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User Interviews: Findings from the Building a National Finding Aid Network Project

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INTRODUCTION

Currently, there is no national infrastructure for the discovery of archival collections held in archives across the United States. For a national archival aggregation network in the US to be successful, it must address the needs of archival researchers. But there is little existing research about the needs and motivations of end users of archival aggregation systems. To address this gap and inform the vision for a national platform, OCLC Research conducted semi-structured interviews with users of regional archival aggregation systems in the US.

In 2020, IMLS awarded the California Digital Library (CDL) a National Leadership Grant to support Building a National Finding Aid Network, a two-year research and demonstration project to build the foundation for a national archival finding aid network to address the inconsistency and inequity of the current archival discovery landscape (LG-246349-OLS-20).[1] CDL led the project, with partners at OCLC, University of Virginia Library, Shift Collective, and Chain Bridge Group. Work on the grant was done in parallel across multiple activities:

- Research investigating both end user and contributor needs in relation to finding aid aggregations

- Research evaluating the quality and consistency of existing EAD-encoded finding aid data from regional archival aggregators

- Technical assessments of potential systems to support network functions, and formulating system requirements for a minimum viable product instantiation of the network

- Community building, sustainability planning, and governance modeling to support subsequent phases moving from a project to a program

OCLC Research is leading efforts in the first two areas. This paper focuses on research with end users of archival aggregation.

There is a significant gap in the archival literature in understanding researcher needs related to aggregations of archival description that represent the holdings of multiple institutions. Much of the early work in this field focused on researcher interaction with and understanding of finding aids as a genre, or with finding aids as rendered in online interfaces. This work has largely investigated the use of and interaction with the collections and interfaces of a specific institution.[2] More recent archival user study work has broadened in scope to better understand the information-seeking behaviors and research practices of scholars using primary sources, but this research has focused almost entirely on historians and other academic researchers in the humanities.[3]

Recent work on archival user personas in service of archival software development projects indicate that users of archives are not only scholars, but also genealogists, local historians, and enthusiast researchers; K-12 educators; a range of researchers using archives for their professional and creative

work in fields such as journalism, documentary filmmaking, and fiction writing; and librarians and archivists.[4] There is little literature on this broader cross section of archives users, but the existing work indicates different researcher types have significantly different needs.[5]

Given the lack of understanding of users of archival aggregation and the broad cross section of archival researchers generally, exploratory work was necessary to identify the needs, expectations, and behaviors of potential users of a national archival aggregation. The following research questions were developed to address this need:

- Who are the current users of aggregated archival description? Do current user types align with the persona types and needs identified in recent archival persona work?

- Why are the current users trying to discover and access archival collections via aggregation of archival description?

- How are current users discovering and accessing aggregations of archival description? What are the benefits and challenges users face when searching archival description in aggregation?

The following report details methods and summarizes findings from semi-structured individual interviews with end users of archival aggregation, one of our data collection efforts to identify the needs of end users. The outcomes of this research offer useful insight that can be leveraged by the NAFAN project as well as inform other projects serving archival researchers. Our research also surfaces new questions and may offer fellow researchers of archival users new paths of inquiry. For findings of our additional research with end users, please review the NAFAN pop-up survey findings report.[6]

Methodology

Sampling plan

OCLC Research identified interview participants via a pop-up survey placed on the websites of 13 US-based regional archival aggregators from March–May 2021. The survey asked participants if they were willing to participate in individual interviews to discuss their archival research process and offered a small monetary incentive for their time if invited to participate in an interview. Nearly 2,000 of the 3,300 survey respondents indicated interest in participating in a follow-up interview.

The research team analyzed the survey data responses using a Two-Step cluster analysis method to identify groupings of users with strong similarities. The analyses were performed iteratively with the data to improve the model after reviewing the silhouette coefficient, which measures how similar an observation is to the other observations within a cluster, or in this case the best fit. The initial model included seven variables. Further analysis indicated that the silhouette coefficient improved with fewer variables. The improved, final model used four variables:

- Purpose for the search/inquiry

- Level of preference for online material (vs. physical material)

- Profession

- Highest degree earned

The cluster analysis initially included all variables for purpose, but early iterations showed that several variables never held the cluster together and they declined in predictor importance. The user purpose variables that had high predictor importance (0.6-1) were family history research, personal interest research, professional project research, and local history research. The three other variables that had high predictor importance included highest degree earned, profession, and the user's preference for how they access archival material (the range being from solely in person, to no preference, to solely online).

The five clusters of users resulting from the analysis were:

- Archivists, librarians, and other professionals

- Faculty and other doctoral degrees

- Undergraduate and graduate students

- Family history researchers

- Personal interest researchers

After assigning a cluster number to each survey participant based on the analysis, a purposive sampling method was used to select respondents from each cluster who had indicated interest in participating in an individual interview. The selection process also considered additional demographic criteria, such as respondents' location, gender, and academic discipline. The research team conducted a total of 25 interviews, with five users from each of the five clusters participating. (See appendix D for details.)

Data collection

Twenty-five semi-structured individual interviews were conducted between October and December of 2021. Interviews were conducted and recorded using Webex, an online video conferencing tool, lasted 45–60 minutes, and included the interviewee, interviewer, and a notetaker from the research team. Participants were offered a $50 gift card as incentive for their voluntary participation in the interview and signed a consent form prior to the interview. (See appendix A.)

The interview protocol focused on user motivations for doing archival research, their research process, experience using archival aggregators and other tools for discovery of archival collections, and their description of an ideal archival material discovery and access system. (See appendix B.) A third-party service was used to transcribe the interview recordings and the transcripts were anonymized by the research team.

Data analysis

Using a content analysis approach, the research team followed a multi-stage analysis process.[7] The first stages included data familiarization and codebook development, wherein, "themes are generated . . . by grouping similar categories into larger categories and naming these as such."[8] After developing the codebook, the team applied it to the data and analyzed the results. The inductive nature of allowing concepts and ideas to emerge from the interview data to identify codes, and then refining those codes through deductive means, allowed for a robust analysis of the interview data.

During the data familiarization stage, three members of the research team reviewed all 25 interview transcripts. Using a structured reading template focused on our research questions, the research team documented initial impressions of the data and identified emerging themes. These emergent themes were used to guide the development of a preliminary coding scheme. Next, the themes were compiled into a draft codebook before testing and refining the preliminary coding scheme. Four transcripts were selected from different clusters and coded to iteratively test the draft codebook. After each round of coding, researchers met to discuss and identify application issues such as missing, confusing, conflicting, or overlapping codes. The finalized codebook included codes and subcodes, along with definitions, examples, and relevant coding rules for each. (See appendix C for the final codebook.)

In the codebook application stage, the codebook was applied to the individual interview transcripts using NVivo by each coder. Each cluster of five interviews was coded by two people. Additionally, the team identified what Lynn Silipigni Connaway and Marie Radford term "Juicy Quotes," or statements used "to bring the participant's voice into the analysis, write-up, and later, in publication."[9]

During both the codebook development and application stages, the team utilized the NVivo intercoder reliability (ICR) coder comparison calculation query using Cohen's kappa coefficient. The goal of this approach to using ICR calculations was to facilitate guided discussions among the research team about best representing the emergent themes in the codebook, rather than achieving a certain level of reliability on a set coding scheme. Average ICR coefficients increased in each round of coding, from 0.547 in the first to 0.622 in the fifth and final calculation.

The research team took a content analysis approach, using a constant comparison technique to compare different codes and participant statements to identify both similarities and differences. During the codebook application, some codes had been applied narrowly and others had been applied in a broad, exploratory manner. Those that had been applied broadly were analyzed for new, emergent themes. Most of these were reported in findings but not reintroduced into the codebook. (See appendix C for the final codebook.) A select group of coded data was also transformed into quantitative data to rank responses and determine focus areas for analysis.

Limitations

The research team identified several limitations that should be noted and can help to contextualize our analysis.

A key goal of the interviews was to identify and document users' interactions with aggregations of archival description. Though interviewees were identified through their participation in a pop-up survey on an archival aggregation website, between five to nine months elapsed between their completion of the online survey and the actual individual interview sessions, depending on scheduling. The length of time between using the aggregator and participating in the interview impacted our data collection efforts. Several participants failed to recall their experiences with the original referring archival aggregator, especially if they visited the site infrequently, so they were unable to share reflections of their experiences with the system. More than half of our interviewees indicated they were first-time users of the aggregator where they took the pop-up survey. This lack of familiarity meant they may not have had other aggregator experiences to draw upon. The research team did not introduce new tasks or ask the interviewees to review the aggregator site during the interview, which may have assisted in helping cue memories from the interviewees.

Because of this limitation, many of the interview questions were answered broadly and without particular emphasis on archival aggregators. Both general and aggregator-specific experiences are reported in our findings, as both can usefully inform the NAFAN project.

Interviews were conducted during the second year of the COVID-19 pandemic, which had significant impacts on the services and capacities of archives to support research. Many archives had been closed to researchers intermittently or consistently since the outset of the pandemic, had reopened with significantly reduced availability for in-person research, and had fewer staff members working on site than pre-pandemic. At the same time, many archives ramped up their digitization services and offered on-demand digitization at a higher volume than pre-pandemic. Throughout the interviews, participants noted the impact of the pandemic on their archival material discovery and access process and needs. When it was unclear if a general or pandemic-specific situation was being described, interviewers tried to ask follow-up questions to clarify. Pandemic impacts were identified as an emergent theme and included in the codebook and are discussed when appropriate in the findings. (See appendix C for the final codebook.)

