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Taubman Health Sciences Library Phase 1 Report: Impact on Patient and Population Care

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Taubman Health Sciences Library Phase 1 Report: Impact on Patient and Population Care

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Executive Summary

In 2017, the Taubman Health Sciences Library Assessment Working Group was asked by the THL administration to assess the impact of the library on patient and population care because, in part, library-wide assessment plans would not likely consider information work in clinical areas.

The group conducted an exploratory sequential mixed methods study to address the charge. It concludes that:

- The Taubman Library and its staff have a positive impact on UM patient and population care.
- The resources perceived to be the most important to individuals are readily available to them and contribute to all areas of their work.
- Informationists interact with a surprising number of individuals from the target population, but there is still room for growth.
- Informationists might not frequently connect people and groups, but when they do, the connections are almost always beneficial.
- The library and its informationists were well-positioned to address information needs during the pandemic based on its strong remote presence.

The group recommends:

- A review of the resources explicitly mentioned in the open text question about unavailable resources.
- That another group consider if there is room to expand informationist work, and/or help the health sciences community better understand the range of services informationists offer.
- That another team look more deeply into the data underlying the impact expressed in Table 7.

Project Background

The Taubman Health Sciences Library (THL) Assessment Working Group was formed by THL administration in FY 2016 to create an assessment plan for the library. The working group submitted a [report](#) in FY 2017 that outlined a multi-pronged plan for implementation.

THL administration [asked](#) the group to prioritize an assessment of the THL impact on patient and population care. This priority was set because it was believed library-wide assessment plans would not consider information work in clinical areas and that there was less information available about this type of assessment.

Charge

The group was charged with:

- Providing an assessment plan focused on how well the library is working with providers, faculty, and health sciences students to identify, appraise, and apply information to provide high quality care
- Providing instruments to use to implement assessment in this area
- Developing an implementation plan, including a timeline, for conducting this assessment
- Submitting a final report stating the accomplishments of the group and results from the implementation plan

Accomplishments

We planned and executed a mixed methods study to determine the library's impact on patient and population care. The path to complete the project was long, with many accomplishments along the way.

2016 ([source](#)): The group accepted its charge, consulted with a methods expert, and decided on the methodology (mixed methods sequential exploratory study).

2017 ([source](#)): The group identified a study population and initial stakeholders for qualitative interviews, received 'not regulated' status from IRB-HSBS, created a [budget](#), presented an MLA lightning round talk, tested and distributed the initial stakeholder survey, conducted a literature review, presented at the miALA Pop Up Assessment Conference, began to develop the qualitative instrument and interviewer manual, and finalized choice of interviewees.

2018 ([source](#)): The group finished the qualitative instrument and interviewer manual, tested the instrument, conducted two pilot interviews, submitted a funding proposal to the Research and Creative Projects Committee, transcribed and coded the pilot interviews, conducted eleven formal interviews, developed a standardized

codebook, coded and analyzed interview results with Dedoose, and began to develop the broad quantitative survey based on themes from the interviews.

2019 ([source](#)): The group continued to analyze the interview data, invited the library assessment specialist to join the group, drafted survey questions, established a timeline for survey distribution, pilot tested the survey questions with colleagues, developed a cognitive interview script, conducted three cognitive interviews, shared interview script with another team on campus, and delivered a presentation about the project to AUL for Research candidates.

2020 ([source](#)): The group tested the survey's logic and flow in Qualtrics, shared information about the project at a tri-campus library assessment meeting, updated the survey based on the COVID-19 pandemic, put a hold on incentives, updated survey based on feedback from stakeholders, launched survey, started work on the manuscript, and shared information about the survey at the Public Services Communication Forum.

2021 ([source](#)): The group performed data analysis using SPSS queries, wrote up an initial draft of findings, returned unused funds to RCPC, and sent a final report to the THL Director to fulfill its charge.

2021: Assistant Director of THL and collections librarian led discussions with informationists at THL to review the resources explicitly mentioned in the open text question about unavailable resources (see [here](#) and [here](#)), and suggested ways to reach out to liaison areas.

Methodology

The group conducted an *exploratory sequential mixed methods study* to investigate and measure the library's impact on patient and population care. The method included qualitative interviews with clinicians and population health researchers (n=11) and a subsequent quantitative survey that was distributed to the broader sample population (n=3579). Data from both the interviews and survey were analyzed and combined to form the basis of this report.

Institutional Review Board: The University of Michigan IRB Health Sciences and Behavioral Sciences reviewed the project and determined that the "study does not fit the definition of human subjects research" and would not need to be regulated [HUM00131285].

Target Population ([source](#), [source](#)): University of Michigan health care providers across the health sciences who use the library and either provide patient care or conduct work that explicitly attempts to impact population health. Students were excluded because they do not have final responsibility for patient care.

Qualitative interviews: The first phase of data collection consisted of thirteen qualitative interviews with clinicians and population health researchers (two pilot; eleven formal). These individuals were identified through a stakeholder survey of THL staff. Two team members individually conducted the interviews. The interviews were scheduled for forty minutes. The first two interviews were pilots and were used to test the instrument. Data from the pilots were not retained for analysis. All interviews were recorded and later coded independently by two of the report authors. Recordings were transcribed with Scribie. Coding was conducted in Excel and transferred into Dedoose. The interview questions are available in [Appendix 1](#).

