Exploring the Role of Tuition-Free Community College for Rural Communities: A Mixed Methods Approach

by

Kristen Marie Cummings

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Higher Education)
in the University of Michigan
2024

Doctoral Committee:

Professor Michael Bastedo, Co-Chair
Associate Professor Awilda Rodriguez, University of Maryland, Co-Chair
Associate Professor Christina Weiland
Assistant Professor Jeremy Wright-Kim

Kristen Marie Cummings

kristenz@umich.edu

ORCID iD: 0000-0002-1840-835X

Dedication

For my parents, Melanie and Don Cummings, whose love and support made this journey possible.

Acknowledgements

To my dissertation committee—Awilda, Mike, Chris, and Jeremy—thank you for your guidance, feedback, and kindness. Awilda – you always made me feel supported as a whole person. Thank you for pushing me to make my writing more accessible and compelling. Your reminders to always stay true to why I am doing this work, and to center people in my work, have made me a better researcher. Mike – you were always there to provide what I needed at the time, whether that was advice, feedback, or affirmations that my work was important and good. Chris – I've admired your brilliance and accessible pedagogical approach since I took your causal methods course during my first semester, and I am delighted that my doctoral journey has come full circle and is ending with you as part of my dissertation committee. I always left our meetings not only with answers to my questions, but also feeling encouraged and excited about my work. Jeremy – I'm so grateful that our time overlapped at Michigan. Thank you for treating me like a peer and expert from the start, and for always being willing to review drafts and provide feedback. I wish for everyone to have someone as supportive as Jeremy on their dissertation committee.

I am grateful to others within CSHPE that were instrumental to my doctoral success. Steve and Brian – thank you for your encouragement, mentorship, and advocacy during my five years on your research team. You gave me support and space to develop skills and confidence in my research ability. Your encouragement for both "trying it all the ways" and recognizing when it's time to stop tinkering and submit the work are lessons that I will take with me into the next stage of my career. Melinda – you are the heart of the department. Thank you for being an unwavering presence who is always there with an answer to any question, a kind and affirming word, and a well-stocked candy dish.

My graduate school experience would not have been the same without my CSHPE friends and colleagues. To those who I had the pleasure of working alongside on Steve and Brian's research team—including KC, Rooney, Nate, Anna, Yiping, Cassandra, Josh, and Meghan—thank you for the camaraderie and support. Some of my favorite memories of grad school involve conversations in our shared office in the mezz. KC – I cannot imagine my doctoral experience, nor my time in Ann Arbor, without you. You helped me find my footing in the program and provided a safe space to learn, grow, and challenge ourselves. You inspire me as a researcher, friend, mother, community member, and human. Rooney – I'm so glad that we went through this program together. You are always there to talk through ideas, answer questions, and navigate the program together. Rooney and KC - I look forward to finding ways to continue to collaborate in the next phases of our professional lives. To my incredible cohort—

Davinia, Yvonne, Mollie, Rooney, Reuben, and Jarett—I am so glad that we got to go on this journey together. Davinia and Yvonne, I will fondly cherish our work sessions at Cultivate, delicious dinners, and your friendship throughout this process. Davinia –your insights and advice about motherhood have been invaluable. Mollie – I appreciate you being so generous with your time and encouragement and always being willing to share your experiences and provide feedback. Liz, Josh, and Kati – thank you for inviting me to work on the Michigan transfer paper and for cultivating a supportive space to learn and grow together. The experience of dissertating through a pandemic, and as I finished remotely, was made less lonely through virtual writing sessions over the past few years with Mollie, Nicole, Davinia, Liz, Josh, Kati, Cassandra, Anna, and Jarell.

To my Ann Arbor family outside of my department – Alanah, Jane, DJ, Matt, and Cynthia – thank you for providing community and friendship. Alanah, Jane, and DJ – our walks always left me with a palpable sense of calm, our Friday nights climbing offered a chance to decompress from the week, and our dinner parties helped foster community and joy. Matt and Cynthia – I hold dear to the memories of BBQs in your backyard, a shared love for the Ann Arbor Public Library system, and your exemplary model of parenthood.

I am thankful as well for those outside of Michigan who have helped me grow as an education researcher. I feel eternally fortunate and grateful for the mentorship of Ozan Jaquette during my time as a Masters student and beyond. For his generosity with his time and support as an instructor and thesis advisor and his encouragement to pursue a research career. Prior to starting my doctoral program I worked at Abt Associates, where I was introduced to the world of rigorous evaluation and had brilliant and kind colleagues. Thank you to the folks at THEC, and especially Amanda Klafehn, for a research-practice-partnership that shaped my doctoral experience, sparked my interest in state-level policy, and helped make the impact of academic work feel less abstract. I had the privilege of interning then working part-time at SHEEO during this program, where I got to collaborate with wonderful colleagues and further build my understanding of and interest in engaging in state-level policy research.

Thank you to the folks at Iowa College Aid, and especially Mark, Meghan, and Mitch, for supporting this work, allowing me to use your data, and for being incredible thought partners. Meghan and Mitch met with me regularly throughout the dissertation process and the end product is better for this collaboration. I am appreciative of funding from the Institute of Education Sciences, U.S. Department of Education through PR/Award # R305B150011 for providing funding and training support and for CIERS at University of Michigan for providing a supportive community of education policy scholars. All opinions, findings, conclusions, and recommendations expressed in this dissertation are those of the author and are not endorsed by, nor reflect the views of, Iowa College Aid or IES.

Thank you to my family – for your endless support and encouragement. First, to my in-laws, Janet and Mark, who have always welcomed me into their family and who provided invaluable care for Charlie (and us) as Luke and I balanced dissertating, new jobs, and moves with the transition to parenthood. To my siblings – growing up with you three was the best. As

the youngest of four, it is not lost on me how my own journey and opportunities have been inextricably linked to your own. To Lauren, who was an anchor during undergrad while I adjusted to an unfamiliar and overwhelming new experience. To Melissa, who amazes me with her dedication to and balance of family, work, and life. I have benefitted enormously from your experience and encouragement. I feel so blessed that we get to experience this transition into motherhood together and I am excited for more family time with you, Kalyan, and Rishi. Shawn – you have always so generously and enthusiastically included me in your life – from allowing your little sister to tag along on errands when we were young to developing a rich friendship in adulthood. I am so grateful that we got to overlap in Michigan and am so happy to have you, Lindsay, and Ainsley back in the same time zone and a drive away.

To my parents, who have been the biggest cheerleaders of me and my education from day one. I, and this degree, are the product of the support and love that you've poured into your family. You are two of the hardest working people I know, and are inspirations to me as parents, friends, and community members. You have been instrumental to my success in all things in life, and especially during the final push of this dissertation. Thank you for letting us move in with you, offering childcare, and filling my days with family meals and unwavering love and support.

To my son Charlie, whose presence has helped center me and provide perspective on what's most important in life. Your joy, inquisitiveness, and laughter are contagious and I am so lucky that I get to be your mom. And lastly, thank you to my incredible husband Luke for your endless encouragement, love, and support through every high and low of this journey. Thank you for moving to Michigan with me, for Saturday morning work sessions at York, and for cooking us delicious meals so I didn't subsist off of cereal when working evenings. I am so proud and grateful for the family and life we are building together.

Table of Contents

List of Tables

List of Figures

List of Appendices

Abstract

Nationwide, rural students enroll in and graduate from college at lower rates than their non-rural peers. Closing this gap in rural college access matters because individuals with a college education experience higher average earnings and lower rates of unemployment relative to their peers without a college credential. State financial aid programs can be a powerful tool to encourage rural postsecondary enrollment. However, in order for aid programs to affect enrollment behavior, students must be aware of these programs and see the opportunities as aligning with their context and goals.

Guided by Perna's model of student college choice, this dissertation employed a mixed methods design to explore how to best design and communicate financial aid opportunities to rural students. The first phase of the study used a randomized controlled trial to test whether an informational campaign about Iowa's statewide tuition-free college program affected rural seniors' college-going behavior (i.e., whether they filed their FAFSA). I randomly assigned the 279 public rural high schools in Iowa, enrolling approximately 22,000 seniors, to one of three groups: (1) posters, (2) posters + handouts, or (3) control. The poster and handout materials contained information about the scholarship and encouraged interested students to file their FAFSA. Using linear probability modelling and student-level state administrative data, I found no evidence that either treatment arm affected FAFSA filing behavior relative to the control condition. There was also no statistically significant difference in FAFSA filing between the two treatment arms.

In the second phase of the study, I facilitated seven focus groups with rural Iowa high school counselors. I utilized the focus group data to contextualize the experimental findings and to shed light on the ideal design of tuition-free programs for rural students and effective methods of communicating these opportunities. Counselors shared their perspective that the campaign materials were insufficient on their own to influence students' college-going behavior, though they can serve as useful complementary tools. Rather, providing real-time guidance, such as through one-on-one meetings, is key to providing students with the support needed to navigate the college-going process. Counselors discussed various aspects of the Future Ready Iowa Last-Dollar Scholarship that present barriers for students and can prevent take-up.

Based on these findings, I conclude that the intricacies of the Last-Dollar Scholarship discourage some prospective recipients from using the program and that providing information through a low-touch informational campaign is an insufficient approach to overcome these structural barriers. Iowa limits eligibility for its tuition-free program to specific credentials and low-income students in order to limit state spending and more narrowly align the program with state needs. However, these restrictions run counter to the straightforward guarantee thought to be a key mechanism of the success of tuition-free programs in other states. The uncertainty of whether the Last-Dollar Scholarship will be approved by the legislature each year and whether changes or restrictions will be added to the program makes it difficult for students to rely on the scholarship and incorporate it into their plans. If states and other organizations want to use financial aid programs to increase college access, then they must structure and promote these programs in ways that align with students' planning and decision-making processes. If states are committed to increasing rural college access, then they must critically evaluate how this population is being served by and experiencing state programs.

Chapter 1 Introduction

Closing disparities in college access is crucial for a more equitable and just society. Individuals with a postsecondary education experience, on average, higher earnings, lower unemployment, and various other benefits (Abel & Deitz, 2014; Carnevale, et al., 2016; Tamborini et al., 2015). There are well-documented gaps in college access and attainment for minoritized and marginalized populations. For example, lower-income students as well as Black and Latinx individuals attend and graduate from college at lower rates than their wealthier and white peers (e.g., Cahalan et al., 2022; Nichols & Schak, 2018; Schak et al., 2019). Rural students are an additional population who face barriers to college access and are underrepresented in institutions of higher education (Campbell, 2019).

Nationwide, rural students enroll in and graduate from college at lower rates than their non-rural peers (U.S. Department of Education, National Center for Education Statistics, 2019; Wells et al., 2019). Among U.S. high school students who were ninth graders in 2009, 68% of rural students enrolled in college in the fall following high school graduation, compared to 71% and 74% of urban and suburban students, respectively (U.S. Department of Education, National Center for Education Statistics, 2019). Among the high school class of 2004, 54% of rural graduates completed an associate degree or above within eight years of high school graduation, compared to 56% of urban graduates and 60% of suburban graduates (Wells et al., 2019).

In Iowa, the U.S. state with the 12th highest proportion of residents living in rural areas (35% in 2010; U.S. Census Bureau, 2010) and the state at the center of my study, postsecondary enrollment, both among rural students and overall, is trending downward. In 2021, 60% of rural

high schoolers enrolled in college in the fall following graduation; a 7-percentage point decline from three years prior.[1] Earlier steps in the college enrollment pipeline, such as the rate of FAFSA filing and postsecondary intentions, are also experiencing a decline among these students.

Approximately 30% of K-12 public school students live in rural areas[2] (U.S. Department of Education, National Center for Education Statistics, 2017a), but these students are severely underrepresented in education research (Thier & Beach, 2019), especially research on higher education (Thier et al., 2021). The research that does exist on rural college access disproportionately represents the Appalachian region with very few rural research studies focusing on other rural areas (Sowl & Crain, 2021; Thier et al., 2021). The educational and economic contexts of rural communities differ from those in urban and suburban areas across dimensions including school size, staffing challenges, and the jobs available in the local labor market (Showalter et al., 2023). This leads to rural students having distinct educational experiences, challenges, and goals that need to be accounted for when developing and evaluating statewide or federal policies and initiatives. In order to address the chronic underrepresentation of rural students in higher education, we need to center these students both in the research sphere and in the design and implementation of programs and policies.

Increasing educational attainment in rural areas can help states meet their postsecondary education attainment goals of having a set percentage of their adult population obtain some level of postsecondary credential by a given year. Many states, including Iowa, remain far below their stated goals (Lumina Foundation, n.d.). As of 2019, 53.4% of Iowan adults (age 25-64) had a

[1] Based on author's calculation of Iowa College Aid administrative data.
[2] Based on the definition of rurality used in this dissertation that includes both the "rural" and "town" designations. 19% of public K-12 school students in the U.S. attend a rural school when using only the "rural" designation.

postsecondary credential (i.e., certification or above; Lumina Foundation, n.d.), leaving a gap of 16.6 percentage points to meet the state's anticipated need of having at least 70% of Iowa's workforce with an education beyond high school by 2025. Rural communities can play a large role in narrowing this gap, as education attainment levels tend to be lower in these areas (Economic Research Service, 2021b). Although sub-associate credential attainment data disaggregated by rurality is not reported in the U.S. Census American Community Survey, rural Iowans are less likely than those in urban areas to have an associate degree or above (U.S. Census Bureau, 2020).

Financial aid is a powerful tool to encourage postsecondary enrollment (Dynarski & Scott-Clayton, 2013) and many states have adopted statewide free-tuition programs[3] with a stated goal of raising college attainment (Perna & Leigh, 2018). The number of these programs continues to grow, though they vary considerably in program details including student- and institution- eligibility, extent of coverage, and the availability of supplemental supports (Erwin & Syverson, 2022). Various organizations have written about and provided frameworks of factors that states should consider when designing their programs (Callahan et al., 2019; Erwin & Syverson, 2022; U.S. Department of Education, 2016), including the tradeoffs between "affordability, access, and student success" (Callahan et al., 2019).

In 2018, Iowa Governor Kim Reynolds announced a statewide two-year college free-tuition program for Iowa as part of a broader set of initiatives meant to help the state meet its educational attainment goal and address workforce shortages. Iowa's program, the Future Ready Iowa Last-Dollar Scholarship (hereafter: Last-Dollar Scholarship), is distinct from many of the

[3] These programs are commonly referred to as Promise programs and, in some cases, free college programs. Iowa does not use the "Promise" language in the title nor description of its program. I follow their approach, avoiding using that terminology in my discussion of the Last-Dollar Scholarship. Still, I view this study as fitting into the literature on Promise programs. I use "tuition-free" and "free-tuition" interchangeably throughout this dissertation.

previously existing programs in that it covers tuition and fees only for programs (certificates, diplomas, and associate degrees) that prepare graduates to work in high-demand occupations in the state (e.g., welder, medical assistant, HVAC technician). The Last-Dollar Scholarship aligns with several factors that evidence demonstrates are central to rural students' postsecondary decision-making process: programs that align with a specific career and lead to stable earnings (Cox et al., 2014; Tieken, 2016); an opportunity to remain near their home communities (Ardoin, 2017; Carrico et al., 2019); and money that addresses financial concerns that could disrupt enrollment (Goldman, 2019; Yang & Venezia, 2020).

Although the Last-Dollar Scholarship has the potential to resonate strongly with the rural population of the state and increase postsecondary enrollment in these areas, this necessitates that eligible individuals are aware of the program. Staff at Iowa College Aid— the state agency that administers and provides information about state financial aid—shared that, in the initial years of the scholarship (the years prior to my study), the program was inconsistently marketed across the state. The program relied heavily on school counselors and community colleges to disseminate the information, and subsequently whether and what students learned about the scholarship was often dependent on whether their high school counselor provided the information. Given this, many graduating seniors may have been unaware of the scholarship or may not have seen it as a viable option.

Individuals' college-going choices are shaped by a number of factors, including state policies and the specific details of state-funded programs. Research on two-year college free-tuition programs suggests that the marketing of these programs—a clear guarantee of free tuition—is a key mechanism driving their positive enrollment effects (Burkander, Callahan, et al., 2019; Carruthers & Fox, 2016). This simple and straightforward messaging departs from the

broader narrative of financial aid messaging and logistics as confusing and difficult to navigate (Dynarski & Scott-Clayton, 2006; Page & Scott-Clayton, 2016). In light of this, understanding how to ensure that the Last-Dollar Scholarship is designed and messaged as a rural-relevant; free-tuition; and straightforward opportunity may help more rural students utilize this scholarship.

Research Questions and Focus

The inconsistent messaging of the Last-Dollar Scholarship highlighted an opportunity to enhance rural student college access by increasing students' awareness of the program. Guided by Perna's conceptual model of student college choice (Perna, 2006a) and using a mixed methods design, this dissertation explored whether scholarship marketing materials, designed to reflect rural students' context, impacted college-going behavior (i.e., FAFSA filing). I address the following research questions:

1. Does providing an informational campaign about a statewide, two-year college free-tuition program impact rural high school seniors' college enrollment behavior?
2. What can we learn from high school counselors about the effectiveness of the informational campaign, how to best communicate postsecondary opportunities to high school seniors, and how to design tuition-free college programs to best support rural students?

In the first phase of the study, I partnered with Iowa College Aid to develop a set of marketing materials (i.e., posters and handouts). I conducted a randomized controlled trial (RCT) with the 279 rural public schools across the state to test whether these materials affected FAFSA filing among rural high school seniors. To analyze the effect of the intervention, I leveraged linear probability modelling and student-level administrative data. In the second phase of the

study, I conducted a series of focus groups with high school counselors from the treatment group schools, with the aim of contextualizing the experimental results. The focus group protocol was designed to address questions and topics that arose during the development, implementation, and analysis of the informational intervention.

Study Contribution

My study contributes to the academic and policy communities' growing understanding of key factors related to rural student college access and financial aid policy as well as the study and practice of informational campaigns. Many states, as well as some institutions, are adopting policies and initiatives aimed at increasing college accessibility for their rural populations (Brown, 2022; Weissman, 2022). By centering rural students in my study, I add to the small but growing research base focused on postsecondary access for these communities. Moreover, the intervention materials were created to be sustainable, in terms of logistics and cost, for Iowa College Aid to implement and expand in future years. My findings about effective postsecondary marketing strategies are relevant not only for Iowa, but for other states and educational organizations as well.

Tuition-free community college plans continue to gain political popularity at the state and national levels (Camera, 2019; Perna & Leigh, 2018). My study is the first to focus on the role of free college programs for rural student access and to estimate the related impacts of an informational intervention. As the positive effect of tuition-free college programs on enrollment can be attributed in part by their straightforward guarantee of free tuition (e.g., Burland et al., 2022; Carruthers & Fox, 2016), it is important to learn more about how to best market these programs. Better understanding how to get information about available scholarships into the hands of students likely to benefit from these opportunities— a focus of my study— will help

states and institutions target their limited budgets and work towards meeting their statewide attainment goals.

Hearing directly from school counselors at rural high schools about their experience navigating and promoting the Last-Dollar Scholarship and other college opportunities—what I studied in the qualitative portion of my study—enhances our understanding of optimal strategies for structuring and promoting statewide tuition-free programs. Much education policy work, particularly around financial aid, is dominated by experimental and quasi-experimental studies. Complementing this work with qualitative findings provides nuance and reveals patterns and explanations not always possible or apparent when using a purely quantitative research design.

Organization of the Dissertation

The rest of my dissertation proceeds as follows. In Chapter 2, I situate my study in the relevant literature and provide an overview of the theoretical framework at the center of my study. I review four bodies of research most closely related to my study: (1) rural student college-choice, (2) the enrollment effects of two-year college free tuition programs, (3) high-school based postsecondary and non-college informational campaigns, and (4) studies of informational interventions that look at FAFSA filing as an outcome. I then discuss the conceptual framework guiding my study: Perna's conceptual model of student college choice (Perna, 2006a). Specifically, I focus on the first and fourth layers of the model: (1) habitus and (4) social, economic, and policy context.

In Chapter 3, I present the study context and research design. I begin by providing an overview of the rural Iowa context and the financial aid program at the center of my study – the Future Ready Iowa Last-Dollar Scholarship. I then describe my motivation for adopting a mixed methods research design and describe the two components – starting with the informational

intervention RCT followed by the qualitative focus groups. In Chapter 4, I present the results from the experiment and exploration into implementation fidelity. In Chapter 5, I discuss the findings from the counselor focus groups. In the final chapter, I integrate the findings from the two separate study phases; discuss the importance of the study; and identify areas for future research. Finally, I discuss several implications and key insights of the study.

Chapter 2 Literature Review and Conceptual Framework

This chapter begins with a review of four bodies of literature that most directly inform my dissertation study. First, I review literature that speaks to how rural students make decisions about their college-going plans, focusing on those aspects of the process that informed my print materials and overall research design. I then turn to the literature on two-year college free-tuition programs, reviewing the existing evidence on both statewide and local versions of these policies. Next, I review literature that examines how college opportunities are communicated to high school students, again focusing on those studies that most closely align with my study. Since there is limited literature examining the effectiveness of college-related print materials for high school students, I expand this portion of my review beyond higher education-focused marketing. To conclude the literature review, I briefly review literature on informational interventions that share my outcome of interest – whether individuals file their FAFSA.

I then describe and discuss the conceptual framework informing my study – Perna's (2006a) conceptual model of student college choice. Positioning my study within this model allows me to emphasize the significance of rural identity and context in shaping the college-going behavior of rural students. I first provide an overview of the framework and then explain in more detail the two layers of this model that most heavily inform my study: the inner-most layer of habitus and the outer-most layer of the economic, social, and policy context. I discuss the relevance of each individual layer to my study before concluding with a summary of why

examining these layers together is helpful for understanding rural student college choice and how they inform the design of my study.

Factors Influencing the College-Going Process of Rural Students

Vocational and Career-Focused Mindset

Many rural students approach postsecondary decision making with a highly vocational mindset. Rural students and their families often prioritize degree utility - making college decisions in the context of what occupation they plan to hold after graduation and with a preference for degrees and credentials that align with a specific career that will offer financial stability (Cox et al., 2014; Robbins, 2012; Schmitt-Wilson et al., 2018; Sims & Ferrare, 2021; Tieken, 2016). This is true across the spectrum of high school academic achievement and intended degree level; it is reflective of rural students planning on entering blue-collar jobs as well as those with aspirations of pursuing terminal professional degrees (e.g., law, business, Doctor of Medicine; Ardoin, 2017; Sims & Ferrare, 2021; Tieken, 2016). Rural students may be exposed to only a subset of possible career paths, shaped by the jobs available in their local community or held by family/community members. They may thus consider a narrower scope of potential college majors and programs (Ardoin, 2017; Schmitt-Wilson et al., 2018; Sims & Ferrare, 2021). Rural students often hold the belief that the purpose college is to acquire a credential as fast as possible and are less focused on college as a time of exploration and self-discovery (Cox et al., 2014; Sims & Ferrare, 2021). Carrico and colleagues (2019) as well as Cox and colleagues (2014) found that many of the rural students in their studies were selecting career goals with an eye towards what was attainable and what would lead to financial stability rather than prioritizing seeking a career that provided personal fulfillment. Many rural youth begin working while in high school, some holding multiple jobs simultaneously. Having a job and

contributing to one's family or own economic stability is often prioritized and highly valued in rural areas (Cox et al., 2014). Rural high school graduates who have established work histories by the time they finish high school may choose to continue down these educational and occupational pathways that they are familiar with (Cox et al., 2014). The combination of availability of information about career pathways and the cultural expectations around higher education as a pathway to financial security create an orientation among rural individuals toward making college decisions with a focus on degree utility and vocational fields. Given this vocational orientation, rural students may be interested in the opportunities afforded by the Last-Dollar Scholarship, which covers community college tuition for programs that align with high-demand local jobs.

Local Economy

Rural students' perceptions of the career opportunities available in their local area is another important factor shaping their college and career aspirations and plans. These perceptions influence whether rural high schoolers attend college, what programs and careers they pursue, and whether they remain in (or return to post college graduation) their local area or seek opportunities elsewhere. When rural high schoolers perceive that there are local job opportunities that do not require a college education, they are less likely to aspire to and enroll in college (Agger et al., 2018; Meece et al., 2013). For example, in a study of the educational and career aspirations of almost 5,000 rural high schoolers throughout the U.S., Meece and colleagues (2013) found that having a positive perception of local job opportunities was inversely related to aspiring to a four-year college degree or above as well as lower odds of aspiring to a career that requires a bachelor's degree or above. Conversely, a rise in local unemployment increased postsecondary enrollment in rural areas, driven by an increase in

enrollment in associate degree programs and students transferring from two- to four-year institutions (Sorensen & Hwang, 2021).

A changing rural economy, experienced throughout the U.S., means a shift in the key industries of rural communities (Council of Economic Advisors, n.d.; Economic Research Service, 2021a) and the type of education needed for jobs that offer a pathway to a stable career. This shifting economy and need for education beyond high school looks very different from the economy experienced by older generations of rural residents (Carr & Kefalas, 2009; Tieken, 2016). In their study examining the types of messages that rural New England students hear about the value of college, Tieken (2016) found that high school counselors, college admissions officers, and staff of community-based organizations emphasized to rural high schoolers that the decline of traditional rural industries that once offered livable wages without a college education are disappearing. These key information providers emphasized that the jobs available today generally require some level of higher education and postsecondary credential, be it a four-year degree or a certificate from a community college or technical school (Tieken, 2016). Rural high school graduates may forgo college and immediately enter the workforce, driven by necessity and/or excitement about the money they can earn right away. Unfortunately, these roles often offer little room for upward growth or increased earning potential (Carr & Kefalas, 2009) and/or or require manual labor (Wright, 2012), which workers may be unable to physically perform as they age.

Students from rural communities often develop and adjust the types of postsecondary programs and careers they plan to pursue based on their experiences with and perceptions of the local economy. These students may identify careers of interest by following the examples of professionals working in the local area, as these professionals provide a tangible example of a

college degree that is employable in their local area (Sims & Ferrare, 2021). Since students' knowledge of career opportunities is influenced in part by the jobs held by people they know, rural students' career aspirations (relative to non-rural students) may be constrained in some ways by the jobs that they see available in their local community and held by family members (Ardoin, 2017). The economic context in rural communities prompts some students to select or adjust their career aspirations to opportunities that are available in their community, whereas perceiving mismatched aspirations and local opportunities or bleak economic opportunities locally prompts other rural residents to seek opportunities elsewhere (Agger et al., 2018; Cox et al., 2014; Petrin et al., 2014). Some rural youth who see opportunities for improvement within their local community view pursuing a college degree as an opportunity to get training to lead that change and improve the quality of life in their community (Wright, 2012).

Although there is some concern that rural youth receive messaging and encouragement from their schools and communities that they must leave their rural area in order to pursue college and well-paid career opportunities (e.g., Carr & Kefalas, 2009), others challenge this narrative. While it is true that local economic conditions are a key factor in rural students' decisions to leave their home community for college and career opportunities (Cox et al., 2014; Petrin et al., 2014), these decisions are driven more by students' own perceptions of their local economic environment than by advice received from teachers and school personnel (Petrin et al., 2014). Further, many of the rural, first-generation, working-class students at the center of Ardoin's (2017) study did not believe that they had to leave their home community in order to become successful or obtain a better life.

There are gender differences in the link between perceptions of local job opportunities and rural students' postsecondary enrollment behavior. Perceiving that there are many jobs in the

local rural community is associated with an increase in postsecondary enrollment for women, but a decrease for men (Agger et al., 2018; Hallmark & Ardoin, 2021). For men, this pattern seems to be indirect via educational aspirations, meaning that rural high school males who perceive greater availability of local job opportunities have lower postsecondary educational aspirations. This gendered relationship is likely driven in part by many of the masculine/male associated jobs in rural communities (e.g., farming, oilfield work) requiring less formal education than female-associated jobs (e.g., nursing, teaching; Hallmark & Ardoin, 2021), and therefore some rural men forgoing college because they do not think it is necessary for their career prospects (Chenoweth & Galliher, 2004). Although there are increasingly more opportunities for women to enter traditionally male-dominated fields, there is a general lack of representation of rural women in these fields, which leads to a maintenance of the status quo and a narrative of "who does what" (Hallmark & Ardoin, 2021, p. 135). Taken together, the perception of local career options influences rural high schoolers decisions of whether and where to attend college as well as what to study, and this relationship varies by gender. Given the salience of the local economy to rural students' college decision making, the Last-Dollar Scholarship is likely to be attractive to many rural students given its alignment between eligible programs and local career opportunities. To explore whether the Last-Dollar Scholarship marketing materials differentially affected the FAFSA filing behavior of male and female students, I tested for heterogenous gender effects.

Local College Options

The availability and type of postsecondary institutions located proximally to rural communities also influences the college-choice decisions of rural youth. For many rural students, there is a strong desire to remain close to home after graduating high school (Ardoin, 2017; Carrico et al., 2019; Chenoweth & Galliher, 2004). Students in rural communities appreciate the

secure environment provided by living in a “close knit” (p. 177) community (Cox et al., 2014), often experiencing rich family connections and the benefits of living nearby extended family (Elder & Conger, 2000; Hurst, 2022). Many rural high school seniors feel that it is important to continue to live nearby parents and family post high school (Kirkpatrick Johnson et al., 2005). College choice is a highly localized decision for both rural and non-rural individuals, with the majority of college students (79% of community college students and 53% of public four-year college undergraduates) attending a postsecondary institution within 20 miles of their home (Sponsler & Hillman, 2016). Rural students often have limited nearby college options to choose from; nationwide, rural communities are disproportionately located within education deserts, areas without nearby access to a public broad-access four-year institution (Hillman & Weichman, 2016; Klasik et al., 2018). This matters for enrollment behavior; distance to postsecondary institutions is negatively associated with the probability of enrollment (Do, 2004; Klasik et al., 2018; Turley, 2009).

Students from rural areas may develop or shift their educational aspirations to align with opportunities available at postsecondary institutions nearby their hometown (Ardoin, 2017), which tend to be predominately community colleges (Hillman & Weichman, 2016). Some rural prospective college students focus on the nearby community colleges rather than four-year colleges in order to remain close to their community, ease into college, and/or to more quickly progress through college and into the labor market (Cox et al., 2014; McDonough & McClafferty, 2001; Wright, 2012). For example, many of the rural Kentucky community colleges students at the center of Wright's (2012) study shared that they chose to enroll at the local community college because it allowed them to save on rent by living at home; continue to work at their current job; and gradually ease into college life. Cox and colleagues (2014) found

that some of the rural New England students in their study preferred to remain close to home because of the safety and support that a familiar place and established social networks provided. For many rural students, the desire to remain nearby their local community is an important factor shaping their decision about whether and where to enroll in college. The combination of this local preference alongside the lower availability of accessible four-year colleges near rural areas elevates community colleges as a crucial provider of postsecondary access for rural communities. The Last-Dollar Scholarship covers tuition at community colleges (and two private two-year colleges), thereby further increasing the accessibility of these institutions to rural residents.

Perceived Value and Fit of College

Rural high schoolers may receive mixed messages about the value of college from influential people in their life. Common concerns among rural students include being unsure whether college will provide a financial payoff and upward mobility (Keily & McCann, 2021); feeling conflicted about the type of programs that are worthwhile and align with the type of work that is valued in their home communities (e.g., Ardoin, 2017); and wondering what it will mean for their identity to enter spaces with norms and belief systems that may vary from those they grew up around (e.g., Wallace & Diekroger, 2000).

Considering the financial value of attending college leads some students to enroll and others to enter directly into the workforce. Rural Appalachian students in Ardoin's (2017) study shared that they viewed college as a pathway to a "better life" (p. 34). Students defined "better life" in ways such as having more economic security and fewer concerns about money as well as being employed in white-collar work that is "easier" (p. 35) than the hands-on work common in many rural communities. At the same time, some rural high schoolers may forgo college in

pursuit of an immediate paycheck, either out of necessity or being unaware that in the new changing rural economy, many jobs requiring only a high school education offer limited room for upward growth (Carr & Kefalas, 2009). Not all levels of college education are viewed equally among rural residents in terms of whether they will pay off financially. Among rural respondents to a Strada and Gallup survey, rural individuals believed that lower levels of higher education offered the best value for the money. While 64% of rural respondents felt that getting an educational certificate was worth the cost, only 46% and 43% felt that an associate and bachelor's degree, respectively, were worth the cost (Keily & McCann, 2021).

Rural students considering their post high-school plans may hear mixed messages and feel conflicted about the type of careers that postsecondary education, particularly four-year degrees, will prepare them to enter. Students in a rural Appalachian community distinguished between "head work versus hard work" (Ardoin, 2017, p. 35). Ardoin (2017) noted that it may be the case that hands-on skills and knowledge are seen by rural students as more valued in their community and in some cases, more prosperous. At the same time, other rural students viewed college as a way to enter an "easy career" that made "good money" (Ardoin, 2017, p. 7). These individuals may have grown up around family with ties to local rural industries (e.g., coal mining) and see college as an alternative route to a career with a livable wage that requires less intensive manual labor (Wright, 2012).

High schoolers from rural areas may also wrestle with the alignment between college experiences and their rural identity. Ardoin (2017) found that there was concern from rural community members about "rural students being changed and educated out of the occupational opportunities in their hometowns" (p. 47). Some rural students worried whether they would fit into a four-year college environment, with these spaces seen as different, scary, and elite

(Ardoin, 2017; Ganss, 2016; Morton et al., 2018). The middle- and upper-class norms and belief systems perceived to be at the center of these institutions may feel unfamiliar and potentially at odds with the belief systems and values held by these rural communities (Ardoin, 2017; Wallace & Diekroger, 2000). Indeed, there is evidence that rural students attending large, four-year universities face challenges adjusting to these new environments (Ganss, 2016; Guiffrida, 2008; Sikes, 2018), and although many students show resiliency in these transitions (Ganss, 2016; Sikes, 2018), these difficulties can also cause mental health issues and lead to transfer or drop-out (Guiffrida, 2008).

Although many rural higher schoolers and their families believe that college is the best pathway to upward mobility, others question whether the payoff will bear out for them. Perceptions of value are informed by a number of factors, including the anticipated financial payoff of a college credential; whether the skills and knowledge received will prepare them to enter into careers that are highly regarded by themselves and their communities; and whether they believe that they will fit into a college environment. My informational campaign attempted to address many of these concerns by clearly articulating the alignment between the Last-Dollar Scholarship eligible programs and jobs that will pay off financially and can be found in rural students' local communities.

Financial Considerations

Financial concerns are among the top factor for rural high schoolers considering postsecondary education, and rural students have been found to be more price sensitive to college costs than their urban and suburban peers (Yang & Venezia, 2020). For many rural prospective college students and their families, college costs are one of the top barriers to access (Ardoin, 2017; Chenoweth & Galliher, 2004; Goldman, 2019; Whiteside, 2021) and these

families rely on financial aid and scholarships in order to make affording college an option (Goldman, 2019). Rural individuals adopt a variety of strategies to make college a financially feasible option. These strategies include attending college part-time and/or working while enrolled (Goldman, 2019); enrolling at a community college rather than a four-year due to the lower tuition (Wright, 2012); and selecting a college nearby their home so they can live at home to save money as well as continue to work at their current place of employment (Wright, 2012).

Rural students and their families are often unfamiliar with the full extent of available financial aid and resources (Chenoweth & Galliher, 2004; Whiteside, 2021). Accordingly, college access programming focused on financial aid can be instrumental in helping increase rural college access (Goldman, 2019; King, 2012). Taken together, the central role that money plays in rural students' college-choice process and the gap in knowledge about financial aid opportunities positioned an informational campaign designed to increase rural students' knowledge of a financial aid program as a promising approach to help enhance rural student college access.

High School Counselors and Teachers

High school counselors, as well as teachers, play a key role in facilitating college access and supporting the college-going process for rural high schoolers, yet these individuals often do not have adequate capacity to provide the level of support needed. Many rural high school students turn to their school counselor as a primary source of information about the college-going process (Ardoin, 2017; Griffin et al., 2011). However, high school counselors juggle multiple roles in addition to providing college information (Ardoin, 2017; Rosales, 2015) and may have limited time and resources to keep current on college knowledge, staying only step ahead of the students themselves in these areas (Ardoin, 2017). Therefore, rural counselors'

college guidance may be predominately related to providing information about local colleges (McDonough et al., 2010). High school teachers may also serve as college and career mentors for students (Griffin et al., 2011; Sims & Ferrare, 2021; Whiteside, 2021), in some cases continuing to provide advice after students transition to college (Sims & Ferrare, 2021). Due to the key role that counselors and teachers play in providing college-going information to rural youth, I asked these two groups to disseminate and display the materials for my informational campaign.

Summary

Although there is an overall dearth of research on rural student college-going and choice, the literature reviewed in this section provides evidence for several key factors that influence the post-high school college choice process of rural students. Rural students tend to seek postsecondary programs that will lead them to a specific career with stable earnings (e.g., Cox et al., 2014) and their decisions are influenced by their perceptions of the career opportunities available in the local economy (e.g., Meece et al., 2013). Students from rural communities often have expressed preferences to remain nearby their home communities after graduating high school (e.g., Chenoweth & Galliher, 2004) and receive messaging both encouraging and questioning the value of college and a postsecondary degree (e.g., Ardoin, 2017). Not unique to rural student populations, but concerns about the cost of college are at the forefront of the minds of rural students and their families navigating the college-choice process (e.g., Yang & Venezia, 2020).

Rural students account for a substantial portion of our K-12 school systems (NCES, 2017, Table 4), yet are underrepresented in institutions of higher education (Wells et al., 2019) and are largely absent in the education research literature (Thier & Beach, 2019). The research that does exist on rural student college access focuses heavily on the Appalachian region (Sowl

& Crain, 2021). Researchers, policymakers, and other educational organizations should prioritize conducting and funding more research focused on learning about the factors influencing the post-high school choice process of rural high schoolers and how our education systems can better support this student population. By focusing on rural students in my study, I add to the burgeoning research base focused on postsecondary access for rural communities.

The Impact of Two-Year College Tuition-Free Programs on Student Enrollment

In this section I review the literature on the enrollment effects of two-year college tuition-free programs, sometimes called free-college programs or Promise programs. Though the details of these programs vary across models (e.g., first or last dollar, eligible institutions, eligibility criteria), they have broad eligibility for the targeted population and cover most if not all of tuition (and sometimes fees). I exclude from this review studies of Promise programs that cover both two- and four-year institutions. The evidence on these broader reaching programs points towards either null effects (Harris et al., 2018; Nguyen, 2019) or overall enrollment increases that are driven by the four-year sector (Bartik et al., 2021; Bifulco et al., 2019; Page et al., 2019). In the following subsections I review separately the literature examining statewide and local two-year college tuition-free programs, finding overall positive enrollment effects across both types of programs.

Statewide Two-Year College Free-Tuition Programs

Current evidence on the impacts of adopting a statewide, two-year college free-tuition program finds positive effects on enrollment at eligible institutions. In the short-run, these enrollment effects are driven in part-by a substitution effect, whereby students who would have likely attended a four-year college in the absence of a free-tuition program enroll in the two-year

sector (Bell, 2021; Gurantz, 2020; Hodara & Childress, 2021; Nguyen, 2020). These programs most closely resemble the program at the center of my study (i.e., the Future Ready Iowa Last-Dollar Scholarship) insofar that they are statewide and focused on the two-year college sector. In this section, I begin by reviewing the evidence from two states – Tennessee and Oregon - that were among the earliest adopters of this type of program and are the focus of the current empirical literature. I then discuss insights from four case studies conducted by research organization Research for Action on statewide Promise programs in Tennessee, Oregon, Nevada, and Delaware. These case studies offer valuable context to complement the quasi-experimental findings from Tennessee and Oregon.

Tennessee Promise. The launch of the Tennessee Promise in 2015 led to large, statistically significant enrollment increases at public Promise-eligible institutions, which includes the state's community college and technical college sectors (Bell, 2021; Nguyen, 2020). The Tennessee Promise provides last-dollar funding (i.e., covers any remaining tuition and fees after other sources of grant aid have been applied) to Tennessee residents pursuing an associate degree, diploma, or certificate at eligible in-state public and private colleges. The program has no initial eligibility requirements aside from FAFSA completion; however, recipients must enroll full-time; maintain a 2.0 collegiate GPA; meet with an assigned mentor; and complete eight hours of community service each year.

Using a difference-in-differences and generalized synthetic control analytical approach alongside IPEDS data, Nguyen (2020) found an approximately 40% increase in first-time, full-time community college enrollment at Tennessee community colleges resulting from the adoption of Tennessee Promise. This increase was particularly pronounced among enrollment of Black and Latinx students. Although the increase in community college enrollment coincided

with a statistically significant decrease in enrollment at public four-year institutions, exploratory analyses suggest that this strong substitution effect occurred in the first year after the policy was implemented, with a bounce back in four-year enrollment numbers in subsequent years.

Supporting and expanding this narrative, Bell (2021) finds through their difference-in-differences analysis of IPEDS data that the Promise-induced enrollment increases occurred at both the public two-year colleges *as well as* the public technical colleges. Notably, there were no enrollment increases at Promise-eligible private two-year colleges in the state, where the Promise scholarship generally does not cover the full cost of tuition. Like Nguyen (2020), Bell finds that the introduction of Tennessee Promise caused a decrease in in-state enrollment at public four-year colleges. The evidence from the Tennessee Promise suggests that, at least in Tennessee, a last-dollar, two-year college scholarship can induce enrollment into the sub-baccalaureate sectors, including among vocationally oriented students. In regard to the program-specific eligibility of the Last-Dollar Scholarship, the substitution effects that occurred between the four- and two-year sector in the Tennessee context may translate to a within-college substitution between eligible and non-eligible programs at Iowa two-year colleges.

Oregon Promise. The Oregon Promise, adopted in 2016 a year after Tennessee Promise, also increased in-state community college enrollment (Gurantz, 2020; Hodara & Childress, 2021). Oregon Promise is a last-dollar scholarship covering tuition (but not fees) for students enrolled in community colleges in the state. Diverging from their Tennessee predecessor, the Oregon Promise has both merit and need-based eligibility requirements. Students must earn a 2.5 high school GPA to be eligible and, added in the second year of the program, have an expected family contribution (EFC) below a given threshold (e.g., $20,000 in 2017). Hodara and Childress (2021) reported that the population of Oregon Promise applicants in the first year of the program

largely reflected the demographics of high school seniors in the state, whereas applicants in the second year (after the addition of the EFC threshold) were more likely to be low-income and students of color.

Using a difference-in-differences approach and student-level administrative data on a sample of 10th grade PSAT takers, Gurantz (2020) found that the Oregon Promise increased enrollment at community colleges by 4-5 percentage points (pp) during its first two years. In the first year of the program, when no family EFC caps were in place, the increase in community college enrollment was driven predominately by students substituting two-year colleges in place of four-year institutions. The second-year increase corresponded with an increase in overall postsecondary enrollment, thereby likely inducing community college enrollment among students who would otherwise not enroll in college. Hodara and Childress (2021) also found a positive relationship between Oregon Promise adoption and community college enrollment in their study using student-level data and a matched comparison group design. However, their analysis using a fuzzy regression discontinuity design to compare marginally eligible students (based on GPA) in the Portland area yielded positive but imprecise and not statistically significant results. These studies on the Oregon Promise provide additional evidence of the potential for statewide two-year college Promise programs to increase enrollment in the state's community colleges.

Research for Action Policy Briefs. Research for Action conducted detailed case studies in four states – Delaware (Burkander, Ballerini, et al., 2019), Nevada (Ballerini et al., 2019), Oregon (Burkander, Kent, et al., 2019), and Tennessee (Meehan et al., 2019)– which involved a review of legislative and policy documents; interviews with policymakers, institutional leaders, and high school staff; site visits to high schools and college; focus groups with high school and

college students; and student-level quantitative analysis. High-school and college students across the states shared that the Promise programs made college a more affordable option, both in terms of encouraging them to attend college in general as well as impacting their college pathway by making starting at a community college a more affordable pathway to earning a four-year degree. The state Promise programs helped remove a "mental barrier" (Ballerini et al., 2019, p. 8) to attending college and prompted some students to reconsider their post-high school plans (Ballerini et al., 2019; Burkander, Kent, et al., 2019; Meehan et al., 2019). The statewide Promise programs are particularly impactful in increasing affordability for middle-income students who are not eligible for other aid programs such as the Pell grant (Burkander, Ballerini, et al., 2019; Burkander, Kent, et al., 2019).

Local Two-Year College Free-Tuition Programs

In addition to statewide Promise programs, the landscape of free-college programs includes many local programs, covering a given region of a state or a single two-year college. Like the impact of the statewide programs, the adoption of a local, two-year, free-college program has positive enrollment effects at eligible institutions. The effects of these programs differ based on programmatic details and across racial/ethnic, socioeconomic, and gender subgroups (Carruthers & Fox, 2016; Gándara & Li, 2020).

Looking across 33 different public, two-year Promise programs, Gándara and Li (2020) found an average enrollment increase of 23%, with heterogeneity based on student race/ethnicity and gender as well as by program details. Gándara and Li examined programs that affect a single, public two-year college and were introduced in or before 2014. The authors examined enrollment changes among first-time, full-time students, using IPEDS data and a difference-in-differences design, with comparison groups consisting of geographically proximal colleges with

similar characteristics. The overall average treatment effect of Promise program adoption on community-college student enrollment increases was strongest among Black and Hispanic students, particularly among Black and Hispanic females.

The programs included in Gándara and Li's (2020) study varied in their design (e.g., first- vs. last-dollar, merit- and/or need-based eligibility requirements, amount of tuition covered), and these program details impact the program's effectiveness. For example, programs that have income-based eligibility requirements were less effective at increasing enrollment relative to those programs without these requirements. Programs that are first-dollar had greater effects than last-dollar programs for White students as did those with merit-based eligibility requirements.

