Earthfest</b>  | <input type="radio"/> | <input type="radio"/> |
| <b>Zero Waste Events</b>  | <input type="radio"/> | <input type="radio"/> |
| <b>e-Waste Recycling Event</b>  | <input type="radio"/> | <input type="radio"/> |
| <b>Planet Blue Ambassadors Program</b>  | <input type="radio"/> | <input type="radio"/> |
| <b>Sustainable Workplace Certification Program</b>  | <input type="radio"/> | <input type="radio"/> |
| <b>Sustainable Lab Recognition Program</b>  | <input type="radio"/> | <input type="radio"/> |
| <b>M Farmers Markets</b>  | <input type="radio"/> | <input type="radio"/> |
| <b>A U-M organization dealing with sustainability</b>   | <input type="radio"/> | <input type="radio"/> |
| <b>Visited the Planet Blue website</b>  | <input type="radio"/> | <input type="radio"/> |
| <b>Read about U-M sustainability efforts in the U-M Record or on other media outlets (i.e. social media, etc)</b> | <input type="radio"/> | <input type="radio"/> |
| <b>Other</b>  | <input type="radio"/> | <input type="radio"/> |

Page Break

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**Custom Layout Question:** FCST46\_1\_2018

 *Please specify:*


Page Break

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**Collection:** SECTION\_H  
**Contains:** FCST47, FCST48, FCST49-FCST50\_SERIES, FCST51, FCST52\_CAMPUS\_2018, FCST52\_MAP\_2018, FCST52\_CENTRAL, FCST52\_EAST, FCST52\_MEDICAL, FCST52\_NORTH, FCST52\_SOUTH, FCST52\_OTHER, FCST55B, FCST56\_2014, FCST59, FCST60, FCST61, FCST61B\_2018, FCST62, FCST63, FCST64\_2014, FCST65\_2014, FCST66\_2014, FCST67

**Question:** FCST47

| Scale Summary |         |         |
|---------------|---------|---------|
| Code          | Label   | Show-If |
| 1             | Staff   |         |
| 2             | Faculty |         |

 *About you:*

**Are you:**

- Staff
- Faculty

Page Break

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**Question:** FCST48  
**Show if:** (FCST47 = 1:[Staff])

| Scale Summary |                        |         |
|---------------|------------------------|---------|
| Code          | Label                  | Show-If |
| 1             | Professional           |         |
| 2             | Managerial             |         |
| 3             | Administrative support |         |
| 4             | Research               |         |
| 5             | Medical, nursing       |         |
| 6             | Service or maintenance |         |
| 7             | Other                  |         |

 **Are you primarily:**

- Professional
- Managerial
- Administrative support
- Research
- Medical, nursing
- Service or maintenance
- Other (*please specify*):

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**Collection:** FCST49-FCST50\_SERIES  
**Contains:** FCST49, FCST50  
**Show if:** (FCST47 = 2:[Faculty])

**Question:** FCST49

| Scale Summary |                     |         |
|---------------|---------------------|---------|
| Code          | Label               | Show-If |
| 1             | Tenured faculty     |         |
| 2             | Non-tenured faculty |         |

 **Are you:**

- Tenured faculty
- Non-tenured faculty

Page Break

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**Question:** FCST50

| Scale Summary |                                |         |
|---------------|--------------------------------|---------|
| Code          | Label                          | Show-If |
| 1             | Teaching faculty               |         |
| 2             | Research faculty               |         |
| 3             | Clinical instructional faculty |         |
| 4             | Lecturer                       |         |
| 6             | Librarian                      |         |
| 5             | Other                          |         |

 **Are you primarily:**

- Teaching faculty
- Research faculty
- Clinical instructional faculty
- Lecturer
- Librarian
- Other (*please specify*):

Page Break

---

**Question:** FCST51

| Scale Summary |                    |         |
|---------------|--------------------|---------|
| Code          | Label              | Show-If |
| 1             | Less than a year   |         |
| 2             | 1-2 years          |         |
| 3             | 3-5 years          |         |
| 4             | 6-10 years         |         |
| 5             | 11-20 years        |         |
| 6             | More than 20 years |         |

 **How long have you worked at U-M?**

- Less than a year
- 1-2 years
- 3-5 years
- 6-10 years
- 11-20 years
- More than 20 years