Emergent themes: The group identified three overarching themes from the qualitative data that would be further explored in the quantitative survey. The three themes, plus representative quotes from the qualitative interviews are:

1. Access to information resources (which can be itemized as resource access, resource types, and resources use)

Representative quotes ([source](#)):

- "Oh yes. In fact I do. So yes. When I bring my students over for the anatomy table, they have found it to be a tremendous resource the last couple of years that I've brought them here, because they can get a visual of almost like a patient, being able to identify the different structures that we go over in class. They can adapt to the visual learners. And it's a great review for them. And even on my evaluations, they said that they want to go more often. So it's been wonderful."
- "I feel that everything is literally at my fingertips. I can't tell you the last time I tried to pull an article from a journal that I couldn't access. So I think that that speaks to the depth and breadth of what the library has to offer, 'cause in my kind of work life, the things that I may look into are... Could be very diverse, and I've never had an issue getting an article, old, new, in an obscure journal versus a very mainstream journal. So I think that from a patient care perspective, if I'm about to do a procedure or I know I have a procedure coming up in the coming days and I wanna look up some stuff on it, it's very easy."

2. Informationist integration and value (which can be itemized as awareness and connection, instruction, expert searching, and statements of informationist value)

Representative quotes ([source](#)):

- "Because this is a relatively new mandate, we've done a lot of benchmarking, a lot of lit reviews of how hospitals have approached this or how other institutions, Public Health, other groups, have approached this work. So library resources have been critical in just understanding what has been done to date in order to guide our feet in determining the best strategy for us. So just to get a lay of the land, to understand what the most fruitful direction to take should be, being at such a resource-rich place like U of M and having the help and support of informationists as well, the Public Health core has been just wonderful."
- "And so whereas, like I said, there's not a specific patient encounter where I've called an informationist, I think that they've clearly shaped the care I deliver as a result of the education I've gotten over the last number of years being a part of this institution."
- "We have a bunch of clinicians trying to write grants when most of what they do is see patients, it doesn't come out so well without the help of the informationist I would say."

3. Information seeking behaviors

Representative quotes ([source](#)):

- "Yes, so they taught me to fish."
- "But I was at another institution for a few years before this that did not have this kind of support. And it really makes a difference in terms of your ability to stay up to date with things."

Quantitative survey: The second phase of data collection was a questionnaire informed by themes pulled from the phase one interviews. Each question in the questionnaire had an antecedent in the interviews (with the exception of those relating to COVID-19 and demographics). The questionnaire was piloted among colleagues and three cognitive interviews were conducted with members of the target population. The survey was opened on August 18, 2020. The cognitive interview materials are available in [Appendix 2](#) and [Appendix 3](#). The questionnaire is available in [Appendix 4](#).

Results

Sample ([source](#)): A total of 506 people completed the survey. Data from 385 respondents that described their work as related to patient care (n=220), population health (n=54), or both patient care and population health (n=111) are described in this phase 1 report on patient and population care. Data from respondents that described their work as related to the basic sciences (n=111) will be described in a later phase 2 report. The basic sciences data, along with data from 10 respondents whose work could not be categorized, was excluded from this phase 1 report, as they were not in our initial study population. The basic sciences data and analyses will be presented in a separate phase 2 report, coming in 2022. For this report, most respondents described their work as related to patient care in some capacity (n=331). A minority of respondents described their work as solely related to population health (n=54).

Table 1 presents the number of respondents who classified their work as population health, patient care, or both.

Table 1: Respondent breakdown

Type of work	Frequency	Percent
Patient care (PC)	220	44
Both PH and PC	111	22
Population health (PH)	54	11
Total number of eligible respondents	385	76
Exclusions		
Basic Science	111	22
Other	10	2
Total number of ineligible respondents	121	24
TOTAL	506	100

Representativeness ([source](#)): To test survey respondent representativeness, the respondent sample was checked against the population to whom the survey was sent for the following areas: school/college affiliation, gender, race, and

appointment track (clinical, research, tenure, lecturer). All areas except for gender were not statistically significant (p -value less than 0.05) in difference. Females, including academic women, are more likely to respond to surveys ([Smith, 2008](#)) and, therefore, across the major characteristics of this population, the respondent sample is similar to the population from which it was drawn.

Demographics ([source](#), [source](#)): The vast majority of respondents were white (n=239), affiliated with the medical school (n=424), and on clinical or tenure track (n=371).

We asked respondents to self-describe their race and gender identity. For race, 'white' represented 79% of the sample population, while Asian/Asian-American comprised 14% and African-American/Black/Hispanic/Latin-X just 6%. For gender identity, the majority of respondents were female (59%). See Table 2 and Table 3 for these numbers.

Table 2: Respondent race (self-described, n=301)

Race		
Group	Frequency	Percent
White	239	79
African-American / Black	11	4
Asian / Asian-American	43	14
Hispanic / Latin-X	6	2
Underrepresented	2	1

Table 3: Respondent gender identity (self-described, n=308)

Gender Identity		
Group	Frequency	Percent
Female	181	59
Male	126	41
Non-Binary	1	< 1

In Table 4, we see that the medical school was the affiliation for 81% of our sample. School of Public Health (6%), Nursing (5%), Dentistry (4%), and Pharmacy (2.5%) represent all but one of the other respondents.

In Table 5, we see there is a narrower division among tracks. all four tracks were in our sample (based on what we know from the Data Warehouse data we compiled). The most common in our sample were either clinical track (41%) or tenure track (33%). Lecturer, instructor, and research track account for the remaining 25%.

Table 4: Respondent primary affiliations (as reported in survey)

Primary School / College Affiliation		
Group	% of Valid Responses	Count
Med School	81.3%	260
SPH	6.3%	20
Nursing	5.6%	18
Dentistry	4.1%	13
Pharmacy	2.5%	8
Other	< 1%	1
Declined to answer	--	64

Table 5: Respondent classification (as listed in the Data Warehouse)

Track				
Group	% in Population	Expected count in sample of 506 (rounded)	Actual count in sample of 506	Significantly different?