Carruthers and Fox (2016) examined the effects of the introduction of Knox Achieves, the predecessor to the statewide Tennessee Promise, finding that it increased enrollment at eligible institutions by 3-5 percentage points (i.e., by 11-17%). Knox Achieves, which was implemented in 2009 in Knox County, Tennessee was a last-dollar scholarship that covered remaining tuition and fee costs for recent high school graduates attending local community colleges. There were no income- or merit-based eligibility requirements, and students were assigned a mentor who helped them apply for financial aid and continued to mentor students after matriculation. Carruthers and Fox employed a difference-in-differences strategy, using student-level administrative data and comparison groups consisting of ineligible students in nearby Tennessee counties. Although there was evidence of some substitution away from the four-year sector, the authors found that the community college enrollment increases coincided with increases in overall college enrollment, suggesting that the increase in community college enrollment was driven predominately by students who would likely not otherwise attend college. Positive enrollment effects of Knox Achieves occurred for both low- and higher-income

students, even though recipients in the former group got little, if any, financial aid from the program, since most of their tuition and fees was covered by other financial aid sources (e.g., Pell Grant).

Anderson and colleagues (2023) estimated the effects of Milwaukee Area Technical College (MATC) Promise - a Milwaukee-based last-dollar Promise program launched in 2015 that covers tuition for low-income high school graduates who attend MATC. For the first cohort of students, who were examined in this study, initial eligibility requirements of the Promise program included: 2.0 senior year GPA; a score of 16 or higher on the ACT; 90% attendance during senior year; graduating on-time; filing the FAFSA; and having an EFC on the FAFSA of $3,000 or below. Additionally, recipients were required to enroll full time at MATC; earn a 2.0 collegiate GPA; complete 8 hours of community service per semester; and participate in MATC academic and career counseling workshops. Notably, because of the EFC requirement, students eligible for the MATC Promise also qualified for at least a partial Pell grant, with the majority (85%) eligible for enough federal and state aid to completely cover their tuition at MATC. Thus, the "treatment" of MATC Promise in this study was predominately the messaging of free tuition, alongside some supplemental supports (e.g., FAFSA workshops, encouragement to attend MATC). From their interrupted time-series analysis, Anderson and colleagues found that the introduction of the MATC Promise led to a five-percentage point increase in enrollment at MATC among students at eligible high schools. Approximately half of this increase was among students who would not otherwise have enrolled in college. There was no statistically significant effect on FAFSA filing. The effects of the Promise program were stronger among low-income students at eligible high schools (measured as students eligible for free or reduced-price lunch - a rough approximation of students whose income aligned with the MATC Promise requirement).

For low-income students, the introduction of MATC Promise increased FAFSA filing by 4.9 percentage points (from a baseline of 28.4%) and increased matriculation in MATC by 6.4 percentage points (from a baseline of 12.5%). Overall college going increased by 4 percentage points among low-income students, meaning that much of the increase in MATC enrollment was among students who would not have gone to college in the absence of the program. This study lends additional support to the notion that the *message* of free tuition helps encourage college enrollment.

Though not looking directly at enrollment, Odle (2022) adds to the narrative of the positive effect of two-year Promise programs on eligible students' community college-going pathways. Odle found that the introduction of a local two-year Promise program increased high schoolers' educational expectation of earning an associate degree or higher by approximately 14pp, or 20%. These results were largest among racially minoritized students and lower-income students.

Summary

Taken together, these studies provide evidence that the adoption of free-tuition community colleges programs, at both the state and local levels, results in positive enrollment effects for eligible two-year programs. The magnitude of the effects varies based on program design, highlighting the need for researchers to continue to study the impacts of newer Promise programs, as well as longer-run effects of these early programs. This will help build the knowledge base around effective policy design of Promise programs. Of relevance to my dissertation study, I am aware of no studies that evaluate the impact—either on student enrollment or other outcomes—of two-year Promise scholarships that restrict eligibility to a subset of programs (e.g., those that align with high-demand careers in the state) as is the case

with the Future Ready Iowa Last-Dollar Scholarship. Further, the marketing aspects of tuition-free programs at two-year colleges remains largely unexplored in current research.

While existing studies on the enrollment effects of two-year Promise programs explore heterogenous effects for certain subgroups, such as by race/ethnicity (e.g., Gándara & Li, 2020) and socioeconomic status (e.g., Carruthers & Fox, 2016), few, if any, explore the impacts of these programs (enrollment effects or otherwise) on rural students. Given that community colleges play a key role in providing access to rural students (e.g., Cox et al., 2014), and that rural students make up approximately 30% of all public K-12 students (NCES, 2017, Table 4), it is important to understand whether and how two-year college free-tuition programs influence the college-going pathways of students in rural communities. It is this opportunity in the literature that I will contribute to with my dissertation study.

Communicating Postsecondary Opportunities to High School Students

A Key Mechanism of Free-Tuition Programs – A Clear Guarantee

There is evidence to support that the positive effects of tuition-free college programs are driven in part by the marketing aspect of these programs, which address a common affordability concern by guaranteeing that students' tuition will be covered and communicating this promise clearly (Anderson et al., 2023; Bifulco et al., 2019; Burkander, Callahan, et al., 2019; Burland et al., 2022; Carruthers & Fox, 2016). Although not tested directly, several Promise program researchers have theorized that this clear guarantee of money is a main mechanism operating in their studies. In their study of Knox Achieves, Carruthers and Fox (2016) found slightly stronger overall college enrollment effects of the two-year Promise program among lower-income students (i.e., free or reduced-price lunch eligible) relative to their higher-income peers. These low-income students likely received little or no aid from the scholarship, since a Pell grant would

be covering most, if not all, of tuition for many of these students. The authors posited that this suggests that the *messaging* about free tuition, beyond the aid itself, is an important factor of the program's success. Bifulco et al. (2019), in their study of a Buffalo, New York-based Promise program (covering two- and four-year institutions) found positive enrollment effects for their predominately low-income sample, even though over half of the recipients received no money from the program, again due to receiving a Pell grant. Notably though, when Bifulco et al. tested for differential effects by high-school poverty level, they found statistically significant results for only the low- and middle-poverty schools, with positive but not statistically significant results among students in high-poverty schools. This suggests that the program effects are stronger among groups of students who are, on average, receiving more money from the scholarship. Still, the authors concluded that the clearly communicated guarantee, which comes well before students start applying to college, is an important aspect of the program. Lastly, in their study of the effects of the MATC Promise, which restricts eligibility to low-income students who are already eligible for other state and federal aid, Anderson and colleagues (2023) found positive enrollment effects of the program, with the strongest effects among those students who would be receiving no aid from the program. The authors posited that it was the message of free tuition, alongside supplemental enrollment supports, that drove their findings.

Two studies provide direct evidence on the positive enrollment effects of providing information on a free-tuition program at the University of Michigan. Dynarski et al. (2021) conducted a RCT to test the effects of an intervention, the HAIL (High Achieving Involved Leader) Scholarship, in which low-income students from across the state who were likely to meet the University of Michigan's admission standards were mailed marketing materials from the university. The highly branded materials encouraged the recipient to apply and promised that,

if admitted, they would receive free tuition and fees for four years. Most of the students receiving these materials would have had their full tuition covered in the absence of the program, under the university's existing financial aid model. Therefore, the intervention did not increase financial aid amounts, but rather reframed information about an already existing policy and made it clear that the student would receive free tuition and fees if they were admitted to the university, thereby reducing complexity and uncertainty. Dynarski and colleagues found that the intervention had a strong effect on application rates (an increase of 42 percentage points) and enrollment rates (an increase of 15 percentage points).

These results were upheld (although on a smaller magnitude) and expanded upon in Burland and colleagues (2022). This subsequent study emphasized that the timing and certainty of free-tuition programs matter. Burland and colleagues (2022) built on Dynarski and colleagues (2021) by adding and estimating the effect of a second treatment arm, representing a new program launched by the University of Michigan (i.e., the Go Blue Guarantee). The Go Blue Guarantee provides a free tuition offer *contingent* on students demonstrating need through a traditional aid application each year. All students in the study sample, across both treatment arms, had family incomes near the poverty line and would have received large financial aid packages covering most or all their tuition and fees. Therefore, the main difference between the two treatment arms was in the timing and level of certainty of what aid offer students received. Burland and colleagues found that the financial certainty afforded by the unconditional guarentee made a difference. While the unconditional treatment arm increased application rates by 28 percentage pointes, the treatment arm that was conditional on students submitting a financial aid application increased application rates by only 9 percentage points. On the enrollment margin, the conditional offer increased enrollment rates by 9 percentage points while the conditional

treatment arm did not have a statistically significant effect. Taken together, these two University of Michigan-based studies provide compelling evidence of the effectiveness of clearly communicating a free-tuition guarantee to eligible students, with an emphasis on the importance of the upfront, unconditional commitment. It is unknown, however, whether these promising findings would generalize to a broader set of institutions and students (e.g., two-year colleges, students without top academic achievement measures).

There is suggestive evidence that at least part of the success of tuition-free college programs comes from the marketing component of the policies (Anderson et al., 2023; Bifulco et al., 2019; Carruthers & Fox, 2016; Gurantz, 2020). The University of Michigan studies (Burland et al., 2022; Dynarski et al., 2021) provide direct evidence of the power of a clear, unconditional guarantee, albeit based on a highly resourced, institution-based program. The Research for Action research project on statewide Promise programs (Research for Action, 2019), introduced briefly above, provides valuable information about the range of communication strategies used by different statewide Promise programs and key takeaways.

Marketing Statewide Free Tuition Programs. The Research for Action policy briefs encompass a policy scan of 21 statewide Program programs as well as in-depth case studies of four. From their broad policy scan (Burkander, Callahan, et al., 2019; Callahan et al., 2019) the study team noted there is large variation in how states advertise and disseminate information about their Promise programs. Some do little advertising beyond including program materials on their website; other states rely on high school and/or community college staff to disseminate information; some adopt a statewide, comprehensive campaign. In general, the most successful approaches tend to be comprehensive state-wide communication strategies as well as smaller, more localized campaigns that utilize a customized approach. The content of the messaging also

matters. Although a simple “free college” message is clear and can help to increase enrollments, it can also lead to students misunderstanding the comprehensiveness of the program and feeling discouraged or even cheated when they realize that not all college costs are covered. In response, many states have shifted their messaging accordingly to a more precise, albeit less attention grabbing, “free tuition” message.

A theme across several of the case study states was that, although the launch of the Promise program was accompanied by a large initial communications push, this messaging tapered over time. Thus, younger cohorts of students do not receive the same level of marketing about the program relative to the early cohorts. In Nevada (Ballerini et al., 2019) and Delaware (Burkander, Ballerini, et al., 2019), the decision to avoid or reduce widespread statewide marketing in favor of more targeted communication efforts was intentional. Since only recent high school graduates are eligible for the Promise programs, leaders in the two states did not want to mislead the general population if they saw more broadly focused advertisements. In the case of Oregon (Burkander, Kent, et al., 2019), the decrease in program promotion appeared to be associated with a gradual loss of momentum over time. Initially there was a significant push with media coverage and extensive communication with high school counselors. However, the focus gradually shifted towards making relevant information available online.

A second theme from the case studies is the importance of not assuming that all students are aware of their state’s Promise program. This is particularly relevant when the primary communication strategy depends on information being shared by high school counselors. Relying solely on this approach can lead to inconsistent, and at times inaccurate, messaging and dissemination between schools. This is partly driven by uneven buy-in of the program across high school personnel or because these staff members are sharing the information only with the

students they think will be eligible or a good fit (e.g., Ballerini et al., 2019). It is also driven by staff turnover and capacity constraints. As noted above, the biggest communication pushes were at the time that the programs were first launched and newer high school staff were not always engaged about the program in the same way (Burkander, Ballerini, et al., 2019). In addition, high school counselors are responsible for a huge host of tasks and often have limited capacity for providing college counseling. In the case of Oregon (Burkander, Kent, et al., 2019), non-high school-based college information providers (e.g., AVID) play a key role in sharing information about the state's Promise program; however only certain schools have access to these programs. Collectively, this suggests that states should adopt a more comprehensive, multi-pronged approach that extends beyond relying solely on counselors to convey program information to students.

The Research for Action briefs provide valuable guidance on effectively communicating free-tuition programs to individuals who may benefit from these opportunities. To learn more about how college opportunities are communicated to students across various contexts, as well as the effectiveness of these strategies, I broaden my scope in the next subsection and review research on college informational campaigns beyond Promise programs. I focus on studies whose topic most closely aligns with my intervention (e.g., print materials, low-touch interventions).

Postsecondary Informational Campaigns

Preferences Regarding College Information. When asked directly about their communication format preferences for receiving college and career information, a group of surveyed high school students from across the U.S. most commonly selected email. Owen and colleagues (2020) administered an online survey to high-school senior ACT test-takers, asking a

series of questions related to their preferences for receiving college and career information. As it relates to their preferred format, students were asked to select (from a list of options) both their most preferred method (i.e., one selection) as well as all the methods they preferred (i.e., select all). Across both questions, students most commonly selected "email" (26% top option, 69% overall), followed by one-on-one (23% and 48%) and mail (12% and 48%). In general, one-way communications were preferred by students over real-time interactions. This speaks to the potential of one-way methods of communication, such as the posters and handouts I used in my study, to be a valuable way to communicate college information to students.

Though not limited to high school seniors, Indiana Commission for Higher Education (ICHE) collected qualitative data - from interviews, focus groups, and surveys - about Hoosiers' opinions on postsecondary education (Beasor & Kuehr, 2022). The study team presented two overarching themes for the attitudes held by state residents about higher education: It is too expensive, and it does not provide enough value / is not necessary. In response to this feedback, Beasor and Kuehr, both on the marketing team at ICHE, developed a three-pillar marketing approach for their agency, focused on creating messaging that is: (1) relevant (e.g., communicate that higher education contains many options beyond the four-year university), (2) valuable (e.g., "getting your foot in the door"), and (3) accessible (e.g., many financial aid opportunities). Directly relevant to my dissertation study, Beasor and Kuehr found that 72% of survey respondents felt overwhelmed by all of the different financial aid programs in the state, and the authors emphasized that it is important that states are providing information about these various opportunities. I expect that the attitudes of Hoosiers, and the subsequent marketing approach developed by the state agency, are applicable to the Iowa context. I attempted to incorporate all three pillars in the intervention materials I created for my study.

Effectiveness of Generic Print Materials. Several studies have tested the effectiveness of mailing letters or fliers about financial aid opportunities, in some cases paired with emails, to high school seniors. The first set of these studies sent out generic materials that were not personalized to the recipient and, although there is evidence of some take-up of these materials, there were no effects on enrollment behavior. Conducting a statewide experiment in Michigan, Hyman (2020) found that letters sent to high-achieving students with encouragement and information about college and financial aid had no enrollment effects on the full sample of students but did lead to a slight increase (1.4 percentage points) in the probability of enrollment among low-income students. The letters included a link to a website about college and financial aid, with approximately 10% of treated students (11% of low-income students) logging into the college information site.

An informational campaign about available college tax benefits, consisting of letters and emails sent to students who applied to a public college in Texas, yielded no change in student enrollment (Bergman et al., 2019). Bergman et al. (2019) estimated the effects separately for student subgroups – high school seniors, currently enrolled students, and previous applicants not currently enrolled – finding no enrollment effects for any group. Although there was engagement with the materials, for example 43% of treated high school seniors opened at least one email that was sent to them, this did not result in increased enrollment.

A third study (Linos et al., 2022) tested whether simplifying letters about a California statewide need- and merit-aid program (the Cal Grant) increased student enrollment, finding no effect. In partnership with the state agency that administers the scholarship, Linos et al. tested in the first phase of their study two different revised versions of the notification letter sent out by the agency to all eligbile high school seniors. The baseline letter, which was received by control

group students, was “quite dense, and contained several undefined acronyms and terms” (Linos et al., 2022, p. 4) as well as unclear next-steps. The revised letters provided the same information, but in a much more simplied format. One version of the revised letter also included an additional sentence containing affirming language that the student belongs in college. Though the revised letters did not lead to an increase in enrollment, they did lead to an increase in students registering for Cal Grant accounts (with a 1 percentage point larger effect for the affirming belonging letter).

Effectiveness of Customized Print Materials. A second set of studies tested the effect of sending customized materials to students, with the results providing mixed evidence on the effectiveness of the approach. The argument here was that customization would reduce information barriers faced by students, for example by providing knowledge about the actual costs they were likely to face at institutions that they were academically qualified for. Building on the first stage of results described above, Linos et al., (2022) conducted a second field experiment on revised Cal Grant notification letters and tested the effectiveness of adding customized elements to the (slightly modified) simplified letter from stage one. The customized letter included information about the net costs that a given student was likely to experience, based on their family income and anticipated living situation, at the public California schools they included on their FAFSA. The study authors hypothesized that prospective students without this individualized information were likely to underestimate the aid available to them and overestimate the college costs they would face, and therefore the customized letters would positively affect college enrollment behavior. Although the customized version of the letter did increase Cal Grant account registration by an additional 3 percentage points, relative to the simplified version from the first stage, there were no subsequent effects on enrollment behavior.

Hoxby and Turner (2013, 2015) found that mailing high-achieving, low-income students semi-customized information about selective colleges, including the net cost they would likely pay, caused recipients to apply to and enroll at more selective institutions. Hoxby and Turner's intervention, the comprehensive Expanding College Opportunity Project (ECO-C), provided students with information- such as graduation rates, net cost, institution expenditures- about multiple colleges that they were likely to gain admission to. These institutions were customized to students based on their location, and varied in their selectivity and type (e.g., state public flagship, nearby colleges, out-of-state private liberal arts college). Students were also provided with fee waivers to apply. The authors found large effects of the intervention: treated students applied to more colleges overall and applied to and enrolled at institutions that were more selective, had higher graduation rates, and greater institutional spending. Launching a similar intervention inspired by ECO-C, Gurantz and colleagues (2019) found minimal application effects and no enrollment effects from their informational campaign that provided customized information to high- and moderately- achieving low- and middle-income students. Gurantz and colleagues' experiment, which had a number of treatment arms and subgroups, consisted of materials (email or mail, with some students also receiving texts) sent by the College Board to high school seniors. The materials included a customized list of "academically strong colleges" (p. 4), with information about each colleges' admissions and financial aid processes and an estimate of their net cost, as well as tips for navigating the overall college-choice process. The primary outcome measures are the number and location of SAT score sends (a proxy for college application) as well as whether and where students enrolled in college. Although the intervention led to a slight increase in the number of schools to which students sent their SAT scores (.06

percentage points or 1.7%), there were no changes in the types of institutions that students sent scores to. There were also no effects on whether or where students enrolled in college.

These studies on postsecondary informational interventions found that, although some personalized print materials have had success in influencing the enrollment behavior of (high-achieving, low-income) prospective college students, the evidence on the effectiveness of generic printed materials is not promising. And yet, printed materials are still heavily utilized by colleges in their recruitment efforts. Even with the the rise of digital marketing, college spending on print materials has remained steady (Lipman Hearn, 2010) and students report that they like receiving printed college materials such as those mailed to them (Owen et al., 2020). Iowa College Aid continues to use posters, handouts, and other printed materials frequently in their high school outreach. I could not find any literature focused on the prevalence or effectiveness of the use of college posters or handouts in high schools. In the next section, I expand my review beyond education-focused interventions and review literature that looks more broadly at the effects of print materials on secondary school students' behavior.

Non-College Marketing to High School Students

My review of the literature examining print-based marketing efforts in secondary schools resulted in three studies, covering both U.S. and non-U.S. contexts, which explored the implementation or effectiveness of using posters in schools to address bullying, smoking, and teen pregnancy. Notably, these interventions were all aimed at reducing negative behaviors, whereas the intent of my Last-Dollar Scholarship campaign was to increase positive behavior (e.g., FAFSA filing, two-year college enrollment). In New Jersey middle schools, Perkins and colleagues (2011) tested a social norms poster intervention about bullying, finding that the printed posters displayed in schools had favorable effects on challenging misperceptions around

bullying norms and decreasing bullying behavior. The authors found in their pre-intervention survey that students' own reported experiences with bullying and pro-bullying attitudes were lower, on average, than what they perceived to be the peer-norm in their school. The authors launched an informational poster intervention around the schools with posters that highlighted the positive student norms and behaviors held by most students (e.g., "most middle school students [3 out of 4] do NOT exclude someone from a group to make them feel bad," Perkins et al., 2011, p. 710). Most of the students reported seeing the posters. Results from a t-test of pre-/post-differences found that the campaign reduced the misperceptions around the bullying peer-norms; decreased the level of bullying; and increased support for students to report instances of bullying, which subsequently decreased the level of bullying in schools and increased support for students to report instances of bullying.

Two studies described the development process of posters used in marketing campaign RCTs. A German secondary (grades 6-7) school-based study (Brinker et al., 2019) developed a poster campaign discouraging smoking. The posters utilized and advertised an intervention-created app (i.e., Smokerface) that shows a prediction of an individual's future appearance based on smoking / non-smoking behavior. The posters showed shorter- and long-term effects of smoking on stock images and provided information (and a QR code) on how students could download the app to explore for themselves. These posters are currently being used in both a poster-only RCT as well as a broader curriculum-based campaign, although neither set of results are available yet. A second study (Messer et al., 2011) chronicled the development of a teen pregnancy prevention social norms campaign that will be tested in North Carolina among 7th-9th graders. Part of the campaign is a series of posters that aim to address misperceptions around activities associated with teen pregnancy. During focus groups about the campaign, students

provided feedback that too many posters were already displayed in school hallways, and that this leads to a diminishing of the message of each additional poster. The students cautioned the intervention providers to be intentional about their use of additional posters. Students also shared that the locations of the posters mattered, although the study did not provide details about strategic locations. While not scholarship related, these studies speak to ways in which secondary school-aged individuals engage with print-based marketing, with implications that likely extend beyond the specific subject matter.

Summary

The literature on Promise programs suggests that the messaging component of the program (i.e., a clear guarantee of free tuition) is a key factor leading to the effectiveness of these policies (Anderson et al., 2023; Bifulco et al., 2019; Burland et al., 2022; Carruthers & Fox, 2016). However, as discussed above, not much is known about how to best market postsecondary opportunities to high school students. Posters and handouts are a major component of Iowa College Aid's marketing strategy, so it is important to understand whether and how students are engaging with these materials and whether they are having their intended impact. Based on my review of the non-education literature, there is a shortage of evidence in general about the effectiveness of print materials on influencing high school students' attitudes and behavior. My study will contribute to the literature and knowledge base about the role of print-based marketing materials in communicating college information to high school students by developing and testing a statewide informational campaign, complemented with qualitative data on counselors' perceptions about these materials.

The Effect of Informational Campaigns on FAFSA Filing

Lastly, I review the limited set of studies on informational campaigns that share my outcome of interest: FAFSA completion. These interventions, which encouraged individuals to file their FAFSA—often in conjunction with additional information or advising support—have been studied using randomized controlled trials. While my study differs from the studies reviewed in this section on several key factors (e.g., scope of intervention, method of communication), I reviewed them to establish priors regarding a reasonable effect size that I could expect to observe in my own study.

The first set of studies consisted of text messaging campaigns where high school students were sent college-going information and nudges that encouraged them to complete important college-going steps, including filing their FAFSA. Page and colleagues (2020) conducted a FAFSA-focused texting campaign in 66 high schools in Texas where treatment group students were sent personalized updates on their FAFSA submission and completion status alongside encouragement to utilize community- and school-based resources to complete their FAFSA. If desired, students were able to text back for assistance. The study team found that the intervention encouraged timelier FAFSA completion but did not affect whether students ultimately completed their FAFSA. The texting campaign led to a 6-percentage point increase in FAFSA submission and completion by April 17th (when the campaign ended) but no difference in FAFSA filing by July 24th. Avery and colleagues (2021) ran two simultaneous texting RCTs – one at the national level that targeted low-income students and one at 72 Texas high schools (a similar sample to Page and colleagues (2020)). Both campaigns used a checklist approach and attempted to guide students through a number of college-going steps, with two-way texting available for students to follow-up with questions. Although Avery and colleagues (2021) found no effect for their

national sample, the Texas intervention increased FAFSA submission and completion by July 16th by at least 5-percentage points.[4] Lastly, Bird and colleagues (2021) conducted a statewide FAFSA texting campaign[5] with the goal of testing whether the success found in smaller-scale interventions with local partnerships would hold when scaled to a larger level. Treated students received encouragement to file their FAFSA, including messages regarding two relevant policy changes – that they could file the FAFSA earlier than in prior years and that they could use income tax returns in the financial aid process. Notably, the study sample consisted of students who had applied to college through the state's portal and therefore had already taken key steps towards college enrollment. Bird and colleagues (2021) found a precise null effect on whether students filed their FAFSA among both the full sample and all subgroups examined. Taken together, the three texting nudge campaign studies provide evidence that low-touch informational campaigns that are implemented with fidelity and alongside state or local partners may be effective at increasing FAFSA filing rates. However, challenges may arise when attempting to implement these interventions at a larger scale.

Two additional studies examined how customized information about college costs affected FAFSA filing behavior. Bettinger and colleages (2012) conducted an RCT focused on low-income families who were receiving support with filing their taxes. These families were offered assistance in completing the FAFSA and/or provided estimates for the aid that they or their child(ren) would likely be eligible to receive at nearby colleges. Although there were substantial effects on FAFSA filing for the assistance and information treatment group (16-

[4] For the national sample, the authors only had access to school-level FAFSA filing data, despite only a subset of students within each school being included in the intervention. As the authors note, this may have been too coarse of data to detect an effect. For the Texas sample, the authors had both student- and school-level FAFSA filing data, though the data match between the two was imperfect, leading to slightly different estimates. The estimated effect from both data sources was at least 5-percentage points.

[5] The authors also conducted a simultaneous national-level texting intervention; however they did not measure FAFSA filing as an outcome.

percentage points among those filing as dependents and 20-27 percentage points among those filing as independents) there were no statistically significant effects on filing behavior among students receiving aid estimates only. Hoxby and Turner (2013), introduced above, provided high-achieving, low-income students with fee waivers as well as semi-customized information about college costs and application procedures. They found no effect of the intervention on students' FAFSA filing behavior, though the authors posited that this was likely because the baseline of FAFSA filing was already quite high among their sample, given that most of the students were already on the college trajectory (the intervention aimed to increase the selectivity of the colleges that students enroll at).

Summary

The five studies reviewed in this section found a range of effects of informational interventions on FAFSA filing, spanning from no effect to an increase of around 6-percentage points.[6] The intervention that I tested—a high school-based print informational campaign—differs from the interventions discussed above on several key dimensions including format, intensity, and content. Of particular significance is the fact that many of the interventions discussed above are specifically aimed at addressing FAFSA filing and other discrete college enrollment tasks, based on the premise that prospective college students may encounter obstacles during the college enrollment and matriculation process. However, I anticipated that my intervention may influence students' FAFSA filing behavior because they learn about a scholarship that makes college more affordable and decide to go to college, filing their FAFSA as part of this process. In other words, I tested how providing information *about a scholarship*

[6] I include in this range only the null effect of the information-only treatment arm from Bettinger et al. (2012). Their large statistically significant findings are from the information + assistance treatment arm.

affected FAFSA filing, rather than testing how providing information and reminders *about the FAFSA* affected FAFSA filing. Nevertheless, the studies reviewed here offer evidence that a low-touch informational campaign has the potential to impact FAFSA filing, with a positive effect of up to 6-percentage points.

Conceptual Framework - Perna's Model of Student College Choice

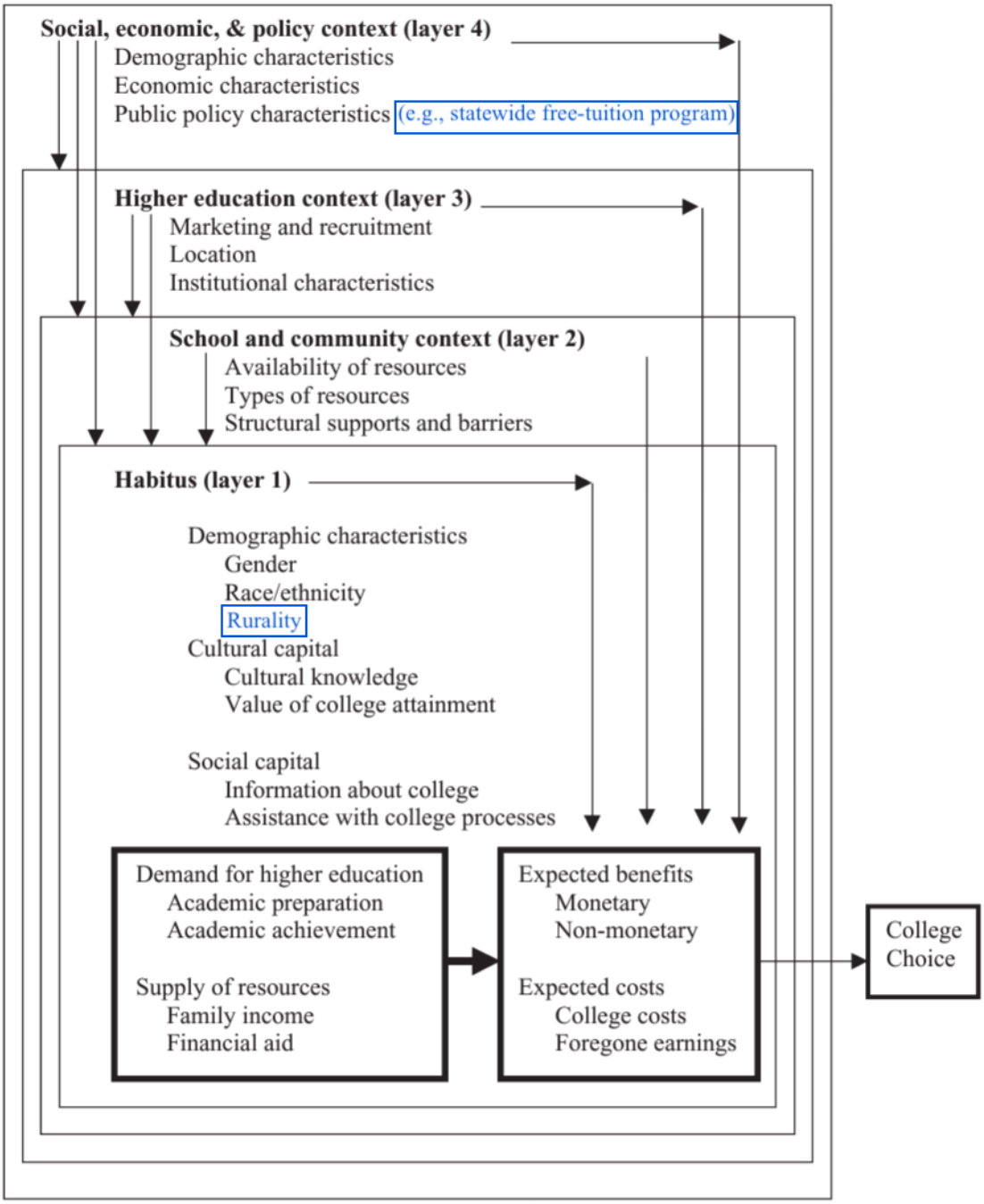
The literature reviewed above suggests that rural context influences how rural students approach making decisions about their post-high school pathways and that some of the key factors they consider may differ from their non-rural peers. Effective policy needs to attend to this rural context when trying to understand and support college-going in rural communities. To center the role that rural identity and context plays in shaping rural students' college-going behavior, I situated my study in Perna's (2006a) conceptual model of student college choice. Integrating economic and sociological perspectives, this model describes four nested layers of context that shape individuals' cost-benefit analysis regarding college-going. Moving outwards, the layers include: (1) habitus; (2) school/community context; (3) higher education context; and (4) social, economic, and policy context.

In my study, I attempted to address a potential disconnect that exists for rural students between the fourth and first layers. Put differently, I sought to understand how policymakers and postsecondary organizations can be more responsive to rural students' habitus. Habitus (Bourdieu, 1984), the first layer, captures the way that social class membership affects our tastes, preferences, and expectations, which in turn shapes our perceptions, experiences, and consumption decisions. The factors important to rural prospective college students (e.g., degree utility and financial stability, proximity to home) can be viewed as aspects of rural habitus that influence how these students make cost-benefit analyses regarding college-going; think about

what represents a worthy investment; and subsequently make college consumption decisions. As a statewide policy that seeks to encourage college enrollment, the Last-Dollar Scholarship is situated in the fourth layer of Perna's model as part of the policy context. I provide a slightly modified version of Perna's conceptual model (Figure 2.1) that demonstrates how I viewed individuals' rural identity and the Last-Dollar Scholarship fitting into the model. Though rurality influences all four layers of Perna's model, my study specifically explores how rurality as an aspect of an individual's demographic characteristics shapes their college-going process.

Perna's (2006a) model of college choice, widely used in the field of higher education, emphasizes the key role that context plays in individuals' college-going decisions. We must account for prospective students' context if we want to understand how and why they make their college-going decisions, and we must be responsive to their context if we hope to influence their behavior. Perna's model centers human capital theory, an economic model commonly used to understand students' college choice decisions, which theorizes that prospective college students make enrollment decisions by weighing the costs (e.g., tuition costs, forgone earnings) and benefits (both monetary and nonmonetary) of attending college. However, unlike many applications of human capital theory, Perna's model also includes four nested layers of context, largely informed by sociological perspectives, that explain key factors and situational context that shape individuals' cost-benefit analysis. The inner-most layer of context is individual's habitus, surrounded by (2) school and community context, (3) higher education context, and (4) social, economic, and policy context. Each contextual layer influences not only the cost-benefit analysis, but also the contextual layers within, meaning for example that an individual's habitus is shaped by each of the other three layers.

Figure 2.1 Perna's Conceptual Model of Student College Choice (Adapted for Study)



Notes: Adapted from "Studying College Access and Choice: A Proposed Conceptual Model," by L.W. Perna, in J.C. Smart (Eds.) Higher Education: Handbook of Theory and Research (vol 21, p. 117), 2006, Springer, Dordrecht (https://doi-org.proxy.lib.umich.edu/10.1007/1-4020-4512-3_3). Copyright 2006 by Springer. Adapted with permission from Springer Nature. Author's modifications shown in blue enclosed by a blue box.

Layer 1 – Habitus

The inner-most layer of context in Perna's (2006a) model, individuals' habitus, is useful in thinking about how prospective college students' rurality shapes how they understand and approach making decisions about their post-high school pathways. Habitus (Bourdieu, 1984) is the concept that our social class membership impacts the way that we experience and perceive the world around us. These class-based perceptions predispose us to certain expectations and aspirations and, often unconsciously, shape our behaviors and choices. Perna suggests that an individual's habitus is influenced by and reflects their demographic characteristics, cultural capital (e.g., cultural knowledge, value of college attainment), and social capital (e.g., information about college, assistance with college processes). Although Perna highlights race/ethnicity, gender, and socioeconomic status as particularly influential demographic characteristics impacting layer 1, students' rurality is an additional characteristic driving prospective college students' habitus and college choice decisions.

The unique characteristics of rural spaces and people, in areas such as labor market, key values, and daily experiences, informs a distinct rural habitus that helps explain how rural individuals perceive the world around them, including their view on the value and role of postsecondary education. As laid out above, the postsecondary decision-making process of many rural high schoolers differs from what is typically discussed in the broader college-going literature. For example, the postsecondary aspirations of rural youth are often driven by occupational considerations, with a focus on degree utility and practical programs that align with specific careers that will offer financial stability (e.g., Tieken, 2016). While college may be seen as a route to an easier (i.e., less physically demanding) and more economically stable life, it may also feel like a divergence from their rural identity and the type of work that is familiar and

valued. College, especially four-year schools, may be viewed as a place for the elite where rural students are unsure whether they will fit in. Viewed through the lens of habitus, we can understand these as class-, and in particular rural-, based perceptions and preferences that influence rural high schoolers' college attitudes, aspirations, and valuation which in turn shape how they approach their college-going decisions. Understanding and being responsive to this context is crucial for organizations interested in improving college access for rural communities.

The level of educational attainment that is understood to lead to security and success may also be contextually mediated by a rural habitus. The labor markets of rural communities often differ from non-rural areas. Although the decline of many traditional rural occupations (e.g., mining, agriculture) represent a changing rural economy with an increasing need for a more educated workforce, many of the jobs available in rural communities require a sub-baccalaureate-level of education and many rural community members proudly work in blue-collar and working-class occupations. Schmitt-Wilson and colleagues (2018) highlight the deficit approach that is often seen in literature examining rural students' educational attainment and urge the field to broaden and recalibrate our conceptualization of educational attainment to include sub-baccalaureate credentials. The authors argue that the ideal level of education attainment is often assumed to be a bachelor's degree. This subsequently places focus on—and to some extent defines success in terms of—bachelor's degree attainment and community college transfer. However, these measures may not align with the goals of rural students attending community college or the needs of their local communities. In fact, Schmitt-Wilson and colleagues suggest that the emphasis on bachelor's degree attainment is driven by what is valued in urban and suburban contexts, a phenomenon that Thomas and Fulkerson (2020) coined urbanormativity, or "the cultural assumption of the normalcy and superiority of life in cities and

suburbs" (p. 21). Privileging bachelor's degrees over other credentials, when the locations of four-year institutions and career prospects of a bachelor's degree may not align with local opportunities, discounts the importance of these college-choice factors to rural students' happiness and success. Investment in college and college-going success may look different in rural spaces because of a different context both in terms of the labor market but also in regard to the norms and ideals of these communities.

Applications of Habitus in the Higher Education Literature. Perna (2006b) applies their college choice conceptual model to understand how prospective college students get and use information about college prices and financial aid. They suggest that the gap between the seemingly available and accessible information about college and student take-up, and perceived usefulness, of this information may be understood through the lens of habitus. An individual's habitus may lead them to believe that college is not a realistic or affordable option for them, whether that's because most people in their social circles did not attend college; they haven't received college guidance in high school; and/or they view a typical path for someone in their community to be the military or workforce. As such, these individuals may not spend the time or energy seeking out information about college costs or may not view related information they receive to be relevant or beneficial. Perna also notes that the information that exists about college costs and financial aid may not be understandable and accessible for individuals from certain groups (e.g., marginalized students). A student and their family's willingness to take on debt in order to finance a college education may also be influenced by their habitus, which may in turn impact whether and how they acquire and use information about college price. Applying these same ideas to a rural context, rural students and their families may be worried and unsure about whether the payoff of college, and the cost of tuition and forgone earnings, will bear out for

them. This may be especially true if their reference group has a dearth of individuals with college degrees and/or has members who did attend college but had negative experiences or for whom college did not pay off financially.

McDonough and Calderone (2006) apply the concept of habitus to understand the way that prospective college students and their families conceptualize and make decisions about the affordability of higher education. McDonough and Calderone's theorizing is based on a set of interviews with college counselors in urban areas and focuses on the experiences of low-income Black and Latinx students and their families. Despite the disparate context of my study compared to theirs—rural areas that are overwhelmingly white, with varying levels of family income—the main ideas put forth by the authors, and their exploration into understanding the sociocultural meaning of money, transcend these contexts and are applicable when thinking about the role of habitus in how rural students and their families make sense of college costs.

McDonough and Calderone (2006) advance that social class influences how students and their families make cost-benefit analyses of college costs and conceptualize college affordability, which in turn impact their college-going behavior and consumption decisions. Our perception of and decisions around money are often relational and influenced by those around us who serve as reference groups, such as family, friends, and those in our community and social circles. Sociocultural differences around the meaning of and practices around money influence how families think about value and what represents a worthy investment, therefore informing their decisions regarding college costs. The low-income families in McDonough and Calderone's study were making meaning of and decisions around college affordability based on well-established understandings of their need, their assessment of the costs and benefits of getting a college education and the value that it may hold, and an attentiveness towards the various

competing financial demands (in a context of limited financial means) that exist not only for the prospective college student, but for the broader family. To the last point, the authors emphasize that the calculation of opportunity cost that students were making accounted for their family's financial context. Even if a student has adequate financial aid to cover the costs of college, this will not help contribute to the family's economic needs. McDonough and Calderone highlight that a disconnect can occur when the social class, and therefore habitus, of those providing and receiving financial aid information differ (e.g., the predominately middle-class high school counselors and low-income families in their study). This can lead not only to frustration, but also may restrict the type of information that is shared, for example counselors presenting community college as the only option affordable for students.

Although much of the current financial aid research accounts for the role of family income, McDonough and Calderone (2006) argue that we need to account for students' social class and sociocultural contexts to better understand how low-income students and their families are thinking about college affordability and making decisions about college. Social class is not just about issues of financial scarcity, but also about class-based preferences and understandings of value and what constitutes a worthy investment. Rurality is an important component of individuals' sociocultural context, and it is vital to understand and account for rural communities' habitus and conceptualization of affordability and value when developing and communicating higher education financial aid policies and programs.

While habitus is an important component in understanding individual's college choice, Perna's (2006a) posits that it exists in an ecosystem embedded within the other three layers, which all influence the choice process as well. The intervention that I tested in my experiment

sits in the fourth layer of Perna's model – the economic, social, and policy context – which I discuss next.

Layer 4 – Economic, Social, and Policy Context

My focus within this outer-most layer of Perna's (2006a) model is the state policy context. Much of education policy, both K-12 and higher education, is decided and implemented at the state level (U.S. Department of Education, n.d.). Relevant aspects of higher education state policy that influence student college-choice include how states choose to fund higher education in their state (Cummings et al., 2021; Laderman & Kunkle, 2022); the state attainment goals they set (Lumina Foundation, n.d.); and the policies and programs they adopt to encourage and support students to enroll in and complete higher education (Dynarski et al., 2022; Nguyen et al., 2019; Perna et al., 2016). Perna & Finney (2014) identify three broad categories of policies that states adopt to improve higher education supply and demand in their state: (1) policies that provide financial resources aimed at making college more affordable; (2) policies focused on academic preparation and helping students transfer between sectors and levels of higher education in an efficient manner; and (3) policies that increase the availability of higher education options for residents of the state (e.g., distance education opportunities, community college baccalaureate programs). My study falls within the first category – financial policies that enhance college affordability.

Tuition-free community college programs are a policy initiative that many states, and specific communities and institutions within individual states, have adopted to encourage enrollment in the two-year public sector (College Promise, n.d.). The details of these programs (e.g., which institutions and programs are included, eligibility requirements, application process) vary between states (Erwin & Syverson, 2022; Perna & Leigh, 2018). As I discuss in more detail

in Chapter 3, Iowa's tuition-free community college program, the Future Ready Iowa Last-Dollar Scholarship program, covers tuition for state residents who enroll in two-year programs that align with high-demand careers in the state. Both recent high school graduates as well as older adults are eligible for the program, and students can enroll part- or full-time. It is imperative that states learn about the effectiveness of these and other policies they adopt and utilize a feedback loop to inform improvements to their policies and programs. Although there is an extensive literature examining the effects of various state and local tuition-free programs (Billings et al., 2021), I am not aware of any studies that explore the influence of these programs on rural populations.

More research is needed that examines how layer four factors of Perna's (2006a) model impact rural students' college-choice. Though not often examined through the lens of Perna's model, a rich literature exists that examines the impact of various aspects of states' economic, social, and policy context on financial aid and college-going both broadly and for specific racial/ethnic and socioeconomic subgroups (e.g., Dynarski et al., 2022; Perna et al., 2014). Rural students are largely absent from this research, although there is an increasing focus on college access for this population by many states (e.g., Brown, 2022), institutions (e.g., Weissman, 2022) and philanthropic organizations (e.g., Ascendium Working Group, 2021). My study contributes to this emerging literature by examining the impact of Iowa's tuition-free two-year college program on rural high school graduates. Attentive to Perna's emphasis on accounting for context when studying student college choice (Perna, 2006a; Perna et al., 2014), the single-state, single-program focus of my study allowed me to account for the nuances of the particular program (e.g., focused on workforce development); the context of the specific state (i.e., Iowa); and the context of my population of interest (i.e., rural students).

Summary of Conceptual Framing

In order to understand, as well as to influence, the college-going behavior of rural youth, we must understand the context in which these individuals and their families are making their decisions. Perna's (2006a) integrated model of college choice provides a framework for centering rural culture and environment in understanding the multifaceted dimensions of influence that impact rural students' post-high school decision-making process. Rural students' habitus, the inner-most layer of Perna's model, is a key component shaping this population's postsecondary choice process and interventions situated in the outer three layers must be attentive and responsive to rural habitus. As it relates to my focus on the outer-most layer, and in particular the state policy context, it is imperative that state policymakers and other entities looking to enhance college access in rural areas first understand the preferences and worldviews (i.e., habitus) that rural communities have regarding college and careers. This context is important to integrate into the design of programs and interventions aimed at enhancing rural student college access.

Based on the preferences and framing with which rural students and their families approach postsecondary decision-making, the Future Ready Iowa Last-Dollar Scholarship is a financial aid program that is likely to strongly resonate with many rural Iowa high school students and align with their postsecondary interests and goals. However, despite the existence of this scholarship, many rural students may be unaware of it or may not see it as a relevant or viable option if it is not being marketed and messaged to these students in a way that reflects their habitus. In the years prior to my intervention, the scholarship was inconsistently marketed and messaged across schools and in many cases the state was relying on school counselors to

disseminate information about the scholarship to students.[7] However, high school counselors balance numerous responsibilities, only one of which is college guidance (Ardoin, 2017; Rosales, 2015), and it was likely the case that many students at rural high schools were not receiving adequate information about the scholarship. It is this opportunity that I addressed through my dissertation study.

The informational campaign I designed alongside state partners, discussed in detail in the next chapter, aimed to be attentive to and shaped by rural students' context and habitus. This intervention, which marketed the Last-Dollar Scholarship to rural high schoolers, used language that incorporated key aspects of rural context and college-going perspectives, based on findings from existing literature. In my study I tested whether this state-level intervention that is informed by and reflective of key aspects of rural habitus influenced rural students' college-going behavior by measuring changes in FAFSA filing. I complemented this experiment with qualitative focus groups where I heard directly from counselors about their experience with and thoughts about the informational campaign and the Last-Dollar Scholarship more broadly.

[7] These claims are based on conversations with Iowa College Aid staff during the conceptualization of the study and design of informational materials.

Chapter 3 Study Design

In this chapter I describe the methodologies employed in my study, in which I both tested *whether* there was an effect of the informational campaign and investigated some of the *why* of my results. I first situate my study by providing a detailed description of the rural context in Iowa and public higher education in the state. I then provide an overview of my mixed methods study design before describing the two phases in detail. I explain the informational campaign I created and the randomized controlled trial (RCT) I conducted to test its effectiveness. This is followed by a description of the qualitative component, wherein I conducted focus groups with high school counselors from treatment group schools. I end the chapter with a discussion of the contributions of my dissertation study.

