

University of Oregon Historic Preservation Program

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Student: Matt Kelly

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Towards an Open Data Framework

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Committee Chairperson: Brandon Spencer-Hartle Brandon Spencer-Hartle Date: 6/20/2024

Committee Member: Deidre McCarthy DEIDRE MCCARTHY Digitally signed by DEIDRE MCCARTHY
Date: 2024.06.17 10:29:38 -04'00' Date: _____

Committee Member: Chad Randl Chad Randl Date: June 17, 2024

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Abstract

The National Register of Historic Places was established as part of the The National Historic Preservation Act, which was signed into law in 1966. This terminal project considered the role the information age has played in shaping the way data about the National Register is collected, stored, and analyzed and made available to preservation professionals, researchers and the public in general. The main question which guided the research project was: *How can an open data framework inform the way National Register nominations are published and accessed as an institutional collection?* The concept of an open data framework was introduced, and its relevance to the National Register was explored. A literature review revealed the prevalence of open data discourse in other allied fields, but less so in historic preservation publications. An online survey was distributed to the preservation community, and was intended to assess familiarity with open data principles and the use of digital research tools. The written responses were primarily open-ended, and analyzed using qualitative coding analysis. Survey respondents revealed an appreciation for the body of knowledge represented by the National Register, and also a desire for improved access to this data. A set of case studies presented examples of digital research tools that are relevant to preservation stakeholders, and explored the ways in which open data initiatives have informed the development and use of these tools. The last section paired findings about shortcomings of the accessibility of National Register data with recommendations on improving the usefulness and relevance of digital tools used by preservation stakeholders.

Modernizing The National Register of Historic Places: Towards an Open Data Framework

By:

Matt Kelly

June 15, 2024

University of Oregon

Historic Preservation Program

Terminal Project Committee Members:

Brandon Spencer-Hartle (chair)

Deidre McCarthy

Chad Randl

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Introduction

The National Historic Preservation Act (NHPA) was signed into law in 1966, during a period of reckoning about the loss of historic buildings in the United States in the years after World War II. The research of a Special Committee on Historic Preservation resulted in the publication of the report titled *With a Heritage so Rich*, which offered a set of recommendations “that addressed federal, state, local, and international means of improving historic preservation.” Key outcomes of the NHPA were the creation of National Register of Historic Places (NRHP) which is administered by the National Park Service (NPS), and the formation of State Historic Preservation Officers and Tribal Historic Preservation Officers (SHPOs and THPOs), among other preservation programs still in effect to this day.¹

In the article *Taming Technology for Preservation*, John I. Mesick anticipated in 1976 that a new technology, database management systems, would aid in the automation of storage and retrieval of historic property inventories such as the National Register. Mesick concluded the article by saying that nearly all the recommendations set forth in the *With Heritage So Rich* had been acted upon, and in doing so, “we have throttled many of our impulses to waste and destroy. But beyond this achievement, a further task remains. Our nation must now allocate the resources and train the personnel who will ultimately tame our technology to accomplish the purposes of historic preservation in America.”²

This terminal project considers the relevance and use of technology in the field of preservation, specifically as it relates to managing data about the National Register of Historic Places. Data management has many implications for researchers and users of the National Register, as explored by the chapter by Carol D. Shull titled ‘Searching for Women in the National Register of Historic Places’ in the book *Restoring Women's History through Historic Preservation* (2003). Shull described that a decision was made in the early 1980s not to include a specific data field related to women’s history in the system used to track all of the listings on the National Register, and dedicates the chapter to describing different ways of locating information about this topic, such as by browsing the ‘significant persons’ data field for the names of women or querying the database for names of architects (90 out of the 25,000 names were found to be women). In this chapter, the

¹ Kimball M. Banks and Ann M. Scott, *The National Historic Preservation Act : Past, Present, and Future* (New York ; Routledge, 2016).

² John I. Mesick, “Taming Technology for Preservation,” *Momentum (ICOMOS Journal)* 13 (1976): 93–106.

National Register was portrayed as a useful research tool that contains information about important aspects of women's history.

The almost 100,000 properties listed on the National Register to date represent roughly 1.8 million resources, which are defined as buildings, sites, structures, and objects. The nomination forms with research and photos about these properties are submitted to the NPS prior to listing on the National Register are an accumulation of knowledge spanning almost six decades. In his essay titled *To Expand and Maintain a National Register of Historic Places*, John H. Sprinkle Jr., who served as a historian for the National Park Service for over three decades, describes the National Register as a "1.5-million page history textbook that illustrates the kinds of places that more than two generations of Americans have thought worthy of preservation." Sprinkle's concept of the National Register is echoed by the National Park Service's description of the various stakeholders that find value in being able to access the National Register, specifically in a digital context. "These important records of American history contain a wealth of information on the diverse places and people of this country and are now accessible to all Americans – communities, researchers, planners, educators, and students."^{3 4 5}

Despite the importance of these records, the current technology infrastructure that allows users to access National Register data has considerable limitations. Nominations from the beginnings of the National Register through 2012 have been largely digitized (about 91%) and are available through the National Archives online catalog. However, only about 4.4% nominations from the years 2014-2023 are available on the National Archives website. This means users must resort to accessing nomination forms through the respective SHPO, but not all SHPOs have websites which make their state's National Register nominations accessible to the public.⁶

Almost 50 years after the novelty of database management systems, discussions about access to digital resources are now framed in larger contexts of 'open data', a term that encompasses topics beyond just software or technology, but of ethics, principles and policies about data as well. The term gained prominent recognition at a national level in 2009 with the launch of the data.gov

³ "John Sprinkle, Jr | School of Architecture, Planning & Preservation," accessed April 22, 2024, <https://arch.umd.edu/people/john-sprinkle-jr>.

⁴ Max Page and Marla R. Miller, eds., *Bending the Future : Fifty Ideas for the next Fifty Years of Historic Preservation in the United States*, Bending the Future : 50 Ideas for the next 50 Years of Historic Preservation in the United States (Amherst: University of Massachusetts Press, 2016), 232.

⁵ "A Preservation Partnership: Digitizing the National Register of Historic Places and National Historic Landmark Records (U.S. National Park Service)," accessed August 22, 2023, https://www.nps.gov/articles/nr_digitization.htm.

⁶ See Appendix A: 'National Archives link calculation' for further details.

website, and in 2013 with Obama's executive order titled Making Open and Machine Readable the New Default for Government Information. This order explicitly alluded to 'openness' as one of its guiding principles. The Open Knowledge Foundation's definition, "open data and content can be freely used, modified, and shared by anyone for any purpose," is widely accepted and often quoted by government data portals and academic institutions.

The goal of this terminal project is to consider ways in which the data management approach of the National Register can be modernized by and for various stakeholder groups. The primary question that will guide the research is: *How can an open data framework inform the way National Register nominations are published and accessed as an institutional collection?*

This research question can be broken up into several parts:

- *how can an open data framework inform:* A literature review will introduce the concept of an open data framework and explore the ways that it is relevant to data management in the context of cultural heritage. This literature review will situate the National Register alongside other cultural resource fields that have demonstrated rigorous scholarship, debate and practice around the issue of open data frameworks. This terminal project will explore case studies which demonstrate a specific focus on open data approaches in order to inform recommendations about improving access to the National Register.
- *the way National Register nominations are published and accessed:* The technologies and interfaces that a stakeholder uses to find specific National Register nomination forms or information about aggregate lists of National Register nominations. A survey will be conducted and will ask stakeholders to describe their experiences and observations about accessing the National Register.
- *institutional collection:* This research will first look at how the National Register can be conceptualized as a body of knowledge, and how this institutional collection is an important source of research for preservationists.

Alongside Sprinkle's essay in the book *Bending the Future: Fifty Ideas for the next Fifty Years of Historic Preservation in the United States*, other contributors were asked to reflect on, among other things, "What's working, what's not, and where can we do better?" in the field of preservation⁷. This terminal project explores similar questions, specifically of the technology used to access this '1.5-million page history textbook.'

⁷ Page and Miller, *Bending the Future : Fifty Ideas for the next Fifty Years of Historic Preservation in the United States*, 3.

About a decade after the passage of the NHPA, the NPS began publishing a newsletter titled *CRM Bulletin* (later versions were branded as “A Technical Bulletin for Parks, Federal Agencies, States, Local Governments, and the Private Sector”). In its inaugural issue, NPS employee F. Ross Holland, Jr. wrote an article titled *What We’re About* and opened with the following: “As preservationists, we are living in exciting times, because we are on the ground floor of an emerging discipline and a rapidly evolving philosophy.” Recognizing the rapidly changing understanding of best-practices, the newsletter would become one way for preservationists to exchange ideas and keep “abreast of changing philosophy, techniques, and technology.” The *CRM Bulletin* invited information sharing from beyond just members of the NPS Cultural Resource Management Division. “Perhaps your article will be critical of the way the National Park Service goes about its work. Such criticism is acceptable...,” and as such, this essay will respond to this 46 year old invitation and will offer a constructive critical look at data management of the National Register.⁸

The value of and ability to analyze the National Register’s data was explored by graduate student Charles Laney Rollins in 1974 in the paper titled *Analysis of the National Register and of the problems concerning accuracy of the data used in the analysis*. “A capacity to produce a critical analysis of the current contents of the National Register is vitally important in order to provide essential data for an appraisal of the overall effectiveness of the Register.” Rollins accessed early collections of National Register nominations in order to understand the overall makeup of many aspects of the collection, and did so by using punch cards to analyze 4,838 properties of the roughly 6,000 that had been listed up until that point. By describing the process of accessing and analyzing the data, Rollins was able to not just assess the contents of the National Register by specific data fields (such as ownership type, listing date, or acreage of the listed property), but also observe issues with the data collection, storage and processing strategies employed by SHPOs and the NPS at the time. These detailed observations allowed Rollins to develop further recommendations for improving these processes.

The critical lenses used by present day preservation professionals to understand the National Register are explored in the next section of this terminal project. The discussion paints the National Register as a cohesive collection, the sum of which is larger than its parts. This collection reflects current and past preservation values and practices, and not just a list of individual nomination forms or the buildings they represent. Access to this collection by researchers enables thorough and meaningful analysis of the National Register.⁹

⁸ “CRM Bulletin Vol. 1 No. 1” (National Park Service, February 1978).

⁹ Charles Laney Rollins, “Analysis of the National Register and of the Problems Concerning Accuracy of the Data Used in the Analysis.” (North Carolina State University, 1974), <https://catalog.lib.ncsu.edu/catalog/NCSU502984>.

The National Register through a Critical Lens

One of the major themes in *Bending the Future* is a growing understanding of the need for the preservation practice to be more representative of a diversity of lived experiences in this country. The National Register functions as an important tool within the preservation profession, and as such, the ways in which listed properties reflect a diversity of identities are also being studied and written about in contemporary academic research and commentary.

The topic of diversity is also present in the National Park Service's approach to managing the National Register. In a presentation titled *Diversity + the National Register: "How will we know it's us?"*, Sherry Frear, the Chief of the National Register of Historic Places, recognized some of the books and articles "concerning a lack of diversity among places listed in the National Register."¹⁰ Frear's presentation highlighted the Underrepresented Community Grants, which seek to increase the presence of certain populations and topics in National Register listings.

Other organizations, such as the Advisory Council on Historic Preservation (ACHP), have similarly indicated a need for a more diverse National Register. The ACHP lists "Supporting designation or protection of historic properties that reflect the full American story and discouraging proposals that would destroy or diminish diverse histories" among their ten priorities for recommendation to the 118th Congress.¹¹

The National Conference of State Historic Preservation Officers (NCSHPO) has also assessed the issue in a report titled *Recommendations for Improving the Recognition of Historic Properties of Importance to All Americans* (2023), which was authored by the National Historic Designation Advisory Committee. In order to "examine how and whether the listings in the NRHP tell our nation's full story and, if not, what impediments exist that prevent it from doing so," the report seeks to "examine the intent, history and implementation of the NRHP with an eye towards fostering greater access and inclusion." The stated goals of the report are to (emphasis theirs):

- **Identify both challenges** to public access to and successful listing in national historic designation programs *and best practices* that optimize access and enhance the prospect of successful listings;
- **Seek dialogue and input** from a wide variety of stakeholders on these issues;

¹⁰ Sherry Frear, Davidson, Lisa, and Ernstein, Julie, "Diversity + the National Register: 'How Will We Know It's Us?'" https://www.nps.gov/subjects/nationalregister/upload/NRHP-NHL-PastForward-presentation-2021-11-03-with-script_508.pdf.

¹¹ "Federal Preservation Legislation and Executive Orders | Advisory Council on Historic Preservation," accessed August 9, 2023, <https://www.achp.gov/preservation-legislation>.

- **Organize and implement** professional practitioner **training and exchange** regarding best practices;
- **Identify needs** in terms of regulatory or policy changes, staffing, administrative and operational matters, and funding necessary to achieve these goals.¹²

In order to provide a context for their study, the NCSHPO's National Historic Designation Advisory Committee's report includes a historiography consisting of over 140 academic, professional, and popular articles focusing on historic preservation and the National Register. Following a look at decades of National Register history, the '2000s--present' section of the NCSHPO report asks the question "In the absence of accurate data, how can success be measured when the common sentiment is that this is an issue that must be measured with qualitative and quantitative data?"¹³ In this terminal project, I seek to explore the issue of "absence of accurate data", with the underlying assumption that our profession could be engaging in more meaningful research about and criticism of the National Register if we had better organization and access to the qualitative and quantitative data found within it.

Within the Historiography section of the NCSHPO report, there are a few passing mentions of data access and management, but the topic of technology is not included in the "several major themes or points of concern" that were encountered by the committee in the "scholarly and popular writing critical of the NRHP program, particularly in the last decade."

The NCSPHO report *does* reference a couple articles from the 1980s in its historiography that deal with the ways the National Register was being made accessible with cutting-edge technologies at the time. Despite the now-outdated technology these articles reference, they remind us how the field of historic preservation can foster ongoing discussions about the implications of new and emerging technology. These and other articles will be looked at in more detail in the literature review section of this report.

¹² The National Historic Designation Advisory Committee, "Recommendations for Improving the Recognition of Historic Properties of Importance to All Americans" (National Conference of State Historic Preservation Officers), accessed December 18, 2023, <https://ncshpo.org/wp-content/uploads/2023/04/NHDAC-Full-Report.pdf>

¹³ The National Historic Designation Advisory Committee, "Recommendations for Improving the Recognition of Historic Properties of Importance to All Americans," 32.

Research Motivation and Overview

Sprinkle's essay about the National Register as a history textbook starts off with a succinct observation about the Secretary of the Interior's responsibility "to expand and maintain a National Register of Historic Places", in which the 'expand' part of the goal has been achieved, but the 'maintain' part "needs work."¹⁴ Sprinkle questions the validity of arguments about the statistics of diversity reflected on the National Register "in light of the register's information backlog". This information backlog includes the outdated nomination forms from decades ago, and the fact that buildings nominated under Criterion C (which highlights architectural qualities of a building) may well also be significant for "important associations with historical events or persons." Sprinkle suggests that "with a little reorganization and some long-neglected repackaging and relabeling of boxes, there is plenty of room in our national storage unit to include a new generation of historic properties that illustrate our historic past." Amidst ongoing debates about a more inclusive National Register, what role can technology play in the "repackaging and relabeling of boxes"?

My motivation to study this topic was formed by my experience in accessing National Register nominations for class readings and as sources when conducting research for classes in my graduate studies in historic preservation. As a technology enthusiast and someone with a past career in systems administration and data management, I would take mental note of the websites and user interfaces I encountered in searching for nominations. With Marshall McLuhan's phrase "The medium is the message" in mind, I began to ask myself what message was being communicated about the importance of technology and innovation in the field of historic preservation.^{15 16}

As a graduate student, the curricula I encountered generally focussed on absorbing and analyzing the content of various written and photographic records and of producing written, oral, and sometimes visual/graphic reports as assignments and coursework. The computer systems that delivered and stored these materials were mentioned in the context of handy research tools, but generally not as primary objects of inquiry themselves. So for example, during a class discussion about research methods, you might hear "Zotero is my favorite citation manager, here is how I'm using it to organize my final project", but likely not "I've decided on using Zotero after reading

¹⁴ Page and Miller, *Bending the Future: Fifty Ideas for the next Fifty Years of Historic Preservation in the United States*, 231.

¹⁵ Marshall McLuhan, *Understanding Media: The Extensions of Man*, Extensions of Man (New York: McGraw-Hill, 1964).

¹⁶ I've seen McLuhan's "The medium is the message" used elsewhere as a way of framing discussions that relate to the use of technology in the humanities, such as in a presentation in April 2024 by George Bruseker (CEO of Takin.solutions) to the Linked Data in Art History Interest Group

about its commitment to an open-source software development model, which aligns with my values better than other citation software packages do.” As a student, I had the opportunity to attend or watch multiple public preservation-related hearings, but didn’t get to take part in discussions in which a public entity decided what software to use for their archival records database. The possibility of a data management framework that values and prioritizes participatory preservationist stakeholder input will be explored later in this report.

I was encouraged that one class I took, called Disability and Preservation, had a twofold goal of both having students research a disability-related site or institution as a way of learning about the history of critical disability studies, but also to produce a report about that site using a web platform which had certain accessibility needs and considerations built-in. The discussions had by classmates, instructors and accessibility advocacy guest speakers was a great example of the ways that the *how* of a communication technology was as much of a consideration as the *what* of the research topic in question. In this case, the message of the medium was that accessibility of our content by readers with visual impairment matters, and here are the technology best-practices informed by experts that we can implement with this specific web platform. This research project will look at what ‘accessible’ might mean to different stakeholders through a survey about the experience of using the National Register.

The topic of digital literacy is addressed in the recommendations section and will introduce to the historic preservation community the idea of software and technology choices as reflection of shared values and ethics. Just as there are countless perspectives about the merits of different preservation policies, there will likely be diverse perspectives on the best data management approach for the National Register or what ‘openness’ means or how it should be implemented. Amidst discussions where different perspectives are debated, having a common understanding of terminology can help preservation stakeholders engage in more productive conversations about the use of technology in our field. Throughout this terminal project, the nuances and ambiguities of the word ‘open’ is explored, especially as it relates to preservation stakeholders’ experience with the National Register as a research tool. The desired outcome of this report is to provide the historic preservation community with shared language and ideas for a path toward a more modern and accessible approach to the creation, storage and retrieval of National Register nominations.

The paper *Framework of Problem-Based Research: A Guide for Novice Researchers on the Development of a Research-Worthy Problem* by Timothy Ellis and Yair Levy (2008) provides a framework for thinking about the relationship among the topic, research problem, goals, and research question as going

from a general concept to a more specific one. Figure 1 below uses this approach to illustrate the general and specific aspects of this terminal project.¹⁷

Conceptual Basis	Artifact	Example
General	Topic	National Register data management
	Research problem	Difficulties and limitations encountered by researchers using the National Register as a body of knowledge
	Goal	Explore the relevance of open data concepts in the historic preservation profession
Specific	Research Question	How can an open data framework inform the way National Register nominations are published and accessed as an institutional collection?

Figure 1 Conceptualizing the National Register

Intended Audience

This research project intends to inform the way that different stakeholders can be collaborators and co-creators of future efforts to modernize the National Register. The primary stakeholder groups are:

- The National Park Service’s National Register Programs, and State Historic Preservation Offices. In particular, those employees of government preservation offices who are responsible for shaping technology policy and implementation as it relates to the National Register.
- Educational communities, specifically universities with graduate historic preservation programs, and organizations such as the National Council for Preservation Education.

¹⁷ Timothy J Ellis and Yair Levy, “Framework of Problem-Based Research: A Guide for Novice Researchers on the Development of a Research-Worthy Problem,” *Informing Science* 11 (2008): 17–33, <https://doi.org/10.28945/438>; John W. Creswell, *Educational Research : Planning, Conducting, and Evaluating Quantitative and Qualitative Research*, 2nd ed. (Upper Saddle River, NJ: Merrill, 2005).

- Preservation consulting firms (and firms in related fields such as historic architecture, cultural resources management and planning). In particular, individuals who are employed in the private sector and whose work regularly includes researching and writing National Register nominations.

The research considers the different roles and responsibilities the stakeholders have in shaping data management approaches in the preservation field. The recommendation section later in this report will offer specific action steps for these different groups to consider.

Conceptualizing the National Register

An important premise for this research is that a National Register nomination has life beyond the endpoint of an administrative process (which was illustrated in the flow chart earlier on in this report). Figure 2 provides a way to visualize this collection of documents and its connections to other documents and stakeholders. As an accumulation of knowledge, the National Register is primarily the content found in the main body of a nomination, with a layer of metadata that helps us categorize each nomination and locate it in a catalog or a database. This metadata includes basic information like the name of the property, location, date of listing, unique ID, among others. Outside of this main content and metadata is a set of explicit and implicit knowledge and institutional norms and conventions that might not otherwise be obvious to an outsider, but that nonetheless exist and influence how a nomination is written, and how that nomination gets reviewed and approved by a State Historic Preservation Office (SHPO) prior to being and accessed after listing.

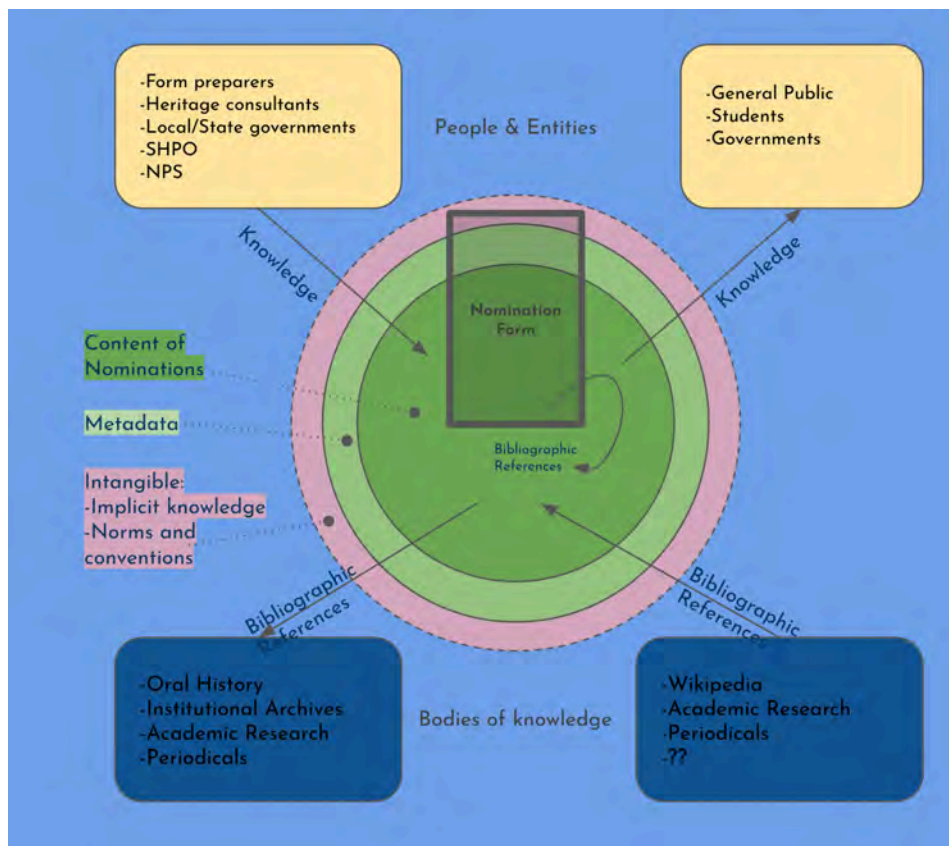


Figure 2 Conceptualizing the National Register

The illustration shows arrows which represent the content of nominations making bibliographic references to other bodies of knowledge, including institutional archives, oral history, academic research, and periodicals. And there are outside bodies of knowledge that reference back to National Register nominations, such as Wikipedia, academic research, blogs and websites. It is important to note that a nomination will likely also cite other nominations or Multiple Property Documents. The illustration shows how any single nomination consists of the three ‘types’ of data already mentioned: content, metadata, and implicit knowledge.

Figure 2 includes examples of the type of people and entities that generally produce, promote or are authors of the content of the nominations, such as heritage consultants, local and state governments or the National Park Service. The creation of content in a nomination is conceptualized as a flow of knowledge. This knowledge also flows back out to be consumed or accessed by students and academics, the general public, and by government bodies.

The National Park Service describes the process of submitting a property for consideration for listing on the National Register as open to a wide range of stakeholders: “property owners, public agencies, private institutions, local historical societies, local preservation commissions, local planning offices, social or merchant organizations, professional consultants, college professors and their students, special interest groups, or interested members of the general public.”¹⁸ For a property to be listed on the National Register, a nomination form is submitted to the SHPO for review, before being passed on to the National Park Service for review. A nomination form (also referred to as a registration form) provides a structured format for a form preparer (author) to capture information and research about a property.

The nomination forms themselves have changed substantially since the National Register was first created. Early nomination forms, often typewritten, provided basic information about property type, date and location, and a brief description of its history. More recent nomination forms tend to be much longer in length, and are filled out by a preparer using a Microsoft Word template provided by the National Park Service.¹⁹

For the purposes of this research, metadata of a National Register nomination will generally be defined as the standard fields on a nomination form such as Property Name, Location, or Date of Listing. These are the fields that will most likely be present on the search functionality of a State’s

¹⁸ “NRB16A: How to Complete the National Register Registration Form,” National Register Bulletin (US Department of the Interior, National Park Service), 2, accessed December 9, 2022, <https://www.nps.gov/subjects/nationalregister/upload/NRB16A-Complete.pdf>.

