

Getting to Know Digital Collections Users

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Cover Page Footnote

Thank you to Dr. Su Kim Chung, Head of UNLV Special Collections and Archives Public Services, for being my research partner in designing and conducting this study.

Getting to Know Digital Collections Users

Emily Lapworth

ABSTRACT

Use and user studies can provide valuable information to archivists and librarians who wish to improve their services and systems. However, studying the use and users of digital archival collections can be challenging. This study describes the methods and findings of a study conducted by the University of Nevada, Las Vegas (UNLV) to explore questions such as, who is using UNLV Digital Collections? How are they using the materials? What are their user interface preferences? Are they satisfied? The methods used include web analytics, an online survey, and interviews. The author shares lessons learned to aid other repositories in designing and implementing digital collections assessments. The findings reveal some consistencies with past studies in user preferences over time and across different user and collection types. Study participants desired intuitive but customizable interfaces and searching and browsing functionality. They wanted the ability to easily and quickly understand the scope of the collections, and to efficiently review search results. Support for downloading high resolution files, citing materials, and creating personal collections was also apparent. Overall, study participants indicated that they are satisfied with UNLV Digital Collections, but this type of research can contribute to improvements that could attract new users and expand the reach of digital collections.

Introduction

This study gathered and analyzed information about the use and users of the University of Nevada, Las Vegas (UNLV) Special Collections and Archives (SCA) Digital Collections (DC). UNLV DC is a public online database that provides access to digitized and born-digital special collections and archives materials including photographs, oral history interviews, newspapers, maps, drawings, menus, videos, correspondence, and other documents.

The motivation for the study was to identify improvements to better serve current and potential users. The data sources analyzed include Google Analytics for the UNLV DC CONTENTdm website (2014-2019), an online survey of SCA DC users (2018), and interviews with SCA in-person users (2019). This article is a summary of findings related to the following research questions:

- Who are UNLV Digital Collections users?
- Where are they from?
- What are they using UNLV DC for?

- What materials do they use?
- How are they searching and navigating UNLV DC?
- What are they doing with UNLV DC items?
- Are they satisfied with UNLV DC?

UNLV's methods and findings are shared as an example of how one repository assessed its digital collections. Other repositories may wish to reuse or repurpose these methods for their own assessment, or to compare their own findings. While each repository and collection is unique, developing shared methods of assessment and comparing results contributes to a richer understanding of digital collections users, which in turn facilitates improvements and leads to increased use of digital collections.

Literature Review

In an analysis of archival user studies from 1977 to 2011, Hea Lim Rhee identified three categories of topics: information needs, information seeking, and information use—information seeking was found to be the most popular.¹ In the time period studied by Rhee, research on Web users was rare. Since then, the study of online users has increased. A 2014 Association of Research Libraries survey found that 47% of responding libraries assessed their locally curated digital collections within the last three years, while 30% had not but planned to.² The benefits of assessment that these libraries identified included: improvements to user interfaces and functionality, collaborations with faculty, development of new digital collections, and advocacy for resources. Challenges included: consistency, quality, reliability, appropriate granularity, meaningful measurements, and communicating results.³

In his 1986 article “Facts and Frameworks: An Approach to Studying the Users of Archives”, Paul Conway proposed a comprehensive framework for studying archives users.⁴ The framework was designed for in-person archival research, with the first three stages (registration, orientation, and follow up) relying on direct interaction with users, which is often not possible with online users of digital archival materials. This digital collections study used a survey (stage four of Conway's framework), in addition to interviews and Web analytics, to gather data related to many pieces of the

1. Hea Lim Rhee, “Reflections on Archival User Studies,” *Reference & User Services Quarterly* 54, no. 4 (Summer 2015): 32, <https://doi.org/10.5860/rusq.54n4.29>.
2. Marilyn N. Ochoa, Laurie N. Taylor, and Mark V. Sullivan, *Digital Collections Assessment and Outreach*, SPEC Kit 341 (Washington, DC: Association of Research Libraries, 2014): 33, <https://doi.org/10.29242/spec.341>.
3. Ochoa et. al., *Digital Collections Assessment and Outreach*, 13-14.
4. Paul Conway, “Facts and Frameworks: An Approach to Studying the Users of Archives,” *The American Archivist* 49 (1986): 393-407, <http://hdl.handle.net/2027.42/85217>.

framework, including intended use, search strategies and mechanics, expectations, and satisfaction.⁵ Conway argued that “Knowledge from user studies will have value beyond single repositories only if widely shared... Archivists should begin with the basics, coordinate research designs, collect data, share results widely, and revise their approaches based on these results.”⁶

Since Conway’s article, standardized metrics for collecting use and user data have been developed, such as the *Archival Metrics Toolkits* and the *Standardized Statistical Measures and Metrics for Public Services in Archival Repositories and Special Collections Libraries*.⁷ The *Archival Metrics Toolkits*, published in 2010, includes five different surveys focused on researchers, student researchers, teaching support, archival websites, and online finding aids. The website/access tools survey asks users what they are using the archival website for, what parts of it they used, how they rate certain features, the usability of the website, what other features they would like, and problems they experienced. The components of an archival website that are evaluated by the survey include: information about the archival repository, the search tool, online finding aids, and digitized items. The survey is not designed to focus specifically on digital collections, but it can be customized.

Standardized Statistical Measures and Metrics for Public Services in Archival Repositories and Special Collections Libraries, published in 2017, includes some measures that can be applied to digital collections, including “user affiliation” (for example, education level or academic status) and “purpose of use” (such as for academic publication, school assignment, or genealogical interest). It also includes an entire domain dedicated to measuring online interactions, such as pageviews and downloads. In 2015, a Digital Library Federation (DLF) working group published best practices for using Google Analytics to measure online interactions of users with digital libraries.⁸

5. Ibid, 397.

6. Ibid, 406.

7. Elizabeth Yakel and Helen Tibbo, "Standardized Survey Tools for Assessment in Archives and Special Collections," *Performance Measurement and Metrics* 11, no. 2 (July 2010): 211-222; SAA-ACRL/RBMS Joint Task Force on the Development of Standardized Statistical Measures for Public Services in Archival Repositories and Special Collections Libraries, *Standardized Statistical Measures and Metrics for Public Services in Archival Repositories and Special Collections Libraries*, published January 2018, accessed December 2022, <https://www2.archivists.org/standards/standardized-statistical-measures-and-metrics-for-public-services-in-archival-repositories>.

8. Molly Bragg, Joyce Chapman, Jody DeRidder, Rita Johnston, Ranti Junus, Martha Kyrrilidou, and Eric Stedfeld, *Best Practices for Google Analytics in Digital Libraries* (Digital Library Federation Assessment Interest Group) published November 2015, accessed December 2022, <https://doi.org/10.17605/OSF.IO/CT8BS>.

Institutional case studies have shared valuable examples and recommendations for implementing Web analytics. In his 2013 article, Michael Szajewski described how to analyze Google Analytics data to increase visibility and discoverability of digital archival content, and to inform outreach and selection.⁹ Tali Beesley explored Web analytics data related to the *Documenting the American South Collection* at the University of North Carolina at Chapel Hill and modeled a method for comparing digital collections of different sizes that UNLV used in its own study: dividing the number of pageviews by the number of items/pages for each collection.¹⁰ Although Web analytics can provide valuable quantitative data about the use of digital collections, this method does not “capture the context surrounding consumption and reuse. For the most part, we do not know who is using our content, nor for what purposes.”¹¹

The DLF Assessment Interest Group (AIG) User Studies Working Group published a white paper in 2015 that surveyed digital library studies related to usability, use, content reuse, and return on investment.¹² They identified gaps in the study of content reuse, including: “Who are the current and potential users of digital library content?” and “What formats should digital repository objects take in order to be most effectively reused by user communities?”¹³ The AIG Working Group pinpointed interviews as the most effective method to determine “not only what users want, but also what they want to do with the digital objects and what delivery format best suits their needs.”¹⁴

Many studies have used surveys and interviews to gather data about how specific groups use digitized archival collections. Multiple researchers have surveyed

9. Michael Szajewski, “Using Google Analytics Data to Expand Discovery and Use of Digital Archival Content,” *Practical Technology for Archives*, no. 1 (November 2013), accessed December 2022, https://practicaltechnologyforarchives.org/issue1_szajewski/.
10. Tali M. Beesley, “Exploring Usage of Digital Collections via Web Analytics Tools” (MLS thesis, University of North Carolina at Chapel Hill, 2012), accessed December 2022, https://cdr.lib.unc.edu/concern/masters_papers/kk91fq41n.
11. Stacy Konkiel, Michelle Dalmau, and David Scherer, *Altmetrics and Analytics for Digital Special Collections and Institutional Repositories*, published April 2015, accessed December 2022, https://figshare.com/articles/preprint/Altmetrics_and_analytics_for_digital_special_collections_and_institutional_repositories/1392140/1.
12. Joyce Chapman, Elizabeth Joan Kelly, Liz Woolcott, and Tao Zhang, *Surveying the Landscape: Use and Usability Assessment of Digital Libraries* (Digital Library Federation Assessment Interest Group, published January 2016, accessed December 2022, <https://osf.io/uc8b3>).
13. *Ibid*, 20.
14. *Ibid*, 21.

historians including Duff, Craig, and Cherry; Sinn and Soares; and Chassanoff.¹⁵ Some studies interviewed historians about their use of specific digitized formats such as photographs and newspapers.¹⁶ DeRidder and Matheny, and Green and Courtney, surveyed and interviewed humanities faculty.¹⁷ Gilliland-Swetland studied K-12 users.¹⁸ Other studies focused on broader user groups: Hill examined users of online archives in the United Kingdom, Assadi et al. examined French digital library users, Górný and Mazurek looked at Polish digital library users, and the Northwest Digital Archives Consortium interviewed its users about their needs.¹⁹ These studies addressed some of the same research questions that UNLV sought to answer; the results are discussed below.

15. Wendy Duff, Barbara Craig, and Joan Cherry, "Historians' Use of Archival Sources: Promises and Pitfalls of the Digital Age," *The Public Historian* 26, no. 2 (April 2004): 7-22, accessed December 2022, https://www.researchgate.net/profile/Wendy-Duff/publication/249985206_Historians'_Use_of_Archival_Sources_Promises_and_Pitfalls_of_the_Digital_Age/links/53ce4cfc26b9b7dbff79a/Historians-Use-of-Archival-Sources-Promises-and-Pitfalls-of-the-Digital-Age.pdf; Donghee Sinn and Nicholas Soares, "Historians' Use of Digital Archival Collections: The Web, Historical Scholarship, and Archival Research," *Journal of the Association for Information Science and Technology* 65, no. 9 (September 2014): 1794-1809, accessed December 2022; Alexandra Chassanoff, "Historians and the Use of Primary Source Materials in the Digital Age," *The American Archivist* 76, no. 2 (October 2013): 458-480, accessed December 2022, <https://doi.org/10.17723/aarc.76.2.lh76217m2m376n28>.
16. Alexandra M. Chassanoff, "Historians' Experiences using Digitized Archival Photographs as Evidence," *The American Archivist* 81, no. 1 (March 2018): 135-164, accessed December 2022, <https://doi.org/10.17723/0360-9081-81.1.135>; Elina Late and Sanna Kumpulainen, "Interacting with Digitised Historical Newspapers: Understanding the Use of Digital Surrogates as Primary Sources," *Journal of Documentation* 78, no. 7 (September 2021), accessed December 2022, <https://www.emerald.com/insight/content/doi/10.1108/JD-04-2021-0078/>.
17. Jody L. DeRidder and Kathryn G. Matheny, "What Do Researchers Need? Feedback on Use of Online Primary Source Materials," *D-Lib Magazine* 20, no. 7/8 (July 2014), accessed December 2022, <https://doi.org/10.1045/july2014-deridder>; Harriet E. Green and Angela Courtney, "Beyond the Scanned Image: A Needs Assessment of Scholarly Users of Digital Collections," *College and Research Libraries* (2015): 690-707, accessed December 2022, <https://crl.acrl.org/index.php/crl/article/view/16454>.
18. Anne J. Gilliland-Swetland, "An Exploration of K-12 User Needs for Digital Primary Source Materials," *The American Archivist* 61, no. 1 (April 1998): 136-157, accessed December 2022, <https://doi.org/10.17723/aarc.61.1.w851770151576l03>.
19. Amanda Hill, "Serving the Invisible Researcher: Meeting the Needs of Online Users," *Journal of the Society of Archivists* 25, no. 2 (October 2004): 139-148, accessed December 2022; Houssein Assadi, Thomas Beauvisage, Catherine Lupovici, and Thierry Cloarec, "Users and Uses of Online Digital Libraries in France," in *Research and Advanced Technology for Digital Libraries, ECDL 2003*, ed. Traugott Koch and Ingeborg Torvik Sølvberg (Berlin, Heidelberg: Springer, 2003), accessed December 2022, https://www.researchgate.net/publication/221175784_Users_and_Uses_of_Online_Digital_Libraries_in_France; Mirosław Górný and Jolanta Mazurek, "Key Users of Polish Digital Libraries," *The Electronic Library* 30, no. 4 (2012), accessed December 2022; Jodi Allison-Bunnell, Elizabeth Yakel, and Janet Hauck, "Researchers at Work: Assessing Needs for Content and Presentation of Archival Materials," *Journal of Archival Organization* 9, no. 2 (April 2011): 67-104, accessed December 2022, <https://digitalcommons.whitworth.edu/libraryfaculty/20/>.