Participants for the interviews were identified via a pop-up survey conducted earlier in the project. The pop-up survey did not include race or ethnicity in the survey demographics. Because this data was not available for consideration in the sampling plan, we do not know if it would have impacted our participant selection and their responses. OCLC Research acknowledges that this is a limitation of this study. We always consider the need for sensitive data prior to including it in data collection instruments, opting not to collect sensitive data we are unsure how we might use. According to Pew Research Center's Internet/Broadband Fact Sheet from 2021, Whites, African Americans, and Hispanic or Latino users who are college graduates or have completed some college make up 98% and 97% of users online.[10] Because both race and ethnicity are highly correlated to education in internet users, and this study focuses on archival users from a broad population of online users, we decided to only collect information about education level and not about race or ethnicity. In retrospect, especially given the exploratory nature of the study, we would reconsider this decision.

Findings

Why users are trying to discover and access archival collections

Users described a variety of motivations to seek out archival collections. These included activities and outputs, information needs, emotional connection or reaction to their research, and the desire to share their research with others.

WORK, ACADEMIC, AND AVOCATIONAL ACTIVITIES

For all 25 participants, their pursuit of archival materials is motivated by work, academic, or avocational activities. Many participants also explained that specific final products influenced their search for archival materials; these final products were tightly tied to their type of activity.

Work-related motivations were driven by the responsibilities of the user's job, sometimes related to a particular output and sometimes to an activity without a defined end product. Final products for work responsibilities ranged from blog posts, presentations, and news articles to books, plays, and documentary films. Archivists specifically described research in service of writing biographical or

historical notes for finding aids and answering reference requests. Faculty described doing archival research to support ongoing research and specific publication projects, and for teaching outputs such as lectures notes and slides or class assignments.

Those who are motivated by academic activities did archival research related to their education. These participants varied in both their research experience and in the types of projects they were pursuing and outputs they sought to create. Undergraduates described working on research papers or projects scoped to specific class assignments. Graduate students described broader research in service of writing theses and dissertations.

Participants seeking archival materials for use in avocational activities were not motivated as frequently by final products, often describing their activities as driven by personal interest, passion, curiosity, or personal growth. Those who were motivated by final products described outputs such as transcription projects, articles, and blog posts through which they could share their research with others. Participant C5-3, for example, was working on a project to create modern 3D image files from scans of stereographic images, transforming them to display on "a 3D television or a VR headset."

About half of participants (12) sought reproductions of archival materials. Some participants obtained reproductions and licensing permissions to include the archival material in an output such as a book, article, or film. Others were motivated to obtain reproductions as it was the only way to access the information found in the material, or as a method of recordkeeping to track and document their own research.

INFORMATION NEEDS

Participants described their research as motivated by a variety of information needs. These included addressing information gaps, finding contextual or factual information related to their research topic, identifying evidence to build an argument, exploring a topic and available resources, confirming existing information, or obtaining reproductions of archival materials.

Almost all participants (23) described information gaps as their research motivation, which we defined as a need to fill in knowledge or identify new information related to a topic of interest. Participant C4-1 described being motivated to research "a side of our family tree that [we] were previously unaware of." Participant C3-4 explained the desire to find new source material: "I think that we get used to, as historians, and writers, seeing the same old images, the same old letters, and diaries, and we want fresh material." Participant C2-2 shared the importance of researching previously unattended populations or topics: "I think that's one of the things to me is just continually finding, discovering these lives . . . and these stories that haven't been told."

Many participants (21) described their need for contextual information. For some, this meant general historical context to help them better understand the larger picture about the time or place related to their area of focus, the network a person existed within, or events that might have influenced a historical actor or event. For others, this meant finding details or anecdotes to round out a story, or to help them understand what life was like for the subject of their research and what they would have experienced or lived through.

Many participants (17) also described a need for factual information such as birth, death, or marriage dates, dates or locations where events took place, and correct spellings for names or full meaning of acronyms. This need was identified across those doing work, academic, and avocational research, including all participants doing family history research and all participants in faculty roles.

More than half of participants (14) were looking for evidence to analyze or interpret—to build a case or a story, identify patterns or connections, or to support arguments with primary sources. Evidence-seeking most often was invoked as a need by those creating new work to be shared with others, such as books, articles, plays, documentaries, or museum exhibitions. Participant C1-4 described this as "something that goes toward making a case." For example, participant C2-4 described a research strategy for using archival sources to build and understand a network of people and sentiment around the central subjects of their research:

> I thought I can figure out all of their secondary contacts and all of their tertiary contacts and mine those people's letters and diaries. . . . I can situate them in their whole social network, they were very controversial, they were very disliked by a lot of people, and I can try to find out why. So that point then led me into making a list of 20 people who knew them well, another 20 or 40 people who knew them well enough to hate them, and it was matter of just going to ArchiveGrid and to NUCMC and places like that to finding out where these people's letters were and papers, and making good use of those.

Participants (19) also described an exploratory information need, often early in the research process. For some, this meant developing initial understandings when working on a new topic or developing research strategies like identifying fruitful search terms or archival repositories with resources on their topic. For others, it was less directed and involved doing broad searches to see what information might turn up and how they might use it, something participant C1-4 described as "lay the archive on the floor and see what it tells you." In later phases of research, participants described exploring for information they suspect might be in a collection or repository based on their knowledge of records, recordkeeping, and collecting patterns.

About half of the participants (12) described being motivated by obtaining a reproduction of archival materials. Some participants obtained reproductions and licensing permissions to include the archival material in an output such as a book, article, or film. Others were motivated to obtain reproductions as it was the only way to access the information found in the material, or as a method of recordkeeping to track and document their own research.

A slightly smaller portion of participants (10) were motivated by a need to confirm or validate information they already had. This included confirming names and dates from other sources to ensure they were accurate. For genealogists, this also included confirming that the records for a person with a common name were indeed the person they were researching. Participant C4-1 described this: "I'll start at the basic information because that's what's going to identify this John Smith from this John Smith, is the birth date, family members, the basic information." For other researchers, confirmation meant looking at original primary sources to assess or verify information they'd found about them in a secondary source or a transcription.

AFFECTIVE RESPONSES AND KNOWLEDGE SHARING

All participants described affective motivations for doing archival research, which we defined as instances when the user identifies a subjective, emotional response to archival resources as motivating their research, or the anticipation of such a response. What provoked their emotion varied, and some participants described more than one type of emotional reaction. Participants also described sharing their research with others as motivating.

For many, the process of researching brought joy, excitement, or satisfaction. Participant C4-2 described how they felt about the research process: "I feel like records and finding aids and all these things, are just more like stepping stones onto another zone. And it may not even really lead anywhere per se, it's taking these trails where you weren't currently before. And so, I think

that's what's fun about this for me, is that there's no end really in sight." Others enjoyed the thrill of looking for and successfully finding useful material. Participant C1-3 explained, "I know that all of us as researchers, part of what we love is kind of the hunt. And when you get it, hah, [laughter] found it!" Others derived particular satisfaction from finding something useful to their research that has not been previously used and written about by other researchers. Participant C2-4 shared, "It's the excitement of finding something that no one else has found before, and that suddenly brings a whole . . . something into focus."

For other participants, emotional reactions stemmed from interacting with the archival materials itself. Participants engaged in family history research described finding personally meaningful information in the archive, like participant C4-2 who found the last rites and burial records of an ancestor: "Holding that record in my hand was just so emotional to see that connection to this ancestor of mine and to see this historical figure, to see his handwriting, his signature, and to actually touch all of that." Like this researcher, other participants described emotions stemming from physically interacting with original archival materials.

Some participants were motivated to find archival materials that would provoke an emotional reaction in others, help tell a story, or make historical events compelling or relatable for an audience. Participant C1-4 described the emotional impact archival materials can impart in their work on documentary films: "Yeah, the way a director would describe it is they're interested in the performance. . . . If there's a tonal quality that's carried in the footage that would not be carried in the written record." Participant C3-3 described using details from archival research in their work as a playwright: "I need anecdotal information. . . . I'm not an academic writing a treatise on something, I need the stories. I need human interest stories, I need those little fun details, you know someone says, oh my gosh, they had Vienna sausages and they were so bad and we all got really, really sick."

Similarly, participants (15) doing research for work and avocational activities explicitly described being motivated by sharing primary sources or the knowledge gained through primary source research with others. Participant C3-4 explained that being able to share archival research is "an honor basically, to be able to access this stuff and bring it to light." In some cases, specific audiences were mentioned, such as sharing genealogy research with specific family members or exposing current students to engaging material from the archive. For example, participant C2-1 described sharing primary source images in class lecture slides: "I liked it because it helps history come alive for my students." Others invoked more abstract audiences such as the public, young people, or Americans broadly, such as participant C3-5 who stated, "This is for them. They need to see these. These young people need to go see this stuff."

How users are discovering archival material

Each participant described a unique approach to seeking out archival materials. Rather than describe the countless varieties of their discovery processes, this section highlights commonalities in how users pursue archival materials online through a focus on the tools participants rely on, the ways those tools enable discovery, and the challenges of using those tools. Participants used multiple social, institutional, and technical tools to find archival sources. Tools discussed here include archival aggregators, archival repositories and archivists, archival description generally, their own networks of colleagues, friends, family, or acquaintances, citations from secondary sources, and other technical tools and platforms such as subscription databases, search engines, and library catalogs.

Participants described deciding to use different tools in different situations, often having a personal hierarchy of tools they use, moving on to the next after the previous is not effective or as the needs of their search evolve. As participant C1-4 explained, "there's a handful of places that I tend to go initially to get that process started and then I splinter off into what the specialized thing is." Which tool they use can depend on what information they already know about a subject, the subject area they are researching, and what connections or resources they have to support access to any material they discover.