¹⁹ “National Register Forms - National Register of Historic Places (U.S. National Park Service),” accessed November 14, 2022, <https://www.nps.gov/subjects/nationalregister/national-register-forms.htm>.

historic database website interface²⁰ or in the ‘National Register Everything’ NRIS Excel file mentioned in the introduction to this report. The knowledge represented in the content of a completed nomination form includes:

- Written text:
 - Historic Context
 - Narrative Description
 - Comparative Analysis
- Charts & Tables
- Photos
- Form Preparers (ie the names of the authors of the nomination)
- Bibliographic Sources.

This terminal project considers the ways that metadata and written content of a nomination are located and accessed differently. This research will look at the way search interfaces provided by various entities such as the NPS, SHPOs, or the National Archives and Records Administration allow users to access the collection of nominations. This search and retrieval functionality provided by these government entities is assessed through an open data lens later in this report.

Getting familiar with the National Register

In order to establish some familiarity with the National Register as a collection of successful nominations, I began by downloading an Excel spreadsheet from the Data Downloads page of the NPS website which is a tabulation of basic metadata about each listing. Figure 3 shows the total listing for each year starting in 1966 through 2023, peaking in the early 1982 with 4,736 a year. For the years 2014-2023 (inclusive), this number has averaged 864 listings per year. For each year, Figure 3 shows properties that were listed as Single nominations, and also properties which were listed under a Multiple Property Document.²¹

Figure 4 shows the same data, but divided up by the property type for that listing. A nominated property can be a building, district, object, site or structure. The chart clearly illustrates that the property type of buildings make up the majority of listings each year, followed by the district

²⁰ Not all SHPOs offer an online repository of the corresponding NRHP nominations for that state

²¹ “Data Downloads - National Register of Historic Places (U.S. National Park Service),” accessed August 10, 2023, <https://www.nps.gov/subjects/nationalregister/data-downloads.htm>.

type. The count of listings for property types of objects, sites and structures is much smaller on an annual basis.

The total resources that are represented within the National Register is often mentioned, such as on the National Park Service website: “Together these records hold information on more than 1.4 million individual resources--buildings, sites, districts, structures, and objects”. However, the Excel file of listings does not include the following data fields:

- count of resources per listing, so it is currently not possible to visualize a trend of the quantity of listed resources over time.
- whether a property was owned privately or publicly at the time of nomination, even though the nomination form for a listing does contain this information.
- The listing criterion or criteria A, B, C and/or D for that nomination

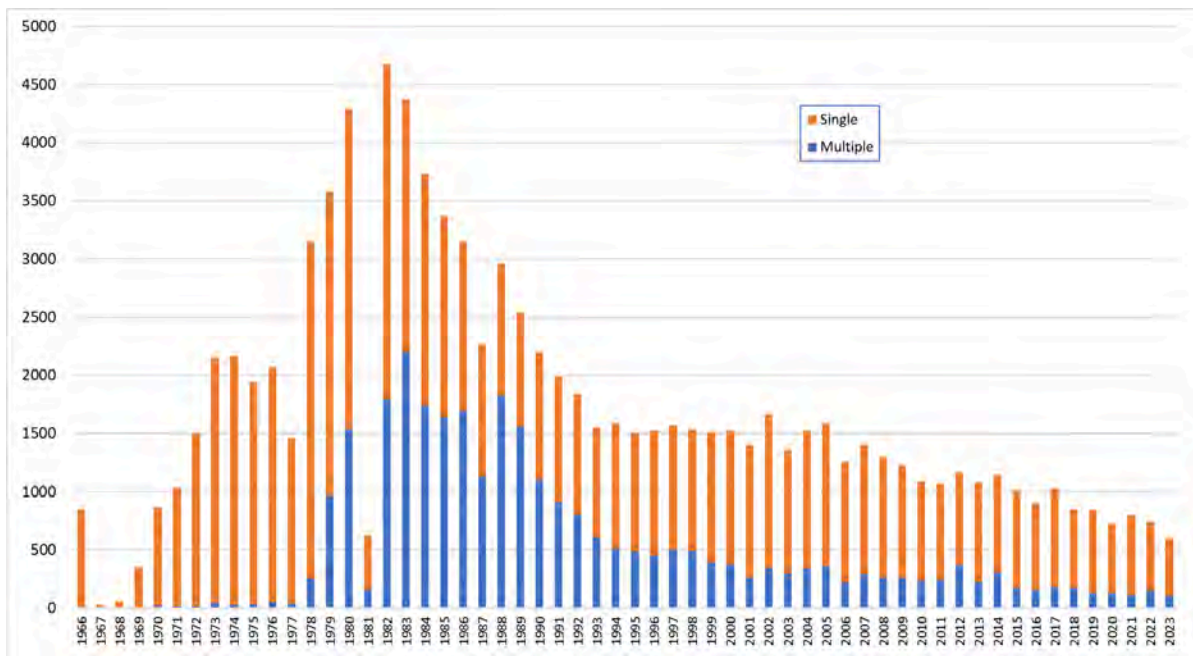


Figure 3 Annual count of NRHP listings for 1966-2023, showing whether a property was listed on its own, or part of an Multiple Property Document

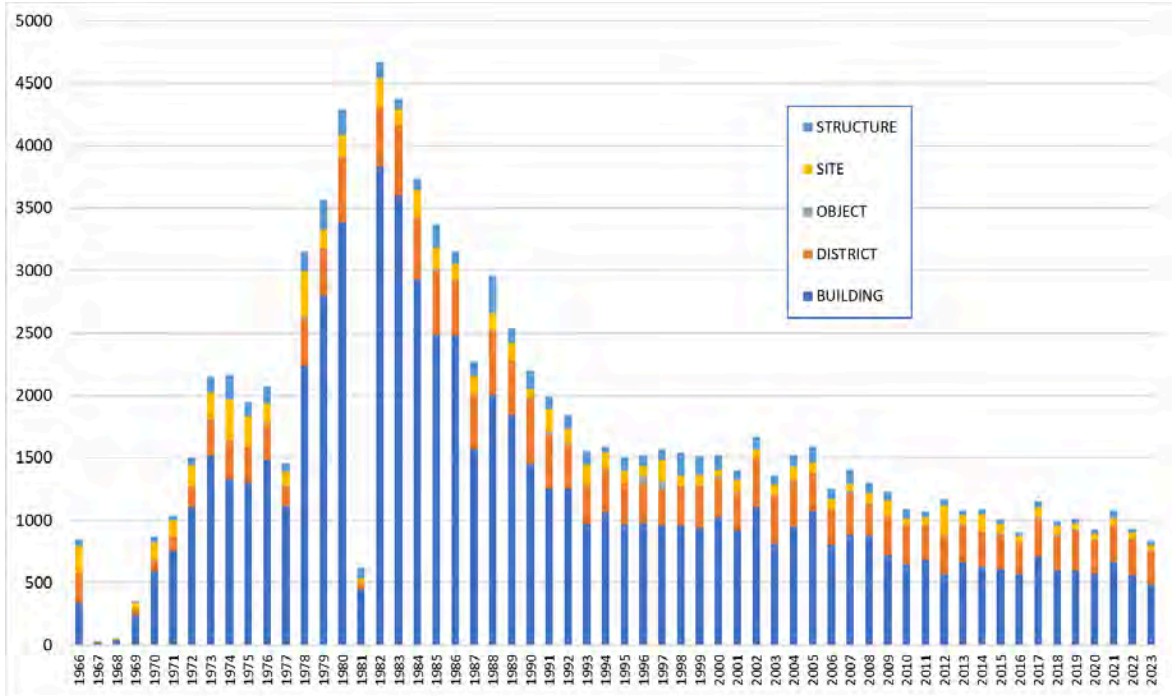


Figure 4 Annual count of NRHP listings for 1966-2023, showing a breakdown of annual total by the total property type of each listing

The book titled *National Register of Historic Places, 1966-1988* (compiled by the National Conference of State Historic Preservation Officers, the National Park Service and the American Association for State and Local History) is a directory of the 52,000 listings up until that point. The introduction asks the question “What do we know about National Register properties?” and includes figures for the three data types (count of resources, ownership type and criteria) listed above that are currently not made accessible by the Excel file. As such, comparing the tabulations of these data fields for present day nominations is not possible with data currently offered by the National Register Excel file.

As mentioned in the introduction of this terminal project, the availability of nominations from recent years in a centralized place such as the National Archives website is limited (roughly 4.4% for the years 2014-2023). The National Register Excel file only provides a link to PDF files that are available through the National Archives, but does not link to a file available through a SHPO website. As such, there is no central location to comprehensively search for and access all past and recent nomination forms even if they already exist in a digitized format elsewhere online.

In order to get a sense of how easy it is to find and access these recent nominations not available through the Excel list, a set of 10 National Register listings was picked from all the 2022 listings using a randomizer spreadsheet function. Downloading up to 10 recent nominations would also allow for a quick look at the type of content within each of these nominations (such as page count, number of images, number of footnotes and number of bibliographic references).

For each of the 10 nominations, I did a quick check to see whether the nomination was accessible on the respective SHPO website. If a SHPO website didn't have a PDF file, I would use Google to search for the property name, or email the SHPO directly requesting the file.

Once located, I performed a rough count of how many pages of text, images, footnote and bibliographic references each PDF had.

Of the 10 nominations:

- 5 had nomination forms easily accessible on the respective SHPO website,
 - Of these 5, one SHPO database was only accessible as a map, and offered no search by text field for property name. The PDF was located by browsing for the respective site on the map,
- 2 other SHPO sites listed the name of the property, but PDFs of the nomination were not linked or readily accessible. I emailed each SHPO and was able to obtain the nomination forms,
- 1 was easily located using Google,
- 1 was not findable through the SHPO database by searching for the historic property name, so a copy was requested to the SHPO via email,
- 1 was not findable, as the SHPO website provided no contact information regarding National Register inquiries, and pointed users back to the National Register data.

Based on the 9 PDF nomination files from 2020 I was able to download, I found the average counts to be:

- 22 pages of text
- 28 images and figures
- 34 footnotes
- 46 bibliographic resources

These rough figures are certainly not statistically significant given the sample size, and don't allow us to make generalized statements about the NRHP as a whole. However, they are included

here as a way to illustrate the type and quantity of content found within the narrative text of a nomination form. This terminal project looks at ways this type of information might be made accessible through improved search processes and interfaces, and ways this content might lead to further research possibilities if it were more accessible.

In addition to considering the qualities, content, and makeup of a nomination form, I also wanted to see what knowledge bases outside of the National Register said about the nomination forms. I was curious whether online mentions in news articles would quote or otherwise make reference to the successful nomination form. As a cursory experiment, on March 21, 2023, I searched the news.google.com portal for the term “National Register of Historic Places”, and picked the first 10 links to news articles that showed up. A list of these links is included in Appendix B.

Of these 10 results found on Google News interface:

- 2 were for White House press releases about new National Monument designations with NRHP properties
- 2 were news articles about recently submitted nominations or about intents to submit nominations
- 3 were articles in reference to already listed properties and linked to the respective SHPO website. Of these 3, only one SHPO website had the corresponding nomination form easily accessible.

Perhaps most interestingly, only three news articles explicitly referenced a quote from a nomination form. The goal here was to gauge how newspaper articles might communicate a connection between a property being on the National Register, and the research that was compiled on the nomination form by the form preparer.

The above two experiments, looking within example National Register nominations, and looking from the outside from a news search engine inwards to National Register nominations, are not statistically significant. When applied on a larger scale, and across different time periods, approaches like ones above could help us understand larger trends in the use of National Register nominations in the preservation profession. How has the language found in nominations changed across the decades? How does the written content of nomination forms vary across states? The survey portion of this study asks what other types of research questions preservation students and professionals are posing about the National Register.

To replicate the above experiments in a statistically significant fashion, a user would need to have access to and download a significant amount of data. As outlined above, locating this data often

involves contacting SHPOs directly via email to request files or navigating SHPO websites with disparate interfaces. The availability of the content of nominations in a more automated and centralized manner could be referred to as ‘machine readable’, which is one way of describing open data. The next section further introduces more aspects of open data.

An Introduction to Open Data Philosophy

A historic preservation professional is both a consumer of information in the research process, and also a curator and creator of information. As such, preservationists should have a thorough understanding of how that data gets managed and the way it connects conceptually and practically with other knowledge bases. Before jumping into the technology side, it is important to take a moment to understand the philosophical context of this research topic.

The philosophy of data and information has implications ranging from the conceptual and abstract to the technical and practical. This research project seeks to explore the ways the accumulation of knowledge that is the National Register is able to be described, understood and assessed along this abstract-practical axis. The conference proceedings by Melanie Swan titled *Philosophy of Big Data* (2015) defines the Philosophy of Data/Information as “a branch of philosophy concerned with the foundations, methods, and implications of data and information; the existence, definition, conceptualization, methods, knowledge possibilities, truth standards, and practices of working with data and information.”²² While the connotations of ‘big data’ are often associated with a context of high-tech private industry, the term has been used to describe government data sets as well, such as by the United States Census Bureau.²³

Swan’s paper uses the definition of ‘big data’ provided by Gartner (a large technology consulting company) as “high-volume, high-velocity and/or high-variety information assets.”²⁴ To understand the National Register through the lens of philosophy of big data, we can read through Swan’s overview of the three main components of philosophy: “ontology, epistemology, and ethics” and replace any mention of ‘big data’ with ‘the National Register’ (and of ‘big data science’ with ‘the study of the National Register’):

Ontology deals with existence; what is ~~big data~~ [the National Register], how does it arise, how does it operate in the world; definitions and classifications. Epistemology deals with knowledge; how is ~~big data~~ [the National Register] helping us know new things about the world, how true are these findings, what knowledge is required to engage in ~~big data science~~ [the study of the National Register]. Ethics deals with how ~~big data science~~ [the study of the National Register] is conducted, how certain kinds of findings get valorized and why;

²² Melanie Swan, “Philosophy of Big Data: Expanding the Human-Data Relation with Big Data Science Services” (IEEE, March 2015), <http://ieeexplore.ieee.org/document/7184918/>.

²³ US Census Bureau, “Big Data,” Census.gov, accessed January 22, 2024, <https://www.census.gov/topics/research/big-data.html>.

²⁴ “Definition of Big Data - Gartner Information Technology Glossary,” Gartner, accessed January 20, 2024, <https://www.gartner.com/en/information-technology/glossary/big-data>.

aesthetics is also part of this category (what gets seen and valued as beautiful or aesthetically pleasing).²⁵

The goal of this research project is not to exhaustively look at all the ontological, epistemological or ethical aspects of the National Register and its use in preservation practice. However, it is important to recognize the philosophical implications whenever they do arise in discourse, debate and scholarship pertaining to technology and the National Register, and especially when considering it 'big data'. Swan says that wherever data is involved, there is some sort of philosophical stance being taken. Swan's cautionary words to scientists could apply to preservationists as well, who "might wish to avoid the difficult and possibly seemingly irrelevant work of thinking through philosophical position by simply accepting the tenets of a dominant paradigm, or by operating at the level of methodology." In essence, even if a preservationist isn't aware they are "doing data philosophy," they are still somehow operating with a set of principles.

The book *The State of Open Data: Histories and Horizons* (edited by Tim Davies, et al., 2019) describes the shift in the span of a decade from open data being "more or less just an idea, emerging as a rough point of consensus for action among pro-democracy practitioners, internet entrepreneurs, open source advocates, civic technology developers, and open knowledge campaigners" to "a term found on government portals, in global policy documents, and in job descriptions."²⁶ It is important in recognizing this evolution from open data being "more or less just an idea" to one that has practical implications to the use of technology in any field.

Tim Berners-Lee, who is credited with inventing the World Wide Web in 1989²⁷, continues to shape web technologies and philosophies, and has been the public face of initiatives and advocacy that have led to the shift of open data being a recognizable and ubiquitous topic (at least within certain contexts). Berners-Lee "moved from an initial focus on openly sharing documents to believing in the need to share raw data."²⁸ The World Wide Web was built on technologies and philosophies that are often described as 'open', but it wasn't until the early 2000s that the concept of 'open data' began to be part of mainstream conversations.

²⁵ Swan, "Philosophy of Big Data."

²⁶ Tim Davies et al., eds., *The State of Open Data: Histories and Horizons* (Cape Town and Ottawa: African Minds and International Development Research Centre, 2019), 1.

²⁷ "The Birth of the Web | CERN," accessed December 8, 2022, <https://home.web.cern.ch/science/computing/birth-web>.

²⁸ Bridgette Wessels et al., *Open Data and the Knowledge Society* (Amsterdam University Press, 2017), 74, <https://doi.org/10.5117/9789462980181>.

For a preservation professional or student, the topic of open data might be encountered in a newspaper headline or in literature about data management approaches in the cultural heritage field, but the intersection of open data and the National Register is less explored in current scholarship. The literature review in the next section of this report will explore the topic of data management in historic preservation and other cultural heritage fields as a way to illustrate the relevance of open data to the National Register.

Other fields grapple with the implications of an open data approach. For example, the University Consortium for Geographic Information Science publishes the *GIS&T Body of Knowledge*, a peer-reviewed publication which “documents the domain of geographic information science and its associated technologies”²⁹. Among the dozens of topics related to industry-specific technologies and applications, there are sections dedicated to such questions as Philosophical Perspectives, Epistemology, and Openness. These entries in the *GIS&T Body of Knowledge* are an example that sets the precedent for similar self-reflection of our own field of historic preservation (and are a good companion to Swan’s piece on philosophy discussed earlier in this terminal project). In the same way that the geographic information science (GIS) field has conventions for technical tools and language, standards for expressing information, and ways of sharing and communicating that information, the field of historic preservation also has its own conventions and accepted standards, and these will be examined in this report.

The *GIS&T Body of Knowledge* entry for Openness, written by Rafael Moreno-Sanchez in 2018, describes the broad range of stakeholders shaping the conversation around this topic. “The philosophy of Openness and its use in diverse areas is attracting increasing attention from users, developers, businesses, governments, educators, and researchers around the world. The technological, socio-cultural, economic, legal, institutional, and philosophical issues related to its principles, applications, benefits, and barriers for its use are growing areas of research.” As mentioned in the introduction to this terminal project, one example of this increasing interest on behalf of governments in the principles and benefits of openness was the presidential executive order from 2013 which asserted that “Government information shall be managed as an asset throughout its life cycle to promote interoperability and openness, and, wherever possible and legally permissible, to ensure that data are released to the public in ways that make the data easy to find, accessible, and usable.” Moreno-Sanchez’s entry also mentions “barriers, myths, or inhibitors to

²⁹ “Welcome to the GIS&T Body of Knowledge! | GIS&T Body of Knowledge,” accessed May 8, 2023, <http://gistbok.ucgis.org/bok-basic-page/welcome-gist-body-knowledge>.

Openness”, which will be helpful in considering preservation professionals’ experiences related to open data when assessing responses to the survey later in this terminal project.³⁰

How does one get from a philosophy to a practicality of open data? One of the ways proposed by Berners-Lee is the ‘Five Stars of Open Data’ which he developed between 2006 and 2010.³¹ One technologist’s paraphrasing of these Five Stars reads as:

- ★make your stuff available on the Web (whatever format) under an open license
- ★★make it available as structured data (e.g., Excel instead of image scan of a table)
- ★★★make it available in a non-proprietary open format (e.g., CSV instead of Excel)
- ★★★★use URIs [Uniform Resource Identifier] to denote things, so that people can point at your stuff
- ★★★★★link your data to other data to provide context³²

The ‘one star’ definition includes the mention of ‘open license’, which brings up questions of authorship and attribution of the nomination forms as intellectual property. This will be explored later on in this project. Based on the earlier section of this project where the availability of nomination was explored, a 1-star on this rating scale seems appropriate for the written content of nomination forms stored as PDF files on the National Archives website. One outcome of this research will be to look at other ways of assessing and advocating for openness in the National Register.

³⁰ University of Colorado at Denver and Rafael Moreno-Sanchez, “Openness,” *Geographic Information Science & Technology Body of Knowledge* 2018, no. Q1 (January 1, 2018), <https://doi.org/10.22224/gistbok/2018.1.5>; “Making Open and Machine Readable the New Default for Government Information,” *Federal Register*, May 14, 2013, <https://www.federalregister.gov/documents/2013/05/14/2013-11533/making-open-and-machine-readable-the-new-default-for-government-information>.

³¹ “Linked Data - Design Issues,” accessed November 16, 2022, <https://www.w3.org/DesignIssues/LinkedData.html>.

³² “5-Star Open Data,” accessed November 25, 2022, <http://5stardata.info/en/>.

Literature Review

The goal of this literature review is to explore the overlap of the topics of open data and the National Register. This terminal project considers historic preservation as a type of cultural resources management (alongside, for example, archaeology), and within historic preservation, the National Register is one of many preservation tools and topics of scholarly writing (alongside, for example, material conservation, adaptive reuse, etc). Figure 5 illustrates this by showing the topic of the National Register as the center of concentric circles, surrounded by historic preservation, and then by cultural resources management more broadly. Similarly, the topic of open data falls within a larger knowledge domain of data management. This is also illustrated in Figure 5 by another set of concentric circles. These hierarchies generally represent the way topics are organized and grouped thematically in literature.

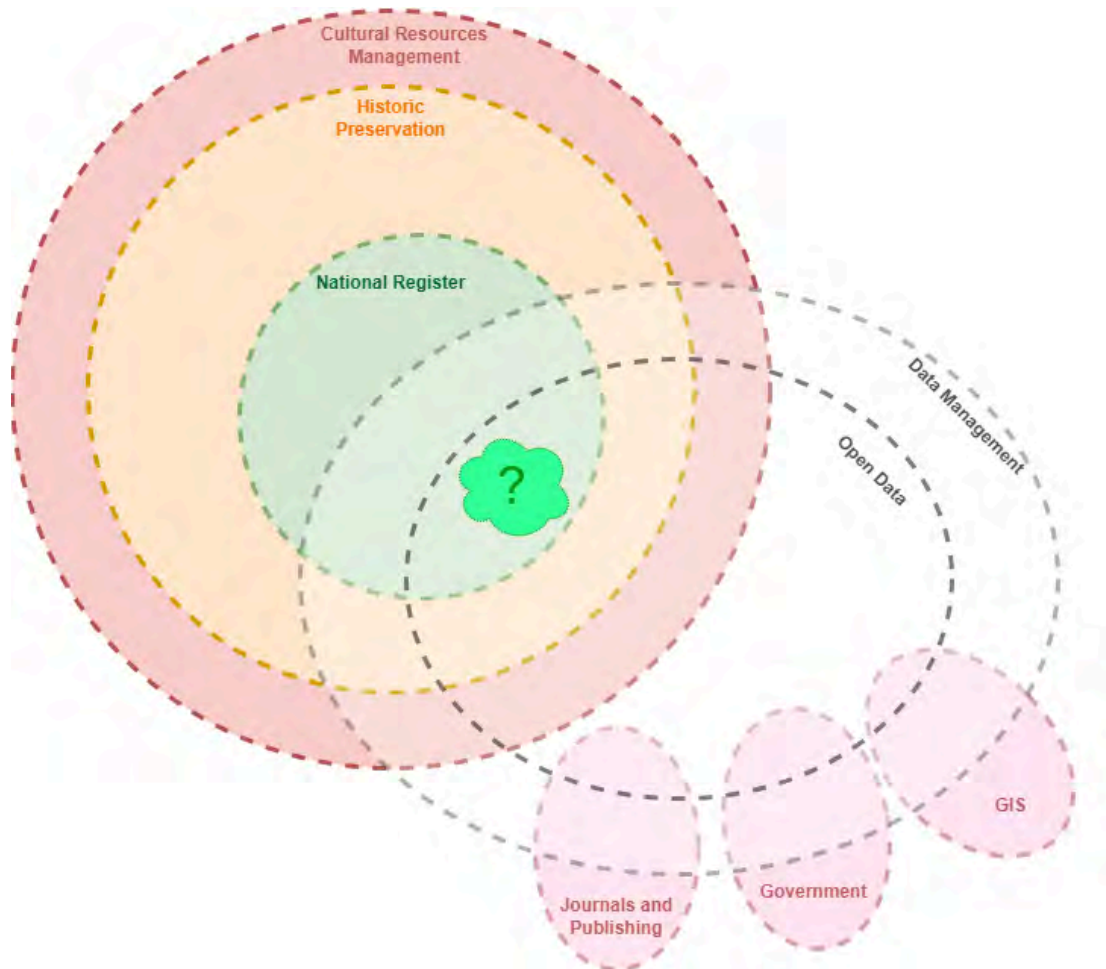


Figure 5: The intersection of open data and National Register knowledge domains

The two sets of knowledge domains shown in Figure 5 also overlap, as a way of illustrating how the resources presented in this literature review, and referenced throughout this paper, are related to each other conceptually. So, for example, there is a lot of rigorous scholarly writing about open data within other social science and heritage professions. There is a small amount of writing about open data within historic preservation. And there is a plentiful amount of writing and public discourse about the National Register itself. A green cloud with a question mark ‘?’ is located on the overlap of the National Register and open data. This ‘?’ represents the noticeable lack of current research available on the topic, and consequently, the research focus of this terminal project.