Page Break

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| Question: FCST52_CAMPUS_2018 |  |         |
|------------------------------|--|---------|
| Scale Summary                |  |         |
| Code                         | Label  | Show-If |
| 1                            | Central Campus <i>(includes the Law School and Diag, among many others)</i>                    |         |
| 2                            | East Medical Campus and Properties <i>(includes buildings off Plymouth road, among others)</i> |         |
| 3                            | Medical Campus <i>(U-M Hospital and surrounding medical buildings)</i>                         |         |
| 4                            | North Campus <i>(between Fuller and Plymouth Roads)</i>  |         |
| 5                            | Ross Athletic Campus <i>(South of Packard to Stadium)</i>                                      |         |
| 6                            | Other <i>(including Wolverine Tower)</i>   |         |
| 7                            | <i>I'm not sure - show me a map</i>  |         |

 **On which campus do you mainly work?**

- Central Campus *(includes the Law School and Diag, among many others)*
- East Medical Campus and Properties *(includes buildings off Plymouth road, among others)*
- Medical Campus *(U-M Hospital and surrounding medical buildings)*
- North Campus *(between Fuller and Plymouth Roads)*
- Ross Athletic Campus *(South of Packard to Stadium)*
- Other *(including Wolverine Tower)*
- I'm not sure - show me a map*

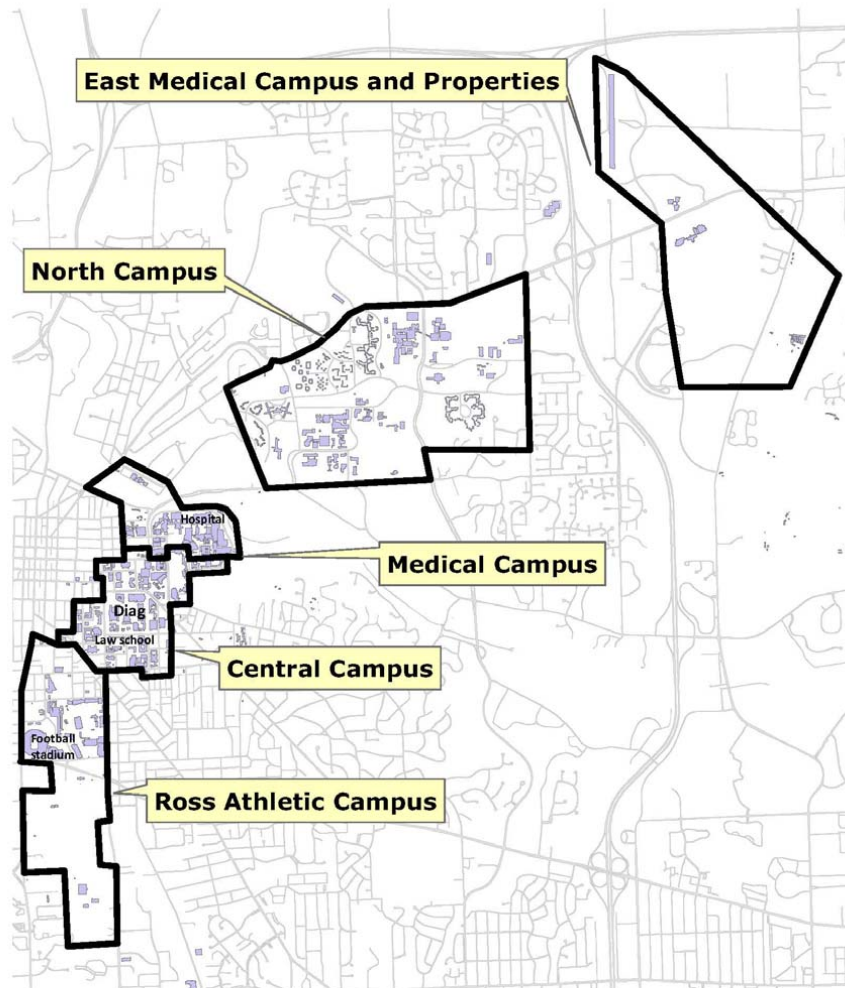
Page Break

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**Question:** FCST52\_MAP\_2018  
**Show if:** (FCST52\_CAMPUS\_2018 = 7:[I'm not sure - show me a map])