Who Are Digital Collections Users?

Reading room registration forms and reference interviews can help identify types of users, such as students, faculty, locals, and artists. Identifying online users is much more challenging, but the categorization of academic versus non-academic users is one common approach in past studies. In Górný and Mazurek's 2009 survey of Polish digital library users, "Approximately 60 percent of users are amateur historians with an interest in the history of their place of residence or genealogists interested in the history of their family. The remaining 40 percent consist mainly of academic researchers and students."²⁰ In the United Kingdom, Amanda Hill examined responses to a voluntary "new user information form," which showed that 80% of users of Archives Hub were researching their family history and were new to finding aids. Hill found that 24% of users in 2003 accessed the Archives Hub website from a computer with a United Kingdom academic domain name.²¹ Another survey of users across six different UK archives found that 60% used the archives for personal leisure and 22% used the archives as part of their job (this includes both professional and academic researchers).²² These findings suggest that non-academic/amateur/personal interest users make up a significant portion of digital collections users. As Rhee noted, research has indicated that different types of users (such as historians, genealogists, and K-12 users) have "different patterns of information seeking and information use."²³

What Are They Using Digital Collections For?

Closely related to the question of academic versus non-academic affiliation, the near question is "what are they are using the digital collections for?" Cherry and Duff's survey of Early Canadiana Online users in 2000 found that 51% of respondents were using the materials for personal interest/genealogy, 21% for scholarly research, 12% for professional purposes, and 6% for teaching.²⁴ Of the respondents using the materials for teaching and scholarly research, 39% recommended it for students completing assignments, 18% to develop course materials, 19% for presentations, 31%

20. Górný and Mazurek, "Key Users of Polish Digital Libraries," 543.

21. Hill, "Serving the Invisible Researcher," 140.

22. *Ibid.*, 140-141.

23. Rhee, "Reflections on Archival User Studies," 34.

24. Joan M. Cherry and Wendy M. Duff, "Studying Digital Library Users Over Time: A Follow-Up Survey of Early Canadiana Online," *Information Research* 7, no. 2 (January 2002), accessed December 2022, <http://www.informationr.net/ir/7-2/paper123.html>.

25. Cherry and Duff, "Studying Digital Library Users Over Time."

for thesis or dissertation, and 61% for writing books, articles, or bibliographies.²⁵ In a study of Polish digital library users from 2011, researchers found that “non-academics use digital libraries principally for genealogical and heraldic studies, collecting biographical data and researching the history of Poland and their home regions.”²⁶

What Materials Do They Use?

Several studies have surveyed different types of users about the formats they use and found that textual resources are among the most-used. When Chassanoff surveyed 86 academic historians in 2011, she found that correspondence, books, newspapers, and periodicals were the most accessed formats online. While 48% of respondents accessed photographs online, 28% accessed maps online and 15% accessed oral histories online.²⁷ Of the non-academic Polish digital library users surveyed in 2011, 62% used “archival sources” in digital libraries very often, 43% used newspapers and magazines very often, and only 11% used photographs and drawings very often.²⁸ Green and Courtney surveyed humanities faculty and found that “the most frequently used materials were texts at 100 percent and images at 94 percent, followed by maps at 58 percent, video at 42 percent, and audio at 39 percent.”²⁹ Amongst humanities and social sciences faculty, Harley et al. identified disciplinary differences; for example: “[Digital] maps, historical documents, and primary source materials are heavily used by historians, anthropologists and archaeologists, as well as by geographers, but less so by writing instructors and those in English and foreign languages.”³⁰

How Are They Searching and Navigating Digital Collections?

Previous studies provide substantial data about the information-seeking behavior of digital collections users and their preferences for searching and browsing. Agosti, Orio, and Ponchia found that “less experienced users ranked more highly those tools that allowed them to explore the content collections in a relatively undirected way.

26. Mirosław Górny, John Catlow, and Jolanta Mazurek, “Evaluating Polish Digital Libraries from the Perspective of Non-Academic Users,” *Electronic Library* 33, no. 4 (August 2015): 719, accessed December 2022, https://www.researchgate.net/profile/Miroslaw-Gorny-2/publication/281994597_Evaluating_Polish_digital_libraries_from_the_perspective_of_non-academic_users/links/56a0b22e08ae2c638ebc8boo/Evaluating-Polish-digital-libraries-from-the-perspective-of-non-academic-users.pdf.

27. Chassanoff, “Historians and the use of Primary Source Materials,” 469.

28. Górny, Catlow, and Mazurek, “Evaluating Polish Digital Libraries,” 719.

29. Green and Courtney, “Beyond the Scanned Image,” 695.

30. Diane Harley, Jonathan Henke, Shannon Lawrence, Ian Miller, Irene Perciali, and David Nasatir, *Use and Users of Digital Resources: A Focus on Undergraduate Education in the Humanities and Social Sciences* (Center for Studies in Higher Education, University of California, Berkeley, 2006), accessed December 2022, <https://cshe.berkeley.edu/publications/use-and-users-digital-resources-focus-undergraduate-education-humanities-and-social-o>.

By contrast, professional researchers were far more likely to require tools that took them directly to specific artefacts, or sets of artefacts that were relevant to their interest.”³¹

Krystyna Matusiak found that most students who were observed using a digital image collection “used the keyword search almost exclusively,” whereas community users “tended to use the browse options more often, although a few performed keyword searches for some specific questions.” When the same group of students and community users was questioned about their preferences, “50% expressed strong preference for keyword searching, 33% said they would prefer to browse, and 17% indicated no preference.” In most cases, the preferences aligned with the observed behavior of the study participants. The results of the study indicated that “the choice of the method in the searching process is related to user past experiences in Web searching, expectations for the collection, the level of user computer skills, and to a certain extent, background knowledge of the subject matter.”³²

Browsing can be more effective for some formats or topics than others. In studying digitized newspapers, Late and Kumpulainen found that “scholars usually browsed or entered queries for content, with some specific theme in mind. Some topics were not amenable to keyword search; for these, the scholars needed to browse the newspapers page by page.”³³

Although browsing has been identified as a preferred information-seeking method in some cases, searching has consistently been found to be very important to digital collections users. A survey of humanities researchers conducted by Green and Courtney found that searchability was among the top five most important needed functionalities of digital collections.³⁴ Users interviewed by Allison-Bunnell, Yakel, and Hauck, “preferred keyword searches as their entry point” into digital collections.³⁵

31. Maristella Agosti, Nicola Orio, and Chiara Ponchia, “Promoting User Engagement with Digital Cultural Heritage Collections,” *International Journal on Digital Libraries* 19, no. 4 (2018): 359, accessed December 2022, <http://www.dei.unipd.it/~agosti/papers/2018/2018-agosti-orio-ponchia-ijdl.pdf>.
32. Krystyna K. Matusiak, “Information Seeking Behavior in Digital Image Collections: A Cognitive Approach,” *The Journal of Academic Librarianship* 32, no. 5 (2006): 482-485, accessed December 2022.
33. Late and Kumpulainen, “Interacting with Digitised Historical Newspapers,” 114.
34. Green and Courtney, “Beyond the Scanned Image,” 695.
35. Allison-Bunnell, Yakel, and Hauck, “Researchers at Work,” 83.

As noted by the DLF AIG User Studies Working Group, “search interface design is critical to [the] effective discovery of new information and locating specific information.”³⁶ DeRidder and Matheny point out that, “once the researcher is presented with a list of results, the usability of that list is critical.”³⁷ Seven of 19 users interviewed by Allison-Bunnell, Yakel, and Hauck “said that they desired useful limiters or sort functions for search results to reduce the need to scan very large results sets... The types of limiters they desired included keyword and form and genre.”³⁸ DeRidder and Matheny stated that five of the 11 researchers they interviewed “said that how results are sorted was very important” and “faceting and limiting options were very important to the majority (eight) of our researchers.”³⁹ Nine of 19 users interviewed by Allison-Bunnell, Yakel, and Hauck “wanted results to be presented both visually and with some accompanying text to be able to view results both ways.”⁴⁰

The DLF AIG User Studies Working Group argued that “visualization of information should be as important as the organization of the information... [I]t is important for a digital library to show the scope of its collection and access options.”⁴¹ DeRidder and Matheny found that the researchers they interviewed needed “scope indicators to describe the range of content covered by an interface; four wanted visualizations; and another added that it should be easy to see at a glance what had been added recently.”⁴² Late and Kumpulainen’s interviews with Finnish scholars who used digitized newspapers also found that “the historians found it vital to understand how the collection was built and what it contained and did not contain. It was important for the scholars to develop a general sense of the data.”⁴³

Although many studies have confirmed the importance of effectively browsing, searching, and understanding digital collections, they have also shown that some users struggle to navigate and use digital collections. In DeRidder and Matheny’s study, six out of eleven interviewees demonstrating their use of digital library interfaces got lost at least once, and four were lost twice. Frustrations with search functionality led users to seek alternative methods of discovery:

36. Chapman et al., *Surveying the Landscape*, 14.

37. DeRidder and Matheny, “What Do Researchers Need?”

38. Allison-Bunnell, Yakel, and Hauck, “Researchers at Work,” 85.

39. DeRidder and Matheny, “What Do Researchers Need?”

40. Allison-Bunnell, Yakel, and Hauck, “Researchers at Work,” 84.

41. Chapman et al., *Surveying the Landscape*, 14.

42. DeRidder and Matheny, “What Do Researchers Need?”

43. Late and Kumpulainen, “Interacting with Digitised Historical Newspapers,” 113.

Often, our participants did not understand how search worked, or how to make it work, and their frustration was apparent in the comments we collected.... In the face of their difficulties in obtaining the desired search results, the researchers in our study were heavily dependent upon limiting and refining options to try to target the desired content. When these were unavailable or unhelpful, they would seek browse options, which often were nonexistent.⁴⁴

Sinn and Soares's survey of historians received mixed responses about the ease of use of digital archival collections. The survey did not focus on any specific collection, but "most of the difficulties that historians articulated were technological and included difficulties regarding searching, browsing, and downloading rather than archival and conceptual difficulties." Alternatively, "many comments about their positive experiences were centered around the speed and ease of use involved with searching and browsing." The authors concluded that technological difficulties do not stop historians from using a digital collection if the content was valuable to them.⁴⁵

What Are They Doing with Digital Collections Items?