Rural Iowa Context

It is important for rural education researchers to provide a clear and detailed description of the rural context of their study. This enables readers to place and understand the results of a single study in reference to other contexts and to synthesize and compare results across studies (Coladarci, 2007). Further, Perna and colleagues (2014) highlighted that understanding the state-specific context in which a public policy is implemented, including the social, economic, and policy characteristics, is key to understanding the policy's effect on higher education outcomes. There is no one widely agreed upon and utilized definition of rural in education research (Coladarci, 2007; Thier et al., 2021), rather researchers adopt a variety of federal classifications (e.g., National Center for Education Statistics [NCES], Census Bureau); provide a rich

description of the rural area; or choose to forgo providing a definition at all (Sowl & Crain, 2021; Thier et al., 2021).

The lack of a consistent definition of rural is not necessarily a problem in itself, as it allows researchers to use the definition that best suits the needs and purposes of their research and/or the local area. However, a limitation of much of the existing literature is that researchers rarely provide sufficient detail about the context of their research (Coladarci, 2007) and may not even provide their operationalization of rural to the reader (Sowl & Crain, 2021; Thier et al., 2021). Given that the students categorized as rural, and subsequently the stated effects for these students, can vary substantially across definitions (Dunstan et al., 2021; Manly et al., 2020), researchers should be intentional and clear in their decision of how to define rural. With all of this in mind, I begin this chapter with a detailed description of the rural Iowa context to help situate my study. In the experimental methods section (below) I describe how I operationalized "rural" in my study.

Rural Communities in Iowa

Iowa is a largely rural state, and this is reflected in many of its key industries. Based on the 2010 Census, over 98% of land in Iowa was classified as rural and 36% of the state's population lived in rural areas.[8] In 2022, approximately half (50.2%) of the K-12 schools in the state were in rural communities, enrolling just under a third (32.8%) of all public students (Showalter et al., 2023). Agriculture and other agriculture-related businesses are a central part of the economy of rural communities in Iowa (Iowa Department of Public Health, 2011; Peters,

[8] The Census Bureau categorizes all population and land outside of urban areas as rural. For more about how the Census classifies urban and rural areas, see https://www.census.gov/programs-surveys/geography/guidance/geo-areas/urban-rural/2010-urban-rural.html. Estimates based on "Percent Urban and Rural 2010 by State" document on this page.

2019), although many farms are experiencing economic hardship, with decreasing incomes and growing debt (Peters, 2019). Other major industries in the state include manufacturing; trade, transportation, and utilities; natural resources and mining; and health care and social services (Iowa Workforce Development, 2018). Evolutions in technology and an aging population are contributing to a changing economy in Iowa. Certain industries, such as agriculture and manufacturing, may see the elimination of certain jobs due to advances in automation. Industries that are expected to experience growth include healthcare; trade, transportation and utilities; and professional and business services (Iowa Workforce Development, 2018).

The population size of rural Iowa is on a downward trajectory with notable declines in the school and college aged populations, as well as those in the 40-54 age category. There is a growing senior population, with gains in those near and just above the retirement age. While the state as a whole experienced an approximately 4% increase in population between 2011 and 2020, the underlying trends were very different between rural and urban areas. Between these years, there was a 12% increase in population in urban areas and a 9% *decrease* in rural areas.[9] In response to these troubling trends in rural Iowa, Governor Kim Reynolds signed the Empower Rural Iowa Act in 2019, which launched initiatives in rural areas centered on expanding broadband access, developing and supporting leadership programming, and investing in housing and capital projects (Office of the Governor of Iowa: Kim Reynolds, n.d.)

The demographics of the rural populations in Iowa differs from those living in urban areas on several dimensions (

). In general, the population of rural Iowa is whiter and older than urban populations in the state, with a lower average educational attainment but higher incomes. The vast majority of

[9] Based on author's calculations of U.S. Census data. Estimates are based on 2011, 2015, and 2020 5-year estimates of American Community Survey (ACS) data. Notably, Census categorizes all areas as urban or rural.

Iowans are White (85%) and this is especially true in rural areas, where 94% of the population is White. Relative to individuals living in urban areas of the state, rural Iowans have a higher median age, 43 years old, compared to a median age of 36 in urban areas. Adults (those age 25 or older) living in rural Iowa are less likely to have a college degree, with 13% holding an associate degree and 25% with a bachelor's degree or higher, compared to 11% and 32%, respectively, of urban Iowans. At the same time, the median income of rural families is approximately 4-7% higher than urban families and the poverty rate in rural areas is lower. The median income among rural Iowans is higher than urban Iowans within all levels of educational attainment, with these differences most pronounced at the levels of HS graduate and some college/associate degree. The lower average educational attainment but higher incomes in rural areas compared to urban areas reflects, in part, distinct labor markets in these areas.

Although those living in rural Iowa encounter cumulative disadvantage due to factors such as a decline of traditional rural economies (Iowa Workforce Development, 2018; Peters, 2019), a shrinking population (Crumb, 2021), and insufficient healthcare infrastructure (Iowa Hospital Association, 2020), these communities are also bastions of resilience and innovation (Governor's Empower Rural Iowa Initiative Task Force, 2022). Many rural community members enjoy the "small-town feel" of their community (Cygnal, 2022), and the interconnectedness of rural communities helps foster social capital and resources as well supportive interactions between adults and youth (Elder & Conger, 2000; McNamee, 2019; Nelson, 2016). A longitudinal study over 400 rural Iowa children and their families revealed that, despite facing economic hardships, having ties to farming was associated with numerous pro-social traits and behaviors such as self-confidence, responsibility, educational success, and civic engagement (Elder & Conger, 2000).

Table 3.1 Descriptive Statistics about Iowans, Disaggregated by Rural and Urban

	All Iowans *(N = 3,150,011)*	**Rural Iowans** *(N = 1,119,827)*	**Urban Iowans** *(N = 2,030,184)*
Age			
Median age	38.3	43.0	35.9
Under 18	23%	24%	23%
Over 65	17%	19%	16%
Race / ethnicity			
White	85%	94%	80%
Latinx/Hispanic	6%	3%	8%
Black	4%	1%	5%
Asian	3%	1%	4%
American Indian and Alaska Native	<1%	<1%	<1%
Native Hawaiian and other Pacific Islander	<1%	<1%	<1%
Two or more races	2%	2%	3%
Highest level of educational attainment (Age 25+)			
<HS diploma	8%	6%	8%
HS graduate or equivalent	31%	35%	28%
Some college, no degree	21%	21%	21%
Associate degree	12%	13%	11%
BA degree or higher	29%	25%	32%
Income			
Median income 2-person family	$70,773	$73,324	$68,803
Median income 4-person family	$97,935	$100,454	$96,471
Adults (18-64) below poverty level	11%	8%	14%
Kids (under 18) below poverty level	13%	9%	16%
Median income by educational attainment (Age 25+)			
< HS diploma	$30,147	$31,288	$29,445
HS graduate or equivalent	$33,483	$36,421	$31,812
Some college or associate degree	$38,649	$40,594	$37,333
Bachelor's degree	$52,475	$53,117	$52,191
N	**3,150,011**	**1,119,827**	**2,030,184**

Source: 2020 American Community Survey (ACS) 5-year estimates - U.S. Census Bureau.
Notes: Due to rounding, totals may not equal 100%. Median incomes are measured in 2020 inflation-adjusted dollars. Poverty measure is based on those who fell below the poverty level in the past 12 months.

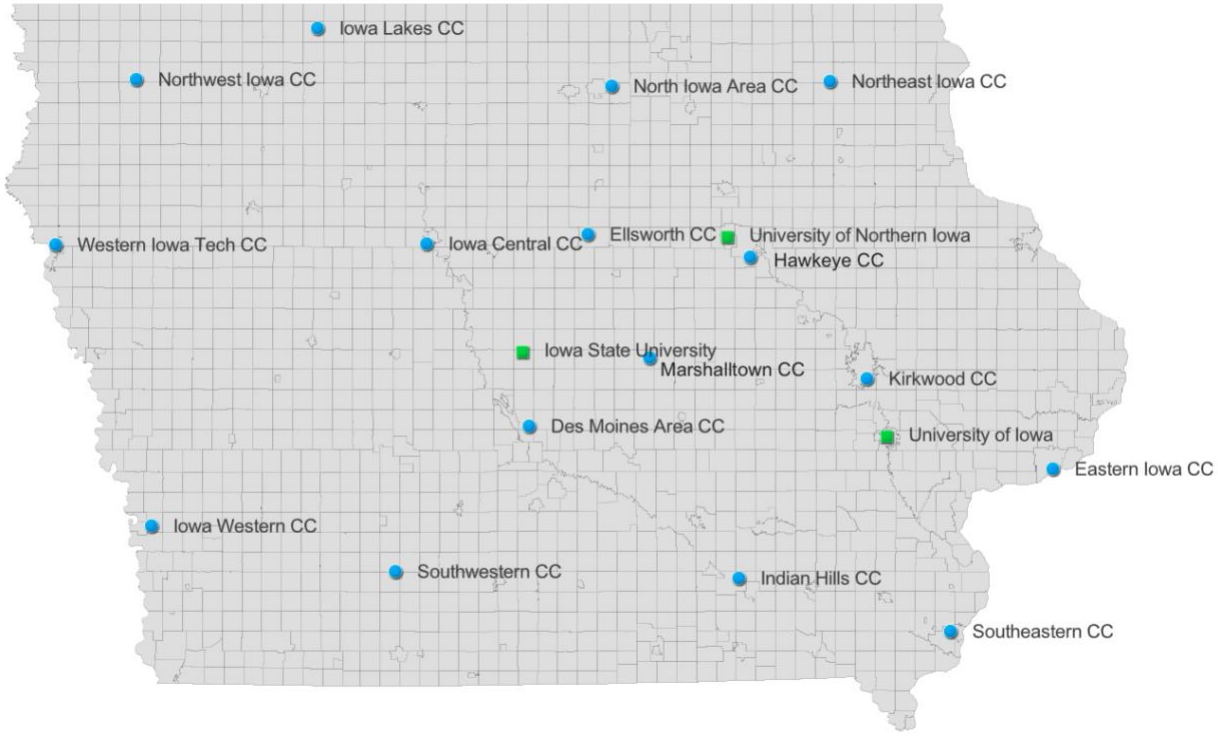
Iowa Public Higher Education

Iowa Public Colleges and Universities. Public higher education in Iowa is comprised of three four-year universities and fifteen community colleges. Iowa State University, the state's flagship institution, and University of Iowa are both research-intensive doctoral universities, and the University of Northern Iowa is the state's only regional comprehensive university. The four-year universities are governed by the Iowa Board of Regents while the community colleges are locally governed, with each board of directors consisting of five to nine elected members (Iowa Department of Education, n.d.). The Iowa College Student Aid Commission (Iowa College Aid) serves as the state's student financial aid agency and oversees the distribution of the state's many financial aid programs (https://iowacollegeaid.gov).

While the community colleges are spaced throughout the state, having only three public four-year institutions means that there are many areas of the state where residents do not live near a public four-year college. Figure 3.1 shows the locations of Iowa's public institutions of higher education. This map highlights the crucial role that community colleges play in providing higher education access to Iowans. For many state residents, a community college is their only proximal option for public higher education.[10]

[10] Many students who attend an Iowa private not-for-profit institution receive the Iowa Tuition Grant, which helps offset the difference in cost of attendance between public and private institutions in the state. In FY2020, the Iowa Tuition Grant was the largest state financial aid program, accounting for 60% of total state financial aid.

Figure 3.1 Map of Public Two- and Four-Year Colleges in Iowa



Source: College addresses pulled from the Integrated Postsecondary Education Data System (IPEDS)
Notes: Green squares represent Iowa public four-year colleges. Blue circles represent Iowa public two-year colleges.

Tuition and Funding. Iowa community colleges are among the most expensive community colleges in the country, ranking 8th out of the 50 states in 2020-21 (U.S. Department of Education, National Center for Education Statistics, 2021a). Published tuition and fees at Iowa community colleges in 2021 ranged from $4,440 to $6,748 (IPEDS, 2020). Iowa community colleges ranked 5th highest among all states in net tuition revenue in 2021, with an average tuition revenue of $5,456 per full-time equivalent enrollment (Laderman & Kunkle, 2022).

These high community college tuition rates are driven by Iowa's funding structure being highly dependent on tuition revenue to fund public institutions in the state. Across both the two- and four-year sectors, Iowa ranks in the bottom half of states in terms of state appropriations and total education revenue. Among public two-year colleges in 2021, Iowa ranked 44th nationwide in state appropriations, with $5,610 per FTE, and 29th in total education revenue, with $11,065

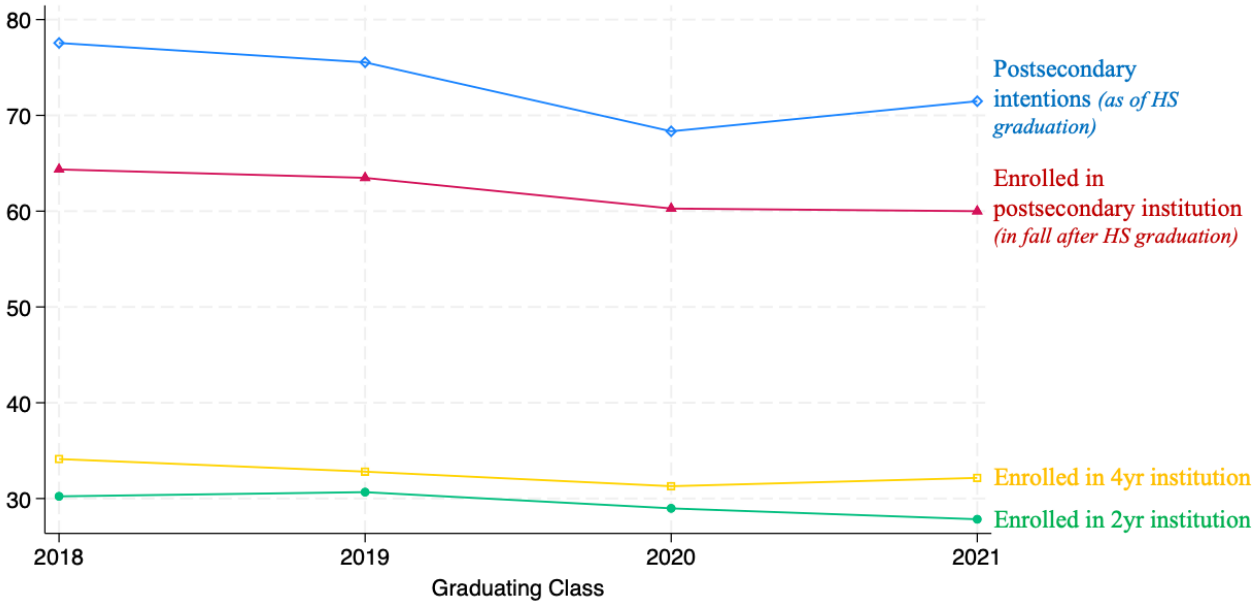
per FTE. In the presence of these low levels of state support, Iowa students are responsible for shouldering a much larger portion of the cost of higher education relative to students in other states. The student share at Iowa community colleges, measured as what proportion of total education revenue comes from net tuition revenue, was close to half (49%) in 2021. This is over twice as high as the U.S. average of 21.8% and places Iowa community colleges as having the third highest student share in the country (Laderman & Kunkle, 2022).

While the high cost of tuition at Iowa community colleges may reduce their accessibility, financial aid programs such as the Last-Dollar Scholarship can help make these institutions more affordable for state residents. The launch of the statewide Last-Dollar Scholarship in 2018 followed the trend across many states of increased state investment in direct aid to students through financial aid programs (Laderman & Kunkle, 2022). These programs allow states to target aid towards and lower the cost of college attendance for certain groups of students (e.g., lower-income students, high academic achievers) or, as is the case with the Last-Dollar Scholarship, for certain programs. Although Iowa allocates little of their total state appropriations towards public financial aid, only $379 per FTE at two-year institutions and $57 per FTE at four-year institutions (Laderman & Kunkle, 2022), the average award among Last-Dollar Scholarship recipients (the largest public college financial aid program in the state) is $2,507 (Iowa College Aid, 2021).

College-going Metrics in Rural Iowa Communities. Postsecondary enrollment rates are declining in Iowa, with large gaps between high school graduates' stated intentions and their subsequent fall college enrollment (Figure 3.2). Although Iowa leads the nation in high school graduation rates, tying with Alabama for the number one rank in 2018-19 (U.S. Department of Education, National Center for Education Statistics, 2021b), Iowa ranked 15th for the proportion

of high school graduates enrolling immediately in college in 2018 (NCHEMS, 2018). Among the high school class of 2021, 71% of rural graduates noted their intention to enroll in postsecondary education while only 60% were enrolled in the fall immediately following graduation (Figure 3.2).[11] These rates are down 7 percentage points and 4 percentage points for intentions and enrollment, respectively, from three years prior in 2018. About a quarter of rural 2021 high school graduates (28%) were enrolled at a two-year college in the fall following graduation and approximately a third (32%) were enrolled at a four-year institution (Figure 3.2).

Figure 3.2 Postsecondary Intentions and Enrollment among Rural Graduates, 2018-2021



Source: Data from Iowa College Aid
Notes: Rural seniors include seniors from schools categorized by NCES as "rural" or "town." Sample includes high school graduates from each class. Postsecondary intention measure is based on students' plans at the time of high school graduation and postsecondary enrollment measures are based on the fall immediately following high school graduation. Postsecondary intention and enrollment measures are based on two- or four-year institutions. Due to COVID-19, the question about postsecondary intentions was made optional in the 2019-2020 data collection and 13.7% of all Iowa Class of 2020 graduates statewide did not report their post-graduation intentions.

When looking at FAFSA filing rates among high school seniors, the outcome that I measure in my study and an important step in the college enrollment pipeline for many students,

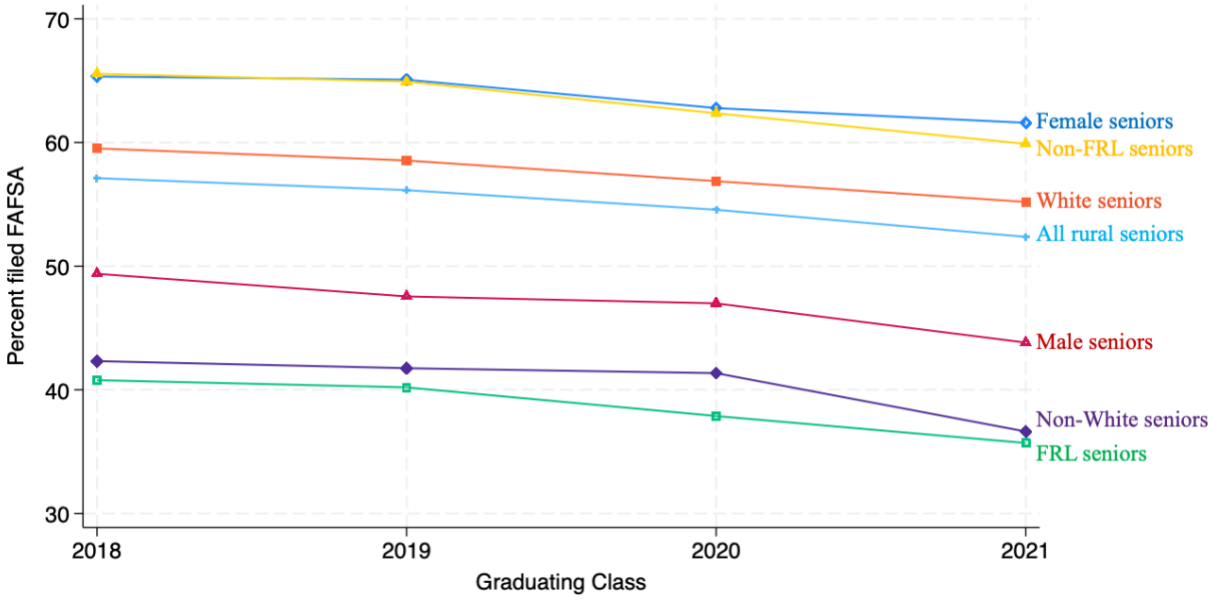
[11] The rates and trends in college intentions and postsecondary enrollment are similar for rural and non-rural students in Iowa. For simplicity, I focus on the rural student statistics in this section.

Iowa currently ranks in the middle of all states but is experiencing a sharp decline. For the high school class of 2022, Iowa ranked 21st in FAFSA completion rates among seniors (Data Insight Partners, 2022), six spots lower than their rank for college enrollment. In 2020-21, 52% of rural Iowa high school seniors filed their Free Application for Federal Student Aid (FAFSA) by May 31st (Figure 3.3), a 5-percentage point (8%) drop from the class of 2018.[12] There is wide variation across schools in the proportion of seniors who complete their FAFSA. For the class of 2021, the percentage of seniors at rural high schools who completed their FAFSA ranged from 20% to 86% with a median of 55%.

Aggregate FAFSA filing numbers mask underlying variation between rural student subgroups (Figure 3.3).[13] Rural female students are much more likely than their male peers to file their FAFSA (62% vs 44% in 2021) as are White students relative to their non-White peers. (55% vs 37%). There are even larger enrollment gaps for higher- and low-income students (measured based on free- or reduced-price lunch eligibility), with a 24-percentage point gap in FAFSA filing (60% vs 36%). I expected that the Last-Dollar Scholarship informational campaign may have differential effects across these student subgroups, both because there are such different FAFSA filing (and college enrollment) baselines and because there may be gaps between these groups in the information and messaging they are receiving about postsecondary opportunities. As discussed in more detail below, I disaggregate the effects of the informational campaign for these subgroups in exploratory analyses.

[12] The FAFSA filing rates presented here (and in Figure 3.3) are based on all high school *seniors* whereas the postsecondary intentions and enrollment numbers presented above (and in Figure 3.2) are based on high school *graduates*.
[13] Similar gaps exist for these rural subgroups in college attendance (based on authors' calculation of Iowa College Aid data).

Figure 3.3 FAFSA Filing Rates among Rural High School Seniors, 2018-2021



Source: Data from Iowa College Aid
Notes: Rural seniors include seniors from schools categorized by NCES as "rural" or "town." Sample includes high school seniors from each class. FRL = Free- and reduced-price lunch eligible.

Background of the Future Ready Iowa Last-Dollar Scholarship

In March 2018, Iowa Governor Kim Reynolds signed the Future Ready Iowa Act (Future Ready Iowa Act, 2018), passed unanimously with bipartisan support in the Iowa House and Senate. The main goal of the Act was to have at least 70% of the state workforce achieve some level of postsecondary education by 2025. The Act consists of several initiatives, including an apprenticeship program, summer internships for high schoolers, childcare grants and, the program at the center of my research study, a last-dollar scholarship for community college students enrolled in eligible programs (https://www.futurereadyiowa.gov/).

The Future Ready Iowa Last-Dollar Scholarship program (hereafter: Last-Dollar Scholarship) provides Iowa residents with scholarships for specific programs (diplomas,

certificates, and associate degrees) at community colleges throughout the state[14] that prepare students to work in occupations that are in high-demand in their state and/or local area. The list of high-demand jobs is selected by the workforce development board and the community colleges (Future Ready Iowa Act, 2018). Eligible programs span a variety of fields, including healthcare and biosciences, information technology, advanced manufacturing, agriculture, and architecture and construction. The most popular programs in 2021 included nursing, computer programming and automotive technology (Iowa College Aid, 2022). As a last-dollar scholarship, the program covers any remaining costs for tuition and fees after other sources of state and federal financial grant aid have been applied. Recipients also receive access to wrap-around services such as direct coaching from AmeriCorps members and virtual assistance via texting (https://iowacollegeaid.gov/LastDollar).

The state categorizes scholarship recipients into two groups: recent high school graduates and adult learners (age 20+). In the first few years of the scholarship, recent high school graduates had to enroll full-time immediately after high school graduation, while adult learners were allowed to enroll full- or part-time. The state has adjusted the requirements each year, including removing the requirement that recent high school graduates immediately enroll. Starting in fall 2022, recent high school graduate recipients were allowed to enroll part-time. Individuals must file their FAFSA in order to receive the scholarship, but there is no separate application for the scholarship.

In FY2021, the Future Ready Iowa Last-Dollar Scholarship program was the second largest state financial aid program, making up 16.3% of the state's total financial aid appropriations at $13,004,744 dollars distributed to 7,864 recipients (Iowa College Aid, 2021).

[14] Eligible institutions also include two private institutions: St. Luke's College and Mercy College of Health Sciences.

The average award amount was $1,692 among recent high school graduate recipients and $1,006 among adult student recipients. The median income across all recipients was $47,990 and 39% of recipients were first-generation college students.[15] The median age of recipients was 21, with a mean age of 25. The majority of Last-Dollar Scholarship recipients were White (79%), while 8% were Latinx and 5% were Black (Iowa College Aid, 2022).

In June 2023, the state legislature added an income restriction to the program, limiting eligibility to students with an adjusted gross income (AGI) at or below $20,000. An FAQ page on Iowa College Aid's website attributes this change to a growing number of applicants, particularly those with high EFCs, alongside static funding (Iowa College Aid, 2023). The change was effective immediately for both current and incoming Last-Dollar Scholarship recipients.[16]

Mixed Methods Experimental Design

The primary purpose of this mixed methods study was to explore whether postsecondary scholarship marketing materials, designed to reflect rural students' context and habitus, impacted college-going behavior. I used a mixed methods sequential explanatory design, consisting of two distinct phases: a primary quantitative component followed by a secondary qualitative component (Creswell & Plano Clark, 2017). My primary motivation for developing a mixed methods design, and specifically in embedding a qualitative component in my study, was to help further explain and extend the quantitative results. As defined by Fetters and Molina-Azorin (2017), integration of qualitative and quantitative components in a mixed methods design helps

[15] Income is based on FAFSA, which students may have filed as dependent or an independent.
[16] This change was announced after the outcome for my experiment was measured. I measure FAFSA filing as of May 31, 2023, and the income restrictions were announced on June 1, 2023. I conducted counselor focus groups the fall following the eligibility change, as is reflected in my protocol and the conversations.

"to create a new whole or a more holistic understanding than achieved by either alone" (p. 293). The quantitative and qualitative portions of my study are sequential, with the focus groups following the analysis of the experimental data. The focus group protocol was designed to address questions that arose while designing, implementing, and analyzing the effects of the informational campaign (e.g., whether treated students were exposed to the materials and aware of the scholarship).

Experiment Research Design and Sample

The first part of my mixed methods dissertation consisted of a randomized controlled trial (RCT) I conducted to answer my first research question: *Does providing an informational campaign about a statewide, two-year college free-tuition program impact rural high school seniors' college enrollment behavior?* This section starts with a description of the RCT framework, followed by information about my data, sample, and measures. I then describe the informational intervention and the mechanisms by which I expected it may affect students' enrollment behavior. Next, I discuss the randomization process I followed and the tests I conducted to ensure that baseline equivalence between treatment groups was met and that my experiment was sufficiently powered. I then detail my analytical approach, before concluding this section with a discussion of the limitations of my design.

Overview of Experimental Design

Randomized controlled trials (RCTs) are considered the gold standard of causal analysis (Rubin, 2008) as they mitigate the concerns of several common sources of bias, such as selection bias and other forms of omitted variable bias. The framework underlying RCTs is the potential outcomes framework, also known as Rubin's Causal Model (Evans, 2021; Holland, 1986;

Murnane & Willett, 2010). In an experiment with one treatment arm, a given individual *i* would experience outcome y_{1i} under the treatment condition and y_{0i} under the control condition. In an ideal world, we would be able to observe both conditions for the individual and the individual treatment effect would be the difference between the two potential outcomes. To assess an average treatment effect, we would average together the individual treatment effects of a group of individuals. In reality, an individual can be assigned to only one group, and we are unable to observe their outcome had they been assigned to the other group. This alternative outcome, also known as the counterfactual, is what we aim to mimic when employing experimental and quasi-experimental designs.

Since RCTs utilize treatment and control groups of individuals (or groups of individuals) that have been randomly assigned, we expect that these groups are, on average, equivalent to each other on all pre-treatment observable and unobservable characteristics. Given that the only difference between these groups is whether they receive the treatment or business-as-usual (i.e., control), these groups can serve as credible counterfactuals for each other. Any difference between the two groups can be attributed to the treatment and represents the average treatment effect.

To estimate the causal effect of an informational campaign on students' FAFSA filing behavior, I randomly assigned high schools (and the seniors within) to either a treatment group that received information about the Last-Dollar Scholarship or to a control group that received no scholarship information. As I will describe in detail below, I used a three-level cluster RCT, in which students were clustered within schools within blocks and randomization occurred at the school level. I created a four-category block variable, based on high school size and historical FAFSA filing rates, to help ensure balance between the groups during randomization.

Data. I used de-identified, student-level administrative data from Iowa College Aid and Iowa Department of Education. These records included data on students' high school attended; demographic characteristics; career and technical education (CTE) participation; and FAFSA filing status.

Sample. I implemented the intervention at rural public high schools in Iowa (N = 294). I excluded alternative and virtual high schools (N = 15) from my sample, for a total of 279 sample high schools. I excluded these two school types because they serve a distinct population of students whose college-going patterns are likely quite different than the other schools in my study. Additionally, the virtual format does not align with my intervention design of displaying and distributing print materials. I excluded non-binary students (N=40) from my sample, rather than grouping them with either male-identifying or female-identifying students. I elaborate on this decision, driven by student privacy concerns, in the limitations section. I excluded 4 students from my analytical sample due to missing covariates (i.e., free- and reduced-price lunch status). There were approximately 22,000 high school seniors in the class of 2023 across the schools in my analytical sample, with class sizes ranging from 7 students to 551 students (mean = 138.6, SD = 118.7).

A summary of sample student demographics is displayed in Table 3.2. In total, 48% of my sample was comprised of female-identifying students. The majority of students identified as White (83%), followed by 10% as Latinx, 3% as Multiracial, 2% Black, 1% Asian, and less than 1% as Native American or Pacific Islander. Approximately a third (32%) of the students in my sample were eligible for free-or reduced-price lunch. About half (53%) of the students were considered CTE concentrators, 11% received Special Education Services, and 11% participated

in a Gifted and Talented Program (these categories are not mutually exclusive). Lastly, around 10% of the students in my sample were non-native English speakers, split between those who were English proficient and those who were not.

Table 3.2 Descriptive Statistics for the Experimental Sample

Variable	**Experimental Sample** (*N*=21,646)
Female	48%
Race	
White	83%
Latinx / Hispanic	10%
Multiracial	3%
Black	2%
Asian	1%
Native American / Pacific Islander	1%
Free- or reduced-price lunch (FRL) eligible	32%
CTE concentrator	53%
Received Special Education services	11%
Participated in Gifted and Talented program	11%
English proficiency status	
Native English speaker	92%
English-proficient linguistic minority student	5%
English language learner	4%

Source: Author's calculation of Iowa College Aid administrative data
Notes: Career and Technical Education (CTE) concentrators are identified based on the state's definition: students who completed 1.5 more Carnegie units of coursework (3 semesters) in a single service area during high school. Due to rounding, totals may not equal 100%.

Defining Rurality. To identify rural high schools, I used the U.S. Department of Education (ED) National Center for Education Statistics' locale framework, which builds off the Census Bureau's rural and urban definitions. The NCES classification scheme consists of four basic locale types (city, suburban, town, and rural), each with three subtypes (Table 3.3) and is the most commonly used definition in rural education and college access research (Sowl & Crain, 2021; Thier et al., 2021). For the purpose of my study, I considered schools in areas

identified under this framework as “rural” or “town” to be rural high schools. Based on this definition, there were approximately 22,000 rural high school seniors at 279 rural high schools across the state of Iowa.

Table 3.3 National Center for Education Statistics Locale Classifications and Criteria

Type	Subtype	Criteria
City	Large	Territory inside an Urbanized Area and inside a Principal City with population of 250,000 or more.
City	Midsize	Territory inside an Urbanized Area and inside a Principal City with population less than 250,000 and greater than or equal to 100,000.
City	Small	Territory inside an Urbanized Area and inside a Principal City with population less than 100,000.
Suburban	Large	Territory outside a Principal City and inside an Urbanized Area with population of 250,000 or more.
Suburban	Midsize	Territory outside a Principal City and inside an Urbanized Area with population less than 250,000 and greater than or equal to 100,000.
Suburban	Small	Territory outside a Principal City and inside an Urbanized Area with population less than 100,000
Town	Fringe	Territory inside an Urban Cluster that is less than or equal to 10 miles from an Urbanized Area.
Town	Distant	Territory inside an Urban Cluster that is more than 10 miles and less than or equal to 35 miles from an Urbanized Area.
Town	Remote	Territory inside an Urban Cluster that is more than 35 miles from an Urbanized Area.
Rural	Fringe	Census-defined rural territory that is less than or equal to 5 miles from an Urbanized Area, as well as rural territory that is less than or equal to 2.5 miles from an Urban Cluster.
Rural	Distant	Census-defined rural territory that is more than 5 miles but less than or equal to 25 miles from an Urbanized Area, as well as rural territory that is more than 2.5 miles but less than or equal to 10 miles from an Urban Cluster.
Rural	Remote	Census-defined rural territory that is more than 25 miles from an Urbanized Area and also more than 10 miles from an Urban Cluster.

Source: National Center for Education Statistics: https://nces.ed.gov/programs/edge/Geographic/LocaleBoundaries

In deciding whether to include the “town” schools in my rural definition, I sought out the expertise of the folks at Iowa College Aid, who had more contextual knowledge of Iowa geography and school districts. Based on the list of the schools that fell into each of the town subtypes, they recommended that I include all three subtypes in my rural definition. Further, Dunstan and colleagues (2021) notes that “students who live in small towns and rural

communities in counties that contain an urban center often face similar challenges as students who live in small towns and rural communities in counties without an urban center…As such, we might expect similar outcomes for them in college" (p. 70). This provided justification for grouping together the town and rural high schools. Lastly, it is worth noting that in my study I did not compare rural and non-rural high schools, but rather focused only on those students graduating from rural high schools. Given this, the exact line that is drawn was less imperative and I erred on the side of being overly inclusive. As discussed below, I ran a specification check that estimated the effect of the intervention on only those schools meeting the NCES rural definition.

Measures

Treatment. There were two treatment arms in this study, (1) posters and (2) posters + handouts. Students in the untreated control group served as the comparison. Treatment was at the high school level, with entire senior classes either receiving one of the treatment arms or serving as the control group. Of the 279 total high schools in the study, students in 92 of the schools received the posters only treatment (posters); students in 95 of the schools received the more intensive treatment with both posters and handouts ("handouts"); and students in 92 of the schools served as the control group (control). My results represent the intent to treat since some treatment group students were likely not exposed to the treatment. In some cases teachers and counselors may not have hung up the posters / distributed the handouts, and in other cases the student may have just not seen the materials in their school.

Both treatment arms were testing the effect of targeted information about a scholarship program on students' college-going behaviors. However, there were some differences between the two treatments that I expected would cause them to have differential impacts on student

behavior, namely: (a) the format and intensity of the information provided and (b) the source of the information. In terms of the format and intensity, the posters were distributed in public spaces throughout the school, but it is likely that some treated students did not notice the posters. In contrast, the handouts were distributed directly to students, so it is reasonable that those students who received the handouts at least read over the material, even if their engagement ended there. Regarding the source of the two sets of the materials, the handouts were distributed by English teachers, ideally alongside a short overview of the scholarship program. The seniors would have had an established relationship with their teacher, and the literature points towards high school teachers being an important source of college information and mentorship (Griffin et al., 2011; Sims & Ferrare, 2021; Whiteside, 2021).

Outcome. I measured the effect of each of my two informational treatment arms on FAFSA filing. I used FAFSA filing as a proxy for college enrollment behavior because I expected that my intervention would induce rural students into Last-Dollar Scholarship programs who would not otherwise attend college, and therefore were unlikely to file their FAFSA in the absence of the treatment. To be eligible to receive the Last-Dollar Scholarship, individuals must file their FAFSA by the predetermined deadline, which was July 15 for the 2022-23 school year. Given this, I expected that if my intervention impacted students' college enrollment behaviors, I would be able to pick up at least some of this movement via FAFSA filing rates. I measured FAFSA filing as a dichotomous variable equal to one if a student filed their FAFSA by the end of the school year (measured as May 31, 2023). For context, the mean FAFSA filing rate across rural Iowa high schools was 55% in 2022 (as of May 31), ranging from 24% to 86% with a standard deviation of 11 percentage points. The outcome measure cutoff occurs prior to the income-based eligibility restrictions that were added to the Last-Dollar Scholarship for the 2023-

24 academic year, discussed above. These eligibility criteria changes were announced on June 1, 2023, so I do not expect that they impacted my experimental results.

Covariates. To increase the precision of my estimates, I included the following student-level demographic and academic covariates in my model: gender; race/ethnicity; free- or reduced-price lunch eligibility; whether student received special education services; whether student participated in a gifted and talented program; and students' English proficiency status.[17] Prior studies have found these characteristics to be related to FAFSA filing and postsecondary enrollment (e.g., Bruecker, 2021; Irwin et al., 2022; Kofoed, 2017; Wells et al., 2023) and Perna's model of college choice, which guides my study, highlights the role that individual-level contextual variables play in influencing students' college choice decisions. At the school-level, I controlled for prior-year (i.e., 2022) FAFSA filing rate.

Intervention Design

The Last-Dollar Scholarship informational campaign launched in November 2022 and consisted of marketing materials (i.e., posters and handouts) about the Last-Dollar Scholarship. The posters and handouts (Figure 3.4) provided an overview of the Last-Dollar Scholarship and encouraged students to file the FAFSA if they were interested. A QR code was provided that students could scan and be taken to Iowa College Aid's Last-Dollar Scholarship website, where they could learn more about the program. The materials were created in close partnership with Iowa College Aid to ensure that the intervention I created was something that the state could, in terms of logistics and cost, implement and expand upon in future years if desired. The materials

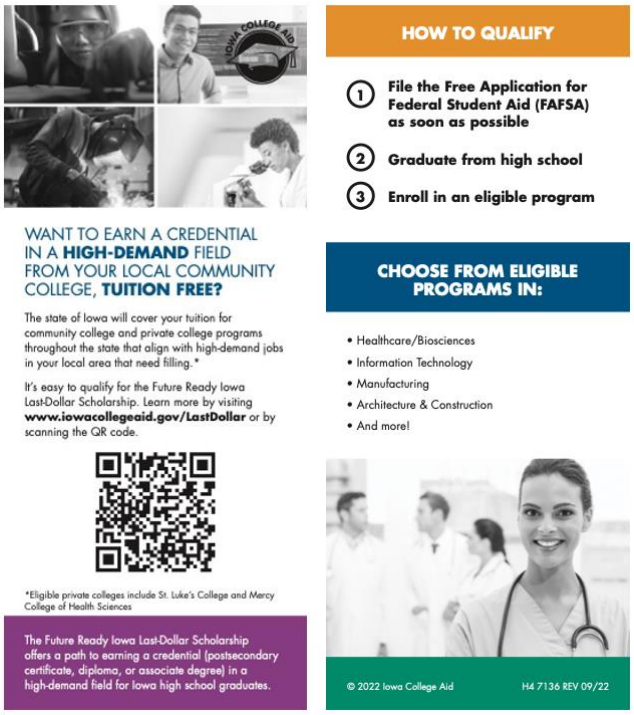
[17] For this measure, I categorized students into three categories: (1) Native English speaker, (2) English proficient linguistic minority student, and (3) English language learners. Students' English language proficiency shapes their educational resources and schooling experience, as well as their post-high school pathways (e.g., Flores & Drake, 2014; Kanno & Cromley, 2015).

used in the intervention followed a similar format to other marketing materials put together by Iowa College Aid and were created by the organization's graphic designer.

Figure 3.4 Informational Campaign Materials

(a) Poster

(b) Handout



Notes: Campaign materials created through a collaboration between author and Iowa College Aid staff

The materials were designed with a rural student audience in mind, highlighting college-choice considerations that the literature has shown to be central to rural students' college-going decision-making process and that I therefore expected to be related to rural habitus and layer 1 of Perna's model of student college choice (Perna, 2006a)—the conceptual framework guiding my study. Given the evidence that rural students tend to seek postsecondary programs that will lead them to a specific career with stable earnings (Cox et al., 2014; Robbins, 2012; Schmitt-Wilson et al., 2018; Sims & Ferrare, 2021; Tieken, 2016), I highlighted that the Last-Dollar Scholarship aims to be a pathway into these types of high-demand jobs with current availability. Rural students often have expressed preferences to remain nearby their home communities after

graduating high school (Ardoin, 2017; Carrico et al., 2019; Chenoweth & Galliher, 2004), so I emphasized the local focus of the program, both in terms of the location of the schools as well as that fact that the credentials align with job opportunities in students' local areas. Lastly, financial concerns are a key factor driving rural students' college choice decisions (Ardoin, 2017; Chenoweth & Galliher, 2004; Goldman, 2019; Whiteside, 2021; Yang & Venezia, 2020), so I highlighted that the scholarship enabled students to earn a college credential tuition-free.

To get input on my materials and the intervention details, I held a virtual focus group in April 2022 with 11 high school counselors from high schools throughout Iowa. I made several changes to the printed materials based on counselor feedback, including editing the language to be more accessible to high schoolers (e.g., I defined credential) and adding photos that were more representative of a span of eligible Last-Dollar Scholarship programs. The counselors also provided helpful feedback about the implementation of the intervention, such as the number of posters to send per school (i.e., 3-4). Overall, the counselors were excited about the intervention plan that was shared.

Intervention Logistics

Poster Logistics. Both treatment arms included the informational posters about the Last-Dollar Scholarship, which were affixed in the hallways of rural public high schools throughout Iowa. I worked with high school counselors to get these posters hung up, mailing each counselor three posters as well as a personalized letter requesting them to hang up the posters in high-traffic areas of their school (Appendix Figure A.1). In total, I sent 561 posters to 187 counselors across 187 schools (i.e., schools in either treatment arm). To encourage counselors to hang up the posters, as well as to track this for implementation purposes, I offered each counselor a small

incentive (i.e., a $5 Amazon gift card) if they sent me an email with a description and picture of the poster locations.

Handout Logistics. The second treatment arm, "handouts" consisted of the informational posters *plus* handouts distributed to high school seniors during their English class. To get the handouts distributed to students I relied on high school English teachers. I utilized English teachers because English is the only subject that Iowa requires students to take eight credits of (1 credit = 1 semester), and therefore is the subject that I expected would have the broadest coverage of seniors.

Like the counselors, I connected with these teachers by sending a package of materials and a personalized letter (Appendix Figure A.2) asking them to distribute the handouts to any seniors they taught. I included an overview about the Last-Dollar Scholarship in the letter to teachers, since I expected that many may be unfamiliar with the program or have limited information. I also provided some customized information about nearby Last-Dollar Scholarship opportunities and encouraged teachers to share this information with their students. I included the college names and most popular Last-Dollar Scholarship programs at two-year colleges within 30 miles of the teacher's high school. If there were no two-year colleges within 30 miles, I included information on the closest college.[18] I sent 7,838 handouts to 193 English teachers across the 95 schools in the "handout" condition, again offering each teacher a $5 Amazon gift card if they emailed me to confirm that they distributed the handouts. Details about how I created my list of high school counselors and senior English teachers, as well as how I determined how many handouts to send to each teacher, can be found in Appendix B.

[18] As noted in the letter, I do not include information about branch campuses, since I did not have the campus-specific information about Last-Dollar Scholarship program offerings and take-up.

Tracking Engagement. I took several steps to track engagement with the materials, since I expected that the implementation of the posters and handouts, and therefore seniors' exposure to them, would vary between schools. As discussed above, I asked teachers and counselors to confirm with me when they hung up / distributed the materials. I used this information to conduct a back-of-the-envelope two-stage estimation by treatment group – in which the first stage was confirmation of materials, and the second stage was FAFSA completion. I also tracked the number of unique scans to the QR codes on the materials as another measure of engagement with the posters and handouts.[19]

Control Group Schools. A third of the schools in my sample, and the students within, were assigned to a control group. Students in the control group did not receive posters or letters. If these schools already had measures in place to provide information to students about the Last-Dollar Scholarship program, they could continue to provide this information.

Potential Intervention Mechanisms

There are several channels through which I expected the informational campaign might influence rural students' college-going behavior: (1) providing awareness of the existence of the program that students did not previously have, (2) clearly messaging the promise of a tuition-free college credential, and (3) messaging the program in a way that resonated with rural students' post-high school preferences and goals. First, students may have been unaware of the existence

[19] I had initially hoped to be able to conduct an exploratory two-stage estimation by block group. However due to the low number of overall scans (<100), I did not end up conducting this analysis. I attempted to capture engagement at the block / material type level in two ways. First, I created a unique QR code for each treatment / block group (i.e., four distinct handout QR codes and eight distinct poster QR codes). Second, I had planned to use the GPS feature of the QR code tracking service that I used (Beaconstac), which tracks the GPS location of each scan – provided that the scanner allows their location to be shared. Using this, I would have been able to attribute a high school location to each unique scan and track how many schools had at least one individual engage with the materials via the QR code.

of the Last-Dollar Scholarship, and what was needed to induce them to take-up the program was simply information about its existence. Although the scholarship was launched back in 2018, prior to the informational intervention the scholarship was being inconsistently marketed across the state and whether students learned about the scholarship was often dependent on whether their high school counselor provided the information; if there were any local informational campaigns (e.g., sponsored by the local community college); or if the student applied to an eligible program and saw it on their financial aid offer. If this explanation was the case, then just letting students know about the existence of the Last-Dollar Scholarship may be enough to impact changes in student behavior.