A key challenge voiced by interviewees related to archival discovery is not specific to any one tool. They described how difficult it is to find archival material, including how many places they must look and how long searching takes. Some participants described a process of using their subject knowledge or understanding of recordkeeping practices to guess where records might be held and searching across multiple institutions and systems to ascertain if and where records exist.

> Yeah, but it does take a lot of time. It's those keyword searches, it's guessing what repository might have something, was this person based on the East Coast, or this company? It does take a lot of time and energy to try and find those archival materials, but it makes all the difference, I think. (Participant C3-4)

This was further exacerbated by archives that do not have information about their collections online.

> So for example, the diocese has no catalog online that I know of, so I have to call them and ask, 'Do you have this collection?' The thing that's a little bit frustrating about this is that you're kind of in some ways shooting in the dark. . . . You don't know what they have and so you don't know what to ask for. (Participant C4-2)

Some participants voiced concern that they were not finding material held at smaller and community-based archives and missing out on the stories that those repositories documented. Participant C3-5 succinctly voiced this concern: "You think of the vastness of the material that's sitting in smaller archives across the nation, how would you know?"

The main benefit of searching for archival collections described across interviews was finding archival material useful to their research. This included finding known collections or items, as well as the serendipity of finding material they didn't know existed.

A discussion of uses, challenges, and benefits of specific tools follows, and is divided into two sections: one on technical tools and platforms, and one on social and institutional tools.

TECHNICAL TOOLS AND PLATFORMS

Throughout the interviews, participants described using a variety of technical tools and platforms, including archival aggregators, subscription and subject-specific databases, and search engines, which are discussed in detail below. In addition, participants mentioned using a range of other online tools to aid their research process, including Wikipedia, YouTube, Amazon.com book previews, Google Books, blogs, and websites.

Participants identified system-related challenges that were common across different tools and platforms. Confusing interfaces were high on this list, which made it difficult for users to navigate to what they needed, understand what they were seeing, or ascertain relationships between results.

> [T]he catalog was actually very frustrating to use. . . . Any kind of search that I did brought up a lot of entries, but . . . It just wasn't very easy to get what I needed. And I had to scroll through a lot and opening a lot of different things. . . . I eventually found with a lot of patience, everything that I needed to find, but it was confusing. . . . Each individual item was in its own separate entry in the catalog, even though they were actually, maybe all in the same box. (Participant C2-3)

Many participants described being challenged by the results set they get back when searching for archival collections. Participant C1-2 explained, "The frustrating part can be the number of results you get back, it can be overwhelming." Similarly, participant C1-5 described a common frustration with understanding the relevance of results: "Oftentimes you get all sorts of static as a result of a search, then it's very hard to see why this stuff turned up at all." For many participants, being able to filter out results without digital access was important.

> When you're looking for something for teaching purposes, where you can't plan a trip and you can't go there and grab the thing, the image or whatever you're looking for, and if there's no way to filter out that kind of material, it makes your search a lot longer and much more frustrating. (Participant C2-5)

Participants desire a way to limit or narrow results sets. This included being able to browse, search, or narrow a result set by date, geography, format, or digital access, as well as an interface that allows them to quickly view and assess a large result set. Many participants had general comments about appreciating easy-to-use systems or interfaces, but they did not describe in detail what made them user-friendly.

Archival aggregators

Though all our participants were originally identified via a pop-up survey on a regional archival aggregator website, not all of them use aggregators regularly or even remembered using the site where they had filled out the survey.

Participants who did use aggregators with some regularity described varying reasons for doing so. The convenience of searching across many archival collections and institutions was commonly cited as a key reason, both because it saved the researcher time and effort, and because it exposed them to collections or archival institutions that they weren't previously aware of. They described using aggregators in an exploratory way, such as trying to find out if a particular person or organization has records in an archive or helping to illuminate relationships between historical actors they were interested in.

Aggregator-specific benefits focused on the scale and breadth of coverage these systems enable. Key among these was the efficiency of being able to search across many institutions on one platform. Participant C1-1 described using an aggregator as "easier than trying to go to 12 different repositories to do a search for a specific name or a specific company that they all could be in one place." Participant C2-3 also appreciated the one-stop nature of archival aggregators, as they were "able to search the whole state within one search." Beyond just efficiency, participants discussed the benefit of the wide variety of types of institutions aggregators include, especially when it provided them awareness of small institutions they might not otherwise know about.

I like the variety of repositories that are represented on there. You've got religious institutions, you've got academic institutions, you've got civil and government institutions represented on there. So it spans a pretty good breadth of topics, it's not just academic, it's not just government, it's not just religious. It's pretty much anything on there. (Participant C4-2)

Participants repeatedly described the aggregators' search capabilities as "powerful." In some cases, this was because the breadth of coverage alongside rich metadata and ability to sort and narrow results helped them to easily identify resources.

Oh, it's so powerful, it just has such a deep reach. A few things, the power of it and the reach, the specificity. Not everybody has the complete finding aids in there, but a lot do and I'm able to really pinpoint in on it. And then the usability of . . . when I do find a records hit, it's easy to navigate around within the collection to see the details, whatever details in the finding aid. (Participant C1-4)

In other cases, they discussed the aggregators' capacity to make connections or relationships across collections and repositories.

[I]t's powerful because . . . it doesn't just give you access to finding aids but it actually gives you kind of a constellation of people that someone you're interested in is also connected with. (Participant C2-3)

Participants described aggregators being most beneficial to them when they were intuitive or easy to use. Archivist interviewees described benefits specific to providing reference services, including the ability to simultaneously look at an aggregator interface with a reference patron wherever they are in the world, to send stable URLs to patrons in reference emails, and to provide comprehensive reference services that might identify collections at other institutions as well as their own.

Participants were especially likely to use a regional archival aggregator when their research topic was related to the state or geographic region in which the aggregator was located. For example, researchers said they would use the Online Archive of California for "any project I was doing that had California roots" (Participant C3-3), or for research "pertaining to an individual that was in California or an event that was in California" (Participant C3-5).

In some cases, participants used an aggregator because they found its interface easier to use than the website or search interface of an individual archive that was included in the aggregation.

Many challenges related to aggregators described by participants were similar to those described more generally in discovering and accessing archival collections. First among them was a desire for more digitized content, along with the challenge of parsing and finding what they need among large results sets and struggling to find the right search terms or not understanding relevance in a results set. Frustration with having to use multiple systems was also an issue in using aggregators, as regional aggregators have limited scope and multiple systems must be used to approximate a nation-wide search. Researchers also were unsure of overlap or coverage across systems.

Similarly, participants raised multiple issues related to wanting to better understand what was included in aggregation systems. Participant C2-4 described a common fear of missing relevant collections because of this lack of clarity: "It's not clear to me how broad their coverage is, so I don't know what I'm missing." In many cases, the lack of clarity about the scope of what an aggregator is searching led to anxiety that their search may have missed relevant material and caused them to seek other tools or double check their searches on the websites of individual archival institutions.

> Again, I feel like it could be more transparent, or I haven't figured it out yet. . . . But I don't really have a sense . . . for example, I don't know whether if I put something in ArchiveGrid and then I go over to say the Beinecke, . . . whether I'm going to find different materials. (Participant C2-2)

Some of this had to do with researchers' understanding that unprocessed collections or those without finding aids would not be included in the aggregation and wanting to better understand how this might impact their search results. They also described wanting a better sense of when collections are added to the system: "And then I also keep going back to ArchiveGrid because I never know when it's going to suddenly start cataloging another database. So there's this feeling like it never ends because there's no way to be exhaustive" (Participant C2-2).

Another aggregator-specific challenge described by multiple participants was figuring out how to access a collection or take a next step once they identified something of interest via the aggregator. This was especially challenging when the transition from the aggregator to the website of an archival repository did not behave as they expected or desired, or when the researcher would have to repeat their search at the archival website in order to find the material they had just identified through the aggregator.

> I don't think it was always super clear how to get to a particular resource record. So let's say, the library in Michigan had something, I don't know that clicking on that would take me directly to where I needed to go. It might take me to that website, and then I'd have to do some searching there. (Participant C1-1)

Participants praised aggregators that make it easy to connect to contact information and the policies of the institution after finding material relevant to their research.

Databases and library catalogs

Most of the participants (20) described using databases to discover and access archival material. These were primarily topical databases such as JSTOR, different ProQuest and Adam Matthew Digital primary source products, or format-focused databases such as Newspapers.com or the Chronicling America historic newspaper database. Many of these require a subscription for access and participants described using whatever databases were provided by their library, taking advantage of database access when visiting a library they didn't regularly use, or frustration that they didn't have access to these resources because of their cost. Archivists also described using administrative and collection management databases not available to the public to identify archival materials.

An important subset of topical databases used by roughly half of participants (13) are genealogy-specific resources such as Ancestry.com and FamilySearch. They relied on these for both traditional genealogy research and biographical information for other types of research. All family history researchers interviewed said they used these tools, along with archivists, faculty members, and other professionals and one avocational researcher. Family history researchers described using many of the features of Ancestry.com beyond just searching for information, including building and

documenting their family tree within the website interface and messaging other users to aid in their research. Some participants had personal subscriptions to the genealogy resources that require payment, and some got access through the public library or their employer.

Library catalogs were another tool widely cited by participants (17), used to identify both primary and secondary sources during their research process. This included the catalogs of individual libraries in academic, public, or other cultural heritage institutions, often associated with a library geographically close to the researcher. It also included union catalogs like WorldCat.org or digital library union catalogs like the Digital Public Library of America (DPLA), Internet Archive, or HathiTrust.