Clinical Track	40.65%	206	200	No ($p = .60$)
Tenure Track	33.05%	167	171	
Lecturer / Instructor	14.81%	75	69	
Research Track	11.48%	58	66	

Impact of information resources ([source](#)): The respondents were asked to select up to three types of resources that were most important to their work. As expected, journals were chosen most frequently ($n=368$), followed by evidence-based resources ($n=225$) and guidelines ($n=197$). Reports ($n=65$) and statistical resources ($n=65$) pulled up the rear.

The impact of the resources were spread relatively evenly across the predefined list of options (Table 6). Teaching, publishing, professional development, and decision-making were clustered at the top. The implication is that the information resources most important to the respondents have a direct impact on their education, clinical, and research work.

Table 6: How do the information resources impact your work?

Type of Impact	Frequency
Teaching	345
Publishing and presenting	339
Professional development	321
Decision making	316
Data work	227
Grants	208

Forty respondents took the time to include free text responses to a question about unavailable resources important to their work. Many of the responses related to COVID access (e.g., more difficult to access books), resources not licensed by the library (e.g., MICROMEDEX, UpToDate), resources that are actually available (e.g.,

American Journal of Psychiatry), and general library services (e.g., Interlibrary Loan).

Several respondents provided direct resource suggestions (included verbatim), which another group can investigate ([source](#)):

- STATdx
- Radiology: Imaging Cancer, Nature Cancer, Nature Metabolism
- Nature Metabolism, The Lancet Diabetes and Endocrinology
- Almanac of Hospital Financial & Operating Indicators;
- ACCSAP knowledge self-assessment
- Rstudio Connect and ShinyServer for sharing our discoveries broadly, and making them more accessible and more available than a journal article can.
- Gapenski's Healthcare Finance: An Introduction to Accounting and Financial Management, Seventh Edition
- Tableau
- Resources like American Medical colleges reports for salaries and requirements for medical school are not available on line you have to go to the library to look at them and it is painstaking to copy the information you want

Others provided broad suggestions or recommendations (included verbatim), which another group can investigate ([source](#)):

- Med VPN does not allow for the same electronic access to UM Libraries as for on-campus network. This is a known issue and needs to be fixed. UM-VPN is fine, but it does not allow for access to Med resources. Switching VPN back and forth is ridiculous.
- Nursing journals
- Uptodate is not front and center as it should be
- Practice Guidelines from American Society for Reproductive Medicine
- Sometimes getting access to actual text books is also not easy.
- Curated preprint server access
- YouTube videos on healthcare topics - however, these are readily accessible via Google or other search engines.

Impact of informationist interactions ([source](#)): Less than half of respondents (n=156) noted that they had interacted with an informationist during the past three years. Given the size of the Library's user base and the impossibility of reaching everyone, this is expected. For the individuals who have interacted with informationists (n=129), 99% perceived those interactions as either very beneficial or somewhat beneficial.

In terms of impact, the respondents noted that informationists improve efficiency, information seeking, and completion of work (Table 7).

Table 7: How do informationists help impact your work? (n=114)

Type of Impact	Frequency	Percent
Improved my ability to find and use information	101	89
Contributed to the production and/or completion of my work	85	75
Helped me be more efficient with my time	73	64
Helped with my teaching and/or instruction needs	54	47
Informed my evidence-based decision-making process	31	27

For those who noted that they had not interacted with an informationist in the past three years (n=209), the most significant reason, beyond not having the need, was lack of awareness. Nearly 40% of respondents noted that they did not know there were informationists available to them (n=75) or how informationists could help them (n=65).

Table 8: Why haven't you interacted with an informationist? (n=209)

Reason	Frequency	Percent
I have not needed to meet with an informationist	106	51
I didn't know there was an informationist available to me	75	36
I don't know how an informationist can help me	65	31
I found another individual or group to help me	8	4

Impact of informationist connections ([source](#)): Respondents were asked whether an informationist had connected them to another individual or group. Only 28% respondents (n=43) in the quantitative survey acknowledged that such a

connection had occurred. When the connections did occur, 97% believed they were beneficial.

However, the theme of 'connection' was more prominent in the qualitative data. Here are two representative quotes from the interviews ([source](#)):

1. "I think one of the unique ways in which informationists contribute to population health, writ large, is by occupying a role that allows you a line of sight to various schools. When I think institutionally, and certainly as a health system, oftentimes we're not completely aware of what is happening in other schools. And being able to bring that interdisciplinary lens and awareness of those who were doing analogous or related or adjacent or complementary work in other disciplines has certainly informed our own thinking. So being that connective tissue between disciplines and schools I think is a unique way in which informationists enrich the field of population health and make it necessarily multidisciplinary, because we know that population health requires interventions and strategies and approaches that straddle disciplines."
2. "I think another role that the informationist...is connecting us with other researchers at the U who may be an additional resource to this kind of work, who were very interested in this area. So [researcher name] and others come to mind, some School of Public Health researchers who were very interested in Community Benefit, and any time you saw research that they were publishing, knowing that they were here, you would send that our way. And since then, we've had conversations with them. We've followed with interest their perspectives on what is happening nationally and used it to inform our hyper geographic local process."

Impact of COVID-19 on library usage ([source](#)): 22% of respondents stated that their use of the library changed during the pandemic. We asked these respondents to briefly describe how their use of the library changed. Most respondents acknowledged that their use of library resources increased, and possibly changed, because of the pandemic. Here are select responses ([source](#)):

Restrictions on physical access:

- "Used to go to the physical library, but now no longer accessible -- more dependent on internet resources"
- "Usually I use the great space for writing grants and papers, but that was not available during shutdown."

Increased use of resources:

- "the online library resources were invaluable to not only patient care but also the ability to learn about and expand our understanding of covid"
- "More actively looking for peer reviewed data and clinical guidelines."
- "I am much more often reading preprints, which do not involve the library in any way because the library is not affiliated with bioRxiv, although that is a possibility from what I understand."
- "Increased use to write COVID-related grants"
- "Accessed more from home."