More likely, there are specific types of information that would be necessary to move the needle, and the second mechanism that I anticipated might explain a prospective effect of the informational campaign was clearly highlighting the guarantee of free tuition that the scholarship provides. Rural students and their families, like many prospective college students, often perceive college as being unaffordable and see cost as a barrier to access (Ardoin, 2017; Chenoweth & Galliher, 2004; Goldman, 2019; Whiteside, 2021). Even if prospective college students were broadly aware about the availability of financial aid, financial aid is notoriously complex (Dynarski & Scott-Clayton, 2006; Page & Scott-Clayton, 2016) and students who anticipate the cost being out of reach may be dissuaded from even applying. The evidence from tuition-free two-year college programs in Knox County, Tennessee and Milwaukee, Minnesota, as well as a free tuition guarantee for low-income students at the University of Michigan, suggest that the intentional marketing of tuition-free college programs can have a substantial effect on student enrollment behavior (Anderson et al., 2023; Burland et al., 2022; Carruthers & Fox, 2016). I expected that a similar mechanism as these studies may operate in the context of my

informational campaign, and that clearly marketing to students the Last-Dollar Scholarship as a pathway to a tuition-free college education would positively impact student FAFSA filing.

The last mechanism through which I speculated scholarship marketing materials might affect student college-going behavior was by incorporating language reflective of and responsive to rural families' habitus and how it shapes rural students' approach to postsecondary decision making. Rural students may not see college or financial aid programs as being a viable option for them if these opportunities are not being marketed and messaged to them in a way that reflects their specific context and preferences. As discussed in the intervention description subsection above, the materials used in the study were designed to speak directly to key factors related to rural student college choice. These factors included rural high schoolers' focus on degree utility and preference for more vocationally oriented credentials; their preferences to remain nearby their communities after graduation; and the role of college costs and affordability. By highlighting these aspects in the marketing materials, I anticipated that the materials may help shape some students' view of how a Last-Dollar Scholarship eligible program fits into their conceptualization of self and their life goals, which in turn would impact their college-going behavior.

Randomization and Baseline Equivalence

Randomization Details. I employed a cluster randomized controlled trial (RCT) in which students, the unit at which I measure my outcome, are clustered within schools within blocks and I conducted randomization at the school level. My decision to randomize at the school level was influenced by several factors. First, since the posters were hung up in school hallways, it was not logistically possible to conduct random assignment at the individual level, since all students in a given school would be exposed to these materials. For the handouts I could

have conceivably conducted random assignment at the classroom level, but this would have presented logistical and measurement concerns (most notably, I do not have course enrollment data).

A secondary motivation for conducting randomization at the school level was to avoid contamination of the treatment-control contrast, which is one of the major potential threats to the internal validity of an RCT (Evans, 2021; Murnane & Willett, 2010). The concern here is that the behaviors of members of the control group could be influenced by members of the treatment group, resulting in a change in what constitutes the "business as usual" control condition. If randomization, and subsequently treatment, was at the individual level, contamination could result either from students in the treatment condition sharing information with their classmates and/or from counselors, teachers, and other school personnel passing along information meant only for the treatment students to some or all control group students. Fortunately, the risk of contamination between students attending the same school is avoided if the randomization occurs at the school level.[20]

Block Variable. I used block random assignment to help ensure balance between the groups during the random assignment process as well as to set myself up to explore heterogenous treatment effects across these subgroups. I used two individual variables to create a four-category block variable. The first variable was based on high school size. There was a large range in the size of the rural schools in my study, which could have implications for the types of resources provided within these schools. Using data on the number of high school graduates in the class of

[20] It is possible that there may be some counselor spillover between the treatment and control schools in instances where a counselor worked across multiple schools. I expect that this is not common—of the 186 schools receiving posters (2/3 of the total sample), there was only one instance of a duplicate counselor serving two of the schools. Counselor spillover could influence the results if: (1) the counselor took posters intended for the treatment school and displayed them at the control school, and/or (2) the counselor acquired information about the Last-Dollar Scholarship that they would not otherwise have known and subsequently shared this knowledge with students at the control group school.

2021, I split the sample schools into two groups: those in the top quartile of school size (90+ graduates) and those in the bottom three quartiles (89 or fewer graduates).

The second variable used to create the block was based on schools' historical FAFSA filing rates, measured as the percent of 2021 graduates who filed their FAFSA. Here I split the schools into two equal groups, splitting at the median FAFSA filing rate of 64% of graduates.[21] I used this block variable because schools with higher baseline FAFSA rates may have stronger college-going cultures or have more college-going resources to provide students. I expected that my intervention would have a larger impact among student at schools with lower baseline FAFSA filing rates.

I combined these two individual variables to create a single block variable with four categories. Table 3.4 shows the number of high schools included in each block. Following best practice, I included this blocking variable as a fixed effect in my model since I anticipated that school size and historical school-level FAFSA filing rates would be correlated with class of 2023 FAFSA filing. Accounting for this variable as a fixed effect should help increase the precision of my estimate by decreasing the standard error (Evans, 2021). I conducted randomization in Stata using the *randomizr* package, distributing the schools within each block evenly across the three possible assignment groups. I reran random assignment draws until I got a draw that balanced at both the school- and student-level.

[21] This measure represents the median FAFSA filing rate among high school *graduates* whereas the descriptive statistics presented in the "College-going Metrics in Rural Iowa Communities subsection in Chapter 3 and in Figure 3.3 represent FAFSA filing rates among all high school *seniors* (based on school rosters at the start of the school year).

Table 3.4 Number of High Schools per Block

Block variable	Number of high schools	Percent
Top quartile school size & above median FAFSA	36	13%
Top quartile school size & below median FAFSA	33	12%
Bottom 3 quartiles school size & above median FAFSA	103	37%
Bottom 3 quartiles school size & below median FAFSA	107	38%
Total	**279**	**100%**

Notes: Author's calculation of Iowa College Aid administrative data

Covariate Balance Check. In partnership with my colleagues at Iowa College Aid, I conducted covariate balance checks at both the school- (unit of randomization) and student-level (unit of outcome measure).[22] Results are presented in Table 3.5 and Table 3.6, respectively. Since I (and Iowa College Aid) did not yet have data on the high school class of 2023, the covariate balance checks were conducted using a historical cohort of students – the high school graduates from the class of 2021. Since I was using historical data, I was able to include in my covariate balance checks variables about postsecondary intentions and enrollment behavior. The calculation of group means included a block variable fixed effect and robust standard errors clustered by high school.

[22] Since I did not yet have access to the student-level administrative data at the time of random assignment, the covariate balance checks were conducted by a colleague at Iowa College Aid. I reviewed their code and results after each iteration of random assignment.

Table 3.5 Student Level Baseline Equivalence Check - Randomization Sample (Class of 2021 Graduates)

	Mean / Proportion			*p*-value of difference		
Covariate	**Control Group** *N* = 6,741	**Posters Group** *N* = 6,435	**Handouts Group** *N* = 6,874	**Control vs Posters**	**Control vs Handouts**	**Posters vs Handouts**
Female	49%	49%	49%	0.922	0.570	0.653
Race						
White	85%	86%	87%	0.757	0.592	0.787
Black	2%	2%	2%	0.664	0.509	0.865
Latinx / Hispanic	9%	8%	8%	0.683	0.752	0.960
Asian / Pacific Islander	1%	2%	1%	0.661	0.461	0.417
Multiracial / Native American	3%	3%	3%	0.809	0.661	0.519
FRL eligible	29%	29%	28%	0.874	0.971	0.825
Filed FAFSA	62%	63%	63%	0.990	0.424	0.534
Postsecondary intentions	77%	76%	77%	0.425	0.668	0.646
Postsecondary enrollment						
Enrolled in two-year college	29%	27%	28%	0.137	0.508	0.499
Enrolled in four-year college	30%	33%	34%	0.153	0.206	0.982
No postsecondary enrollment	41%	40%	39%	0.710	0.230	0.502
			F-test for joint significance	0.64	0.36	0.21
			p-value of *F*-test	0.7742	0.9605	0.9956

Source: Author's calculation of Iowa College Aid administrative data

Notes: *p<0.1, ** p<0.05, *** p<0.01. Cells report group means rounded to the nearest whole number. Calculation of group means includes a control for the block variable and comparisons include robust standard errors clustered by high school. FRL = Free- and reduced-price lunch eligible. Postsecondary intentions measured at time of high school graduation and postsecondary enrollment behavior is measured as of the fall following high school graduation.

Table 3.6 School Level Baseline Equivalence Check - Randomization Sample (Class of 2021 Graduates)

	Mean / Proportion			*p*-value of difference		
Covariate	**Control Group** *N* = 92	**Posters Group** *N* = 92	**Handouts Group** *N* = 95	**Control vs Posters**	**Control vs Handouts**	**Posters vs Handouts**
Female	49%	49%	49%	0.798	0.783	0.986
Race						
White	89%	89%	90%	0.750	0.854	0.622
Black	1%	1%	1%	0.685	0.511	0.814
Latinx / Hispanic	6%	7%	7%	0.947	0.951	0.994
Asian / Pacific Islander	1%	1%	1%	0.439	0.377	0.187
Multiracial / Native American	2%	3%	2%	0.409	0.885	0.337
FRL Eligible	31%	31%	29%	0.886	0.343	0.262
Filed FAFSA	63%	62%	63%	0.325	0.828	0.267
Postsecondary intentions	75%	74%	75%	0.708	0.869	0.593
Postsecondary enrollment						
Enrolled in two-year college	29%	28%	30%	0.334	0.513	0.120
Enrolled in four-year college	30%	31%	30%	0.329	0.873	0.406
No postsecondary enrollment	41%	41%	40%	0.894	0.333	0.430
			F-test for joint significance	0.69	0.45	1.34
			p-value of *F*-test	0.7317	0.9191	0.2145

Source: Author's calculation of Iowa College Aid administrative data

Notes: *p<0.1, ** p<0.05, *** p<0.01. Cells report group means rounded to the nearest whole number. Calculation of group means includes a control for the block variable and comparisons include robust standard errors clustered by high school. FRL = Free- and reduced-price lunch eligible. Postsecondary intentions measured at time of high school graduation and postsecondary enrollment behavior is measured as of the fall following high school graduation.

As shown in Table 3.5 and Table 3.6, the final set of treatment and control schools were balanced on all measured covariates. There were no statistically significant differences in mean values of covariates between either of the treatment groups and the control group or between the two treatment groups. I also conducted a joint significance test for the student- and school-level samples, in which I regressed treatment status on the full set of covariates and performed an *F*-test to assess whether the covariates were jointly equal to one. The joint significance test also indicated balance between the groups.

I conducted additional exploration into the group-level differences in FAFSA filing rates. Although there were no significant differences in this variable between groups, I wanted to be especially confident that any differences that I find between groups in post-treatment FAFSA rates could be attributed to the intervention. For this exploration, I checked whether the effect sizes between each group for baseline FAFSA filing rates met What Works Clearinghouse (WWC) standards. The WWC is a Department of Education initiative that reviews and summarizes research about the effectiveness of education programs, practices, products, and policies. According to the WWC:

- An effect size below 0.05 at baseline "satisfies the baseline equivalence standard,"
- An effect size between 0.05 and 0.25 at baseline "requires statistical adjustment to satisfy the baseline equivalence standard," and
- An effect size above 0.25 "does not satisfy the baseline equivalence standard." (Institute of Education Sciences, 2022, p. 54).

The effect size differences in FAFSA filing between each of the groups in my school-level model fell between 0.024 and 0.106 while the effect sizes for the student-level model ranged from 0.02 to 0.04. In both cases, I performed a statistical adjustment by including historical FAFSA filing as a covariate in my model, therefore meeting WWC standards. Based on the set of checks described in this subsection, I concluded that baseline equivalence was met on

observables and subsequently could assume that all groups were equivalent on average on all observed and unobserved factors related to FAFSA filing, my outcome of interest.

Statistical Power

As noted above, my study used blocked clustered randomization, in which high school seniors were clustered within high schools within blocks, and high schools were my unit of randomization. I calculated the minimum detectable effect size (MDES) for my study using the PowerUP! Program, using the calculator for a three-level fixed-effects blocked cluster random assignment design with treatment at level two (Dong & Maynard, 2013). Following conventional practice in empirical studies, including those in education, I set the alpha level (α) at 0.05 and statistical power ($1-\beta$) at 80% (Evans, 2021). I used a range of estimates for the various assumptions, including estimates on the more conservative end. For the intraclass correlation coefficient, I used a range of numbers from 0-0.2, following Hedges and Hedberg's (2007a; 2007b) guidance about ICCs to use in education research power analyses overall as well as in rural schools in particular. This range also included the default values utilized by the WWC: 0.2 for achievement outcomes and 0.1 for all other outcomes (Institute of Education Sciences, 2022). For the level one R-squared value (R_1^2) I used values between 0-0.2, a conservative estimate informed in part by exploratory estimates I conducted in PowerStats using the High School Longitudinal Study of 2009 (HSLS) data. HSLS is a nationally representative, longitudinal survey conducted by the U.S. Department of Education that follows over 20,000 individuals who were enrolled in 9th grade in 2009 as they move through high school and into college/the workforce. For the level two R-squared value (R_2^2) I used 0.2-0.6, based on a set of papers that examined the effect of informational texting interventions at the school level on FAFSA completion (Avery et al., 2021; Page et al., 2020).

Based on the above parameter assumptions, my estimated MDES ranged from 0.047 to 0.123 (Figure 3.5). Although conventional practice in many fields is to follow Cohen's (1988)'s guidelines for interpreting the magnitude of effect size of .2, .5, and .8 as small, medium, and large effect sizes, respectively, Kraft (2020) argues that smaller effects represent meaningful impacts in education interventions and advises education researchers use the lower threshold of .05 = small, .05-.2 = medium, and >.2 = large. Using Kraft's guidelines, I determined that my estimated MDES for my sample of 279 schools provided me adequate power for detecting a medium sized effect in the main models of my study. In the context of my study, an effect size of 0.1 would be an approximately 1.34 percentage point increase in FAFSA filing rates from a baseline of 52%.

Figure 3.5 Power Analysis: Calculating Minimum Detectable Effect Size (MDES)

		Rho_2 (ICC)								
		0	0	0	0.1	0.1	0.1	0.2	0.2	0.2
		R_2^2								
		0	**0.3**	**0.6**	**0**	**0.3**	**0.6**	**0**	**0.3**	**0.6**
R_1^2	**0**	0.047	0.047	0.047	0.139	0.119	0.094	0.190	0.161	0.125
	0.1	0.044	0.044	0.044	0.138	0.118	0.093	0.190	0.160	0.124
	0.2	0.042	0.042	0.042	0.137	0.117	0.092	0.190	0.160	0.123

Notes: Figure based on multiple iterations of power analyses conducted by the author using the PowerUP! Program and various parameter assumptions. Calculated for a three-level, fixed-effects blocked cluster random assignment design with treatment at level two (school-level). Based on randomizing the 279 rural Iowa public high schools into one of three randomization groups (2 treatment arms and 1 control group).

Analytic Strategy

To estimate the effect of the treatment on my outcome of interest, whether students filed their FAFSA by the end of the school year, I used a linear probability model. I used a linear probability model for ease of interpretation, however, to test whether my results were sensitive to the model chosen, I ran a specification test using a logit model. I estimated the effect of each of my two treatment arms relative to the control condition. I also ran a global linear hypothesis test

to check whether the effects of the two treatments are jointly different. My model was represented by the following equation:

$$\boldsymbol{FAFSA_{ijk} = \beta_0 + \beta_1 POSTER_{ij} + \beta_2 HANDOUT_{ij} + \gamma X_{ijk} + \tau X_{jk} + \delta_k + \varepsilon_{ij}}$$

where for each student *i* in high school *j* in block *k,* $\boldsymbol{FAFSA_{ijk}}$ is a binary outcome indicator of whether the student filed their FAFSA by the end of the school year (May 31, 2023). $\boldsymbol{POSTER_{ij}}$ and $\boldsymbol{HANDOUT_{ij}}$ are categorical indicators for which treatment arm a student was exposed to (randomly assigned at the school level), with students at schools who did not receive any additional Last-Dollar Scholarship marketing materials serving as the reference group. $\boldsymbol{\beta_1}$ and $\boldsymbol{\beta_2}$, my coefficients of interest, represent the causal effect of the posters and handouts treatments, respectively, on FAFSA filing. $\boldsymbol{\gamma X_{ijk}}$ represents a vector of student-level covariates and $\boldsymbol{\tau X_{jk}}$ represents the school-level covariate (historical FAFSA filing); both of which I included in my model to increase precision of my estimate. $\boldsymbol{\delta_k}$ represents the block fixed effect and $\boldsymbol{\varepsilon_{ij}}$ represents the error term. Since random assignment was conducted at the school-level but the outcome was measured at the student-level, I clustered my standard errors by high school to account for the lack of independence and subsequent correlation of outcomes between individuals from the same cluster (i.e., high school).[23] Since there was likely some non-compliance, for example counselors not hanging up posters in their schools and teachers not distributing the handouts to their students, my estimates represent the intent-to-treat. As discussed previously, I collected some information from counselors and teachers about the extent

[23] As discussed in Evans (2021), there is a concern that clustering standard errors can lead to an over rejection of the null hypothesis in studies with a low number of clusters. Although there is not agreement on the exact number of clusters this entails, my number of clusters per treatment arm (~93) exceeds the 50-cluster threshold identified by Duflo et al. (2007) and the 15-cluster threshold recommended by Hayes & Moulton (2019).

to which they distributed the materials, and also tracked scans of the QR codes on the materials and used these data to help contextualize my results.

I experienced no student- or school-level attrition due to non-response. I received data directly from Iowa College Aid for all 279 rural schools that were initially randomized. Demographic and outcome variable (i.e., FAFSA filing status) data is available for all students who were enrolled at a school in my sample at the start of the school year. As discussed in the sample subsection above I excluded 40 non-binary students from my sample (to avoid grouping them with female- or male-identifying students) and excluded 4 students due to missing FRL status. My results represent the intent to treat since some treatment group students were likely not exposed to the treatment. In some cases teachers and counselors may not have hung up the posters / distributed the handouts, and in other cases the student may have just not seen the materials in their school.

Exploratory Subgroup Analyses. I examined whether the informational intervention had differential effects for certain subgroups of students. While the full sample results should be interpreted as confirmatory, these subgroup analyses were exploratory as I did not make any corrections to account for multiple hypothesis testing. I tested for heterogenous treatment effects on the following measures: gender; family income; race/ethnicity; high school CTE participation; and by block. I conducted my subgroup analyses by restricting my sample to students in my subgroup of interest and rerunning my model for those students only.[24]

I tested for heterogenous treatment effects across several demographic characteristics. Given the lower baseline rates of FAFSA filing among rural males vs females (44% vs 61%,

[24] I also tested for heterogeneous treatment effects by running my main model and adding interaction terms where I interacted each of the treatment group indicators with the relevant subgroup indicator variable (e.g., race/ethnicity). I found similar results as when I ran the models on the restricted subgroup samples.

respectively, see Figure 3.3), as well as the gendered nature of many traditionally rural and Last-Dollar Scholarship-eligible jobs, I expected that I might find a larger effect among rural males than females. In their review of 33 different two-year Promise programs, Gándara and Li (2020) found that the effects of the program varied by student race/ethnicity with the strongest effects among Black and Hispanic/Latinx students. Following their lead and motivated by the FAFSA completion gap by race/ethnicity in my sample (Figure 3.3), I tested for differential effects of my informational campaign by race/ethnicity. Since lower-income students tend to be more price sensitive relative to their higher-income peers (Hurwitz, 2012; Kim, 2012) and file their FAFSA at lower rates (Figure 3.3), I ran the model separately for students who were and were not eligible for free- or reduced-price lunch, expecting to find a larger effect for eligible students.

I also tested for heterogenous treatment effects for students who participated in multiple CTE courses during high school (i.e., CTE concentrators). Due to the overlap between the high-demand fields eligible for the Last-Dollar Scholarship and the coursework and career paths that fall under secondary CTE, I anticipated that CTE concentrators would be particularly interested in and benefit from the informational intervention and that I would see a larger effect among this subgroup of students. I followed Iowa Department of Education, as well as the National Center for Education Statistics (NCES)'s definition of CTE concentrators (ACTE, 2019): a student who completed 1.5 or more Carnegie units of coursework in a single service area by the time they graduate high school (1 semester-long class = .5 Carnegie units). There are six different service areas: (1) Agriculture, food, and natural resources; (2) Information solutions; (3) Applied sciences, technology, engineering, and manufacturing, including transportation, distribution, logistics, architecture, and construction; (4) Business, finance, marketing and management; (5)

Health sciences; (6) Human services. Based on this definition, approximately half (53%) of the students in my sample were CTE concentrators.

Finally, I tested whether there were differential treatment effects by block group. Students at both smaller schools as well as those with lower baseline FAFSA filing rates may have had less access to college-going counseling and resources, which are related to higher FAFSA filing and college-going rates (Belasco, 2013; Owen, 2012; Poynton & Lapan, 2017). Subsequently, I expected that the intervention would have a larger impact among these students relative to those attending larger schools or schools with higher baseline FAFSA filing rates.

Robustness Checks. I tested the robustness of my results to several alternative specifications. First, I checked the sensitivity of the results of my fully specified model to more basic versions of the model. Randomly assigning schools to treatment and control conditions as I did should create comparable groups and remove the need to include covariates in the final model - though their inclusion helps increase precision. I started by running a naïve version of the model, including only block fixed effects. Next, I added in student-level demographic controls, followed by a control for prior-year school-level FAFSA filing rates. Lastly, I added the clustered standard errors by high school.

To test the sensitivity of my operationalization of rural high school, I estimated my model using two alternative definitions of rural. For the first alternative definition, I limited my sample to only those schools categorized as rural by NCES locale classifications, excluding those schools that fall under the town classification. For the second alternative definition, I used the Rural Iowa Primary Care Loan Repayment Program[25] definition, which defines a town as rural if

[25] The Rural Iowa Primary Care Loan Repayment Program provides student loan forgiveness for doctors serving in rural service areas. For more information, visit: https://iowacollegeaid.gov/RuralIowaPrimaryCareLoanRepaymentProgram

it is located more than 20 miles from a city with a population of at least 50,000. The first alternative definition included 207 of the 279 rural schools in my preferred specification, while the second included 226 schools.

I also ran a robustness check in which I measured the outcome at the high school level. My preferred specification used a student-level analysis, since doing so allowed me to include student-level covariates in my model. I checked the sensitivity of my results to using a school-level model since that is the level at which treatment was conducted. I also tested whether my results were robust to using a logistic regression modeling approach. My preferred model used a linear probability model for ease of interpretation. However, since either approach can be used, I tested the sensitivity of my results to my model choice. I also reran my model using an alternative timing for my outcome variable. While my main model uses a FAFSA filing cutoff of May 31, 2023—aligning with the end of the school year—I tested the sensitivity of my results to a July 15, 2023 cutoff, which aligns with the state's deadline for the scholarship program.

Lastly, as I discuss in the subsequent limitations section, I found that, although my *randomization* sample satisfied a covariate balance check, there was some imbalance in my *analytical* sample. This was driven by the historical FAFSA filing variable and the fact that, as I realized after conducting my initial analyses, there is considerable variation in the school-level FAFSA filing rate at the rural schools in my study. Though I remain true to my pre-specification plan of using prior year (i.e., 2022) FAFSA filing rates as my main specification, I also tested the robustness of my model to using a school-level FAFSA covariate that averaged the prior five years of FAFSA filing rates.

Limitations

I discuss three sets limitations of the quantitative portion of my study: those related to implementation fidelity; covariate imbalance in my analytical sample; and compromises between statistical power, specificity, and participant privacy in my subgroup analyses. First, there are several limitations related to the fidelity of the intervention as executed. Some students in the handout treatment may not have received a handout, for example if they were in a class where the teacher did not distribute the handouts or if the student was not enrolled in an English class their senior year. There was likely some non-compliance for the posters treatment as well, either because students attended a school in which counselors did not hang up the posters or because students did not notice the posters that were in their school. For this study I took extra steps towards mitigating and accounting for this noncompliance – I wrote customized letters to teachers and counselors requesting their assistance and offered a small incentive for their partnership. I followed-up with those individuals who I had not heard from by early December, sending emails to 192 teachers and 170 counselors. Further, tracking the distribution of materials as well as the number of unique QR codes for the posters and handouts provided me with a rough measure of student exposure to the materials, which I used to help contextualize my results and approximate a ballpark treatment on treated estimate. Nonetheless, this experiment was meant to be a test of a real-world intervention, and these limitations were representative of how informational campaigns operate outside of researcher-controlled settings.

Another set of limitations pertains to the covariate balance among the analytical sample and variation in the outcome variable. Given the timing of the experiment, I randomized my sample, and tested for covariate balance, using data on rural high school graduates from the class of 2021. Based on this sample, the three groups are balanced on all individual covariates. When I

reran a covariate balance check using my analytical sample—high school seniors in the class of 2023—the handouts and control groups were no longer balanced. This imbalance is present both in a joint *F*-test that accounts for all the covariates, as well as in the specific prior-year school-level FAFSA filing variable (Table 3.7). In the student-level analytical sample, there is a 3-percentage point difference in means between the posters and control groups, equating to a 0.22 effect size. There is a 6-percentage point difference in means between the handouts and control groups (0.56 effect size) and a 3-percentage point difference in means between the handouts and posters groups (0.29 effect size). Following What Works Clearinghouse (WWC) standards, the posters vs control comparison can meet baseline equivalence by including a statistical adjustment since the absolute value effect size is between 0.05 and 0.25. However, the handouts vs control and handouts vs posters comparisons do not satisfy baseline equivalence using the WWC standards because their absolute value effect sizes are above the 0.25 threshold (Institute of Education Sciences, 2022).[26] I investigated why there was imbalance in the FAFSA covariate in the analytical sample but not the randomization sample and found that there is sizeable variation within schools in their year-to-year FAFSA filing rates. This raises some concerns about the viability of using a school-level FAFSA rate measure as an outcome, not only in my study but in studies of rural schools more broadly. In response to this concern, I followed my pre-registered specification of using the single prior-year measure in my main model, but also conducted a robustness check that instead used a five-year average as the historical FAFSA covariate. I further explore this issue quantitatively in Chapter 4 and qualitatively in Chapter 5.

[26] When assessing baseline equivalence in the school-level analytical sample, the difference in means of the posters vs. control groups and handouts vs. posters groups are both in the range of meeting WWC standards with the inclusion of a statistical adjustment (effect sizes of 0.13 and 0.14, respectively). The difference in means between the handouts and control groups does not meet the WWC threshold for satisfying baseline equivalence with an effect size of 0.28.

Another limitation of the study stems from the small size of certain student populations at rural Iowa high schools. Due to the small number of nonbinary seniors (N=40) and to protect students' privacy, Iowa College Aid was not able provide me with data that identified nonbinary students. This necessitated that I either categorize these students alongside male or female students or that I exclude them from my sample. I choose to do the latter, though recognize that this decision renders this group of students invisible within the dataset. In my exploratory subgroup analysis I collapsed the six race/ethnicity categories that I used as covariates into two groups. I created categories that captured the racial/ethnic groups that were underrepresented in higher education in Iowa, as this classification has policy relevance. I operationalized "racially marginalized in higher education" as those students who identified as Latinx, Black, multiracial, and Native or Pacific Islander and "not racially marginalized in higher education" as those students who identified as White or Asian. Though combining these subgroups enhances statistical power, it also reduces specificity and minimizes the differential experiences of these disparate populations. In general, the lack of disaggregation in my race/ethnicity groups reflects a broader limitation present in many administrative datasets – classifying individuals into a limited number of rigid categories does not account for the heterogeneity within these groups nor the fluidity of race and ethnicity (Denton & Deane, 2010; Viano & Baker, 2020).

Table 3.7 Student Level Baseline Equivalence Check – Analytical Sample (Seniors in Class of 2023)

	Proportion / Mean			*p*-value of difference		
Covariate	**Control Group** *N* = 7,267	**Posters Group** *N* = 6,887	**Handouts Group** *N* = 7,492	**Control vs Posters**	**Control vs Handouts**	**Posters vs Handouts**
Female	48%	49%	48%	0.211	0.698	0.336
Race						
White	81%	83%	85%	0.714	0.360	0.610
Latinx / Hispanic	12%	10%	93%	0.755	0.553	0.744
Multiracial	3%	3%	2%	0.817	0.078	0.064
Black	3%	2%	2%	0.349	0.418	0.889
Asian	1%	1%	1%	0.863	0.493	0.562
Pacific Islander or Native American	1%	1%	1%	0.655	0.417	0.818
FRL eligible	33%	32%	31%	0.939	0.588	0.623
Received Special Education services	11%	11%	11%	0.634	0.843	0.750
Participated in Gifted & Talented program	11%	12%	10%	0.298	0.801	0.204
English proficiency status						
Native English speaker	92%	92%	92%	0.979	0.980	0.934
English-proficient linguistic minority students	4%	4%	3%	0.901	0.427	0.512
English language learners	4%	5%	6%	0.894	0.642	0.821
Prior year school-level FAFSA filing (5/31/22)	51%	54%	57%	0.378	0.007***	0.109
			F-test for joint significance	0.60	2.30	1.50
			p-value of *F*-test	0.842	0.009***	0.126

Source: Author's calculation of Iowa College Aid administrative data

Notes: *$p<0.1$, ** $p<0.05$, *** $p<0.01$. Cells report group means rounded to the nearest whole number. Calculation of group means includes a control for the block variable and comparisons include robust standard errors clustered by high school. Totals may not equal to 100% due to rounding. FRL = Free- and reduced-price lunch eligible.

Qualitative Research Design and Sample

I used qualitative methods, in particular focus groups with rural Iowa high school counselors, to answer my second research question: *What can we learn from high school counselors about the effectiveness of the informational campaign, how to best communicate postsecondary opportunities to high school seniors, and how to design tuition-free college programs to best support rural students?* As noted above, the qualitative portion of my study was a secondary and supplemental component to the experiment with the primary goal of helping to further understand the experimental results. With that in mind, my qualitative design was informed by case study design (Yin, 2018) however I do not consider it to be a full case study due to the limited scope of this portion of my study.[27] The "case" that I investigated in my study is the phenomenon of rural student college choice with a focus on the role of the Last-Dollar Scholarship and marketing of this program.

Sampling and Recruitment

I used convenience sampling to recruit school counselors into my study (Creswell & Plano Clark, 2017). Since I was interested in learning about counselors' experiences with and perspectives on the materials, I recruited counselors from treatment group schools. I sent recruitment emails to all 186 counselors at either a poster or poster + handout school and offered a $50 gift card as an incentive for participation. In my recruitment message, I described the focus group as being about the Last-Dollar Scholarship and best practices around communicating

[27] To be considered a full case study, my qualitative portion would need to more clearly bound and comprehensively examine the "case." For example, Yin (2018) instructs that to "cover the complexity of a case and its context a case study evaluation should rely on multiple sources of evidence" (p. 270) and use triangulation. As it pertains to my study, this could mean pulling from multiple perspectives (e.g., speaking with students or financial aid administrators) and reviewing legislative documents and records related to the Last-Dollar Scholarship.

college opportunities to seniors. While 33 counselors initially volunteered to participate, 23 attended one of the focus groups, a 12% participation rate.[28] I conducted a total of seven focus groups, ranging from 1 to 5 participants each.[29] This aligns with Hennink & Kaiser's (2022) recommended number of focus groups for achieving saturation (4-8). By the last focus group I felt that saturation had been reached, as no new themes were emerging.

A total of 24 participants were in the sample: 23 high school counselors and one College and Career Transition Counselor (CCTC).[30] In Appendix Table A.1 I provide individual demographic characteristics for my each of my participants. A summary of these individual characteristics, as well as a summary of the characteristics of counselors' schools of employment, are displayed in Table 3.8. Though one counselor declined to provide their demographics, the remaining 23 participants identified as White and the vast majority (87%) as female and from a rural place (87%). Among the counselors in my study there was a range in years of school counselor experience, but it skewed towards more-experienced counselors, with well over half (68%) having worked in the position for more than 5 years. In terms of the schools represented by the focus group counselors, schools from the smallest quartile of school size were underrepresented, as were those in the lowest two quartiles of average yearly FAFSA filing.

[28] Of the 186 emails I sent, I received notice that 18 were sent to counselors who were no longer employed at the school (evidenced by bounce-backs or autoreplies). Two counselors declined to participate, and I did not hear from the remaining 132.
[29] Although all focus groups were scheduled to have a minimum of 3 participants, one ended up with only a single participant due to no-shows.
[30] One of the school counselors extended the focus group invite to their College and Career Transition Counselor (CCTC).

Table 3.8 School Counselor Characteristics

	N	%
Gender		
Female	20	87%
Male	3	13%
Race/ethnicity		
White	23	100%
Rurality of own HS *(where they graduated)*		
Rural	20	87%
Suburban	3	13%
Years of experience *(as school counselor)*		
1-2 years	2	9%
3-5 years	2	9%
6-10 years	3	14%
11-15 years	5	23%
16-20 years	4	18%
21 or more years	6	27%
Size of senior class		
6-36 seniors	3	13%
37-54 seniors	7	30%
55-89 seniors	7	30%
90+ seniors	6	26%
School FAFSA filing % *(5yr average, 2018-2022)*		
30-52%	3	13%
53-56%	4	17%
57-61%	9	39%
62%+	7	30%

Sources: Focus group counselors' self-identified demographics and author's calculation of Iowa College Aid administrative data

Notes: The first four categories represent counselors' individual characteristics, the last two represent the high schools where counselors were employed. One school counselor declined to provide demographic characteristics and is excluded from the first four categories. One participant was a community-college based CCTC and therefore is not included in the last three categories. Size of senior class and FAFSA filing rate categories are based on quartiles of each measure. Totals may not equal to 100% due to rounding.

Instrument and Procedure

I conducted the focus groups using a facilitation protocol to guide the discussion (Appendix C). This protocol was created with the goal of contextualizing my experimental results and helping illuminate why the intervention did not have an effect. The questions asked counselors about their perceptions of the informational campaign as well as strategies for

communicating postsecondary opportunities. Since I anticipated that some counselors may not recall the specific materials, I presented images of the posters during the focus groups alongside the related questions. The protocol was crafted to capture counselors' thoughts about the Last-Dollar Scholarship more generally and their ideas of how the state could best support school counselors in providing college-going counseling. Additionally, the protocol was designed to collect information about whether and how the Last-Dollar Scholarship was factoring into students' college-going decisions (i.e., their cost/benefit analysis) as well as whether the marketing materials and scholarship program more broadly aligned with rural students' habitus.

I conducted virtual focus groups with participants, ranging from approximately 60 to 90 minutes each, using Zoom. Participants were assured that their responses would remain anonymous. The focus groups were recorded and transcribed verbatim. As an incentive for their participation, I provided each participant with a $50 gift card. After the focus groups, I had participants fill out a short survey to collect demographic information. I recruited counselors in early September 2023 and conducted the focus groups in late September through early October. To protect participant confidentiality, I use pseudonyms to replace counselor names.

Data Analysis

I took a deductive approach to analyzing my qualitative data. Prior to my first focus group, I created an initial codebook of a priori categories and subcategories of key concepts that I was interested in exploring through the focus groups. These categories and subcategories (e.g., usefulness of print materials; student engagement with materials; reasons for non-utilization) were based on the conceptual framework and prior literature as well as inquiries I had during the implementation and analysis of the experiment. The focus group protocol was deliberately designed to address these specific topics. I then engaged in an iterative, open-coding approach

(Saldaña, 2021) in order to capture participants' experiences and perspectives within these broad categories—adding additional subcategories as needed. Constant comparative analysis (Glaser & Strauss, 1967; Krueger & Casey, 2015) was then used to identify patterns and themes within the data. Once I had my final set of themes, I did an additional review of each transcript to check for disconfirming evidence. Table 3.9 provides examples of the categories, subcategories, and codes used in data analysis.

Trustworthiness

I used several strategies to strengthen the trustworthiness of my findings. To enhance internal generalizability (Maxwell, 1992), I aimed to recruit a large enough sample so that the claims I present are based on the experiences of multiple participants. I also listened for and incorporated in my analysis any negative or disconfirming evidence that was present in counselors' accounts. In terms of transferability, I provided thick descriptions (Guba, 1981), both of the overall Iowa rural context as well as of my participants' individual contexts. To do the latter, I report the demographic characteristics of my sample as well as some key characteristics of the schools at which they are employed.

To bolster dependability in my study, I created an "audit trail" (Guba, 1981, p. 87) by clearly documenting my research process and the decisions and choices I made throughout the study. I did this by keeping an analytical journal where I tracked my reasoning for decisions I made and my reflections throughout the process. I also wrote analytical reflection memos after each focus group and as I reviewed my data in order to reflect on the data while the groups were still fresh in my mind. This process of memoing also allowed me to identify patterns and connections among focus groups and between the focus groups and existing literature and theory

(Emerson et al., 2011). Lastly, I shared my positionality and engaged in reflexivity, considering how my personal identities influenced the way I interpreted the data.

Positionality

I acknowledge that the identities, experiences, and perspectives that I brought to this research project, such as growing up in a rural community, shaped my positionality and subsequently all aspects of the study, from conceptualization through interpretation (Gary & Holmes, 2020; Peshkin, 1988). I aimed to be reflexive of how this subjectivity showed up in my work, and I discuss a few aspects here. First, I am committed to examining and enhancing postsecondary access for rural individuals. Informed by my time during childhood living in a rural community, as well as my experiences during adulthood living in non-rural spaces and studying education policy, I believe that the education research and policy communities do not give adequate attention and support to the postsecondary access of rural students. Second, I bring a perspective that rural students are not always well-served by four-year institutions, even if the student earns a bachelor's degree but especially when they do not. I see sub-baccalaureate and CTE-focused credentials as legitimate and positive outcomes for rural students to aspire towards, which allows me to think deeply about the challenges and opportunities of a tuition-free college policy that limits eligibility to these programs. Lastly, although I bring a familiarity of growing up in a rural community into the study, my lived experiences differ from the population I was studying as I do not have experience with community colleges nor have I ever lived in Iowa. My partnership with Iowa College Aid, and in particular one colleague who is a lifelong Iowan, helped bring invaluable contextual knowledge of the context in which I situated my study.

Table 3.9 Examples of Categories, Subcategories, and Codes

Category	Subcategory	Explanation of Subcategory	Code Example	Example of Raw Interview Data
Knowledge of Last-Dollar & Engagement w/ Intervention Materials	Engagement with materials	Describes individuals' (student, counselor, or parent) engagement with the scholarship intervention materials (posters and handouts)	parents	"…but I think it was really good for the parents, especially because they don't get to hear my spiel, you know, and so I think it piqued their interest, maybe even more than the kids."
Student Engagement with Last-Dollar Scholarship	Reasons for non-utilization	Counselors' discussion of reasons that students do not take-up the Last-Dollar Scholarship, including barriers as well as other reasons students choose not to use	timing of notification	"I just wish that this whole process could be earlier in the year. It could be faster, smoother, just for that clarity for families."
FAFSA fluctuation	-	Discussions in response to question about yearly variation in school-level FAFSA filing rates	small class size	"So, for us with such small graduating numbers, when you can't remove people who do not exist in your facility anymore, your percentages move very, very quickly way or the other…."
Counselors Perceptions and thoughts on Last-Dollar Scholarship	Accolades of Last-Dollar Scholarship	Responses related to the Last-Dollar Scholarships' usefulness and importance in their schools and communities	-	"I mean, it's an awesome program. And you hate to have any complaints about it. It was such a refreshing, I had to read it twice. Like, when it first came out, I'm like, what am I missing? Like, where's the catch? You know, and so it was such as refreshing program that anybody, because we're trying to keep kids in Iowa in those shortage areas, and I think it did that."
Counselor resources and support	-	Resources that they utilize in the college-advising portion of their role as well as other ways that they are supported in this role. Also includes counselors' ideas about how they could be better supported in facilitating students' post-high school pathways.	additional capacity	"Just having the allies in some capacity to help with these situations, whether it is funding programs like ICAN that can come in and help have this conversation about financial aid or help fill out the FAFSA with families who are interested, or working with community college and making sure there are people there who can fill those roles. Helping and sharing and being allies with each other I think is incredibly important."

Notes: The subcategories and codes included in the table serve as examples and do not represent a comprehensive list

Limitations

I discuss two limitations related to the qualitative portion of my study: the implications of relying on respondents' voluntary participation and the absence of student voices. To recruit participants for my study, I invited all 186 school counselors employed at one of the treatment high schools via email. The counselors who agreed to participate likely differed in important ways from those who did not volunteer to participate and subsequently I do not expect my sample of counselors is representative of rural Iowa school counselors more broadly. Centrally, counselors who responded to an invite to discuss the Last-Dollar Scholarship likely had a decent base of knowledge about the program. The counselors that volunteered may have been more likely to engage with their students about the program, both by displaying the posters that I sent and more broadly. As shown in Table 3.8, the counselors who participated in my study were disproportionately from schools with greater enrollments and historical FAFSA filing rates. Further, my sample of counselors was skewed towards those with more years of experience. Less than 20% had 5 or fewer years of experience as a school counselor and over a quarter (27%) had more than 20 years of experience. I expect that those counselors with many years of experience may possess a deeper understanding about the Last-Dollar Scholarship, along with more opportunities to disseminate information about the program with their students. These more tenured counselors have had more years to acquire a wealth of knowledge of the counselor role and to put effective systems in place, relative to those counselors in the initial years of their career. I kept this context front of mind as I analyzed and discussed the focus group findings.

A second limitation is the absence of student voices when I am aiming to understand whether and how my materials affected student decision making. There are several points in the protocol where I rely on counselors' accounts to describe students' knowledge, perspectives, and

behaviors. Although counselors may be able to provide insights across a greater breadth of student experiences than I would have gotten with student focus groups alone, there is a risk that counselors may overlook essential elements or lack perspectives from specific subsets of students.

Chapter 4 Experimental Results

My informational intervention randomized controlled trial (RCT) addresses my first research question: *Does providing an informational campaign about a statewide, two-year college free-tuition program impact rural high school seniors' college enrollment behavior?* In this chapter I present my findings, starting with the full sample effects and followed by the results of my exploratory subgroup analysis. I then walk through several robustness checks that test these main effects to a series of alternative specifications. Additionally, I explore anomalies in the yearly school-level FAFSA filing rates and present various indicators of implementation fidelity.

Estimation of Intervention Effect

Table 4.1 displays the causal effect of each of the two treatment arms on whether students filed their FAFSA by the end of the school year (May 31, 2023). In my preferred specification—which includes robust standard errors clustered by high school and controls for several student-level demographic characteristics and school-level prior year FAFSA filing rate—there was no evidence that either treatment arm (posters or handouts) affected FAFSA filing behavior relative to the control (no materials) condition. Results of a generalized linear hypothesis (GLH) test showed that there were also no statistically significant differences in FAFSA filing behavior between the two treatment arms.

Table 4.1 Effect of Informational Campaign on FAFSA Filing

	Posters vs Control		Handouts vs Control		Handouts vs Posters
Control Group Mean	**Treatment Effect**	**Effect Size**	**Treatment Effect**	**Effect Size**	**GLH test *p*-value**
0.520	-0.008 (0.012)	0.016	0.008 (0.012)	0.016	$p = 0.141$
			***N* = 21,646**		

Source: Author's calculation of Iowa College Aid administrative data
Notes: *$p<0.1$, ** $p<0.05$, *** $p<0.01$. Unadjusted control group mean. Robust standard errors clustered by high school shown in parentheses. Effect size is calculated by dividing the impact of the program (OLS coefficient) by the standard deviation for the control group. *p*-value from Generalized Linear Hypothesis (GLH) test examines whether there is a statistically significant difference between the impacts of the two treatment arms.

Exploratory Subgroup Analysis

Since the full sample results may mask underlying variation by student subgroups, I tested whether there were heterogenous effects across gender; race/ethnicity; free-or-reduced price lunch (FRL) status; CTE concentrator status; and block (based on school size and historical FAFSA filing). I estimated my models separately for each of these subgroups of interest.[31] Following my pre-registered analysis plan, the subgroup analysis was considered exploratory, and I did not make any corrections to account for multiple hypothesis testing. Although there was some variation in the point estimate across subgroups, I found null effects for each subgroup (Table 4.2).

[31] I also tested for heterogenous treatment effects by rerunning my main model with interaction terms that interacted the two treatment indicators with the subgroup variables. Using this method I also found null effects for all subgroups.

Table 4.2 Exploration of Heterogenous Treatment Effects by Subgroup

	Posters Group Treatment Effect		Handouts Group Treatment Effect		Handouts vs Posters GLH test
Subgroup	**Effect**	**SE**	**Effect**	**SE**	***p*-value**
Full Sample *(N = 21,646)*	-0.008	(0.012)	0.008	(0.012)	0.141
Male *(N = 11,184)*	-0.019	(0.015)	-0.003	(0.015)	0.284
Female *(N = 10,462)*	0.004	(0.014)	0.021	(0.014)	0.179
Racially marginalized in HE *(N = 3,479)*	-0.004	(0.026)	0.017	(0.024)	0.413
Not racially marginalized in HE *(N = 18,167)*	-0.010	(0.013)	0.007	(0.013)	0.170
FRL eligible *(N = 6,884)*	-0.000	(0.019)	0.025	(0.017)	0.148
Not FRL eligible *(N = 14,762)*	-0.012	(0.013)	0.001	(0.014)	0.320
CTE concentrator *(N = 11,502)*	-0.012	(0.016)	0.013	(0.015)	0.110
Block 1: large size, high FAFSA *(N = 5,353)*	0.010	(0.022)	0.028	(0.019)	0.344
Block 2: large size, low FAFSA *(N = 5,937)*	-0.035	(0.026)	0.005	(0.028)	0.115
Block 3: small size, high FAFSA *(N = 4,947)*	0.002	(0.023)	0.022	(0.021)	0.386
Block 4: small size, low FAFSA *(N = 5,409)*	-0.002	(0.021)	-0.020	(0.024)	0.366

Source: Author's calculation of Iowa College Aid administrative data

Notes: **p*<0.1, ** *p*<0.05, *** *p*<0.01. Robust standard errors clustered by high school shown in parentheses. *p*-value from Generalized Linear Hypothesis (GLH) test examines whether there is a statistically significant difference between the impacts of the two treatment arms. HE = higher education; FRL = free- or reduced-price lunch; CTE = career and technical education. Racially marginalized in HE includes those students who identify as: Latinx, Black, Multiracial, and Native or Pacific Islander. Not racially marginalized in HE includes those students who identify as White or Asian

Robustness Checks

I tested the sensitivity of my specification choices by running a series of models with more simplified specifications, shown in Table 4.3. Results from a naïve model where I regressed the outcome on the two treatment arms, including only block fixed effects, suggest that there was a small, but statistically significant effect of the handouts treatment relative to the posters only and control treatments. This effect held when I added student-level demographic controls. When I added a control for prior-year school-level FAFSA filing rates, the effect of the handouts relative to the posters condition remained, however there was no longer an effect of the handouts relative to the control condition. Upon inclusion of the robust standard errors clustered by high school, the effect of the handouts compared to the posters also lost statistical significance.