Once users find relevant materials in digital collections, the next question is "What are they doing with those items?" Multiple studies have highlighted the importance of downloading. Downloading was among the top five most important functionalities needed by humanities faculty surveyed by Green and Courtney.⁴⁶ Allison-Bunnell, Yakel, and Hauck's 2008 interviews found that:

The ability to get high-quality reproductions of images was the most frequently mentioned functionality. Fourteen [out of 19] subjects commented on the ability to get high-quality images for publication or study, with every one of them expressing a high interest in this function... While most focused on a more traditional process of placing an order for prints or photocopies, there was interest in the ability to download high quality images directly for further study rather than for publication.⁴⁷

In Emma Stanford's 2015 survey, 69% of respondents preferred to download materials, and nine out of 13 interviewees "said that they did like to be able to download images, either to work offline... to edit or manipulate the images, to

44. DeRidder and Matheny, "What Do Researchers Need?"

45. Sinn and Soares, "Historians' Use of Digital Archival Collections," 1801.

46. Green and Courtney, "Beyond the Scanned Image," 695.

47. Allison-Bunnell, Yakel, and Hauck, "Researchers at Work," 91.

include them in PowerPoint presentations or lectures, or to remix and juxtapose them to assist with analysis.”⁴⁸

Multiple studies have shown that the ability to create personal collections, either from downloaded items or within a digital collections interface, is important to users. A 2002 study of French digital library users found that “a lot of people keep downloaded documents in ‘personal digital libraries’ focused on their personal centres of interest.”⁴⁹ In DeRidder and Matheny’s study,

Almost every researcher interviewed collected citations and annotations (and often transcriptions) in one location, and downloaded documents elsewhere, which then had to be matched up during the research process... The gathering of digital data across multiple interfaces creates chaos for the research process, and all our participants struggled with this. High on the list of requests was citations within the PDFs and an automatic file name that reflects the author/creator and part of the title.⁵⁰

Late and Kumpulainen found that “scholars collected the selected research data on their own computers or other tools external to the NLF [National Library of Finland] interface (e.g. in MS Excel or Google spreadsheets)” while some also used a feature that allowed them to paste from newspaper articles and create their own scrapbook that could be downloaded as an Excel spreadsheet.⁵¹ Agosti, Orio, and Ponchia also found that users desire the ability to easily organize and annotate their research:

[U]sers from all categories [undergraduates, postgraduates, and professional researchers] consistently stressed the need to be able not just to locate and annotate the material, but to organize it within the interface—in the case of professional researchers—or access it in an organized way—in the case of students. These users also provided a comprehensive list of suggestions for achieving this customizability. Most commonly, they requested the ability to create different sorts of workspaces for individual projects, and a folder functionality to allow bookmarks and annotations to be categorized and ordered. They also required the ability to copy and move bookmarks and annotations, also outside the environment.⁵²

48. Emma Stanford, “Discovering Digitized Special Collections: An Investigation of Researchers’ Practices and Priorities” (Master’s thesis, City University London, 2016), 29, 49, accessed December 2022, <https://hcommons.org/deposits/item/hc:11675/>.

49. Assadi et al., “Users and Uses of Online Digital Libraries in France,” 10.

50. DeRidder and Matheny, “What Do Researchers Need?”

51. Late and Kumpulainen, “Interacting with Digitised Historical Newspapers,” 115.

52. Agosti, Orio, and Ponchia, “Promoting User Engagement,” 360.

The need for annotation and editing tools was also identified by Green and Courtney in their interviews with fine arts faculty.⁵³

Full text search of digital collections materials has also been identified as an important feature for users. In Allison-Bunnell, Yakel, and Hauck's 2008 study, five out of 19 interviewees expressed a high interest in searching OCR text.⁵⁴ DeRidder and Matheny also found that the researchers they interviewed expressed a need for full text content.⁵⁵ Meyer and Eccles found that the efficiency of keyword searching the full text of rare books and parliamentary papers was "a huge factor in scholars' use of these digitised materials."⁵⁶ A 2015 survey of researchers found that "the most important features—selected by more than 50% of respondents—were zoomable images, high-quality image downloads, downloadable PDFs and searchable text."⁵⁷

Somewhat related to full text and personal collections creation is the use of digital collections as data sets for computational analysis. Some formats lend themselves well to this type of use; Late and Kumpulainen's study of scholars who used digitized newspapers found that many of them collected and analyzed data computationally and that "the sheer size of the body of data available encouraged the use of computational methods."⁵⁸ Although there is growing potential for this method of using digital collections, it does not appear to be widespread yet. In 2016 Meyer and Eccles observed that,

Shifts to humanities data science and data-driven research are of growing interest to scholars... Currently, these computational approaches are relatively few, but the availability of large digital collections opens up the possibility of large-scale analysis to become a more important part of the overall humanities scholarship landscape.⁵⁹

Citation is one measurement of use that remains relevant for scholarly users of both physical and digital collections. Citation analysis suggests that scholarly citation of digital collections has increased over time: Sinn's review of articles in the *American Historical Review*, 2001-2010, found that the number of digital archival items being

53. Green and Courtney, "Beyond the Scanned Image," 696.

54. Allison-Bunnell, Yakel, and Hauck, "Researchers at Work," 90.

55. DeRidder and Matheny, "What Do Researchers Need?"

56. Eric T. Meyer and Kathryn Eccles, *The Impacts of Digital Collections: Early English Books Online & House of Commons Parliamentary Papers* (London: JISC, 2016): 31-32, accessed December 2022, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2740299.

57. Stanford, "Discovering Digitized Special Collections," 28.

58. Late and Kumpulainen, "Interacting with Digitised Historical Newspapers," 116.

59. Meyer and Eccles, *The Impacts of Digital Collections*, 52-53.

used and the number of articles citing them increased gradually by year.⁶⁰ However, studies have shown that some users continue to cite the original physical materials even if they used the digitized version. A 2015 survey of researchers asked what format they would cite if they used a digitized rare book or manuscript; 44% said they would cite the original only, most of whom said it was because this way was customary in their field. Fifteen percent of respondents said they would cite the digitized version and 30% said they would cite both.⁶¹ Sinn and Soares found that historians choose to cite original materials instead of the digital surrogates because the originals are “more authoritative,” and the reason they choose to cite digital surrogates is because it allows readers to easily access the sources.⁶² The majority of researchers interviewed by Meyer and Eccles said that they didn’t have a good understanding of how to cite digital resources correctly, and sometimes felt pressured by publishers to cite in a traditional way, without long URLs.⁶³

Are They Satisfied with Digital Collections?

According to Rhee’s literature review of archival user studies in 2015, user satisfaction is a rarely studied topic.⁶⁴ One study addressing this topic was found—a 2000 survey evaluating *Early Canadiana Online*. It found that over 90% of respondents were Very Satisfied or Satisfied with the site’s response time, browse and search capabilities, comprehensiveness, and display.⁶⁵

Institutional Context

Founded in 1957, the University of Las Vegas, Nevada is a public land-grant R1 university of about 30,000 students. The Special Collections and Archives (SCA) division of the UNLV University Libraries documents the history, culture, and environment of Las Vegas, the Southern Nevada region, the global gaming industry, and the University. SCA’s holdings include over 15,000 cubic feet of archival collections, over 32,000 books and periodicals, 1,800 maps, and 4,000 oral history interviews. As of 2022, SCA is composed of five units: Digital Collections, Public

60. Donghee Sinn, "Impact of Digital Archival Collections on Historical Research," *Journal of the American Society for Information Science and Technology* 63, no. 8 (August 2012): 1521-1537, accessed December 2022.

61. Stanford, "Discovering Digitized Special Collections," 30-31.

62. Sinn and Soares, "Historians' Use of Digital Archival Collections," 1802-1803.

63. Meyer and Eccles, *The Impacts of Digital Collections*, 27.

64. Rhee, "Reflections on Archival User Studies," 34.

65. Cherry and Duff, "Studying Digital Library Users Over Time."

Services, Technical Services, the Center for Gaming Research, and the Oral History Research Center.

SCA's Digital Collections (DC) provides online access to select materials from UNLV SCA and, on occasion, other local repositories. DC digitizes archival photographs, manuscript materials, newspapers, oral history interview transcripts, and audio. The department also adds select born-digital photographs, oral history transcripts, and oral history audio clips to CONTENTdm, the content management system used for online access at the time of the study. Items are selected for digitization in consultation with all units of SCA. Digital objects are described using Dublin Core metadata and archival description is reused or repurposed when possible. Contextual websites were created for some grant-funded thematic digital collections, such as *Dreaming the Skyline* and the *Southern Nevada Jewish Heritage Project*.⁶⁶

Methods

The researchers who planned and conducted this study were the author, Emily Lapworth, Digital Special Collections and Archives Librarian in the UNLV Digital Collections department, and Dr. Su Kim Chung, Head of UNLV SCA Public Services. The methods used in this study include Web analytics for UNLV DC, an online survey of DC users, and interviews with SCA users. This data was also compared with information about UNLV SCA in-person users collected via reading room registration forms. Web analytics data for the UNLV DC CONTENTdm website was analyzed using Google Analytics. The survey and interview plan for this study was reviewed by the UNLV Institutional Review Board (IRB) and deemed exempt in October 2018.

The online survey was focused on UNLV Digital Collections.⁶⁷ It was linked from the UNLV DC CONTENTdm website and the DC main (informational) website. The survey was promoted on the UNLV Libraries website and social media, a UNLV faculty and staff email newsletter, an email newsletter for UNLV students, and the UNLV Libraries newsletter. Sixty-six responses were collected from October 10 to December 17, 2018. Respondents were not required to answer every question, so some responses were incomplete. Although the sample size of this survey is small, it provides a starting point for further investigation. A slightly modified version of the survey remains open, although per the IRB-approved study plan, responses after December 17, 2018 are collected only for internal feedback, not for published research.

In 2019, the researchers conducted nine semi-structured interviews with UNLV SCA users; the interviews were focused on their use of UNLV DC rather than their in-

66. <https://special.library.unlv.edu/skyline>, <https://special.library.unlv.edu/jewishheritage>.

67. See Appendix 1 for the survey questions.

person research.⁶⁸ One part of the interviews asked participants to look at six different examples of UNLV DC digital objects. Interviewees were asked, “Does the digital object and its description make sense to you? Tell us what you’re looking at. Please share your thoughts by saying them all out loud” (think-aloud protocol).⁶⁹

Results

Who are UNLV DC Users?

UNLV DC gathered data from several sources to answer the research question, “Who are UNLV DC users?” This question aligns with the Standardized Statistical Measures and Metrics for Public Services’s advanced measure “user affiliation.”⁷⁰ User affiliation may be defined in any number of ways, such as membership status, academic level, profession, or geographic location.

At the time of analysis, Web analytics provided a partial picture of the academic affiliation of DC users because Google Analytics recorded the names of internet service providers (ISPs). Analytics data was filtered by ISP using the regular expression “college|school|education|universit*” to pinpoint researchers that were using academic ISPs. This method only provides a minimum estimate of academic use and users since students and faculty use different ISPs at home and off campus, and some academic ISPs may not include the words filtered for (“college,” “school,” “education,” “university, or “universities”) in their ISP name. Using this method, 10% of all users came from academic ISPs from 2014-2019. Analyzing ISPs is no longer supported by Google Analytics.⁷¹

UNLV’s online survey of DC users asked, “Who are you?” Respondents could choose more than one answer and the choices aligned with different types of academic users (results are shown in Table 1).

Respondents who chose “other” provided the following free text answers:

- Frequent visitor to Las Vegas
- UNLV alum
- Historian of Nevada Armored Transport and all things related to the industry in Nevada.
- Just a pop-culture enthusiast

68. See Appendix 2 for interview questions.

69. See Appendix 3 for interviewee profiles.

70. SAA-ACRL/RBMS Joint Task Force, *Standardized Statistical Measures*, 10.

71. Tom Lundin, “Google Analytics Deprecating ‘Network Domain’ and ‘Service Provider,’” Seer Interactive, published February 6, 2020, accessed December 2022, <https://www.seerinteractive.com/blog/deprecating-network-domain-service-provider>.

- Professional
- Work in Spec[ial] Coll[ections]
- Brand
- Clark County public communications employee
- Neon Museum social media
- Recent graduate school graduate
- Library staff
- Vegas history buff

Table 1. Who are the UNLV DC survey respondents (n=66)?

User affiliation	Percentage of respondents	Number of respondents
Undergraduate student	35%	23
Other	29%	19
College or university faculty or instructor	21%	14
Graduate student	8%	5
Unknown	8%	5

A high percentage (64%) of respondents are affiliated with a college or university, which is consistent with the fact that the survey was promoted to the UNLV community. It also aligns with user information collected via reading room registration forms, 2014-2019. Sixty-three percent of in-person SCA users are faculty or students, and the largest user group in the reading room is UNLV undergraduates, who account for 38% of users. The second highest DC survey respondent group is “other” (29%), which may align with “local resident” (18%) and “out of town visitor” (11.5%), which are the second and third largest categories in the reading room, respectively. The reading room user affiliation categories are more specific than the ones used in the online survey and reflect the desire to discern between local users and those from out of town or other universities.

Where Are They From?

Web analytics easily provide geographic information about users. Using Google Analytics, UNLV found that only 33% of its digital collections users are from Nevada, compared to almost 80% of in-person users. Sixty-four percent of survey respondents were from Nevada, meaning the survey results are skewed towards local users. Most DC users are from the United States, but 12% are from outside the country.