Search engines

Search engines were a key tool for 16 participants. These participants used search engines to find information in the early stages of their research to get grounded in the subject, later in their process to confirm information such as dates or locations of events, or as a last-ditch effort to find something relevant after they had exhausted more specialized resources. They also described using search engines throughout their research when they were unsure if and where any materials on a given topic are held in an archive: "And usually there wasn't any better way than to just type in [Research Subject Name] papers and Google that and it will come up what library had it" (Participant C2-3).

Participants also identified challenges in using search engines for archival research, including a general difficulty identifying archival holdings and historic rather than contemporary material.

> I don't know how to get Google to an older date range. It's just like I could put in somebody's name, well okay, that's going to show me people that are alive today with that name. . . . But it's very difficult for me, I found it to be like, "Okay, Google, let's just start historical, like I want to start in 1900." . . . I don't feel like Google's useful. I almost wish there was maybe like Google History. (Participant C4-5)

Participants also described contending with large results sets with irrelevant or untrustworthy content and spending significant time assessing the trustworthiness and reliability of the websites and information they found through search engines. Participant C1-1 explained, "You also can get just weird results that are gibberish if you actually try to go to the website."

Users did appreciate the way Google supported searching by offering suggestions for spelling errors in search, recognizing plurals, and similar processing of common user behavior or errors when entering search terms. Users wanted these features in archives-specific systems.

SOCIAL AND INSTITUTIONAL TOOLS

Users did not rely solely on web-based and technical tools to identify archival materials for their research. They also relied on human and institutional resources in the form of archives and archivists, archival description, personal and professional networks, and citations in secondary sources. A discussion of each of these follows.

Archives and archivists

All 25 participants described seeking out materials from individual archival repositories. They identified a wide range of archives situated within government, academic, museum, historical society, or other cultural heritage institutions. Participants were largely pursuing records in repositories located in the United States, but also pursued materials held in other countries depending on their research subject.

Some participants described starting with large repositories with a broad collecting scope and a high volume of records, such as the National Archives and Records Administration (NARA) or Library of Congress. Others will start with a set of institutions in their local area, or that they know collect in the area they are studying, such as participant C5-1 who explained, "I'll go to the New York Public Library or any of half a dozen others that I'm pretty sure have pretty large holdings [in my area of interest]."

Many participants (21) also described contacting archivists directly to request help pursuing archival collections. They contacted archivists via email and telephone, as well as talked with archivists during in-person visits to archives.

There were multiple reasons they contacted archivists. In some cases, it was to identify materials, including trying to find out if there were uncataloged or unprocessed materials that weren't listed in the catalog, or to generally ask for suggestions of collections of interest that they might not know about. In other cases, it was to get additional information about a collection they had already identified, such as to get additional detail about something with minimal archival description or to ask about restrictions on a collection in advance of planning a research visit. They also described asking archivists for help navigating discovery systems, including tips for where and how to search, or for help with known item searches that they hadn't been able to successfully navigate on their own.

Participants also described archivists and librarians as important discovery enablers. Their familiarity with archival systems, practices, and collections all facilitated discovery of otherwise difficult-to-find or difficult-to-identify materials. Participant C1-4 highlighted the usefulness of these different kinds of knowledge: "Archivists [are] enormously helpful, either through their personal knowledge of the collection, the corporate knowledge, or their help in navigating to find something." Participants also identified the importance of archivists' familiarity with their institutions' collections to help discover resources they might not have found on their own or that discovery systems might not have been able to identify. Participant C5-4 stated:

> It's the staff who work there and the people who are there that make connections and see things that you don't know to ask about, that you don't know the possibility of. . . I've really relied on our librarians, our curators, because there's only so much a keyword and digital search can do. . . . I think that Research Librarians are some of the unsung heroes in the academic world . . . there is a kind of correlative talent and skill that humans have in relating disparate materials, that computers fail at.

Archivists also identified their own institutional knowledge as well as that of their colleagues as vital in aiding in discovery, often turning to coworkers with different areas of expertise than their own to help identify relevant collections for research and reference requests.

Archival description

Participants also discussed archival description itself as a crucial tool for archival discovery, whether it was accessed via an aggregator, an individual archive's catalog or website, or elsewhere.

They praised the usefulness of rich and robust description of archival materials and collections, identifying multiple aspects of the collection description that they found useful. For some, high-level information about an archival collection was important. Information about the size and scope of the collection helped them assess how much might be relevant to their research; information about access restrictions or materials held in off-site storage helped them assess if they would be able to use the collection and what next steps to take to access it. For others, description of collection contents was especially useful, both details such as names of correspondents and granular date information, and more robust collection or series level information that helps them understand the collection as a whole. Participant C2-5 described how that detailed and broad description worked together to help them assess the usefulness of a collection to their research:

> I will go back to the full finding aid. So, what is this document in the context of this finding aid? If for some reason, I didn't go through the finding aid and I just came upon this one folder, one sub-section, then I might say, "Okay, this is actually pretty peripheral to this finding aid, this collection. So maybe this isn't so central to my project."

Participants also described challenges when contending with archival description. Some participants remarked on the unevenness of the level of description across collections and repositories.

> Some of them it's like a needle, it's like a haystack, and there's just, it's just labeled "haystack." And then others, it's like Schlesinger, it's almost handed to you on a silver spoon. Every single thing is cataloged. (Participant C2-2)

Some participants saw a connection between the level of description available and the help they were able to get as remote researchers.

> What is the level of processing that is available? Because it's a lot easier to reach out to a library and say, "Hey, I'm really interested in folder two about business 1910," than, "What's in this archive with 10 boxes?" You're not going to find that help. . . . Institutions are understaffed, so if you can really narrow it down at all even to one box, I think people are more able to help you. (Participant C3-4)

Participants were also keenly aware of what they weren't seeing in discovery systems and were concerned both about unprocessed collections and materials that never make it into the archive, either because of collecting decisions or records lost to war, migration, time, and natural disasters. Because of their awareness that archives often hold materials not visible online, they want to be able to easily contact an archive to ask questions about their research and were frustrated by systems that don't have clear contact information.

> And the other part that it's also difficult, sometimes they just don't have a help section. Or access to some information on how to contact them, so I can find someone to guide me on that. Yeah. (Participant C3-2)

Relatedly, participants also identified repository-level description such as scope or history of collecting as useful to discovery. This information helps them identify repositories that might hold unprocessed or uncataloged collections that would be relevant to their research.

Personal networks and citations

Participants described relying on the knowledge of others to help identify archival materials for their research. They mined the expertise of others through formal and informal personal networks, and through scholarly knowledge represented in citations in secondary source works.

Participants (21) described talking to other people with valuable knowledge of their subject of study and related archival material as key to their research process. This included ongoing relationships with colleagues working in a similar field or subject area, professors or advisors in academic settings, and community elders or other people situated within communities or contexts the researcher was studying. It also included one-off interactions with friends or relatives of a research subject to inquire about the existence or availability of archival materials, and a range of others with records or cultural heritage knowledge in a certain subject such as curators, park rangers, records clerks, or private collectors. These interactions occurred both in person and virtually via email, WhatsApp, Facebook groups, and messaging on Ancestry.com. Users also create their own networks through targeted listservs, email correspondence among groups, and social media such as genealogy-focused Facebook groups. Participant C1-4 described regularly relying on an email list of others working in their field: "We have just an email group constantly posting questions of, 'does anyone know where these live? Does anyone have a contact of this obscure archive? Does anyone recognize this reporter? What town it might be from?'"

Citations were another vital discovery resource for many participants (15) across researcher types, including all five participants in faculty roles as well as others doing work, academic, and avocational research. Multiple participants described using books explicitly or exclusively for their citations: "The footnotes are just as important and interesting as the verbiage in the article. I'm always looking and like, 'Oh gosh, I didn't know about this archive'." (Participant C3-4).

Citation chaining often was an early and important part of getting grounded in both the subject and the available sources in a research project. Participant C3-2 explained:

> [U]sually what I do is I start with my secondary sources, I start with my bibliography . . . And those are my first readings, and I try to look into what the authors are quoting, what sources that they're using, and then get extracting those sources, then I start to move into archives and then I try to see which ones of those archives that the author is using are available online. And then, once I start getting the names of the archives or places that have primary sources that interest me, I start exploring those specific catalogs.

Participants primarily relied on footnotes and citations in secondary sources, but also described using curated filmographies and bibliographies, as well as indexes to vital records.

How users are accessing archival material

Once archival material is identified, it must be accessed. This section looks at how participants access archival collections and focuses on what enables user access and what makes user access tasks more challenging. General access issues are discussed first, followed by specific types of access, including in person, mediated, and online access, and finally, how personal relationships and networks impact access to archival collections. Additionally, the impacts on the COVID-19 pandemic on participants' research is discussed throughout this section.

As with discovery, archivists were described as important enablers for access to archival collections. The availability of digital materials and archives' willingness to digitize materials on-demand were also identified as important enablers to access. A variety of challenges related to accessing archival collections also surfaced in our interviews with nearly all participants (21).

Because archivists often act as intermediaries to archival access, websites that make it difficult to find information about requesting reproductions or contacting the archive can exacerbate access challenges. Conversely, easy and clear access to contact information, reference request forms, and reproduction policies or requests were considered helpful. Participant C3-2 described a positive experience with one archives' website: "there is a section that says, 'services' and one of the options right there, it's 'reproductions.'"

Archives and archivists' policy and practice also can impact access to and reuse of collections. Donor and other restrictions on access to materials were cited as a challenge, particularly when restrictions weren't well communicated on websites or in archival description.

> The availability was listed as "restricted, contact the librarian," and I finally contacted the librarian, and they were like, "Oh yeah, it's just like, this person never gave full consent for their oral history to be released and it's just permanently restricted." And I'm just like, "Why is this even here?" (Participant C2-5)

Other policy issues related to records access also contributed to difficulty accessing some materials. Family history researchers described some vital records, such as birth, death, and adoption records being closed or only available to immediate family members. Researchers who had dealt with Freedom of Information Act and other similar records release request systems said the time these processes can take prohibits them from including restricted records in their work.