Table 4.3 Alternative Specification Checks for Main Model

Block fixed effects	X	X	X	X
Student-level covariates		X	X	X
Prior year HS FAFSA rate			X	X
Robust SE clustered by HS				X
Posters	-0.001	-0.003	-0.008	-0.008
	(0.008)	(0.008)	(0.008)	(0.012)
Handouts	0.027***	0.026***	0.008	0.008
	(0.008)	(0.008)	(0.008)	(0.012)
GLH test *p*-value (Handouts vs Posters)	0.001***	0.000***	0.029**	0.141
***N* = 21,646**				

Source: Author's calculation of Iowa College Aid administrative data
Notes: *p<0.1, ** p<0.05, *** p<0.01. Robust standard errors clustered by high school shown in parentheses. p-value from Generalized Linear Hypothesis (GLH) test examines whether there is a statistically significant difference between the impacts of the two treatment arms.

I conducted a series of robustness checks to test whether my results were sensitive to alternative modelling approaches (Table 4.4). First, I ran my model using logistic regression rather than OLS analysis, finding similarly null results. I tested the model using two alternative

categorizations of rural high schools (see description in methods section above) and the results were qualitatively similar and continued to show no effect. When running the model at the school-level rather than the student-level I found no effect of either treatment arm. Examining the impact of the materials using a July 15, 2023 cutoff for the FAFSA filing outcome measure resulted in null results with point estimates similar to the main specification. Finally, I tested the model with an alternative measure for the school-level historical FAFSA covariate that averaged the prior five years rather than just prior year (i.e., 2022). Although the point estimate was slightly larger (0.013 vs 0.008), the result was not statistically significant.

Table 4.4 Robustness Checks for Main Model

	Logistic Regression	Alt Rural Def: NCES rural only	Alt Rural Def: IA Loan Forgiveness	School-level Analysis	Alt Outcome: FAFSA filing by 7/15/23	Alt FAFSA covariate: 5yr average
Posters	0.956	-0.007	-0.011	-0.005	-0.007	-0.006
	(0.056)	(0.015)	(0.012)	(0.013)	(0.012)	(0.012)
Handouts	1.039	0.010	0.008	0.015	0.009	0.013
	(0.060)	(0.014)	(0.012)	(0.013)	(0.012)	(0.012)
Handouts vs Posters GLH test *p*-value	0.132	0.245	0.118	0.128	0.148	0.111
N	**21,646**	**12,440**	**15,895**	**279**	**21,646**	**21,646**

Source: Author's calculation of Iowa College Aid administrative data
Notes: *p<0.1, ** p<0.05, *** p<0.01. Robust standard errors clustered by high school shown in parentheses. p-value from Generalized Linear Hypothesis (GLH) test examines whether there is a statistically significant difference between the impacts of the two treatment arms. Logistic regression results displayed as odds ratios.

Additional Exploration into Historical FAFSA Covariate

As discussed in the limitations section in Chapter 3, the analytical sample (seniors in the class of 2023) did not meet baseline equivalence when testing for statistically significant differences between each of the three treatment groups (Table 3.7). Since the imbalance was driven by statistically significant differences in the prior year school-level FAFSA filing rate covariate, I conducted additional exploration into how the school-wide FAFSA filing rate at rural

Iowa public high schools changed year-to-year between 2018-2022. I found that there was fair bit of variation (approximately 8 percentage points) in average year-to-year FAFSA filing rates among the schools in my study and that school-level FAFSA filing rates were only moderately correlated year-to-year. In my investigation into whether the trends in FAFSA filing coincide with the onset of the COVID-19 pandemic, I found no evidence to suggest a connection.

There was considerable variation in yearly school-level FAFSA filing rates between 2018 and 2022 (Table 4.5). The mean absolute difference when looking at individual year variation was between 7 and 8 percentage points. The movement occurred in both directions: the 25th percentile difference within a single year ranged from -5.3 to -9.2 percentage points while the 75th percentile ranged from 3.1 to 8.6 percentage points. As seen in Table 4.6, school-level FAFSA filing rates were only moderately correlated across years (~.5).

Table 4.5 Changes in Yearly School-Level FAFSA Filing in Sample Schools, 2018-2022

Year	Average Absolute Value Difference: Percentage Points	Average Absolute Value Difference: Number of Students	25th Percentile Difference: Percentage Points	75th Percentile Difference: Percentage Points
2018 to 2019	7.3 pp	7.0	-5.8 pp	5.6 pp
2019 to 2020	7.5 pp	6.8	-8.6 pp	3.1 pp
2020 to 2021	8.4 pp	7.1	-9.2 pp	4.5 pp
2021 to 2022	8.2 pp	7.4	-5.3 pp	8.6 pp
2018 to 2022	9.1 pp	8.6	-10.0 pp	4.1 pp

Source: Author's calculation of Iowa College Aid data
Notes: Calculations based on high school graduates in each year.

Table 4.6 Correlation between School-Level FAFSA Rates in Sample Schools, 2018-2022

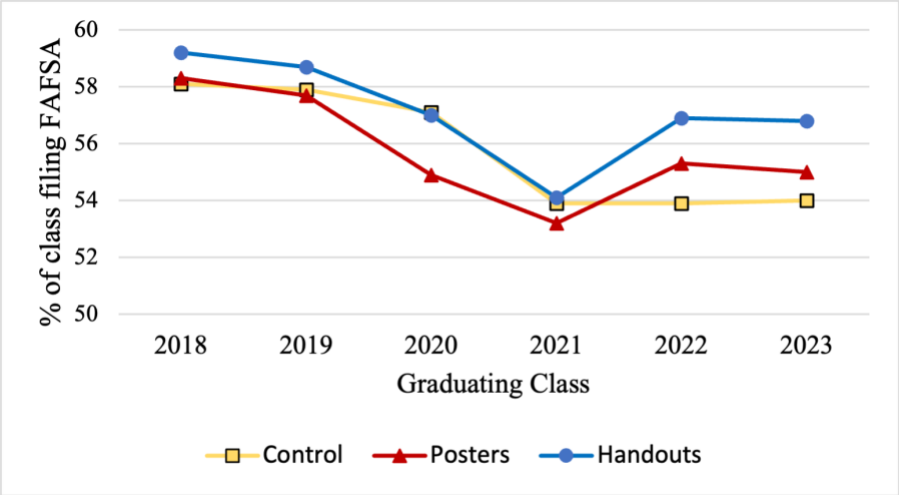
	2018	2019	2020	2021	2022
2018	1.000				
2019	0.489	1.000			
2020	0.486	0.506	1.000		
2021	0.371	0.491	0.533	1.000	
2022	0.388	0.498	0.449	0.542	1.000

Source: Author's calculation of Iowa College Aid data
Notes: Calculations based on high school graduates in each year.

Part of what was driving these substantial shifts in FAFSA-filing rate was the small size of many rural Iowa high schools. Seventy-five percent of the schools in the sample had fewer than 90 students in their senior class, so relatively small changes in the number of students who filed had a large impact on the percentage point change. As shown in Table 4.5 (column 3), the average school-level change year-to-year in terms of the number of students ranged from 6.8 to 7.4.

I also explored variation in yearly FAFSA filing rates at the treatment group level, to investigate whether there were any differential shocks that may inform the interpretation of my results. As shown in Figure 4.1, FAFSA filing rates were on the decline across all three treatment groups between 2018 and 2021. Rates increased in 2022 among the two treatment groups (posters and handouts) but remained flat in the control group. Rates appeared to remain steady from 2022 to 2023 (the intervention year) across all three groups. Table 4.7 shows that the FAFSA filing rates between treatment groups were not statistically different from each other between 2018 and 2021, but in 2022 and 2023 the rates ***were*** different between the handouts and control groups ($p<.05$ and $p<.1$ in 2022 and 2023, respectively).

Figure 4.1 School-Level FAFSA filing (by May 31), by Treatment Group



Note: Calculation of group means includes a control for block group

Table 4.7 School-Level FAFSA Filing Rates (by May 31) 2018-2023, by Treatment Group

		Proportion			*p*-value of difference		
Year	**All Schools** *N* = 279	**Control Group** *N* = 92	**Posters Group** *N* = 92	**Handouts Group** *N* = 95	**Control vs Posters**	**Control vs Handouts**	**Posters vs Handouts**
2018	59%	58%	58%	59%	0.901	0.407	0.508
2019	58%	58%	58%	59%	0.903	0.537	0.464
2020	56%	57%	55%	57%	0.166	0.988	0.145
2021	54%	54%	53%	54%	0.568	0.802	0.436
2022	55%	54%	55%	57%	0.375	0.036**	0.298
2023	55%	54%	55%	57%	0.580	0.059*	0.279

Source: Author's calculation of Iowa College Aid data
Notes: *p<0.1, ** p<0.05, *** p<0.01. Cells report group means rounded to the nearest whole number. Calculation of group means includes a control variable for the block variable. Calculations based on high school graduates in each year.

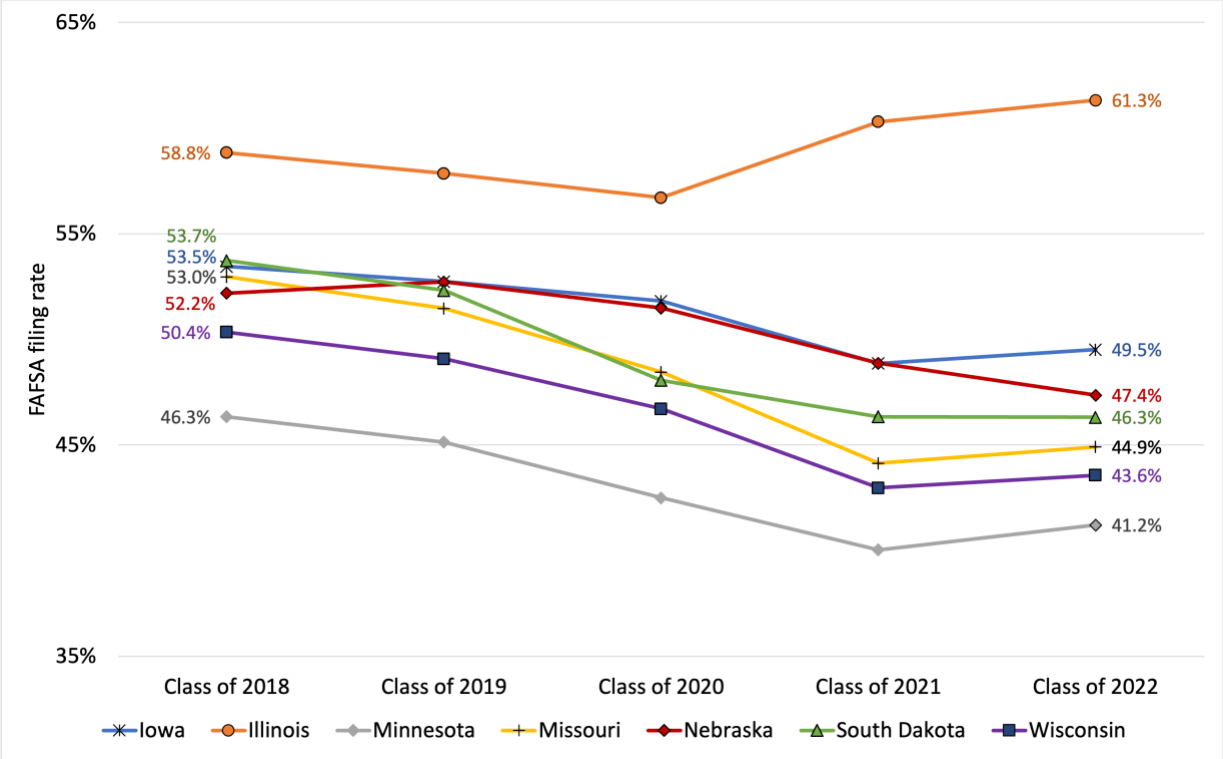
The year-to-year variation in FAFSA-filing rates has implications for the block groups I created. I used fall 2021 FAFSA filing data (from the high-school class of 2021) to calculate my block group – separating the schools that were above and below the median of all rural schools in my sample. If I had instead used a variable that averaged the school-level FAFSA filing rates

from 2018 to 2022, 70% of the schools would have been classified the same, while the remaining 30% would have been in the opposite group.

FAFSA filing rates in Iowa during the five years prior to the intervention appear to generally follow the trends in neighboring states. Figure 4.2 shows state-wide FAFSA filing rates in Iowa and its six neighboring states from 2018-2022. All the states included, with the exception of Nebraska, experienced a decline in statewide FAFSA filing rates between 2018 and 2019. Iowa, along with most other states in the figure, experienced a decrease in both 2020 and 2021 (continuing prior trends), before rates started to rise in 2022.

There do not appear to be any shocks in FAFSA filing rates at Iowa rural schools corresponding to the early years of the COVID-19 pandemic. The FAFSA filing rate across all schools in my sample dropped from 56% to 54% between 2020 and 2021 – and this downward turn is seen in many nearby states as well (Figure 4.2). These declines, however, followed a downward trend that was present since at least 2018 so it is unclear whether and how much of the decline should be attributed to COVID-19 related factors.

Figure 4.2 State-Level FAFSA Filing Rates, Iowa and Neighboring States



Source: FAFSA filing data from Federal Student Aid Completion Report Archives. School enrollment data from https://knocking.wiche.edu/data.
Note: Data represents students who completed the FAFSA by May 31 for each high school class. Includes students from public and private high schools. FAFA completion rates were calculated by the author by dividing the total number of FAFSA completers by the total number of public and private school students in each given year.

Since the prior-year historical FAFSA covariate measure was fairly noisy, I performed exploratory analysis utilizing a five-year average school-level FAFSA covariate instead. Using this variable, I tested whether baseline equivalence was met for my analytical sample; reran my full sample results; and reran my exploratory subgroup analysis. When checking for baseline equivalence in the analytical sample using the five-year FAFSA measure (Table 4.8), statistically significant differences remained between the handout and control groups in the historical FAFSA measure as well as during the joint significance test, though the *p*-values were larger in both

cases.[32] As reported as one of the robustness checks in Table 4.4, the main, full-sample estimates were still null when using the five-year average FAFSA variable, although the magnitude of the handout effect was slightly larger. When I conducted the exploratory subgroup analysis using the five-year average FAFSA covariate, there were several statistically significant results (Table 4.9). There was a 3.8 percentage point effect of the handouts (relative to the control condition) for female students and a 4.5 percentage point effect for free- and reduced-price lunch (FRL) eligible students, both significant at the $p<.05$ level. There was also a statistically significant difference between the handouts and posters condition for FRL students ($p<.05$) and a marginally significant difference for CTE concentrators ($p<.1$). Since the subgroup analysis was exploratory, I did not make adjustments to account for multiple hypothesis testing, and it is likely that some of the results would not be statistically significant with those adjustments. Still, these results suggest possible heterogenous treatment effects for certain subgroups of students that are worthy of additional exploration in future research.

[32] When testing for baseline equivalence in the analytical sample at the school-level and using the five-year FAFSA covariate, the sample achieves baseline equivalence for the poster vs control comparison as well as the handout vs control comparison. There is, however, slight imbalance in the handout vs poster groups.

Table 4.8 Student Level Baseline Equivalence Check using 5yr Average FAFSA Covariate – Analytical Sample

	Proportion / Mean			*p*-value of difference		
Covariate	**Control Group** *N* = 7,267	**Posters Group** *N* = 6,887	**Handouts Group** *N* = 7,492	**Control vs Posters**	**Control vs Handouts**	**Posters vs Handouts**
Female	48%	49%	48%	0.211	0.698	0.336
Race						
White	81%	83%	85%	0.714	0.360	0.610
Latinx / Hispanic	12%	10%	93%	0.755	0.553	0.744
Multiracial	3%	3%	2%	0.817	0.078	0.064
Black	3%	2%	2%	0.349	0.418	0.889
Asian	1%	1%	1%	0.863	0.493	0.562
Pacific Islander or Native American	1%	1%	1%	0.655	0.417	0.818
FRL eligible	33%	32%	31%	0.939	0.588	0.623
Received Special Education services	11%	11%	11%	0.634	0.843	0.750
Participated in Gifted & Talented program	11%	12%	10%	0.298	0.801	0.204
English proficiency status						
Native English speaker	92%	92%	92%	0.979	0.980	0.934
English-proficient linguistic minority students	4%	4%	3%	0.901	0.427	0.512
English language learners	4%	5%	6%	0.894	0.642	0.821
5yr average school-level FAFSA filing	53%	55%	57%	0.527	0.037**	0.170
			F-test for joint significance	0.54	1.87	1.47
			p-value of *F*-test	0.884	0.041**	0.139

Source: Author's calculation of Iowa College Aid administrative data

Notes: *$p<0.1$, ** $p<0.05$, *** $p<0.01$. Cells report group means rounded to the nearest whole number. Calculation of group means includes a control for the block variable and comparisons include robust standard errors clustered by high school. Totals may not equal to 100% due to rounding. FRL = Free- and reduced-price lunch eligible.

Table 4.9. Main and Exploratory Subgroup Effects, using 5yr Average FAFSA Covariate

	Posters Group Treatment Effect		Handouts Group Treatment Effect		Handouts vs Posters GLH test
Subgroup	**Effect**	**SE**	**Effect**	**SE**	***p*-value**
Full Sample *(N = 21,646)*	-0.006	(0.012)	0.013	(0.012)	0.111
Male *(N = 11,184)*	-0.015	(0.021)	0.015	(0.016)	0.127
Female *(N = 10,462)*	0.010	(0.021)	0.038**	(0.016)	0.124
Racially marginalized in HE *(N = 3,479)*	-0.006	(0.024)	0.013	(0.024)	0.464
Not racially marginalized in HE *(N = 18,167)*	-0.006	(0.012)	0.013	(0.013)	0.137
FRL eligible *(N = 6,884)*	0.002	(0.022)	0.045**	(0.019)	0.027**
Not FRL eligible *(N = 14,762)*	-0.001	(0.018)	0.016	(0.015)	0.330
CTE concentrator *(N = 11,503)*	-0.012	(0.020)	0.024	(0.015)	0.060*
Block 1: large size, high FAFSA *(N = 5,353)*	0.024	(0.026)	0.033	(0.022)	0.723
Block 2: large size, low FAFSA *(N = 5,937)*	-0.019	(0.048)	0.027	(0.025)	0.327
Block 3: small size, high FAFSA *(N = 4,947)*	-0.013	(0.030)	0.025	(0.025)	0.189
Block 4: small size, low FAFSA *(N = 5,409)*	0.008	(0.040)	0.027	(0.034)	0.593

Source: Author's calculation of Iowa College Aid data

Notes: *$p<0.1$, ** $p<0.05$, *** $p<0.01$. Robust standard errors clustered by high school shown in parentheses. *p*-value from Generalized Linear Hypothesis (GLH) test examines whether there is a statistically significant difference between the impacts of the two treatment arms. HE = higher education; FRL = free- or reduced-price lunch; CTE = career and technical education. Racially marginalized in HE includes those students who identify as: Latinx, Black, Multiracial, and Native or Pacific Islander. Not racially marginalized in HE includes those students who identify as White or Asian.

Implementation Fidelity and Student Engagement with Intervention Materials

In this section, I discuss the steps I took to explore the extent of intervention implementation and take-up using several different measures. To assess one aspect of implementation fidelity, I tracked the proportion of teachers and counselors who confirmed with me that they had distributed the campaign materials. As noted in the methods chapter, I included a personalized letter with each packet of informational materials that included an overview of the informational campaign and requested that the counselor/teacher email me to confirm that they had displayed the posters/distributed the handouts. I offered individuals a $5 Amazon gift card upon confirmation. I sent an email follow-up one month after the materials were mailed to all teachers and counselors that I had not yet heard from, checking in on whether the materials had been received and dispersed.

In their confirmation emails, school counselors shared the places where they displayed the posters. Figure 4.3 contains photos shared by school counselors of the posters hung up throughout Iowa high schools. Common locations included on a school counselor office bulletin board alongside other college-going materials; on the library door; in the lunch room; and in the main hallways that students use to enter the school or areas where seniors commonly congregate. Several counselors noted in their emails that the posters helped spur additional conversations with seniors and that the posters were helpful to reference during meetings with students. Although most of the teachers who responded to the follow-up email confirmed that they had distributed the handouts to seniors in their English classes, some replied that they did not have any seniors in any of their classes and some noted that they had received the materials but passed them on to the school counselors to distribute.

Figure 4.3 Intervention Posters Displayed in Iowa High Schools

Source: Photos sent to author by counselors in treatment group schools.

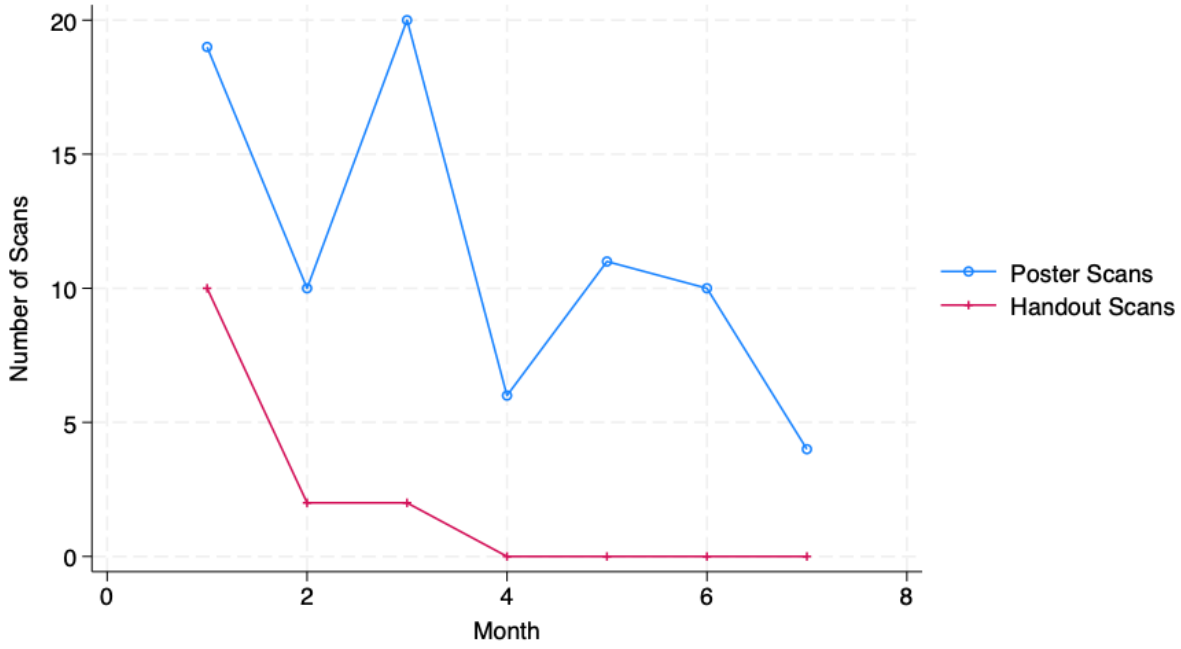
I received confirmation from 71 out of 187 counselors (38%) who were sent posters and at least one teacher from 19 of the 95 schools (20%) that were sent handouts. Broken down by treatment condition, I received confirmation from 35 of 92 (38%) counselors in the posters only treatment and 36 of 95 (38%) counselors in the posters + handouts treatment. These numbers may underreport the proportion of materials that were hung and distributed, as it is likely that some counselors and teachers received and distributed the materials but did not confirm this with me.[33] I conducted a ballpark estimate of the effect for compliers by rerunning the models and including only the subgroup of treatment schools where materials were confirmed.[34] I continued to find a null effect, though the magnitude of the point estimate for the handout treatment was

[33] On the handouts side, I received one returned package; notice from two teachers who had not received the handouts; and had five emails bounce back. For the posters, two counselors told me they did not receive the materials and I had four emails bounce back.

[34] For the schools in the handouts treatment, I included those schools where at least one teacher confirmed that they distributed the handouts, regardless of whether I received poster confirmation from the school counselor.

higher than the main model (1.6 versus 0.8 percentage points, $p>0.1$). Though with so few schools confirming implementation (only 19 of the 95 schools, or 20%) this estimate was imprecise, it underscores the importance of accounting for variation in implementation fidelity.

Figure 4.4 Engagement with Materials by Month



Source: Beaconstac QR code tracking data collected by the author

There was little engagement with the QR codes on the posters or handouts and the codes received only 94 total scans during the time period of the marketing campaign (November – May). The majority of the scans (80) were from the posters, with the QR code on the handouts being scanned only 14 times. The highest number of scans were in November and January (Figure 4.4). To put these numbers in context, there were 7,492 total seniors exposed to the handouts and 14,379 seniors exposed to the posters. Although I expect that most of the scans from the handouts came from seniors, it is feasible that the poster scans may have come from anyone who spent time in the building, including younger students, parents, or teachers. With such a low number of total scans, I did not conduct any additional exploratory analyses to

identify the high schools where the scans took place or approximate a treatment-on-treated estimate.

Chapter 5 Focus Group Findings

I conducted focus groups with school counselors employed at rural Iowa high schools to answer my second research question: *What can we learn from high school counselors about the effectiveness of the informational campaign, how to best communicate postsecondary opportunities to high school seniors, and how to design tuition-free college programs to best support rural students?* In this chapter, I first present factors identified during the focus groups that can inhibit access to the Last-Dollar Scholarship for rural seniors. I then turn back to the experiential results and draw from the focus group data to help contextualize my findings.

Several changes affecting the Last-Dollar Scholarship were taking place around the time when the focus groups were conducted, and these changes were prominent in the minds of many of the participating counselors. First, the state added income restrictions that restricted eligibility for the Last Dollar Scholarship to students whose Expected Family Contribution (EFC) on the FAFSA was at or below $20,000. This change was announced on June 1, 2023 and applied to prospective recipients from the high school graduating class of 2023 as well as individuals who were currently receiving the scholarship. Along a similar timeline, there were also changes being made to the FAFSA as part of the FAFSA Simplification Act (Weisman, 2023), which will affect FAFSA filing during the 2023-24 school year (pertaining to aid for the 2024-25 academic year). Though information about the proposed changes was available at the time of the focus groups, the Department of Education had not yet released the date that the revised FAFSA would be available for families to access. Three changes were particularly salient during the focus group

conversations. First, all self-employed individuals (including farmers) would be asked to report their assets, when previously only small business owners with 100+ employees were required to do so. Second, the calculation of a farming family's net worth would include the value of their farm. Finally, the revised FAFSA would not account for the concurrent enrollment of multiple children, whereas in prior years a family's EFC would be divided by the number of children they had simultaneously enrolled in college. As I will elaborate below, counselors were unsure what these changes would mean for their students' eligibility for the Last-Dollar Scholarship in future years, as well as their students' ability to qualify for need-based financial aid more broadly.

Challenges Hindering the Full Utility and Accessibility of the Last-Dollar Scholarship

During the focus groups, school counselors discussed certain aspects of the Last-Dollar Scholarship that present barriers for students and can prevent them from using the scholarship. I discuss four themes from these conversations: (1) recently added income restrictions that limit the Last-Dollar Scholarship eligibility to students with an expected family contribution (EFC) at or below $20,000, alongside proposed changes to the FAFSA, removes eligibility from middle-class students and self-employed families (including many farm families) who had previously benefitted from the scholarship; (2) the uncertainty of whether the scholarship will be approved by the legislature each year – and the late timing of this decision – limits the ability of students to plan around the scholarship; (3) though free-college programs are often lauded for their simplicity, certain aspects of the Last-Dollar Scholarship make it complex to navigate; and (4) the coverage of tuition only leaves many remaining costs, including expensive tool kits required for trade-focused programs.

Viewing these challenges through the lens of Perna's conceptual model of student choice (Perna, 2006a), all of these factors are elements of a state policy (level 4) that may influence

rural students' decision-making process as they are considering whether a specific post-high school pathway (i.e., a Last-Dollar Scholarship eligible program) is worth pursuing. The anticipated monetary costs of college play a crucial role in the cost/benefit analysis at the center of the model. The availability of financial aid can significantly influence students' decisions towards attending college (Cummings et al., 2021; Dynarski, Page, et al., 2022). Although I initially drew upon Perna's model to help understand the potential disconnect between the *marketing* of the Last-Dollar Scholarship and rural students' habitus, there were a number of challenges identified by school counselors during the focus groups that point towards aspects of the *design* of the program as complex and unclear. These factors may dissuade interested students from pursuing a Last-Dollar Scholarship eligible program or from pursuing postsecondary education altogether.

While my original application of Perna's model focused on exploring how to encourage more rural students to utilize the Last-Dollar Scholarship by addressing the potential disconnect between the state-funded financial aid program (layer 4) and rural student habitus (layer 1), the focus groups with counselors revealed that layer 2—the school and community context—was also a key component of this equation. As emphasized by Perna in their model, individual student behavior is shaped by the context of the system that the student exists in. School counselors are often key sources of college-related knowledge and social capital and help students develop their habitus and navigate the potential role of college in their post-high school pathways (Griffin et al., 2011; Perna, 2006a). As was clear during the focus groups, many school counselors' role with the Last-Dollar Scholarship during the intervention year went far beyond disseminating print information about the program to students. Rather, many were actively reaching out to prospective recipients and helping students navigate the nuances of the program.

Given this— as I will discuss more within the context of the subsections below—rural students' ability to utilize the Last-Dollar Scholarship may be influenced by layer 2 factors of Perna's model such as the capacity of their school counselor(s) as well as the counselor(s)' knowledge about and perception of the financial aid program.

Income Restrictions Removes Eligibility for Middle-Class Students

The income eligibility restriction that was added to the Last-Dollar Scholarship in summer 2023 (EFC <$20k) was front of mind for many of the counselors that I spoke with in fall 2023. In addition to the nature of the roll-out itself, discussed more in the next subsection, counselors worried that these changes would remove access for many middle-income students – a population that had previously benefitted from the availability of the scholarship. Concerns about the eligibility restrictions themselves were compounded by parallel changes proposed for the FAFSA for the 2023-24 school year. These changes, specifically those pertaining to the treatment of family assets and consideration of number of children simultaneously enrolled in college, as well as the unknown timing of the revised FAFSA rollout, posed additional concerns and uncertainties for counselors and their students.

Many counselors expressed concern that the income restriction would remove access to the scholarship for "the kids that I consider middle-class" [Grace], who have limited options for affordable higher education. Counselors remarked that the Last-Dollar Scholarship had been particularly beneficial for middle-income students who have financial need but are not eligible for programs targeting low-income students, with Jane saying that the program "has been significantly helpful to those students who are a little bit above Pell Grant eligibility." Some counselors worried that the income restriction would prevent middle-income students no longer

qualifying for the scholarship from pursuing a college education. This was a concern of Alice's, who commented that:

> There's so many need-based programs available. So it was really nice to have a program that was not need-based for the middle-class kids who are just over the EFC. So I do think that that's going to, I think some of those kids that went to college maybe will not now, because they do have more money coming out of their pocket. I mean, their families don't have a ton of extra.

Several counselors shared that many of their middle-class, and even higher-income, students are responsible for paying for college themselves, making the cost of college without the scholarship prohibitive. Hannah remarked on this, saying:

> Even if you are a middle-class kid, mine are all paying for school themselves. So I have really low-SES and I've got middle-class kids and I have maybe one wealthy kid out of my whole bunch. Even that wealthy kid has to pay for school themselves. So it's a different world than how I grew up. And maybe that's what lawmakers have experienced. Also, a lot of my minors are in charge of themselves. So, if you take away the thing that's supporting them…they're gonna go to work instead.

Lucy also expressed that many of her students, even some of those from "the wealthier families that could definitely afford it," are responsible for footing their own bill for college and "are trying to make a very smart financial choice for themselves, because they knew it was going to come back to them." In applying their model of student college choice to understanding how students learn and use information about financial aid and college costs, Perna (2006b) noted that a relevant dimension of habitus is expectations around whose responsibility it is for paying for college. They observed that there has been a shift towards students rather than parents being expected to increasingly shoulder the cost of college. With this shift, the group of students who

experience financial need may be more extensive than those who meet the $20,000 EFC cutoff imposed on the Last-Dollar Scholarship.

Counselors in multiple focus groups raised the topic of whether the Last-Dollar Scholarship income restriction was in line with the program's objective of getting more Iowans trained to enter high-demand fields with unfilled jobs and to "recruit people in Iowa to stay in Iowa in the shortage areas [Alice]." Some counselors, like Olivia, wondered "if we need more workers in these career areas, why do we care what their financial background is? Fill the position that is empty that our state needs." Elizabeth shared similar "frustrations," reflecting that "if the goal was truly to get students into those programs, then, despite your family's income, you're helping serve the purpose." Without an explanation from the state, counselors were left wondering what the motivation for the change was and wishing that there "would have been some explanation as to why [they added the income restriction], especially during the summer" [Hannah].

A consistent concern raised in six of the seven discussions was what the change in how families' assets will be counted will mean for students' demonstrated need and ability to qualify for the Last-Dollar Scholarship (as well as other need-based programs). The change requires all farmers and other small-business owners, not just those with 100+ employees as was previously required, to report their assets. Further, there are changes to the way that the net worth of a family's farm is being calculated that will now include the value of the farm. This will substantially increase the amount of money that most farm families are expected to contribute to their children's college education (Weisman, 2023). Focus group counselors conveyed concern about the "huge, huge issue" [Jennifer] that the change could present for farm families as well as other families with small businesses, including those employed in trade professions. Emma

described the changes to the Last-Dollar Scholarship eligibility happening alongside these changes to the FAFSA as a "double whammy," saying:

> The bit I've heard about the new FAFSA, that's really going to hurt their chances of qualifying for any federal aid. And now to add that qualification to the Last-Dollar Scholarship on top of that just feels like a double whammy to our families that are self-employed, which I think is a lot of rural America, especially rural Iowa.

Victoria conveyed her misgivings that asking about assets may turn off some families from completing the FAFSA at all. She commented that "a lot of families are very private about what their finances are" and shared her concern that "they're just gonna say, if you want to know about my assets, then forget it. I'm not filling it out."

In parts of rural Iowa, small businesses and family farms make up a large portion of the community. Much like Jennifer, Melissa expressed concerns about the gravity of the impact that the FAFSA assets change would have on the state, saying, "the whole state of Iowa I think is going to struggle." Many of the counselors voiced their apprehension about how the change might portray some families as affluent, thereby disqualifying them from need-based aid, despite their actual financial circumstances. This was the unease felt by Emma:

> That's probably one of my biggest concerns with that change is there's a population of students that on paper, their family looks like they make a sustainable amount of money, but a lot of our families whose students are interested in some of those trades programs, their parents are also in trades and maybe are self-employed, or in agriculture.

Victoria, who is herself a farmer, elaborated on the fact that merely owning costly equipment as a self-employed family does not indicate readily available funds for college tuition:

> I also am unsure how to advise our farming or other self-employed families because we keep hearing you need to put in all of your assets. Well, we farm as well. And I know that

> yes, we have machinery that is worth money. But it's not liquid cash that we can just spend on college. And so I continue to hear that from families: 'Yes, if you look at my assets sheet it looks like we have money, but I can't write a check for college.' And so that's a huge concern.

Lucy shared the concern that how the finances of self-employed families will be factored does not align with the socioeconomic reality of these households. She highlighted that this change may remove financial aid eligibility from families who qualify for free- or reduced-price lunch: "In the past, I'd probably assume that anyone that was getting free-or-reduced lunch would probably meet that EFC. But now I have no idea. Because it's goofy."

Though less commonly discussed, another concern regarding the proposed FAFSA changes that was raised in several focus groups was that the FAFSA will no longer consider the concurrent enrollment of multiple siblings when determining a students' financial need. Some counselors, including Alice, worried that this will "really burden those families that have two kids in college…if you have siblings, it used to be a benefit to you. Now, to me, that's just an extra hardship on those families that were trying to get their kids through college." Jane shared this concern, voicing that "where I think I'm gonna see a lot of injury is from families with multiple kids in college, I'm talking 2, 3, 4 kids in college where that EFC would have been cut in half before."

Lack of a Guarantee: Uncertainty and Timing Challenges

The uncertainty about whether the Last-Dollar Scholarship will be approved by the legislature each year – and the late timing of this decision and accordingly individuals' notification of their award status – presents "too many guessing games… and just too many unknowns" [John], making it challenging for students to anticipate and plan for their postsecondary expenses and post-high school pathway. This lack of predictability caused some

counselors to “give an asterisk” [Olivia] when promoting the program, warning students that it must be approved each year. The concern about this issue has grown among counselors after many students and counselors were caught off-guard by unexpected program changes during the 2023 legislature session. The scholarship’s potential to influence students’ decisions and serve as a recruiting tool may be undermined by the late notification of award status – as students often do not receive notice of the award until the end of (or even after) their senior year. Applying Perna’s model suggests that a lack of complete information about students’ supply of resources (i.e., financial aid) prevents students and their families from calculating their expected costs of college. If the availability of financial aid is a key determining factor in a student’s choice of program, then this late timing may also inhibit students from being able to calculate their expected earnings, given the uncertainty about their chosen career path. The overall atmosphere of uncertainty and unpredictability may discourage rural students and tip the scales away from them utilizing the Last-Dollar Scholarship.

The Last-Dollar Scholarship does not have guaranteed funding from the state, but rather requires annual approval – a process that typically occurs late in the academic year or even summer. While a few counselors mentioned warning their students that the scholarship had to be approved annually and was “not a sure thing” [Melissa], many assumed it’s continued availability without question. Evelyn noted “it never occurred to me that it wouldn’t be there. When [the local community college] talked about it, it wasn’t iffy. It was, ‘hey, we have this program.’” The uncertainty of the program is exacerbated by the timing of program renewal and student notification of the award, which counselors shared typically does not occur until May or later, just one or a couple months before the start of the school year. For example, in 2023, the Iowa governor signed the bill approving appropriations for the program on June 1. Although

prior to the 2023 eligibility changes many counselors did not doubt the continuity of the program, some still noted that the uncertainty places a burden on students as they navigate their post-high school plans. As Ava described,

> I think it's really hard for [students] to see how it's going to impact them. And because it is just so far down the road, so they're like, well, do I still need to apply for scholarships? Do I still need to do X, Y, and Z? Or how am I actually going to actually see this money. Because it's dependent on the legislature, even though they know they're gonna get it, and they've done their FAFSA, it can be July before they know what the impact is actually going to be for them. And they're starting school in August. So the timeline of it, I think, is really hard. And I can tell them all that, but uncertainty is such a driving emotion, that just to be left in that uncertainty for months is, I think, frustrating.

In addition to their thoughts about the specific changes in eligibility criteria, many school counselors voiced their frustration and disappointment regarding the manner and timing in which the changes were rolled out, which counselors described as "horrific" [Amelia] and "a mess" [Victoria]. The change – effective immediately - was communicated to families just months before the start of the 2023-24 academic year, meaning that some current scholarship recipients as well as those planning to start on it in the fall were no longer eligible to receive the scholarship. This "last minute" [multiple counselors] change "threw families for a loop" [Alexis]," with counselors describing the process as "not professional," [Amelia] "extremely dirty," [Hannah] and "unfair" [Lucy]. Students who were relying on money from the program had to quickly pivot – either changing their plans or coming up with the funds to "foot this bill that [they] weren't expecting" [Emma]. As Hannah explained, she "had kids that had made very specific plans, because they knew tuition was covered" and equated the last-minute change as "pulling the rug out of my kids' feet."

Several counselors raised concerns about how the rollout might affect their reputation and credibility among the parents and students they serve, worried about "looking like an idiot" [Emma] and "feel[ing] like a liar" [Victoria]. They worried that they might be perceived as providing inaccurate information, even though they were equally surprised at the decision to restrict the scholarship. Hannah expressed concern that the rollout damages the reputation of both high school counselors and community colleges, sharing that

> It totally ruins the reputation of the community college. The college didn't make that decision, the state did. But it super damages the relationship. And it damages our relationship as school counselors because we walked through all this with them and helped them understand things, and then it makes us look like we don't know what we're talking about. And it damages the relationship with the college because again, it was this promise made.

Many of the counselors shared that their experience of the rollout, particularly its last-minute nature, would change how they convey and promote the scholarship to their students. It won't change *whether* they promote the scholarship – they will continue to present it to their students as an option, however they will be "less confident in promoting" it [Emma] and "not as peppy and cheerleady" [Hannah]. Alice shared that while she used to really feature the Last-Dollar Scholarship with her students, she will now promote it "more generally, like I would everything else. Before I was emphasizing it, and I will now just be like, here's another program."

Counselors also conveyed that they will underscore the tentative nature of the program and that it is not a guarantee. Some counselors experienced "a real breach of trust" [Rebecca] with the state and expressed concerns about the possibility of last-minute changes in future years.

Elizabeth shared "I think I will just be really tentative on, you know, things change…like the disclaimer upfront that we don't know exactly what's going to happen." Jane also expressed approaching advertising the scholarship with more caution:

> So cautious again, because is the governor going to come down in June again and make a different EFC requirement. So cautious towards students, saying – at this point, it's looking like you would qualify, but always putting that in there, instead of saying, you're certainly going to qualify, because I don't know what changes are gonna come, moving forward.

The introduction of income restrictions—which many students will not know whether they meet until they file their FAFSA—alongside concern that unexpected last-minute changes could be added in future years, creates challenges for student planning. Victoria discussed how these two pieces make it "really sticky." Previously it was "much easier to plan moving forward" but "now we can't, because we don't have all of the information that we need." Rebecca described how the multiple unknowns, including changes with how the FAFSA will calculate expected family contribution, will make it difficult to help her students navigate the program:

> So I'm gonna be introducing this Last-Dollar Scholarship to them, at senior day in a couple of weeks. And being like some of you might qualify, some of you might not, depends on how much money your family makes, how much I don't know, we'll wait and see. I can maybe tell you in March, or maybe you won't know until August when they apply it or they don't. And so it might be free for you, or you might have to pay for the whole thing.

Other counselors appeared unfazed by potential uncertainty in future years. Lena shared that she "[doesn't] think it would change" how she promotes the program, and Jennifer described that "it's not going to change the conversations, it will just change a piece of the conversation."

Returning to Perna's model of college choice (Perna, 2006a), prospective Last-Dollar Scholarship recipients do not have complete information about their eligibility for the program, and subsequently their college costs, until close to or after graduation. This makes it difficult for students to plan ahead in making decisions about their post-high school plans. The funding model of the state program—resulting in this lack of guarantee—not only directly influences students' decision-making process, but also plays a mediating role through the counselors positioned in the school and community context layer (layer 2). Counselors spoke of an erosion of trust due to the last-minute change in scholarship eligibility criteria and the subsequent upheaval of the plans of both current and former students during the end of the 2023 school year. Many counselors reflected that this experience will change the way that they discuss and promote the Last-Dollar Scholarship with their students—they will emphasize the tentative nature of the program and may not express the same level of enthusiasm about the program. This may ultimately affect whether these students perceive the program as a good fit and worthwhile opportunity to pursue.

Navigating Scholarship Complexities

Counselors discussed how certain aspects of the Last-Dollar Scholarship present complexity in navigating the program for both students and counselors. These complexities include changes in scholarship details as well as variation between colleges in eligible programs and scholarship implementation. The recent changes to scholarship eligibility discussed in the prior subsection (i.e., income eligibility restrictions) adds an additional layer of complexity that raises concern among some counselors.

For some counselors and students, confusion over the Last-Dollar Scholarship starts with the name itself. In one focus group it was raised that the Last-Dollar Scholarship being called a

scholarship is “a little confusing” [Lily], since “kids have in their mind what a scholarship is, is this really that” [Ava]? The Last-Dollar Scholarship differs from other scholarships that students are familiar with. As Lily noted, “A scholarship is something you send an application for, and you go through that process. And then it’s usually pretty explicit about how much you’re receiving, upfront.”

Counselors highlighted frequently changing eligible programs and differences in eligible programs across community colleges as factors that contribute to the complexity of the Last-Dollar Scholarship. Counselors discussed the challenge of promoting the scholarship when programs can be added or removed every other year. Further, some programs are eligible for the scholarship at certain colleges but not others. As Elizabeth reflected, “I wish it was across the board though that the state said these are the programs and not individual community colleges always getting to determine that…so it makes it tough, you know?” During several focus groups, there was discussion amongst counselors about whether there was an easy to navigate document or centralized location where all this information was readily available. While some counselors mentioned familiarity with existing resources, other counselors were unaware of their existence.

Complexities regarding the implementation of the scholarship, including variation in implementation between schools, was another aspect of complexity mentioned during the focus groups. Jane shared that how the money is applied “varies from school to school. It’s very complex, and kind of challenging” and Rebecca contributed this in part to “unclear guidance from the state on how to [implement the program].” Rebecca described the challenge that this presents to her and other counselors:

> So that's been a barrier where I feel like I'm trying to explain something to students, that even the people who are literally applying these dollars can't explain it to me like I'm a 10-year-old. So how am I supposed to give mass guidance?

Frequently evolving program details, such as enrollment intensity requirements and age restrictions, also added complexity to the Last-Dollar Scholarship. It was evident in several focus groups that some counselors were unaware of certain changes that had been made to the Last-Dollar Scholarship, which hinders their ability to provide the most update-to-date information to students. For example, after discussing a recent change that Ava had not been aware of, she remarked, "Right. And I don't feel like I knew that well enough to tell kids that." Emma also commented on how the changes make it hard to keep the program details straight, saying "there's a lot at play. And it doesn't help when the information is changing, and I'm not even quite sure how to promote certain things." Jennifer shared a similar sentiment, saying "the whole awareness piece is the piece for us counselors. I feel like sometimes you don't know what you don't know. And sometimes we just don't know."