Table 2. UNLV user location

Location	SCA reading room registration forms (2014-2019)	DC Web analytics (2014-2019)	Online DC survey (2018)⁷²
Nevada	79%	33%	64%
United States, but not Nevada	16%	54%	23%
Outside of the United States	2%	12%	5%
Unknown	3%	0%	9%

What are They Using UNLV DC for?

The UNLV DC online survey asked, “Are you using UNLV Digital Collections for a specific project?” UNLV SCA reading room registration forms ask in-person users to indicate their intended research product. The survey and the registration form both allow respondents to choose more than one option. Table 3 compares the responses from both in-person and online UNLV users.

Respondents to the DC online survey were given the option to indicate what “something else” was:

- Personal research
- Historical research on armored transport history in Nevada.
- Research on historical mining towns for a private minerals collection.

72. Percentages in this table were rounded to the nearest whole number.

- GA [graduate assistantship] hours
- Usually to support Clark County social media posts, UNLV Digital Collections often have photos from county events not in county files
- My research began as a thesis project, but I have hopes that it can grow into something more.
- Curiosity. The collection is huge, there's things to discover.
- Looking up others' work (student worker QC [quality control])
- Just to learn

Table 3. Intended product / project of UNLV users⁷³

Intended product/project	SCA reading room registration forms (2014-2019)	Online DC survey (2018)
Article ⁷⁴	10%	25%
Book	14%	17%
Class paper or project	37%	36%
Digital humanities project	n/a	7%
Exhibit	4%	8%
Film or video	4%	8%
Genealogy research	2%	2%
Personal interest	21%	n/a
Professional report or presentation	11%	14%
Social media, blog, or personal website ⁷⁵	3%	22%
Something else/other	3%	32%
Teaching	n/a	12%
Thesis or dissertation ⁷⁶	5%	10%

73. "n/a" indicates that the intended product/project was not an option.

74. The online DC survey provided the specific options "newspaper, magazine, or online article" (5 people or 8% chose this) and "scholarly article" (10 people or 15% chose this) for "article."

75. The SCA reading room registration form only lists "website/blog" instead of "social media, blog, or personal website," which is what the choice was labeled in the online DC survey.

76. The SCA reading room registration form separates thesis (81 respondents chose this) and dissertation (60 respondents chose this).

It is important to note that this sample of DC users is likely skewed by promotion of the survey via UNLV newsletters. However, it is interesting that the percentage of users choosing some products, such as “class paper or project,” is approximately the same in both the online survey and the reading room. In addition, some of the choices, labels, and questions were not exactly the same between the reading room registration forms and the online survey. The difference in percentages in the social media category could be because the reading room form uses the label “website/blog” instead of “social media, blog, or personal website.” Alternatively, it is certainly logical to hypothesize that online users are more likely to use archival materials for social media than in-person users. Although “personal interest” was not included as an option in the online survey, the percentage of respondents who selected “something else,” and what they wrote in their free text answers, suggests that some users do categorize their reason for use as “personal,” “curiosity,” or “research,” as opposed to a specific concrete product or project.

What Materials Do They Use?

At the time of this study, UNLV DC had 22 thematically-focused individual digital collections (also referred to as digital projects). The author used Web analytics to compare the number of unique pageviews of each digital project to get an idea of which DC materials are used the most. However, comparison between digital projects using Web analytics is challenging because of the structure of the CONTENTdm website and the high proportion of large compound objects in some projects. In CONTENTdm, compound objects are digital objects that consist of more than one digital file. “Parent” level metadata describes the entire compound object as a whole, and each digital file within it is referred to as a “child.” In CONTENTdm, compound objects only appear in search results at the parent level (child items do not appear in search results individually), but there is no parent-level webpage (parent-level metadata appears on every child webpage). Pageviews are recorded at the child level of compound objects, which makes them difficult to compare with single digital objects that consist of only one digital file.

Custom reports were created in Google Analytics to analyze the item-level pages of each project (item-level pages are single object pages and compound object child pages). Landing and search pages were not included. A regex formula was used to filter by page URL (for example, /digital/collection/ent/.+ filters to pages in the *Entertainment* project). The number of pageviews was then divided by the number of items in each project to determine the average number of pageviews per item. Table 4 shows the ten digital projects with the most unique pageviews per item in 2019.

This analysis gave UNLV DC insight into some of the most popular digital projects. Some of the formats represented in these ten projects include maps, oral histories, architectural records, photographs, and menus. However, this measure of use is likely skewed by the amount of description and promotion associated with each project, and the contextual information available. All of these projects have rich descriptive metadata compared to some of the other UNLV digital projects. All of

them also have contextual websites except *Oral History Collections 1* and *2*.

Table 4. UNLV digital projects with the most unique pageviews per item in 2019

Digital Project⁷⁷	Average number of unique pageviews per item in 2019
Southern Nevada and Las Vegas, History in Maps	14
Nevada Test Site Oral History Project	9
Dreaming the Skyline Resort Architecture and New Urban Space	8
Dino at the Sands	7
Oral History Collection (2 of 2)	7
Showgirls	7
Oral History Collection (1 of 2)	6
Menus: The Art of Dining	4
Southern Nevada: The Boomtown Years, 1900-1925	4

77. These digital projects can be viewed at <https://special.library.unlv.edu/digital-projects>. They have been migrated to a different website than the one in use at the time of this study. After this study, these digital projects were migrated from a CONTENTdm website to an Islandora website. The content of the Oral History Collections was migrated to Islandora but is no longer distinguished from the rest of the content in the repository by these digital project names.

How Are They Searching and Navigating UNLV DC?

UNLV's online survey asked DC users, "What brings you to UNLV Digital Collections?" They could only choose one answer, not multiple. No definitions were given for the answer choices, so participants could self-identify what category their use of UNLV DC falls under.

Table 5. UNLV DC online survey "What brings you to UNLV Digital Collections?" (n=60)

Choice	Percentage of respondents	Number of respondents
I am conducting research	37%	22
I am looking for something specific (such as a photo of something or an answer to a specific question)	27%	16
I am browsing	27%	16
Other	10%	6

This question is meant to provide some insight into the discovery strategies and objectives of online users. For example, a user conducting research may want to study all of UNLV SCA's photos of the "Welcome to Fabulous Las Vegas" sign to see how the environment around it has changed over the years; a different user may be searching for a photograph of the sign in 2007 to see if the parking lot for it was built yet; yet another user might just be browsing to see what kinds of materials are available in UNLV DC.

Thirty-seven percent of the UNLV DC survey respondents indicated that they are conducting research. This might mean that they are conducting a comprehensive investigation of a topic, and they may want to view entire archival collections rather than just samples of representative items. They may also want easy access to all available contextual and provenance information, or access to digital materials via an archival finding aid. UNLV SCA interviewees provided extensive feedback on this kind of use, which is discussed in a separate article.⁷⁸ Findings related to searching and browsing preferences are shared in the next section.

78. Emily Lapworth and Su Kim Chung, "The Archives at the Tip of Their Fingers: Exploring User Reactions to Large-Scale Digitization," *Journal of Archival Organization* 18, no. 1-2 (2021): 1-33, accessed December 2022, https://digitalscholarship.unlv.edu/lib_articles/721/.

Browsing

UNLV's study found that browsing curated or random materials, without the need to enter search terms, is valuable to users. One interviewee said that they used UNLV DC for leisure, just to look, rather than for research. Four other interviewees discussed how browsing helped them find materials that they didn't know existed or might have overlooked. Browsing also inspired research ideas that they otherwise would not have thought of. Browsing can help orient users and give them a sense of what's available:

Yeah, I want to be able to browse a little bit and to get a sense of what's going on, and then I can do focused browsing and then I can be more comfortable about the quality of my research, that I'm getting a sense of what's out there and how much I've really looked at. (interviewee 3, question 22.3)

One interviewee discussed spending extensive time exploring an A-Z list of archival collections: "I basically took the time and explored a lot of those at random, just to see what they were about" (interviewee 8, question 19). He also described physically browsing through hundreds of items from photograph collections: "I found collections I never would have known about asking about" (interviewee 8, question 15). Now, almost all of those items have been digitized and the same type of browsing can be done online. Much like the A-Z list of archival collections, it can be helpful to users to display a list of everything, in addition to the ability to filter and search.

Browsing can also serve as a method of thorough research and unexpected discovery within a specific archival collection:

I still like leisurely looking through a collection to find things that will surprise me, a reference to a person or an event that wasn't identified in the finding aid, that I would only get if I was just reading page by page. That's the way I did it with hard copy... When I started now looking at digitized material, I just tend to go from page to page. (interviewee 2, question 31)

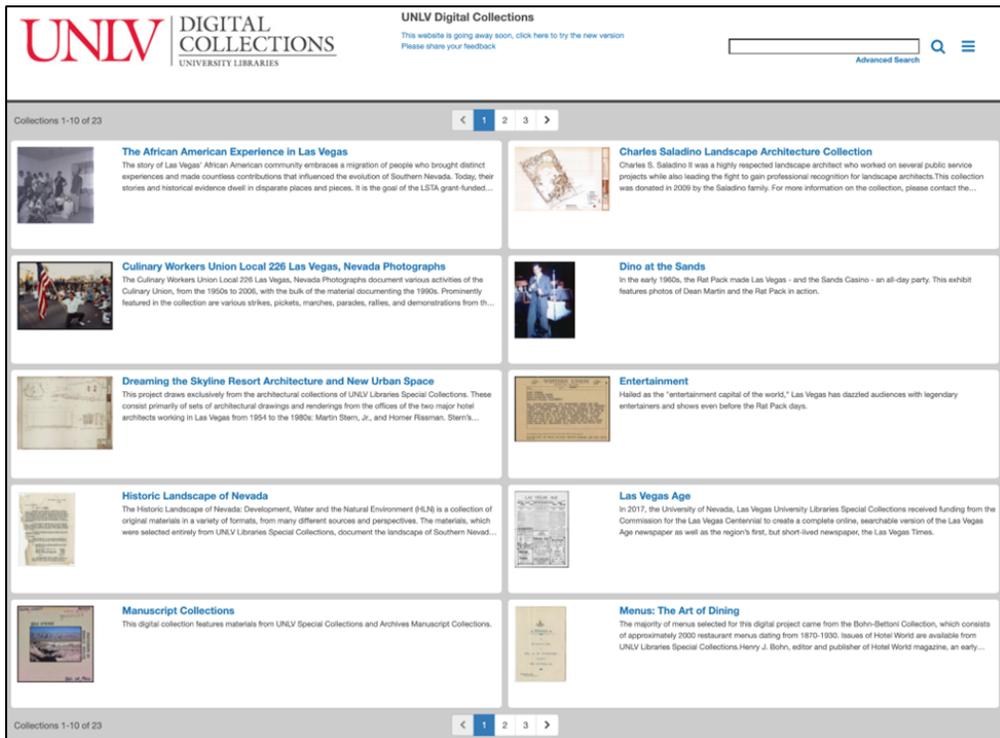
Individual digital collections (a.k.a. digital projects) are another entryway into browsing and exploring materials. Five interviewees mentioned UNLV's curated digital projects when they viewed examples of digital objects (question 22), indicating that they would explore and use the projects, and that they are helpful.

So this is part of the *Southern Nevada Jewish Heritage Project*. I will from time to time search specifically by the, I don't know what you call this, the research initiative. (interviewee 1, question 22.3)

Okay, the Jewish cultural heritage project. And that helps kind of organize it when they have the different digital collections for say landscapes and things like that. (interviewee 5, question 22.3)

Photograph collections—again if you want more photographs, you can go directly to that. Yeah. Okay. Wonderful. (interviewee 9, question 22.1)

Figure 1. UNLV digital collections/projects displayed on the UNLV DC CONTENTdm homepage



In the DC online survey, one faculty/instructor commented, “I miss that digital slideshow display of the photo collections that let you flip through the stack of photos.” They are likely referring to a specific website feature of CONTENTdm: the home pages of each digital project used to have a carousel/slider of randomly selected images that gave users an idea of what was in a digital project, and items to look at if they didn’t know where to begin. A self-proclaimed “local history enthusiast” that responded to the survey also expressed a desire for guided browsing options: “it would be nice to have something online that users can choose answers from questions that will guide them to the best source.”