While many participants praised the help they received from archivists, they also described archivists whose gatekeeping behavior made accessing collections difficult. Participant C2-2 described encountering this from some archivists: "It's very strange to me how some are really possessive of their materials." Participant C1-4 encountered challenges with archivists impeding access often enough to have a personal catch phrase for the phenomena:

> It's funny, sometimes, just for a complete candor, sometimes those are the people who are the problem, that you get people who are protective of their collections or who misunderstand how copyright works or . . . I don't know. There's that term I use sometimes, archival personality syndrome. (Participant C1-4)

The COVID-19 global pandemic significantly impacted access to archival research, especially during the first 12–24 months when many archival repositories were closed. During this time, mediated access via assistance from an archivist was one of the only options available to researchers, access that was further restricted by constraints on staff and on-site work time at the archive. Participant C5-1 described this challenge: "Given the restrictions on COVID the last couple of years, it's really tough to find a reference librarian who could even begin to look at something, and it would have to be superficial because they're kind of busy."

For other participants, the pandemic helped alleviate some existing challenges to accessing archival materials, especially with regard to digitization and online access to materials. Participant C2-4 explained, "COVID was wonderful for the willingness of archivists all around the country to say, 'Oh, of course we can do that,' and send me 20 scans of something with almost no effort on my part." Similarly, participant C3-3 shared their gratefulness that, "because of the pandemic, I think [archival institutions] put a lot of their stuff online and I was able to . . . access stuff that I don't know if . . . I would've normally been able to access."

TYPES OF ACCESS

Participants described using three main means of access—online, mediated, and in person. Online and mediated access were described as enabling use of collections, while in-person access was enabled by other factors. While many participants use more than one of these types of access, and the boundaries between them can sometimes blur, participants clearly distinguished between them and they are discussed here as distinct forms of access.

A large part of how researchers access archival collections depends on their personal context— their location, information needs, personal and professional responsibilities, access to resources, and a multitude of other factors. The way these factors impact access to archival collections and the decisions participants must make when pursuing different types of access are discussed here as well.

Online access

Online access to digitized material was the most frequently noted (17) feature helping participants see and use archival collections. Many participants cited a lack of availability of digital collections as an access challenge with real impact on their research: "[Digitized items will] turn up when I'm messing around, but ordinarily, the aggregators just list the shelf numbers and box numbers and a description, they don't show the images, which doesn't help me at all. . . . Yeah, I can't reach through the screen and grab box 13" (Participant C5-1).

Participants described online access as helping to alleviate barriers or challenges presented by travel, expense, or time required to do in-person research. Some participants only pursue materials they can use online, while some access documents online in preparation for in-person research.

Online access was most often discussed as an archival repository providing scanned images of archival documents, streaming audio or video, or transcriptions of material in their own collections within the context of their archival discovery system. But it also included access to archival materials via curated exhibitions or subject guides, as well as subject specific databases, such as Ancestry.com, FamilySearch, Newspapers.com, and Fold3. Some participants described being unable to access resources that require a subscription or are behind a paywall, or having to call in favors or otherwise work harder to gain access.

> If there are articles that I need, I will often ask for them because the tribe simply can't have the broad swath of subscriptions that often you find to help you [at a large academic institution]. . . . And it's difficult, like I said, I'd have to go around, and I have to ask, and it'd be really nice if I could just click and access the data that I was wanting, without having to take the time to bother other people and ask for favors. (Participant C1-3)

For some participants, online access was sufficient, but others desired the ability to download both a surrogate of the material and citation or other metadata to document their research and have the required information for later publication or reuse requests. They were frustrated by the inability to download or only being able to download low-resolution or watermarked files. When materials are not available online, researchers want an easy path to being able to request scanning or other reproduction and licensing services.

Mediated access

The ability to request either research or reproduction services was another important access enabler, especially for material that had not already been digitized or that was located outside the researcher's local area. Participants described requesting reproductions or research assistance from archival repositories, usually through email exchanges with an archivist. Participants also described paying for research assistance from people not affiliated with the repository such as students and professional researchers. Paid research tasks often included both examining materials to provide information and taking digital photographs.

When considering requesting assistance from an archivist, several participants described their sensitivity to perceived staffing and budgetary limitations at archives and tried to modify their behavior to account for them and to maximize the likelihood of receiving help: "I don't know that I would speak with them about other collections they would have, only because I don't want to take up too much of their time. I would generally keep it to the collection that I'm interested in" (Participant C3-3).

Similarly, participants described modifying their digitization requests because of perceived capacity limitations: "Sometimes it would be easier to look at not just the folder, but the box and sort of surrounding material, but you can't because it's located 12 hours away, and I know archivists are asked to do a lot already and saying, 'Can you scan this much material for me?' isn't really feasible in a lot of cases" (Participant C1-1).

Participants also encountered challenges when trying to access materials because of prohibitive pricing, and unclear or restrictive reproduction policies. Some participants described situations where archives misunderstood copyright law or their reproduction policy was more restrictive than the law required, making it difficult to obtain copies or reuse archival materials.

When faced with the decision about whether to pay for licensing or copies of archival material, participants identified several common factors. Cost plays an important role and often is weighed against other factors. Participant C3-5 described their decision-making process when working on publications: "If we have to order it, we order it. We try not to end up with too [many] expensive processes because it makes the book that much more expensive, it's that simple." When contemplating ordering a large volume of material to be copied, participants described weighing the cost of reproduction fees against the cost of a research trip or hiring someone to do research for them. Participant C2-2 described this happening with a request they had recently submitted to an archive: "They're now telling me my request is going to cost a minimum of $550. [chuckle] So now I'll probably try to find a way to go . . . because they're charging $2.50 a page."

Along with cost, the amount of red tape involved in getting access can also impact the decision. Participant C4-1 described how this influences her: "But obviously something that's free is going to be a lot nicer to get than something that maybe you have to jump through hoops for . . . like there was one form that I had to have notarized to get the record. And so it's just like hoops maybe that you have to jump through or if it's cost prohibitive, it might influence a little bit."

Similarly salient is the importance of the material to their research. For genealogists ordering reproductions of materials, this often meant the closeness of and their certainty about their relation to the subject of the document. Participant C4-1 described these factors weighed against cost in their genealogy research: "cost and how I'm related to that person, and how important I think that information might be to the research." For researchers making decisions about work-related licensing of archival material, this meant both its centrality to their research as well as its uniqueness in being able to illustrate the story they were trying to tell.

In-person access

Participants who had accessed archives in person described doing so because it was the only way to see the materials they needed, and/or because of a preference for in-person research.

Some participants emphasized the importance of being able to use archives that had not yet been widely studied and cited this as one motivator to do in-person research: "I don't want to only work with the stuff that everybody can get to digitally because . . . somebody else is probably writing an article right now about it" (Participant C2-1). Some made a distinction between in-person and remote interactions with archivists, and were motivated to do in-person research because of the help they were able to get or believed that they would get: "I've had some great luck occasionally with some librarians, but in general, I think most of them are overworked and underpaid, and they don't necessarily want to help me over the phone, so going in person is better" (Participant C2-2).

Proximity was seen as an important enabling factor in accessing archival materials in person. Participants described being able to use materials close to them with relative ease compared to materials that would require travel for access.

Travel often is required to view archives in person. Participants described competing responsibilities and limited time and funds to dedicate to travel as major challenges to accessing collections. Participant C4-4 explained, "[what's] frustrating is knowing that there's something that you can only see if you travel to the library and knowing that I don't have the time or the financial wherewithal to get there."

Some participants doing work or academic-related research were able to rely on institutional support for research travel or would extend conference or other work-related travel to include a few research days in an archive. Avocational and many academic researchers had to rely on personal resources to fund research travel. Participant C4-3 described the trade-off when using personal funds to support research travel: "It just depends financially. Any person doing any kind of research, you're going to have household budgets and you're going to have to take from that household budget to make these trips."

Arranging for relief from caregiving responsibilities also factored into cost equations and navigating these responsibilities in general impacted research decisions. Participant C2-4 explains:

> When I was doing this, a lot of my early research, I had small children, and more so I had to very carefully plan my summers, there was a summer when I did surgical strikes on libraries, of being gone for four days here, and then four days there, while my husband could somehow manage, and then I've actually spent the last 20 years of my life caring for my husband who had Parkinson's disease, and I was very limited in my mobility for quite a while.

When assessing the viability of an in-person research trip, participants described considering multiple factors. The importance of available material was a key consideration, as was the volume of material available and the potential for related collections at the same repository or other institutions in the area to be useful. Participant C3-3 explained, "I think it has to do with how closely it relates to what I'm working on and then, of course, how far away it is."

Certainty about the relevance of the materials also played into the decision to travel, which can be difficult to assess remotely. Participant C2-3 explained, "It's a difficult decision . . . you don't always know from the finding aid, do you, what really it amounts to." Participant C2-1 described using digitized documents before deciding to travel to an archive, both to exhaust online resources and to help assess what might be available in person: "My research projects often involve a lot of digital footwork . . . because I look at records online before I bother to put together a budget request for funding to travel anywhere, to go with the documents that are not digitized."