The income restrictions introduced an additional layer of complexity to the scholarship, making it unclear which students will qualify and adding difficultly for counselors trying to help students navigate whether the Last-Dollar Scholarship can and would be a good option for them. Counselors shared that it will be difficult for them to do targeted outreach about the scholarship since they do not know which students will qualify, and trying to predict eligibility with students puts the counselor in an uncomfortable position of needing to have a "weird conversation" [Lucy] with students about what their parents do and "tiptoeing" [Lucy] trying to discern whether students will be eligible for the scholarship. Emma was also worried that the income restrictions "puts a lot of pressure on us as counselors to know, in my opinion, too much about a student." She went on to explain how the proposed FAFSA change in how assets will be counted requires personal details about a student, saying: "if they're self-employed, it's not just, oh, what are your parents making a year? Give me a range. Now it's, okay, well, what of that is liquid

assets and what is machinery and equipment?" Adding to the discomfort is the fact that some of these counselors, like Emma, work at schools in small towns that they are community members of. She explained,

> And so now I'm just kind of getting into a weird place with it. I don't need a parent calling me and being like, why are you asking all these questions about... We're in a small town, we have 1,200 people in our town. 50 kids per grade. That part just starts to feel awkward in terms of like, I know way too much about your family and their business and that part of it.

In contrast to the counselors who adopted a hands-on approach when guiding their students through the Last-Dollar Scholarship, some took a more hands-off approach. They expressed little concern that not knowing their students' EFC would hinder their ability to support students, since not knowing this information has always been the case for other need-based funding opportunities. As Robert noted – "it's just another option. It's up to them to follow through and see it out."

With the intricacies and continual changes to the Last-Dollar Scholarship, both before and especially with the newly added income restrictions, a couple counselors commented that most students would need guidance in navigating the program details. Emma shared:

> I would be a little hesitant just handing this to a kid and be like, figure it out. Because especially with the new stipulations I would just worry about them figuring it out on their own. I feel if they figured it out on their own, it would be a happy accident. I don't know that they would be as intentional about it, unless they do have someone guiding them through it.

Reflecting on the additional complexity that the income restrictions add, Lucy compared marketing the scholarship to the medical commercials full of disclaimers:

> If there was this advertisement, and there's all these disclaimers, I'm thinking of those medical commercials were all the sudden they start to talk really fast, like, [fast talking sounds], you know, do not use it you're allergic to and all that.

Though many of the counselors expressed concern about certain complexities of the scholarship, others noted that, at least in certain aspects of the program, it was quite straightforward. Jennifer, for instance, remarked "I mean, the whole application process probably couldn't be more easy. Fill out the FAFSA, declare a major."

This complexity, characterized by numerous rules and frequently changing student and program eligibility requirements, compounds the challenges discussed in the previous subsections of students having the information needed to weigh their various post-high school options. Many counselors highlighted how the complex nature of the Last-Dollar Scholarship necessitates support from them to assist students in navigating program details and rules. Moreover, it requires counselors to engage in more targeted outreach—tailored to specific eligibility criteria—rather than general outreach, as not all students qualify. Given this, students' ability to utilize the Last-Dollar Scholarship is influenced by factors from the school and community layer of Perna's model (Perna, 2006a) such as the availability of high school staff knowledgeable about the Last-Dollar Scholarship as well as the capacity of counselors to provide the necessary hands-on guidance.

"A Lot More Affordable, but it's Not Free": Coverage Gaps of the Last-Dollar Scholarship

While counselors generally viewed the Last-Dollar Scholarship as a substantial benefit for their students, some counselors commented that the scholarship would be even more beneficial if it offered more extensive coverage. Counselors discussed large, uncovered costs that students face, including expensive toolkits and room and board. Due to the last-dollar nature of

the program, the amount that students can receive from the award may be crowded out by Pell or may crowd out locally available scholarships.

Some counselors, like Lucy, shared that students do not always understand "that whole cost of attendance piece." Lucy explains to her students that with the scholarship, college "is gonna be a lot more affordable, but it's not free." Grace noted that "there's a lot of other costs kids have to incur going to college. If they really want these kids to get the degree or certificate, maybe it could include housing too." Alexis also had suggestions for additional cost coverage that would be useful for students, saying it would be helpful if the scholarship "could be broader and cover books and fees, or room and board might be helpful, too." Sarah brought up that students who have to take prerequisite classes before starting a program have to pay for those classes out of pocket and noted that the scholarship could be more accessible by "starting the coverage right away."

One specific uncovered cost that is particularly relevant for some of the trade-focused programs targeted by the Last-Dollar Scholarship is required tool kits and supplies, which can be quite expensive. Several counselors mentioned the Diesel Tech/Mechanics programs specifically, with Victoria sharing "we have a lot of kids that go into Diesel Mechanics…but those tools are not covered. And that's thousands of dollars." [35] Two counselors mentioned local programs, one a non-profit and one employer-sponsored, that cover tuition for trades-programs and provide money for toolkits and other supplemental costs. Emma described the non-profit as "awesome" and described it as "something similar to what I think Last-Dollar aspired to be."

Numerous counselors commented that the last-dollar nature of the program prevents students from utilizing other potential sources of financial aid, like the Pell grant or local

[35] Iowa Community College websites list the cost of the required toolkits for Diesel Technology programs at upwards of $5,000 (e.g., Iowa Western Community College, n.d.; Kirkland Community College, n.d.).

scholarships. Evelyn remarked that "that was always one of the things that I didn't like about the Last-Dollar…I always disliked that they would apply like the Pell Grant first." She noted that, particularly with the newly added income restriction, the students who will be eligible for the Last-Dollar will already have most or all of their tuition covered by Pell, saying:

> The kids that are going to qualify are probably going to get free money anyway, and it's kind of like they exhaust the free money. And then, well, good luck paying for your housing or your toolkit. You're definitely gonna have to take out loans for that, because we've used all the free stuff.

During one focus groups it was discussed by multiple counselors that there are locally available scholarships in their communities that also only cover tuition costs, which means that students cannot benefit from both these local scholarships and the Last-Dollar Scholarship. Melissa noticed that "students are not applying for local scholarships, because they know that their tuition will be covered from the Last-Dollar Scholarship" and that this leads to "all these people that want to give money, but then it's not going to the right people. And then it's just not given." Hannah shared that she's been able to "call local scholarship people and ask them if we could use their scholarship… it's written for tuition, but I've asked if we can use it for room and board or fees instead." However, she warned that not all students "have somebody like us…that can help advocate or can work through these problems." This can impede college access because you have "kids that were made promises that then just stop, because there is an obstacle."

Summary

Taken together, the rural school counselors that participated in the focus groups spoke about the Last-Dollar Scholarship being "an incredible program" [Ava] for their communities that "helps me get almost all of my kids excited about postsecondary education" [Hannah]. Alice

conveyed “I mean, it’s an awesome program. And you hate to have any complaints about it.” Nevertheless, counselors identified several program elements that could be enhanced to more effectively meet the needs of their students and strengthen college access in rural areas. Counselors expressed concern that the income restrictions implemented in summer 2023 would constrain college access for a portion of their students interested in pursuing vocational fields, contradicting the program’s objectives.

States develop financial aid programs and other policies with the hopes of incentivizing certain student behavior. In the case of the Last-Dollar Scholarship, Iowa aimed to encourage individuals to earn credentials leading to in-demand careers. Perna’s model of student choice, which underscores that individuals’ assessment of the costs and benefits of college is shaped by their habitus and several contextual layers, provides a framework to analyze the financial aid program’s impact on the college decision-making process of rural students (Perna, 2006a). At first glance, the Last-Dollar Scholarship appears well-crafted to appeal to rural students’ habitus and align with the factors they consider important when deciding their post-high school pathways (see Chapter 2). The program enables recipients to enroll in a nearby community college, tuition-free, pursuing a credential that aligns with career opportunities available locally. Nevertheless, in this section I presented various challenges related to the Last-Dollar Scholarship, as highlighted by rural school counselors.

When viewed through the lens of rural habitus—the values and beliefs held by students in rural communities—these challenges indicate potential limitations of the program that may ultimately hinder rural students from utilizing it. For example, though many rural high schoolers focus on degree utility while making their post-high school plans (e.g., Carrico et al., 2019; Cox et al., 2014), theoretically aligning with the in-demand fields of the eligible Last-Dollar

Scholarship programs, there is a timing misalignment. The eligible programs are only determined one or two years in advance, and students who would potentially base their plans on the list of programs may already be deeply engaged in secondary vocational programs by the time the list is available. Further, for rural students who are price sensitive (e.g., Yang & Venezia, 2020) and may have heard mixed messages about the value of college (e.g., Ardoin, 2017; Keily & McCann, 2021), the complexity of the scholarship rules and uncertainty of the funding situation—whether students will receive the scholarship for their first year and have it renewed in subsequent years—may present too much ambiguity and risk for rural students who are looking for more certainty and financial security.

Students' decisions about college-going are not only shaped by the presence of aid programs, but by the details of those programs as well. For Iowa to ensure equitable access to the Last-Dollar Scholarship, not only does the marketing of the program need to resonate with rural students, but the design of the program itself also needs to reflect rural students' habitus and factors that they are considering when making their cost/benefit analysis. Counselors characterized the Last-Dollar Scholarship as complex, highlighting the value for students of hands-on-guidance to help navigate the program. In light of this, Iowa should be attentive to layer 2 factors in Perna's model, including the availability of school counselors and other school-based resources. Moreover, Iowa could gain insights from seeking input from counselors (and/or students). This feedback could both improve the program and help ensure that counselors are willing to actively support and endorse the program with their students.

Contextualizing the Experimental Results

The challenges discussed above may present obstacles to Last-Dollar Scholarship utilization that are beyond what an informational campaign can address. In this section, I present

findings from the focus group that provide additional context for the null effects of the information campaign. I summarize what I learned about (1) the extent to which students had information about the Last-Dollar Scholarship outside of the campaign materials; (2) alternative opportunities that students are pursuing instead of the Last-Dollar Scholarship; (3) counselors' experiences with communicating postsecondary opportunities to high schoolers and their families, including their perceptions of the informational campaign materials; and (4) the efficacy of using FAFSA filing as an outcome measure.

Understanding Students' Exposure to the Last-Dollar Scholarship

The goal of the informational campaign was to inform more students about the Last-Dollar Scholarship and encourage students' participation in the program. The materials were meant to be complementary to promotion of the scholarship that was already occurring and to help fill in any gaps and catch students who may not otherwise know about the program. Several questions in the focus group protocol were aimed at gaining insight into how information about the Last-Dollar Scholarship was being disseminated to rural high schoolers outside of the informational campaign. For context, the 24 participants were those who responded to an email specifically recruiting for a focus group about the Last-Dollar Scholarship. Therefore, they may represent one end of the spectrum in terms of their knowledge about and practices related to communicating about the scholarship. This subset of counselors may be particularly well-informed about the opportunity and might be sharing it with their students more actively and intensively than the typical counselor.

A Growing Awareness of the Last-Dollar Scholarship. When asked about whether students are aware of and understand the details of the Last-Dollar Scholarship, many counselors spoke of an increased awareness since the scholarship first launched in 2019. In discussing

students' familiarity with the Last-Dollar Scholarship, Lena replied that "people remember that now. When we were first starting, we had to say it and say it and say it and no one remembered what it was. But now it's like, oh, yeah, we talked about that." David shared, "I think more and more students are becoming aware of it." While counselors reported a greater overall awareness with the program, many also observed that students' understanding of the scholarship's specifics were still growing. Though students may recognize the name, they are not always familiar with the details of the scholarship or the steps they need to take to receive it. Emma and Rebecca both explained that the Last-Dollar Scholarship is less recognized among their students compared to well-established local scholarships, and that their students find value in learning about the scholarship during their senior seminar course. Emma shared,

> If I say a certain name of a scholarship, kids are like, oh, yep, I know what that one is. Whereas with the Last-Dollar, I think, that's not quite a part of our culture yet in terms of something kids can just roll off the tongue and name.

Rebecca shared a similar sentiment, describing the scholarship as "not as baked into the culture the way that certain specific local scholarships kids seem to know about their senior year are" and said that although there is some recognition of the scholarship, students "learn what it is their senior year." Ava remarked that though there is a general awareness of the scholarship, there is less understanding of "how to get it. I get tons of questions about that" and that many of her students "don't understand how it actually works, that it's simply a function of the FAFSA…I think there's still some confusion with that."

Several counselors discussed their own growing awareness and comprehension of the program since its launch and how this, in turn, has impacted their ability to convey information about the program to their students. In the initial years of the Last-Dollar Scholarship, some counselors had a "lack of knowledge about it" [Emma] and "really didn't know much about it"

[John]. Subsequently, these counselors did not promote it much to their students. This was Lucy's experience, who shared: "When it first started, it was kind of confusing. I felt like we didn't, maybe me personally, I didn't really understand it then either… I just didn't have much awareness about it. And so I didn't say a lot."

Variation in Information Shared by Counselors. All the counselors involved in the focus groups said that they shared information about the scholarship with their students, though there was a range in the timing, setting, and regularity with which this information was conveyed. Some students heard about the scholarship early and often, with counselors first introducing the scholarship to students in middle school and continuing to share more information each year until students graduated. These early introductions often occurred either during a middle school careers class or during transition meetings that counselors had with eighth graders (and sometimes their families) as the students prepared to enter ninth grade. Counselors who took this early and often approach mentioned the program in more "broad strokes" earlier on and started to "dial in" [Riley] as students got to be juniors and seniors. These counselors generally felt confident that seniors were aware of the Last-Dollar Scholarship. This was the approach taken by Hannah, who shared**:**

> Both my schools are 7-12. So I mean, we talk about it as young as seventh grade when they're just flailing around trying to get through junior high. And then there's a careers class that's taught in eighth grade that sometimes I go into and speak about it specifically and show them different ones that are listed that year. And then they're going to hear about it again and again. And then especially junior year, if there's prereqs to the program that I know they want then we're trying to knock those down throughout junior and senior year. And then they get it, their parents specifically get it the end of junior year when I do some financial aid night things with them. And then they get it really heavy in senior year because I have them in class...

Other students were not likely to hear about the Last-Dollar Scholarship from their school counselor until later in their high school journey, in their junior or senior years. Some counselors delivered information about the program during college readiness or financial literacy classes that seniors were enrolled in. Certain schools also organized college planning presentations or special college days where counselors would present on the Last-Dollar Scholarship along with other financial aid opportunities. Counselors also commonly reported discussing the Last-Dollar Scholarship with their students during one-on-one meetings, either introducing the scholarship for those unfamiliar or delving deeper with those who already had some knowledge of the program. Some counselors mentioned discussing the program with all seniors, while others indicated a more selective approach, primarily discussing the program with students they believed would have an interest in the program or who approached them with questions. A common theme among many of the focus group participants was that their small school size facilitated them developing a close connection with their students' interests and post-high school goals. This allowed the counselors to customize their communication of post-high school opportunities and support, including "know[ing] the group of kids that you would want to target with [the Last-Dollar Scholarship]." [Lena]

Community Colleges: "They're always talking about it." Community colleges were commonly mentioned as a central source providing information about the Last-Dollar Scholarship. Given that the Last-Dollar Scholarship covers tuition at two-year colleges, the community colleges have an incentive to encourage engagement with the program and some use it as "a recruiting tool." Jennifer, a school counselor who had previously been employed by a community college, noted that community college representatives are frequently talking about the Last-Dollar Scholarship with students. As she described, "when the kids meet with

community colleges, I mean they're always talking about it. So they're getting it from them as well when they come to visit our schools or if they go on a campus visit."

School counselors shared various ways that the community colleges engaged with high schoolers about the Last-Dollar Scholarship program. Some high schools have embedded College and Career Transition Counselors (CCTCs) – individuals who are affiliated with a community college and work with one or more high schools to help facilitate college and career exploration and students' transitions into post-high school roles. Counselors at schools with CCTCs spoke of these individuals as assisting students with learning about and navigating the Last-Dollar Scholarship, as well as providing valuable college-going information and guidance more broadly. Some students become familiar with the Last-Dollar Scholarship when community college representatives provide information during campuses tours or when the representatives visit the high school to deliver presentations about the college, which often include details about the Last-Dollar Scholarship. Certain high school students are involved with coursework or programs, such as Career Academies, through their local community college and learn about the Last-Dollar Scholarship through these channels.

In summary, there was considerable variation in the extent of exposure students had to the Last-Dollar Scholarship. Across focus groups, counselors reported being a primary source of scholarship information for their students, with some serving as the first and/or sole provider of information. Some schools heavily promote the Last-Dollar Scholarship, exposing students early on in their high school careers, whereas at other schools students may not become aware of the opportunity until senior year during one-on-one meetings with their counselor. Overall, familiarity with the program and scholarship details seem to be on the rise, though some questions about program details remain.

A Lack of Interest, not a Lack of Information: Pursuing non-Community College Pathways

In the case of some students who appear to be strong candidates for the Last-Dollar Scholarship, their decision to not utilize the program seems to be influenced not by a lack of information, but rather a lack of interest. Numerous school counselors reported that many of their students who could be well-suited for the program based on their career interests intentionally choose a different path, such as a four-year college, immediate entry into the workforce, or enrollment into an apprenticeship program. Most commonly, their students with vocational interests choose to bypass the Last-Dollar Scholarship to directly enter the workforce, with counselors noting that the current economy offers options for relatively well-paying jobs for students directly out of high school without any requirements for additional education. David experienced this with students at his schools, explaining:

> …Yeah, they're got the information. But when you can get out of high school and, you know, how much kids are making nowadays, right out of high school or while, quite frankly, while they're in high school...So it's that immediate paycheck.

Viewed through the lens of Perna's model, this could be interpreted as layer 4 (social, economic, and policy context) factors shaping students' college decisions. The timing of the intervention and focus groups coincided with a nationwide labor shortage, providing favorable prospects for individuals to enter directly into the workforce without a college credential (Binkley, 2023).Exacerbating the allure of an immediate paycheck, entering directly into the workforce may be a desirable path for students who find work more appealing than school. As Robert shared:

> Some of the kids that are going into the workforce are ones that, maybe they're not the biggest fans of school. Even if it was a technical skill that they were wanting to go get, they can get a decent job with benefits.

Some employers offer apprenticeship programs as an alternative pathway to a community college where students can get vocational training while also receiving a paycheck. Rebecca spoke about how some of these apprenticeship programs offer a "better deal" for students, saying,

> …there are a growing number of registered apprentice, or not registered, but apprenticeship programs, where there's a partnership with an employer, that does come with a specified tool scholarship, it's like Sinclair or John Deere, somebody's sponsoring somebody, that's also a Last-Dollar Scholarship program. And so then I did some digging to figure out is one better than the other or whatever. And for at least the three students I've had do diesel tech, which is a Last-Dollar program, it was better for them to go through the employer because they got a $5,000 tool scholarship on top of the employer covering their tuition expenses, and then guaranteed employment as long as they pass the program. And for most of them, they're working and getting paid while they're doing it, too.

On the other end, and less commonly discussed in the focus groups, some students forwent the Last-Dollar Scholarship to instead attend a four-year school. Several of the counselors noted a "stigma" [Lucy] related to attending a community college rather than a four-year college, or a pull based on "herd mentality" [Riley] to attend a four-year college, that prevented students who may otherwise be interested in the Last-Dollar Scholarship from utilizing it. For these students, the norms observed in their peers and the expectations of themselves (e.g., elements of their habitus) is to attend a four-year college. Lucy described,

> I think it's more of a stigma thing, and where a student might be interested in that field, but they're still a little leery about, okay, that's going to be a two-year program. And I'm

> talking to my other friends, and they're going to a four-year college or university. And so there, it would make a lot more sense for them to pursue that two-year program and to do the Last-Dollar Scholar program, but they're still like, I need my four-year degree. And I'm like, no, you don't. But I think there's still a little bit of that stigma. So that's where the ones where I think it would have been a good fit for them. They didn't consider more just because it's that two-year program.

Although the sentiment among counselors in my focus groups was that the bulk of their vocationally oriented students who pursued non-college pathways did so purposefully, there were some students for whom other obstacles, such as college information or getting the FAFSA completed, posed a barrier. For example, when asked the question of whether students going directly into the workforce instead of pursuing a Last-Dollar Scholarship program did so due to a lack of information or interest, Alice explained that for the majority of her students it was a lack of interest, but there are a handful who face other barriers:

> Yeah, I think it's a lack of interest. They want to go the apprenticeship, or they want to do the military thing. I mean, there's four or five that maybe have those barriers that I work really, really hard to try to make sure that they are aware. Maybe they are the first one in their family and the family's not really on board with college at all, like why would you do this. And so I do work really hard to try to get them as much information as I can to get them to at least try filling out [the FAFSA] … But no, they have other plans. They want to go straight to this or straight to that.

While many of the examples and quotes included in this section represent instances where vocationally oriented students were aware of the Last-Dollar Scholarship opportunity and purposely chose to pursue an alternative option, a frequent topic of discussion—as discussed in the prior section— was that the current design of the Last-Dollar Scholarship, including its limited coverage and complexity in design, pose barriers that prevent some students from utilizing it. Though the counselors in the focus groups did not raise lack of awareness of the

Last-Dollar Scholarship's existence as an issue in their schools, there are elements of complexity of the program that may impact student and counselors' ability to fully understand the program. Further, multiple counselors noted FAFSA completion—a prerequisite for Last-Dollar Scholarship eligibility—as a barrier for students who may otherwise wish to utilize the Last-Dollar Scholarship. In a few cases this barrier manifested as students being unaware of the FAFSA requirement and the deadline for completing it, while in other cases the counselors noted that students are held up from completing their FAFSA because they need information from their parents about their finances, and the parents are unable or unwilling to assist.

How to Communicate Postsecondary Opportunities: "The Million-Dollar Question"

Role of Print Materials. Counselors were mixed on whether they felt that the informational campaign materials, and print materials promoting postsecondary opportunities more generally, were effective ways to influence students' behavior. In general, the counselors I spoke with did not believe that these materials alone had the capacity to drive substantial action. Across the board, counselors emphasized that more in-depth conversations, such as one-on-one-meetings, were the most effective means to do that. However, the response was mixed on whether the campaign materials served as a helpful complementary tool or made no discernable difference.

The counselors in the focus group shared that they displayed the informational poster, alongside other materials they received advertising post-high school opportunities, though many expressed uncertainty with the extent to which the posters were viewed and whether students found them beneficial. As Lily noted:

> It's hard to know if anyone's looking at them. I guess I can put them up, but I don't see a lot of movement outside of where I have them all hung up, you know? So it's hard to know that students are actually looking at them and actually taking the time to read them.

Other counselors noted that some students and parents may casually peruse the posters when they were displayed in convenient locations, though did not feel that individuals were seeking out the information specifically.

> I would say the posters... and again, I guess I really don't know... my office is located right below the gym. So if they come down and use the lower bathrooms when they're here at a sporting event, and if they happen to be waiting in line or something like that, maybe they would. However, do I feel like students or parents come specifically to my information board, just to look? I doubt it. [Amelia]

Several counselors expressed doubt that the students read or were influenced by the posters, both in response to my question about the specific Last-Dollar Scholarship posters and college posters in general. Victoria expressed "Honestly, we get so much of that stuff that I put it up on a bulletin board, and it just looks cluttered. And I don't think that very many kids look at that stuff." John articulated a similar response, sharing that despite the posters being hung up, students come in asking where they can find scholarship information:

> I'm gonna say any poster you put up, anything you share? Students can come in and the poster has been up for two weeks, but they come in and say, 'Hey, I'm looking for some information about scholarships, where do I go? And what do I do?' So, yeah, this is not really effective.

Other counselors believed that the materials were a valuable resource within a broader strategy to help promote opportunities for students and parents, referring to them as a "talking piece" [Alexis] or a way to "open the door to a conversation [Rebecca]." Several counselors

noted that seeing the posters was a helpful reminder for themselves to talk about the program with students, as Rebecca explained:

> I think the posters have been more helpful for this kind of general awareness, having them in the hallways. Either for underclassmen who see it or ask about it and I've had, not a lot but some, that I'll be standing in the hallway and then they'll be like 'Is this for real?' And then it opens the door to a conversation…Or for parents when they come in for conferences or whatever.

While Victoria found that an abundance of posters cluttered the bulletin board and were not helpful to students, Robert, on the other hand, embraced the idea that more posters were better: "We like having anything that we can hang up to advertise it. The more posters and different things we have the more somebody's going to notice something." Several counselors spoke about how the posters can be helpful for parents, who may see them when they are at the school for sporting events or other activities, and who do not have as many (or any) other opportunities to learn about the Last-Dollar Scholarship.

The handouts were not a major topic of discussion in the focus groups, as they were sent to English teachers and only indirectly used by the counselors (i.e., when the teacher passed them on to the counselor). However, for those who did discuss the handouts, counselors again had diverging opinions, with some finding them valuable and others not. Several counselors shared that their students do not pay attention to handouts. Though she finds value in posters, Lucy voiced finding handouts distributed by colleges to be a waste of money and time, because students do not engage with them and can easily find information about the college online:

> When it comes to handouts...I almost cringe when different college reps come in. They're like, let me leave these handouts with you. And I'm like, you're wasting your time, dropping these handouts, the students can Google the college and get more accurate stuff

> on the website. But I have the handouts that they leave, and I don't think students hardly ever glance at them. It's very rare. And so I feel like sometimes the handouts almost become this huge waste of money and resources that I'm like, oh, my gosh, if they didn't pay for these really fancy glossy things, what could they use that money for? But you know, I do like the posters. So that way, it's something that might be more in their face, and something I can reference. But handouts, I struggle sometimes with handouts, because they might grab them, but they just get tossed, they don't do anything with them.

On the other hand, several counselors conveyed liking handouts, noting that, while students may not look at the posters, they are likely to engage with the handout at least momentarily. Elizabeth expressed her preference for the campaign handouts over posters since, they "would have gone right in front of the students, at least for a moment until they either shoved it in a folder or threw it away."

Effective Communication: One-on-One Meetings are "The Best Way to Get Them."

While many counselors were skeptical about the effectiveness of the poster and handout campaign materials, they also discussed that it is a struggle to get information out to students and families in general. A common theme across all the focus groups was how crucial one-on-one meetings were in communicating post-high school opportunities to students. This was evidenced in Rebecca's statement that, "one-on-one conversations with a counselor they have some kind of relationship with is way more effective than a million posters."

The school counselors participating in the focus group described difficulties in finding ways to communicate information to students and their families, with one participant calling this "the million-dollar question" [Ava]. Counselors regularly use social media to communicate opportunities, though some noted that they likely reach predominately parents since the platforms that the counselors use (e.g., Facebook) are not those more commonly used by their students (e.g., TikTok and Instagram). Counselors found e-mails helpful to a certain extent,

though many agreed with Lily's sentiment that "at some point, students and even parents start to tune out my emails, um, not even open them." Counselors also discussed offering in-person opportunities, such as scholarship information nights and the chance to receive FAFSA assistance during parent conferences. However, attendance at these events tends to be low and veteran counselors mentioned a decline in attendance over the years. Several counselors mused whether families have limited engagement with these opportunities due to the availability of online information, though counselors expressed concern about whether families possessed the exact knowledge of what to search for online.

Across the board, school counselors felt that one-on-one meetings were the best way to communicate information about the Last-Dollar Scholarship and other postsecondary opportunities with seniors. Counselors emphasized that one-on-one meetings gave them the chance to be "right in front of [students]" and have "somewhat of a captive audience" [John], permitting them to have in-depth, personalized discussions with students and guide them through the details of the Last-Dollar Scholarship. As Lena shared, "I feel like conversation goes 10,000 miles farther than any poster…actually having a sit down and walking them through the process is usually needed for the vast majority." Other counselors, underscoring the value of having students engage with the information in real-time, discussed strategies involving group meetings. Ava, contemplating the use of posters as a tool during such meetings, shared her approach:

> Here's what I think you have to do with students, I think you have to make them do it in the moment. So if I want them to look at the Last-Dollar Scholarship, I'm gonna put the poster up in my room when I have them for Lunch and Learn and I'm gonna say, everybody right now scan the QR code. Now you see the landing page that you're at, this is where you need to be if you need more information about this. Short of making them do it in the room with you, I don't know that you ever know or actually get them to do it.

Overall, the counselors who participated in the focus groups did not think that the campaign materials, nor other forms of widespread communication such as emails and social media, were sufficient on their own to influence students' college-going behavior. Instead, counselors stressed the importance of one-on-one meetings and other face-to-face opportunities for conveying information and providing real-time guidance. While many counselors considered print materials to be valuable complementary tools for initiating conversations, others held doubts about their usefulness. As discussed in the first half of this chapter, these one-on-one conversations and opportunities for students to receive resources and support from school counselors falls within layer 2 of Perna's model of student choice (Perna, 2006a).

Yearly Variation in FAFSA Filing: "It's All Kind of a Crapshoot"

While conducting the experimental analysis to measure the effect of the informational campaign, I realized that there was quite a bit of fluctuation in yearly FAFSA filing rates among rural Iowa schools in the years prior to the study. I asked counselors directly about this – seeking their firsthand experiences and insights into factors driving the variation. Counselors agreed that their FAFSA filing rates tend to vary year-to-year and felt that much of this yearly variation was just a reflection of the unique makeup of each senior class and the small size of many rural Iowa high schools – not necessarily a meaningful shift in FAFSA filing behavior at their school.

Counselors noted that given the small size of many rural Iowa schools, a small change in the number of students filing the FAFSA can have a large impact on the overall percentage. Counselors stressed that the makeup of seniors in each class is unique in terms of the proportion with post-high school plans that do not necessitate completing the FAFSA – such as entering the military or going directly into the workforce – and this "kind of makes it look a little skewed from year to year sometimes depending on if you have more college-going population versus a

work based / military population." [Elizabeth] Given the confluence of these two factors: small class sizes and non-college pathways, counselors discussed that they do not expect that their FAFSA filing rate will be steady year-to-year. As Olivia described:

> Every grade of students is different because we're comparing apples to oranges every year. It's a whole new dynamic of kids every year. And so, to me, the rates will never stay consistent because their plans are different. So, when I create a FAFSA completion goal, I go through my list of seniors and look what their plans are and see how many even need to fill out the FAFSA before I'm going to create a goal. So my goal is different every year based on seniors and what their plans are. So if more are going to the military or straight to the workforce, apprenticeship, then I'm going to have a lower percentage FAFSA completion goal than I did the year before when more were going to community colleges and four-year colleges.

Accentuating the influence of small numbers, many counselors brought up how some students counted in the denominator of the completion rate should not be included – such as those who moved from the school district after the count date and those enrolled in an alternative post-high transitionary program for special education students (where participating students stay on the senior class roster up to age 21). Discussing the implications of this, Alice explained "so, for us with such small graduating numbers, when you can't remove people who do not exist in your facility anymore, your percentages, move very, very quickly, one way or the other."

Given these factors, many of the counselors did not aim to get 100% of their seniors to file the FAFSA, but rather focused their efforts on those non-filers who they felt would benefit from submitting one. As Ava noted, "If all your kids that need to do it, have done it, then your FAFSA completion rate can only be what it is." A topic that came across in many of the focus groups, and was evident in Olivia's approach described above, was that many rural school counselors had individualized knowledge about each of their seniors' post-high-school plans.

Counselors were able to use this knowledge, alongside weekly lists provided by Iowa College Aid with student-level FAFSA completion status data, to target their outreach to students whose post high-school plans required a FAFSA but who had not yet submitted one. Jane explained her approach as:

> So I guess I don't look at my percentages, specifically. I go through my list of kids that have not filed the FAFSA and I'm like okay, that kid transferred out. That kid is on an IEP and they're continuing another year, or this kid went to work at [manufacturing facility nearby]. That is what I look for…

Though the overall sentiment among the counselors was that much of the yearly variation in FAFSA filing was due to random fluctuations, some counselors did comment about changes in resources or assistance that could be influencing the change in a given year. Some counselors spoke of putting in more intentional effort, which may have led to a change in their filing rate. Ashley commented on being more intentional with supports, though also noted the random fluctuation due to class composition:

> I would agree ours were up a little bit too. I think it's due to our being a little more intentional with some of our supports. Like not only having fill out the form nights, both in English and Spanish, but also having FSA ID nights during our conferences so that we can make sure they've got the FSA IDs all set up prior to our fill out the form nights. But it does fluctuate like the others are saying, you know, from year to year, just based on the composition of our senior class, how many students are documented, how many parents are working under legal papers so that they have taxes to bring in, those kinds of things.

On the other hand, Jennifer specifically noted that she had not changed her strategy, despite seeing increased filing rates, reflecting that "my rate was really high last year. I'm not sure I did anything different."

In summary, counselors did not feel that fluctuations in annual FAFSA submission rates at rural schools were representative of meaningful changes in the college-going culture of their schools, but rather driven by random variation in the make-up of each senior class and their distinct goals. The bulk of counselors felt that, except for a small number of students who face barriers to filing the FAFSA, most of their students who would be well-served by filing the FAFSA (i.e., have immediate college intentions or aspirations) are completing it. They spoke about how what can seem at first glance to be a large swing in FAFSA completion and could even be misconstrued as counselors "not working really hard," is just the result of small changes in the makeup of a class in small rural schools, where a subset of students intentionally pursues non-college pathway

Chapter 6 Discussion and Conclusion

In this final chapter, I provide a summary of the dissertation followed by an integrated discussion of the two phases of my study. I then outline the key contributions of my dissertation and identify areas for future research. Finally, I discuss implications for states and colleges to consider when developing tuition-free college programs and communicating these and other postsecondary opportunities to prospective students.

Summary of Dissertation

The purpose of my mixed methods dissertation was to learn how to best communicate financial aid opportunities to rural students. This study was designed to address two research questions:

1. Does providing an informational campaign about a statewide, two-year college free-tuition program impact rural high school seniors' college enrollment behavior?
2. What can we learn from high school counselors about the effectiveness of the informational campaign, how to best communicate postsecondary opportunities to high school seniors, and how to design tuition-free college programs to best support rural students?

My study was situated in rural Iowa and focused on the state's tuition-free college program – the Future Ready Iowa Last-Dollar Scholarship – which covers tuition for specific two-year college programs that prepare graduates to work in high-demand occupations in the state. To access the aid program, students must file their Free Application for Federal Student Aid (FAFSA) and enroll in an eligible program—there is no separate application.

I began by developing and testing the effectiveness of a statewide informational campaign about the program, which was designed to be responsive to rural students' habitus. I randomly assigned the 279 public rural high schools in Iowa, enrolling approximately 22,000 seniors, to one of three groups: (1) posters, (2) posters + handouts, or (3) control. The poster and handout materials contained information about the scholarship and encouraged interested students to file their FAFSA. My outcome of interest was whether students filed their FAFSA by the end of the school year. Though I was unable to measure actual scholarship take-up due to data and timing constraints, I expected that for the students who I was most interested in reaching through the campaign—those who would not otherwise attend college—a change in their college-enrollment would be measurable by a change in their FAFSA filing. Posters and handouts are widely used by states and colleges to advertise their postsecondary and financial aid opportunities, yet little is known about the effectiveness of this approach. Using linear probability modelling and de-identified, student-level state administrative data, I found no evidence that either treatment arm affected FAFSA filing behavior relative to the control condition. There was also no statistically significant difference in FAFSA filing between the two treatment arms. These results were robust to a series of alternative specification checks.

I then facilitated focus groups with high school counselors at rural Iowa schools. Though the initial goal was to use the data to contextualize the experimental findings, I also heard important lessons about the ideal design of tuition-free programs and the most effective methods of communicating these opportunities. I identified and discussed four themes regarding factors that hinder the scholarship's full utility and accessibility for rural students. For the schools represented in the focus groups, there was considerable variation in the extent of exposure students had to the Last-Dollar Scholarship. Counselors did not think the campaign materials,

nor other forms of widespread communication, were sufficient on their own to influence students' college-going behavior. Instead, counselors stressed the importance of face-to-face opportunities for conveying information and providing real-time guidance, with print materials serving as valuable complementary tools.

Integrating the Results to Explore the Null Effect

As demonstrated in Chapter 4, the statewide informational campaign about the Future Ready Iowa Last-Dollar Scholarship did not affect FAFSA filing among rural public-school seniors. In this subsection, I bring together the quantitative and qualitative findings to discuss possible ways to think about this null effect from four different perspectives: in terms of implementation; treatment; outcome; and the program itself. Throughout the discussion, I pull from the focus groups with rural Iowa school counselors as well as the broader literature.

Implementation

One potential explanation for the null effect that I found could be that print-based materials *are* an effective way to influence student college enrollment behavior, but that there were issues with the implementation of the informational intervention. Some counselors and teachers may not have received the materials or may not have distributed them upon receipt. An exploration into the extent of material dissemination suggests that the poster intervention was implemented at least modestly but that many handout treatment group students were likely not exposed to the handouts. An exploratory treatment-on-treated (TOT) estimate (discussed in Chapter 4) suggests that it is unlikely that fidelity of implementation was the primary factor contributing to the lack of effect of the posters.

Although I expect that the majority of counselors and teachers *received* the materials I sent, it is likely that not everyone distributed them. While the campaign was intended to be low effort and manageable for teachers and counselors to implement, these individuals juggle numerous responsibilities and demands on their time (Ardoin, 2017; Rosales, 2015) causing an unexpected package to potentially be relegated to the lower-priority category of "one more thing I don't have time for." I believe that distribution was likely higher among the counselors, as they would have all been familiar with Iowa College Aid and the request aligned with current counselor practices - they regularly receive and display posters advertising college opportunities. Further, I received email confirmation from counselors at a rate double that of teachers. For both teachers and counselors, the extent of participation is likely non-random, but rather those who distributed the materials are disproportionately those who already actively promoted the program with their students. A more proactive partnership with the schools and personnel may be needed for this type of campaign. For example, reaching out to counselors and teachers prior to sending the materials may increase their buy-in (or even their awareness) and lead to an increase in engagement with the materials. Strengthening the partnership with the schools could also assist in reducing the workload needed to prepare the materials. It was a time-intensive process to create the list of teachers and left room for inaccurately identifying the senior English teachers. Obtaining this information directly from the schools would streamline the preparation process, saving valuable time that a stage agency might not have, while also enhancing the accuracy of material distribution to the intended recipient. Returning to Perna's model of student college choice (Perna, 2006a), this underscores the importance of states (layer 4) being attentive to factors not only in layer 1 (habitus, as discussed in Chapter 2), but also in layer 2—the school and community context. Given that state agencies commonly depend on school-level personnel

to help implement state programs, it is crucial for states to be mindful of the types of resources available within schools and to explore ways to collaborate within—and ideally enhance—the structural supports available.

Even with the intervention implemented with only moderate fidelity, this represents "real-world" conditions of these types of informational campaigns. The conditions of my experiment were likely more tightly controlled and "ideal" than a campaign such as this would typically be implemented by a state agency or similar entity. I had the capacity to do things such as engaging in an involved process of identifying teachers; looking up teacher and counselor emails from school websites (since there was not an internal database of this information); and sending follow-up emails to all the counselors and teachers. When calculating a back-of-the-envelope treatment-on-treated (TOT) estimate—restricting the sample to only those treatment schools that confirmed material distribution—I continued to find no effect for the posters. For the handouts treatment, the point estimate was larger in magnitude than the main intent-to-treat effect, though still not statistically significant (1.6 versus 0.8 percentage points, $p>0.1$). Though this may suggest that the handouts are a more promising intervention than posters, with so few schools confirming implementation (only 19 of the 95 schools, or 20%), these TOT estimates were imprecise.

Treatment / Intervention

Another possible explanation for the lack of effect of the information campaign is that the campaign was not an effective treatment. The low-touch intervention may not have been strong enough to induce changes in student behavior or the barrier to FAFSA filing may not have been information – either because students were already aware of the scholarship opportunity or because other barriers existed that went beyond informational deficits. The literature on low-

touch college informational campaigns that I reviewed in chapter 2 found no effects of generic letters and emails about financial aid and college tax benefits on student enrollment behavior (Bergman et al., 2019; Hyman, 2020; Linos et al., 2022). Although early studies found promising enrollment effects of sending semi-customized information about selective colleges to high-achieving, low-income students (Hoxby & Turner, 2013; 2015), a similar replication study found only small application effects and no effects on enrollment (Gurantz, 2020). Taken together, these studies suggest that interventions focused only on providing additional information about college or financial aid may not be enough to move the needle on enrollment behavior.

Was There a Knowledge Gap? It may be the case that the treatment was attempting to address a knowledge gap that did not actually exist. The Last-Dollar Scholarship was launched in 2019 and while the informational intervention was aimed at filling in the cracks and providing knowledge to students who would not otherwise know about the program, it is possible that prospective candidates were already aware of the program, rendering the intervention unnecessary. This raises the question of what was occurring in the control group schools. If high school or community college staff were already advertising the program at most schools before the campaign, then the treatment contrast, or the difference in what is received by the treatment and control schools (Hamilton & Scrivener, 2018), would not be very large.

All participating focus group counselors reported some level of information-sharing about the Last-Dollar Scholarship beyond the campaign materials, though this may not be representative of the broader population of Iowa school counselors. The general consensus from the focus groups was that in the absence of the intervention, the students attending the participating counselors' schools would have still known about the intervention. Counselors shared that the majority of non-participating students who could have been well-suited for the

program chose not to participate because of a lack of interest rather than a lack of information. Among the focus group counselors there was a large range in the timing and extent to which the counselors introduced and shared information about the program with their students. Some counselors regularly engaged with students about the program throughout all four years of high school, while at other schools seniors may not have learned about the program until their senior year. A comparable range of communication about the Last-Dollar Scholarship likely existed both across and within schools throughout Iowa. The school counselors who willingly joined a focus group about the Last-Dollar Scholarship likely learned towards one end of the spectrum where they provided more intensive exposure about the program to their students.

Conversations with staff at Iowa College Aid indicated that the program was inconsistently marketed within and across schools, suggesting that some informational gaps likely did exist in the years prior to the informational campaign. This aligns with findings about the marketing of statewide tuition-free community college programs in other states, where researchers found that there was often inconsistent, and at times inaccurate, information relayed to students from their school counselors, driven by factors such as staff turnover; capacity constraints; and staff buy-in (Ballerini et al., 2019; Burkander, Ballerini, et al., 2019). During the focus groups, some counselors mentioned that they are not always aware of changes made to the Last-Dollar Scholarship, which inhibits their ability to communicate accurate and timely information to their students. Many of the counselors in the focus groups shared that they were the first and main source of Last-Dollar Scholarship information for their students. To the extent that this is true throughout the state, students may remain unaware of the Last-Dollar Scholarship if they attend a school with a counselor who does not have the information or capacity to engage with their students about the program. Taken together, it is likely that in the pre-intervention

years that there was a wide variation in whether and how much students were learning about the Last-Dollar Scholarship. Still, it is probable that there was some extent of insufficient (or lack of) information about the program, which this campaign was primed to address.

Was the Informational Campaign a Robust Enough Treatment? An alternative explanation for the null effect of the campaign is that the print campaign was not a sufficiently robust intervention to inform students about the opportunity and/or induce student behavior. During the focus group, the consensus among school counselors was that students pay little attention to print materials such as posters and handouts. Counselors stressed the central role of face-to-face meetings with students for providing college-going guidance to students. One indicator of engagement with the materials – tracking the frequency of QR code scans on the printed materials – aligns with the story of limited student engagement with the posters and handouts. Counselors shared that their most effective method of communicating postsecondary opportunities to students is through in-person meetings, especially one-on-one meetings. Interactions with counselors and other school personnel (e.g., teachers) falls within the school and community context layer (layer 2) of Perna's model of student college choice (Perna, 2006a). Perna identifies these individuals as key transmitters of college-related social capital. With this in mind, it is logical that one-on-one meetings represent a crucial opportunity for counselors to offer support and guide students in their college-going decisions.

Though some counselors acknowledged the usefulness of print materials as supplementary aids, they did not think that the materials on their own had the potential to influence students' behavior. While counselors prioritized one-on-one meetings, many counselors said that assisting students with college-related tasks, such as applying for scholarships and registering for college classes, consumes a significant portion of their time and

conveyed that one of the most effective ways to enhance their ability to assist students in their post-high school planning would be supports aimed at increasing counselors' capacity. Counselors had high praise for college and career transition counselors (CCTCs) – individuals associated with a community college who help facilitate high schoolers' college transition. Unfortunately, there are only a limited number of CCTCs and not all schools have access to this resource. Thus, the state investing more in these positions could contribute to enhancing college access, in part by connecting students with opportunities such as the Last-Dollar Scholarship.

Regardless of whether the informational campaign was providing knowledge to students that they would not have otherwise known, the treatment may not have affected student FAFSA filing if other obstacles existed that the campaign did not address. There are well-documented barriers to FAFSA filing, such as complexity and lack of support (Bahr et al., 2018; Schraeder, 2021), and the intervention was not designed to address these issues. During the focus groups, several school counselors discussed that some students are unable to file their FAFSA because their parents are unable to complete it or unwilling to provide required information. Effective support to increase FAFSA filing may need to involve more intensive, hands-on guidance and encouragement that walks students and their families through completing the application. Providing information may be a useful component of a strategy to enhance FAFSA filing and college going. However, states and other entities should consider pairing informational campaigns with tangible FAFSA filing support.

Outcome

It is possible that the treatment did affect student college-going behavior, just not via the outcome measure that I examined in my study. I tested for changes in FAFSA filing, but the informational campaign may have affected other parts of the college-enrollment process such as

reducing summer melt (i.e., seniors who report plans to enroll in college but do not matriculate in the fall); affecting whether (i.e., no college to college) or where (i.e., shifting from four-year college to two-year college) students enroll; or by influencing students' program of study (i.e., shifting students into a Last-Dollar Scholarship eligible program). My study was designed to be able to detect an effect if the treatment influenced the behavior of students who would not have filed their FAFSA in the absence of the treatment, likely to be marginal collegegoers. However, if the informational campaign influenced students in some of the ways described in these examples – such as students shifting from a four-year to a two-year college or changing their program of study, I would not expect to be able to pick this up in their FAFSA filing behavior, as they likely would have filed their FAFSA in both cases.