This literature review and research paper will also occasionally look at the ways other government publications or datasets, professions like GIS, or industries such as the publication of journals have approached the topic of open data. Implementation of open data in other fields can provide context to solving similar technology questions in our own field.

As illustrated in the introduction to this section, I chose literature that explicitly focused on an intersection of historic preservation and data management, or writing that established the centrality of the National Register in the practice of preservation and as a reflection of values of the preservation community.

This literature was generally found through previous reading assignments in historic preservation classes in my time as a graduate student; searching the University of Oregon library database for keywords like “historic preservation”, “National Register”, “open data”; and searching for similar keywords on Google, Google Scholar and other academic reference websites. Occasionally, I would come across relevant book or journal articles shared on social media or referenced by presenters on online conferences or workshops.

The selection below represents only a small portion of the hundreds of documents that accumulated in my bibliography software Zotero. I chose to highlight the resources that would help set the stage for the rest of this terminal project, and offer approachable introductions to readers who are interested in exploring these topics further.

Historic Preservation Practitioners and Scholars

An important part of the literature review for this research includes works written by historic preservation practitioners and scholars. The introduction to this terminal project referenced some examples of criticisms about the National Register that have been published in recent years. DeTeel Patterson Tiller (who served as the Deputy and Acting Associate Director of the National Park

Service) presented a lecture titled *Subjectivity in Ethics* at the Annual Meeting of the National Council for Preservation Education in 1993. The lecture is a clear call to rethink the National Register, and specifically, to modernize the policies and practices of the historic preservation field so that they stay relevant and useful to the general public.

Tiller wrote, “Historic resource inventories must be seen by the historic preservation profession not as arcane repositories of information open to researchers and those undaunted by the challenge of finding the information, but as open interactive databases that assist in the management of these resources and ensure their preservation for future generations.”³³

One example Tiller gives about the management of resources is when disaster recovery agencies needed information about historic properties in Charleston after Hurricane Hugo in 1989, but the state of South Carolina could not provide this information in a timely manner due to a database not being computerized. In the wake of Hurricanes Katrina and Rita a decade and a half later, technology modernization allowed for an effort led by the Cultural Resources GIS Facility (CRGIS) of the National Park Service which “constructed a methodology to identify and evaluate all potentially affected properties” and “provided a means for historic preservationists to determine the historic significance of individual resources through GIS.”³⁴

A quarter century later, Tiller, alongside Richard D. Wagner, edited the book *Creating Historic Preservation in the 21st Century*. This collection of 13 chapters includes ones titled ‘Addressing the Diversity Deficit: Reform the National Register of Historic Places’ (by Vincent L. Michael) and ‘Bringing Big Data into Historic Preservation Practice’ (by Emily Wolf).

The latter essay touches on the important theme of a platform’s user interfaces (UI) and user experience (UX). “To access any of this data, a user must review a PDF of each individual nomination form, rendering any deeper analysis of the National Register dataset impossible without extensive manual data entry.”³⁵ The possibilities and types of ‘deeper analysis’ will be explored later on in the responses to the survey component of this report.

Two 1984 articles published in *Association for Preservation Technology Bulletin* are early examples of the sweet spot of the overlap of the topics of historic preservation and data management. They are titled ‘The Computerization of Historic Preservation’, by Barbara Wyatt (at the time Chief,

³³ DeTeel Patterson Tiller, “Subjectivity in Ethics,” in *Ethics in Preservation, Lectures Presented at the Annual Meeting of the National Council for Preservation Education* (Indianapolis, Indiana: National Council for Preservation Education, 1993).

³⁴ Deidre McCarthy, “Historic Preservation Response Methodology Based on the Hurricane Katrina Model” (Cultural Resource GIS Facility, Heritage Documentation Programs, National Park Service, n.d.).

³⁵ Emily Wolf, “Bringing Big Data Into Historic Preservation Practice,” in *Creating Historic Preservation in the 21st Century* (Cambridge Scholars Publishing, 2018).

Survey and Planning Section, Historic Preservation Division of the State Historic Preservation Society of Wisconsin), and 'National Register Computerization' by Bruce MacDougal (at the time Architectural Historian with the National Register of Historic Places).

These articles are an invaluable resource for two reasons. First, they are a detailed record of attitudes, experiences and specific technologies during a turning point in the increased availability of computerization to government settings. Second, the manner and scope in which the authors approach the topic of technology in the field of preservation offers a precedent for similar examination of the topic in this research project.

Wyatt opens with the assertion that "The preservation office that does not seriously consider computerizing is avoiding one of the most exciting aspects of historic preservation" and looks at the ways technology was being put to use by state preservation offices in two main contexts: office management (i.e. word processing or accounting), and site inventories. "An automated site file can contain a range of information about individual properties, from basic locational data to a complete description and bibliography for each site. Most inventories fall somewhere in between."³⁶

Wyatt summarizes some of the challenges for the preservation community in 1984 into these main categories:

1. lack of computer literacy and guidance from within the field
2. too little commitment to funding computerization
3. lack of a standardized data element dictionary

Wyatt's view that "learning about states' and municipalities' experiences with computers can help others avoid unfortunate mistakes, learn about successful software and hardware, and make difficult decisions, such as the appropriateness of specific data elements" seems as relevant of an approach to improving and fostering computer literacy nowadays as it was when technology was just being adopted.

Wyatt recognized that shrinking operating funds affected the adoption of software for site inventories or other technology investments. To counter this, the "critical tactic is to produce a document that explains the importance and use of the inventory and other program elements that require automation, how automation will expand their use, and how office functions and the quality of work will be improved." As such, the recommendation to create a document that explores the relevance and potential benefits of adopting novel technologies within the preservation field is taken

³⁶ Barbara Wyatt, "The Computerization of Historic Preservation," *Bulletin of the Association for Preservation Technology* 16, no. 2 (1984): 9-14, <https://doi.org/10.2307/1493996>.

to heart in this terminal project, even knowing that funding them may be impossible or unlikely due to similar budgetary shortcomings still present today.

Wyatt describes that technology costs for site inventory software are multiplied when different preservation offices each hire and pay for consultants separately:

The ideal scenario could have happened several years ago: a national preservation agency or organization could have funded the development of a software package for site inventories. The sale of this package by the consultant, or its availability in the public domain, would have set a standard in the field prior to the expenditure of preservation funds, over several years, to various consultants.

Wyatt's article doesn't just stress the need for standard data formats across preservation offices, it also recommends collectivizing the needs of different offices, and standardizing the tools and software to address those needs, otherwise "redundancy will undoubtedly continue." The author sees the possibility that some astute private sector software vendors will capitalize on the "potentially lucrative, albeit limited, market" for inventory software, but stresses that "the real burden for standardizing some elements of data bases belongs to the preservation community."

Wyatt looks at the parallels of data challenges and standardization initiatives in other organizations such as the Society of American Archivists or the Intermountain Antiquities Computer System, which was a collaboration between federal, state and academic entities. "It is important that one group does not ignore the efforts of a companion professional organization or agency." As such, the case study section of this terminal project highlights efforts by other relevant organizations and technologies that may offer solutions to some of the problems encountered by users of the National Register.

Whereas Wyatt's article looked at broader issues of site inventories and data standardization within preservation, Bruce MacDougal's article 'National Register Computerization' takes a specific look at the ways that a new National Register database was being developed as a way of making more accessible "all of the meticulously researched and thoughtfully organized data compiled by thousands of individual researchers across the country over the past 18 years," which at the time was "virtually inaccessible except on a file by file basis."³⁷ MacDougal describes the design considerations that went into building a database that would both keep track of new properties being added to the National Register, and that would also offer a way of managing the large amount of already listed properties. The database would allow better tracking of types of ownership of sites listed, and assist

³⁷ Bruce MacDougal, "National Register Computerization," *Bulletin of the Association for Preservation Technology* 16, no. 2 (1984): 21–25, <https://doi.org/10.2307/1493998>.

in the allocation of federal preservation dollars to states “based on the volume of each state's nomination program.”

The various ‘data categories’ built into the database (such as “significant Date(s), Period of Significance, Area of Significance, Significant Person's Name, Historic Function, Current Function) would make it possible “to ask the system to provide answers to a wide variety of research questions related to historic properties.” Even in the earliest stages of digitization, the National Register database was described as a research tool. This characterization of the National Register as a knowledge base to be queried and asked questions is central to framing some of the questions I will incorporate into a survey described later in this report.

The *Bulletin of the Association for Preservation Technology* printed a critical response to the Computers and Preservations issue from 1984 (which included Wyatt and MacDougal’s articles) by a reader from Canada who felt that the articles were too conservative and behind the times, especially considering that “the Canadian Inventory of Historic Building has been recording architecture on a computer database since 1970.” Paula Stoner Reed, the American Editor for the APT Bulletin, responded:

The fact that the National Register, one of the largest collections of information on historic properties in existence, is not yet computerized proves that the preservation field in the U.S. is generally far from the leading edge of computer technology. As you and our authors have implied, we must see and accept the values of computers in our work.³⁸

Reed stressed that “The editors have made numerous pleas to the membership for publishable articles on any topics dealing with preservation technology. Our Bulletins can be state-of-the-art only if the articles we receive are state-of-the-art.” The theme of digital literacy and the need for open exchange of ideas and tools, especially as it pertains to novel uses and analysis of the National Register is a present theme throughout this terminal project.

Whereas MacDougal and Wyatt’s articles were written while the creation of a National Register database was still in progress, Diane Miller’s article ‘23 Years of Automating the National Register’, written in 1991, offers a much more complete timeline of computerization efforts. As the title suggests, automatization was part of the earliest considerations when the National Register first came into being in the late 1960s. “Efforts to automate the Nation's list of significant historical and archeological properties have been made almost continually since the administrative apparatus for expanding the National Register was first established.” Miller describes the many budgetary,

³⁸ “Letters to the Editor,” *Bulletin of the Association for Preservation Technology* 17, no. 2 (1985): 68–70, <https://doi.org/10.2307/1494137>.

administrative, and technical issues that efforts to establish a comprehensive database faced, which meant that “it took until 1986 to complete automation of all National Register listings.” A report published in 1969 titled *An Information System for the National Register* was produced by National Register and Advisory Council leadership who “worked with representatives of IBM to develop a prototype using data entered from several states.”³⁹

Miller notes that “The first National Register nomination form was, in fact, designed in connection with this study and was included as an appendix to the report.” The 1969 IBM report foresaw the need to be able to analyze National Register data “in response to Congressional or Federal agency inquiries and for planning purposes” and recommended “geographic information storage and retrieval, going so far as to recommend having all locational references digitized by the NPS, and suggesting a retrieval system that could locate overlapping areas.”

Miller notes that in 1991 “we are still striving to meet some of the requirements outlined in 1969.” In the following two decades since the IBM report was published, development of the system was abandoned at times, or reassigned from one department to another. Despite these setbacks, there was interest by the general public in using the data as early as 1974, when a master’s thesis analyzed “the National Register by automating data on 5,000 listings and doing some simple computer sorts.”

Despite early computerization efforts, “a constituency to use the data was never developed; applications for the data were never fully understood; and there is some question about whether retrieval capabilities were ever completed.” However, after the National Register Information System had been completed in 1986, “accessibility to potential users inside and outside the NPS and the ability to retrieve data have been the focus of enhancements,” noting that at the time “each year more than 1,500 requests for information are answered using the NRIS to look up information.”

In 1986, the priorities for future consideration included:

efforts to cross reference National Register listings with properties documented in the Historic American Buildings Survey and Historic American Engineering Record, and perhaps with other Federal programs. In a related effort, the Interagency Resources Division is developing a microcomputer program to give to states, Federal agencies, and local governments for automating cultural resource survey and inventory data in a manner consistent with the National Register. Data elements compatible with the NRIS are included in this Integrated Preservation Software (IPS), and a special program allows users to add their own data elements. IPS will facilitate sharing and transfer of data among partners in the national preservation program.

³⁹ Diane Miller, “23 Years of Automating the National Register,” *CRM* 14, no. 4 (1991): 22–23.

The need to share not just data, but software tools as well, was recognized as a key way to ensure state and local agencies had a degree of flexibility to customize their ‘data elements’ as they worked on their own inventories, but still retain the ability to be linked to other databases. A cursory search for ‘Integrated Preservation Software’ on Google shows that the proposed system Miller described in 1991 was indeed put into use by state agencies throughout the 1990s.

As recently as 1999, IPS was described as “a long-term project to address the needs of the Cultural Resource Management community, primarily in the SHPOs, to standardize and automate their data for easier tracking, sharing and reporting” in an article titled ‘The Use of Computers in Cultural Resource Management’ by John H. Myers. “Long term development goals call for the IPS to serve as an umbrella system to facilitate interaction between now disparate databases and programs, and to bridge communications between users at all levels of the cultural resource management community.”⁴⁰ It is unclear when or why the IPS system was discontinued by the Information Management Unit of the NPS.

Miller concludes that:

Future directions for the NRIS will focus on developing a more "open" computer architecture, incorporating technological advances in hardware and software, continuing to disseminate National Register information in a variety of electronic formats, and expanding online access. The NRIS is, however, only an index to the description and significance texts, the photographs, and maps—all still in paper form in the National Register files.

This issue still persists with accessing the National Register. Although the content of the nominations, including photographs and maps, are now widely available as PDF files, the Excel file of all National Register properties mentioned earlier, for example, still acts as “only an index”. What might it mean to “disseminate National Register information in a variety of electronic formats” in the year 2024? Miller’s use of the term ‘open computer architecture’ is seemingly prescient, as it was an idea that didn’t reach maturity and widespread adoption within academic and government settings until decades later.

While these last three articles are good reference points for the discussion of the adoption of technology early on in the development of the National Register, a few more recent sources are representative of contemporary discussions of the National Register.

Bending the Future: Fifty Ideas for the next Fifty Years of Historic Preservation in the United States, is a series of 50 essays about the future of historic preservation. The chapter by John H. Sprinkle Jr, is

⁴⁰ John H. Myers, “The Use of Computers in Cultural Resource Management,” *Archives & Museum Informatics* 13, no. 3–4 (1999): 353–54, <https://doi.org/10.1023/A:1012428712333>.

most relevant to this terminal project as it includes a call to tidy up the National Register records, which might be considered “a cluttered, disorganized collection.”

“Perhaps some rebranding is in order to address the National Register’s maintenance backlog: let’s imagine an interactive, widely accessible, authoritative, and crowd-sourced guide to our historic places and their stewards...”⁴¹ Sprinkle’s choice of five descriptors “interactive, widely accessible, authoritative, and crowd-sourced” all seem worthy traits to aspire to. This research paper will be similarly aspirational, primarily by asking survey respondents how they would envision the National Register modernizing. However, Sprinkle’s descriptors also pose an issue in that the words used can be ambiguous or lack a reference to specific technology standards or tools. The descriptors might even seem contradictory. How can a data set be both authoritative *and* crowdsourced? Such aspirational words require more clarity and groundedness in a technical context or framework.

The introduction to *Preservation and the New Data Landscape* (part of the Issues in Preservation Policy series edited by Erica Avrami) asserts that “information is a fundamental preservation policy tool.” The essays in this edition look at the ways preservation policy can be assessed through data analysis, or how inventory and survey platforms can engage with the public as an outreach tool. They are divided up into sections titled ‘Institutionalizing Data’, ‘Co-producing Knowledge’, ‘Building Evidence-Based Narratives’, and ‘Informing Policy Agendas’.⁴²

The essay ‘Big City, Big Data: Los Angeles’s Historic Resources’ by Janet Hansen and Sara Delgadillo Cruz looks at the technology that was developed and deployed to survey LA’s historic resources. In ‘The Case for Data Analytics in Preservation Education and Practice’, author Jennifer L. Most looked at course requirements and course catalogs and found that “while three of the institutions appear to offer some data analytics training as sections of larger courses (at two of those institutions, the larger courses are program requirements), not a single historic preservation program appeared to offer a semester-long course of this type, let alone one that is required or that is specifically tailored for preservation students.”

In ‘The Possibilities and Perils of Data-Driven Preservation Research: Lessons from a Multiyear Study of Federal Historic Rehabilitation Tax Credits’, authors Stephanie Ryberg-Webster and Kelly L. Kinahan describes their process of gathering and analyzing data about the use of Historic Tax Credits (HTC). They found that recordkeeping conventions have changed over time,

⁴¹ Page and Miller, *Bending the Future : Fifty Ideas for the next Fifty Years of Historic Preservation in the United States*.

⁴² Erica C. Avrami, ed., *Preservation and the New Data Landscape*, Issues in Preservation Policy (New York, NY: Columbia University, 2019), <https://www.arch.columbia.edu/books/reader/370-preservation-and-the-new-data-landscape#reader-anchor-0>.

and they were only able to locate relevant data for certain geographies or time windows. They crafted their research methodology within the limited data sets available to them. Following an overview of their conclusions about “the effect of HTC activity on revitalization and gentrification”, they offer some recommendations about the “immense possibilities for additional data-driven research on HTCs.” These recommendations include calls for the NPS to make more and better-formatted data about the HTC available to researchers, and also to fund a ‘data recovery’ project to track data on HTC investments prior to 1997. The essay suggests that “research across a variety of contexts and locations would be readily possible with an open data policy on the part of the National Park Service.” This terminal project considers what a meaningful open data policy might mean for users of the National Register. The book ends with a piece titled *Data and Evaluative Criteria in Historic Preservation: A Literature Review*, which offers a helpful overview of publications with the topics of data and preservation as their focus.

Whereas the last essays from *Preservation and the New Data Landscape* assess issues of data in preservation from an academic perspective, there are also governmental entities that have written on the topic, such as the Advisory Council on Historic Preservation (ACHP). The ACHP was formed after the NHPA passed in 1966, and is “an independent federal agency comprised of 24 statutorily designated members from federal agencies, preservation organizations, Indian tribes, and expert private citizens.”⁴³ The ACHP published a *Digital Information Task Force Recommendations and Action Plan* in 2020, in order to “examine the state of preservation planning data and make recommendations on how it can be leveraged for greater planning efficiency and improved preservation outcomes.”⁴⁴ The document highlighted examples of work at state, tribal, and local levels, and identified five main issue areas under which specific recommended actions were made:

- Make the Administration, Congress, agency officials, and the public aware of how digital information, including geographic information systems (GIS), increases the effectiveness and efficiency of project planning and helps avoid harm to historic properties.
- Identify opportunities for funding and resource enhancement.
- Enable cultural resources GIS data exchange between states, Tribes, local governments, and federal agencies.
- Address data management impediments to increase GIS availability.

⁴³ “About the ACHP | Advisory Council on Historic Preservation,” accessed May 3, 2024, <https://www.achp.gov/about>.

⁴⁴ “Digital Information Task Force Recommendations and Action Plan | Advisory Council on Historic Preservation,” 2020, https://www.achp.gov/digital-library-section-106-landing/digital-information-task-force-recommendations-and-action-plan/#_ftnref2.

- Properly manage access and secure sensitive data.⁴⁵

The *Digital Information Task Force Recommendations and Action Plan* recognizes that “information about historic places is currently maintained at a variety of levels of government (federal, state, tribal, local) and by some non-profit organizations and private consulting firms.” The scope of the recommendations appear mostly geared towards the uses of digital and geospatial information in federal planning, and doesn’t explicitly mention the National Register or a specific open data approach.

In this Historic Preservation Practitioners section of this literature review, there have been examples of the voice of NPS employees, a university publication, and of an important federal government preservation agency. I’d like to finish this section by looking at the work of a student, Ashley N Wheeler, whose doctoral dissertation titled *Remembering a Nation’s Historic Property: Ambiguities, Opportunities, and Poetries in the National Historic Preservation Act* (Arizona State University, 2021) explores how the National Historic Preservation Act has shaped the practice of preservation given that “The NHPA and NRHP can be viewed collectively as a source of tactics and stances for preservationists.” This study makes the distinction between “local discourses (everyday talk)” and “Discourses (ideologies)” and “demonstrated how the NHPA informs d/Discourses of preservation.”⁴⁶ Wheeler’s use of ‘d/Discourse’ is a reference to an essay from 1990 by James Paul Gee that defined Discourse as “ways of being in the world”, or “a sort of ‘identity kit’ which comes complete with the appropriate costume and instructions on how to act, talk, and often write, so as to take on a particular social role that others will recognize”⁴⁷ As such, Wheeler is stressing how the NHPA and NRHP have influenced not just the words (‘discourse’) preservationists use, but the larger context of their “actions, values and beliefs” (‘Discourse’) as well.

Wheeler dismisses the idea that the National Register is just a list, but rather “an archive including historic narratives, images, and drawings of the listed places”. Wheeler’s report not only affirms the topic of this terminal project, but also the use of one’s interdisciplinary backgrounds to inform the approach to a study of the National Register. Wheeler’s background as a poet and an

⁴⁵ “In a Spirit of Stewardship (Section 3 Report to the President),” 10–11, accessed April 8, 2024, https://www.achp.gov/sites/default/files/documents/2024-03/ACHP%202024%20Section%203%20Report%20to%20the%20President_0.pdf.

⁴⁶ Ashley N Wheeler, “Remembering a Nation’s Historic Property: Ambiguities, Opportunities, and Poetries in the National Historic Preservation Act” (Arizona, Arizona State University, 2021), <https://keep.lib.asu.edu/items/161719/view>.

⁴⁷ James Paul Gee, “Ideology in Discourses, Critical Perspectives on Literacy and Education,” *Social Linguistics and Literacies*, 1990, <https://curricublog.wordpress.com/wp-content/uploads/2009/01/gee-discourses-1990.pdf>.

artist lead her to use creative and unconventional approaches in critically looking at the National Register. Similarly, in this terminal project, I'll draw on my own technology interests and decade of career in the IT sector as a way to explore the preservation profession from an angle that I'm familiar with.

Cultural Heritage Data Management

It is important to understand the ways other related fields have navigated conversations about data, especially those closely related to preservation. The August 1987 issue of the *CRM Bulletin* was dedicated to information management, and recognized that “Just as the National Cancer Institute sponsors automated access to medical reference and consultation information, so should we look ahead toward on-line accessibility of technical preservation information.”⁴⁸

The *Conservation Perspectives* newsletter published by the Getty Conservation Institute in Fall 2022 includes the feature article titled *The Great Digital Lost and Found: Challenges and Possibilities in Managing Cultural Heritage Data*. Despite no explicit mention of the National Register, this article provides a good overview of the cultural heritage domain which

involves some uniquely challenging information management issues. It encompasses a dizzying diversity of topics in which one may use data to model and document everything from architectural styles to historical events and people, time periods, excavations and surveys, artifacts, curation and conservation interventions, laws and regulatory systems, notions of significance, descendant community perspectives, geography, and climate. Some information may be local in scope, and some may be documented at a large international scale. Some data are highly geospatial in nature, some may require narrative documents, and some may be expressed as images or even 3D models.⁴⁹

Using the same terminology and approach as this description, the National Register could be considered primarily a narrative document with a scope spanning from a local to the national scale, and one that also contains geospatial data and images. Eventually it may well include 3D models too.

The article asks “What frameworks should guide cultural heritage data management?”, which is a key question that fits into the goals of this terminal project. Kansa asserts that “If you make a career out of data curation, it’s an absolute struggle to make it sound interesting” and “Data creation, management, and curation are integral to everything we regard as important or interesting

⁴⁸ “CRM Bulletin Vol. 10 No. 4” (National Park Service, August 1987), 2.

⁴⁹ Getty Conservation Institute, “Conservation Perspectives, The GCI Newsletter, Heritage Data Management,” Fall 2022.

in our work”⁵⁰. The tension found between those two statements is fertile for exploration. By showing the ways that authoring or researching nomination forms is an act of data creation, management and curation, and not just the completion of an administrative process, I hope to help make the topic of data management more engaging and interesting to a range of preservation stakeholders.

Kansa asserts that “If one seriously considers the risks of what will be forgotten and what legal and ethical obligations may be broken, then good data creation and management practices no longer seem tedious and dull—they become immediate and urgent.” I would offer a slight rewriting of this cautionary position to a more positive framing: The benefits of good data creation and management practices become more evident and relevant when stakeholders of many backgrounds and skill are involved in the development of said practices.

Kansa gives an overview of the FAIR data principles, which stands for Findable, Accessible, Interoperable, and Reusable. He takes the FAIR framework as a given, explaining that scientists and researchers in the humanities have generally agreed that the FAIR principles are a useful framework by highlighting “how data should be portable across software or computing systems.”

The FAIR principles aren’t just about computing systems talking to each other, thus breaking down ‘data silos’. The principles are also about “finding ways to empower people to reuse information in different settings.” Kansa explores the possibilities of this information reuse:

In the cultural heritage context, these information flows can foster collaborations and outcomes as diverse as:

- conservation and protection;
- public education, including exhibitions;
- research and analysis, including archaeological and historical studies, as well as cultural heritage conservation and management topics;
- news, current events, and social media;
- commercial interests;
- new creative expression (arts and media, including gaming);
- advocacy and support.

Given that the topic of the National Register does indeed show up in all of the above outcomes (some of which I highlighted in the section in this report titled Conceptualizing the National Register), it serves as a good reminder that information flows in preservation deserve attention. Kansa’s article stresses why it is vital to not just look at “technocratic” aspects of data management, but social and “relational” ones too.