The availability of online or mediated access to material also factors into deciding to travel to an archive, with many participants preferring to use those access methods before visiting in person. Participant C4-3 gave an example:

> The other large role in that is whether or not it can be found online. Can I call these people and send them fees through the mail and have them assist me? Will they email it to me? Those are things that will affect whether or not I go, because if I can save a 1500-mile trip then I will. [laughter]

Because time in the archive is so precious, many of the participants who were able to do in-person research felt pressure to make the most of their time in the reading room. For most, this meant spending their time taking as many digital photos of materials as possible. Participant C3-4 described trying to maximize time on a recent research visit:

> [I] went over there and basically spent four days not really reading things or going through it but sitting there with my phone . . . taking a photo of every single thing. . . . So when I'm at an archive, I generally am not reading or really processing the materials at that time, I am literally digitizing them. I'm just trying to get through as much as possible, and then I'm taking that home . . . and that's when I'm reading it, that's when I'm taking notes in Word from it.

Policies allowing photography in the reading room were commonly identified as supporting access. Relatedly, a lack of clarity about or difficulty finding reading room photography policies was seen as a challenge, especially when planning or assessing the viability of research trips. A few participants also expressed frustration that they can't share back the digital images that they create in reading rooms.

NETWORKS AND RELATIONSHIPS

Participants identified their networks and relationships as enabling multiple types of access to collections. This was most often cited by participants in academic or professional settings aligned with archival repositories.

Some participants described the value of ongoing relationships with archivists and how this supported both discovering and accessing collections. Participant C3-2 described this in the context of their work: "I also try to keep communication with the people in charge of the archives, in this case, the Latin American collection and ask them to, 'Okay, what other universities have access or have collections that are already digitized?'" In some cases, participants described high levels of service or preferential treatment from repositories or archivists with whom they had a relationship. Participant C2-4 described this kind of experience with one repository:

> I found that the archivists and special collections there was really intrigued by my project and was willing to sit down and I would give her the dates where I thought she'd find something and she found stuff for me that I didn't have to go to [State] to see. [chuckle] And then she'd scan it to me. It's just amazing the speed up that's possible here. But having an archivist who doesn't just bury your letter at the bottom of a pile and never get back to it, that's. . . . Somebody's letter must be at the bottom of the pile, but it's not usually mine.

While networks and relationships can be viewed as an enabler and advantage by individual users, the converse is also true. The lack of these connections creates a disadvantage for those who do not have the benefit of relationships to help navigate or circumvent sometimes opaque archival systems and workflows. Participant C3-4 recognized that their professional role and relationships benefit their ability to navigate archival systems, and that those without might not have this same advantage: "If [they were] just an enthusiast, [they] would probably have an even more challenging time because [they] wouldn't have those professional connections that a professional would have."

In some cases, networks or relationships allowed users to skirt restrictions or delays. Some participants described using peer and colleague networks to get access to content in subscription databases they didn't have access to or behind paywalls. Participant C2-4 described using their network to avoid the long turn-around time of an archives' reproduction queue:

> I excitedly called the archivist there and he said, "Oh yeah, we can get those to you if you can wait a couple of weeks." I said, "A couple of weeks?" [chuckle] So I called a friend of mine who teaches at [University] and I said, "Could you get me this sooner? Just send your research assistant over to Xerox it for me?" And within a day, she'd FedEx-ed this whole thing to me.

For some participants, these networks became especially important in dealing with a lack of access to archives due to the closures during the pandemic, especially those pursuing academic degrees with discrete timelines for their studies and assignments. Participant C3-2 explained:

> [Y]ou're in a doctoral program and you want to finish within a certain number of years. . . . I lost time that I was supposed to be using, exploring primary sources. . . . I depended on my advisor to getting into connections with other professors and basically just the good heart of any professor who wants to share what they have in their personal archives.

Future directions for archival aggregators

The final question in our interview protocol asked participants to imagine, if they had a magic wand, their ideal way to search for and access archival materials. This section reports on answers to that question. It can be assumed that participants also would want archival aggregators to try to address some of the challenges outlined elsewhere in our findings. Those challenges are echoed in many of the desires expressed in this section but are not explicitly discussed here.

The most frequently expressed desire (18) for a future aggregation system was one that provided comprehensive searching across the holdings of institutions across the United States. Participant C2-4 described this as a "one-stop shopping place." Others likened it to existing systems, but with a focus on archival research and collections, "like a Google of the archival world" (Participant C1-1), or "WorldCat, but just for archives, more focused on archival materials and the needs of searching for archival materials" (Participant C2-5).

Participants also were attuned to the type of institutions they would want to see included, and the benefit of being able to search across big and small institutions.

> I think having one place where you could search for archival material . . . a place that would pull your large institutions, like your Duke Universities, your Stanfords, Yales, your large universities, your smaller universities, but also independent research libraries, historical societies, state historical societies, local historical societies. (Participant C1-1)

Participants described benefits they would draw from a nationally-scoped system. It would save time and effort and help them to feel confident in locating a broad representation of materials.

Participant C2-3 remarked, "that would be wonderful to have . . . to be able to just do a single search and have some idea of where things were everywhere in the country." Participant C3-4 commented, "And it would be so cool if lots of collections . . . just popped up as opposed to really needing to know lots of different institutions and repositories and going to this site and going to this site and going to this site." Another participant described the trust a national system could impart: "I think it would be useful to have a single place to have these kinds of things so that I don't have to go to Google where you can get some wackadoodle's idea of something. This is all vetted by academic institutions. So it's more trustworthy as a source" (Participant C2-1).

Increased access to digital materials was another key desire mentioned by participants (17). Some would wield their magic wand to make all materials digitally available, such as participant C4-5 who remarked, "If everything was online, that would be my perfect world." But others had more modest or realistic requests of getting more material online than there is presently and being able to access everything an institution has scanned alongside or through the finding aid.

Many of the aggregator features that participants want are related to the technical platform and its functionality. One commonly invoked wish was an easy-to-use system (10). Participants largely spoke about this in general terms, saying things like, "a very nice and friendly interface" (Participant C3-2) or search that is "intuitive to use" (Participant C1-2). Participant C5-3 described wanting both the interface and any APIs to be easy to use: "just a decent, easy use website and then backed up with some technical information for those who need it, for whatever APIs may be available for accessing the data, for those people who know how to leverage that."

Multiple participants (10) mentioned functionality that would help researchers more accurately search. This included advanced search options to use when constructing a query, as well as filtering or faceting functions to allow them to narrow results sets. Desired fields included geography, type of material, date or date range, keyword, subject, and author or creator.

Participants (9) also wanted the system to clearly provide information on how to contact or make requests of individual archives once the users identify material of interest to them. Participant C4-1 described an ideal scenario: "The site is easy to navigate and the record pulls up, or it's pretty clear about how to get that record." The kind of information desired included providing easy contact information for individual archives, as well as information like their hours, appointment information,

reproduction policies and request forms: "This ideally aggregated website has some information so I can contact that archive, that would be perfect. Or how to obtain reproductions of documents from those archives even if they don't have anything digitized" (Participant C3-2).

Some participants (7) wanted to be able to see basic information about institutional collecting scope.

Users wanted a support feature. Some discussed recommender functionality (8) to help them find collections of interest. One participant described this like the functionality commonly available on streaming video and online shopping platforms, where "if you go through and you click on something, you'll say, 'Here are other records you might . . . interest you'" (Participant C2-2). Participant C5-2 imagined a network graph like interface of related collections to explore: "[F]or finding archival materials, I don't know if this would ever be possible, but something . . . where you could find a networked chain of different materials that you can click from point to point and see where that takes you." Other types of support mentioned include reference support, technical documentation for how to download metadata or images or use APIs, and general orientation to the system and to archival research.

Additional items on researchers' wish lists included more detailed description or more transcription of records (5), the ability to connect to other researchers working on similar topics (5), and the ability to search across materials in different languages and have translations of materials (3).

Discussion and Recommendations

Participant statements during the interviews highlight the current challenging archival discovery and access landscape in the US. A national aggregation can provide important value to users by making archival collections more visible and discoverable on the web and making connections between collections much more easily visible to users. The following discussion draws from our findings to suggest functional and programmatic directions that NAFAN could take to benefit users.

Address discovery challenges and needs

The central challenge for archival researchers surfaced in our interviews is discoverability of archival collections on the web. Researchers in individual interviews described being frustrated by having to use siloed discovery systems and being challenged by the significant amount of time and effort they must spend in identifying archival material of relevance to their research. They want an easy-to-use system that provides comprehensive discovery of archival collections across many institutions. Participants also described different information needs and information-seeking behavior, including known item and topical searching, exploration, and identifying collections previously unknown to them. Similarly, they also were concerned with surfacing connections across collections, institutions, and topics, and with discovering collections in small and underfunded institutions and institutions of which they are unaware.

Recommendations:

- Make participation possible for the widest possible range of archival institutions, including repository profiles as a baseline level of participation.

- Build functionality to identify connections between related collections across the aggregation.

- Build functionality to support different information-seeking needs, including search, browse, and suggestion.

- Assess what specific functionality would address users' articulated desire for an "easy-to-use" system. Research, design, and usability resources should be allocated to this in future project work.

Users identified challenges with understanding and parsing large results sets across search-based systems. They desire a way to narrow results and to easily assess what is and is not relevant to their research. In a national aggregation context, results sets will be larger and will likely be more unwieldy, making this challenge even more pronounced. Users also expressed uncertainty about the comprehensiveness of their searches, not understanding the coverage of their search tools, and missing out on newly available collections.

Recommendations:

- Build functionality that allows users to sort and filter result sets.

- Design an interface that supports users to quickly scan and assess result sets.

- Articulate to users what archives are included in the aggregation and encourage archives to communicate what they have and have not included in the aggregation through repository profiles or other means.

- Build a feature to highlight and make visible newly added or revised collection descriptions.