As discussed in detail in Chapter 4, there were also some quirks related to the FAFSA filing measure itself, including variability in year-to-year school-level FAFSA filing rates and only moderate correlation. The small school sizes, combined with the unique post-high school goals of each senior class, lead to considerable variation in yearly FAFSA filing rates and many counselors did not find this measure to provide a true reflection of on-the-ground realities. Further, some of the counselors who participated in the focus groups noted that nearly all of their students who would benefit from completing a FAFSA (i.e., those considering college) were already completing the FAFSA, therefore leaving few students on the margin of FAFSA filing. Another factor that was likely contributing to variation in yearly FAFSA filing rates is staffing changes in terms of principals and school counselors. Iowa College Aid staff indicated that many rural schools in the state experience a particularly high turnover of school counselors, driven in part by counselors leaving the rural districts for larger districts. Different counselors, or principals, may adopt different priorities, including their focus on promoting college-going

among their students. If a new school counselor (or principal) comes in and is focused on college-going as a primary responsibility of the counselor office, this may lead to a bump in FAFSA filing rates. Taken together, this raises the question of FAFSA filing as a suitable outcome measure in this context[36] and underscores the challenge of conducting quantitative research in rural schools, many of which have small enrollments.

Reflecting on the noisiness of school-level FAFSA filing rates in the years preceding my intervention, along with the sensitivity checks presented in Chapter 4 (Table 4.3), sheds some light on why my estimates changed so much from the most naïve model to the fully specified version that included the historical FAFSA filing covariate. I conducted randomization, and ensured balance between the three groups, using data from 2021 high school graduates. Although the FAFSA filing rate was similar across the three randomization groups when using the 2021 data (Table 3.5), statistically significant differences emerged between the control and handout groups in my analytical sample (class of 2023) when using the FAFSA filing rate from the year prior to the intervention (2022, Table 3.7). I did not anticipate this, as I expected that school-level FAFSA filing rates were a relatively stable measure year-to-year. However, the fact that FAFSA filing is only moderately correlated year-to-year helps clarify why my historical FAFSA filing covariate had such a substantial impact on the estimate. Had the FAFSA filing rates from 2021 to 2022 been strongly correlated, the covariate would not likely have contributed much explanatory power due to randomization and balanced groups. When I tested the sensitivity of my results to the timing of my FAFSA filing measure, using a five-year average from 2018 to 2022, I continued to find null (though larger in magnitude), results (Table 4.4). This provides further confidence that neither treatment caused an increase in FAFSA filing.

[36] The issues raised here about the FAFSA outcome measure pertain particularly to the school-level FAFSA measure. My main specification uses student-level FAFSA filing as the outcome variable.

Program Design

Lastly, the lack of effects of the informational campaign may not have been driven by the campaign or measurement issues, but rather due to the design of the scholarship program at the center of the campaign. Students may face financial barriers that go beyond the costs that are covered by the program or the program may be too complex for students and their families to fully understand. The uncertainty of whether the Last-Dollar Scholarship will be renewed by the legislature each year, compounded by last-minute income eligibility restrictions added in summer 2023, presents challenges for students to make postsecondary plans that rely on the scholarship. I discuss these issues in detail in the first half of Chapter 5.

The Last-Dollar Scholarship may not be compelling enough to induce students to change the trajectory of their post-high school plans and enter an eligible community college program. There may be other factors in layer 4 of Perna's (2006a) model of student college choice (social, economic, and policy context) that are influencing students' behavior. As discussed in Chapter 2, many rural high schoolers making decisions about what to do after high school are influenced by factors such as the ability to make a steady paycheck and jobs that are available in the local economy. Although the Last-Dollar Scholarship may present a postsecondary pathway linking rural high schoolers with these things, students may also perceive these opportunities as being available by going directly into the workforce. At the time of this study, the country was in the midst of a labor shortage and there were ample opportunities for entry-level jobs that did not require a college education, as emphasized in several of the counselor focus groups. Going to college, even for a one-year credential program, involves both a time and money cost for students. If the state wants to incentive students to pursue the specific Last-Dollar Scholarship eligible career fields, then the aid program may need to be designed to be more generous or

appealing to these students and account for alternative options available to prospective recipients. Collectively, the structure of the Last-Dollar Scholarship may limit its value for some students and may impede the state's goal of inducing additional students to pursue careers in high-demand fields. Counselors had high-praise for the Last-Dollar Scholarship program, and many emphasized how much it had benefitted their communities. Still, it is possible that the group of students who would be well-served by the program as currently designed are already utilizing it. If certain elements of the program deter students from being interested in it or able to access the program, then additional amounts or methods of promotion will be unlikely to move the needle on enrollment.

Contributions of Research

My study offers an examination into a distinctly designed statewide tuition-free program – one that restricts eligibility to in-demand, workforce-oriented programs. As states increasingly adopt some form of tuition-free college program, it is valuable to understand the affordances and drawbacks of various models. An unanticipated aspect of the study involved engaging with counselors as they navigated recent changes to the program's eligibility criteria (and forthcoming changes to the FAFSA). This provided insights into how counselors experienced the changes and the potential impact that such income restrictions might have on student access to and experience of the program.

Employing a mixed methods approach allowed me to not only estimate the causal effect of the intervention, but also to gather additional insights about the intervention and broader program. Through my RCT, I tested one common approach that states and colleges use to promote college opportunities – posters and handouts. I add to the limited literature on the effectiveness of print materials in influencing the behavior of adolescents. My findings align

with prior literature on the effectiveness of generic financial aid print materials, which found little to no effect on student behavior (Bergman et al., 2019; Hyman, 2020; Linos et al., 2022). My qualitative findings contribute to the extant literature on elements to consider when implementing a school-based poster campaign (Brinker et al., 2019; Messer et al., 2011; Perkins et al., 2011).

I go beyond an impact analysis and explore factors related to intervention fidelity, including tracking material dissemination and take-up. Engaging in direct conversations with some of the counselors responsible for disseminating the materials and promoting the scholarship more broadly afforded me the opportunity to hear their perspectives on the effectiveness of the materials. Moreover, it provided valuable insights into promising approaches for communicating postsecondary opportunities to rural high schoolers. Prior literature points to the marketing of tuition-free college programs as a key mechanism of their effectiveness (beyond just the aid itself). In the case of the Future Ready Iowa Last-Dollar Scholarship, the intricacies and uncertainties of the program pose challenges in marketing it as a straightforward guarantee—a strategy that has proven successful for promoting tuition-free programs in other states (e.g., Anderson et al., 2023; Burland et al., 2022). Rather, some school counselors emphasized the importance of offering hands-on-guidance to students to assist them in navigating the complexities of the financial aid program. Identifying the components of an effective communication strategy for rural students—and subsequently ensuring that students have access to adequate information and support—will help states make greater progress toward statewide college attainment goals.

I apply Perna's model of student college choice (Perna, 2006a) to a novel setting, adapting it to explore how the marketing and design of the Future Ready Iowa Last-Dollar

Scholarship shapes the post-high school pathways of rural high school seniors. While Perna highlights the importance of students' demographics in the innermost layer of their model, they specifically highlight the influence of race/ethnicity and socioeconomic status (Perna, 2006a; Perna, 2010). In my study, I employ Perna's model to examine an aspect of individuals' habitus that is not frequently explored within this framework—a students' rural identity.

I heed Perna's call for researchers to pursue a more comprehensive understanding of the role of financial aid in students' college choice decisions (Perna, 2010). Rather than solely focusing on the impact of the presence or amount of a particular aid program on students' enrollment behavior, Perna advocates for understanding the layers of context in which the program is operating and in which students are making their college-choice decisions, including the characteristics of the program as well as the perceptions and expectations that students hold about the program (Perna, 2006a; Perna, 2010; Perna & Steele, 2011). I engaged in this line of inquiry in my study, building from the premise that for Iowa's tuition-free program (layer 4 of the model) to be accessible to rural students, then the design and marketing of the program must align with rural students' habitus (layer 1). Applying this framework helped reveal challenges that rural students face in accessing the program. My findings also highlight the critical importance of layer 2 of Perna's model—and specifically the importance of school counselors—in understanding rural students' experience of the aid program. The program's success in encouraging students who might not otherwise enroll in a Last-Dollar Scholarship eligible program depends, in part, on the capacity and buy-in of school counselors, who play a key role in the promotion of the program.

My study helps to inform strategies to address underrepresentation of rural students in higher education and adds to the growing literature on college access for rural communities—a

population understudied in education research. Rural communities face challenges and have distinct needs that set them apart from non-rural areas, yet they exhibit remarkable resilience and some of their unique characteristics also serve as their greatest strengths. Focusing specifically on rural students allowed me to center the rural context in the study design and facilitated rural-specific conversations to emerge during the focus groups. The discussions explored topics particularly relevant in rural settings, including the impacts of smaller school sizes, the interaction with the scholarship of farming families, and the employment opportunities available within the local community. For instance, existing literature indicates that the college-going decisions of rural high school students are influenced by their perceptions of the local economy, with college attendance inversely related to the perception of available local jobs that do not require a college degree (e.g., Agger et al., 2018). In pursuit of financial stability and the opportunity to contribute to their family's or their own economic well-being, rural students may opt to enter directly into the workforce (e.g., Cox et al., 2014). During the focus groups, some school counselors shared that this trend was observable in their schools. Students whose interests aligned with a Last-Dollar Scholarship program instead capitalized on labor shortages in their local area and opted for full-time employment after (or even before) graduation. As the interest in and research focused on rural student college access continues to grow, it is essential for these studies to center rural perspectives and context.

Directions for Future Research

While my study provides insights into various aspects of designing and promoting tuition-free programs, it also underscores the need for further exploration. In this section, I propose three areas that would benefit from further research. Specifically, I recommend research

that: (1) further explores the impact of the Last-Dollar Scholarship program; (2) examines the impact of strategies aimed at communicating information about and providing supports related to post-high school pathways; and (3) focuses specifically on rural populations.

As raised by numerous school counselors during the focus groups, it would be valuable to understand whether the Last-Dollar Scholarship is having its intended impact of filling positions in high-demand fields with job vacancies. Through the growing body of literature examining the impact of local and statewide free-tuition programs, we know that the effects of these programs vary and that differences in program design and implementation drive some of these differences (Billings et al., 2021; Dowd et al., 2020). Given the distinct focus of the Last-Dollar Scholarship—and the concerns expressed by school counselors about some of the more complex elements of the program— it would be beneficial to further evaluate this specific program. It is also important to understand whether the income restrictions facilitate or hinder the Last-Dollar Scholarship's ability to achieve its goals. These topics would benefit from both rigorously designed quasi-experimental studies as well as qualitative studies that elevate the voices of individuals who directly experience the program, such as students (both high school and college) and community college staff. Questions of interest may include: (1) Has the program helped address the vacancies in high-demand fields? (2) Are higher-income students who enroll in a Last-Dollar Scholarship eligible program subsequently entering a job in those fields? (3) Is the program subsidizing students who would otherwise still enroll in the same programs? If so, what impact is the money having on their college and post-collegiate success (e.g., graduation, student-loan debt)?

Additional research is needed that deepens our understanding of how to equip students with the information and support needed to learn about prospective college and financial aid

opportunities, discern which best align with their needs and preferences, and navigate any barriers that may prevent them from utilizing these resources. One approach consistently mentioned during the counselor focus groups was the Community College Transition Coach (CCTC) position. This position is a particularly promising way to increase the college and career counseling that can be offered to students attending rural high schools – where a strong connection with local community colleges exists and there is often only one school counselor serving a broad range of grades and programming needs. Future studies could explore the advantages and limitations of this approach, conduct formal tests of its impact, and investigate feasible and cost-effective ways to scale up the position, both within Iowa and in other states.

Future research should seek to further understand how to help rural students make informed decisions and pursue college and career pathways that align with their needs and interests. Though not unique to rural communities, researchers, policymakers, and practitioners working in rural areas need to grapple with the dual realities that college is not the best fit for all students ***and*** that all students should have the information and resources available to pursue postsecondary education if they so choose. Rural students are a demographic understudied in education research and deserve to be the focus of studies, not merely included as a subgroup of interest. Though the Last-Dollar Scholarship is not limited to rural communities, by focusing in on rural students, I learned about the distinct ways that these communities experience the scholarship, including its most recent changes. The experiences of and effects for rural students may be obscured in full-state studies, and focusing specifically on rural communities allows the unique context of rural areas to be accounted for and incorporated into the design of interventions and evaluations. Narrowing in on how rural communities experience and are impacted by statewide policies and programs helps ensure that these policies and programs are

effectively meeting the needs of rural students and helps to identify areas for improvement. As the body of research in rural education continues to build, studies focusing on the challenges faced by rural students should also explore and highlight the social resources and strengths that students gain from growing up in these communities.

Implications for Policy and Practice

The ability of a financial aid program to improve college access is predicated on it being designed and promoted in ways that reflect and are responsive to the needs of the communities it intends to support. In this section, I discuss factors that states, colleges, and other organizations should consider when designing tuition-free programs and creating strategies for advertising these and other college-related opportunities.

Implications for Designing Tuition-Free Programs

While an increasing number of states are adopting some version of a tuition-free college program (Dickler, 2022; Perna & Leigh, 2018), there is significant variation in specific program details and implementation. Heterogeneity between programs reflects differences in state priorities, cost considerations, and the political climate in the state. My exploration into the Future Ready Iowa Last-Dollar Scholarship offers a look into a uniquely designed tuition-free college program and contributes to broader conversations about optimally structuring tuition-free programs. In this section I draw from insights gained from my focus groups with school counselors to discuss three key takeaways that states should consider when designing their programs.

Though my study focused on rural students and counselors, many of the implications summarized here likely apply in non-rural contexts as well. Based on the results of my study, I

believe that there are elements of the Last-Dollar Scholarship that are misaligned with student needs more broadly. Still, these issues, and subsequently these implications, may hold particular relevance for rural individuals given the higher rate of CTE participation among rural students (National Center for Education Statistics, 2023) and the prominent role that community colleges play in providing college access for rural communities (Cox et al., 2014; McDonough & McClafferty, 2001; Wright, 2012). Many rural students aspire to pursue careers that enable them to live in or near their home communities and contribute back to their family and community (Goldman, 2019; Puente et al., 2023; Sowl et al., 2021). The Last-Dollar Scholarship holds promise in setting students on these pathways, although there are areas where the program falls short. The takeaways discussed here offer considerations for Iowa to enhance the program for students, both rural and non-rural. These insights are also pertinent for other states that are establishing or improving their statewide aid programs.

Takeaway #1: For the program to shape students' college decision-making and contribute to statewide attainment goals, students must be able to strategically plan around the program.

To influence prospective students through tuition-free college programs, states must structure them in a manner that integrates with students' planning and decision-making processes. Like many other states, Iowa promoted the launch of its tuition-free program as a way to make progress towards achieving its statewide college attainment goal. However, counselors shared that certain elements of the Last-Dollar Scholarship add complexity that limits the scholarship's ability to affect students' behavior. The uncertainty of whether the program will be approved for a given year, coupled with the unpredictability of potential changes and restrictions added during the legislative session, hinders students' ability to anticipate ahead of time whether

they will receive the scholarship and plan accordingly. This complexity, as well as what counselors perceived to be a harmful and poorly timed rollout of the 2023 eligibility restrictions, precludes some counselors from fully championing the program with their students.

Students may not be willing to commit to a specific college program without knowing its price. The state should ensure that students have comprehensive financial aid information as students are making choices about their post-high school plans, and well in advance of starting a program. The way that the Last-Dollar Scholarship is implemented, at least at some colleges, requires students to attend orientation and/or register for classes before they receive confirmation of their award. For example, Northeast Iowa Community College's website says: "Eligible students are notified (via NICC college email) of their award once the state of Iowa approves funding for the next year, eligibility criteria are confirmed, and registration for fall 2023 classes is completed with an NICC Enrollment Advisor" (Northeast Iowa Community College, n.d.). This is a lot to ask of students *before* they receive confirmation that their tuition costs will be covered, particularly for students who are undecided whether they want to attend college or pursue that specific program. The college's conditional wording is reasonable, given that they must also wait on the state's approval of the program. To ensure that students can make well-informed decisions about their post-high school plans, the state should prioritize discussing and voting on the program earlier in their legislative session. Providing all financial aid information to students before the end of the school year enables them to utilize school-based resources (e.g., school counselors, teachers) in making their decisions. Since some students may be choosing between a Last-Dollar Scholarship program and a four-year college program, it would be beneficial for students to have this information prior to the May 1st College Decision Day (when many four-year colleges require students to accept an offer of enrollment). Having current Last-

Dollar Scholarship recipients adhere to the eligibility requirements in place at the time they initially received the scholarship—rather than being at risk of losing their aid midway through their program if restrictions are added —would also contribute to a more predictable program that students can plan around. States that can secure guaranteed funding streams for part or all of their program—such as the public/private partnership that underlies Tennessee's Promise Program—take a step towards mitigating yearly uncertainties in program funding.

Another element of the program that is difficult for students to plan around is that the eligible programs are subject to change every other year. Prospective Last-Dollar Scholarship recipients may be making decisions that shape their post-high school trajectory during the initial years of high school. For example, students may be making choices about which CTE courses to take or considering enrollment in a specific Career Academy or dual enrollment courses at the local community college. It would be advantageous for the state to support students in incorporating the Last-Dollar Scholarship into their plans at this earlier stage. By the time the exact list of eligible Last-Dollar Scholarship programs is released in students' junior or senior year it may be too late to influence their path. During the focus groups, I heard from multiple counselors that by their senior year many students were already set on specific college programs that they were planning to pursue and were not interested in shifting towards a Last-Dollar Scholarship eligible program, even if it would come with free tuition.

Takeaway #2: States should be mindful of when and how they roll out changes to their program.

When changes to the program are necessary, whether due to the states' budgetary demands and policy objectives or to enhance the program, states should be mindful of how and when these changes are rolled out. School counselors play a key role in the communication strategy of the Last-Dollar Scholarship and to ensure smooth implementation it is essential to

keep these individuals informed and updated about the program. Furthermore, providing a more extensive explanation for the program restrictions to counselors and families may have mitigated some of the frustration felt by these groups.

After launching the scholarship in 2019, Iowa has made changes each year, some that expanded access (e.g., removing requirements for full-time enrollment) and others that restricted it (e.g., adding an income eligibility restriction). Across both contexts, counselors expressed how frequent changes resulted in overall confusion about the program, and some had trouble staying current on the program rules. This experience aligns with the challenges faced by school counselors in Oregon (Burkander, Kent, et al., 2019). Shifting income eligibility criteria and "funding volatility" (pg. 8) for Oregon's statewide promise program complicated school counselors' ability to communicate the program to their students. Though the changes to Iowa's program were likely being conveyed to counselors, several remarked on the challenge of managing the large volume of emails and communications from Iowa College Aid, Iowa College Access Network (ICAN), and individual colleges. Counselors suggested that having a yearly training, overview document, or centralized platform containing all program details, changes, and available resources would make the resources and opportunities more helpful and accessible.

The state may have been able to assuage some of the frustration experienced by counselors and families with more substantial communication about the reasoning behind their decision to add income restrictions. The school counselors that I spoke with were upset about the rollout of the 2023 changes, which they said came as a surprise and harmed both current and prospective Last-Dollar scholarship recipients. The state attributed the eligibility restrictions to stagnant funding combined with a rising number of applicants, particular higher-income individuals. While the need to balance the budget presents a genuine challenge for states,

restricting the number of students receiving the scholarship seems somewhat counterproductive to the program's overarching goal of encouraging more individuals to pursue careers in the eligible fields. Counselors were confused by this incongruity and wanted more information behind the motivation for the change and evidence that the program was not operating as intended. Some questioned why it mattered what the income of the recipients were if these individuals were entering the targeted programs and subsequent career fields. The lack of context surrounding what the counselors perceived to be a harmful policy rollout for some students resulted in an erosion of trust between some counselors and the state that may take considerable time to repair.

The timing of the rollout was also not ideal and further diminished the trust of counselors, students, and families. One of the affected community colleges anticipated that their financial aid office would be working "right up to the start of the fall semester" to communicate and support students impacted by the changes (Van Nostrand, 2023). Adding the FAFSA-based eligibility restrictions to the Last-Dollar Scholarship at the same time as the FAFSA Simplification Act was being implemented led to increased confusion and uncertainty for counselors and families. They were unsure of what the final FAFSA changes would be and how these would affect students' eligibility for the Last-Dollar Scholarship and other need-based aid. This was especially true of the proposed FAFSA changes regarding the treatment of assets of self-employed individuals, a modification expected to impact numerous families in rural Iowa. When making substantial changes to their aid programs, states should be mindful of other changes occurring that could amplify the impact of these changes. While the changes would have been disruptive regardless of their timing, making and announcing the change before the end of the school year—and offering

support to school counselors in navigating these changes with their students—would likely have led to a more seamless and less frustrating implementation.

Takeaway #3: Financial need is not limited to low-income students only – nor is it restricted to students' tuition and fees

When designing a "free-college" program, states must make decisions about which expenses to include, whether to impose income restrictions, and whether to adopt a first-, last-, or middle-dollar model. In determining their approach, states must make tradeoffs about cost and accessibility. While restricting a tuition-free program to students demonstrating financial need may help the state direct funds towards those students who need it the most and whose college enrollment decisions are most shaped by price, the true extent of financial need may be more extensive than this approach captures. Adding income-based restrictions to a financial aid program makes it less straightforward and may discourage students who would be eligible from even considering the program. Though utilizing a last-dollar and tuition-only (or tuition and fees only) scholarship design is lower cost for states relative to other options, this model leaves students with many remaining costs – and often provides little or no money towards the lowest-income students.

States wanting to target their funds towards students most in need of the money should consider adopting a minimum award amount that provides some aid to all students enrolling in the eligible program or institution. This was a suggestion that came up in multiple focus groups. Many states utilize a last-dollar approach for their statewide aid programs (Erwin & Syverson, 2022). Last-dollar programs are less expensive to implement than their more generous first-dollar counterparts, which makes them politically attractive to a bipartisan audience (Burke, 2023). However, last-dollar programs are commonly critiqued for disproportionately benefitting middle- and upper-income students, since low-income students have most or all of their costs

covered by need-based aid programs such as the Pell grant. Though adding some costs, establishing a minimum guaranteed scholarship amount would attend to these equity concerns. It would provide some funding for those students with the greatest need, and who still face unmet need, without the substantial additional costs associated with a first-dollar model. Moreover, this approach would incentive students to pursue other scholarship opportunities, such as local scholarships, since doing so would provide the student with more funding than receiving just the state aid program would. Oregon utilized a middle-dollar model for a number of years, guaranteeing a minimum award of $1,000, although they have since removed this condition (Oregon Higher Education Coordinating Commission, 2015).

Free-tuition programs can play a crucial role for middle-income students who do not qualify for initiatives targeting low-income students. This was a theme raised during my focus groups and has been discussed in other state contexts as well (Burkander, Ballerini, et al., 2019; Burkander, Kent, et al., 2019). In adding income eligibility restrictions to the scholarship in summer 2023, Iowa cited a primary reason being that higher-income students were making up an increasing proportion of Last-Dollar Scholarship recipients (from 11% of recipients to 25%, Iowa College Aid, 2023). This decision aligns with critics who argue that a large portion of state aid programs subsidize students who can afford to pay and would pursue postsecondary education in the absence of the programs. In the case of Iowa, the newly added EFC limit of $20,000 equates to a pre-tax yearly family income of approximately $100,000, which most consider to be middle or upper-middle class (Bennett et al., 2020; Bieber, 2023). Still, counselors shared their perspective that some of the students who will be impacted by the income restriction are students they consider to be middle-class and price sensitive. Counselors noted that many of these students are paying for college themselves, so these students' perceptions of affordability

may not align with broader conceptions of this demographic. The upcoming changes to the FAFSA will alter how demonstrated need is calculated for self-employed and farming families, and this may interact with financial aid program income restrictions, including those added to the Last-Dollar Scholarship, in a way that disproportionately restricts access for this group of students. A common concern among counselors participating in my focus groups was that the FAFSA modifications will make self-employed and farming families appear wealthier than they are and the counselors were particularly concerned about the impact of these changes for rural communities. This concern is echoed in the broader discourse (Knott, 2023). In establishing income-based restrictions for financial aid programs, states should consider that a given cutoff may be experienced differently by potential recipients.

Beyond the students who formally lose eligibility for the Last-Dollar Scholarship due to the income restrictions, these restrictions may dissuade other students from pursuing the program due to uncertainties of whether they will qualify. Students need to file their FAFSA to determine whether they have an Expected Family Contribution (EFC) that makes them eligible, and the FAFSA is a well-documented barrier for college access (Hodara, 2017). Individuals who are unsure whether they want to pursue postsecondary education may not take the time to fill out the FAFSA to determine their eligibility, potentially deterred by the additional complexity. The uncertainty regarding eligibility is heightened by upcoming FAFSA changes, which will increase the EFC of children of small-business owners and families with multiple children enrolled in college. Moreover, the introduction of income restrictions during the 2023 legislative session may instill enduring apprehension that additional late-stage restrictions will occur in the future, which may discourage would-be eligible students from engaging with the program.

Implications for Communicating Postsecondary Opportunities

Navigating postsecondary pathways is an intricate process fraught with complexities. Many students and their families need not only information, but also hands-on guidance to understand their options and navigate the process. The lack of effects of the informational campaign and the lessons learned from the counselor focus groups support the argument that more structural changes and support are needed. During the focus groups, counselors underscored the importance of face-to-face communication as the most effective way to provide college and career information and guidance to students. Accordingly, a key investment in enhancing postsecondary communications would be to increase counselor capacity. Still, a low-touch informational intervention may be all that a state agency or organization has the budget for, and these interventions can be helpful complementary tools. In this section I discuss two takeaways from my study related to communicating postsecondary opportunities: (1) the importance of investing in and supporting counselors and other on-the-ground individuals to provide direct guidance to students and (2) factors for state agencies to consider when developing lower-touch informational campaigns and interventions.

Takeaway #4: Face-to-face is the ideal way for school counselors to communicate postsecondary opportunities to high school students. To better support counselors' ability to provide this hands-on-guidance, states should prioritize investing in efforts that increase counselor capacity.

School counselors play a key role in supporting postsecondary access for their students. In the case of the Last-Dollar Scholarship, the state relies heavily on counselors to disseminate scholarship information to students. School counselors emphasized that meeting with their students one-on-one and providing customized guidance is by far the most impactful way to support students in their post-high school planning and transitions. In discussing the efficacy of low-touch informational campaigns in influencing students' college-going behavior, counselors felt that simply providing information is not enough, due to the challenges that many students

face in navigating college and career pathways. Rather, students benefit from having someone who can walk them through the information and any required processes. Many counselors in my focus groups, including those at small schools, shared that it is often a challenge to have adequate time for one-on-one meetings with all their students. Thus, counselors' main suggestion for enhancing their ability to provide college and career support was to increase counselor capacity. While hiring additional counselors is one, albeit expensive, approach, counselors shared other lower cost ideas for building their capacity.

The most promising approach for growing high schools' capacity to provide college and career support is through more peoplepower. One option is to hire more school counselors and get schools closer to the 250:1 student-to-school counselor ratio recommended by the American School Counselor Association (ASCA, n.d.). Several counselors who had experience working at multiple schools noted the discernable difference when working with a smaller ratio, and some counselors at smaller schools noted that it was easier for them to budget time to meet with students relative to those counselors at larger schools. Still, a theme that emerged was that counselors at small rural schools "wear so many hats" [Amelia]. They are often responsible for a larger range of grades, with diverse programming and support needs, leaving these counselors limited time to dedicate towards college-related tasks. The more favorable student-to-counselor ratios do not capture the large range of tasks that these counselors are responsible for, and many of these smaller school counselors have difficulty finding sufficient time to meet with all their students. Thus, across the schools represented in my sample, a reoccurring theme was the expressed need for increased support in providing college-related assistance.

While hiring an additional full- or part-time staff member at the school-level may not be feasible within the budget constraints of many districts, strategies that involve a formalized

partnership with a community college may be a promising approach. A recent and expanding program in Iowa is the Community College Transition Coach (CCTC) position. CCTCs are based at a community college and serve one or more high schools. They support juniors and seniors with college and career transition related guidance, including non-community college pathways (e.g., military, four-year colleges, workforce). Given the pivotal role that community colleges play in rural communities, high school counselors have experienced some blurring of the lines between the traditional duties of a high school counselor and college related tasks (e.g., answering advising questions, assisting with college class registration). The CCTC position helps address this issue. The counselors that I spoke with who had a CCTC assigned to their school had high praise for this position, and those without a CCTC noted how useful this type of support would be. The amount of time that CCTCs dedicate to specific high schools varies—some schools have a full-time CCTC whereas others are on a much more part-time basis (e.g., one afternoon a week)—but across the board counselors underscored how critical this support was and expressed deep gratitude for the individuals serving in these roles. In the initial years of the program the Iowa Department of Education is offering start-up grants and longer term the funding involves operational sharing between the community college and the high schools. Spreading the costs between the state, community colleges, and high schools may be a viable way to expand college and career advising capacity at rural high schools. As the CCTC program continues to expand in Iowa, this initiative serves as a promising model for other states.

States can also implement smaller-scale initiatives to streamline and support their school counselors, thereby augmenting their capacity. One type of assistance is to equip counselors with information that helps them to strategically allocate their time. A beneficial resource that was frequently mentioned by counselors is the weekly FAFSA completion updates provided by Iowa

College Aid, which offer a student-level list detailing each student's FAFSA filing status. While the preparation of these lists does require some time from the state to compile, they provide valuable information to the counselors and allow counselors to offer targeted support. States can also support counselors by creating opportunities for counselors to be in community with and learn from one another. Counselors shared that one challenge of being the sole counselor is "working in isolation" [Ava] and noted how valuable it was to have a chance to collaborate with others working in similar contexts. State agencies can support their counselors by organizing convenings or regular check-ins during which counselors can collaborate and learn with and from one another.

Lastly, rather than trying to create and offer all resources in-house, states should consider where they may partner with and/or provide financial assistance to state- or community-based organizations that are already doing the work of supporting counselors and their students. Numerous counselors highlighted the incredible work that is being done by Iowa College Access Network (ICAN) – a nonprofit that offers both professional development and resources to counselors as well as hands-on-support, such as FAFSA filing assistance, to students and their families. ICAN offers an in-person financial aid presentation for high-schools, though some counselors noted that paying for the fee ($250), or having the bandwidth to solicit a sponsor, can be prohibitive. This is an example of an opportunity where the state could partner with ICAN and help subsidize these already established and high-quality presentations. By collaborating with other organizations, states may be able to achieve a greater reach and impact.

Takeaway #5: Considerations for lower-touch informational campaigns.

Though states should acknowledge that lower-touch interventions are not able to address structural issues, lower-touch interventions can serve a supplemental role in spreading

information about post-high school opportunities for students. My mixed methods study revealed valuable insights into elements that may contribute to a more effective informational campaign. When partnering with on-the-ground staff, states should ensure that the information or intervention is straightforward to disseminate and does not impose a significant time burden. When possible, the intervention should involve walking students through the program or steps they will need to take. Finding ways to incorporate parents may be beneficial as well.

If a dissemination strategy will involve counselors or other on-the-ground staff, making it as user-friendly to implement as possible should be a priority. While the poster campaign I developed aimed for simplicity in implementation, I heard from some counselors who had not hung the posters until I sent the reminder email. This underscores the busy nature of this group and emphasizes the importance of keeping ask requests as straightforward as possible. Further, as it relates to my materials, I should have sent a shorter, more concise letter accompanying the posters, to make it easier for counselors to quickly skim. While counselors acknowledged their appreciation for the abundance of resources they receive from various organizations such as Iowa College Aid and ICAN, they also noted that the sheer quantity can be overwhelming and challenging to navigate. One potential solution could involve consolidating all available information into a centralized location and providing an annual summary of programs with the latest information. To aid in implementation, organizations can also put together ready-to use materials. For example, some counselors highlighted that ICAN provided a social media kit for the new FAFSA that was well-organized, had clear instructions, and gave specific things to post alongside accompanying captions.

Counselors emphasized the value of guiding students through a program and its necessary steps in real-time, ensuring exposure and the opportunity to address any questions that may arise.

This approach is particularly beneficial for programs like the Last-Dollar Scholarship, where only some college programs are eligible, and the list varies from college-to-college. While a more personalized conversation can be had one-on-one, taking even ten minutes during a class period to show students the program website and how to navigate the list of programs ensures that students absorb at least some of the information and know the steps to take to learn more. States should consider that the complexity and restrictions of a program may limit opportunities to broadly advertise the program. For example, counselors expressed reservations about promoting the scholarship widely to all students, given their uncertainty about which students would qualify.

Finally, while much school-based college-going information is directed towards students, states should consider how to incorporate parents in the information-sharing process. Though many focus group counselors shared that an increasing number of their students bear the responsibility of funding their college education, parents often play a key role in guiding students through post-high school planning. Equipping parents with information about specific scholarship opportunities may help prompt additional discussions and exploration at home.

Concluding Statement

Though statewide tuition-free college programs are becoming increasingly common, there is considerable variation in their design and implementation. In deciding the details of their programs, states must contend with questions such as which students do they want to induce to go to college? Which programs do they want to fund? Which costs do they want to cover? While answering these questions, states must navigate trade-offs and balance competing goals and constraints. The process taken to understand whether these programs are having their intended effect should involve examining their role and impact both broadly and for specific populations

of students. Evaluations should include both rigorous impact studies as well as qualitative studies that center and learn from the individuals implementing and promoting the program (e.g., community college staff, school counselors) as well as prospective and current recipients. In promoting these and other post-high school opportunities to rural students, it is beneficial to provide both information and real-time opportunities for students to engage with the information and ask questions. This approach can help empower students to make informed decisions and potentially mitigate some of the barriers to access that they encounter.

Appendices

Appendix A: Supplemental Tables and Figures

Appendix Table A.1 Characteristics of School Counselor Focus Group Participants

Pseudonym	Gender	Race/ethnicity	Rurality of HS they graduated from	Years of school counselor experience
Alice	Female	White	Rural	6-15 years
Alexis[a]	Female	White	Rural	--
Amelia	Female	White	Rural	16+ years
Ashley	Female	White	Suburban	16+ years
Ava	Female	White	Rural	6-15 years
David	Male	White	Rural	16+ years
Elizabeth	Female	White	Rural	16+ years
Rebecca	Female	White	Rural	< 6 years
Emma	Female	White	Rural	< 6 years
Evelyn	Female	White	Rural	6-15 years
Grace	Female	White	Rural	< 6 years
Hannah	Female	White	Suburban	16+ years
Jane	Female	White	Rural	6-15 years
Jennifer	Female	White	Rural	16+ years
John	Male	White	Suburban	16+ years
Lena	Female	White	Rural	16+ years
Lily	Female	White	Rural	< 6 years
Lucy	Female	White	Rural	6-15 years
Melissa	Female	White	Rural	16+ years
Olivia	Female	White	Rural	6-15 years
Riley	Female	White	Rural	6-15 years
Robert	Male	White	Rural	16+ years
Sarah	Female	White	Rural	6-15 years
Victoria	N/A	N/A	N/A	N/A

Note: [a]Alexis was employed as a College and Career Transition Counselor (CCTC).

Appendix Figure A.1 Template for School Counselor Letter (sent with posters)

Dear «Counselor_First_Name»,

I am reaching out from Iowa College Aid with a request for you to help us spread awareness among your high school seniors about one of our statewide financial aid programs, the Future Ready Iowa Last-Dollar Scholarship. This scholarship can help students earn a credential from a two-year college in the state, debt-free. In this mailing, you will find three posters promoting the program and encouraging interested students to file their Free Application for Federal Student Aid (FAFSA). **We are hoping that you can hang up these posters in high-traffic areas in your high school** (e.g., library, cafeteria, water fountains, outside your office) or in areas where students are engaged in coursework that aligns with programs covered by the Last-Dollar Scholarship (e.g., industrial tech, career academy, and work-based learning classrooms).

You are likely already familiar with the Last-Dollar Scholarship (www.IowaCollegeAid.gov/LastDollar), which launched in 2018 and can help cover the full cost of earning a degree, diploma, or certificate in a high-demand field. We appreciate your partnership in sharing information about the scholarship with your students over the past few years. With this informational campaign, we hope to increase awareness of the program among seniors at your school, who we believe may benefit from the scholarship. As an additional component to this campaign, we are also reaching out to the senior English teacher(s) in your school asking them to distribute handouts about the scholarship to students in their classes.

We are collaborating with a Ph.D. student at the University of Michigan, Kristen Cummings, to learn more about the rollout of the informational campaign and whether it affects students' FAFSA filing and college-going behaviors. As part of this, she is asking that you send her an email (kristenz@umich.edu) with (a) a photo of the posters displayed in your school and (b) a brief description of the location of the posters. **As a thank you for your time and partnership, she will provide a $5 Amazon gift card to all counselors who email her.**

Thanks in advance for your support. If you have any questions about the scholarship or these materials, please email lastdollar@iowa.gov.

Sincerely,

Mark Wiederspan

Mark Wiederspan, Ph.D.
Executive Director, Iowa College Aid

Appendix Figure A.2 Template for English Teacher Letter (sent with handouts)

IowaCollegeAid.gov
Because College Changes Everything

Dear «Teacher_First_Name»,

I am reaching out from Iowa College Aid requesting your help in spreading awareness among your high school seniors about one of our statewide financial aid programs, the Future Ready Iowa Last-Dollar Scholarship. This scholarship can help students earn a credential from a two-year college in the state, debt-free. In this mailing, you will find handouts promoting the program and encouraging interested students to file their Free Application for Federal Student Aid (FAFSA). **We hope that you can distribute these during your English class(es) to any seniors in the course.**

We have also sent these handouts to «Other_English_Teacher(s)_Name(s)», based on our understanding that they also teach English courses that may have senior enrollment. If you end up with extra handouts, feel free to share the remaining handouts with «Other_English_Teacher(s)_First_Name(s)», or others teaching senior English (in case we didn't send enough); distribute them to seniors in non-English courses you teach; or distribute them to any younger students in the class.

As you are distributing the handouts to your students, it may be helpful to provide students with an overview of the scholarship and some of the most popular eligible programs at nearby colleges. The Last-Dollar Scholarship (www.IowaCollegeAid.gov/LastDollar), launched in 2018, is a program sponsored by the state of Iowa that covers any remaining tuition and fees after other federal and state financial aid is applied. It is awarded to students pursuing certificates, diplomas, or associate degrees at Iowa community colleges (and some private colleges)* in high-demand career fields.

The most popular Last-Dollar Scholarship programs at the college closest to «School_Name» are:

- **«Closest_CC_to_HS»**: (1) «M_1st_CC_1st_most_popular_LDS» (2) «M_1st_CC_2nd_most_popular_LDS» (3) «M_1st_CC_3rd_most_popular_LDS»

There may also be branch campuses of community colleges nearby that are not reflected on this list. We encourage interested students to look into the certificate, diploma, and degree programs at those institutions as well, and to reach out with any questions.

[letter continued on next page]

With this informational campaign we hope to increase awareness of the program among seniors at your school, who we believe may benefit from the scholarship. As an additional component to the campaign, we are also reaching out to the counselor in your school asking them to hang up posters about the scholarship in the hallways.

We are collaborating with Kristen Cummings, a Ph.D. student at the University of Michigan, to learn more about the rollout of the informational campaign and whether it affects students' FAFSA filing and college-going behaviors. As part of this, she is asking that you send her an email (kristenz@umich.edu) with (a) the number and names of class(es) that you distributed handouts during and (b) the total number of seniors who received handouts. **As a thank you for your time and partnership, she will provide a $5 Amazon gift card to all teachers who email her.**

Thanks in advance for your support. If you have any questions about the scholarship or these materials, please email lastdollar@iowa.gov.

Sincerely,

Mark Wiederspan

Mark Wiederspan, Ph.D.
Executive Director, Iowa College Aid

*Eligible private colleges include St. Luke's College and Mercy College of Health Sciences.

Appendix B: Creating Lists of High School Counselors and Senior English Teachers

To create my list of high school counselors, I started with a list of counselors involved in Iowa College Aid's Course to College professional development program. For my treatment schools that were represented on the list, I confirmed that the counselor was still employed at the current school by checking the school's website. For the schools that did not have a counselor participating in Course to College, I visited the school website and pulled the counselor's name and email address.[37]

The process of creating a comprehensive list of English teachers and determining how many handouts to send to each was more complicated than the process followed for the counselors. I started with a list provided by Iowa College Aid of the names of all Iowa public school teachers, as well as the name of the school they taught at and all courses they taught (i.e., course numbers). Using this information, I created a list of probable senior English teachers by reducing the list to those individuals who taught English courses and electives that were likely to have senior enrollment (i.e., I excluded non-English courses as well as English courses that specified they were for grades 9-11). The list from Iowa College Aid was from the 2021-22 academic school year, so I expected there was some movement of teachers into and out of schools as well as individual courses between the 2022 and 2023 school years. Using my English teacher list as a starting point, I visited the websites of each school in the posters + handouts

[37] If there were multiple high school counselors at a given school, I first tried to determine whether there was a counselor that worked predominately with seniors. Otherwise, I selected one of the counselors to send materials to.

treatment group and (a) confirmed the teachers on my list still taught high school English, removing any teachers who were not listed on the school website, and (b) added the names of any high school English teachers who were not on my initial list. As available on the websites, I also grabbed any information about the specific grades and courses that each teacher taught and used this information to exclude a few additional teachers from my list (e.g., those who were listed as teaching ninth and tenth grade).

After the list of English teachers was created, the next step was to determine how many handouts to send to each teacher. Using the number of 2021 graduates in each school, I went through my list of English teachers and the information I had about which courses they taught and made a subjective decision of how to distribute handouts across the teachers. I distributed handouts to between one and nine teachers at each school and provided several extra handouts to teachers since I did not know how senior enrollment was distributed across teachers. For example, if there was a school with an estimated 80 seniors and there were two English teachers who appeared to teach the same number of senior-enrolled courses, I provided each English teacher with 50 handouts. In the customized teacher letters, I included information about the other teachers at the school who I distributed handouts to and encouraged the teachers to share / borrow handouts from these individuals if they had not received the number needed for their classes.

Appendix C: Focus Group Protocol

Introduction

Thank you for agreeing to participate in this focus group! I appreciate you taking time to speak with me about your experiences and to share your thoughts.

My name is Kristen, and I am a graduate student at the University of Michigan. I'm working on my dissertation where I'm studying the role of college costs and scholarships in students' decisions about what to do after high school as well as how these opportunities can be best communicated to students. I'm focusing specifically on the Future Ready Iowa Last-Dollar Scholarship program. This conversation is part of that project and I'm excited to hear your thoughts and perspectives.

Some quick notes before we get started:

(1) The focus group is meant to be conversational: talk to each other – ask one another questions, build on each other's ideas, etc.
(2) Your participation is total voluntary. You can decide not to answer any questions and can stop participating at any time
(3) I'll be recording our conversation to make sure I don't miss anything. I may use your words in my paper, but I won't include any personal or identifying information that would link what is said here today to you, personally.

Does anyone have any questions about the logistics before we begin? Great, let's get started.

Getting to Know Each Other

1. **We'll start by going around and introducing ourselves. Please share your name, what school you work at, and how long you have been working there.**

Perceptions of Last-Dollar Scholarship

To start, I have questions about your thoughts on and experiences with the Last-Dollar Scholarship

2. **Since the Last-Dollar Scholarship was launched in 2019 have you noticed a shift in more students interested in and pursing the eligible programs?**
    a. I'm interested in which students' behavior it's shifted and how - has it shifted students who wouldn't otherwise go to college into college? Has it shifted the degree programs or area that students pursue? Either at the community college level or prompting students to start or end at a community college?

3. **Do you think that all students are aware of and understand the Last-Dollar Scholarship?**
    a. What may help students better understand the Last-Dollar Scholarship?
    b. For those students whose interests may align with the Last-Dollar Scholarship but are not utilizing it – do you think that this is driven more by a lack of information on those students' part, or a lack of interest?

4. **In what ways do your students come to learn about the Last-Dollar Scholarship?**
    a. [*potential prompt* – in what grade?] When you bring it up with students during meetings, does it seem like they are already familiar, or does it seem like some or all of it is new information?
    b. Do you think that there are students whose interests align with the Last-Dollar Scholarship but who are unaware of it?
        i. What do you think are some of the barriers to connecting these students with the Last-Dollar Scholarship?

5. **As many of you are likely aware, there were these recent changes to the program design. As of May, there is now an income eligibility restriction. Students must have an EFC <$20,000, which equates to a family income of approximately $100k. Were you aware of these changes, and have you noticed any changes to student engagement?**
    a. Has it changed how you all engage with the program and communicating it to your students?

6. **What changes, if any, could be made to the Last-Dollar Scholarship to make it more useful and accessible to students?**
    a. Do you think that there are students whose interests align with the Last-Dollar Scholarship but who face barriers to accessing it? *What are those barriers? What changes could be made to address them?*

7. **Is there anything else you want to note about your experience with or your thoughts about the Last-Dollar Scholarship?**

<u>Reactions / Feedback to Experiment Results [40 minutes – bulk of time]</u>

Next, I am going to provide an overview of the informational campaign I implemented alongside Iowa College Aid. Last year, Iowa College Aid created an informational campaign with print materials that were distributed to high schools in Iowa. To get these materials up in schools, posters were mailed to high school counselors, which most or all of you received, and handouts were sent to high school English teachers.

Our hope was that these materials would help inform more students about the Last-Dollar Scholarship and encourage students to participate in the program. They were meant to be complementary to the conversations that you are already having with your students, and to help inform students who otherwise may not have known about the program.

****show slide with the campaign materials****

8. **For those of you who received these materials and displayed them in your schools –**
    a. Do you think that students noticed them and found them to be helpful?
    b. How might they have been more enticing or helpful?

9. **Do you think that these types of materials – posters and handouts with an overview of the program - are an effective way to help students learn about college and financial aid opportunities?**
    a. Any ideas on other ways of communicating college opportunities that you find to be more effective?

Stop sharing slide

FAFSA Filing Element

I have a few additional questions about FAFSA filing in your schools that I'd like to discuss with our remaining time.

10. **To measure whether there was an effect of the campaign, I tested whether there was a change in school-level FAFSA filing rates. In looking over school-level FAFSA filing rates from the past 5 years I noticed there is quite a bit of fluctuation year-to-year. Has this been your experience and do you have a sense of why this may be?** *(e.g., difference supports or programming year-to-year)*
    a. Do you feel that you have the capacity to meet 1-1 with all your students regarding their post-high school plans?