⁵⁰ Eric C. Kansa, “The Great Digital Lost and Found,” *Conservation Perspectives, The GCI Newsletter*, Fall 2022.

The article also introduces the CARE framework, which stands for “Collective Benefit, Authority to Control, Responsibility, and Ethics,” and requires us to “us to understand that data are not ethically or culturally neutral.” This understanding is important given that “conservation takes place in a complex social landscape, often shaped by legacies of colonialism, racism, and other structural inequalities.” The CARE framework was “created by a collaboration of information ethicists, human rights lawyers, Indigenous community leaders, and anthropologists.”

This article, and the others in the *Conservation Perspectives* newsletter, are shorter and more accessible in reading level than other academic or journal articles, and would be a good resource to offer preservation professionals interested in data management. In the recommendations section of this terminal project, I’ll explore the topic of digital literacy in more detail, and describe the ways it can help Historic Preservation practitioners be better stewards of data and their research efforts, especially as it pertains to the National Register.

The article *Centering Relationality: A Conceptual Model to Advance Indigenous Knowledge Organization Practices*, written by Sandra Littletree, Miranda Belarde-Lewis, and Marisa Elena Duarte in 2020 offers an overview of the differences in Euro-American knowledge organization and Indigenous knowledge organization (KO) practice. The article begins by exploring the roots of modern knowledge organization in colonialism and provides examples of how, a century after Indian boarding schools, “the labor of evaluating Native ‘information’—implements, dress, ornaments, and manuscripts—naming it, preserving it, and creating aids to access that information across epistemological and ontological differences, and often not toward the benefit of their Indigenous peoples, but in service to the nation-state.”⁵¹

The article provides a conceptualization of Indigenous systems of knowledge (ISK), and explains how this is different from a KO institution such as a museum or library that holds Indigenous artifacts or “expressions of ISK”. As suggested by the title, the ISK is centered on relationality. “Everything starts with relationships. Relationships energize the ways we interact with the world and the ways of knowing that emerge from those experiences.”

⁵¹ Sandra Littletree, Miranda Belarde-Lewis, and Marisa Duarte, “Centering Relationality: A Conceptual Model to Advance Indigenous Knowledge Organization Practices,” *Knowledge Organization* 47, no. 5 (November 2020): 410–26, <https://doi.org/10.5771/0943-7444-2020-5-410>.

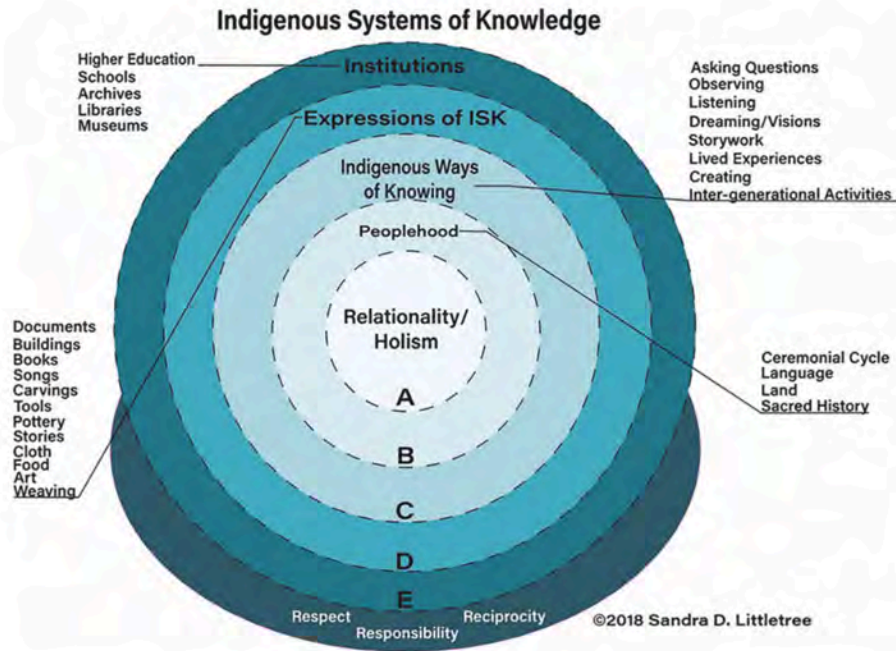


Figure 2. Indigenous systems of knowledge conceptual model with examples.

Figure 6 “Indigenous systems of knowledge conceptual model with examples”

Figure 6 is used by the authors to illustrate the centrality of Relationality and shows concentric circles moving outward, “the layers demonstrate increasingly visible and tangible aspects of ISK”: Peoplehood, Indigenous Ways of Knowing, Expressions of ISK, and Institutions. The authors recognize the counterintuitive approach of categorizing aspects of ISK in this way, but they offer the conceptual model “as a bridge—a boundary-spanner—between the often incommensurable worlds of meaning and practice that shape western and Indigenous practices of KO.”

“We must acknowledge the fact that mainstream KOSs [knowledge organization systems] uphold colonialism.” As such, this article is an important read for any preservationist, especially considering the field of preservation is a mainstream manifestation of knowledge organization.

Where the field of KO is often structured around principles of controlled vocabulary, specificity, literary warrant, coherence and standardization, and moving from the general to the specific in subject categorization, principles of Indigenous librarianship are grounded in a more community-based approach, namely, a relational approach.

This terminal project often explores “principles of controlled vocabulary, specificity, literary warrant, coherence and standardization,” as these approaches are often the ones espoused as best-practices in the information management sector.

We note here a clear controversy regarding the progressive American ideology that requires that public libraries and state archives provide public access to all information in their collections in support of democratic values around free expression. Because of the history of American colonialism, this idea runs counter to the colonial reality of sovereign Native nations, the members of which must exert principles of inherent and government-to-government sovereignty to curb the exploitative and assimilationist habitus of taking that has enabled American imperialism.

The authors’ words can serve as a reminder to preservation practitioners, who frequently make use of ‘public libraries and state archives’ (including the records of the National Register), that the ideology of openness has had, and continues to have, serious implications for the sovereignty of Indigenous knowledge organization systems and the expressions thereof. Openness, when defined or implemented as “public access to all information,” can have detrimental consequences and shouldn’t always be seen as a beneficial or only approach for all data management situations.

This article doesn’t touch on the FAIR or CARE framework, or address any specific open data technologies, but instead offers broad philosophical and ethical arguments about the need for thoughtfulness and for “Institutions that hold these expressions of Indigenous systems of knowledge in their collections, whether it appears in books, films, primary sources, or journal articles, must acknowledge the importance of relationality when designing KOSs.” The article also provides the distinction between the term relationality as a concept which helps illustrate connections or “linkages” between datasets, and relationality as an Indigenous approach of “making sense of the world as well as the definition of a right way to live a good life.” This distinction is important to keep in mind, especially when discussing Linked Open Data (LOD).

Earlier in this terminal project, a brief mention was made of Tim Berners-Lee and his idea of Linked Data. The use of LOD has been implemented across a wide range of contexts. When a dataset is published using commonly accepted LOD standards, it allows for connections to be made with other datasets that share the same types of data. Figure 7 is a commonly-cited diagram that shows the links that are found between hundreds of datasets. Some datasets may only link to one other data set, while other datasets link to many data sets.

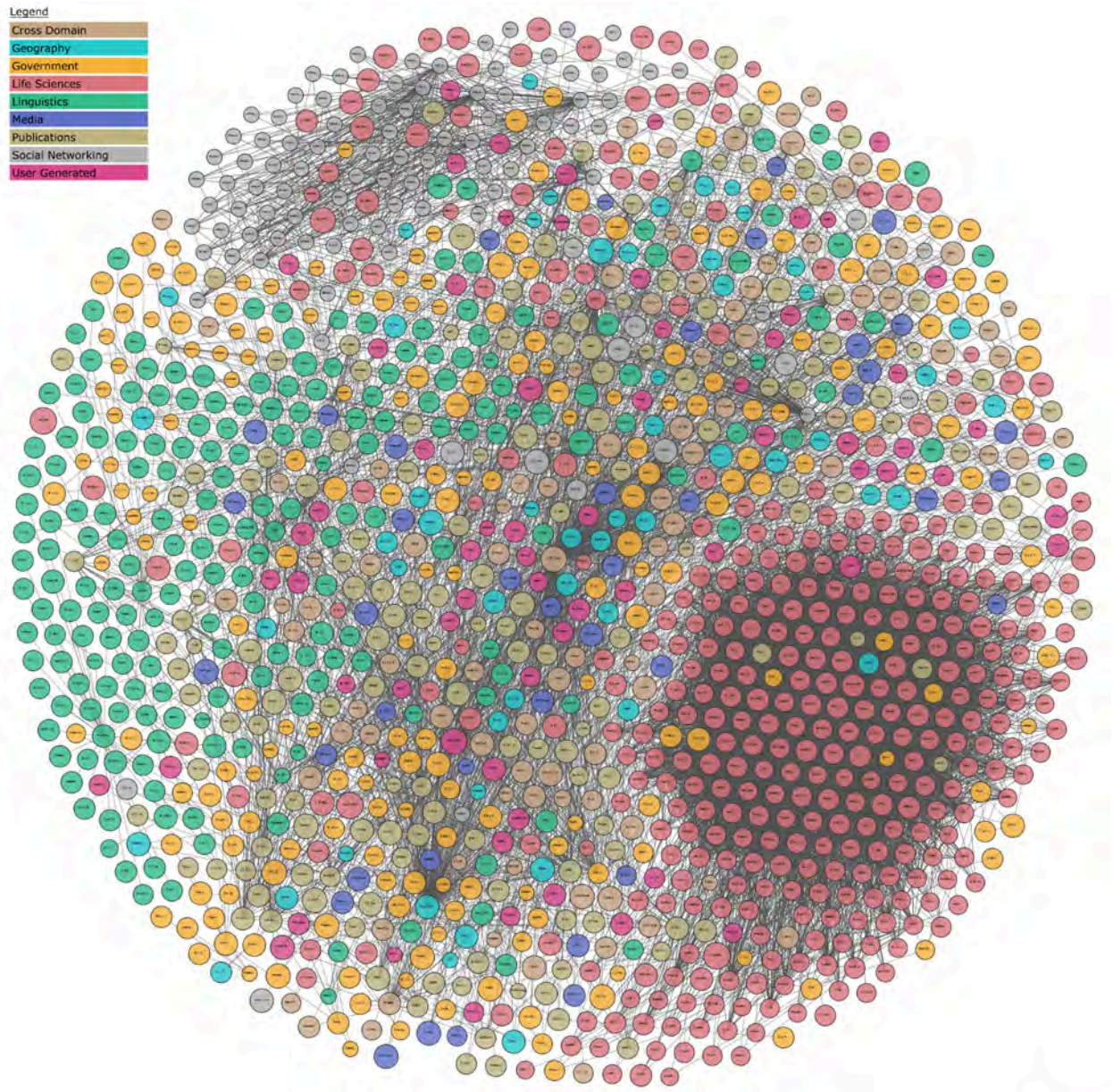


Figure 7: The Linked Open Data Cloud⁵²

The book *Ethics in Linked Data*, edited by B. M. Watson, Alexandra Provo and Kathleen Burlingame, looks at the way communities in the Galleries, Libraries, Archives, Museums, and Special Collections (GLAMS) have grappled with the ethical issues raised with the widespread adoption of LOD. The introduction traces the conversations had by the ‘LD4 Community’, which was “created to provide channels for communication and collaboration for linked data initiatives in

⁵² “The Linked Open Data Cloud,” accessed August 14, 2023, <http://cas.lod-cloud.net/>.

libraries and archives,” and specifically of the work done by the Ethics in Linked Data Affinity Group of the LD4. The conversations began as “theoretical topics” and turned into “more praxis-based considerations”. The collection of essays in the book reflect this range of theory-practice implications of LOD use, and asserts that it is possible:

- to foreground ethics rather than apply them as an afterthought,
- to acknowledge and mitigate the damage caused by existing systems,
- to create a place and space of justice for the minoritized, and
- to enable more ethical outcomes in linked data projects.⁵³

One of the essays in *Ethics in Linked Data* titled *Worlds in Conflict: A Dispute over Embedding Linked Data in Web Pages*, by Ryan Shaw, asserts that arriving at consensus about how a specific technology is used for “the common good” can result in disputes. Shaw sees the dispute over a technical practice as an actual embodiment, and not just a reflection, of a specific ethic. Shaw’s chapter looks at a specific case study, and uses discussions found on mailing list archives to look at how “incompatible visions of the common good - not disagreement over technical issues” were at the heart of a dispute over the implementation of a technology. Shaw believes this case study serves as a helpful reference point for those wanting to adopt and debate LOD in an ethical manner, and concludes that technical institutions don’t necessarily need more ethical frameworks for technology without also developing diplomatic frameworks that allow for critique, confrontation, and compromise with other technical institutions. The rest of the essays in the book serve as a counterpoint to the “often utopian and technophilic” discussions around LOD.

Foundations of Open Data Philosophy and Practice

The section of this project titled ‘An Introduction to Open Data Philosophy’ cited some sources that help provide an understanding of data philosophy and briefly introduced how the design of the World Wide Web has incorporated the concept of ‘open data’. One of these sources about data philosophy is worth quoting once more: “The reason that philosophy is important is that it provides the intellectual framework that shapes and justifies what kinds of questions are asked, how they are asked, how the answers are made sense of, and what is done with the resulting knowledge.”⁵⁴ This provides some guidance on how one might approach a survey of stakeholders involved in creating and consuming the National Register, and reiterates why a clear understanding

⁵³ B. M. Watson, Alexandra Alisa Provo, and Kathleen Burlingame, *Ethics in Linked Data*, Series on Critical Information Organization in LIS ; Number 1 (Sacramento, CA: Library Juice Press, 2023).

⁵⁴ Swan, “Philosophy of Big Data.”

of data philosophy can help frame questions about data management. This section of the literature review will look at other resources about open data that will help situate the discussion of data management and the National Register.

The book *Open Data and the Knowledge Society* (by Bridgette Wessels, Rachel Finn, Kush Wadhwa, and Thordis Sveinsdottir) is “based largely on the empirical work conducted within a European Commission funded project called Policy Recommendations on Open Access to Research Data in Europe (RECODE).”⁵⁵ The book looks at five case studies to illustrate four ‘grand challenges’ in open data: stakeholder values and inter-relationships; technological barriers; legal and ethical issues; and institutional and policy issues. The book “provides empirical evidence about the ways in which data is being shaped by and shaping research culture, the institutional, technical and social ecosystems that are emerging within this open data movement and the ways in which institutions have adapted to this emerging landscape”.

Open Data and the Knowledge Society, published in 2017, does not address FAIR principles, which were first proposed the year prior. This illustrates how quickly new ideas and frameworks are being proposed and adopted in different fields. As such, my own research here is a product of its time, and a reflection of the types of views and ‘d/Discourse’ about data management prevalent in academia and government open data initiatives.

Whereas the *Conservation Perspectives* article mentioned above gives an introductory look at the FAIR principles, the article *Will It Ever Be FAIR?: Making Archaeological Data Findable, Accessible, Interoperable, and Reusable* (by Christopher Nicholson, Sarah Kansa, Neha Gupta and Rachel Fernandez) offers an in-depth look at the history of the FAIR and how the principles apply in the context of archaeology. One key challenge for archaeology practitioners is that there are many repositories available (this article lists 18), and meaningful analysis across data sets is difficult without standardized data. The article recognizes the barriers to FAIR, but also highlights that “The benefits to investing time and money on completing the data life cycle through the adoption of FAIR practices are numerous for all major stakeholders in archaeology.”⁵⁶

Nicholson et al recognize that “although the FAIR principles are compactly stated, there are substantial challenges to their implementation in any given context.” The article offers ways increased adherence to FAIR principles can be encouraged by different entities including SHPOs,

⁵⁵ Wessels et al., *Open Data and the Knowledge Society*.

⁵⁶ Christopher Nicholson et al., “Will It Ever Be FAIR?: Making Archaeological Data Findable, Accessible, Interoperable, and Reusable,” *Advances in Archaeological Practice* 11, no. 1 (February 2023): 63–75, <https://doi.org/10.1017/aap.2022.40>.

grant funding agencies, publishers, professional societies, CRM firms, academics, and students. Indeed, the authors recognize that “implementing the FAIR principles and practices takes a community.”

It is worth clarifying that ‘FAIR’ and ‘open data’ are not synonymous, or interchangeable, nor is one a subset of the other. Ghent University offers the following clarifications, and a useful diagram found in Figure 8:

When shared, data can be open or FAIR, or both:

- FAIR does not mean that data have to be open, in the sense of data that can be 'freely used, modified and shared by anyone for any purpose' (opendefinition.org).
- Open data have an open access level and an open license, and ideally, are in an open file format.
- Rather, the 'A' in FAIR means that it is clear and transparent how data can be accessed, and - if applicable - under which conditions. In other words, data shared under restrictions can still be FAIR (also see degrees of data sharing).
- Open data are not necessarily FAIR (or even managed) data.
- Ideally, the aim is to increase the amount of data that are open as well as FAIR.⁵⁷

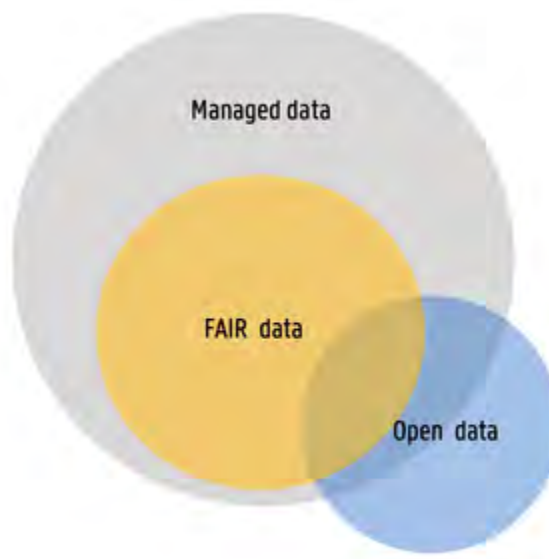


Figure 8: FAIR and Open data overlap

The article *Cloudy, increasingly FAIR; revisiting the FAIR Data guiding principles for the European Open Science Cloud* is another good resource for understanding some of the nuances of FAIR. The

⁵⁷ “FAIR Data,” Universiteit Gent, accessed December 10, 2023, <https://www.ugent.be/en/research/datamanagement/after-research/fair-data.htm>.

article has a section that goes over “what FAIR is not” as a way of disambiguating and distinguishing from overlapping or similar data standards.

FAIR is not equal to Open: The ‘A’ in FAIR stands for ‘Accessible under well defined conditions’. There may be legitimate reasons to shield data and services generated with public funding from public access. These include personal privacy, national security, and competitiveness. The FAIR principles, although inspired by Open Science, explicitly and deliberately do not address moral and ethical issues pertaining to the openness of data.⁵⁸

The article *Fifty shades of openness*, written by Barend Mons et al. in 2016 before discussions of FAIR became adopted and discussed, provides an overview of the many ways the word ‘open’ can be understood. The article begins by looking at early uses of this word in English in different contexts (such as “open house,” “open air,” “open stacks,” or “open society”), which point to an understanding that “all have access to a shared resource.” Mons et al. give a brief history of the ideologies and legal frameworks behind free software and open source software movements, which began in the 1980s, and set the stage for the explosion of the use of the word ‘open’ in the 2000s.⁵⁹

Following the Budapest Open Access Initiative declaration in 2002, which specifically addressed issues of openness in scholarly literature,

Open Access then gave rise to a wide range of other opens concerned with scholarship, publication, and cultural heritage generally. This spread of openness can be seen as the diversification of a powerful idea into a wide range of resources and services. It can also be seen more importantly as the arrival, society-wide, of an idea whose time has come ... an idea with political, legal, and cultural impacts.

The article explores over 30 uses of the word open, and warns that ambiguity around different uses can lead to misinterpretations. This last quote sums up why openness is an important one to the historic preservation field. After all, the field also operates under a set of political, legal and cultural contexts, and so openness can manifest itself there, and in doing so, can have an impact on data management practices too.

The doctoral thesis *U.S. Department of the Interior: Sharing FAIR Data Fairly*, by Jason Earl Duke in 2022, brings the discussion of open and FAIR into a setting historic preservation practitioners likely can identify with most, given that the National Park Service is an agency within the Department of the Interior. Earl explores the wide adoption of FAIR principles in scientific fields, but notes that, after an extensive literature review, “No papers were located that guided

⁵⁸ Barend Mons et al., “Cloudy, Increasingly FAIR; Revisiting the FAIR Data Guiding Principles for the European Open Science Cloud,” *Information Services & Use* 37, no. 1 (March 7, 2017): 49–56, <https://doi.org/10.3233/ISU-170824>.

⁵⁹ Jeffrey Pomerantz and Robin Peek, “Fifty Shades of Open,” *First Monday*, April 12, 2016, <https://doi.org/10.5210/fm.v21i5.6360>.

Federal Government agencies on the proper application of the FAIR Principles or how to make data and metadata more ‘FAIR.’”⁶⁰

Earl explores three main research questions:

1. To what extent are currently shared US DOI datasets following the FAIR Data Principles?
2. What additional information is desired by consumers for shared DOI Federal data assets?
3. To what extent can specificity and consistency, regarding FAIRness, for sharing DOI Federal data assets be reached by DOI Chief Data Officers without undue burden?

Earl identifies two main stakeholder groups for the study: Federal Data Users, and Department of the Interior Chief Data Officers (CDO). The role of CDO was established following the passage of the Foundations for Evidence-Based Policymaking Act of 2018.

CDOs enable data driven decision-making in a variety of ways, from providing and leveraging centralized agency analytics capacity to creating tools and platforms that enable self-service across their agencies and for the public. CDOs serve in a central leadership position, with visibility into relevant agency operations, and are positioned highly enough to regularly engage with other agency leadership, including the head of the agency.⁶¹

As a result of the Act, the DOI also established a Data Governance Board, whose charter’s guiding principles include FAIR Data and Responsible Data Stewardship (“Data is Open by Default unless protected by law or regulation”).⁶² Earl’s study looks at the real-world implications of these guiding principles in the government agency.

Earl’s study makes use of interviews with the two groups of stakeholders, by posing standardized sets of questions to each participant depending on their group. The goal was to develop a ‘Voice of the Customer’, which is “great at telling you what the customer wants from a process, but it is not designed to tell why a process is failing or performing poorly.” As such, as the researcher, Earl acts as an intermediary between the two stakeholder groups in the series of interviews held with members. All the members were interviewed separately, but Earl aggregated their responses to form the ‘Voice of the Customer’. “The data users and consumers have specific

⁶⁰ Jason Earl Duke, “U.S. Department of the Interior: Sharing FAIR Data Fairly” (University of Arkansas, 2022).

⁶¹ “Federal CDO Council - About Chief Data Officers,” accessed May 8, 2024, <https://www.cdo.gov/about-agency-cdos/>.

⁶² “Data Governance Board Charter” (Department of the Interior, January 26, 2020), <https://www.doi.gov/sites/doi.gov/files/uploads/20200129131310886.pdf>.

needs and expectations, and the Chief Data Officers all have particular needs and expectations regarding the FAIR Principles for the US DOI to inform them of and to train them in.”⁶³

The CDO group was composed of 14 participants, including 11 agency-level CDOs and other senior data leaders. The responses were anonymous, and it is unclear whether an NPS CDO participated. There is no mention of the National Register in this study, but it serves as an important reference point for ways that dialog about open and FAIR data can be fostered at a leadership level in a government agency.

The book *Aaron Swartz’s A Programmable Web: An Unfinished Work*, by activist Aaron Swartz (published posthumously in 2013), is accessible to a general public and provides an overview of the document linking and retrieval technology upon which the World Wide Web was built. Written in the earlier days of the open data movement, it begins “by trying to understand the architecture of the Web—what it got right and, occasionally, what it got wrong, but most importantly why it is the way it is.” And as with earlier pieces in this literature review, it looks ahead to a new open data philosophy. “This is an entirely new notion of the tapestry—a tapestry of data instead of a tapestry of documents. Documents can’t really be merged and integrated and queried; they serve mostly as isolated instances to be viewed and reviewed. But data are protean, able to shift into whatever shape best suits your needs.”⁶⁴ This last sentence is a good reminder that, as a set of data, the National Register is used by a wide range of stakeholders with varying needs and uses.

The book *How the Internet Really Works: An Illustrated Guide to Protocols, Privacy, Censorship, and Governance* by Article 19 et al offered a framework and communication style that I found helpful in situating the National Register amidst a bigger technology ecosystem, and in describing that ecosystem to non-technical preservation professionals. The book is written for a general audience and uses drawings extensively. For example, Figure 9 describes the five layers that make up the internet: Infrastructural, Logical, Application, Content and Social. The latter three layers will be most relevant to this study, but the focus will be mainly on Applications (generally, the web interfaces one uses to access NRHP nominations and the de facto use of PDFs), and the way these Applications enable or limit the access to Content (the actual text of a nomination). One slightly more granular division of layers also shown in Figure 9, the Open Systems Interconnection Model, has a Presentation layer underneath Applications. The Presentations layer which “translates and

⁶³ Duke, “U.S. Department of the Interior: Sharing FAIR Data Fairly.”

⁶⁴ Aaron Swartz, “Aaron Swartz’s A Programmable Web: An Unfinished Work,” *Synthesis Lectures on the Semantic Web: Theory and Technology* 3, no. 2 (February 28, 2013): 1–64, <https://doi.org/10.2200/S00481ED1V01Y201302WBE005>.

transmits data between applications”⁶⁵ will be where more technical discussions later on in this terminal project will be situated.