Participants described using a variety of tools to identify archival collections outside of aggregator systems. Consulting with archivists is a vital enabler of discovery. Researchers contact (or wish to contact) archivists to request further information about collections they have already identified, especially those with minimal description, to enquire about unprocessed archival collections, and to request suggestions for collections relevant to their research. Additionally, participants described citations in secondary sources as playing a vital role in finding archives.

A national aggregation should consider how the NAFAN platform could support these alternate means of discovery, as well as bear some of the need that these alternate means currently address.

Recommendations:

- Build functionality to support easy download and construction of citation information.

- Design an interface that makes it clear which archive holds the material represented in the aggregation, and how to contact that archive.

- Offer repository-level information on collecting scope, an indication of roughly how much of their collection is described in NAFAN or on their own website, and if the archive allows access to collections not described online.

- Offer tutorials and answers to frequently asked questions to respond to common researcher needs that might be addressed at the aggregator rather than individual archive level.

Address access challenges and needs

While aggregators are traditionally considered discovery systems, research findings indicate that NAFAN should seek to support access as well as discovery. End users described a desire to be able to access archival materials once they had discovered them and noted the ways aggregators, catalogs, websites, and search engines can support or frustrate that process. A NAFAN platform will provide value by understanding how the system can support online, mediated, and in-person access needs, planning for archival research trips, and contacting individual archives. Users also noted barriers to doing in-person archival research, especially when it requires traveling to an archive. A national aggregation can support access by helping researchers discover collections held geographically close to them that they are more likely to access easily. Both pop-up survey data and interviews with users tell us that online access to digital collections is highly desired by researchers. NAFAN can address researcher access needs by considering how digital resources will be incorporated into aggregation features and interfaces to more easily allow researchers to access digitized collections.

Our research with end users also identified inequity related to who can access archival collections and how easily they can do so. Resource limitations and caretaking responsibilities impacted users' ability to do in-person research. Some users were limited to working only with digital collections that they could access online. Users working in academic and cultural heritage settings cited using personal and professional networks to navigate the sometimes-opaque ways that archives operate or to avoid barriers other researchers had to routinely deal with. A national aggregation that takes seriously the information needs of a range of users has the opportunity to make an important intervention in this uneven landscape of access.

Recommendations:

- Build easy-to-understand paths and interfaces for finding the individual archives' contact information and policies.

- Encourage and support archives to create clear and visible contact information; research, reproduction, and reading room photography policies; and access restrictions.

- Build functionality to allow users to search for archives and archival collections held in specific geographic areas.

- Build functionality to help users identify archival collections and material that can be accessed online.

CONCLUSION

The findings of this research indicate the need for a national aggregation of archival description, the value it could provide to archival researchers, and how the system could meet user needs. These findings not only identify the necessary technical features, but also support the need for design, usability testing, and user support features. Concrete guidance can be drawn from this research for prioritization of the next phases of the NAFAN project.

ACKNOWLEDGMENTS

brings her expertise in layout, displaying gusto and courage in the face of tables. JD Shipengrover (Information Architect) uses her skills as a graphic designer to create meaningful and effective graphics that help readers connect with data.

APPENDIX A: CONSENT FORM

Consent to Participate in a Research Study Semi-Structured Individual Interview

OCLC/CDL NAFAN PROJECT
Principal Investigator: Günter Waibel, California Digital Library
Project Coordinators: Lynn Silipigni Connaway, Ph.D., OCLC Research
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Description of research
OCLC Research, California Digital Library, and University of Virginia as part of the IMLS-funded project (LG-246349-OLS-20), Building a National Archival Finding Aid Network (NAFAN) is conducting one-on-one interviews with users of archival aggregation websites. This is an opportunity for you to share your knowledge and experiences interacting with finding aids and searching for archival material.

Confidentiality
Although there are plans to publish research results, you will not be identified in any reports on this study. All research records will be kept confidential to the extent provided by federal, state, and local laws. Data from the study will be kept in a secure location. **A copy of this document is available for your records and one copy will be kept with the research records. Your participation in this study involves no more than minimal risks or discomforts.**

Consent
Interviewees will receive a $50.00 USD electronic gift card. Interviews will last approximately 45-60 minutes and be conducted remotely via WebEx, an online video meeting platform. It will require reliable internet access and a web cam. This session will be recorded. Recordings are used solely for transcription purposes.

Your participation in this study is voluntary. Subsequent to your consent, you may refuse to answer specific questions, withdraw from the study at any time, or ask that information be removed from our dataset. You also may ask questions concerning the study before, during, or after the study.

UCLA Office of the Human Research Protection Program (OHRPP):
If you have questions about your rights as a research subject, or you have concerns or suggestions and you want to talk to someone other than the researchers, you may contact the UCLA OHRPP by phone: (310) 206-2040; by email: participants@research.ucla.edu or by mail: Box 951406, Los Angeles, CA 90095-1406.

If you would like additional information or have questions about this research, you can https://www.oclc.org/research/areas/user-studies/national-finding-aid-network.html or contact Lesley Langa, Associate Researcher, OCLC, Inc., 6565 Kilgour Place, Dublin, OH, 43017-3395. Email: langal@oclc.org

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I have read the information contained in this document. I have been informed that my participation in this study is voluntary. I agree to participate in this study.

_____   _____

Printed Name   Date

_____

Signature

APPENDIX B: SEMI-STRUCTURED INDIVIDUAL INTERVIEW PROTOCOL

Instructions for Interviewer Prior to Interview

For the interviews, we want to call the participants via Webex and record the interview. After you are done with the interview and the recording is done, Janet will receive an email with a link to the recording and she will be responsible for placing the recording file in the Dropbox folder for interview recordings. You are responsible for placing your notes into the same folder for the interview (file naming protocols at the end of this document).

User code:
Contact email address:
Interviewer:
Note taker:
Date of interview:
Interview start time:
Interview end time:

Participant Demographic Information from Survey
Gender:
Age:
State of Residence:
Highest Level of Education Completed:
Academic Status/Profession:
Institutional Affiliation:
Aggregator associated with pop-up:

Instructions for Interviewer

Please follow the script as closely as possible.

Script for Introduction

Hello, my name is **[Name]** and I will be interviewing you to help us study the ways in which you look for archival materials on the web. Is it still a good time to talk?

Let me tell you just a little bit about who I am, who I work for and what we're doing with this research project. I work as **[provide brief description of your title or job role]** at OCLC. OCLC is a non-profit cooperative that works with libraries around the world. OCLC Research is working with people who use archives to understand how they search for and access materials.

[Name], from OCLC Research also is joining us today and will be taking notes. **[Name],** please introduce yourself. **[Name]** will turn off the video camera during the interview and may ask you to repeat something or clarify if they did not understand your response.

This interview is a part of the research for an IMLS-funded project (LG-246349-OLS-20), Building a National Archival Finding Aid Network (NAFAN). A team of researchers at OCLC Research are collaborating on the project along with California Digital Library and University of Virginia Library.

Thank you for taking the time to talk with us today. We really appreciate your help. Our interview won't take much longer than an hour. There are no right or wrong answers. It is not a test. I just want you to be as honest as you can to find out what you think.

For your time and participation, you'll be compensated with an Amazon electronic gift card worth $50 USD. I also will be recording the interview and typing notes as you speak, so please don't think I'm not listening to you. I will be using this later so that I can remember what you have said. My questions are **[indicate where]** and I will be writing notes **[indicate where]**. Everything you say is private and will not be discussed with anyone outside of the research team. I will be changing your name to keep you anonymous and will destroy the sound recording and any information you give when it is no longer needed. We want you to be aware that you can stop participating at any time. Is this all okay? Do you have any questions before we start?

Instructions for Interviewer: Refer to the interviewee's survey responses

- The search you conducted on **[fill in month survey was completed]** on **[fill in name of regional finding aid aggregator]**

- The user's frequency of use of the aggregation website

- The purpose for visiting the aggregator site

- The outcome of your visit to the aggregator site

Instructions for Notetaker

Press record after questions from the interviewee are answered.

Semi-structured Individual Interview Questions

1. Please describe a typical research project and the research process you go through over the course of the project. (Probes: Where do archival materials fit into your research process? Please describe the ways that you use archival materials. Do you use archival materials differently depending on the purpose of your project?)

2. We identified you via a survey you took at [**fill in the name of regional finding aid aggregator and fill in month survey was completed**]. What were you looking for? Are there specific reasons or situations for which you use **[fill in name of regional finding aid aggregator]**? (Probe: Did you know that **[fill in name of regional finding aid aggregator]** includes descriptions of collections held at many different institutions? What do you like about it? What do you dislike about it?)

3. Please describe the ways you look for archival materials. What other resources and/or tools do you use to find archival materials? For example, genealogy or newspaper databases or websites, human sources, such as genealogists, neighbors, friends, etc. (Probes: Do you use different tools for different purposes? Do you use different tools to find audio, video, or other specific formats? What do you like or dislike about those tools?)

4. Once you locate the description of archival material that interests you, what do you typically do next? (Probe: What are the next steps you might want to take? Is there something you would want to be able to do but often can't? What would influence you to pursue or not pursue using a specific archival material? Once you identified materials in an archive or special collection that might be interesting, how did you decide if it was worth going to the physical archive or special collection to work with the materials?)

5. Think about a recent attempt to search for archival material for your research. What did you find particularly delightful about the experience? What did you find particularly frustrating? Please describe what made it delightful and/or frustrating.

6. If you had a magic wand, what would be your ideal way of finding archival material for your research? Please describe this ideal way of getting the archival material. Include when, where, and how you would use it, and what it would do.

Conclusion of Interview

7. What else, if anything, would you like to share about your search experience?

8. What questions do you have for me?

If you think of anything else that you would like to tell me or have any questions, please feel free to contact me via email.