Decreased use of resources:

- "Less time to use library resources due to increase in clinical load"
- "I would often interact online when I was in my office. During the pandemic I just didn't come to office [sic]."

Contributions to publications:

- "Increased use of resources including library information lead to review and write articles [sic] around COVID-19 management."
- "I worked on a publication and accessed online library resources more during the pandemic."

Increased expenses:

- "Regret having limited access to textbooks; this required me to purchase them out of pocket"

Pandemic challenges: The COVID-19 pandemic occurred just prior to questionnaire distribution. The group decided to delay its release and add a section about the pandemic since it had profoundly impacted patient and population care. The pandemic likely also negatively impacted the response rate to the survey. Despite these challenges, the survey yielded a number of interesting results.

Conclusions and Recommendations

Before delving into the conclusions and recommendations, it is important to note that respondents to the qualitative and quantitative components of the study were possibly, or maybe likely, favourably predisposed to the library. This could result in a disproportionately positive lean in the data.

General conclusions: To complete the charge, the group concludes that:

- The Taubman Library and its staff have a positive impact on UM patient and population care. This impact is evident through the availability of resources and work of individuals.
- The resources perceived to be the most important to individuals are readily available to them and contribute to their research, education, and clinical work.
- Informationists interact with a surprising number of individuals from the target population, but there is still room for growth (given the overall size of the population).
- While informationists might not frequently broker connections between people and groups, they are almost universally beneficial when they do occur.
- The library and its informationists were well-positioned to address information needs during the pandemic based on its strong remote presence.
- Individual use of the library changed in about a quarter of the population during the pandemic. Many individuals accessed materials online more frequently or in a different manner. Some individuals increased their use of library resources due to clinical and research needs while others reduced their use due to restrictions in their research activity. Others missed the physical space to conduct work or ask for assistance in-person.

Specific recommendations:

- Many respondents did not know that an informationist was available or how they could help. Another team should consider what room for growth there could or should be for informationist work, and/or help the health sciences community better understand the range of what informationists offer.
- Another team could take a deeper dive into some of the data related to impact of resources in Table 7.

Other takeaways:

- The group developed competence in research methodology, interview techniques, questionnaire and transcript coding, survey development, research software (e.g., Dedoose, Scribie, SPSS), and qualitative and quantitative analysis.
- The group worked closely with the University Library's Assessment Specialist, which ties into the One Library initiative and highlights the value of interdisciplinary collaboration.
- The group had an opportunity to present its progress at several meetings and conferences.
- The group distributed responsibility for various study components among all of its members, which created leadership opportunities for each member.
- The group diligently conducted a complex research study, and pursued it to completion.

Appendix 1: Qualitative Interview Questions ([source](#))

THL Patient and Population Care Assessment Interview Questions

(Turn on digital recorder and confirm that it is working)

Hello, my name is _(Your Name) and I am with _(Interviewee Name) on (Today's date)___

I want to confirm that you have signed the consent agreement to be interviewed.

Thank you for agreeing to be interviewed for our study. Your participation will help inform the library's resources and partnerships, and we will provide you with a manuscript abstract when it is available.

An assessment group at the Taubman Health Sciences Library is conducting a mixed-methods study to explore, identify, and analyze the library's value in patient and population care at the University of Michigan.* For this research, the library will be generally defined as the services and partnerships of informationists that work within the library, as well as the library's electronic and print content.

***Population care** can be defined as health care for broader populations rather than individuals and can include concepts such as clinical guidelines, protocols and legal policy. Specifically, for the purposes of this study, we define population care as "the health care needs of a specific population and making health care decisions for the population as a whole rather than for individuals" as cited by: <http://elearning.loyno.edu/masters-nursing-degree-online/resource/population-focused-healthcare>

Informationist: An information specialist who is often: "[embedded](#)" [at the site where patrons conduct their work or need access to information, such as in a hospital, clinic, or research laboratory; and \(2\) informationists have academic training or specialized knowledge of their patrons' fields of practice or research.](#)" Term first coined [in 2000](#).

Institution: as referred to in question #5) broadly includes your department, unit, or the University of Michigan at large.

Questions:

1. Tell me about your work in providing patient care or affecting population care. *
("Work" can be defined as including work directly with patients, populations, and research that affects patients and populations.)
2. How has your own use (e.g., unassisted by an informationist) of electronic or print resources from the library made a difference in the quality of patient care? Please describe the situation.

Probes from Creswell's "30 essential skills" book (chapter 15):

- Tell me more.
- What is an example of that?
- Could you explain your response more?
- What does "____" mean?

3. What are some examples of times that you worked with an informationist? (Probe reasons for asking for assistance, e.g., need for comprehensive search, difficulty finding something, need to filter search results, etc.)

Probes from Creswell's "30 essential skills" book (chapter 15):

- Tell me more.
- What is an example of that?
- Could you explain your response more?
- What does "____" mean?
- What are some of the reasons you haven't?

4. How has working with an informationist made a difference in the quality of patient care?

How has working with an informationist made a difference in population health?

Probes from Creswell's "30 essential skills" book (chapter 15):

- Tell me more.
- What is an example of that?
- Could you explain your response more?
- What does "____" mean?

5. What other ways does your informationist contribute to patient or population care in your institution? (e.g., instruction, supports research or evidence-based practice; provides specialized information services to departments; supports patient

education, participates in committees, accreditation, or similar activities; development of clinical guidelines, patient safety initiatives, etc.)

Probes from Creswell's "30 essential skills" book (chapter 15):

- Tell me more.
- What is an example of that?
- Could you explain your response more?
- What does " ____ " mean?

6. What else would you like to tell us about the library's role in patient and population care that we didn't ask? Again, the library will be generally defined as the services and partnerships of informationists that work within the library, as well as the library's electronic and print content.