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label  | Show-If |
| 1             | Central Campus <i>(includes the Law School and Diag, among many others)</i>                    |         |
| 2             | East Medical Campus and properties <i>(includes buildings off Plymouth road, among others)</i> |         |
| 3             | Medical Campus <i>(U-M Hospital and surrounding medical buildings)</i>                         |         |
| 4             | North Campus <i>(between Fuller and Plymouth Roads)</i>  |         |
| 5             | Ross Athletic Campus <i>(South of Packard to Stadium)</i>                                      |         |
| 6             | Other <i>(including Wolverine Tower)</i>   |         |

 **On which campus do you mainly work?**



**SCIP Regions**


- Central Campus (*includes the Law School and Diag, among many others*)
- East Medical Campus and properties (*includes buildings off Plymouth road, among others*)
- Medical Campus (*U-M Hospital and surrounding medical buildings*)
- North Campus (*between Fuller and Plymouth Roads*)
- Ross Athletic Campus (*South of Packard to Stadium*)
- Other (*including Wolverine Tower*)

Page Break

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**Question:** FCST52\_CENTRAL  
**Show if:** (FCST52\_CAMPUS\_2018 = 1:[Central Campus (includes the Law School and Diag, among many others)]) or (FCST52\_MAP\_2018 = 1:[Central Campus (includes the Law School and Diag, among many others)])

| Scale Summary |                                    |                    |
|---------------|------------------------------------|--------------------|
| Code          | Label                              | Show-If            |
| 1             | Angell Hall                        |                    |
| 28            | Central Campus Recreation Building |                    |
| 26            | Central Power Plant                |                    |
| 2             | Chemistry                          |                    |
| 3             | Clarence Cook Little Building      |                    |
| 4             | Dana Natural Resources Building    |                    |
| 5             | Dental & W.K. Kellogg Institute    |                    |
| 6             | East Hall                          |                    |
| 7             | Edward Henry Kraus Building        |                    |
| 29            | Ford School of Public Policy       |                    |
| 8             | Harlan Hatcher Graduate Library    |                    |
| 9             | Haven Hall                         |                    |
| 10            | Hutchins Hall                      |                    |
| 11            | Institute For Social Research      |                    |
| 30            | Law School (including South Hall)  |                    |
| 12            | Literature Science and the Arts    |                    |
| 13            | Lorch Hall                         |                    |
| 14            | Modern Languages Building          |                    |
| 34            | Munger Graduate Residences         |                    |
| 15            | Museum of Natural History          |                    |
| 16            | North Quad                         |                    |
| 32            | Palmer Commons                     |                    |
| 17            | Randall Laboratory                 |                    |
| 18            | Ross School of Business            |                    |
| 19            | School of Education                |                    |
| 31            | School of Public Health I or II    |                    |
| 20            | School of Social Work Building     |                    |
| 21            | Shapiro Harold & Vivian Library    |                    |
| 22            | Student Activities Building        |                    |
| 27            | Tisch Hall                         |                    |
| 33            | Undergraduate Science Building     |                    |
| 23            | University Health Services         |                    |
| 24            | West Hall                          |                    |
| 25            | 202 S. Thayer                      | <i>Never Shown</i> |
| 77            | Other                              |                    |

 **Listed below are many buildings on Central Campus. Some buildings are known by more than one name. If you do not see the name of the building where you work, please select "Other" and type in the name of the building in which you work.**

**Please select the name of the building where you mainly work.**


- Angell Hall
- Central Campus Recreation Building
- Central Power Plant
- Chemistry
- Clarence Cook Little Building
- Dana Natural Resources Building
- Dental & W.K. Kellogg Institute
- East Hall
- Edward Henry Kraus Building
- Ford School of Public Policy
- Harlan Hatcher Graduate Library
- Haven Hall
- Hutchins Hall
- Institute For Social Research
- Law School (including South Hall)
- Literature Science and the Arts
- Lorch Hall
- Modern Languages Building
- Munger Graduate Residences
- Museum of Natural History
- North Quad
- Palmer Commons
- Randall Laboratory
- Ross School of Business
- School of Education
- School of Public Health I or II
- School of Social Work Building
- Shapiro Harold & Vivian Library
- Student Activities Building
- Tisch Hall
- Undergraduate Science Building
- University Health Services
- West Hall
- 202 S. Thayer
- Other (*name of building*):