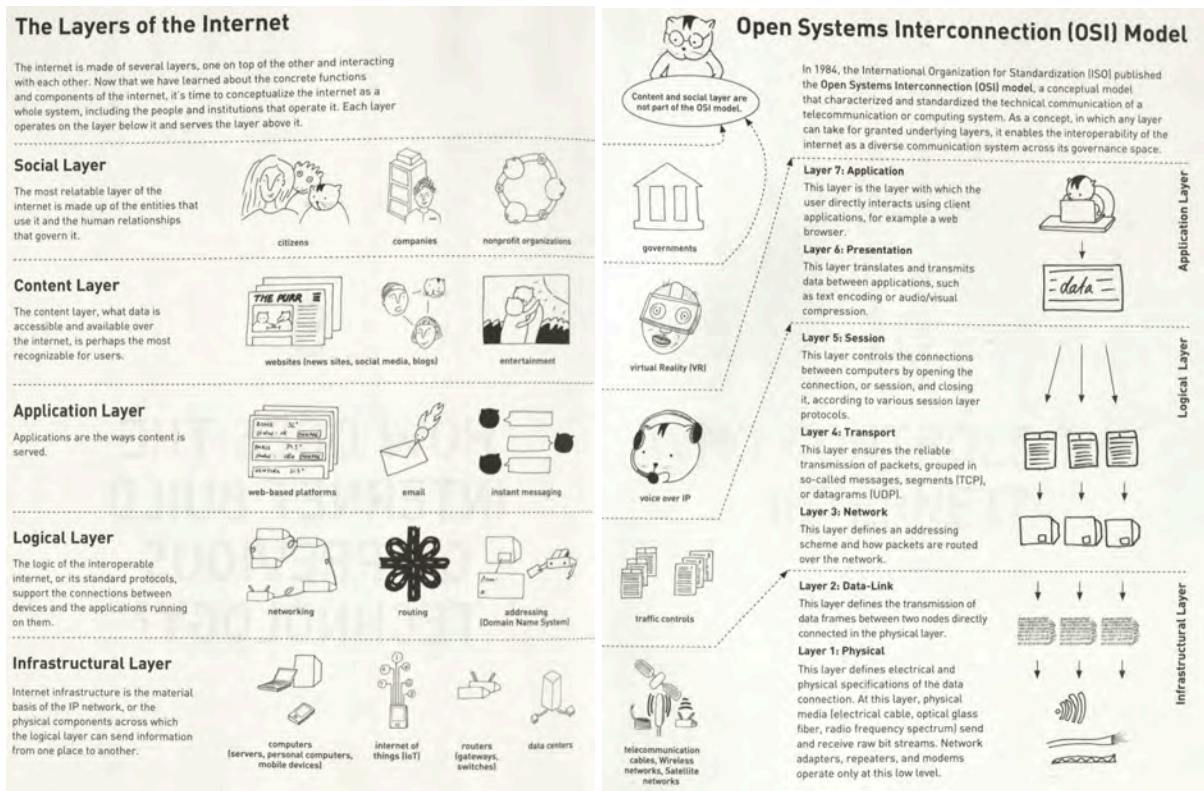


Figure 9 ‘The Layers of the Internet’ from *How the Internet Really Works: An Illustrated Guide to Protocols, Privacy, Censorship, and Governance*⁶⁶

Figure 10 illustrates how all of the manifestations of the layers are strongly influenced by governance structures that set technology standards and shape laws. This terminal project will ask to what extent historic preservation professionals can be part of larger conversations about the shaping of technology, especially if that technology can help make our field more relevant and effective.

⁶⁵ Article 19 et al., eds., *How the Internet Really Works: An Illustrated Guide to Protocols, Privacy, Censorship, and Governance* (San Francisco: No Starch Press, 2021).

⁶⁶ Article 19 et al., *How the Internet Really Works*.

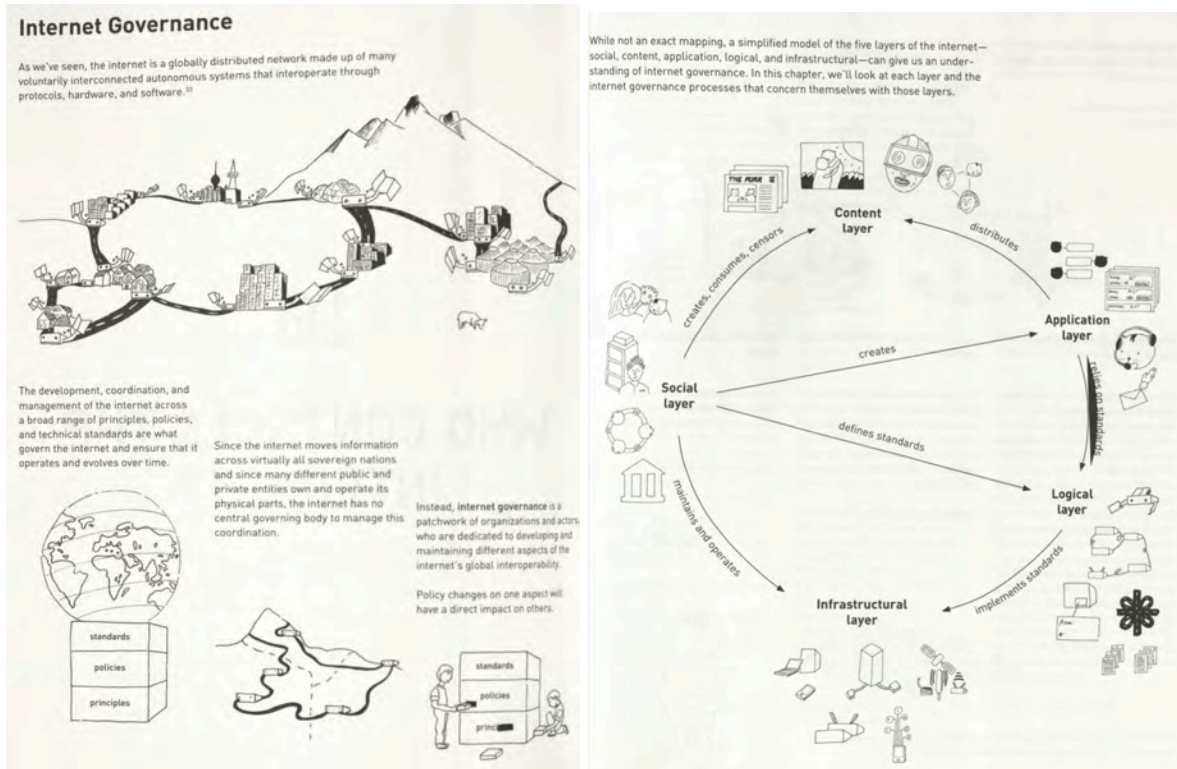


Figure 10 ‘Internet Governance’ from *How the Internet Really Works: An Illustrated Guide to Protocols, Privacy, Censorship, and Governance*⁶⁷

When considering the ample amount of highly technical scholarship about open data, the graphic conceptualization of technology in *How the Internet Really Works* offers a simplified framework that offers a segway back to the research question of this report.

Conclusion

How can an open data framework inform the way National Register nominations are published and accessed as an institutional collection? For the purposes of this research, a framework can be thought of as: A set of philosophies and ethics, which inform the conversations amongst a range of stakeholders. These conversations give rise to a set of principles and policies which in turn inform the development and deployment of tools and technologies.

As such, an open data framework is one that specifically centers and prioritizes a Discourse (“ways of being”: philosophies, ethics, conversations, tools and technologies) of openness.

⁶⁷ Article 19 et al., *How the Internet Really Works*.

This literature review explored the intersecting knowledge domains of data management and cultural resource management. The center of this intersection, specifically of literature about open data and the National Register, was most lacking, but fortunately, the literature found in neighboring knowledge domains can help by providing a context to the rest of this terminal project. The works explored in this literature review were good examples of analysis of the ‘philosophies, ethics, conversations, tools and technologies’ proposed in the framework for this research project.

Survey Methodology and Design

With the goal of this terminal project in mind (to understand how open data principles and tools are relevant to the National Register), it is important to consider how preservation students and professionals interact with this knowledge repository. Asking open ended questions to stakeholders about experience in authoring, reviewing, publishing and consuming the National Register, helped identify some of the strengths and weaknesses of the current process. The survey also explored the understanding preservation stakeholders have of concepts of openness.

The National Park Service offers the following definition of a stakeholder: “An individual, group, or other entity that has a strong interest in decisions concerning park resources and values.”⁶⁸ Although this definition comes from a glossary “relevant to managing development in the national parks,” it can be seen as analogous to the National Register or digital platforms. Although the publication *How to Complete the National Register Registration Form* does not use the word stakeholder explicitly, it does list the following groups: “property owners, public agencies, private institutions, local historical societies, local preservation commissions, local planning offices, social or merchant organizations, professional consultants, college professors and their students, special interest groups, or interested members of the general public.”

Precedent

Along with the paper *U.S. Department of the Interior: Sharing FAIR Data Fairly* discussed in the literature review, I encountered several other sources that mention the use of stakeholder surveys as a methodical approach in a research context. These examples affirm the use of surveys and interviews as a way of centering stakeholder voices in order to inform improvements to systems. For example, as outlined in the *Digital Information Task Force Recommendations and Action Plan*, the ACHP, in collaboration with Federal Preservation Officers, will query federal agency staff, applicants, and consultants about their use of state and local government historic properties databases or GIS layers to document how these tools are being used in preparing information to support project siting and Section 106 reviews and how they might be made more effective.⁶⁹

⁶⁸ “Definitions - S - (U.S. National Park Service),” accessed June 14, 2024, https://www.nps.gov/dscw/definitionsdc_s.htm.

⁶⁹ “Digital Information Task Force Recommendations and Action Plan | Advisory Council on Historic Preservation.”

This is not a new approach. In 1997, the National Center for Preservation Technology and Training issued the *Internet Communication Survey Report*, which was an analysis of a survey carried out with the purpose of collecting

data about the use of Internet-based technologies for communication among preservation professionals. The objective of this project was to help the National Center for Preservation Technology and Training plan and develop training courses, workshops, and services that will advance the use of electronic communication technologies for historic preservation.⁷⁰

The NCPTT survey could be completed online or on a hard copy (see Figure 11). It was promoted through the Association for Preservation Technology International and was also sent to all State Historic Preservation Offices.^{71 72}

Fig. 2. The NCPTT Internet Survey consists of 25 questions about Internet awareness, access, and utility. The survey form is designed to be completed in five minutes or less. Submit yours today!

Figure 11 Screenshot of the NCPTT Internet Survey from the *APT Bulletin*

⁷⁰ “NCPTT Internet Communication Survey Report” (NCPTT, December 5, 1997).

⁷¹ Barrett Kennedy, “Computer Forum,” *APT Bulletin: The Journal of Preservation Technology* 28, no. 2/3 (1997): 3–5, <https://doi.org/10.2307/1504526>.

⁷² Unfortunately, I did not become aware of this survey until long after my own survey was completed. I am including it here as a helpful reference point to the type of research tool employed by preservationists.

I created a survey on the Qualtrics platform, and broke the survey into four main pages. The first page provided the potential survey respondent with information about the survey and an informed consent statement, and then asked the respondent whether they would like to proceed anonymously (i.e. only their affiliation would be recorded), or named (i.e. their affiliation *and* name would be recorded). The next page then asked for the respondent's affiliation (and name, if they had chosen that option). A dozen questions were split up into three different pages, to minimize the possibility that respondents would become overwhelmed.

Survey respondents were recruited by email and by posting a link to the survey on the Historic Preservation Professionals Facebook group and the Dismantling Preservation Discord discussion board. More information about the recruitment process is located in Appendix D.

The questions presented to the participants are outlined below (in **bold type**), followed by a brief explanation of the reason the question was included.

Please indicate the option that best describes your current affiliation:

- **Student**
- **Academic**
- **Historic Preservation Professional (Federal, State, Tribal or Local government)**
- **Historic Preservation Professional (Private sector or consultant)**
- **Historic Preservation Professional (Non-profit sector)**
- **Other Cultural Heritage Professional**
- **Member of the general public**
- **Other**

By collecting this information, the goal was to be able to understand the respondent's background, and possibly allow for comparison of responses between groups. For example, do private sector or consultants tend to understand and experience the National Register and open data differently than students of government preservation professionals?

Q1 What has been your favorite or most rewarding part(s) of your experience authoring, reviewing, or accessing a National Register nomination?

The goal was to open with a question that would help bring to focus the positive associations of working with the National Register. This research project is based on the premise that the National Register is an important preservation tool, and so, it was important to hear from the respondents in their own words about the rewarding outcomes they've experienced.

Q2 What has been your least favorite or the most frustrating part(s) of your experience authoring, reviewing, or accessing a National Register nomination?

Another main premise of this research project is that there are frustrations and perceived shortcomings in the way the National Register works. This question was paired with the earlier one before the issues of open data were presented in the following questions, as a way of letting respondents describe their frustrations in their own words.

Q3 What are some helpful research or data management tools you have used while authoring, reviewing, or accessing a National Register nomination?

The goal here was to understand the breadth and type of tools that respondents find helpful in their work with the National Register.

Q4 How would you define the term ‘open data’?

The responses to this question will help describe the state of data literacy within the preservation field and will provide a way to gauge some common misconceptions about what open data is.

Q5 What do you think is a common understanding of the term ‘open data’ in the field of Historic Preservation?

In some cases, the answer to this question by respondents will likely be very similar to the one above, in other words, the respondent believes their understanding of open data is also a generally accepted one. In other cases, the respondent may be aware of the gap that exists between their own definition and the common understanding of the term open data in the field.

Q6 How would you describe the level of knowledge most cultural heritage professionals have about the topic of 'open data'?

- Underinformed
- Misinformed
- Uninformed
- Well-informed
- Other: (option for open-ended response)

This multiple choice question was included as a way to cut down on respondent fatigue.

Q7 How would you describe the way most cultural heritage professionals feel about the topic of 'open data'?

- **Skeptical**
- **Accepting**
- **Enthusiastic**
- **Curious**
- **Other:** (option for open-ended response)

Whereas the above question is intended to understand levels of knowledge about open data, this question relates to feelings or orientations toward the topic.

Q8 What resources have you found helpful in educating yourself or others about 'open data' in the field of Historic Preservation?

Some possible answers might include: co-workers, specific State or Federal agency guidelines, or other online resources. The compilation of responses to these questions may result in a helpful toolkit for professionals who are motivated to learn more about open data.

Q9 One common 'open data' framework is the *FAIR* model, which stands for *Findable, Accessible, Interoperable, and Reusable*. In what ways have you found the content of National Register nominations to be *Findable, Accessible, Interoperable* or *Reusable*?

I didn't offer detailed definitions of the generally accepted terms of FAIR data, in order not to overwhelm the respondent or have them over-think what these four words meant. The goal of this question was to both get a sense for what these possibly ambiguous terms can mean to each respondent.

Q10 In what ways can the National Register nomination and listing process be more innovative and modern?

One hypothesis in this research was that some of the frustrations and friction encountered by users of the National Register can be addressed and minimized through the use of specific tools, technologies and administrative processes.. This question was helpful in eliciting responses that would form the beginning of a 'wish list' of things that will likely make the work of preservation professionals more streamlined and powerful.

Q11 What kind of research questions have you been able to ask and answer based on access to information related to National Register nominations?

One important premise of this report is that a National Register nomination is the culmination of significant research efforts, and that the body of knowledge that is the National Register is an important source for researchers. The goal of this question is to find out some examples of research topics or approaches that involve the National Register.

Q12 What kind of research questions would you ask of the National Register that you can't currently ask due to lack of access to information?

In contrast to the question above, the goal of this question was to find out what types of things people would like to do with the National Register that they perceive to be impossible at this time. Paired with the earlier questions on ways to be more innovative and modern, these responses will provide a stakeholder-centric roadmap for ways to improve the National Register interfaces and data availability.

It may be that some responses will show people want to ask questions of the National Register that they can already answer, but just don't know how to use the currently available tools. This will help to illustrate ways that digital literacy, tutorials and help guides can be crafted to ensure professionals are well-equipped.

Survey Analysis: Methodology

In total, the survey was completed by 35 respondents between July 3 and September 28, 2023. Figure 12 shows the breakdown of these 35 respondents by consent type (ie Anonymous or Named), and by Affiliation. Only completed surveys were taken into consideration (in other words, partial surveys where the user did not get to the last page and click ‘Submit’ were not part of this survey analysis).

	Consent Type		
Affiliation	Anonymous	Named	Grand Total
Academic	3	3	6
Historic Preservation Professional (Federal, State, Tribal or Local government)	9	1	10
Historic Preservation Professional (Private sector or consultant)	6	7	13
Other Cultural Heritage Professional		1	1
Student	3	2	5
Grand Total	21	14	35

Figure 12: Respondent breakdown by Affiliation and Consent Type

A qualitative content analysis (QCA) was performed on the responses as a way to understand and categorize the range of experiences and opinions described by the respondents. *Qualitative Content Analysis in Practice* by Margaret Schreier describes QCA as “a method for describing the meaning of qualitative material. It is done by classifying material as instances of the categories of a coding frame.”⁷³ The Dedoose software package was chosen as a way to facilitate the QCA process. Alongside Schreier’s book, *Qualitative and Mixed Methods Data Analysis with Dedoose* by Michelle Salmons et al, were the two primary sources I used to become familiar with the QCA approach, and specifically the software features Dedoose offers.

QCA involves breaking up the responses into ‘chunks’ (this is Shreir’s term, while the Dedoose software refers to chunks as excerpts), and applying codes to each chunk. In my coding process, I went through the responses for each question, and worked to create codes across all respondents before moving on to the next question. Each excerpt was only assigned one code.

⁷³ Margrit Schreier, *Qualitative Content Analysis in Practice* (Los Angeles: SAGE, 2012).

Once I had coded the entire survey data set, I printed all the codes out and looked for patterns and themes that would serve as categories for the codes. There was a list of hundreds of codes at this point, so spreading them all out on a table, and using pen and paper to highlight important words, make note of spelling and grammar errors, and connect and group similar-themed codes by drawing lines became a welcome break from what was otherwise a process very dependent on spreadsheets and computer screens. I then went through the survey responses once more, and grouped similar codes into categories, while also fine tuning the codes for grammar and brevity. I found that if the code itself was getting so long that it wouldn't fit into the Dedoose interface, it was likely too broad of a net being cast, and might need to be broken down into two or more codes. Conversely, if I found that there were codes that were only applied to one excerpt, these codes were likely too specific and could be merged with other codes by broadening or generalizing the description of a code whenever possible.

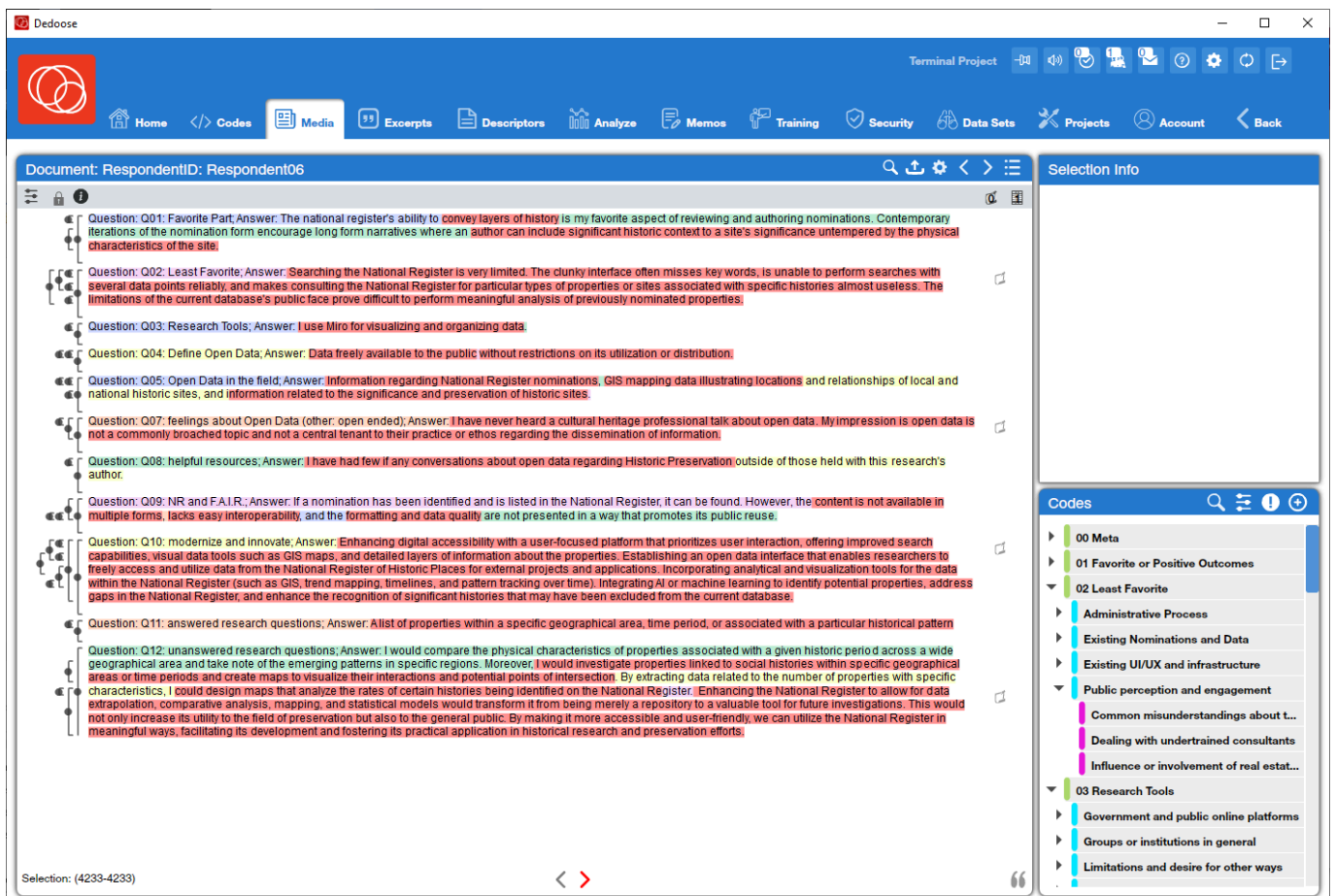


Figure 13: The Dedoose software interface, showing the Respondent06's survey response

Figure 13 shows a sample screenshot of the survey responses within the Dedoose software. The main area of the screen shows the open-ended text responses for Respondent06 after the coding process had selected relevant excerpts (chunks) of text and applied a code. On the right is the menu of code categories and codes that were generated during the QCA process. Each question (for example “02 Least Favorite”) had a set of code categories (eg “Administrative process” or “Existing UI/UX infrastructure”), and within each code category, a set of codes (ie “Dealing with untrained consultants” or “Influence or involvement of real estate developers/owners”).

After the coding process was complete, there ended up being 580 coded excerpts. A total of 333 codes were generated, and these fit into 49 code categories. The following section of this report will describe the coding results in further detail.

Survey Analysis: Results

This section summarizes the main outcomes of the coding process using a narrative description of the codes and code categories developed for each question. This section highlights the main themes that arose during the Qualitative Content Analysis (QCA) process, including some of the grand challenges that respondents described about their experience with the National Register. A detailed table of the codes and code categories generated using Dedoose can be found in Appendix F.

Throughout this section, numbers in parentheses refer to either:

- the count of excerpts that were coded with that particular code. These codes are shaded
- or to the code category count, which represents the sum of coded excerpts that fell within that certain code category

It is important to note that the code count doesn't always correlate to a count of the amount of respondents that answered a question in a certain way. In other words, one respondent may have answered a question in a way that was divided into multiple excerpts, each resulting in its own code. Other respondents may have skipped certain questions altogether.

For each question, representative 'good quotes' will supplement the codes and categories as a way to give voice to the survey respondents' own experiences. The quoted responses include minor edits I made for spelling and formatting. The original responses are available in their entirety in Appendix E.

Question 1, which was about favorite or positive parts of working with the National Register, resulted in 49 coded excerpts. The code categories reflected different types of outcomes such as 'Connection with communities' (6) or 'general outcomes' (4). The code categories with largest counts were 'Knowledge generation, publication, or contribution' (16), and 'Research and learning' (23).

Within the 'Knowledge generation, publication, or contribution' code category, a 'creation of a more representative or complete historical record' (5) and 'reuse, repurposing, or preservation of old buildings' (4) were the most prevalent codes.

Within the 'Research and learning' code category, the 'possibility of accessing important information' (9) and 'research or learning in general' (8), were the most prevalent codes, which

reinforces the premise of this research project that the National Register is an important research tool for the preservation community.

Respondent25 felt that "There isn't really a fun part. The nomination process is just like defending a dissertation, a step or check offs that have no meaning other than a ritualistic set of check boxes." Others described their favorite part of the National Register to simply be the completion of the process itself, with no further specifics.

On the other hand most of the respondents offered affirmative or even enthusiastic reflections on the positive outcomes of the process. Respondent18, for example, appreciated "Learning something new or interesting, then getting to write it in a way that conveys the resource's significance. I also love getting comments from reviewers like 'Oh, I didn't know that!'"