Probes from Creswell's "30 essential skills" book (chapter 15):

- Tell me more.
- What is an example of that?
- Could you explain your response more?
- What does " ____ " mean?

Appendix 2: Cognitive Interview Script for Interviewees ([source](#))

Section 1. Introductory Questions

Q1. How do you describe your racial and/or ethnic background?

- Open-ended

Q2. How do you describe your gender identity?

- Open-ended

Q3. Please indicate the **U-M school(s) and/or college(s)** where you hold one or more paid appointments. If you have multiple paid appointments, please list what you consider to be your primary appointment first.

- School/College [menu of schools and colleges]
- School/College [menu of schools and colleges]
- School/College [menu of schools and colleges]

Q3a. You indicated that you have a paid appointment in [School/College]. If your appointment is in a particular department (or multiple departments), please list them here:

- Department: ____
- Department: ____

Q4. In which U-M building and/or clinic do you spend most of your work hours?

- U-M Buildings [menu of U-M buildings and clinics and an 'other' option with text box]

Q5. Is English your primary language in the workplace?

- Yes
- No

Q6. Which of the following best reflects your work?

- Population care
- Patient care
- Both
- Neither

Section 2. Resource Questions

Q7. Please select up to three types of information resources that are the most important to your professional work.

- Clinical practice guidelines or policies (e.g., Michigan Medicine Clinical Care Guidelines, ECRI Guidelines Trust)
- Government reports, research institute or association reports or other similar documents (e.g. reports from the CDC, WHO, etc.)
- Books, either electronic or print (e.g., Harrison's Internal Medicine, William's Hematology, Atlas of Head & Neck Pathology)
- Peer-reviewed journal literature (e.g., via PubMed, Google Scholar, Scopus)
- Evidence-based medicine and clinical information (e.g., Dynamed, Cochrane Library, Micromedex, UpToDate)
- Data, statistical and epidemiological resources (e.g., National Center for Health Statistics (NCHS), MeasureDHS, HIV/AIDS Survey Indicators, etc.)
- Citation management programs (e.g., EndNote, Mendeley, Zotero, etc.)
- Other

Q8. In what way(s) is/are these resources? Select all that apply.

- Teaching/Instruction (e.g., teaching, preparation, materials)
- Decision-making for evidence-based practice (e.g., policy decisions, community interventions)
- Data management and analysis (e.g., dissemination, sharing, visualization)
- Grants (e.g., funding opportunities, writing)
- Publishing and presenting (e.g., manuscript preparation, choice of journal, research methodologies)
- Professional learning and development (e.g. staying current, knowledge and skill building)
- Other

Q9. Are there any information resources that are important to you but not readily available through the University?

- Yes
- No

Section 3. Informationist questions

For the remaining questions, please note that the term *informationist* refers to a librarian in the Taubman Health Sciences Library who works within the health sciences.

If you've met with informationists more than once, consider your overall impression of those interactions when answering the questions.

Q10a Informationists interact with faculty in a variety of ways, including one-on-one, in groups (small or large), in classrooms, and in meetings. Have you interacted with an informationist in these or another way in the past three years?

- Yes
- No

Q10b Could you provide information about your 'no' response?

- I have not needed to interact with an informationist
- I didn't know there was an informationist available to me
- I found another individual or group to connect with
- I didn't know how to connect with an informationist
- Other

Q11a Informationists connect faculty to a variety of information and information resources like articles, data and statistics, policy papers, research institute studies, non-profit or government resources, tutorials, databases, etc.

Has an informationist worked with you to find these or similar types of information?

- Yes
- No
- Unsure

Q11b How would you characterize the contribution of the informationist(s) to your information-seeking efforts?

- Beneficial
- Neither beneficial or not beneficial
- Not beneficial

Q11c In which of the following ways did working with the informationist(s) help or impact your work? Check all that apply.

- Improved my ability to find and use information
- Helped me be more efficient with my time
- Informed my evidence-based decision-making process
- Contributed to the production and/or completion of my work
- Helped with my teaching and/or instruction needs
- Helped in another way
 - Please specify

Q12a Informationists connect faculty to individuals and groups across a wide range of disciplines. Has an informationist made a useful connection for you to another person or group?

- Yes
- Yes, multiple times
- No
- Unsure

Q12b Can you provide more information about why the connection was useful?

- Open ended

Appendix 3: Cognitive Interview Script for Interviewers ([source](#))

Cognitive Interview Materials

To dos

- [Invitation letter](#)
- We will seek additional cognitive interviews if we feel a need to do so after the first three.

Before interview

- Schedule 60 min meeting. Plan to have 45 min for cognitive interview
- Ensure that two people are present (interviewer and notetaker)
- Send consent form in advance

Materials for Interview

- Provide interviewee with a print version of interviewee-friendly survey
- Bring an interviewer-friendly version to the meeting
- Bring the informed consent form to reaffirm consent
- Obtain informed consent

Lead interviewer

- Facilitates the discussion.
- Keeps the discussion moving forward
- Obtains informed consent
- Make notes on interviewer-friendly survey as needed
- Make introductory statement
- Affirmations that feedback is helpful/useful throughout interview are appreciated (ex: "Yes, thank you! This is helpful.")
- Ask for "first impressions" of demographic questions

Notetaker

- Takes official notes
- Records the discussion

Introductory Statement

Thank you for helping us with our study. We're planning to distribute the survey widely throughout Michigan Medicine and other health sciences units. This conversation will help us fine tune the questions.

We're going to walk through the survey and prompt you for feedback at various points. Otherwise, treat this exercise as if you were taking the survey yourself.

We're going to take notes on our conversation. There are no right or wrong answers.

Do not read definitions. They are for reference if asked.

Population (instead of individual **patient**) **care** involves the health care needs of a specific population.

Informationist is a librarian in the Taubman Health Sciences Library who works within the health sciences.