Thank you again for your time and answering the questions. You'll be receiving a $50 electronic Amazon gift card in your email within the next week. If you don't see it by next Friday, please email Janet who scheduled your interview and she can check on it for you. Thanks again.

Pause the recording until the interviewee leaves the session.

Once the interviewee leaves the session, take the recorder off of pause for the note taker and the interviewer to record their thoughts and reactions.

Interviewer Comments

Note Taker Comments

Stop recording.
AFTER COMPLETION

Confirm that file is correctly named and then add your initials to it: "NAFAN-Interview [Participant ID] [Your initials]"

Name the Audio Recording: "NAFAN-Interview Audio [Participant ID]"

Save and upload the Interview Protocol file to Dropbox> NAFAN - IMLS grant project>Data and Notes>Individual Interviews

Janet will upload the video recording to the same folder as above.

ADDITIONAL NOTES

APPENDIX C: NAFAN INDIVIDUAL INTERVIEW CODEBOOK

Theme	Subcode level 1	Subcode level 2
Discovery	Challenges	System challenges
	Challenges	Structural challenges
	Challenges	Legal challenges
	Challenges	Professional challenges
	Enablers	---
	Benefits	Personal
	Benefits	Professional
	Benefits	Serendipity
Access	Challenges	System challenges
	Challenges	Structural challenges
	Challenges	Legal challenges
	Challenges	Professional challenges
	Challenges	Digital surrogate availability
	Enablers	---
	Benefits	Personal
	Benefits	Professional
	Type of access	In-person
	Type of access	Online
	Type of access	Mediated
Needs	Exploratory	---
	Factual information	---
	Contextual information	---
	Evidence for analysis	---
Motivators	Final product	---
	Activity	Work activity
	Activity	Academic activity
	Activity	Avocational activity
	Emotional reactions	---
	Information gaps	---
	Information confirmation	---
	Obtain materials	---
	Knowledge sharing	---
Decision making	---	---

Theme	Subcode level 1	Subcode level 2
Research duration	Short-term	---
	Long-term	---
	Ongoing	---
Sources	Search engines	---
	Archival collections	---
	Library websites	---
	Humans	---
	Citations	---
	Presentations	---
	Library catalog	---
	Online network	---
	Databases	---
	Archivists / librarians	---
	Genealogy	---
	Local history	---
	Public library resources	---
	Other	---
Pandemic	Challenges	---
	Benefits	---
Aggregators	Familiarity	---
	Challenges	---
	Benefits	---
	Motivators	---
Magic wand	National scope	---
	Filtering / faceting	---
	Digital surrogates	---
	Multiple languages	---
	Institutional access information	---
	Institutional collection scope info	---
	Browse	---
	User support	---
	Recommender	---
	Serendipity	---
	Easy to use	---
	Other	---
Juicy quotes	---	---

APPENDIX D: INTERVIEW PARTICIPANT IDS AND DEMOGRAPHIC DETAILS

Information in the chart below is drawn from the pop-up survey placed on the websites of 13 US-based regional archival aggregators from March–May 2021. Some demographic information gathered in the survey is not included to protect participant anonymity. Gender and state of residence are not reported at the individual level in the chart. Fifteen interview participants reported their gender as female, eight reported their gender as male, and two participants did not report a gender. The 25 participants reported living in 16 different states.

ID	Cluster name	How did you get to this website?	What project* or type of research prompted you to visit this site today?	How frequently do you visit this site?	Highest level of education completed	Age
C1-1	Archivists/ librarians & other professionals	I've used this site before	Professional project	Weekly	Master's degree	26-34 years old
C1-2	Archivists/ librarians & other professionals	I've used this site before	Professional project	Weekly	Undergraduate/ bachelor's degree	45-54 years old
C1-3	Archivists/ librarians & other professionals	I found it through a browser search	Professional project	This is my first time	Master's degree	35-44 years old
C1-4	Archivists/ librarians & other professionals	I've used this site before	Professional project	Weekly	Undergraduate/ bachelor's degree	55-64 years old
C1-5	Archivists/ librarians & other professionals	I've used this site before	Professional project	Weekly	Master's degree	65+ years old
C2-1	Faculty and academic researcher	I've used this site before	Class assignment; material to use for teaching	Less than monthly	Doctorate (Ph.D., J.D., M.D.)	35-44 years old

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* **Long-term** projects were described in the survey as "book, documentary, exhibition, anything with a timeframe in months or years."
Short-term projects were described in the survey as "news article, television project, anything with a timeframe in days or weeks"

ID	Cluster name	How did you get to this website?	What project* or type of research prompted you to visit this site today?	How frequently do you visit this site?	Highest level of education completed	Age
C2-2	Faculty and academic researcher	I've used this site before	Long-term project	Weekly	Doctorate (Ph.D., J.D., M.D.)	45-54 years old
C2-3	Faculty and academic researcher	I've used this site before	Long-term project; professional project	Less than monthly	Doctorate (Ph.D., J.D., M.D.)	55-64 years old
C2-4	Faculty and academic researcher	I've used this site before	Long-term project	Less than monthly	Doctorate (Ph.D., J.D., M.D.)	65+ years old
C2-5	Faculty and academic researcher	I found it through a browser search	Long-term project; professional project; short-term project; local history research	This is my first time	Doctorate (Ph.D., J.D., M.D.)	26-34 years old
C3-1	Undergraduate and postgraduate students	Someone told me about this site	Class assignment	This is my first time	High school diploma/ G.E.D.	19-25 years old
C3-2	Undergraduate and postgraduate students	Someone told me about this site	Thesis or dissertation	This is my first time	Master's degree	26-34 years old
C3-3	Undergraduate and postgraduate students	I followed a link on a website or social media	Creative or artistic project	This is my first time	Master's degree	55-64 years old
C3-4	Undergraduate and postgraduate students	I've used this site before	Long-term project	Monthly	Master's degree	35-44 years old
C3-5	Undergraduate and postgraduate students	I found it through a browser search	Long-term project, material to use for teaching	Weekly	Undergraduate/ bachelor's degree	65+ years old

ID	Cluster name	How did you get to this website?	What project* or type of research prompted you to visit this site today?	How frequently do you visit this site?	Highest level of education completed	Age
C4-1	Family history researcher	I found it through a browser search	Family history research	This is my first time	Undergraduate/ bachelor's degree	35-44 years old
C4-2	Family history researcher	Someone told me about this site	Long-term project; family history research, personal interest	Monthly	Undergraduate/ bachelor's degree	26-34 years old
C4-3	Family history researcher	I found it through a browser search	Family history research	This is my first time	High school diploma/ G.E.D.	35-44 years old
C4-4	Family history researcher	I followed a link on a website or social media	Family history research, personal interest, professional project, local history	This is my first time	Undergraduate/ bachelor's degree	65+ years old
C4-5	Family history researcher	I followed a link on a website or social media	Family history research	This is my first time	Undergraduate/ bachelor's degree	55-64 years old
C5-1	Personal interest researcher	I found it through a browser search	Local history research, personal interest	This is my first time	Master's degree	65+ years old
C5-2	Personal interest researcher	I followed a link on a website or social media	Long-term project; personal interest, professional project; thesis or dissertation	Less than monthly	High school diploma/ G.E.D.	---
C5-3	Personal interest researcher	I found it through a browser search	Personal interest	Less than monthly	Master's degree	---
C5-4	Personal interest researcher	I found it through a browser search	Local history research, personal interest	This is my first time	Undergraduate/ bachelor's degree	---
C5-5	Personal interest researcher	I found it through a browser search	Personal interest	This is my first time	Master's degree	---

NOTES

1.   For details on the grant proposal, see:

        Institute of Museum and Library Services. 2020. "Log Number: LG-246349-OLS-20."
        Program: National Leadership Grants - Libraries. Regents of the University of California.
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2   Rhee, Hea Lim. 2015. "Reflections on Archival User Studies." *Reference & User Services
        Quarterly* 54(4): 29–42. https://doi.org/10.5860/rusq.54n4.29.

3   Ibid.

4   See, for example:

        ArchivesSpace. "User Personas." Created by Mark Custer. Updated 23 July 2016.
        https://archivesspace.atlassian.net/wiki/spaces/ADC/pages/66355248/User+Personas;

        Stanford University Libraries, Georgia Tech, and University of Michigan. 2017. "ArcLight
        Personas." Stanford Digital Repository. https://purl.stanford.edu/hk349dn1751;

        Rockefeller Archive Center. 2017-19. "Project Electron Personas." Personas. Updated 1 May
        2019. https://github.com/RockefellerArchiveCenter/personas/tree/base/project
        -electron-personas.

5   Wendy M. Duff. 2005. "Working as Independently as Possible: Historians and Genealogists
        Meet the Archival Finding Aid." In *The Power and the Passion of Archives: A Festschrift in
        Honour of Kent Haworth*, edited by Reuben Ware, Marion Beyea, and Cheryl Avery. Ottawa:
        Association of Canadian Archivists.

6   Langa, Lesley A., Chela Scott Weber, and Lynn Silipigni Connaway. 2023. Pop-Up Survey:
        Findings from the Building a National Finding Aid Network Project. Dublin, OH: OCLC
        Research. https://doi.org/10.25333/qfjb-h531.

7   Connaway, Lynn Silipigni, and Marie L. Radford. 2021. *Research Methods in Library sand
        Information Science. Seventh edition*. Library and Information Science Text Series. Santa
        Barbara, CA: Libraries Unlimited.

8   Ibid., 306.

9   Ibid., 304.

10   Pew Research Center. 2021. "Internet/Broadband Fact Sheet" Posted 27 April 2021.
        https://www.pewresearch.org/internet/fact-sheet/internet-roadband/?menuItem=d5edf003
        -5858-4269-89c5-f2889ecf7951.