Searching

If users are looking for something specific, such as a photograph of a person, or an answer to a question, they likely want to jump straight to keyword searching, with

the option to refine their search using advanced searching or filtering. Four UNLV interviewees (1, 2, 5, 8) specified that they start off with a keyword search when they use UNLV DC. The importance of effective searching and ranking is highlighted by UNLV interviewee 5, who discussed how Google influences user behavior, so that many users may only look at the first page of search results:

So I think intuitively we're so used to just instant... any researcher these days, sort of, I don't know if you want to call it instant gratification, but where you can just search for the term and have everything with you know, 1,000 different results and then you pick the first 10 and then you say, "Okay, that's enough of looking." (question 25)

The need for effective search capabilities increases with the intensity of the research being conducted by a user—a casual searcher may be happy with the first relevant item they can find, but an in-depth researcher may need to find, sort through, compare, and analyze a large set of items that may be relevant to their research in different ways. UNLV interviewee 3 suggested a feature like Google Alerts to send an email when new materials related to his past or saved searches are added. Interviewee 6 liked the ability to change the search results page from a list to a grid (question 22.5). Interviewee 1 specifically mentioned using advanced search: "I've

Figure 2. UNLV DC CONTENTdm search results filtered to one specific digital collection/project

The screenshot displays the UNLV DC CONTENTdm search results page. At the top, there is a search bar with the text "Advanced Search" and a magnifying glass icon. Below the search bar, the page is titled "Dreaming the Skyline" in a large, stylized font. The main content area is divided into several sections:

- Collections:** A list of collections with checkboxes. The collection "Dreaming the Skyline Resort Architecture and New Urban Space" is selected.
- Individual Creator:** A list of creators with their names and the number of items they have contributed. "Stern, Martin" is listed with 71 items.
- DC Type:** A list of digital content types with their counts. "still image" has 2129 items.
- Genre (TGM):** A list of genres with their counts. "design drawings" has 1427 items.

The search results are displayed in a list view. The first result is titled "Aerial photograph of Circus Circus after the addition of a second tower, 1986". The second result is titled "Aerial photograph of Circus Circus, circa 1974". The third result is titled "Aerial photograph of guests at the Riviera Hotel swimming pool (Las Vegas), after 1955". The fourth result is titled "Aerial photograph of Harrah's properties and Harvey's Lake Tahoe (Stateline, Nev.), circa 1960". The fifth result is titled "Aerial photograph of Harrah's Stateline Club and Harrah's Tahoe (Stateline, Nev.), circa 1958". The sixth result is titled "Aerial photograph of Harrah's Stateline Club and Harrah's Tahoe (Stateline, Nev.), circa 1961".

learned how to do more advanced searches so that I don't have to pore through as much search results and that's helped but even with that, there's still just a lot of stuff that yields that you have to go through while researching items online" (question 17).

In UNLV's study, there were differing opinions on the ease of searching. One interviewee said that searching is "pretty intuitive" (interviewee 5, question 35), and a Las Vegas visitor who filled out the online survey wrote, "easy to search collection—well organized." Two interviewees thought that searching was complicated by the fact that there are multiple related SCA websites with different search boxes, and sometimes it's not straightforward which website they are searching within.⁷⁹ Even within the UNLV DC CONTENTdm website, results would sometimes be automatically filtered to only one digital project if a user entered via a specific digital project website (see Figure 2).

It's not always the easiest to search... OK, so the biggest issue I've had most of the three, four years I've been using your website is there's different ways to get into your websites, there's different URLs... you have multiple search boxes, a variety of types of search boxes. And sometimes I'm not sure where I'm in, what I'm in. Sometimes I see on the left like what you mentioned, like 'Entertainment' ... or there are checkmarks in it [the digital project facets]. Sometimes they're blank, sometimes I'm in like the Boomtown collection and they're all checked, and I start removing them. And you know, so my main suggestion would be to have one main page where you just give your user an option of what they want to search in. So like there should just be a box for digital photographs, digital manuscripts, or, you know, like specialized collections – have a drop down menu. Because sometimes I put something in, especially that Quick Search [UNLV Libraries' search tool]... it doesn't know what I'm talking about. So it's just frustrating to use that. (interviewee 8, question 35)

Another survey respondent wrote, "the search sometimes doesn't pull quite what you're looking for. For instance, often we're just looking for a still photo of something, but when you click on 'still image,' you get scans of a lot of documents." This user appears to know how to use faceting and more advanced search strategies, but the filtering does not work as expected.

One UNLV interviewee was not familiar with facets and asked what they were when viewing the first sample digital object (interviewee 6, question 22.1). Four other

79. At the time of the study, the following related websites were online: 1) UNLV DC CONTENTdm website; 2) UNLV DC informational/contextual website, which included a search box that led to the UNLV DC CONTENTdm website; and 3) UNLV SCA website, which is an informational part of the main UNLV Libraries website, and also contains a database of brief records describing archival collections with links to PDF finding aids. On the UNLV SCA website, there is a search box with options to search: 1) for cataloged SCA materials within UNLV Libraries Quick Search tool; 2) the SCA database of records describing archival collections; 3) digitized materials within the UNLV DC CONTENTdm website; or 4) the entire UNLV Libraries informational website.

interviewees (1, 3, 5, 8) talked about how facets and filtering search results are helpful to them. Three (1, 5, 8) specifically discussed the ability to filter by format, for example limiting the search to images only, or filtering out a large collection of student newspapers. Interviewee 3 described a desired search strategy that could be achieved using facets and/or a sort by feature:

I would like to be able to search really quickly and organize by date, by the items here, and maybe group them by other characteristics, location that's being featured. I know this sounds like a lot here but I'd love to be able to almost clump them by Mount Charleston pictures, by different locations, maybe even different states, but some sort of clumping that would reduce the 93 records, because right now I feel like I'd have to go through [all 93 records] to get a sense, but again, I'm not sure what my intention would be for looking at this, but I would like to have some way to summarize these somehow and get an overview of what's going on. (question 22.1)

UNLV interviewee 8 is an example of a user who thoroughly combs through all of his search results: "I don't mind spending an hour until I'm exhausted, going down hundreds of pages, not giving up" (question 35). He felt that certain aspects of UNLV DC's user interface made looking through search results slower and more difficult:

If you click back to results, it puts you at the top of the page. And if you're someone like me clicking on 40, 50, 80 out of 1400, that's a lot of times I have to scroll down to find the one I just left... in databases like for the county library, you know, it does do that—it puts you right back to where you left off after looking at a piece of the article or the article. It brings you back to where you were, which saves a lot of time from scrolling down looking for the one you just left. (interviewee 8, question 19)

The inability to open links in a new tab was an interface issue that made it slower to go through search results for interviewee 1. He reiterated and summed up his main concerns when asked at the end of the interview, "What about UNLV's Digital Collections can be improved?"

If I could, in the digital collections, get through search results quicker—that's the big thing for me. And most of it relates to that in some form or another, either by showing more results per page or I kinda wish that I could change the thumbnail size so I didn't have to click into it to see some detail. And then if it were easier for me to filter out the newspaper results because those always come up first for some reason. (question 35)

A DC online survey respondent provided similar feedback about the usability of the search results:

I've been using the digital collection for about 5 years. I'm mostly pleased with the latest changes I've seen take place on the site in the last year. The ability to discover via search is a major part of using the collection, and two things I wish could change have to do with sorting search results. The

inability to list more than 10 items on one page, or to open items in browser tabs are the biggest hindrances to sorting through what is sometimes hundreds of search results.

Figure 3. Features available at the top of the UNLV DC CONTENTdm search results page in July 2022



User Interface and Navigation

Several respondents to the DC online survey desired a more user-friendly interface. An undergraduate student commented, “make UI more user friendly,” and a graduate student commented:

Create a more user-friendly website for researchers, especially for those who are searching more broadly at the beginning of their research... My initial impressions of Digital Collections was that there was not much material because of the website design... Another suggestion is to change the website design to be more visually driven so that it is easier to see what is in a collection... It would be great if researchers could select different type of view options for how they want to search the site.

Another survey respondent said that the new CONTENTdm interface “is almost unusable” and that it “makes searching the UNLV Digital Collections significantly more cumbersome and adds significant delays to my research.” Interviewee 1 conjectured that an update to CONTENTdm and its user interface may have directly caused him to use UNLV DC less:

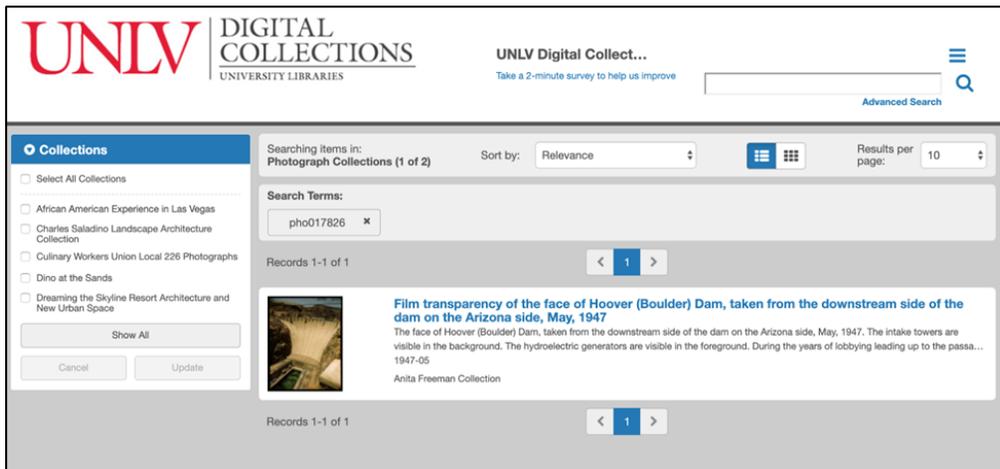
I don’t know if this is like the chicken or the egg but my personal research on digital collections dramatically shifted when the new CONTENTdm came out. I used it much less frequently and I don’t know if it’s because the new CONTENTdm just made me not want to research, or if I was not wanting to research and because of it I said, “nah I don’t need to.” (question 22.5)

In contrast, interviewee 7 said that the UNLV DC interface is “user friendly” (question 22.1) and interviewee 6 thought that somebody who’s never used archives before would be able to easily use UNLV Digital Collections (question 35).

Interviewees 2 and 4 expressed some confusion in navigating the user interface. When viewing the search results page that showed the first example digital object, interviewee 2 was overwhelmed at first, but quickly oriented himself:

I've seen templates like this before and they always look very busy to me. When I first click on it, I don't know what I'm supposed to be looking at first, what's over on the lefthand side... It's pretty clear now that I should be looking at the one that's labeled film transparency of the face of Hoover Boulder Dam. But I just saw so many words all across the screen, my eyes were first drawn to the left column where it says collections. (question 22.1)

Figure 4. Search results page interviewees viewed for question 22.1



Interviewee 4 discussed how she sometimes gets lost when using UNLV Digital Collections:

...sometimes I got lost in your collection, because I would be researching something and I would end up outside of special collections, not realizing it. And once that happened, it was hard to get back... I didn't really want to migrate out of special collections. And I wasn't sure if I still would have access to the Special Collections material or if I was then accessing from another collection within the archive... I remember feeling confused about that a few times... I was still in the UNLV online collections, but I felt like I was no longer specifically looking through Special Collections. But again, I wasn't sure if Special Collections was entirely separate from any additional online archives that the University had. So I wasn't sure if I needed to be worried ... or if I was still there, but I thought I wasn't there because I no longer saw the Special Collections header or something, something clued me into the fact that I had migrated someplace else. (question 22.6)

This problem results from having multiple interlinked but distinct websites at the

time of the study: a UNLV SCA website (a section of the main UNLV Libraries website with general information about SCA and a database of archival collection descriptions), a UNLV DC website (contextual information about the department and individual digital projects), and a UNLV DC CONTENTdm website (the actual digital objects and metadata).

UNLV interviewee 3 discussed in depth the challenges of orienting oneself in digital collections, and how visualization and the interface could make digital collections easier to use for novice users: “It seems like given the data tools we have now, the data visualization tools, interface tools, we can do something a little more sophisticated than just lists of keywords, lists of items” (question 22.3). He compared the idea of visualizing archival collections to how the experience of browsing book stacks is replicated online:

The equivalent would be for the traditional book stacks, not just having the standard management system that shows you what you’re searching around but the idea of even visualizing the books, taking the data you already have and showing a bookshelf with the sizes, because you’ve got all that data in there, right? The sizes, the number of pages approximately. So you can scroll back and forth like you used to be able to do in the old days when you actually walked the stacks. You’re like, ‘I found this book, what’s near it?’ (question 22.3)

Interviewee 3 had many ideas for improvements to the user interface, including contextual help and feedback, in which a user could hover their cursor over a button or label and help text would appear (also known as tooltips). Another idea was that a user could click a button on a page to send a message asking for help or providing feedback, and the website would automatically record the page it’s sent from for context. Interviewee 3 also noticed that “there’s a lot of variations—sometimes OCR stuff is available, sometimes it’s not, sometimes I can save the PDF, sometimes I can’t.” He asked, “Is there any way to have a consistent... set of buttons or controls that will be grayed out or made available to indicate what I can or can’t do for a record?” (question 22.6).