Questions 1-6 (Demographics)

The first set of questions aim to understand our participants better. We're hoping to get demographic information to better inform our services and priorities. I'm going to ask you to consider this first set of 6 questions as a group and then ask you for your impressions of them. Okay? Please think about how the questions are worded.

*The first question we will be asking in our survey is... [repeat this phrasing throughout]

Q1. How do you describe your racial and/or ethnic background?
<ul style="list-style-type: none">• Open-ended
Q2. How do you describe your gender identity?
<ul style="list-style-type: none">• Open-ended
Q3. Please indicate the U-M school(s) and/or college(s) where you hold one or more paid appointments. If you have multiple paid appointments, please list what you consider to be your primary appointment first.
<ul style="list-style-type: none">• School/College [menu of schools and colleges]• School/College [menu of schools and colleges]• School/College [menu of schools and colleges]
Q3a. You indicated that you have a paid appointment in [School/College]. If your appointment is in a particular department (or multiple departments), please list them here:

<ul style="list-style-type: none"> • Department: ____ • Department: ____
<p>Q4. In which U-M building and/or clinic do you spend most of your work hours?</p>
<ul style="list-style-type: none"> • U-M Buildings [menu of U-M buildings and clinics and an 'other' option with text box]
<p>Q5. Is English your primary language in the workplace?</p>
<ul style="list-style-type: none"> • Yes • No
<p>Q6. Which of the following best reflects your work?</p>
<ul style="list-style-type: none"> • Population care • Patient care • Both • Neither

Probing questions

- What are your first impressions of these questions? Do you see yourself in these questions?
- Do any of them give you pause? If so, why?
- How would you answer the question for yourself?
- Do you have any suggestions for us about this set of questions?

Question 7 (Resources): Next in our survey we are going to ask:

<p>Q7. Please select up to three types of information resources that are the most important to your professional work.</p>
<ul style="list-style-type: none"> • Clinical practice guidelines or policies • Government reports, research institute or association reports or other similar documents • Books, either electronic or print • Peer-reviewed journal literature • Evidence-based medicine and clinical information • Data, statistical and epidemiological resources • Citation management programs

- | |
|---|
| <ul style="list-style-type: none">• Other• None [go to Q9] |
|---|

The next question relates to information resources. [Present question in writing. Read.]

Probing questions

1. Do the words "information resources" make sense to you in light of the listed categories? [If not, do you have other suggestions for wording?]
2. Some categories seem pretty straightforward (books, peer reviewed literature), do these categories make sense to you? [If no - what could be improved? What part feels confusing or is unclear?]
3. We'd like to look at some of the more complex categories:
 - [state out loud] clinical practice guidelines and/or policies ~~via associations and other organizations~~ (eg. Michigan Medicine Clinical Care Guidelines, ECRI Guidelines Trust)
 - Does this make sense to you? [if there is hesitancy, try to probe that - not just what they are saying but how they are saying it]
 - government reports, research institute or association reports or other similar documents (eg. reports from the CDC, WHO, etc.)
 - Does this category make sense to you? [try to probe any confusion or hesitancy]
 - evidence-based medicine and clinical information (e.g., DynaMed, Cochrane Library, Micromedex)
 - Does this category make sense to you? [try to probe any confusion or hesitancy]
 - data, statistical and epidemiological resources (e.g. National Center for Health Statistics (NCHS), DHS, HIV/AIDS Survey Indicators, etc.)
 - Does this category make sense to you? [try to probe any confusion or hesitancy]
4. What would your top 3 information resources be if you were answering this question?

5. Was it difficult or easy to answer this question? [probe if there was any difficulty]

Question 8 (Resources):

Q8. In what way(s) is it/are they important? Select all that apply.

- Teaching/Instruction (e.g., teaching, preparation, materials)
- Decision-making for evidence-based practice (e.g., patient care recommendations, policy decisions, community interventions)
- Data management and analysis (e.g., dissemination, sharing, visualization)
- Grants (e.g., funding opportunities, writing)
- Publishing and presenting (e.g., manuscript preparation, choice of journal, research methodologies)
- Professional learning and development (e.g., staying current, knowledge and skill building)
- Other

Probing questions

- Some categories are pretty straightforward (teaching/instruction, grants, publishing), do these categories make sense to you? [If no - what could be improved? What part feels confusing or is unclear?]
- We'd like to explore some of the other categories more deeply. [Ask if each one makes sense. If there is hesitancy, try to probe that - not just what they're saying but how they're saying it]
 - Decision-making for evidence based practice (e.g., patient care recommendations, policy decisions, community interventions)
 - Data management & analysis (e.g., storage, dissemination, sharing, visualization)
 - Professional learning and development (e.g. staying current, knowledge and skill building)
- Do you think there are any categories missing?
- Now that we have gone through these categories, how would you answer this question? [Restate if necessary]
 - With the response questions we provided was it easy to answer this question or not?

Question 9 (Resources):

Q9. Are there any information resources that are important to you but not readily available through the University?

- Yes [box opens: What are those resources?]
- No [go to 10a]

How would you answer this next question? [read aloud]

Probing questions

1. Can you say in your own words what you think we're asking?
2. Do you have suggestions for improving the clarity of the wording?

Preamble to Informationist-related Questions

We now shift focus to questions about Taubman Library informationists. At the beginning of the section we provide the following text: [Read text]

For the remaining questions, please note that the term *informationist* refers to a librarian in the Taubman Health Sciences Library who works within the health sciences.

If you've met with informationists more than once, consider your overall impression of those interactions when answering the questions.

I'm going to ask you about the statement I just read first.

Probing questions

1. Can you state the definition of an informationist in your own words?
2. Any suggestions for clarifying the definition?
3. Do you feel able to answer questions about your interactions with informationists with this definition?