Respondent01 wrote that "The act of putting together a nomination is sometimes an opportunity to generate new first hand sources in the form of interviews and uncovering unpublished documentation, which otherwise may never have been made available." Similarly, Respondent03 described that "Authoring a NR nomination felt like a genuine step towards the creation of a more representative historical record, and an important step in assisting the stakeholders in restoring and maintaining their historic building."

Respondent32 offered the following nuanced and thoughtful response, which highlighted how a user's identity and experiences can affect how they perceive the National Register:

I primarily interact with NRHP nominations as a preparer, a user (typically in relation to compliance projects), and an instructor in NRHP nomination. My favorite aspect of preparing NRHP nominations is typically working with stakeholders (especially descendants of those who used the resource during its period of significance) and compiling/sharing primary source research that fills out the story of the resource in a way that has never been done before. As a user, my favorite thing about NRHP nominations is the wealth of information about a single resource contained in a single document. As an instructor, I also have a deep appreciation of the way that NRHP nominations require a number of different skillsets and challenge students to exercise their research, technical writing, persuasive writing, cartography, and photography skills.

How might different stakeholders' data needs be reflected in future updates of the National Register's database and interfaces?

Question 2, which was about the least favorite parts of working with the National Register, resulted in 64 coded excerpts, and included code categories such as 'Public perception and engagement' (5) and the 'administrative process' (31).

The codes within ‘administrative process’ category were similar to the topics referenced in the NCSHPO report *Recommendations for Improving the Recognition of Historic Properties of Importance to All Americans*, for example: ‘Burdensome aspects of nomination form or process’ (8), ‘Inconsistent reviewing across and within SHPOs and NPS’ (9), or ‘Narrow or limiting interpretations of eligibility and significance’ (3).

Respondent20 replied that their least favorite part was simply "Excessive paperwork and jargon." Respondent24 described the arbitrary nature of the review process (“In general, the idea of 'historically significant' can be subjective and subject to the personal perspectives of the reviewers.”), while Respondent18 described the inconsistency in reviews by different agencies (“we shouldn't need to write NRs differently for different states.”)

Respondent32 offered a response that captured the juxtaposition of the expectation that a National Register nomination can be both a technical piece of writing produced by a professional, and the need for it to be a process that is accessible to a broader population without specialized training:

I also want to add that as a preparer, I have conflicting feelings about the complicated and technical nature of the nomination form and the ways that this precludes authorship by non-professionals. I really do think that professionals produce better NRHP nominations, and to be frank, I like my job and want to get to continue doing it. However, I struggle with the inaccessibility of the form, especially to communities without the resources to hire a professional preparer, and the resulting disparity in representation of resources on the NRHP.

While these previous responses are great examples of larger discussions about the National Register, the code categories most relevant to my study were ‘Existing Nominations and Data’ (12) and ‘Existing UI/UX and infrastructure’ (21). Within these categories, examples of codes include ‘Difficulty locating specific nominations’ (2), ‘Difficulty locating specific information within a nomination’ (2), ‘Difficult UI/UX’ (6), ‘Difficulty locating specific histories or property types’ (2), ‘Duplicated web interfaces’ (3), ‘Lack of digitization’ (2) and ‘Lack of standardized access and websites across states’ (4).

The difficulties users described with various aspects of the existing nominations, data and UI/UX offer an important reference point for future improvements of the National Register system. These possible improvements are explored in more detail in the case studies and recommendations section later in this terminal project.

Respondent06’s response was representative of the least favorite parts of working with the National Register: “Searching the National Register is very limited. The clunky interface often misses

key words, is unable to perform searches with several data points reliably, and makes consulting the National Register for particular types of properties or sites associated with specific histories almost useless. The limitations of the current database's public face prove difficult to perform meaningful analysis of previously nominated properties.” Respondent33 described “The lack of search options and the unintuitive organization. Specifically finding the author of the document.” Later sections of this report will consider ways to recognize the labor and expertise represented by each of the authors (or ‘preparers’) of a National Register nomination form.

Question 3, which was about helpful research or data management tools, resulted in 64 coded excerpts across six code categories: ‘Government and public online platforms’ (15), ‘Groups or institutions in general’ (9), ‘Publications’ (12), ‘Software’ (7), and ‘Website or online platform’ (15) are good reference points for useful tools, while the code category ‘Limitations and desire for other ways’ (6) included frustrations and limitations encountered by users, and suggestions for improvement.

Respondent17 acknowledged the difficulties of searching for a nomination, but recognized that “it has improved tremendously over the past decade. I personally enjoy the ESRI tools developed by states like Washington that are visually searchable. Archivegrid is a great way to see institutional archival holdings and is invaluable to research.” Respondent32 responded that “For accessing a NRHP nomination, I often find that Wikipedia is an easier and faster way to find the nomination than the NPS's clunky spreadsheet.” One of the case studies in the following section of this report will look at some of the UI/UX strengths that Wikipedia offers as an interface for searching for National Register properties.

Respondent14 stressed the importance of a uniform set of technology tools that could be used by preservation government agencies: “I have said for over 20 years that the NC SHPO and NPS MUST get together to create a uniform survey/inventory database system that is used by ALL states, so that consultants, local staff, and the public can learn one system/database used by all SHPOs and THPOs. It is ridiculous that each SHPO creates its own system and software. (At least as far as I know.)”

Respondent23 observed that “In the age of the internet, there are so many tools and avenues open for researchers. My answers would be different depending on the perspective (author, reviewer, access) and thus too numerous to list. One aspect common to the first two is access to

digital maps, both contemporary and historic. The National Register is inherently about "place" and having good, accessible maps is important in understanding context.”

The many digital tools available for stakeholders to use in different contexts (authoring, reviewing, accessing the National Register) highlights that users can achieve an outcome in the way that best suits them and their skills, but also highlights the need for digital literacy to be able to select the best tools and to use the tools to their full potential.

Question 4 asked the respondent to provide their own definition of the term ‘open data’ and resulted in 72 coded excerpts. The code category ‘general descriptions’ (25) included codes which offered few or no details or distinction of the *how*, *why*, or *who*, such as ‘available to public’ (13), or simply ‘ease of access’ (7), or ‘not sure or no idea’ (7).

The code category ‘specific outcomes and descriptors’ (43) was used when the respondent expanded beyond general descriptions by including specific descriptors such as ‘Access at no cost’ (6), ‘Access online’ (5), or ‘Accessible without an account, credentials, or qualifications’ (3). ‘Specific outcomes and descriptors’ also included things that can be done with open data such as ‘Can be downloaded’ (2), ‘Can be viewed, manipulated, or edited’ (7), ‘Findable via search engine’ (2) or ‘Use, access, distribute, or analyze freely or with no restrictions’ (4).

Only 4 excerpts were included in the code category ‘Philosophy and ethics’, which had one count each for the codes ‘Colonial definition’, ‘Egalitarian’, ‘Ideological movement’, and ‘transparent and inclusive’.

Respondent27 offered a concise meaning of ‘open data’: "Data that is accessible and comes with a non-commercial license. Adheres to the FAIR principles." Respondent05’s definition was also brief but captured a few different codes within the ‘Specific outcomes and descriptors’ category: "Information that is easily publicly accessible. It can be found via a google search or other common practice and does not include confidential or restricted information of any kind. There is no cost associated with accessing the information and it can be shared."

Respondent30 described the broad meaning or interpretations of the term ‘open’:

"Similar to other "open" movements such as open-source software, I would define "open data" as A) an ideological movement championing freely accessible and editable raw data, either specifically government-collected data or a more broad spectrum of data including both public and private entities and corporations or B) accessible data that falls into one of these categories. "Accessibility" in this framework is defined as not having monetary or credential barriers to access, data range/type limitations, intellectual property (IP)/copyright laws and licensing agreements, or commercial value."

Respondent21 offered a different perspective than other respondents in their definition of ‘open data’: "Public access to qualitative and/or quantitative data underlying a publication; data can be analyzed to replicate/uphold or reinterpret/expand the original publication." Respondent21 is saying that inasmuch as a complete National Register nomination form contains conclusions drawn from analysis of many sources and research, that those same sources and research should be considered as a data set in and of itself, separate from the nomination form, that could be accessed as a whole and reinterpreted by another person. Respondent21’s interpretation of open data stresses the need to be able to access the original bibliography used by a nomination form preparer. A list of footnotes and bibliographic sources becomes less meaningful to the reader of a nomination if these sources aren’t easily findable and accessible through digital platforms. The footnotes and bibliographic sources become less useful to the reader if they are stored behind paywalls.

Question 5 asked the respondent to identify a common understanding of the term ‘open data’ in the field of historic preservation. As with Question 4, there was a code category of ‘General descriptions’ (10), which primarily consisted of the code ‘openly or publicly accessible’ (7). The ‘Specific outcomes or descriptions’ (12) had codes such as ‘can be shared publicly’ (2), ‘Unbounded by licensing limitations’ (1), ‘Exploitable or editable’ (2), or ‘Not trustworthy or authoritative’ (2).

The code category ‘Examples of data that is considered open’ (4) offered examples of data in the historic preservation field the respondent believed is generally considered open, with one code excerpt for each of ‘GIS or map data’, ‘Information regarding NR nominations’, ‘information regarding significance and preservation of sites’, and ‘Technical information or data about property.’

A significant portion of excerpts resulted in the code category of ‘Lack of definition’ (14), which captured codes where the respondent either knew there wasn’t a common understanding, or wasn’t sure if there was a common understanding. Respondent03 observed that “It’s not a topic that I’ve seen/heard brought up a lot, so while I’m sure there are preservationists out there with a more nuanced sense of what open data is, there are probably a lot of other folks who either have no idea what it is, or a fairly basic understanding (like me).” How does a preservation professional identify data experts amongst the profession, and how are these experts equipped to facilitate conversations about open data? Respondent17 felt that “A lot of archaeologically-sensitive data is certainly not open data, nor should it be. Most of our work, though, really is for the public and should be accessible to community members who want to learn more.”

Later sections of this report will suggest ways the preservation profession can foster conversations, education, and training that will help stakeholders become more familiar with the term ‘open data’, especially as it pertains to the National Register. The suggestions will also look at the need to address some of the negative connotations of untrustworthiness of the term ‘open data’. Respondent04 described the common understanding of open data as “Data that isn’t trustworthy because it isn’t curated or safeguarded by cultural resource professionals”. The case studies section later in this report will look at open data sets that are curated and safeguarded by cultural resource professionals as a counterpoint to this.

Question 6, was a multiple choice question that asked the respondent to describe the level of knowledge most cultural heritage professionals have about the topic of 'open data'. The 35 respondents selected the following options:

- Underinformed: 21 (60%)
- Misinformed 3 (9%)
- Uninformed: 6 (17%)
- Well-informed: 1 (3%)
- Other: 4 (11%)

The ‘Other’ option allowed the respondent to write in an open ended response, which resulted in the following: “Dismissive”, “I can’t speculate on the profession as a whole”, “Informed” and “No single acceptable definition.”

Given that the majority of respondents felt that the majority of cultural heritage professionals are underinformed about the topic of open data, what possibilities are there to offer educational tools and opportunities? How important is it for cultural heritage professionals to be well-informed about the topic of ‘open data’?

Question 7 asked the respondent to describe the way most cultural heritage professionals feel about the topic of 'open data' with a multiple choice question.

- Skeptical: 8 (23%)
- Accepting: 4 (11%)
- Enthusiastic: 1 (3)
- Curious: 10 (29%)
- Other: 12 (34%)

The ‘Other’ write-in responses included “Dismissive”, “Generally accepting”, “It’s racist and colonial”, “unaware”, and 8 responses that were grouped within the code ‘Respondent doesn’t

know', such as "I do not know- I am curious, but I don't know what others know", "I don't think we think about open data", "I doubt that most feel anything about it", or "I have never heard a cultural heritage professional talk about open data."

Respondent06's impression was that "open data is not a commonly broached topic and not a central tenet to their practice or ethos regarding the dissemination of information." Their response recognizes that practice and ethos are related, thus echoing the framework posed at the beginning of this research project.

Where do preservation practitioners who are curious about topics along this ethos-practice framework find a forum to discuss ideas and learn about tools?

Question 8 asked the respondent to identify resources they have found helpful in educating themselves or others about 'open data' in the field of historic preservation, resulting in 41 coded excerpts. The three main code categories were 'General resources' (6), 'Online resources and platforms' (11) and 'Specific communities or organizations' (8).

Of note is the code category 'No examples of resources given' (16), which included the two codes 'New or unfamiliar topic to the respondent' (11) and 'None or very few resources' (5).

The responses to this question illustrated a broad range of experiences in learning more about the topic of open data. Respondent31 mentioned that "I haven't tried to educate myself on this topic." Similarly, Respondent28 asserted that "This is not part of my work or a need that I have." These responses contrast with Respondent01 who observed that "I feel like I have learned the most about open data from people I know working more in software and tech fields and then gone off myself to see how it might apply to the preservation field."

Respondent30 also recognized that preservation professionals can be informed by conversations happening in broader contexts:

There is some discussion of open data within the Dismantle Preservation movement and amongst Gen X, Millennial, and Gen Z cultural resources professionals. However, this discussion is fairly limited in scope and depth. More generally, I follow the work of open data activists and public educators, and I often direct people toward groups such as the Electronic Freedom Foundation or Open Knowledge Foundation or to individuals such as Cory Doctorow, Chelsea Manning, or maia arson crimew.

Respondent08 noted that "Getty's Arches project seems to be a decent foundation for exposing people to the idea." This case study will be explored later in this report as an example of an

open source software that is being deployed by governments and cultural institutions as a historic resource inventory platform.

Question 9 asked the respondent to describe the ways they have found the content of National Register nominations to be Findable, Accessible, Interoperable or Reusable, resulting in 59 code excerpts. Four of the resulting code categories captured excerpts that gave straightforward descriptions of the terms ‘Findability’ (11), ‘Accessibility’ (8), ‘Interoperability’ (5) and ‘Reusability’ (8).

These four code categories included codes such as:

- ‘Findability almost impossible for everyday person’ (1), ‘Findability is limited’ (2), ‘older forms generally more findable’ (2), ‘Findability sometimes easiest through Google’ (1), ‘Local or SHPO databases better than nationwide search’ (1),
- ‘Accessibility easier in some states with searchable databases’ (1), ‘Accessibility has improved over past ten years’ (1), ‘Accessible as in no cost’ (1), ‘access limited to nominations that have been digitized’ (1)
- ‘Interoperability is fairly poor’ (1), ‘PDFs easy to share or reuse’ (1), ‘lacks easy interoperability’ (1), ‘Unsure what interoperability means’ (1)
- ‘Reusability is limited without access to original sources’ (1), ‘Reusability is limited by formatting and data quality’ (1), ‘Nominations make great references and research tools’ (1), ‘Content not available in multiple forms’ (1), ‘difficult to copy or save text and images’ (1).

The code category ‘Comparison or qualification of different aspects of FAIR’ (16) included codes where multiple aspects of F.A.I.R. were addressed or compared within one excerpt. Examples of these codes are: ‘Findability or accessibility limited to a few states with nominations posted online’ (3), ‘F.A.I.R. is inequitable to tribes’ (1), ‘Inconsistency from one nomination to next’ (3), ‘It isn't F.A.I.R.’ (3), ‘F. and A. require specialized training’ (2).

Respondent05 recognized that “As a preservation professional with full awareness of the process and players I struggle to find information on the Nationwide pages. However, I have great success using more local pages about the National Register such as Montana SHPO.”

Respondent30 offered the following response:

At present, my experience is that NRHP nominations do generally meet the minimum requirements of the FAIR model. They are findable (sometimes with a bit of legwork) on multiple online databases. They are accessible, insofar as I do not need to pay money to access them; however, accessibility from a disability standpoint is often limited, as

nominations are often scanned PDFs of older documents, some of which are degraded in quality and most of which cannot be parsed by a screen reader and do not have alternate text available for images. They are interoperable and reusable in that I can download them, print them, and cite them as sources in my own research. Since NRHP nominations are generally available as PDFs, interoperability and reusability are limited because the files can become unstable or break, may not open correctly in some free PDF viewers/editors, and it may be difficult to copy or save text and images

Respondent25 cautioned that “FAIR is a lie and a way for archaeologists to make unreasonable demands for data from tribes.” This is an important reminder that conversations about data frameworks have generally disregarded the perspectives and needs of tribal communities.

The other two code categories were ‘Things I can do with FAIR data’ (6), and ‘Wishlist and criticisms’ (5). The criticisms were captured in the code ‘NPS website not user friendly’, whereas the wishlist excerpts offered helpful ideas such as ‘Consolidate all nominations into one website,’ ‘link contexts in nominations to more general topics, places, or people,’ and ‘Continue digitizing historic nominations.’

This question was drafted and published while my own understanding of the distinction of ‘open data’ and ‘FAIR’ was still being formed. I’ve highlighted the similarities and differences earlier on in this report and explored some of the ways other authors have described the overlap between the two. So although the assertion I used to frame the question (“One common ‘open data’ framework is the FAIR model”) is less straightforward and more nuanced than that, I believe the answers to this question are still valuable and merit consideration.

Question 10 asked the respondent to describe ways that the National Register nomination and listing process could be more innovative and modern, and resulted in 81 coded excerpts (which happens to be the most coded excerpts of any of the questions in this survey).

The code category ‘Barriers and frustrations’ (18) included similar themes to the answers in Question 2 such as codes ‘Excessive or clunky forms’ (2), ‘prioritization or valuing of architecture and integrity over community experience’ (2), ‘Limited search terms’ (2) or ‘unfriendly UI/UX and reliance on PDFs’ (1).

The code category ‘General Nomination Process and Administration’ (32) was about the process of nomination submission and reviews, and the larger context of historic preservation practice (i.e. the steps it takes to get a nomination listed). These were generally less technology related, such as ‘Approachable to a wider public’ (3), ‘Better or updated guidelines’ (3), ‘More holistic, inclusive criteria for eligibility’ (3), but did include a couple technology related codes such as

‘Allow digital recordation techniques’ (1) and ‘Fillable, electronic, or online forms with indexed data fields’ (7). The need for a ‘born-digital’ process for submitting nomination forms will be discussed in more detail later in this report.

The code category ‘National Register Websites and databases’ (31) was about desired improvements to the technology and interfaces encountered by a user to find or access already-listed nominations. It included codes such as ‘Improved search functionality’ (9), ‘Unified or universal software across states’ (2), ‘Better or more GIS and visual tools’ (5), ‘Better access for users with disabilities’ (1) and ‘Offer alternatives to PDFs’ (1). These and other suggestions by stakeholders will be important reference points when crafting the recommendations later in this report.

This question also resulted in the most ‘good quotes’ I tracked in my Dedoose software. The responses quoted below are central to understanding the ways preservation stakeholders envision a modernized National Register infrastructure. Before jumping into those, it is worth noting that not everyone believes change is necessary. Respondent28 mentioned “I don't think there's an issue with the nomination and listing process. It just is what it is. You may be trying to solve a problem that's not really a problem for professionals.”

Respondent30 recognized there is already discussion already happening about the “definitions and importance of various aspects of integrity and interpretation of the nomination criteria” but that “digital submission methodology does not currently reflect best practices advocated for by digital archivists, and the actual forms provided by NPS and most state SHPOs are clunky, inflexible, and often wildly outdated.”

Respondent15 gave a good example of limited search terms, in particular, the difficulty in locating National Register documents given that “Several SHPO databases are not searchable by architect. NPS and NARA do not index architect names at all.” One solution to this is that “All blanks on the form must be indexed as an individual data field with a controlled, but expandable vocabulary as necessary.” Later on in this report, some examples of ‘controlled vocabularies’ relevant to the National Register will be described.

Respondent27 expressed interest that the National Register nomination forms “go all digital. Incorporate metadata from the start. Allow digital recordation techniques (including 3D).” Respondent14 desired “easier fillable forms. I am working with a consultant who failed SHPO Technical Review because of page number problems.” Respondent14 also thought that “universal survey and inventory software or database would be innovative and simplify work for consultants who work in many states. Far easier and more uniform DOE decisions and processes.”

Similarly, Respondent22 called for "the creation of a federal, centralized database-- potentially one that uses machine learning to scrape metadata and make nominations keyword searchable." Within the entire body of responses, this is the only mention of the idea of 'data scraping', but it is an important one, as it raises questions about the value of the entirety of written text of all National Register nominations both for research purposes or for training artificial intelligence models. Respondent06 alludes to this too: "Establishing an open data interface that enables researchers to freely access and utilize data from the National Register of Historic Places for external projects and application". The need for programmatic access to allow for custom tools and data research methods will be discussed in the next section.

In addition to wanting to "digitize the forms further - not just PDF scans," Respondent34 describes how the order of the information within a nomination form itself could be reconfigured. "Reformat them to summarize primary categories on the cover: Date of Construction, Style/Architect, Criteria, Statement and Period of Significance, CDFs, Chronology of Alterations (this should be added!)"

Lastly, Respondent08's response, "I'm imagining a searchable database where you could enter key words like 'modern' 'theater' and 'Indiana' and get a list of results," is helpful for two reasons. It is an example of the way preservationists would like to query the National Register as a dataset. But it is also a good way future surveys might prompt respondents to think creatively about the data problems they are trying to solve. "I'm imagining a searchable database where..."

Getting people to think creatively about tools that don't yet exist or that they are unfamiliar with using can be difficult. A goal of the following sections with case studies will be to show how other fields and cultural resource practitioners have imagined searchable databases, and then worked on making those imagined tools come to fruition.

"Now imagine if all the museums that had in their collection a Marilyn Monroe series by Warhol created LOD on the works and they could be connected to each other, virtually. What questions might you ask?"⁷⁴

Question 11 asked respondents to identify the kind of research questions they have been able to ask and answer based on access to information related to National Register nominations,

⁷⁴Margaret R. Geddes, "Strategies to Support Wider Adoption of Linked Open Data in Smaller Museums" (2019), <https://jscholarship.library.jhu.edu/handle/1774.2/62123>.

which resulted in 40 coded excerpts. There were two resulting code categories, ‘Questions regarding individual properties’ (16) and ‘Questions Regarding nomination forms in aggregate’ (24).

The ‘Questions regarding individual properties’ category included codes such as ‘building or property details’ (8) such as age or materials, context, comparable properties, significance, or ownership, ‘General research about the history or preservation of a place’ (2), or ‘How has the property evolved over time’ (2). Respondent07 describes how they were “able to learn the history of a school integration event through the school building's National Register nomination.” This illustrates how one single nomination can serve as a case study and educational tool to teach about a specific topic or “broad patterns of our history”.⁷⁵

The ‘Questions Regarding nomination forms in aggregate’ category included codes such as ‘Comparative analysis of similar properties’ (4), ‘A list of properties meeting a set of search criteria’ (2), ‘Significance of certain property type to or within a certain context’ (4), or simply ‘Source for research’ (5). Respondent09 offered a concrete example of the type of research inquiry: “Who, what, where, when, why, and how people have done National Register nominations since the late 1960s. This has been particularly interesting related to early minority preservationists, such as the work of the Afro-American Bicentennial Corporation.”

Respondent32 enthusiastically responded “So many! All kinds of questions about exterior appearance, materials, and changes over time, as well as questions about what happened in/at a particular resource and how that resource fits into its broader historical context. NRHP bibliographies can also be great sources for primary source data.”

Question 12 asked respondents to describe the type of research questions they would ask of the National Register that they can’t currently ask due to lack of access to information, resulting in 47 coded excerpts in two code categories.

The first code category was ‘Roadblocks, deadends, unanswerable questions’ (26), and included codes such as ‘Questions that require search across multiple metadata fields’ (8), ‘Questions regarding specific aspect or outcome of nomination process’ (5), ‘Questions regarding equity or representation’ (3), ‘A topic or property type in a certain geographic area’ (3), and ‘Questions regarding a specific topic’ (3).

⁷⁵ “How to Apply the National Register Criteria for Evaluation,” National Register Bulletin (US Department of the Interior, National Park Service, 1997).

For example, Respondent12 explained that they “have tried to learn about African American history in PA. The effort is largely worthless--the system is too poorly organized to facilitate that type of research.” Respondent22’s research questions included “How many other buildings by this architect are nominated nation-wide? Are there any other resources that have similar building techniques or character-defining features?” Similarly, Respondent32 had “a lot of questions about aggregate data and questions related to comparative analysis.”

Respondent16’s answer stressed how important it is to be able to search past nominations for certain types of properties in order to write new nominations for similar properties. “For instance, I recently nominated an African American boating club, but did not know how to use NRIS to see if any are currently listed and to read them”. The recommendation section of this report will address the need to offer tutorials and ‘how-to’ guides as part of any software or website interface, including the National Register.

Respondent03 offered another helpful example of searches they don’t believe are currently supported.

For example, if I was writing a NR nomination about a resource that I thought had connections to the theme of maritime history under Criterion A, I might want to search for previous nominations that had also been nominated under that theme, with the same level of significance, within the same state, in order to draw more detailed comparisons between them. While I can search the NARA spreadsheet for one of these factors, I can’t filter for multiple at a time; similarly I think being able to search for which nominations reference other nominations would be an interesting/useful way of interacting and researching National Register information.”

Respondent03’s research question might be answered by simply knowing how to filter a spreadsheet by multiple columns. Once again, having ‘how-to’ tutorials about how to use Excel or Google Sheet functionalities to sort through a large spreadsheet of National Register listings would be helpful. And it is also possible that storing and accessing metadata related to the National Register through other sorts of interfaces or queries might offer more powerful search tools for researchers.