Page Break

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**Question:** FCST52\_EAST  
**Show if:** (FCST52\_CAMPUS\_2018 = 2:[East Medical Campus and Properties (includes buildings off Plymouth road, among others)]) or (FCST52\_MAP\_2018 = 2:[East Medical Campus and properties (includes buildings off Plymouth road, among others)])

| Scale Summary |   |                    |
|---------------|---|--------------------|
| Code          | Label   | Show-If            |
| 1             | Arbor Lakes Building 1, 2 or 3                  |                    |
| 2             | Arbor Lakes Building 2                          | <i>Never Shown</i> |
| 3             | Arbor Lakes Building 3                          | <i>Never Shown</i> |
| 4             | Domino's Farms                                  |                    |
| 5             | East Ann Arbor Health & Geriatrics Center       |                    |
| 6             | Matthaei Botanical Gardens or Nichols Arboretum |                    |
| 7             | Rachel Upjohn Building                          |                    |
| 77            | Other   |                    |

 **Listed below are buildings on East Medical Campus and Properties. Some buildings are known by more than one name. If you do not see the name of the building where you work, please select "Other" and type in the name of the building in which you work.**

**Please select the name of the building where you mainly work.**


- Arbor Lakes Building 1, 2 or 3
- Arbor Lakes Building 2
- Arbor Lakes Building 3
- Domino's Farms
- East Ann Arbor Health & Geriatrics Center
- Matthaei Botanical Gardens or Nichols Arboretum
- Rachel Upjohn Building
- Other (*name of building*):

Page Break

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**Question:** FCST52\_MEDICAL  
**Show if:** (FCST52\_CAMPUS\_2018 = 3:[Medical Campus (U-M Hospital and surrounding medical buildings)])  
 or (FCST52\_MAP\_2018 = 3:[Medical Campus (U-M Hospital and surrounding medical buildings)])

| Scale Summary |  |                    |
|---------------|--|--------------------|
| Code          | Label  | Show-If            |
| 1             | A. Alfred Taubman Biomedical Science Research Building |                    |
| 2             | A. Alfred Taubman Health Care                          |                    |
| 20            | A. Alfred Taubman Health Sciences Library              |                    |
| 3             | Brehm Tower  |                    |
| 4             | Cancer Center  |                    |
| 15            | Detroit Observatory                                    |                    |
| 5             | Frankel Cardiovascular Center                          |                    |
| 6             | Kellogg Eye Center                                     |                    |
| 7             | Life Sciences Institute                                |                    |
| 8             | Med Inn  |                    |
| 9             | Medical Science Research Building I, II or III         |                    |
| 10            | Medical Science Unit I or II                           |                    |
| 11            | Medical Science Unit II                                | <i>Never Shown</i> |
| 19            | Medical Science Unit III                               | <i>Never Shown</i> |
| 12            | Mott Children's Hospital                               |                    |
| 13            | Neuroscience Hospital                                  |                    |
| 14            | Neuroscience Hospital Unit 2                           | <i>Never Shown</i> |
| 16            | Palmer Commons   |                    |
| 17            | School of Nursing                                      |                    |
| 18            | School of Public Health I or II                        |                    |
| 21            | Undergraduate Science Building                         |                    |
| 22            | University Hospital                                    |                    |
| 23            | Von Voigtlander Women's Hospital                       |                    |
| 77            | Other  |                    |

 **Listed below are buildings on the Medical Campus. Some buildings are known by more than one name. If you do not see the name of the building where you work, please select "Other" and type in the name of the building in which you work.**

**Please select the name of the building where you mainly work.**

- A. Alfred Taubman Biomedical Science Research Building
- A. Alfred Taubman Health Care
- A. Alfred Taubman Health Sciences Library
- Brehm Tower
- Cancer Center
- Detroit Observatory
- Frankel Cardiovascular Center
- Kellogg Eye Center
- Life Sciences Institute
- Med Inn
- Medical Science Research Building I, II or III