School Counselor Support from the State

11. **I know that school counselors like yourselves are juggling a lot of different demands on your time, only one of which is providing college-going knowledge and support for students. Thinking about opportunities and constraints you face, how can the state complement and better support your efforts around supporting the college advising portion of your role?**

12. **What advice would you share with folks at Iowa College Aid and the state government who are interested in supporting more students in going to college?**

Conclusion

Those are all the questions that I have. Is there any information that we didn't discuss today that you think is important or would be helpful for me to know? Do you have any questions for me?

Thank you for taking the time to speak with me today! I appreciate your willingness to share your experiences with me. Please reach out with any additional questions.

Bibliography

Abel, J. R., & Deitz, R. (2014). Do the benefits of college still outweigh the costs? *Federal Reserve Bank of New York: Current Issues in Economics and Finance*, *20*(3), 1–11.

Agger, C., Meece, J., & Byun, S. (2018). The Influences of Family and Place on Rural Adolescents' Educational Aspirations and Postsecondary Enrollment. *Journal of Youth and Adolescence*, *47*(12), 2554–2568. https://doi.org/10.1007/s10964-018-0893-7

American School Counselor Association (ASCA). (n.d.). *School Counselor Rules & Ratios*. American School Counselor Association. Retrieved December 1, 2023, from https://schoolcounselor.org/About-School-Counseling/School-Counselor-Roles-Ratios

Anderson, D. M., Monaghan, D. B., & Richardson, J. (2023). *Can the promise of "free" raise college attainment? Lessons from the Milwaukee Area Technical College Program* (Working Paper 22–614). Annenberg Institute at Brown University.

Ardoin, S. (2017). *College aspirations and access in working-class rural communities: The mixed signals, challenges, and new language first-generation students encounter*. Lexington Books.

Ascendium Working Group. (2021). *National Rural Postsecondary Research Agenda*. Ascendium. https://www.ascendiumphilanthropy.org/assets/Uploads/National_Rural_Postsecondary_Research_Agenda.pdf

Association for Career and Technical Education (ACTE). (2019). *Perkins V: Secondary "CTE concentrator" definition background*. Advance CTE. https://cte.careertech.org/sites/default/files/SecondaryConcentratorBackground_2019.pdf

Avery, C., Castleman, B. L., Hurwitz, M., Long, B. T., & Page, L. C. (2021). Digital messaging to improve college enrollment and success. *Economics of Education Review, 84*(102170), 1–35. https://doi.org/10.1016/j.econedurev.2021.102170

Bahr, S., Sparks, D., Hoyer, K. M., & Ralph, J. (2018). *Why didn't students complete a Free Application for Federal Student Aid (FAFSA)? A detailed look* (NCES 2018-061). Institute of Education Statistics (IES). https://nces.ed.gov/pubs2018/2018061.pdf

Ballerini, V., Hagood, S., Meehan, K., & Callahan, M. K. (2019). *The case of Nevada Promise: Promise replication in a different state context*. Research for Action. https://www.researchforaction.org/research-resources/postsecondary-workforce/the-case-of-nevada-promise-promise-replication-in-a-different-state-context/

Bartik, T. J., Hershbein, B., & Lachowska, M. (2021). The effects of the Kalamazoo promise scholarship on college enrollment and completion. *Journal of Human Resources, 56*(1), 269–310. https://doi.org/10.3368/jhr.56.1.0416-7824R4

Beasor, C., & Kuehr, A. (2022, August 10). *Indiana's education value movement: Research findings & messaging strategy* [Conference session]. State Higher Education Executive Organization Annual Policy Conference, Indianapolis, Indiana. https://sheeo.org/wp-content/uploads/2022/08/08-10-Indiana-Ed-Value-Message-Briefing.pdf

Belasco, A. S. (2013). Creating college opportunity: School counselors and their influence on postsecondary enrollment. *Research in Higher Education, 54*(7), 781–804. https://doi.org/10.1007/s11162-013-9297-4

Bell, E. (2021). Estimating the spillover effects of the Tennessee Promise: Exploring changes in tuition, fees, and enrollment. *Journal of Student Financial Aid*, *50*(1). https://doi.org/10.55504/0884-9153.1725

Bennett, J., Fry, R., & Kochhar, R. (2020, July 23). Are you in the American middle class? *Pew Research Center*. https://www.pewresearch.org/short-reads/2020/07/23/are-you-in-the-american-middle-class/

Bergman, P., Denning, J. T., & Manoli, D. (2019). Is information enough? The effect of information about education tax benefits on student outcomes. *Journal of Policy Analysis and Management*, *38*(3), 706–731. https://doi.org/10.1002/pam.22131

Bettinger, E. P., Long, B. T., Oreopoulos, P., & Sanbonmatsu, L. (2012). The role of application assistance and information in college decisions: Results from the H&R Block FAFSA experiment. *The Quarterly Journal of Economics*, *127*(3), 1205–1242. https://doi.org/10.1093/qje/qjs017

Bieber, C. (2023, September 5). Does your income make you upper class, middle class, or lower class? *The Ascent*. https://www.fool.com/the-ascent/personal-finance/articles/does-your-income-make-you-upper-class-middle-class-or-lower-class/

Bifulco, R., Rubenstein, R., & Sohn, H. (2019). Evaluating the effects of universal place-based scholarships on student outcomes: The Buffalo "Say Yes to Education" program. *Journal of Policy Analysis and Management*, *38*(4), 918–943. https://doi.org/10.1002/pam.22139

Billings, M. S., Gándara, D., & Li, A. Y. (2021). Tuition-free promise programs: Implications and lessons learned. *New Directions for Community Colleges*, *2021*(196), 81–95. https://doi.org/10.1002/cc.20485

Binkley, C. (2023, March 9). The labor shortage is pushing American colleges into crisis, with the plunge in enrollment the worst ever recorded. *Fortune*. https://fortune.com/2023/03/09/american-skipping-college-huge-numbers-pandemic-turned-them-off-education/

Bird, K. A., Castleman, B. L., Denning, J. T., Goodman, J., Lamberton, C., & Rosinger, K. O. (2021). Nudging at scale: Experimental evidence from FAFSA completion campaigns. *Journal of Economic Behavior & Organization*, *183*, 105–128. https://doi.org/10.1016/j.jebo.2020.12.022

Bourdieu, P. (1984). *Distinction: A social critique of the judgement of taste*. Harvard University Press.

Brinker, T. J., Buslaff, F., Suhre, J. L., Silchmüller, M. P., Divizieva, E., Wilhelm, J., Hillebrand, G., Penka, D., Gaim, B., Swoboda, S., Baumermann, S., Walther, J. W., Brieske, C. M., Jakob, L., Baumert, H. M., Anhuef, O., Schmidt, S. M., Alfitian, J., Batra, A., … Thomas, R. (2019). Process Evaluation of a Medical Student–Delivered Smoking Prevention Program for Secondary Schools: Protocol for the Education Against Tobacco Cluster Randomized Trial. *JMIR Research Protocols*, *8*(4), e13508. https://doi.org/10.2196/13508

Brown, J. (2022, October 17). *Rural tennessee districts convene to address college-going decline*. SCORE. https://tnscore.org/rural-tennessee-districts-convene-to-address-college-going-decline/

Bruecker, E. M. (2021). *An exploration of financial aid application patterns and college access: Three studies using high school-level FAFSA data* [Doctoral dissertation, University of

Wisconsin - Madison]. https://www.proquest.com/docview/2572584472/abstract/3EAB052FF6694691PQ/1

Burkander, K., Ballerini, V., Kent, D. C., & Callahan, M. K. (2019). *The case of Delaware's Seed Scholarship: A well-established but lesser-known promise program*. Research for Action. https://www.researchforaction.org/research-resources/postsecondary-workforce/the-case-of-delawares-seed-scholarship-a-lesser-known-long-running-program-designed-to-increase-affordability/

Burkander, K., Callahan, M. K., Ballerini, V., & Hagood, S. (2019). *Statewide college promise programs: Balancing affordability, access, and student success*. Research for Action. https://www.researchforaction.org/research-resources/postsecondary-workforce/statewide-college-promise-programs-balancing-affordability-access-and-student-success/

Burkander, K., Kent, D., & Callahan, K. (2019). *The case of Oregon Promise: An early adopter focused on broadening access*. https://www.researchforaction.org/research-resources/postsecondary-workforce/the-case-of-oregon-promise-an-early-adopter-focused-on-broadening-access/

Burke, L. (2023, April 27). *How the promise of free college doesn't always help low-income students*. The Hechinger Report. https://hechingerreport.org/how-the-promise-of-free-college-doesnt-always-help-low-income-students/

Burland, E., Dynarski, S., Michelmore, K., Owen, S., & Raghuraman, S. (2022). *The power of certainty: Experimental evidence of the effective design of free tuition programs* (NBER Working Paper 29864). National Bureau of Economic Research. https://www.nber.org/papers/w29864

Cahalan, M. W., Addison, M., Brunt, N., Patel, P. R., Vaughan III, T., Genao, A., & Perna, L. W. (2022). *Indicators of higher education equity in the United States: 2022 historical trend report.* The Pell Institute for the Study of Opportunity in Higher Education, Council for Opportunity in Education (COE), and Alliance for Higher Education and Democracy of the University of Pennsylvania (PennAHEAD).

Callahan, M. K., Kent, D. C., Meehan, K., & Shaw, K. (2019). Affordability, access, and success: A framework for examining statewide college promise programs. In *Research for Action*. Research for Action. https://eric.ed.gov/?id=ED603776

Camera, L. (2019, September 12). 2020 explained: How free college and student debt will impact the election. *US News & World Report*. https://www.usnews.com/elections/student-debt-free-college-2020

Campbell, C. (2019). *Those left behind: Gaps in college attainment by race and geography*. Center for American Progress. https://www.americanprogress.org/article/those-left-behind/

Carnevale, A. P., Jayasundera, T., & Gulish, A. (2016). *America's divided recovery: College haves and have-nots*. Georgetown University Center on Education and the Workforce. https://cew.georgetown.edu/cew-reports/americas-divided-recovery/

Carr, P. J., & Kefalas, M. J. (2009). *Hollowing out the middle: The rural brain drain and what it means for America*. Beacon Press.

Carrico, C., Matusovich, H. M., & Paretti, M. C. (2019). A qualitative analysis of career choice pathways of college-oriented rural central Appalachian high school students. *Journal of Career Development*, *46*(2), 94–111. https://doi.org/10.1177/0894845317725603

Carruthers, C. K., & Fox, W. F. (2016). Aid for all: College coaching, financial aid, and post-secondary persistence in Tennessee. *Economics of Education Review, 51*, 97–112. https://doi.org/10.1016/j.econedurev.2015.06.001

Chenoweth, E., & Galliher, R. V. (2004). Factors influencing college aspirations of rural West Virginia high school students. *Journal of Research in Rural Education, 19*(2), 1–14.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed). Lawrence Erlbaum Associates.

Coladarci, T. (2007). Improving the yield of rural education research: An editor's swan song. *Journal of Research in Rural Education, 22*(3), 1–9.

College Promise. (n.d.). *Programs across the states*. Retrieved December 11, 2022, from https://www.mypromisetool.org/

Council of Economic Advisors. (n.d.). *Strengthening the Rural Economy—The Current State of Rural America*. The White House. Retrieved December 15, 2022, from https://obamawhitehouse.archives.gov/node/11491

Cox, G. R., Tucker, C. J., Sharp, E. H., Gundy, K. T. V., & Rebellon, C. J. (2014). Practical considerations: Community context in a declining rural economy and emerging adults' educational and occupational aspirations. *Emerging Adulthood, 2*(3), 173–183. https://doi.org/10.1177/2167696813515850

Creswell, J. W., & Plano Clark, V. L. (2017). *Designing and conducting mixed methods research (3rd ed.)*. SAGE.

Crumb, M. (2021, October 19). Census analysis: Refocus on rural Iowa needed to stabilize population decline. *Business Record.* https://www.businessrecord.com/census-analysis-refocus-on-rural-iowa-needed-to-stabilize-population-declines-17/

Cummings, K., Laderman, S., Lee, J., Tandberg, D., & Weeden, D. (2021). *Investigating the impacts of state higher education appropriations and financial aid*. State Higher Education Executive Officers Association. https://sheeo.org/wp-content/uploads/2021/05/SHEEO_ImpactAppropationsFinancialAid.pdf

Cygnal (2022). *Iowa statewide survey of working-age residents.* https://www.iowachamberalliance.com/filesimages/20582%20ICA-IAWorkingAge-Deck_v2.pdf

Data Insight Partners. (2022). *Current FAFSA Completion Rates by State*. https://national.fafsatracker.com/currentrates?

Denton, N. A., & Deane, G. D. (2010). Researching race and ethnicity: Methodological issues. In *Researching race and ethnicity: Methodological issues*. Sage. https://doi.10.4135/9781446200902.n5

Dickler, J. (2022, April 8). Free college is now a reality in nearly 30 states. *CNBC*. https://www.cnbc.com/2022/04/08/free-college-is-now-a-reality-in-nearly-30-states.html

Do, C. (2004). The effects of local colleges on the quality of college attended. *Economics of Education Review, 23*(3), 249–257. https://doi.org/10.1016/j.econedurev.2003.05.001

Dong, N., & Maynard, R. (2013). *PowerUp!: A tool for calculating minimum detectable effect sizes and minimum required sample sizes for experimental and quasi-experimental design studies* [Computer software]. http://www.causalevaluation.org/

Dowd, A. C., Rosinger, K. O., & Fernandez Castro, M. (2020). Trends and perspectives on finance equity and the promise of community colleges. In L. W. Perna (Ed.), *Higher*

Education: Handbook of theory and research (Vol. 35, pp. 1–72). Springer International Publishing. https://doi.org/10.1007/978-3-030-11743-6_7-1

Duflo, E., Glennerster, R., & Kremer, M. (2007). Using randomization in development economics research: A toolkit. In *Handbook of development economics* (Vol. 4, pp. 3895–3962). Elsevier. https://doi.org/10.1016/S1573-4471(07)04061-2

Dunstan, S., Henderson, M., Griffith, E. H., Jaeger, A., & Zelna, C. (2021). Defining rural: The impact of rural definitions on college student success outcomes. *Theory & Practice in Rural Education*, *11*(1), 60–75. https://doi.org/10.3776/tpre.2021.v11n1p60-75

Dynarski, S., Libassi, C. J., Michelmore, K., & Owen, S. (2021). Closing the gap: The effect of reducing complexity and uncertainty in college pricing on the choices of low-income students. *American Economic Review*, *111*(6), 1721–1756. https://doi.org/10.1257/aer.20200451

Dynarski, S. M., & Scott-Clayton, J. E. (2006). The cost of complexity in federal student aid: Lessons from optimal tax theory and behavioral economics. *National Tax Journal*, *59*(2), 319–356. https://doi.org/10.17310/ntj.2006.2.07

Dynarski, S., Nurshatayeva, A., Page, L., & Scott-Clayton, J. (2022). *Addressing non-financial barriers to college access and success: Evidence and policy implications* (NBER Working Paper 30054). National Bureau of Economic Research. https://www.nber.org/papers/w30054

Dynarski, S., Page, L. C., & Scott-Clayton, J. (2022). *College Costs, Financial Aid, and Student Decisions* (NBER Working Paper 30275). National Bureau of Economic Research (NBER). https://doi.org/10.3386/w30275

Dynarski, S., & Scott-Clayton, J. (2013). Financial aid policy: Lessons from research. *The Future of Children*, *23*(1), 67–91. https://doi.org/10.3386/w18710

Economic Research Service. (2021a, April 23). *Rural Economy*. U.S. Department of Agriculture (USDA). https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/rural-economy/

Economic Research Service. (2021b, April 23). *Rural Education*. U.S. Department of Agriculture (USDA). https://www.ers.usda.gov/topics/rural-economy-population/employment-education/rural-education/

Elder, G. H. & Conger, R.D. (2000). *Children of the land: adversity and success in rural America.* The University of Chicago Press.

Emerson, R. M., Fretz, R. I., & Shaw, L. L. (2011). *Writing ethnographic fieldnotes (2nd ed.)*. University of Chicago Press. https://press.uchicago.edu/ucp/books/book/chicago/W/bo12182616.html

Erwin, B., & Syverson, E. (2022). *State information request: College promise programs*. Education Commission of the States. https://www.ecs.org/state-information-request-college-promise-programs/

Evans, B. J. (2021). Understanding the complexities of experimental analysis in the context of higher education. In L. W. Perna (Ed.), *Higher education: Handbook of theory and research* (Vol. 36, pp. 611–661). Springer International Publishing. https://doi.org/10.1007/978-3-030-44007-7_12

Fetters, M. D., & Molina-Azorin, J. F. (2017). The journal of mixed methods research starts a new decade: The mixed methods research integration trilogy and its dimensions. *Journal of Mixed Methods Research*, *11*(3), 291–307. https://doi.org/10.1177/1558689817714066

Flores, S. M., & Drake, T. A. (2014). Does English language learner (ELL) identification predict college remediation designation? A comparison by race and ethnicity, and ELL waiver status. *Review of Higher Education*, *38*(1), 1–36. https://doi.org/10.1353/rhe.2014.0041

Future Ready Iowa Act, § House File 2458 (2018). https://www.legis.iowa.gov/docs/publications/LGE/87/HF2458.pdf

Gándara, D., & Li, A. (2020). Promise for whom? "Free-college" programs and enrollments by race and gender classifications at public, 2-year colleges. *Educational Evaluation and Policy Analysis*, *42*(4), 603–627. https://doi.org/10.3102/0162373720962472

Ganss, K. M. (2016). The college transition for first-year students from rural Oregon communities. *Journal of Student Affairs Research and Practice*, *53*(3), 269–280. https://doi.org/10.1080/19496591.2016.1157487

Gary, A., & Holmes, D. (2020). Researcher positionality—A consideration of its influence and place in qualitative research—A new researcher guide. *Shanlax International Journal of Education*, *8*(4), 1–10. https://doi.org/10.34293/education.v8i4.3232

Glaser, B., & Strauss, A. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Aldine.

Goldman, A. M. (2019). Interpreting rural students' stories of access to a flagship university. *The Rural Educator*, *40*(1), 16–28. https://doi.org/10.35608/ruraled.v40i1.530'

Governor's Empower Rural Iowa Initiative Task Force (2022). *Empower Rural Iowa annual report: December 2022.* https://www.iowaeda.com/UserDocs/documents/IEDA/eri_report_122022.pdf

Griffin, D., Hutchins, B. C., & Meece, J. L. (2011). Where do rural high school students go to find information about their futures? *Journal of Counseling & Development*, *89*(2), 172–181. https://doi.org/10.1002/j.1556-6678.2011.tb00075.x

Guba, E. G. (1981). Criteria for assessing the trustworthiness of naturalistic inquiries. *ECTJ*, *29*(2), 75–91. https://doi.org/10.1007/BF02766777

Guiffrida, D. A. (2008). Preparing rural students for large colleges and universities. *Journal of School Counseling*, *6*(14), 1–25.

Gurantz, O. (2020). What does free community college buy? Early impacts from the Oregon promise. *Journal of Policy Analysis and Management*, *39*(1), 11–35. https://doi.org/10.1002/pam.22157

Gurantz, O., Howell, J., Hurwitz, M., Larson, C., Pender, M., & White, B. (2019). *Realizing your college potential? Impacts of College Board's RYCP campaign on postsecondary enrollment* (EdWorkingPaper 19–40). Annenberg Institute at Brown University. https://edworkingpapers.com/ai19-40

Hallmark, T., & Ardoin, S. (2021). Public narratives and postsecondary pursuits: An examination of gender, rurality, and college choice. *Journal of Women and Gender in Higher Education*, *14*(2), 121–142. https://doi.org/10.1080/26379112.2021.1950741

Hamilton, G., & Scrivener, S. (2018). *Measuring treatment contrast in randomized controlled trials*. MDRC. https://www.mdrc.org/publication/measuring-treatment-contrast-randomized-controlled-trials

Harris, D. N., Farmer-Hinton, R., Debbie, K., Diamond, J., Blakely Reavis, T., Krupa Rifelj, K., Lustick, H., & Carl, B. (2018). *The promise of free college (and its potential pitfalls)*.

Brown Center on Education Policy at Brookings. https://vtechworks.lib.vt.edu/handle/10919/97762

Hayes, R. J., & Moulton, L. H. (2017). *Cluster randomised trials (2nd ed.)*. CRC Press.

Hedges, L. V., & Hedberg, E. C. (2007a). Intraclass correlation values for planning group-randomized trials in education. *Educational Evaluation and Policy Analysis*, *29*(1), 60–87. https://doi.org/10.3102/0162373707299706

Hedges, L. V., & Hedberg, E. C. (2007b). Intraclass correlations for planning group randomized experiments in rural education. *Journal of Research in Rural Education*, *22*(10), 1–15.

Hennink, M., & Kaiser, B. N. (2022). Sample sizes for saturation in qualitative research: A systematic review of empirical tests. *Social Science & Medicine*, *292*(114523), 1–10. https://doi.org/10.1016/j.socscimed.2021.114523

Hillman, N., & Weichman, T. (2016). *Education deserts: The continued significance of "place" in the twenty-first century* (Viewpoints: Voices from the Field). American Council on Education. https://www.acenet.edu/Documents/Education-Deserts-The-Continued-Significance-of-Place-in-the-Twenty-First-Century.pdf

Hodara, M. (2017). *What does the research say about barriers to FAFSA completion and strategies to boost completion?* Education Northwest. https://educationnorthwest.org/sites/default/files/resources/FAFSA-research%20handout-jan2017.pdf

Hodara, M., & Childress, L. (2021). *What were the reach and impact of the Oregon Promise financial aid program in its first two years?* (REL 2022-119). Regional Educational Laboratory Northwest. https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=REL2022119

Holland, P. W. (1986). Statistics and causal inference. *Journal of the American Statistical Association, 81*(396), 945–960. https://doi.org/10.1080/01621459.1986.10478354

Hoxby, C. M., & Turner, S. (2015). What high-achieving low-income students know about college. *American Economic Review*, *105*(5), 514–517. https://doi.org/10.1257/aer.p20151027

Hoxby, C., & Turner, S. (2013). *Expanding college opportunities for high-achieving, low-income students* (Discussion Paper No. 12-014). Stanford Institute for Economic Policy Research.

Hurst, K. (2022, May 18). More than half of Americans live within an hour of extended family. *Pew Research Center*. https://www.pewresearch.org/short-reads/2022/05/18/more-than-half-of-americans-live-within-an-hour-of-extended-family/Hurwitz, M. (2012). The impact of institutional grant aid on college choice. *Educational Evaluation and Policy Analysis, 34*(3), 344–363. https://doi.org/10.3102/0162373712448957

Hyman, J. (2020). Can light-touch college-going interventions make a difference? Evidence from a statewide experiment in Michigan. *Journal of Policy Analysis and Management*, *39*(1), 159–190. https://doi.org/10.1002/pam.22155

Institute of Education Sciences. (2022). *What Works Clearinghouse procedures and standards handbook, Version 5.0*. U.S. Department of Education. https://ies.ed.gov/ncee/wwc/handbooks

Iowa College Aid. (2021). *Annual Report FY21*. https://iowacollegeaid.gov/AnnualReports

Iowa College Aid. (2022). *Future Ready Iowa: Last-Dollar Scholarship outcomes*.

Iowa College Aid. (2023, June 1). *Last-Dollar Scholarship eligibility changes FAQ*. https://iowacollegeaid.gov/news/LastDollarFAQ

Iowa Department of Education. (n.d.). *Community Colleges*. Retrieved May 31, 2022, from https://educateiowa.gov/adult-career-comm-college/community-colleges

Iowa Department of Public Health. (2011). *Iowa rural and agricultural health and safety resource plan 2011*. https://publications.iowa.gov/id/eprint/22055

Iowa Hospital Association (2020). *Access to health care in rural Iowa: Preserving rural economies and health.* https://www.ihaonline.org/wp-content/uploads/2020/12/CAH-CAF-position-paper-FINAL-V2.pdf

Iowa Western Community College. (n.d.). *Diesel Technology, A.A.S.* Iowa Western Community College. Retrieved November 16, 2023, from https://www.iwcc.edu/academic_programs/industrial-technology/diesel-technology-a-a-s/

Iowa Workforce Development. (2018). *Iowa's workforce and the economy: 2018*. https://www.iowaworkforcedevelopment.gov/iowas-workforce-and-economy-2018

Irwin, V., Wang, K., Hein, S., Zhang, J., Burr, R., Roberts, A., Barmer, A., Mann, F. B., Dilig, R., Parker, S., Nachazel, T., Barnett, M., & Purcell, S. (2022). *Report on the condition of education 2022* (NCES 2022-144). U.S. Department of Education National Center for Education Statistics. https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2022144

Kanno, Y., & Cromley, J. G. (2015). English language learners' pathways to four-year colleges. *Teachers College Record*, *117*(12), 1–44. https://doi.org/10.1177/016146811511701202

Keily, T., & McCann, M. (2021). *Perceptions of postsecondary education and training in rural areas*. Education Commission of the States. https://www.ecs.org/perceptions-of-postsecondary-education-and-training-in-rural-areas/

Kim, J. (2012). Exploring the relationship between state financial aid policy and postsecondary enrollment choices: A focus on income and race differences. *Research in Higher Education*, *53*(2), 123–151. https://doi.org/10.1007/s11162-011-9244-1

King, S. B. (2012). Increasing college-going rate, parent involvement, and community participation in rural communities. *The Rural Educator*, *33*(2). https://doi.org/10.35608/ruraled.v33i2.415

Kirkland Community College. (n.d.). *Diesel Truck Technology*. Retrieved November 16, 2023, from https://www.kirkwood.edu/programs/degrees/manufacturing-trades-transportation/diesel-truck-technology

Kirkpatrick Johnson, M., Elder, G.H, & Stern, M. (2005). Attachments to family and community and the young adult transition of rural youth. *Journal of Research on Adolescence, 15*(1), 99-125.

Klasik, D., Blagg, K., & Pekor, Z. (2018). Out of the education desert: How limited local college options are associated with inequity in postsecondary opportunities. *Social Sciences, 7*(9), 1-26. https://doi.org/10.3390/socsci7090165

Knott, K. (2023, March 20). Treating farm families unfairly? *Inside Higher Ed.* https://www.insidehighered.com/news/2023/03/21/congress-considers-family-farm-and-small-business-fafsa-exemption

Kofoed, M. S. (2017). To apply or not to apply: FAFSA completion and financial aid gaps. *Research in Higher Education*, *58*(1), 1–39. https://doi.org/10.1007/s11162-016-9418-y

Kraft, M. A. (2020). Interpreting effect sizes of education interventions. *Educational Researcher*, *49*(4), 241–253. https://doi.org/10.3102/0013189X20912798

Krueger, R. A., & Casey, M. A. (2015). *Focus groups: A practical guide for applied research* (5th ed.). SAGE.

Laderman, S., & Kunkle, K. (2022). *State higher education finance: FY 2021*. State Higher Education Executive Officers Association. https://shef.sheeo.org/wp-content/uploads/2022/06/SHEEO_SHEF_FY21_Report.pdf

Linos, E., Reddy, V., & Rothstein, J. (2022). Demystifying college costs: How nudges can and can't help. *Behavioural Public Policy*, 1–22. https://doi.org/10.1017/bpp.2022.1

Lipman Hearn. (2010). *Wondering what works? The changing marketing mix in higher education*. https://www.case.org/resources/marketing-spending-colleges-and-universities

Lumina Foundation. (n.d.). *A stronger nation: Learning beyond high school builds American talent.* Retrieved December 11, 2022, from https://www.luminafoundation.org/stronger-nation/

Manly, C. A., Wells, R. S., & Kommers, S. (2020). Who are rural students? How definitions of rurality affect research on college completion. *Research in Higher Education*, *61*(6), 764–779. https://doi.org/10.1007/s11162-019-09556-w

Maxwell, J. (1992). Understanding and validity in qualitative research. *Harvard Educational Review*, *62*(3), 279–301. https://doi.org/10.17763/haer.62.3.8323320856251826

McDonough, P. M., & Calderone, S. (2006). The meaning of money: Perceptual differences between college counselors and low-income families about college costs and financial aid. *American Behavioral Scientist*, *49*(12), 1703–1718. https://doi.org/10.1177/0002764206289140

McDonough, P. M., Gildersleeve, R. E., & Jarsky, K. M. (2010). The golden cage of rural college access: How higher education can respond to the rural life. In *Rural education for*

the twenty-first century: Identity, place, and community in a globalizing world. (pp. 191–209). The Pennsylvania State University Press.

McDonough, P. M., & McClafferty, K., A. (2001). *Rural college opportunity: A Shasta and Siskiyou county perspective*. UCLA Graduate School of Education & Information Studies. http://www.mcconnellfoundation.org/wp-content/uploads/2015/07/rural_college.pdf

McNamee, T. (2019). Social capital in the rural United States and its impact on educational attainment. In R.D. Bartee & P.L. George (Eds.), *Contemporary perspectives on social capital in educational contexts* (pp. 201-219). Information Age Publishing.

Meece, J. L., Hutchins, B. C., Byun, S., T. W., F., Irvin, M. J., & Weiss, M. (2013). Preparing for adulthood: A recent examination of the alignment of rural youth's future educational and vocational aspirations. *Journal of Educational and Developmental Psychology*, *3*(2), p175. https://doi.org/10.5539/jedp.v3n2p175

Meehan, K., Hagood, S., Callahan, K., & Kent, D. (2019). *The case of Tennessee Promise: A uniquely comprehensive promise program*. Research for Action. https://www.researchforaction.org/research-resources/postsecondary-workforce/the-case-of-tennessee-promise-a-uniquely-comprehensive-promise-program/

Messer, L. C., Shoe, E., Canady, M., Sheppard, B. K., & Vincus, A. (2011). Reported adolescent sexual norms and the development of a social marketing campaign to correct youth misperceptions. *Journal of Children and Poverty*, *17*(1), 45–63. https://doi.org/10.1080/10796126.2011.539197

Morton, T. R., Ramirez, N. A., Meece, J. L., Demetriou, C., & Panter, A. T. (2018). Perceived barriers, anxieties, and fears in prospective college students from rural high schools. *The High School Journal*, *101*(3), 155–176. https://doi.org/10.1353/hsj.2018.0008

Murnane, R. J., & Willett, J. B. (2010). *Methods matter: Improving causal inference in educational and social science research*. Oxford University Press.

National Center for Education Statistics (2023, November). Career and technical education programs in rural high schools. *Condition of Education.* U.S. Department of Education, Institute of Education Sciences. Retrieved February 24, 2024 from https://nces.ed.gov/programs/coe/indicator/lce.

NCHEMS. (2018). *College-going rates of high school graduates—Directly from high school, 2018.* http://www.higheredinfo.org/dbrowser/index.php?submeasure=63&year=2018&level=nation&mode=map&state=

Nelson, I.A. (2016). Rural students' social capital in the college search and application process. *Rural Sociology 81*(2), 249-281. https://doi.org/10.1111/ruso.12095

Nguyen, H. (2019). Free tuition and college enrollment: Evidence from New York's Excelsior program. *Education Economics*, *27*(6), 573–587. https://doi.org/10.1080/09645292.2019.1652727

Nguyen, H. (2020). Free college? Assessing enrollment responses to the Tennessee Promise program. *Labour Economics*, *66*(101882), 1–17. https://doi.org/10.1016/j.labeco.2020.101882

Nguyen, T. D., Kramer, J. W., & Evans, B. J. (2019). The effects of grant aid on student persistence and degree attainment: A systematic review and meta-analysis of the causal

evidence. *Review of Educational Research*, *89*(6), 831–874. https://doi.org/10.3102/0034654319877156

Nichols, A. H., & Schak, J. O. (2018). *Degree attainment for Black adults: National and state trends*. The Education Trust. https://edtrust.org/resource/national-state-trends-degree-attainment-black-adults/

Northeast Iowa Community College. (n.d.). *Last-Dollar Scholarship—Northeast Iowa Community College*. Iowa Last-Dollar Scholarship. Retrieved December 6, 2023, from https://www.nicc.edu/financial-aid/scholarships/last-dollar/

Odle, T. (2022). *The power of "free" college: Reducing racial and socioeconomic inequalities in college expectations* (EdWorkingPaper 22–565). Annenberg Institute at Brown University. https://doi.org/10.26300/0wkw-wd50

Office of the Governor of Iowa: Kim Reynolds. (n.d.). *Empowering rural Iowa*. Retrieved June 16, 2022, from https://governor.iowa.gov/goals/empowering-rural-iowa

Oregon Higher Education Coordinating Commission. (2015). *Fact sheet: The Oregon Promise*. https://www.insidehighered.com/sites/default/files/files/OregonPromiseFactSheetFINAL7_8_15%20(1).pdf

Owen, L. (2012). *Narrowing the college opportunity gap: Helping students and families navigate the financial aid process* [Doctoral dissertation, Oregon State University]. https://www.proquest.com/docview/1220880050/abstract/D4DDE706C3B0463EPQ/1

Owen, L., Poynton, T., & Moore, R. (2020). Student preferences for college and career information. *Journal of College Access*, *5*(1), 68–100.

Page, L. C., Castleman, B. L., & Meyer, K. (2020). Customized nudging to improve FAFSA completion and income verification. *Educational Evaluation and Policy Analysis*, *42*(1), 3–21. https://doi.org/10.3102/0162373719876916

Page, L. C., Iriti, J. E., Lowry, D. J., & Anthony, A. M. (2019). The promise of place-based investment in postsecondary access and success: Investigating the impact of the Pittsburgh Promise. *Education Finance and Policy*, *14*(4), 572–600. https://doi.org/10.1162/edfp_a_00257

Page, L. C., & Scott-Clayton, J. (2016). Improving college access in the United States: Barriers and policy responses. *Economics of Education Review*, *51*, 4–22. https://doi.org/10.1016/j.econedurev.2016.02.009

Perkins, H. W., Craig, D. W., & Perkins, J. M. (2011). Using social norms to reduce bullying: A research intervention among adolescents in five middle schools. *Group Processes & Intergroup Relations*, *14*(5), 703–722. https://doi.org/10.1177/1368430210398004

Perna, L. (2006a). Studying college access and choice: A proposed conceptual model. In J. C. Smart (Ed.), *Handbook of higher education* (Vol. 21, pp. 99–157). Kluwer Academic Publishers. https://doi.org/10.1007/1-4020-4512-3_3

Perna, L. (2006b). Understanding the relationship between information about college prices and financial aid and students' college-related behaviors. *American Behavioral Scientist, 49*(12), 1620–1635. https://doi.org/10.1177/0002764206289144

Perna, L. W. (2010). Toward a More Complete Understanding of the Role of Financial Aid in Promoting College Enrollment: The Importance of Context. In J. C. Smart (Ed.), *Higher Education: Handbook of Theory and Research: Volume 25* (pp. 129–179). Springer Netherlands. https://doi.org/10.1007/978-90-481-8598-6_4

Perna, L. W., & Finney, J. E. (2014). *The attainment agenda: State policy leadership in higher education*. Johns Hopkins University Press.

Perna, L. W., Klein, M. W., & McLendon, M. K. (2014). Insights and Implications for State Policy-Makers. *The ANNALS of the American Academy of Political and Social Science*, *655*(1), 209–230. https://doi.org/10.1177/0002716214539895

Perna, L. W., & Leigh, E. W. (2018). Understanding the promise: A typology of state and local college promise programs. *Educational Researcher*, *47*(3), 155–180. https://doi.org/10.3102/0013189X17742653

Perna, L. W., Rowan-Kenyon, H., Bell, A., Thomas, S. L., & Li, C. (2016). A typology of federal and state programs designed to promote college enrollment. *The Journal of Higher Education*, *79*(3), 243–267.

Perna, L. W., & Steele, P. (2011). The Role of Context in Understanding the Contributions of Financial Aid to College Opportunity. *Teachers College Record*, *113*(5), 895–933. https://doi.org/10.1177/016146811111300507

Peshkin, A. (1988). In search of subjectivity—One's own. *Educational Researcher*, *17*(7), 17–21. https://doi.org/10.3102/0013189X017007017

Peters, D. (2019). *Rural Iowa at a Glance 2018 Edition*. Iowa State University Extension and Outreach. https://store.extension.iastate.edu/product/Rural-Iowa-at-a-Glance-2018-Edition

Petrin, R. A., Schafft, K. A., & Meece, J. L. (2014). Educational sorting and residential aspirations among rural high school students: What are the contributions of schools and educators to rural brain drain? *American Educational Research Journal*, *51*(2), 294–326. https://doi.org/10.3102/0002831214527493

Poynton, T. A., & Lapan, R. T. (2017). Aspirations, achievement, and school counselors' impact on the college transition. *Journal of Counseling & Development, 95*(4), 369–377. https://doi.org/10.1002/jcad.12152

Puente, M., Martinez, M.N., Arroyo, D.R., & Torres, S. (2023). Rural Latinx students' spatial imaginations for their college choices: Towards a student understanding of "rural-serving institutions" in California's San Joaquin Valley. *Education Sciences, 13*(7), 1-19. https://doi.org/10.3390/educsci13070660

Research for Action. (2019, December). *State and Local College Promise Programs: Examining Policy and Practice*. Research for Action. https://www.researchforaction.org/project/state-local-college-promise-programs-exploration-policy-practice/

Robbins, B. M. (2012). "People like us don't go there": Local culture and college aspirations in rural Nebraska. *Yale Journal of Sociology, 12,* 98–129.

Rosales, J. (2015, February 1). *With new roles, school counselors are more indispensable than ever*. National Education Association. https://www.nea.org/advocating-for-change/new-from-nea/new-roles-school-counselors-are-more-indispensable-ever

Rubin, D. B. (2008). For objective causal inference, design trumps analysis. *The Annals of Applied Statistics, 2*(3), 808–840. https://doi.org/10.1214/08-AOAS187

Saldaña, J. (2021). *The coding manual for qualitative researchers*. SAGE.

Schak, J. O., Bentley, C., Nichols, A. H., & Pilar, W. D. (2019). *Broken mirrors II: Latino student representation at public state colleges and universities*. The Education Trust. https://edtrust.org/wp-content/uploads/2014/09/Broken-Mirrors-Latino-Student-Representation-at-State-Public-Colleges-and-Universities-September-2019.pdf

Schmitt-Wilson, S., Downey, J. A., & Beck, A. E. (2018). Rural educational attainment: The importance of context. *Journal of Research in Rural Education, 33*(1), 1–14. https://doi.org/10.18113/P8JRRE3301

Schraeder, B. (2021, April 5). Survey findings: How COVID-19 is impacting FAFSA filings. *Education Advisory Board (EAB)*. https://eab.com/insights/blogs/enrollment/fasfa-fillings-2021/

Showalter, D., Hartman, S. L., Eppley, K., Johnson, J., & Klein, B. (2023). *Why rural matters 2023: Centering equity and opportunity*. National Rural Education Association. https://www.nrea.net/why-rural-matters

Sikes, A. (2018). *Rural students' experiences at selective four-year colleges: Pathways to persistence and success* [Doctoral dissertation, William and Mary]. https://scholarworks.wm.edu/etd//1530192623

Sims, L. R., & Ferrare, J. J. (2021). "Since I am from where I am from": How rural and urban first-generation college students differentially use social capital to choose a college major. *Journal of Research in Rural Education*, *37*(6), 1–21. https://doi.org/10.26209/JRRE3706

Sorensen, L. C., & Hwang, M. (2021). The importance of place: Effects of community job loss on college enrollment and attainment across rural and metropolitan regions. *AERA Open, 7*(1), 1–18. https://doi.org/10.1177/2332858421997170

Sowl, S., & Crain, A. M. (2021). A systematic review of research on rural college access since 2000. *Rural Educator*, *42*(2), 16–34.

Sowl, S., Smith, R.A., Brown, M.G. (2021). Rural college graduates: Who comes home? *Rural Sociology, 87*(1), 303-329.

Sponsler, B. A., & Hillman, N. (2016, April 11). Where you live rather than what you know? The problem with education deserts. *Brookings*. https://www.brookings.edu/blog/brown-center-chalkboard/2016/04/11/where-you-live-rather-than-what-you-know-the-problem-with-education-deserts/

Tamborini, C. R., Kim, C., & Sakamoto, A. (2015). Education and lifetime earnings in the United States. *Demography*, *52*(4), 1383–1407.

Thier, M., & Beach, P. (2019). Stories we don't tell: Research's limited accounting of rural schools. *School Leadership Review*, *14*(2), 1–15.

Thier, M., Longhurst, J. M., Grant, P. D., & Hocking, J. E. (2021). Research deserts: A systematic mapping review of U.S. rural education definitions and geographies. *Journal of Research in Rural Education*, *37*(2), 1–24. https://doi.org/10.26209/JRRE3702

Thomas, A. R., & Fulkerson, G. M. (2020). Urbanormativity and the university. *New Directions for Student Services*, *2020*(171–172), 21–28. https://doi.org/10.1002/ss.20361

Tieken, M. C. (2016). College talk and the rural economy: Shaping the educational aspirations of rural, first-generation students. *Peabody Journal of Education*, *91*(2), 203–223. https://doi.org/10.1080/0161956X.2016.1151741

Turley, R. N. L. (2009). College proximity: Mapping access to opportunity. *Sociology of Education*, *82*(2), 126–146. https://doi.org/10.1177/003804070908200202

U.S. Census Bureau. (2010). *American Community Survey*. https://data.census.gov

U.S. Census Bureau. (2020). *American Community Survey*. https://data.census.gov

U.S. Department of Education. (n.d.). *Laws & guidance*. Retrieved December 11, 2022, from https://www2.ed.gov/policy/landing.jhtml?src=ft

U.S. Department of Education, National Center for Education Statistics. (2017a). Table 4. Number of city, suburban, town, and rural regular, operating public and elementary and secondary schools with student membership and percentage distribution of students in membership, by state or jurisdiction: School year 2015-16. In *Selected Statistics from the Public Elementary and Secondary Education Universe: School Year 2015-16*. National Center for Education Statistics. https://nces.ed.gov/pubs2018/2018052/tables/table_04.asp

U.S. Department of Education, National Center for Education Statistics. (2017b). Table 326.10: Graduation rate from first institution attended for first-time, full-time bachelor's degree-seeking students at 4-year postsecondary institutions, by race/ethnicity, time to completion, sex, control of institution, and acceptance rate: Selected cohort entry years, 1996 through 2010. In *Digit of Education Statistics (2017 ed.)*. https://nces.ed.gov/programs/digest/d17/tables/dt17_326.10.asp

U.S. Department of Education, National Center for Education Statistics. (2019). Table 302.46: Percentage distribution of fall 2009 ninth graders, by high school locale in 2009, high school completion status, postsecondary enrollment and work status or plans, and postsecondary attainment status: 2013 and 2016. In *Digest of Education Statistics (2019 ed.)*. National Center for Education Statistics. https://nces.ed.gov/programs/digest/d19/tables/dt19_302.46.asp?current=yes

U.S. Department of Education, National Center for Education Statistics. (2021a). Table 330.20. Average undergraduate tuition, fees, room, and board charges for full-time students in degree-granting postsecondary institutions, by control and level of institution and state or jurisdiction: 2019-20 and 2020-21. In *Digest of Education Statistics (2021 ed.)*. National

Center for Education Statistics. https://nces.ed.gov/programs/digest/d21/tables/dt21_330.20.asp

U.S. Department of Education, National Center for Education Statistics. (2021b, May). *Public high school graduation rates*. https://nces.ed.gov/programs/coe/indicator/coi

U.S. Department of Education, Office of the Under Secretary. (2016). *America's College Promise Playbook*. https://www2.ed.gov/documents/press-releases/college-promise-playbook.pdf

Van Nostrand, J. (2023, July 7). Scholarship program though SWCC changes. *Creston News*. https://www.crestonnews.com/news/local/2023/07/07/scholarship-program-though-swcc-changes/

Viano, S., & Baker, D. J. (2020). How administrative data collection and analysis can better reflect racial and ethnic identities. *Review of Research in Education, 44*(1), 301–331. https://doi.org/10.3102/0091732X20903321

Wallace, L. A., & Diekroger, D. K. (2000, October 26). *"The ABCs in Appalachia": A descriptive view of perceptions of higher education in Appalachian culture*. The Annual Conference of the Women of Appalachia: Their Heritage and Accomplishments, Zanesville, OH.

Weisman, A. (2023). *FAFSA simplification act changes for implementation in 2024-25*. U.S. Department of Education, Office of Postsecondary Education. https://fsapartners.ed.gov/knowledge-center/library/dear-colleague-letters/2023-08-04/fafsa-simplification-act-changes-implementation-2024-25

Weissman, S. (2022, September 29). *Bridging a growing divide*. Inside Higher Ed. https://www.insidehighered.com/news/2022/09/29/new-college-prep-program-rural-wyoming-students

Wells, R.S., Chen, L., Bettencourt, G.M., & Haas, S. (2023). Reconsidering rural-nonrural college enrollment gaps: The role of socioeconomic status in geographies of opportunity. *Research in Higher Education, 64*, 1089-1112. https://doi.org/10.1007/s11162-023-09737-8

Wells, R. S., Manly, C. A., Kommers, S., & Kimball, E. (2019). Narrowed gaps and persistent challenges: Examining rural-nonrural disparities in postsecondary outcomes over time. *American Journal of Education, 126*(1), 1–31. https://doi.org/10.1086/705498

Whiteside, J. L. (2021). Becoming academically eligible: University enrollment among first-generation, rural college goers. *Rural Sociology*, *86*(2), 204–228. https://doi.org/10.1111/ruso.12353

Wright, C. J. (2012). Becoming to remain: Community college students and post- secondary pursuits in central Appalachia. *Journal of Research in Rural Education*, *27*(6), 1–11.

Yang, L., & Venezia, S. (2020). The impact of financial aid on associate degree attainment for rural community college students: A comparison of rural, urban, and suburban patterns. *Community College Review*, *48*(4), 423–454. https://doi.org/10.1177/0091552120935975

Yin, R. K. (2018). *Case study research and applications: Design and methods (6th ed.)* (6th edition). SAGE Publications.