Respondent05’s example, “I would love to search to understand how many National Register listed homesteads there are in the Northern Plains, or how many Airway beacons are recorded nationally” is not answerable through simply knowing how to manipulate a spreadsheet, but would require more specialized search capabilities. The idea of contextual searches, and how it differs from simple keyword searches, will be introduced in a case study later in this report.

The second code category for this question was ‘Wishlist’ (21), which included codes similar to Question 10 like ‘Better ways to analyze data about multiple NR properties at once’ (5), ‘Better management of Citation or links within and across nominations’ (2), ‘Better options for cultural resources for social, ethnic, or minority groups’ (2), ‘Centralized uniform searchable database’ (2), ‘Maps, GIS, spatial, visual and multimedia tools’ (5), and ‘More timely access to newest nominations’ (1).

Respondent30 offered a thorough description of the challenges and possible solutions to their research processes:

In order to do a quick visual assessment of NRHP listing density, I would need to download a huge amount of aggregate data and process it myself using a GIS program. Additionally, some resources have non-intuitive names and/or no situs address. To address both of these, I would love to see a version of the NRHP digital database with a map/GIS integration for search and visual assessment purposes. Additionally, associating keywords with NRHP nominations so the data could be searched for all resources relating to a particular theme, event, or other topic would be extremely helpful for assessing aggregate trends or finding resources similar to one I am currently researching/assessing.

Several responses alluded to improving the availability of information about the nomination and review process itself. Respondent31 wanted to know “more about boundary justification. I feel like there is often a political or negotiation process that determines what gets into a district and what is left out. As time goes by these considerations change but it would be useful to know why and how boundary decisions were made at the time of the designation.” Respondent17 considered that “having more insight into the process could help in the study of the history of preservation itself - how have these documents been modified? Who is the approving official? What does the NPS value? What hasn’t been successfully listed?”

Similarly, Respondent09 said they “would be interested in a database of nomination forms of properties that were not successfully listed to the National Register (as well as delisted). I would like to know if people of minority background (especially BIPOC) are over represented as having more failed or delisted nominations as well as the explanations from the SHPOs and NPS as to why these places were rejected or delisted.” Respondent04 was curious about “Why has a particular resource been deemed ineligible by the keeper of the NRHP?”

By the time a nomination gets reviewed at the National level, it has been reviewed by a State Historic Preservation Office. In fiscal years 2020 and 2021, the rejection rate of all request types at the National Level was less than 1% and 0.5%, respectively, for “failing to meet the criteria for listing

or for lacking physical integrity.”⁷⁶ Respondent04’s curiosity about properties deemed ineligible might also be extended to the discussions that are had during the review process by SHPOs.

Respondent05, who was curious about the topics of homesteads in the Northern Plains or Airway beacons, felt that easy access to information about these “would give me a better sense of the integrity thresholds for possibly uncommon resource types.” Many of the responses reaffirmed that, as an aggregate, NR nominations help researchers understand the NR process and prepare successful nominations of similar properties.

In contrast to the research questions posed by other respondents, Respondent23 offered a critique of the premise of this question:

I really can't answer this one as worded. What I can say is that National Register information - data - and its availability is a product of time. The NHPA was passed in 1966. The first state nomination came in 1969. The quality and quantity of information in subsequent nominations has varied over the years. The kind of data collected and how it is formatted has changed over the years. Much of the information (or lack thereof) was dictated by the technology of the day. Old databases had limited space, so the amount of information added to that database was limited. Successive generations of databases allowed for more information collection, but legacy data was still lacking. And, as a federal system, each state has a different character and ‘personality’ in how it runs its program. Recognizing this, the NR has never tried to make everything ‘standard’ in terms of some terminology that might be captured in a database. True, this limits some usefulness. But it avoids putting too many square pegs into round holes. So while it is great to consider the NRHP as a research tool, you must remember its primary purpose as a Federal planning tool. That is why it was created and why it is expanded - to provide the Federal government information necessary in considering undertakings.”

Is it possible that future changes in the National Register’s use of technology can improve its usefulness both as a Federal planning tool, but also a repository for research? Respondent06 addresses both of these outcomes in their response:

Enhancing the National Register to allow for data extrapolation, comparative analysis, mapping, and statistical models would transform it from being merely a repository to a valuable tool for future investigations. This would not only increase its utility to the field of preservation but also to the general public. By making it more accessible and user-friendly, we can utilize the National Register in meaningful ways, facilitating its development and fostering its practical application in historical research and preservation efforts.

The range of viewpoints expressed in the responses to this question, and the disagreement stakeholders might have about the purposes and priorities of the National Register are a fertile place for debate and discussion. How can government and academic institutions foster these discussions, and incorporate the wisdom and viewpoints of stakeholders into the practice of preservation?

⁷⁶ Frear, Davidson, Lisa, and Ernstein, Julie, “Diversity + the National Register: ‘How Will We Know It’s Us?’”

In addition to the specific codes and categories developed for each question, my coding process also included a code category titled 'Meta', which included two codes:

- 'Survey Design Criticism' (9): This was feedback from respondents, within the survey responses, about the questions being asked. This feedback included criticism about the premise of the questions being asked in the survey. These were responses that would likely be helpful to keep in mind when refining a future iteration of this survey or designing a similar survey. For example, in Question 03, Respondent28 wrote "Not sure what you mean by research or data management tools. Also, authoring, reviewing, and accessing are very different tasks so this question is difficult to answer." For Question 12, Respondent23 wrote "I really can't answer this one as worded."
- 'Unclear, ambiguous, or follow up' (10): These were response excerpts that were difficult for me to code but that likely have useful information if I could follow up with the respondent to clarify. These 10 excerpts represent less than 2% of the total 580 excerpts.

Survey Limitations

When considering the process of designing, recruiting for, and analyzing the survey results, the following limitations come to mind. The sample size of 35 respondents is small when considering the total of all preservation professionals (governmental and private sector), academics and students. The recruitment method depended on casting a wide net within the preservation contacts and networks I'm most familiar with. However, these networks aren't representative of the larger population of preservation stakeholders. Future iterations of this survey could be tailored and promoted by specific preservation entities such as the NPS, NCPTT, ACHP, NCSHPO, National Association of Tribal Historic Preservation Officers (NATHPO) or at local state levels by SHPOs. Designing a survey with input from stakeholder representatives and qualitative data experts can ensure that the survey is more likely to offer relevant responses. The Dedoose platform allows for qualitative analysis of a single data set to be performed by multiple people. A larger set of survey responses could be analyzed by a team of trained reviewers in order to reduce the impact of bias of having a single reviewer.

The survey was intended to assess familiarity with open data principles and preservation stakeholders' most prevalent data needs. These two facets will change over time, and so a future iteration of this survey would be designed to be replicated at certain ongoing intervals, and specifically capture this change. The issues most pressing or important to preservationists might not be the same in a decade.

Despite these limitations, perhaps the most important finding is that surveys can result in thoughtful and insightful responses from stakeholders. By replicating a similar survey at a larger scale, and with input from survey design experts and stakeholder communities, the survey results would be more thorough and represent a set of data to serve as a reference point for future and ongoing refinement of the National Register data platforms.

A Path Forward: Case Studies

The analysis of survey results revealed or confirmed several ‘grand challenges’ faced by users of the National Register. Many responses brought up issues about the administrative side of the National Register. Although these issues are acknowledged in the introduction of this terminal project, they are not the primary focus of this report. Instead, the focus will be on issues such as difficulty locating data or using NRHP websites, or lack of understanding how open data comes into play in the field of preservation.

Whereas the literature review focused on writing *about* various knowledge domains or topics, this case studies section is a chance to look at an open data framework in action. Some of the case studies chosen will likely be familiar to some preservationists already. By highlighting the case studies as examples of open data Discourse in action, preservationists may become more familiar with the framework.

As mentioned early on in this research project, an open data framework can include a range of philosophies and ethics, principles and policies, and tools and technologies. The goal of this section will be to provide examples of open data implementations that are relevant to the historic preservation stakeholder community, and in particular, implementations that are likely to be useful additions to the digital scholarship toolsets used by researchers who are preparing a National Register nomination.

Online Journal Publishers

Throughout my research process, I became very aware of the UI/UX experience I was having in accessing content. My research process, and not just the content of the resources I was accessing, became a way to experience best practices in digital scholarship and content accessibility. So, for example, I might be accessing a journal article from *American Antiquity*,⁷⁷ hosted on the Cambridge Core platform, and notice the following (as shown in Figure 14):

- A web-based interface with the full text of the article on the website
- An option to download a PDF
- Author affiliations and ORCID links, which is a unique ID assigned to researchers
- Navigation to different sections of the text on the left hand

⁷⁷ Kelsey E. Hanson et al., “‘This Place Belongs to Us’: Historic Contexts as a Mechanism for Multivocality in the National Register,” *American Antiquity* 87, no. 3 (July 2022): 439–56, <https://doi.org/10.1017/aaq.2022.15>.

- AI-generated ‘Related Content’ section on the right
- ‘Share’ buttons which pre-populates a post on social media with a link to the article
- ‘Cite’ buttons which allow the user to pick what citation style to use
- Keywords and abstract in English and Spanish
- Ability to change the page navigation into French
- Citation links throughout the text which link to a list of References Cited at the end
- All references have links to Google Scholar or CrossRef

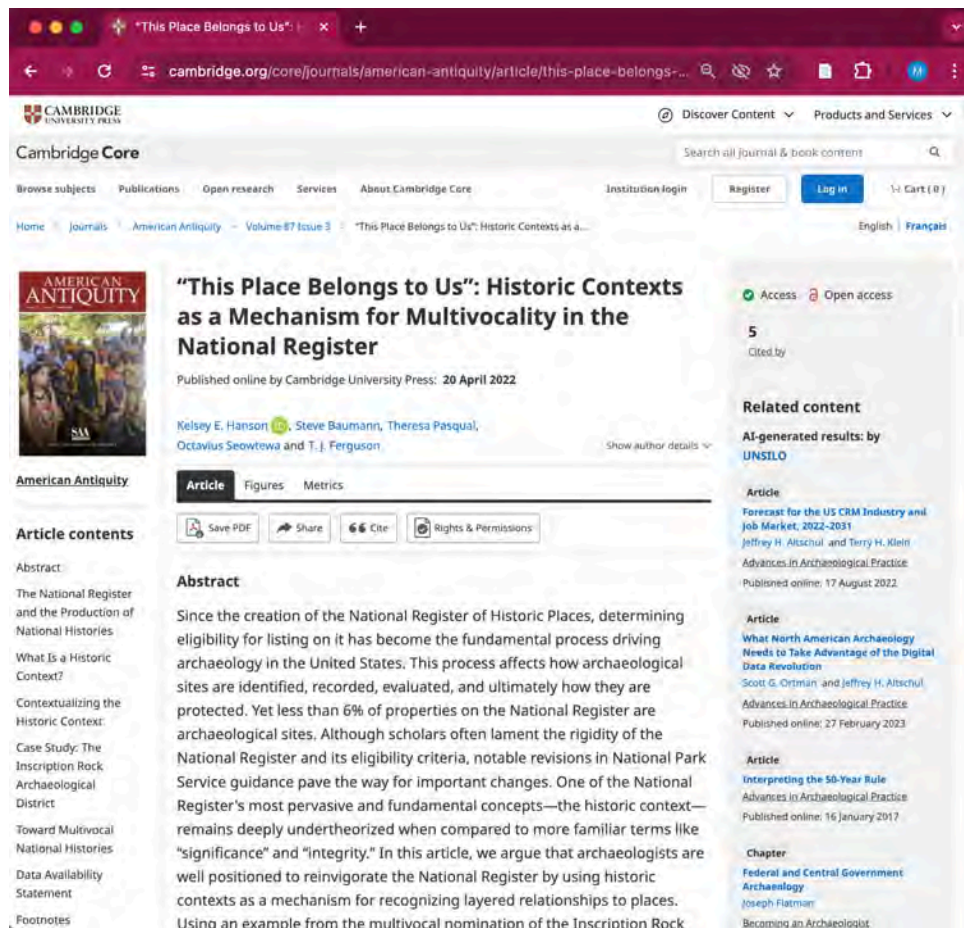


Figure 14: Example of an article hosted on an online open access journal

Inasmuch as there are similarities between peer-reviewed publications and the review process of a SHPO and the NPS, it seems that the NRHP could be seen as a platform which published research in the form of nominations. The functionalities and user interface described in the

Cambridge Core platform above were similar across other platforms I encountered, such as journal articles hosted on the National Institute of Health's online National Library of Medicine.⁷⁸

Federal Register

I've chosen one other type of online publishing platform which complement the journal examples above, which is the Federal Register website. It is a relevant example because 1) it is a government publication 2) it regularly publishes Notices about the National Register, 3) is an open-source platform, 4) has a user-friendly interface, 5) helpful reader aids including guidance on using a powerful search interface⁷⁹, 6) offers several tools for developers. To this last point: "This section of our Reader Aids is designed for anyone who wants to use Federal Register data programmatically. Explore our API interactively, get details about all of our API endpoints, and more."⁸⁰ APIs will be described in further detail in the next case study.

As an open-source project, I could download the Federal Register code from the repository, and set up my own instance of the code, and adapt it to my own publishing needs (the License clearly indicates that you can't re-use official logos or icons, however). The 'About' section for the Federal Register 2.0 platform reads:

The FR 2.0 web site is similar to a daily web newspaper, with a clear layout and new tools to guide readers to the most popular topics and relevant documents. The site displays individual news sections for Money, Environment, World, Science & Technology, Business & Industry, and Health & Public Welfare. FR 2.0 has greatly improved navigation and search tools and highlights each agency's significant rules. The new web site takes advantage of social media and integrates seamlessly with Regulations.gov and the Unified Agenda to make it easy for users to submit comments directly into the official e-Rulemaking docket, and view the history of rulemaking activity through a regulatory timeline.⁸¹

There is precedent for this idea of sharing of tools used in managing the National Register, not just the National Register data itself. In the article *23 Years of Automating the National Register*, Miller writes "Interagency Resources Division is developing a microcomputer program to give to states, Federal agencies, and local governments for automating cultural resource survey and

⁷⁸ "A Case for Data Commons - PMC," accessed May 7, 2024, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5636009/>.

⁷⁹ "Reader Aids :: Search Help," Federal Register, accessed September 19, 2023, <https://www.federalregister.gov/reader-aids/videos-tutorials/utilizing-complex-search-terms>; "Reader Aids :: Videos & Tutorials," Federal Register, accessed December 5, 2023, <https://www.federalregister.gov/reader-aids/videos-tutorials/linking-to-federalregister-gov>.

⁸⁰ "Reader Aids :: Developer Resources," Federal Register, accessed August 23, 2023, <https://www.federalregister.gov/reader-aids/developer-resources>.

⁸¹ "Federal Register 2.0," Ruby (2010; repr., U.S. National Archives, June 22, 2023), <https://github.com/usnationalarchives/federalregister-api-core>.

inventory data in a manner consistent with the National Register.” It is unclear if this computer program came to fruition.⁸²

Application Program Interfaces (API)

The National Park Service defines an API as “a set of requirements that allows one application to talk to another. The NPS Data API allows official, authoritative data and content to be used not only on NPS.gov but also by internal and external developers in apps, maps, and websites.” The data accessible via the NPS Data API is related to specific parks and their services (the categories include Alerts, Campgrounds, Events and Visitor Centers). As with APIs on other systems, a ‘call’ is made to the API. This call is formatted in a certain way, which is understood by the API. The API then returns a ‘response’ which fulfills the user’s request with data (also formatted in a specific way), and may provide other information like error codes.

In the NPS API Documentation shows examples of these different API calls and responses.⁸³ The code of an API call and response is shown so that a coder might become more familiar with the API, it is not intended as a primary way an average user would interact with the data behind an API. Instead, the idea is that a coder would make use of API calls in an application designed to take in NPS data, and repurpose it for specific uses.

For example, a tour company might create an app for tourists to access custom itineraries to guide them as they visit different parks. The itinerary could call the park’s amenities through an API, and present that information to the tourist using the app. The tourist would not need to know an API was being used by the app. By using an API call, the app would provide up-to-date information stored at the NPS.

The power of an API lies in the possibility of offering automated ways of data retrieval that previously may have relied on manual data collection or document downloading. So whereas researchers might previously have had to download spreadsheets about census data, they can now access bulk US census data through APIs as well.⁸⁴ The Library of Congress and the National Archives Catalog also offer APIs.^{85 86}

⁸² Miller, “23 Years of Automating the National Register.”

⁸³ “API Documentation - Developer Resources (U.S. National Park Service),” accessed August 15, 2023, <https://www.nps.gov/subjects/developer/api-documentation.htm>.

⁸⁴ “Data - Developers - About,” accessed May 7, 2024, <https://www.census.gov/data/developers/about.html>.

⁸⁵ “APIs for LoC.Gov | Library of Congress,” web page, Library of Congress, Washington, D.C. 20540 USA, accessed August 15, 2023, <https://www.loc.gov/apis/>.

⁸⁶ “API for the National Archives Catalog,” National Archives, December 8, 2021, <https://www.archives.gov/research/catalog/help/api>.

Unfortunately the NPS Data API documentation does not provide examples of apps created which have put the API to use (nor have I been able to locate any examples of coders using the Federal Register API for a custom app). The NPS Data API roadmap has not been updated since 2017.⁸⁷

Open Researcher and Contributor ID (ORCID)

The ORCID platform allows for authors to claim an ID, and then any publication under their name which uses the functionality will appear in the ORCID database. Many journals I used throughout my research process used the ORCID functionality on their own site. This made it very easy for me to locate journal articles written by a specific author. An ORCID profile also allows a user to provide keywords and an educational history, as shown in Figure 15.

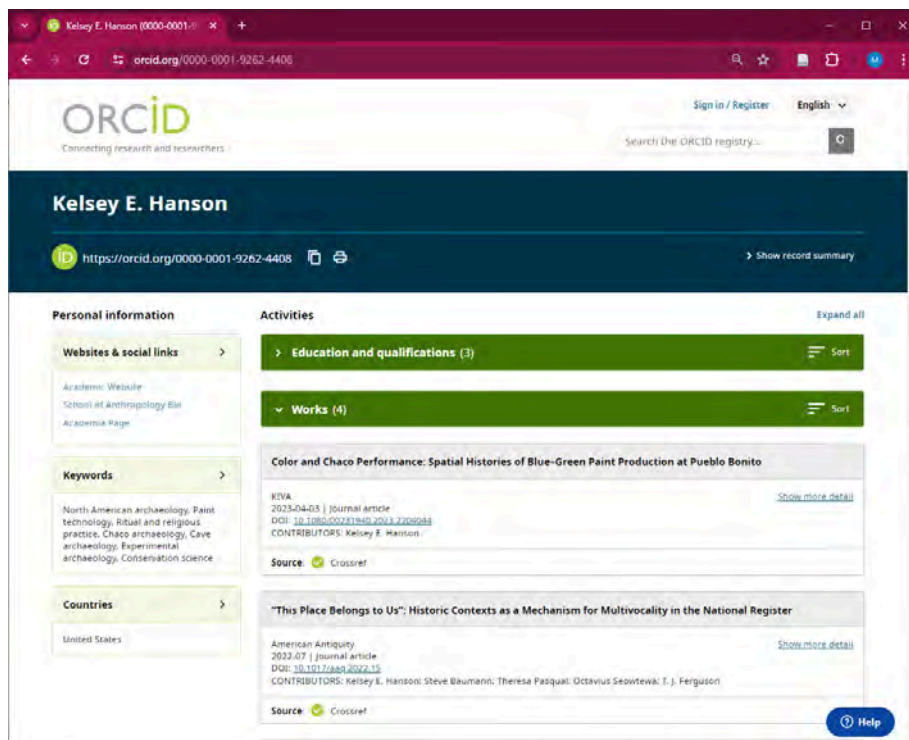


Figure 15: Example of an author's profile on the ORCID platform⁸⁸

The National Register Content and Copyright page seems to only specify expectations around use of NPS website content, and makes no explicit mention of the expectations around use

⁸⁷ "API Roadmap - Developer Resources (U.S. National Park Service)," accessed August 15, 2023, <https://www.nps.gov/subjects/developer/api-roadmap.htm>.

⁸⁸ "Kelsey E. Hanson (0000-0001-9262-4408) - ORCID," accessed May 7, 2024, <https://orcid.org/0000-0001-9262-4408>.

of actual nomination content.⁸⁹ It can be assumed that a government publication can be repurposed under fair use provisions. But what rights or expectations do nomination form preparers have? The FAQ for the National Register provides guidelines to the question “What is the preferred method of citation for a National Register of Historic Places nomination file?” Currently, authors are listed many pages deep in a nomination, and their names are not included as part of the NRIS Excel file or any other bulk data set of the NRHP.

A future update to the NRIS system would store form preparer names in an accessible and machine readable way. NRHP should allow users to submit an ORCID as part of their nomination form submission. This would allow researchers to access all nominations for a specific author.

Linking Lost Jazz Shrines

The topic of Linked Open Data (LOD) was briefly mentioned earlier in this terminal project. The Linked Jazz project offers an example of LOD that is particularly relevant to preservationists. The goal of the project, which is hosted at the Semantic Lab at Pratt Institute, was to capture information about Central Brooklyn’s cultural legacy of jazz. Important information found in oral history was stored in LOD formats, which explored relationships “not only between people, but also between people and music groups, people and music venues, and music groups and music venues.”⁹⁰

This case study is useful for many reasons, as the website for the project:

- provides an introductory description of LOD
- describes the way different stakeholder groups collaborated on the inputs and outcomes of the project
- describes the many events that the research team presented at
- illustrates the technical concepts with diagrams, so users can understand how this tool was constructed
- reflects on the process and provides recommendations about engaging in partnerships, programming and outreach, administrative and project management,

⁸⁹ “National Register Content and Copyright - National Register of Historic Places (U.S. National Park Service),” accessed November 22, 2022, <https://www.nps.gov/subjects/nationalregister/national-register-content-and-copyright.htm>.

⁹⁰ “Linking Lost Jazz Shrines - LINKS + RESOURCES,” accessed September 24, 2023, <https://sites.google.com/weeksvillesociety.org/linking-lost-jazz-shrines/links-resources>.

and technical aspects, and in doing so, encourages others to explore similar tools and methods

This project is relevant to the National Register as it is a novel data management approach that preservationists will eventually encounter. It highlights what is learned in the process of cultural organizations coming together with academics to test a new technology. In the project, the relationship between the people, places and events surrounding a cultural movement are able to be documented and analyzed. This is similar to the research done by a National Register nomination preparer, especially one for Criterion A “associated with events that have made a significant contribution to the broad patterns of our history.” Eventually, the findings that are the result of similar LOD projects may be incorporated into NRHP nominations.

Arches

Arches is an open-source software platform that was originally designed for use in heritage inventory management, and has been adopted as the online platform by cities like Los Angeles to host the HistoricPlacesLA website. The relevance of Arches as a case study is that it highlights:

- Process: the way technologists, government offices, and cultural resource professionals come together and build software that takes into account a variety of stakeholder needs, funding models, and data governance requirements
- Outcomes: the use of open data practices and tools

The Arches software team offers ongoing webinars, training and user group sessions that help current and prospective users of the software understand the capabilities of the platform and ways that others are using the software. Arches has an active user base that regularly convenes to plan for future updates of the software. The online Community Forum allows people to “post and share their comments, feedback, guidance, or ideas” about the Arches.⁹¹

Wikipedia and the National Register

It is important to understand the ways that information about the National Register is communicated and displayed on Wikipedia. Wikipedia is a platform that allows edits to articles by

⁹¹ “Arches Community Forum | Arches Project,” accessed June 14, 2024, <https://www.archesproject.org/forum/>.

anyone. Wikipedia has an editorial process that guides the way articles are structured and cited. Wiki editors can organize around a specific ‘WikiProject’, which aims to create articles about specific topics and do so in a concerted and collaborative method. The National Register of Historic Places WikiProject is run by “a group dedicated to improving Wikipedia's coverage of listings on the U.S. National Register of Historic Places” and was established in 2006.

The Wikipedia article for the National Register of Historic Places was created in 2002 and consisted of a single paragraph at that time.⁹² It has since grown to a comprehensive overview of the NRHP, including its history, nomination process and property owner incentives. The article includes 41 external references (citations), a list of Further Reading resources, and links to separate articles about the NHRP in each of the states and territories. These state-level pages serve as a directory of sorts, and give summary information about all the NHRP listings in that state, broken down by county level. An amount of NHRP properties in each county is listed, alongside a sampling of photos, and a map showing amounts of properties per county.

The National Register of Historic Places WikiProject has a sub-page titled NRIS information issues:

This is a working page to detail information system glitches, factual inconsistencies, and potential factual errors in official information regarding properties and districts listed on the National Register of Historic Places of the United States. It is hoped that this recording may facilitate discussion, correspondence with the National Park Service/National Register, and corrections.⁹³

Wikipedia article pages and WikiProject pages both offer a ‘Talk’ page, which is where editors discuss the edits to the pages. The Talk page for the NHRP WikiProject is the public forum where editors exchange ideas, and sometimes argue about the best practices editors should take into account when editing individual NRHP pages. There are 69 archived pages of the NRHP WikiProject Talk. A comprehensive analysis of this text is outside of the scope of this terminal project, but likely a source for future interested researchers. There is an index to these pages, which lets one view the specific topic and number of responses to a specific conversation thread.⁹⁴ By

⁹² “National Register of Historic Places - Wikipedia,” accessed May 7, 2024, https://en.wikipedia.org/w/index.php?title=National_Register_of_Historic_Places&oldid=122772.