- Medical Science Unit I or II
- Medical Science Unit II
- Medical Science Unit III
- Mott Children's Hospital
- Neuroscience Hospital
- Neuroscience Hospital Unit 2
- Palmer Commons
- School of Nursing
- School of Public Health I or II
- Undergraduate Science Building
- University Hospital
- Von Voigtlander Women's Hospital
- Other (*name of building*):

Page Break

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**Question:** FCST52\_NORTH  
**Show if:** (FCST52\_CAMPUS\_2018 = 4:[North Campus (between Fuller and Plymouth Roads)]) or (FCST52\_MAP\_2018 = 4:[North Campus (between Fuller and Plymouth Roads)])

| Scale Summary |  |         |
|---------------|--|---------|
| Code          | Label  | Show-If |
| 1             | Art and Architecture Building                        |         |
| 2             | Bentley Historical Library                           |         |
| 3             | Bob and Betty Beyster Building                       |         |
| 4             | Carl A. Gerstacker Building                          |         |
| 5             | Chrysler Center Engineering                          |         |
| 6             | Duderstadt Center                                    |         |
| 7             | Electrical Engineering and Computer Science Building |         |
| 8             | Engineering Research Building                        |         |
| 9             | Francois-Xavier Bagnoud Building                     |         |
| 10            | GG Brown Laboratory                                  |         |
| 11            | Gorguze Family Laboratory                            |         |
| 12            | Herbert H. Dow Building                              |         |
| 13            | Industrial and Operations Engineering Building       |         |
| 14            | Moore Building                                       |         |
| 15            | Naval Architecture and Marine Engineering Building   |         |
| 16            | North Campus Administrative Complex                  |         |
| 22            | North Campus Facilities Services Building            |         |
| 17            | North Campus Research Complex                        |         |
| 18            | Space Research Building                              |         |
| 19            | Transportation Research Institute                    |         |
| 20            | Walgreen Drama Center                                |         |
| 21            | Walter E Lay Automotive Laboratory                   |         |
| 77            | Other  |         |

 **Listed below are buildings on North Campus. Some buildings are known by more than one name. If you do not see the name of the building where you work, please select "Other" and type in the name of the building in which you work.**

**Please select the name of the building where you mainly work.**

- Art and Architecture Building
- Bentley Historical Library
- Bob and Betty Beyster Building
- Carl A. Gerstacker Building
- Chrysler Center Engineering
- Duderstadt Center
- Electrical Engineering and Computer Science Building
- Engineering Research Building
- Francois-Xavier Bagnoud Building
- GG Brown Laboratory
- Gorguze Family Laboratory
- Herbert H. Dow Building


- Industrial and Operations Engineering Building
- Moore Building
- Naval Architecture and Marine Engineering Building
- North Campus Administrative Complex
- North Campus Facilities Services Building
- North Campus Research Complex
- Space Research Building
- Transportation Research Institute
- Walgreen Drama Center
- Walter E Lay Automotive Laboratory
- Other (*name of building*):

Page Break

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**Question:** FCST52\_SOUTH  
**Show if:** (FCST52\_CAMPUS\_2018 = 5:[Ross Athletic Campus (South of Packard to Stadium)]) or (FCST52\_MAP\_2018 = 5:[Ross Athletic Campus (South of Packard to Stadium)])

| Scale Summary |  |                    |
|---------------|--|--------------------|
| Code          | Label                                      | Show-If            |
| 2             | Administrative Services Building           |                    |
| 3             | Argus Building                             | <i>Never Shown</i> |
| 4             | Boyer Building                             |                    |
| 5             | Buhr Building                              |                    |
| 6             | Campus Safety Services Building            |                    |
| 7             | Donald B. Canham Natatorium                |                    |
| 8             | Facility Services Building A, B or C       |                    |
| 9             | Hoover Annex                               |                    |
| 10            | Hoover Heating Plant                       |                    |
| 11            | Institute of Continuing Legal Ed           |                    |
| 12            | Intramural Sports Building                 |                    |
| 13            | John P. Weidenbach Hall                    |                    |
| 1             | Madison Building                           |                    |
| 14            | Schembechler Hall                          |                    |
| 15            | Transportation Services Building           |                    |
| 16            | William D. Revelli Hall                    |                    |
| 17            | William Davidson Player Development Center |                    |
| 18            | Yost Ice Arena                             |                    |
| 77            | Other                                      |                    |