Question 10a (Informationist)

Q10a. Informationists interact with faculty in a variety of ways, including one-on-one, in groups (small or large), in classrooms, and in meetings. Have you interacted with an informationist in these or another way in the past five years?

- Yes [go to Q11a]
- No [go to Q10b]

The first question in this section is [read question].

Probing questions

1. What do you think we're trying to ask?
 - a. Can you state it in your own words?
2. What does "Informationists interact" mean to you?
3. What do the examples (one-on-one, in groups (small or large), in classrooms, and in meetings) mean to you? What do you think we're trying to get at?
4. How would you answer this question?
5. How do you feel about the five-year timeframe?

Question 10b (Informationist):

Q10b. Could you provide information about your 'no' response? [survey ends at THSL homepage]

- I have not needed to interact with an informationist
- I didn't know there was an informationist available to help me
- I found another individual or group to connect with
- I didn't know how to connect with an informationist
- Other

Skip question

Question 11a (Informationist):

Q11a. Informationists connect faculty to a variety of information and information resources like articles, data and statistics, policy papers, research institute studies, non-profit or government resources, tutorials, databases, etc.

Has an informationist worked with you to find these or similar types of information?

- Yes [go to 11b]
- No [go to 12a]
- Unsure [go to 12a]

The next question is [read question]

Probing questions

1. What do you think we're trying to get at with the idea of 'connecting faculty'?
 - a. Can you state it in your own words?
2. Is this question easy or difficult to answer?
3. Let's consider the examples:
 - a. Data and statistics
 - i. Does this make sense to you? [if there is hesitancy, try to probe that]
 - ii. Can you think of an example?
 - b. Policy papers
 - i. Does this make sense to you? [if there is hesitancy, try to probe that]
 - ii. Can you think of an example?
 - c. Non-profit or government resources
 - i. Does this make sense to you? [if there is hesitancy, try to probe that]
 - ii. Can you think of an example?
4. How would you answer this question?

Question 11b (Informationist):

Q11b. How would you characterize the contribution of the informationist(s) to your information-seeking efforts?

- Helpful [go to Q11c]
- Neither helpful or unhelpful [go to 12a]
- Unhelpful [go to Q11d]

The next question is a continuation of the previous one. [Read question; if interviewee has answered 'no' to the previous question, ask them to answer as if they responded 'yes']

Probing questions

1. Is the intent of the question clear? Do you know what we're trying to ask?
2. What does 'helpful' mean to you?
3. How would you answer the question?

Question 11c (Informationist):

Q5c. In which of the following ways did working with the informationist(s) help or impact your work? Check all that apply.

- Improved my ability to find and use information
- Helped me be more productive with my time
- Informed my evidence-based decision-making process
- Contributed to the production and/or completion of my work
- Helped with my teaching and/or instruction needs
- Helped in another way
 - Please specify

The next question tries to categorize the impact of that help. [Read question; if necessary remind interviewee to consider this question as if they had answered 'yes' previously]

Probing questions

1. Do these categories make sense to you?

2. Some categories are straightforward (more productive with my time, teaching and/or instruction needs). Do you agree that they're straightforward?
3. We'd like to explore some of the other categories in more detail. What does this one mean to you and can you provide an example? [ask each individually; we want an example to elicit specific feedback]:
 - Improved my ability to find and use information
 - Informed my decision-making process for evidence based practice
 - Contributed to the production and/or completion of my work
4. Do you think there are any categories missing here?
5. How would you answer this question?

Question 11d (Informationist)

Q11d. Can you explain why your work with an informationist was unhelpful?

- Open ended

Skip

Question 12a (Informationist)

Q12a. Informationists connect faculty to individuals and groups across a wide range of disciplines. Has an informationist made a useful connection for you to another person or group?

- Yes [go to Q12b]
- Yes, multiple times [go to Q12b]
- No [go to Q13]
- Unsure [go to 13]

The next question is [read question]:

Probing questions

1. What do you think we're trying to ask? Can you state it in your own words?
2. When we say "connect people to individuals and groups across a wide range of disciplines", what does that mean to you?
3. When we say "useful connection", what does that mean to you?
4. How would you answer this question?

Question 12b (Informationist):

Q12b. Can you provide more information about why the connection was useful?

- Open ended

Probing question

- [If they answered 'yes'] Since you answered 'yes', could you give us a sense of how you would answer this last question [read]:

Question 13 (Closing)

Q13. If you have additional comments about Taubman Health Sciences Library resources or services please provide them here.

- Open-ended question

Skip

Concluding Statement

Thank you! This discussion has helped us clarify and improve our questions. We'll provide you with a manuscript abstract when it is available.

Appendix 4: Quantitative Survey

The Taubman Health Sciences Library supports the work of health professionals, faculty, staff, and students at the University of Michigan. In order to understand and continually improve the impact of Taubman Library's resources and services, we hope you will complete this survey, even if you have not interacted with the Library before.

The survey will take 5 to 10 minutes of your time. Your participation in this survey is completely optional. You may skip a question or end your participation at any time.

We will only share aggregated and de-identified data. All identifiers (e.g., your email address) will be removed from the data after the survey closes.

The study was reviewed by the Health Sciences and Behavioral Sciences Institutional Review Board (HUM00131285).

We thank you for your time and consideration. If you are willing to participate in the survey, please click the 'Next' button below.