What Are They Doing with UNLV DC Items?

To gather information related to specific functionalities and uses of digital collections, UNLV’s online survey asked, “What would you like to do with the materials in UNLV Digital Collections?” Participants were able to select multiple answers (see Table 6 for results).

Downloading

Downloading, whether for their own reference or to reproduce, share, publish, reuse, remix, or edit, is a functionality that 60% of UNLV survey respondents take advantage of. All nine interviewees said that they would download, save, or print items from UNLV Digital Collections (question 28). Downloading was also mentioned

14 other times during UNLV's interviews by eight of the interviewees, and printing was mentioned nine other times by five interviewees. Six interviewees mentioned requesting high resolution reproductions a total of ten times (CONTENTdm only allows direct downloads of lower quality access copies). Seven interviewees said they would share, publish, reuse, or edit digital materials. Interviewees shared the following comments about downloading:

I have downloaded a lot and saved and print and it's great. (interviewee 5, question 28)

I would definitely download, save, and print to research and highlight and interact with the document itself. (interviewee 6, question 28)

I did notice that with the new CONTENTdm, I can't download as big a file anymore and so that would be the other thing, if I could get back to the original size or you know a larger size scan... to be able to get the fuller, bigger image. The bigger image would be more helpful. (interviewee 1, question 35)

I would print. I rarely download anything, rarely save anything. I tend to be a print person. (interviewee 2, question 26)

Table 6. UNLV DC online survey, "What would you like to do with the materials in UNLV Digital Collections?" (n=60)

Action	Percentage of respondents	Number of respondents
Download or save so I can refer back later	60%	36
Cite	58%	35
Reproduce, share, publish, reuse, remix, or edit	53%	32
Just look	52%	31
Analyze quantitatively (such as computational analysis of text)	20%	12
Find materials that I later consult in person at UNLV Special Collections & Archives	18%	11

Figure 5. Download and print buttons appear on the right side of the page for digital objects on the UNLV DC CONTENTdm website



Four comments in the DC online survey feedback specifically addressed downloading, download quality, and “getting scans”:

It would be helpful to make the downloading options more apparent on the site... some patrons don't know how to download the image and/or don't see the button to do so. (library staff)

I would prefer higher resolution still images. What is currently present on the site is way too small. (faculty/instructor)

An easy method of getting scans of documents and photos would be helpful.⁸⁰ Everyone there is super friendly and helpful though! (undergraduate student)

One respondent was unhappy that when they downloaded a map, it was “terrible” quality even though the quality on the website looked wonderful: “What is the point in allowing people to download an image if the image quality is so bad it is unusable.”

In the UNLV SCA interviews, the nine interviewees were asked, “What kinds of file formats would you like online access to?” Results are shown in Table 7.

One interviewee said that all the listed file formats “have their purpose,” but has never downloaded anything from UNLV DC.⁸¹ All interviewees wanted access to PDF documents and image files such as jpegs. These file formats are the most prevalent in

80. It is unclear if this person was unaware of the download option, referring to getting high resolution images (which are not available to be downloaded from CONTENTdm), or referring to the process of requesting new digitization.

81. In Table 7, interviewee’s answer was interpreted as they would like to have access to all listed file formats.

UNLV DC. Almost all interviewees would like access to high resolution image files such as tiffs, but three people said online access to tiffs is not necessary, and that the current process to request via staff is fine. Another person said that they only need access to tiffs for professional work, not personal research. Most interviewees wanted access to compressed MP3 audio files, which mainly consist of oral history interviews in UNLV DC. No interviewees indicated that they wanted access to uncompressed WAV audio files specifically. Plain text documents were less popular, although they could be easier to copy and paste text from than PDFs. They are also a better format than PDFs to use for computational text analysis. Two interviewees acknowledged that they hadn't actually ever used plain text files from DC before but could imagine how they might be useful.

Table 7. File formats UNLV interviewees want access to

File format	Number of interviewees
Image files such as jpeg	9
High resolution image files such as tiff	8
PDF documents (full-text searchable)	9
Plain text documents	3
Compressed (smaller size) MP3 audio files	7

Citing

Fifty-eight percent of online survey respondents said they would cite materials from UNLV DC. Seven out of nine interviewees said they would cite the materials they use in the SCA reading room and in DC. Citing was also mentioned eight other times outside of interview questions that specifically asked about it. This indicates that citation is a popular and important use of digital collections materials.

The interviewers asked users, "Do you know how to cite digital collections materials? Would you cite the digital surrogates or the original physical materials?" Six out of nine interviewees said that they know how to cite digital collections materials. Seven out of nine interviewees said they would cite the digital surrogate rather than the physical original, if that is the version they used.

I decided to use, to cite the digital surrogate because it would enable someone who wants to look at that source to click it on. I was trying to think of the ultimate user and if there's a link you could click on, if I just cited one sentence from it, they could go and read the entire article. I used to be the other half. But I'm now persuaded that I should be using the digital surrogate. (interviewee 2, question 34)

Only two interviewees said they would cite the physical materials, with one person referring to the “authenticity” of the original physical materials.

UNLV interviewees liked when citations were directly provided in digital object metadata: "I can cite this specifically; I'm able to utilize the information that's already been found. I'm not reinventing the wheel. This is so important" (interviewee 9, question 23.2.1). "I like how they make it very clear how ... it says to cite this material properly use XYZ format. That's helpful" (interviewee 5, question 28). A citation generator that provides citations in different formats would be even more useful: "It would be nice if there was a quick way to generate a cite, maybe automate it on each page. If I could click something and say this is the cite for this" (interviewee 3, question 22.2). Two interviewees also discussed their desire for UNLV Digital Collections to be compatible with Zotero, EndNote, and RefWorks, to allow easy citation management. Interviewee 3 asked if digital objects have “the permanent object identifiers, or the DOIs or whatever they're called” (question 22.3).

Figure 6. Citations and persistent URLs (Object Archival Resource Key) were available in the metadata for only some of the digital objects in UNLV DC at the time of the study

Item Description	
Object Archival Resource Key	http://n2t.net/ark:/62930/d1z892s39
Digital Identifier	pho030796
Physical Identifier	0242_0066
Citation	[\$75,000 Silver Bullion: photographic print]. May Bradford Photograph Collection, 1870-1976. PH-00242. Special Collections and Archives, University Libraries, University of Nevada, Las Vegas. Las Vegas, Nevada.

It would be ideal if citation information was also included with downloaded files. Two interviewees that did a lot of downloading put in extra work to be able to later cite the downloaded items. “When we downloaded it, it would be a different record number than what was found here... So when I cited it, I had this huge Excel spreadsheet I would use” (interviewee 5, question 22.1).

For my professional project, as I was trying to manage the images that I had downloaded, I went through kind of piecemeal and said, “Oh, here's a really

cool picture.” I downloaded it to a folder on my hard drive and then when I had to, at the end when it came time to actually cite all of this stuff, I had to do a lot of legwork going back and finding that image again through Digital Collections so that I could get the citation information for it and I spent my entire spring break regathering information that I foolishly didn’t get in the first place so that was, you know, kind of on me but also had there been a way through Digital Collections, through the actual CONTENTdm itself, to keep track of this information for me so I didn’t have to waste my spring break searching titles and, you know, searching image numbers and what like that to get the citation information, that would have been really helpful (interviewee 1, question 35).

Creating Personal Collections

UNLV interviewees were asked, “Would you gather materials into your own virtual collection if possible?” (question 29). Seven interviewees said yes; one said “possibly;” and another said “no”—he downloads items instead. Outside of this specific question, creating personal collections was mentioned three other times by three different interviewees. Below are some of the comments about personal collections, and how they could help users manage their research:

I would love to have a board, a bulletin board of my research, where I’ve got my stuff in progress, that pulls the assets I’m interested in, and saves the location, saves this image, and it’s in this position on this page and it’s my research page at Special Collections... I want to pull pictures from multiple collections and drop them together and create my own folders. But then I want to see how they link to your folders. (interviewee 3, question 22.3)

It would be nice to gather our own materials, to be able to go directly back to something quickly instead of going and clicking through folders [compound digital objects]... if I could just pin one of the photos that I found deeper in the folder, that would be nice. (interviewee 7, question 31)

I can’t begin to tell you the number of times I looked at an image and went ‘Oh this is so cool, this is perfect, this is exactly what I’m looking for!’ and then went and clicked download and then it said like here’s your image, copy number 7 of 8 that I had already downloaded it 7 times—I just didn’t remember it. So that’s why if [there was] the ability to save something to a personal collection, that would have been really helpful for me. (interviewee 1, question 25)

It might create less of a back and forth kind of process. So when you’re doing research, sometimes you don’t necessarily write down the right things, or you have to look up things several times. If you have that feature where you can just save it into your drive or into your account, it might make things easier (interviewee 9, question 29)

User-created collections could also be shared and published: “that'd be so cool, say, if I were to have some paper and then here's a link that shows we can get 50 images on the topic and I can actually use those to augment” the paper (interviewee 5, question 29).

The ability for users to create their own collections is not available within the UNLV Digital Collections website, but interviewee 3 mentioned several existing tools that could be used to similar effect: Zotero, EndNote, RefWorks, Scrivener, and Adobe Lightroom. RefWorks was also mentioned by interviewee 1. Compatibility for Web scraping, or downloads that include citation information, would make it easier for researchers to use these tools easily and efficiently with digital collections. UNLV interviewee 3 also discussed the desire to annotate and highlight digital objects:

A lot of times with Zotero, you want to basically grab everything as a PDF and ... basically when you scrape a webpage, it'll have the metadata, you'll have an Amazon link for example, and I pulled the PDF right there, so I've got everything grouped together, really nicely, and then I can add comments, I can add comment records there that highlight various elements that I've pulled out (question 22.6).

Other Ways of Interacting

UNLV's interviews provided feedback related to the different ways that users interact with UNLV DC, beyond just viewing, downloading, and citing. Full text search of transcriptions was mentioned 16 times by seven of the interviewees. One interviewee pointed out that transcriptions are also simply easier to read in some cases: “if it was written in cursive or whatever the transcripts were very, very useful to find stuff” (interviewee 5, question 22.6).

Six UNLV interviewees interacted with DC images directly, enlarging them and zooming in on details. “The fact that you can enlarge it and turn it around depending on what kind of document you need to insert it in or how you want to use it—it's very useful.” (interviewee 6, question 22.6). This type of functionality can be especially helpful for certain formats such as maps, highly detailed photographs, or even handwritten letters in which the text is written in several different directions.

Two UNLV interviewees said that they would use UNLV DC for a digital humanities project (such as computational analysis of text, visualization, etc.), and 20% of online survey respondents said they would like to analyze UNLV DC materials quantitatively (such as computational analysis of text). UNLV SCA does not regularly support this type of use, but user demand for it would justify further investigation and investment.

Are They Satisfied with UNLV DC?

The UNLV online survey asked users, “How satisfied are you with Digital Collections?”

Table 8. UNLV DC online survey, “How satisfied are you with Digital Collections?” (n=66)

Satisfaction	Percentage of respondents	Number of respondents
Very satisfied	44%	29
Satisfied	47%	31
Not satisfied	9%	6
Very unsatisfied	0%	0

Two of the respondents that selected “not satisfied” (1 graduate student and 1 undergraduate) commented that they did not know about the UNLV Digital Collections. The undergraduate student commented:

I do not know anything about the collections, including how it can be a resource to me as a student and what types of information it provides. There should be more signage around the library and maybe tabling during certain events to make students more aware that it exists.