 **Listed below are buildings on the Ross Athletic Campus. Some buildings are known by more than one name. If you do not see the name of the building where you work, please select "Other" and type in the name of the building in which you work.**

**Please select the name of the building where you mainly work.**

- Administrative Services Building
- Argus Building
- Boyer Building
- Buhr Building
- Campus Safety Services Building
- Donald B. Canham Natatorium
- Facility Services Building A, B or C
- Hoover Annex
- Hoover Heating Plant
- Institute of Continuing Legal Ed
- Intramural Sports Building
- John P. Weidenbach Hall
- Madison Building
- Schembechler Hall
- Transportation Services Building
- William D. Revelli Hall


- William Davidson Player Development Center
- Yost Ice Arena
- Other (*name of building*):

Page Break

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**Question:** FCST52\_OTHER  
**Show if:** (FCST52\_CAMPUS\_2018 = 6:[Other (including Wolverine Tower)]) or (FCST52\_MAP\_2018 = 6:[Other (including Wolverine Tower)])

| Scale Summary |  |                    |
|---------------|--|--------------------|
| Code          | Label  | Show-If            |
| 1             | A. Alfred Taubman Biomedical Science Research Building | <i>Never Shown</i> |
| 2             | Argus Building I or II                                 |                    |
| 3             | Argus Building II                                      | <i>Never Shown</i> |
| 4             | Brehm Tower  | <i>Never Shown</i> |
| 5             | Briarwood Medical Group Buildings                      |                    |
| 6             | Campus Safety Services Building                        | <i>Never Shown</i> |
| 7             | Central Campus Recreation                              | <i>Never Shown</i> |
| 8             | Couzens Hall   | <i>Never Shown</i> |
| 9             | Detroit Observatory                                    | <i>Never Shown</i> |
| 10            | Kellogg Eye Center                                     | <i>Never Shown</i> |
| 11            | KMS Building   |                    |
| 12            | School of Public Health I and II                       | <i>Never Shown</i> |
| 13            | Stockwell Hall   | <i>Never Shown</i> |
| 14            | Wolverine Tower  |                    |
| 77            | Other  |                    |

 **Listed below are other U-M buildings where you may work. Some buildings are known by more than one name. If you do not see the name of the building where you work, please select "Other" and type in the name of the building in which you work.**


**Please select the name of the building where you mainly work.**

- A. Alfred Taubman Biomedical Science Research Building
- Argus Building I or II
- Argus Building II
- Brehm Tower
- Briarwood Medical Group Buildings
- Campus Safety Services Building
- Central Campus Recreation
- Couzens Hall
- Detroit Observatory
- Kellogg Eye Center
- KMS Building
- School of Public Health I and II
- Stockwell Hall
- Wolverine Tower
- Other (*name of building*):

Page Break

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**Question:** FCST55B


 **What is the name of the city, township, or village where you currently live?**

City, township, or village name:

Page Break

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Question: FCST56\_2014

 **What is the ZIP code of your current residence?**

5-digit ZIP code:

Page Break

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Custom Layout Question: FCST57

 **The major cross streets (intersection) near your current residence are:**

Street 1:

Street 2:

Page Break

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**Question:** FCST59

| Scale Summary |           |         |
|---------------|-----------|---------|
| Code          | Label     | Show-If |
| 0             | None      |         |
| 1             | 1         |         |
| 2             | 2         |         |
| 3             | 3         |         |
| 4             | 4 or more |         |

 **Number of cars and trucks (passenger vehicles) owned/leased by your household:**

- None
- 1
- 2
- 3
- 4 or more

Page Break

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**Question:** FCST60

| Scale Summary |            |         |
|---------------|------------|---------|
| Code          | Label      | Show-If |
| 1             | Under 25   |         |
| 2             | 25-29      |         |
| 3             | 30-39      |         |
| 4             | 40-49      |         |
| 5             | 50-59      |         |
| 6             | 60-69      |         |
| 7             | 70 or over |         |