1. Which of the following best describes the focus of your work? For the purpose of this survey, population health involves the health factors or outcomes of a group of people instead of an individual patient (for example, public health).
 - Population health
 - Patient care
 - Both population health and patient care
 - Basic science
 - Other - briefly describe _____

2. Please select up to three types of information resources that are the most important to your professional work.
 - Clinical practice guidelines or policies (e.g., Michigan Medicine Clinical Care Guidelines or guidelines from other professional organizations)
 - Government reports, research institute or association reports or other similar documents (e.g., reports from the CDC, WHO, etc.)
 - Books, either electronic or print (e.g., Harrison's Internal Medicine, William's Hematology, Atlas of Head & Neck Pathology)
 - Peer-reviewed journal literature (e.g., via PubMed, Google Scholar, Scopus)
 - Evidence-based medicine and clinical information (e.g., DynaMed, Cochrane Library, Micromedex, UpToDate)
 - Data, statistical and epidemiological resources (e.g., National Center for Health Statistics (NCHS), MeasureDHS, HIV/AIDS Survey Indicators, etc.)
 - Citation management programs (e.g., EndNote, Mendeley, Zotero, etc.)
 - A resource not listed above _____
 - A second resource not listed above _____
 - None

3. Next, for each of the information resources you selected, you will be asked whether that resource impacts your work in the following areas:
 - Teaching/Instruction (e.g., teaching, preparation, materials)
 - Decision-making for evidence-based practice (e.g., patient care, policy decisions, community interventions)
 - Working with data (e.g., analysis, collection, dissemination, management, sharing, visualization) Grants (e.g., funding opportunities, writing)

- Publishing and presenting (e.g., manuscript preparation, choice of journal, research methodologies) Professional learning and development (e.g., staying current, knowledge and skill building)
4. You selected the following resource (____). In what area(s) does this resource impact your work? Select all that apply.
- Teaching/Instruction
 - Decision-making for evidence-based practice
 - Working with data
 - Grants
 - Publishing and presenting
 - Professional learning and development
 - Other _____
5. You selected the following resource (____). In what area(s) does this resource impact your work? Select all that apply.
- Teaching/Instruction
 - Decision-making for evidence-based practice
 - Working with data
 - Grants
 - Publishing and presenting
 - Professional learning and development
 - Other _____
6. You selected the following resource (____). In what area(s) does this resource impact your work? Select all that apply.
- Teaching/Instruction
 - Decision-making for evidence-based practice
 - Working with data
 - Grants
 - Publishing and presenting
 - Professional learning and development
 - Other _____
7. Are there any information resources that are important to you but not readily available through the University?
- Yes
 - No
8. If yes: Please list those unavailable resources. _____

For the remaining questions, please note that the term informationist refers to a librarian in the Taubman Health Sciences Library who works within the health sciences.

If you have met with informationists more than once, consider your overall impression of those interactions when answering the questions.

9. Have you interacted with an informationist in the past three years? Common interactions include one-on-one, small or large group, classroom, and other types of meetings.

- Yes
- No

10.If 'yes' to Q9: Informationists connect faculty to a variety of information resources like articles, data and statistics, policy papers, tutorials, databases, etc. Has an informationist worked with you to find these or similar types of information?

- Yes
- No

11.If no to Q9: Could you provide information about your 'no' response? Select all that apply.

- I have not needed to interact with an informationist
- I didn't know there was an informationist available to me
- I found another individual or group to help me
- I don't know how an informationist can help me
- Other _____

12.If yes to Q10: How would you characterize the contribution of the informationist(s) to your information-seeking efforts?

- Very beneficial
- Somewhat beneficial
- Not a good use of my time

13.If 'very beneficial' to Q12: In which of the following ways did the informationist's help impact your work? Select all that apply.

- Improved my ability to find and use information
- Helped me be more efficient with my time
- Informed my evidence-based decision-making process
- Contributed to the production and/or completion of my work
- Helped with my teaching and/or instruction needs

- Helped in another way (Please specify)

14.If 'not a good use of my time' to Q12: Can you explain why your work with an informationist was not a good use of your time?

15.If 'yes' to Q9: Informationists connect faculty to individuals and groups across a wide range of disciplines. Has an informationist made a connection for you to another person or group?

- Yes
- Yes, multiple times
- No

16.If 'yes' or 'yes, multiple times' to Q15: The connection(s) made for you were:

- Beneficial
- Not beneficial

17.If 'not beneficial' to Q16: Could you please describe why the connection(s) were not beneficial?

The COVID-19 pandemic has profoundly impacted patient and population care at the University of Michigan, and has also impacted how people access the Library. We ask the following questions to better understand how to support your work in this new environment.

18.Do you have one or more suggestions on how the library could support your work during a situation similar to the COVID-19 pandemic?

- Yes
- No

19.If 'yes' to Q18: What are your suggestions?

20.Were you involved in work directly related to the pandemic (e.g., online teaching, coronavirus research, patient or population care, etc.)?

- Yes
- No

21.If 'yes' to Q20: Did your use of the library change (e.g., accessing journal articles, government reports, data or consulting with informationists, etc) due to the pandemic?

- Yes
- No

22.If 'yes' to Q21: Briefly describe how your use of the library changed.

We are asking the following demographic questions to better understand the Taubman Library user community and provide us with information that will help us improve our services.

23. How do you describe your racial and/or ethnic background

24. How do you describe your gender identity? Examples of ways people describe themselves include nonbinary, transgender, female, male.

25. Please indicate the U-M school(s), college(s), or other unit(s) where you hold one or more paid appointments.

- School, college, or unit
- School, college or unit
- School, college or unit

26. If your paid appointment is in a particular department (or multiple departments), please list them here:

- Department
- Department
- Department

27. Before the March 2020 stay-at-home orders, in which U-M location did you spend most of your work hours?

- Central Campus
- University Hospitals and Centers on the U-M medical campus
- Burlington and Briarwood Centers and Clinics
- Domino's Farms
- East Ann Arbor Centers and Clinics
- Kellogg Eye Center
- Rachel Upjohn Building
- West Ann Arbor Health Center
- Other

28. If you have additional comments about Taubman Health Sciences Library resources or services, please provide them here. (This is the last survey question. Please click the 'Submit' button when you are done.)