Some of the other specific complaints from the survey indicating dissatisfaction included broken links and incorrect dates. One respondent commented, “I find it harder to find this site now.” When asked, “What about UNLV’s Digital Collections can be improved?” UNLV SCA interviewees were positive overall but repeated certain suggestions and issues that had come up earlier in the interviews, such as improving searching and downloading. They suggested making it easier to use and creating training modules for novice users. Interviewees generally wanted more digitized materials available online, and two interviewees specifically mentioned manuscript materials as opposed to photographs. Several survey respondents also indicated a desire for more materials:

Purely for my entertainment, with no regard for their historical importance, I would love to see more ephemera related to Vegas entertainers. I wish Fabulous Las Vegas was available on-line. (enthusiast)

I love it, I just wish there were more books in it. (undergraduate student)

The more the better, thank you! :) (faculty/instructor)

Despite the complaints, 91% of UNLV survey respondents selected “Satisfied” or “Very Satisfied.” This suggests that although DC users may have many complaints and suggestions for improvement about specific things, they are overall satisfied. Further

research could determine if this is due to expectations that library-type databases are often complex and difficult to use, or if it is because the content in archival digital collections is unique and valuable and worth the effort and frustration to access. Several comments from UNLV's interviews align with the latter. Interviewee 8 said, "So I would say that for your website, probably 70% of my time has been productive. And 30% has just been trying to figure things out. Which is a percentage I can live with because I'm not gonna find anything if I don't do that." Interviewee 2 said, "Of all those places ... that I've ever done research, this is by far the one that has paid off the most benefits for my scholarship. And I would say that to someone who was not associated with Special Collections."

Conclusion

Having a better idea of who UNLV SCA Digital Collections users are, where they are from, and what they are using digital collections for helps to demonstrate the impact and value of SCA and DC, especially for students and faculty at UNLV, but also on a national and international scale. This data also helped UNLV SCA design its new digital collections user interface, the UNLV Special Collections and Archives Portal, launched in August 2021.⁸² Due to the fact that UNLV Digital Collections has a global audience that includes undergraduates, faculty, and non-academic users with varying levels of archival experience, SCA aimed for an intuitive design and minimal archival jargon. Staff also added a help page to provide an explanation of what the UNLV SCA Portal is, what is in it, and tips for how to use it.

Measuring which UNLV DC materials are used the most was complicated by the structure of the CONTENTdm website, but it highlighted the importance of description and promotion. The results motivated the DC department to increase its efforts to enhance the description of existing digital objects, and to adjust its approach to describing new digital objects. The department had previously moved from an intensive item-level metadata approach to replicating aggregate finding aid arrangement and description, and is now aiming for something in between to balance efficiency, quantity, and quality.

UNLV's study gathered extensive feedback related to the browsing, searching, user interface, and features of Digital Collections. Many of these findings are consistent with past studies, some of which were conducted over a decade ago. While it is good news that digital collections managers do not need to adjust to constantly changing expectations, it does suggest a lack of innovation in interface and system design. Like many institutions, UNLV SCA has limited resources for development, but it did have the opportunity to use this feedback to inform the design of its new Portal. In addition to digital objects, the Portal also contains finding aids for archival collections, and agent records with biographical information. This change adds

82. UNLV Special Collections and Archives Portal, UNLV University Libraries, accessed December 2022, <https://special.library.unlv.edu>.

context to digital objects and it reduced the number of separate UNLV SCA websites and search boxes that interviewees said they were often confused by. To facilitate browsing, SCA placed buttons on the Portal's homepage to quickly view items by topic, format, or digital project. The Portal provides multiple options for filtering search results, and it allows users to change the number of results per page and switch between list and grid views. To support citation and online sharing, Archival Resource Keys (ARKs) are now assigned to all digital objects to provide persistent URLs, and suggested citations are added to the metadata of all digital objects. The Portal also allows users to easily download files, including high quality tiff images and PDFs with full text. Full text is also added to digital object metadata so it is searchable not only within PDFs but also indexed for Portal-wide searching. OpenSeadragon image viewer lets users zoom, rotate, and view images full screen.

At this time SCA lacks the resources to develop any features that support the creation of personal collections, although this and past studies suggest that it would be a popular feature. UNLV's study showed that users have some interest in the computational analysis of our digital collections, and in 2019 UNLV DC published its first dataset of digitized archival records.⁸³ Due to lack of researcher demand and staff vacancies, the creation of new datasets, and promotion and instruction on the topic of collections as data are not currently priorities for SCA.

Despite some negative feedback about DC's functionality and user interface, UNLV's survey found that 91% of users are satisfied, suggesting that access to the unique archival content of digital collections is valuable enough to overshadow inconveniences and frustrations. UNLV's survey and interviews were conducted in 2018 and 2019, before the COVID-19 pandemic forced reading rooms to close and digital collections became the only way to access archival collections for many users. Further research is needed to gauge if the pandemic significantly changed user expectations, needs, or rates of satisfaction.

In addition to assessing current users in the present, archives should also consider the role of digital collections in the future. As born-digital records become a larger proportion of the archival record, digital collections systems should be adapted to better aid in the discovery, access, and use of born-digital archival records. Digital collections have the potential to bring archives to a wider audience and to contribute to a more historically literate society. Demonstrating the current impact of digital collections can help repositories secure more resources to improve their systems and interfaces, add more materials, promote collections, and consequently increase use. Efforts to develop standardized measures specifically for the assessment of digital archival collections (such as the work of the Digital Library Federation Assessment Interest Group), and to share data and findings, contributes to a better understanding

83. "Las Vegas City Commission Records Dataset," UNLV Libraries, published December 2019, accessed December 2022, <https://github.com/UNLV-Libraries/UNLV-Collections-as-Data/tree/master/Las-Vegas-Commission>.

of digital collections use and users, and informs advocacy and improvement efforts across the profession.

Appendix 1. Survey Questions

Question Block 1:

Q1.

TITLE OF STUDY: Collecting data for user-focused improvements to digital collections

INVESTIGATOR: Emily Lapworth, Digital Collections Librarian; Su Kim Chung, Head of Special Collections and Archives Public Services

For questions or concerns about the study, you may contact Emily Lapworth at emily.lapworth@unlv.edu or 702-895-2276, or Su Kim Chung at sukim.chung@unlv.edu or 702-895-2241.

For questions regarding the rights of research subjects, any complaints or comments regarding the manner in which the study is being conducted, contact the UNLV Office of Research Integrity - Human Subjects at 702-895-2794, toll free at 877-895-2794 or via email at IRB@unlv.edu.

Purpose of the Study

You are invited to participate in a research study. The purpose of this study is to learn more about the users and use of digital archives and special collections in order to improve digital collections for users.

Participants

You are being asked to participate in the study because you are a current user of UNLV Digital Collections.

Procedures

If you volunteer to participate in this study, you will be asked to answer questions about your current use of UNLV Digital Collections.

Benefits of Participation

There may not be direct benefits to you as a participant in this study. However, we hope to learn user preferences in order to improve digital collections.

Risks of Participation

There are risks involved in all research studies. This study includes only minimal risks; some participants may experience discomfort or anxiety answering questions.

Costs/Compensation

This study will take 2-5 minutes of your time. You will not be compensated for your time.

Confidentiality

All information gathered in this study will be kept as confidential as possible. Your name will not be included in written or oral materials that could link you to this study. Survey participants have the option to provide their contact information if they wish to be contacted about their feedback. This contact information will be removed from the survey responses that are used for this study. Other identifying information (such as email addresses, IP addresses, and geographic coordinates recorded by Qualtrics) will also be removed for this study. The anonymized data will be retained by the PIs and UNLV Special Collections and Archives so that follow up studies can be conducted, data can be compared, and the department can keep track of user needs over time. Risk of breach of confidentiality will be minimal as all data will be stored in secure electronic folders on secure servers at the University Libraries and identifying information will be removed.

Voluntary Participation

Your participation in this study is voluntary. You may refuse to participate in this study or in any part of this study. You may withdraw at any time without prejudice to your relations with UNLV. You are encouraged to ask questions about this study at the beginning or any time during the research study.

[Choose one]

- Participant Consent: I have read the above information and agree to participate in this study. I am at least 18 years of age. A copy of this form has been given to me.
- I do not agree to participate in this study.

Question Block 2:

Q2.

How satisfied are you with UNLV Digital Collections?

[Choose one]

- Very satisfied
- Satisfied
- Not satisfied
- Very unsatisfied

Q3.

Do you have any feedback or suggestions for UNLV Digital Collections?

[Free text response box]

Question Block 3:

Q4.

What brings you to UNLV Digital Collections?

[Choose one]

- I am looking for something specific (such as a photo of something specific or an answer to a question)
- I am conducting research
- I am browsing
- Other [free text response box]

Q5.

What would you like to do with the materials in UNLV Digital Collections?

[Choose all that apply]

- Download or save so I can refer back later
- Reproduce, share, publish, reuse, remix, or edit
- Cite
- Analyze quantitatively (such as computational analysis of text)
- Find materials that I later consult in person at UNLV Special Collections & Archives
- Just look

Question Block 4:

Q6.

Are you using UNLV Digital Collections for a specific project?

[Choose all that apply]

- Class paper or project
- Teaching
- Digital humanities project
- Thesis or dissertation
- Scholarly article
- Newspaper, magazine, or online article
- Book

- Exhibit
- Film or video
- Professional report or presentation
- Social media, blog, or personal website
- Genealogy research
- Something else [free text response box]

Question Block 5:

Q7.

Who are you?

[Choose all that apply]

- College or university faculty or instructor
- Graduate student
- Undergraduate student
- Teacher (K-12)
- Student (K-12)
- Other [free text response box]

Q8.

Where do you live?

[Choose one]

- Las Vegas/Southern Nevada
- Central/Northern Nevada
- United States but not Nevada
- Outside of the United States

Question Block 6:

Q9.

Would you like someone to contact you in response to your feedback?

[Choose one]

- Yes
- No

Q10.

Your name

[Free text response]

Q11.

Your email address

[Free text response]

- End of Survey -

Appendix 2. Interview Questions

Study: Collecting data for user-focused improvements to digital collections

Co-principal investigators: Emily Lapworth and Su Kim Chung, UNLV Libraries

The purpose of this study is to collect information about current and potential users of UNLV Digital Collections via an online survey and in-person interviews. The information will be used to inform improvements to UNLV Digital Collections. The results and methods will also be discussed in an article to be submitted to a peer-reviewed journal to be shared with the libraries, archives, and cultural heritage institutions community. The methods will be shared so that they can be reused by others, and the data and results will be shared to inform profession-wide understanding of digital collections users.

The data that will be used for this study will be anonymized. Interviews will be recorded (audio only) and transcribed. The audio will be deleted after the study period (2 years). All data will be stored in secure electronic folders on secure servers at the University Libraries.

This interview will have two parts. In part one, we will ask you about your research and how you use UNLV Special Collections and Archives in person. In part two, we will ask you to look at UNLV Digital Collections and answer related questions.

[Obtain informed consent from participant.]

[Ask participant to verify or correct the information collected from their reading room registration form]:

1. Organization or agency:
2. City, State:
3. Who are you? (Select all that apply)
 - College or university faculty or instructor
 - Department:
 - Graduate student
 - Department:
 - Undergraduate student
 - Major:
 - Teacher (K-12)
 - Subject:
 - Student (K-12)
 - Other:

4. Subject of research:
5. What is the output of your research? (Select all that apply)
 - Class paper or project
 - Teaching
 - Digital humanities project
 - Thesis or dissertation
 - Scholarly article
 - Newspaper, magazine, or online article
 - Book
 - Exhibit
 - Film or video
 - Professional report or presentation
 - Social media, blog, or personal website
 - Genealogy research
 - Other:

Part I:

6. Please describe your experience conducting research in archives. (e.g. How many years? How often?)
7. What other archives do you conduct research at, besides UNLV Special Collections and Archives?
8. How often have you used UNLV Special Collections and Archives materials in person? (How long?)
 - Monthly
 - Several times per year
 - Once per year
 - Not regularly but intensively
 - Other:
9. On a scale of 1 to 5, how would you rate your expertise as a user of UNLV Special Collections and Archives? (5 would be expert and 1 would be novice.)
10. Can you give us a brief summary of the research you've conducted in UNLV Special Collections and Archives?

11. What specific collections or subjects have you researched at UNLV Special Collections and Archives?
12. What kinds of special collections materials do you generally use/have you used? (Select all that apply)
 - Photographs
 - Oral history transcripts
 - Oral history audio or video
 - Audiovisual materials (not oral histories)
 - Manuscript collections
 - Maps
 - Born-digital records (materials that were created digitally, rather than physical materials that were scanned or digitized)
 - Other
13. Beyond viewing materials, what else do you do with them? (Select all that apply)
 - Take pictures, scan, or photocopy to refer back to later
 - Request high-resolution reproductions
 - Share, publish, or reuse
 - Cite
 - Other
14. When doing research in UNLV Special Collections and Archives, how do you use the finding aid, collection guide, or other descriptions? (front matter, etc.)
15. Is there anything specific that makes research at UNLV Special Collections and Archives challenging? Any improvements you would like to see or suggestions you have?