 **How old are you?**

- Under 25
- 25-29
- 30-39
- 40-49
- 50-59
- 60-69
- 70 or over

Page Break

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**Question:** FCST61

| Scale Summary |                              |                    |
|---------------|------------------------------|--------------------|
| Code          | Label                        | Show-If            |
| 1             | Female                       |                    |
| 2             | Male                         |                    |
| 3             | Transgender                  | <i>Never Shown</i> |
| 5             | Other                        |                    |
| 4             | <i>Choose not to respond</i> |                    |



**Are you:**

- Female
- Male
- Transgender
- Other (*please specify*):
- Choose not to respond*

Page Break

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Question: FCST61B\_2018

 **Please indicate the racial or ethnic group(s) with which you identify.**

*(Select All That Apply)*

- African American/Black
- Asian American/Asian
- Hispanic/Latino/a
- Middle Eastern/North African
- Native America/Alaskan Native
- Native Hawaiian/Other Pacific Islander
- White
- Other *(please specify)*:

Page Break

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| Question: FCST62 |                                 |         |
|------------------|---------------------------------|---------|
| Scale Summary    |                                 |         |
| Code             | Label                           | Show-If |
| 1                | High school graduate or less    |         |
| 2                | Some college                    |         |
| 3                | College graduate                |         |
| 4                | Graduate or professional degree |         |
| 5                | Other                           |         |

 **What is the highest level of education you have completed?**

- High school graduate or less
- Some college
- College graduate
- Graduate or professional degree
- Other (*please specify*):

Page Break

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**Question:** FCST63

| Scale Summary |                     |         |
|---------------|---------------------|---------|
| Code          | Label               | Show-If |
| 1             | Less than \$50,000  |         |
| 2             | \$50,000-\$74,999   |         |
| 3             | \$75,000-\$99,999   |         |
| 4             | \$100,000-\$149,999 |         |
| 5             | \$150,000-\$199,999 |         |
| 6             | \$200,000 or more   |         |

 **What category best represents your 2017 annual household income?**

- Less than \$50,000
- \$50,000-\$74,999
- \$75,000-\$99,999
- \$100,000-\$149,999
- \$150,000-\$199,999
- \$200,000 or more

Page Break

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| Question: FCST64_2014 |                                    |         |
|-----------------------|------------------------------------|---------|
| Scale Summary         |                                    |         |
| Code                  | Label                              | Show-If |
| 1                     | Very satisfied                     |         |
| 2                     | Somewhat satisfied                 |         |
| 3                     | Neither satisfied nor dissatisfied |         |
| 4                     | Somewhat dissatisfied              |         |
| 5                     | Very dissatisfied                  |         |

 **How satisfied are you with your survey experience?**

- Very satisfied
- Somewhat satisfied
- Neither satisfied nor dissatisfied
- Somewhat dissatisfied
- Very dissatisfied

Page Break

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**Question:** FCST65\_2014

 **How long do you estimate it took you to complete the survey?**

minutes

Page Break

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**Question:** FCST66\_2014

| Scale Summary |                           |         |
|---------------|---------------------------|---------|
| Code          | Label                     | Show-If |
| 1             | Yes                       |         |
| 2             | No                        |         |
| 3             | I don't remember (unsure) |         |

 **Do you remember completing a U-M survey like this in the past?**

- Yes
- No
  
- I don't remember (unsure)

Page Break

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| <b>Question:</b> FCST67 |       |         |
|-------------------------|-------|---------|
| <b>Scale Summary</b>    |       |         |
| Code                    | Label | Show-If |
| 1                       | Yes   |         |
| 2                       | No    |         |

 **Would you like to receive information on U-M sustainability activities and resources?**


- Yes
- No

|   |
|---|
| <b>Collection:</b> SECTION_I<br><b>Contains:</b> INCENTIVE_2018<br><b>Show if:</b> (PL_LOTTERY = 1) |
|---|

Page Break

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| Question: INCENTIVE_2018 |   |         |
|--------------------------|---|---------|
| Scale Summary            |   |         |
| Code                     | Label   | Show-If |
| 1                        | Yes, please include me in the drawing.        |         |
| 0                        | No, thanks. Do not include me in the drawing. |         |

 **Once you submit your completed survey, you will be eligible to win a \$50 Amazon gift code. Do you wish to be included in the drawing?**

- Yes, please include me in the drawing.
- No, thanks. Do not include me in the drawing.

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