Part II:

16. How confident do you feel conducting research using library and archives databases? (e.g. online catalog, quicksearch on libraries homepage, Special Collections database)
17. Have you viewed archival materials online before? (where, what, etc.)
18. Have you used UNLV Digital Collections?

If yes, the participant has used [which] UNLV Digital Collections:

19. What did you use UNLV Digital Collections for?

20. How often have you used UNLV Digital Collections?

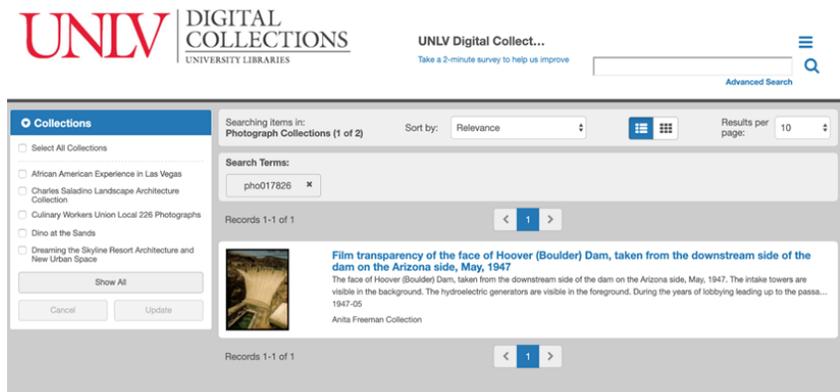
- Monthly
- Several times per year
- Once per year
- Not regularly but intensively
- Other:

21. On a scale of 1 to 5, how would you rate your expertise as a user of UNLV Digital Collections? (5 would be expert and 1 would be novice.)

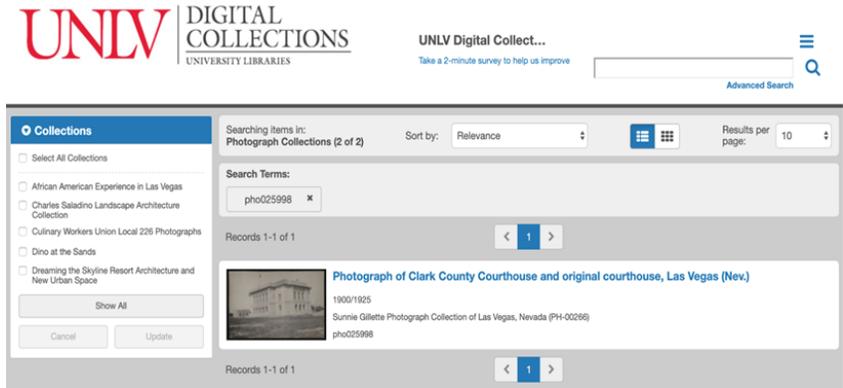
All Participants:

22. Go to the following webpages and look at the UNLV Digital Collections materials. Does the digital object and its description make sense to you? Tell us what you're looking at. Please share your thoughts by saying them all out loud [think-aloud protocol]:

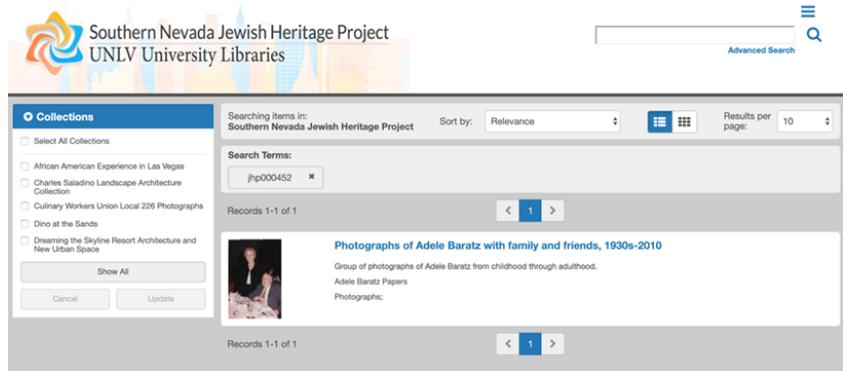
22.1 <http://d.library.unlv.edu/digital/collection/pho/search/searchterm/pho017826> [digital object from Photograph Collections]



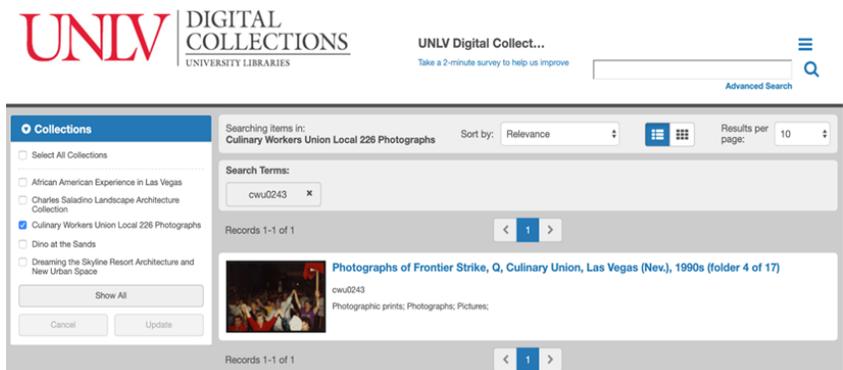
22.2 <http://d.library.unlv.edu/digital/collection/p173o4coll4/search/searchterm/pho025998> [digital object from Photographic Collection]



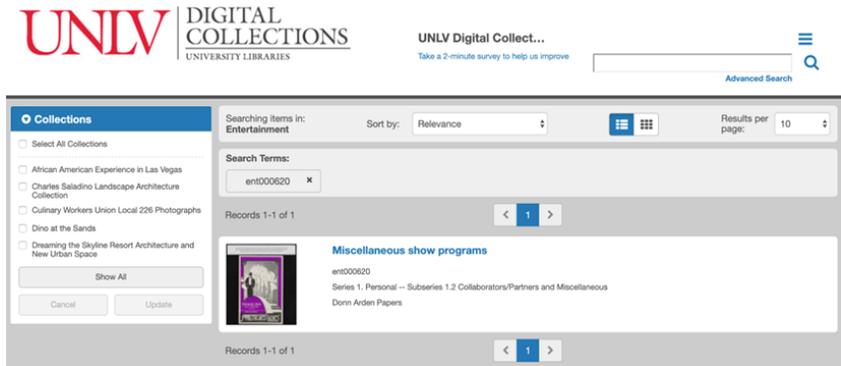
22.3 <http://d.library.unlv.edu/digital/collection/jhp/search/searchterm/jhp000452> [digital object from Southern Nevada Jewish Heritage Project]



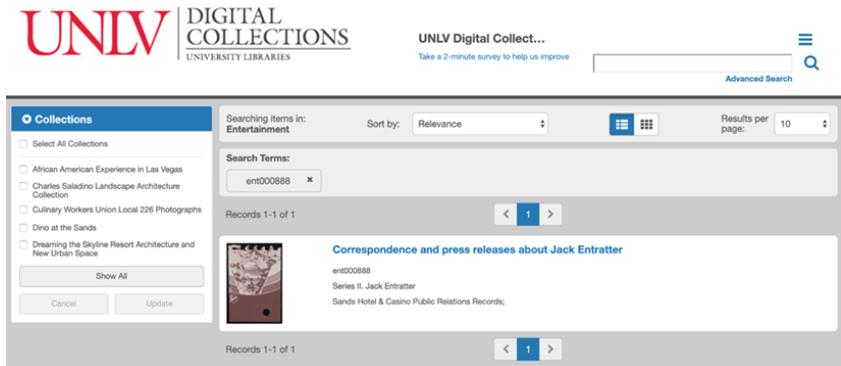
22.4 <http://d.library.unlv.edu/digital/collection/cwu/search/searchterm/cwu0243> [digital object from the Culinary Workers Union Local 226 Las Vegas, Nevada Photographs]



- 22.5 <http://d.library.unlv.edu/digital/collection/ent/search/searchterm/ent000620> [digital object from Entertainment collection with 15 items, some items not fully digitized, and OCR transcription in metadata]



- 22.6 <http://d.library.unlv.edu/digital/collection/ent/search/searchterm/ent000888> [digital object from Entertainment collection with 116 items and OCR transcription in metadata]



23. Go to the following webpages and click on the link next to “Collection Guide.” Does the collection guide change your understanding of the digital materials?

- 23.1 Digital object from the Culinary Workers Union Local 226 Las Vegas, Nevada Photographs: <http://d.library.unlv.edu/digital/collection/cwu/search/searchterm/cwu0243>

- 23.2 Digital objects from the Entertainment collection:

- 23.2.1 <http://d.library.unlv.edu/digital/collection/ent/search/searchterm/ent000620> [Folder with 15 items, OCR transcription in metadata, some items within digital object not fully digitized]

23.2.2 <http://d.library.unlv.edu/digital/collection/ent/search/searchterm/entooo888> [folder with 116 items and OCR transcription in metadata]

24. Would you prefer to browse folders of materials online (similar to the reading room experience) or would you rather browse individual items?
25. Taking into account that more materials would be available online if they were grouped together in folders, does this change your answer?
26. If collections were available online in their entirety, how would this affect your research?
27. What kinds of file formats would you like online access to?
 - Image files such as jpeg
 - High resolution image files such as tiff
 - PDF documents (full text searchable)
 - Plain text documents (full text searchable)
 - Compressed (smaller size) MP3 audio files
 - Uncompressed (larger size but better quality) WAV audio files
 - Other:
28. With UNLV Digital Collections materials, would you:
 - Download, save, or print so you can refer back later
 - Share, publish, reuse, or edit
 - Use for a digital humanities project (such as computational analysis of text, visualization, etc.)
 - Cite
 - Find materials that you later consult in person at UNLV Special Collections & Archives
 - Just look
 - Other:
29. Would you gather materials into your own virtual collection if possible?
30. Would you add your own keywords or tags to digital items if possible?
31. Would you use UNLV Digital Collections the same ways you use UNLV Special Collections and Archives materials in person, or differently?

32. Compare the experience of using a physical collection and using the digitized online version. Full collections available online include:
 - *Culinary Workers Union Local 226 Photographs*
 - *Sands Hotel Public Relations Records*
 - *Donn Arden Papers*
 - *Jerry Jackson Papers*
33. Do you trust the digital representation of archival materials? Or do you still feel the need to see the physical items for yourself?
34. Do you know how to cite digital collections materials? Would you cite the digital surrogates or the original physical materials?
35. What about UNLV's Digital Collections can be improved?

Appendix 3: Interviewee Profiles

Table 9. UNLV interviewee profiles⁸⁴

Interview number	Interviewee description	UNLV Special Collections and Archives (in-person research)		UNLV Digital Collections	
		Self-described expertise (5 is expert and 1 is novice)	How often used?	Self-described expertise (5 is expert and 1 is novice)	How often used?
1	Former graduate student (architecture), current community user	4	Several times per year	5	Several times per year recently; previously monthly or more
2	History professor (out of town)	4	Several times per year since 2003	3	Almost daily in 2017 and 2018
3	Journalism and Media Studies professor	3	2-3 times per year	3	2-3 times per year
4	Museum curator (non-UNLV)	1	Not regularly but intensively (1-2 times, 8 hours each, in the last few years)	2	Every other month
5	Graduate student (History)	2	Once per year	4	Not regularly but intensively. 2 months for 3+ hours per day

84. Unless otherwise indicated, all interviewees were local and affiliated with UNLV.

		UNLV Special Collections and Archives (in-person research)		UNLV Digital Collections	
Interview number	Interviewee description	Self-described expertise (5 is expert and 1 is novice)	How often used?	Self-described expertise (5 is expert and 1 is novice)	How often used?
6	Undergraduate (History)	3,9-4	Monthly (at least once per month, 2-3 hours per visit)	2	Not regularly, but intensively; maybe once per year
7	Undergraduate (Public health)	1.5 or 2	Once per year	3	Several times per year
8	Community historian (non-UNLV)	3	Four times per year	4	Constantly
9	Undergraduate (History)	5	Several times per month	3	Several times per year