⁹³ “Wikipedia:WikiProject National Register of Historic Places/NRIS Information Issues - Wikipedia,” accessed April 25, 2023, https://en.wikipedia.org/wiki/Wikipedia:WikiProject_National_Register_of_Historic_Places/NRIS_information_issues

⁹⁴ “Wikipedia Talk:WikiProject National Register of Historic Places/Archive Index,” Wikipedia, November 30, 2023,

sorting by count of replies to a thread, one can quickly access the conversations which spurred the most debate. One can also search the indexed pages for keywords.

The seventeen years of discussion around how to organize information about the National Register in Wikipedia is an insightful example of a group of people navigating ethical and technical issues involved with data curation. The usefulness of these archived discussion boards lies in the disputes and diplomacy found therein, just as Ryan Shaw found the mailing list archives in the *World in Conflict* essay discussed in the literature review of this report. These editors believe that each property on the NRHP should have a corresponding Wikipedia article. However, Wikipedia's editorial standards require a threshold of 'notability', and some 'stub' placeholder pages of NRHP had been deleted in the past as the articles themselves hadn't met stated Wikipedia standards.

I'm sure this question has come up before. Are NRHP sites inherently notable? Is [Fire House No. 1](#) notable?--[Appraiser](#) 18:27, 10 September 2007 (UTC)

I believe the general consensus has been yes. Regardless of that, I say yes as well. [IvoShandor](#) 18:39, 10 September 2007 (UTC)

If the [State Historic Preservation Office](#) is willing to nominate a property to the National Register, and the keeper of the National Register of Historic Places accepts the nomination and lists the property on the National Register, then that clearly counts as notability. The National Register nomination form itself counts as a reliable source, independent of the subject, and should count as significant coverage (because of the amount of research required to defend the nomination). Still, there are a few places I'm hesitant to do articles about, such as the [Orchard Gardens Railway Station](#). It's on the National Register, but when I went there to take pictures, it basically looked to me like a shack alongside the tracks. --[Elkman](#) ^(Elkspeak) 18:49, 10 September 2007 (UTC)⁹⁵

Other examples of topics discussed in the Talk pages:

- How to deal with information regarding 'Restricted address' NRHP properties, especially given that some of these properties are well known to locals or part of larger archeological sites that draw large amounts of tourists or are otherwise promoted by the NPS or local tourism bureaus
- How to meet Wikipedia's guidelines for no primary sources as references in articles. This meant that one user who lived near an NRHP site wanted to write about the site's current

https://en.wikipedia.org/w/index.php?title=Wikipedia_talk:WikiProject_National_Register_of_Historic_Places/Archive_index&oldid=1187577006

⁹⁵ "Wikipedia Talk:WikiProject National Register of Historic Places/Archive 3 - Wikipedia," accessed May 7, 2024,

https://en.wikipedia.org/wiki/Wikipedia_talk:WikiProject_National_Register_of_Historic_Places/Archive_3#Notability.

condition in the article, but first-hand experience was not acceptable for inclusion. Wikipedia expects citations of published materials. So if there wasn't a published report about an NRHP's current condition, then the Wikipedia article might not be entirely up to date or complete even if a local editor was able to provide an account of the condition.

- Creating a template for an 'infobox' so that each NRHP Wikipedia article has a summary of important information on the right hand side of the page. Figuring out what happens when a specific article uses the NRHP infobox alongside other infoboxes created for other topics.
- Data cleanup and sourcing issues, including reaching out to NPS and SHPO staff
- Ensuring all NRHP articles use language consistent with standard terminology used by preservation professionals
- The creation of a style guide for NRHP articles

The work of the editors as part of the Wikiproject has resulted in a plan that strives to ensure that every NRHP property has a corresponding Wikipedia article. The Wikiproject team have even come up with a quality checking system which tabulates each article (as shown in Figure 16) based on article quality (a ranking system used on all articles throughout the Wikipedia site), and article importance (a ranking system used to rate the NRHP articles). This data is calculated automatically as the ratings to each article change over time. system allows the editor to prioritize the improvement of the lowest ranking articles, and to highlight, recognize and promote the work that has been done to achieve high ratings within the Wikipedia system.⁹⁶

⁹⁶ "Wikipedia:WikiProject National Register of Historic Places/Assessment - Wikipedia," accessed May 7, 2024, https://en.wikipedia.org/wiki/Wikipedia:WikiProject_National_Register_of_Historic_Places/Assessment.

National Register of Historic Places pages by quality and importance							
Importance→ Quality↓	Top	High	Mid	Low	Related	???	Total
★ FA	1	23	11	45	3	0	83
⊕ GA	3	79	60	341	8	0	491
B	10	231	132	845	44	0	1,262
C	10	388	262	2,425	97	1	3,183
Start	9	2,172	1,141	21,998	461	20	25,802
Stub	0	53	745	42,962	517	0	44,277
Total (articles only)	33	2,946	2,351	68,618	1,130	21	75,100
★ FL	0	3	0	3	0	0	6
List	2	115	2,883	385	63	0	3,449
Unassessed	0	0	0	0	0	3	3
Total	35	3,081	5,259	69,299	1,206	24	92,290

Percent assessed

Quality	100.00%
Importance	99.97%

Figure 16: Wikiproject assessment metrics

The Wikiproject team have put together a ‘Resources’ page, which are links to websites editors are encouraged to consult if they are working on an Wikipedia article of an NRHP site. The resources are broken down by state, and in doing so, act as a catalog of the broad information management ecosystem surrounding the NRHP. The ‘Resources’ page also acts as a historiography of NPS technology. The page frequently mentions a data retrieval system called ‘Focus’ which, according to this Wikiproject documentation, “is a front end to query NRIS data which is provided by the NPS.” ‘Focus’ appears to have been replaced by the system now known as NPGallery.⁹⁷

The need for a consistent and uniform source of data led one Wikiproject member, username Elkman, to create a website that would take data downloaded from the NRIS, and create templates for each NRIS entry that could then be incorporated into the corresponding Wikipedia article. Elkman also created example queries users could run to generate lists of NRHP properties

⁹⁷ “Wikipedia:WikiProject National Register of Historic Places/Resources - Wikipedia,” accessed May 7, 2024, https://en.wikipedia.org/wiki/Wikipedia:WikiProject_National_Register_of_Historic_Places/Resources.

meeting specific criteria.⁹⁸ The ‘Elkman tool’ could then be used freely by any of the editors as they edited their own articles.

Each editor has their own profile page, and some editors use this as a place to share thoughts and grudges, but also describe their work on specific topics. I had made a particular note of one Wikipedia user called ‘Doncram’ earlier on in my research, and had added their name to my list of potential survey respondents. Doncram's voice is present in many of the discussions in the archived Talk pages. Sadly, Doncram passed away recently, as per the memorial on the banner on the top of their Wikipedia profile. I felt it would be insightful to include some of Doncram’s own words about their interest in the National Register of Historic Places:

Nonetheless, I am proud to have built, with others, six inter-related list systems that support the one percent of Wikipedia which has been about historic sites in the United States. One is the [mature list-system covering the U.S.'s National Historic Landmarks](#), its more important historic sites. Two is the [great list-article system covering about 85,000 National Register of Historic Places-listed historic sites in the United States](#). Which required development of, three, more than [3,000 supporting disambiguation pages](#), and is supported by, four, a network of articles on [more than 700 NRHP architects](#), [more than 100 NRHP builders](#), and [more than 20 NRHP engineers](#). I've started the majority of articles of each those third and fourth supporting types, and contributed to almost every one. Fifth is a series of list-articles of historic places of various types, such as [List of courthouses in the United States](#), [List of Masonic buildings](#), [List of mosques](#), [List of corrals](#) and many more (which include places lists on the NRHP and not. Sixth is the [non-mainspace list-system tracking errors in National Register data](#).

And I've started and developed a large number of articles on individual historic sites, with one of my special interests being to provide links for readers to the great NRHP nomination documents, increasingly available on-line. And I am proud to have made many other contributions within [WikiProject National Register of Historic Places](#), including development of featured-list-worthy list-articles such as [List of NHLs in NY](#).⁹⁹

There are likely many more narratives like this one that would help preservation professionals understand the affinity that a volunteer Wikipedia editor has for the National Register, and the ways that their outsider perspective has helped shape the way the National Register appears on one the world’s most popular websites. The Wikiproject wasn’t just about ensuring that each NRHP listing had a corresponding article with a map and photos, but to make sure the collection of articles was organized well, accessible by themes or geographies, and overall integrated into the larger Wikipedia body of knowledge.

As an example, Figure 17 shows the ‘infobox’ functionality of a page on Wikipedia that has been adapted by Wiki editors to display National Register information including a representative

⁹⁸ “NRHP Query,” accessed December 6, 2023, <https://www.elkman.net/nrhp/>.

⁹⁹ “User:Doncram - Wikipedia,” accessed April 25, 2023, <https://en.wikipedia.org/wiki/User:Doncram>.

photo, map, location, date of National Register listing, and whether it is part of a larger historic district. The uniformity of the visual representation and organization of this information across thousands of pages relies on an infobox template (also shown in Figure 17).

The ‘Talk’ pages, and the Wikipedia articles themselves are an example of both an openness Discourse and an National Register of Historic Places Discourse in action at the same time. The places these Discourses don’t have commonality create a rich dialog and in many cases require consensus about compromises.

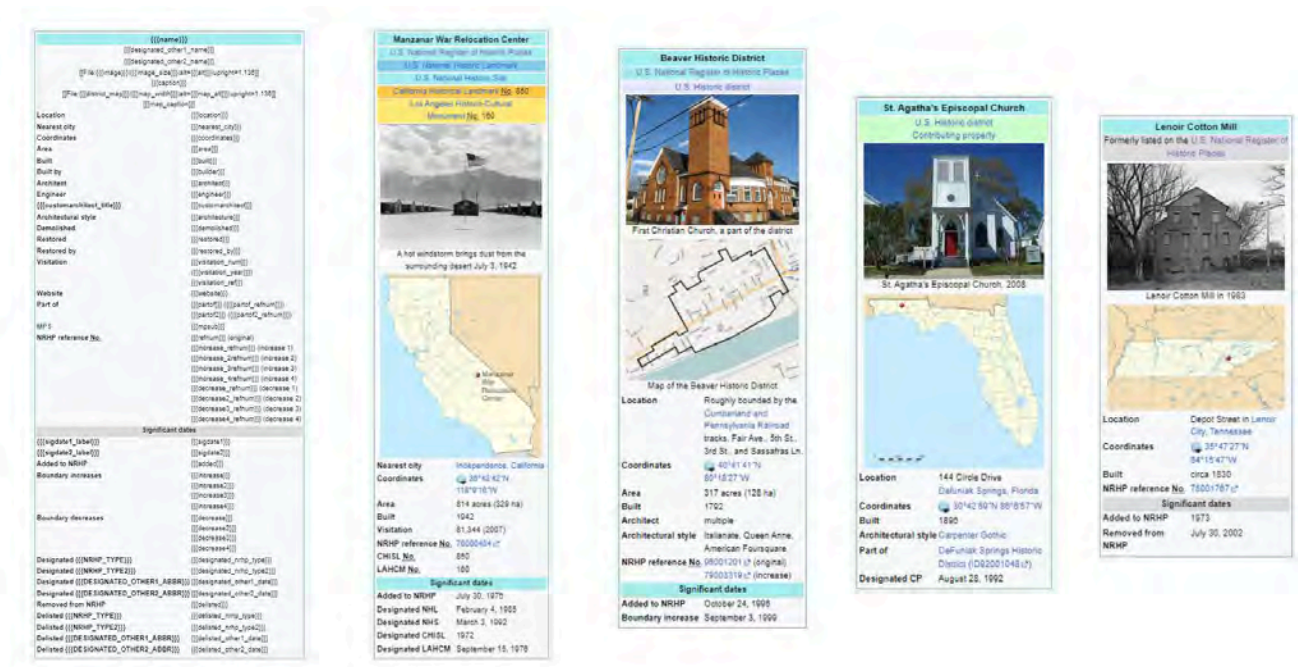


Figure 17: The infobox template for use in Wikipedia articles about National Register properties

Findings and Recommendations

The literature review examined the use of an open data framework ('Discourse'), and the survey results identified a desire for improving the way the data about the NRHP is managed and accessed, especially from the perspective of researchers. The case studies further elaborated ways that open data can shape a future for the National Register. The findings below are informed by the mixed methodology of this literature review, qualitative analysis of the survey results, and the case studies. They also take into account my own independent judgments and observations I made during the course of this terminal project.

The initial motivation of this terminal project was to study the technology used to manage and access National Register data by present day users, and to suggest improvements of it. In doing so, two other main themes arose:

- the history of technology in the field of preservation provides an important context and reference point to this study,
- digital literacy amongst preservation stakeholders can lead to a better understanding and implementation of needed changes.

As such, the following recommendations are divided into three main sections: 1) improving current tools and infrastructure of the National Register, 2) prioritizing our use, understanding, and interpretation of the archives that reflect the work of preservationists from decades past, especially records that pertain to the computerization of the National Register, 3) fostering conversations about education and digital literacy in the field of preservation.

It is worth providing an overview of the systems or interfaces that facilitate the transfer and access to National Register data to the general public. Whenever possible, the findings and recommendations below will address these specific portals or interfaces listed here:

- 1) **National Register nomination form submissions:**
 - a) **State-level submission portals.** Some SHPOs request a prepared PDF document be emailed to a specific address, other states have a separate online portal where a nomination is uploaded
 - b) **Cultural Resources Submission Portal.** These are accessible to SHPOs only, and are not for contractors or the general public. This site is where a nomination that has already passed review at SHPO level is submitted to the NPS for review. Photos as

part of the National Register form are bundled into PDFs, but can also be uploaded as separate files.

2) **National Register nomination inventories**

- a) **NRIS Excel sheet.** This is updated a few times a year after each cycle of nomination reviews. It includes basic metadata (property name, location, etc) and links to a PDF scan of the nomination form stored on the NARA interface, though not all properties have links to a nomination form.
- b) **State-level inventories.** Search functionality varies, not all states offer online databases.¹⁰⁰ Some SHPOs offer a static document that lists the names of NRHP within that state, but no direct download link (one must email the SHPO for a copy). Other states offer map interfaces for historic properties that include both state registries and NRHP properties.
- c) **The NHRP sub-page of the NPGallery Digital Asset Management System.** “The NPGallery Digital Asset Management System is an enterprise system for storing, organizing, and sharing photos and other digital files.” This platform is used by parks and other NPS programs to store and share digital files.¹⁰¹ The NHRP sub-page offers a search interface specific to NRHP metadata.¹⁰² The results from searches on this sub-page only seem to be current through roughly 2015 or 2018.
- d) **National Register Database and Research webpage.**¹⁰³ This page offers links to research resources, including some of the others listed here in this list. The page has a simple search interface which allows users to view a table of metadata about NRHP properties. The metadata in the online table is similar in scope as the NRIS Excel sheet. Users can sort by columns but cannot filter by specific data within those columns. Data appears to be recent through September 2022.

- 3) **NARA Catalog.** This is an online search interface for the National Archives and Records Administration, a repository of over 239 million records spanning a wide range of federal agency and presidential documents, images and other multimedia. It includes a collection of scanned NRHP PDFs. Users may access a direct link to a PDF scan of a nomination

¹⁰⁰ A comprehensive inventory of each SHPO’s online inventory was not carried out for this research project.

¹⁰¹ “About NPGallery,” accessed January 16, 2023, <https://npgallery.nps.gov/About>.

¹⁰² “NPGallery NRHP Archive Search,” accessed August 15, 2023, <https://npgallery.nps.gov/NRHP>.

¹⁰³ “National Register Database and Research - National Register of Historic Places (U.S. National Park Service),” accessed August 16, 2023, <https://www.nps.gov/subjects/nationalregister/database-research.htm>.

through the Excel or online search function detailed above. Or, they may use the NARA search interface to locate the items by keyword. The search term must include “national register of historic places” plus other keywords to locate a list of relevant documents. The advanced search functionality allows users to choose certain metadata types that are pertinent to the metadata scheme NARA uses, but these are not specifically relevant to a NRHP search. The date associated with a NRHP file appears to be the digitization or accession date, not the NRHP listing date. There is no way to filter search results by NRHP-specific metadata such as Single/Multiple property submission, area of significance, city, county, etc.

- 4) **NRHP online map interface.**¹⁰⁴ This is a map of all non-restricted NRHP properties, which shows a dot on the location of the property. A user can click on the dot to bring up the basic metadata about the NRHP property. In some cases, the metadata popup includes a link to the corresponding NARA record. There is no search functionality to access specific NRHP listings. In other words, the map would not allow a user to find all NRHP associated with a specific architect or NRHP significance criteria.
- 5) **Data.gov website.** This is a large collection of datasets from many different federal, state, and local governments. By using the search term “national register of historic places”, a list of 63 data sets are presented. These include:
 - a) The NRHP data set published by the NPS. This appears to be a downloadable version of the NRHP online map interface mentioned above. It primarily consists of a geodatabase file system (‘.gdb’ extension). When opened in a GIS software package, it would allow a user to perform searching and spatial analysis of the NRHP properties.
 - b) Other data sets from city or state governments, which are lists of NRHP properties within those specific jurisdictions. These data sets vary in file format and scope.¹⁰⁵

¹⁰⁴ “National Register of Historic Places Spatial Data Processed by the Cultural Resources GIS Facility,” accessed August 10, 2023, <https://www.nps.gov/maps/full.html?mapId=7ad17cc9-b808-4ff8-a2f9-a99909164466>.

¹⁰⁵ A comprehensive survey of the NRHP related data sets on data.gov was not conducted.

Improving current tools and infrastructure of the National Register

Multiple uses of National Register data

Finding: Beginning with the 1969 report *An Information System for the National Register*, there is a clear intent for data analysis of NRHP records. There is also a clear intent expressed in early NPS and academic literature for the NRHP to be used for interpretive, educational or tourism purposes. Based on literature review and the survey component, these purposes and uses are still understood by preservation stakeholders to be an important aspect of the NRHP.

Recommendation: Consolidate the above websites and databases into one primary landing page for all NRHP needs. A user would then be directed to sub-pages with specialized search or data analysis functionality and interfaces. Ensure that future updates to the NRHP platform incorporate best practices around user interface and user experience design (UI/UX), accessibility best practices and open data principles.

This new system would reconceptualize the NRHP from a document management system (ie an index in the form of an Excel file which points to PDF versions of a nomination) to a more complex content management system (ie a system designed to store metadata, text, and multimedia that are part of a nomination form using technology and standards specific to each data type, instead of being bundled together as a PDF).

PDFs as a data storage format

Finding: The standard for storing and retrieving National Register nomination forms is in a PDF file. This is true for:

- older nominations which were originally typewritten on paper forms, and eventually scanned and digitized
- Present-day nomination forms, which are created after a nomination author fills out an electronic Microsoft Word document template and outputs a PDF version for review by a SHPO and the NPS.

The PDF is the primary storage and retrieval file type for the text and images found within contemporary and old nomination. This limits the machine readability and re-use of these different types of content for other purposes. Photos submitted with current nomination forms are not available in their original format to end users.

Recommendation: Phase out the use of the Microsoft Word template and implement an online submission interface which would allow users to submit all necessary parts of the NRHP nomination form in discrete fields. All required metadata would be in the form of drop-down menus and eliminate the need for the user to enter certain fields manually. Photos and diagrams would be uploaded as individual files and retain their original file metadata. This would mean that all content that is part of any NRHP going forward would be stored primarily in a database instead of combined into a PDF file. This database would be configured with relevant security measures to ensure restricted NRHP submissions are not public unless a public listing is suitable.

This database would allow for more flexible uses of National Register data. For example, the consolidated website feature recommended above could present a web-based version of the ‘Summary paragraph’ section of contemporary nomination forms alongside a couple representative photos from the nomination as an abstract of sorts to allow researchers to browse nominations without always needing to download a PDF.

Whenever possible, updates to the National Register nomination submission and retrieval system should follow the principles and guidelines outlined in the 2023 presidential executive order titled *Delivering a Digital-First Public Experience*, which outlines “common standards for delivering online tools and experiences that meet today’s expectations.”¹⁰⁶

Preservation professionals’ use of the Microsoft Word nomination template

Finding: There is likely a significant familiarity and efficiency built into a stakeholder’s workflow when using Microsoft Word to fill out a NRHP nomination. An online-only form submission would require careful planning, implementation and user training. Users might depend heavily on the functionality of Microsoft Word given its ubiquity in office settings.

Recommendation: Any new online-only interface for submitting nominations would provide for a type of file conversion utility that would extract text from a completed Microsoft Word nomination template. This would still allow users to follow a familiar workflow in their research and nomination writing process, but it would mean that the form would be submitted in a fully ‘born-digital’ manner, and not tied to a Microsoft Word or PDF format.

¹⁰⁶ “Shalanda D. Young, “OMB Memorandum M-23-22: Delivering a Digital-First Public Experience” (Office of the Federal Chief Information Officer, September 22, 2023), accessed November 28, 2023, <https://www.whitehouse.gov/omb/management/ofcio/delivering-a-digital-first-public-experience/>.

Accessibility of National Register nominations

Finding: The ‘Accessible’ part of the FAIR framework isn’t specifically about access to digital resources by blind people, people with visual impairments, or others who use screen readers or other assistive devices. Although some NPS publications (such as the nps.gov website) and certain PDFs of National Register nomination forms are delivered in a Section 508 compliant format, it isn’t clear that National Register database interfaces themselves are compliant. In other words, just because a specific PDF is Section 508 compliant, if a user can’t locate it in the first place due to barriers encountered on the website, then the document isn’t truly accessible to that user.

Recommendation: Any future National Register website update should:

- ensure that all web interfaces used to locate nomination forms are designed with inclusive digital best practices in mind.
- take into consideration input from disability advocates and disabled persons.

Whenever possible, the recommendations and requirements in the 2023 executive order titled *Strengthening Digital Accessibility and the Management of Section 508 of the Rehabilitation Act* should be followed.¹⁰⁷ This executive order asserts that “Members of the public and Federal employees should have equitable access to government, regardless of ability.” The preservation community and the NPS should explicitly outline what “equitable access” means specifically in regards to the National Register, and what is being done to achieve that equitable access.

Searching National Register metadata and nomination forms

Finding: Diane Miller’s article from 1991 referred to the National Register as “only an index” to the nomination forms themselves, which were still stored in paper format.¹⁰⁸ There still remains a disconnect between the NRIS Excel “index” and the full-text content of the nomination forms, even though many of the forms are available in a digitized format. There is not an easy way to search or filter search results based on both NRIS metadata *and* nomination text at the same time. Although searching for terms within the text of National Register nominations is possible through the National Register archives website, there is no way to filter search results. The filters offered on the left hand side of the National Archives interface are for the recordkeeping structure of the

¹⁰⁷ Shalanda D. Young, “OMB Memorandum M-24-08: Strengthening Digital Accessibility and the Management of Section 508 of the Rehabilitation Act” (Office of the Federal Chief Information Officer, December 21, 2023), accessed June 12, 2024, <https://www.whitehouse.gov/omb/management/ofcio/m-24-08-strengthening-digital-accessibility-and-the-management-of-section-508-of-the-rehabilitation-act/>.

¹⁰⁸ Miller, “23 Years of Automating the National Register.”

National Archives (such as file format or location of archival material), and not the metadata typical of a National Register search (such as listing date, name of architect, or state or city of the listed property).

Recommendation: Future search functionality and website interfaces should be tailored to the specific metadata of the NRIS index and of the full text of a nomination form, and allow search and filter of both metadata and the full text of nominations at the same time. This would be made possible by capturing the nomination form content in an entirely ‘born-digital’ manner.

The search interface of the Federal Register offers a good example of enabling a full-text search that can be further filtered by metadata fields relevant to that collection. The Federal Register also allows users to ‘subscribe’ to a specific search term and receive an email notification when any new material added to the website meets that search term.

Digital Object Identifiers for nomination forms

Findings: Digital object identifiers (DOI) are used extensively in many sectors including government, academia, and publishing. The National Park System already uses DOIs for NPS-authored science reports and may support DOIs “for other types of published reports and datasets” in the future.¹⁰⁹

Recommendations: Create a DOI system for all National Register nominations, past and present. The main function of a DOI would be to ensure a permanent URL web address where all authoritative data related to that specific NRHP property could be retrieved. The interface would show the user the metadata and entire nomination in a web-based format for all ‘born-digital’ nomination submissions. The interface would allow for a PDF version of the nomination to be downloaded. These and other useful functionalities were present in online journal interfaces or the Federal Register website outlined in the case study section of this report. The DOI system could use the NRIS number currently assigned to NRHP properties, as it is a de facto DOI already.

A DOI system would offer uniform numbering and access for all internal and external users, and would facilitate citations within future NRHP nominations, academic publications, website content and social media.

For past NRHP nominations listed prior to the implementation of a ‘born-digital’ system, the DOI would provide the retrieval of PDF files. As technology of OCR and data extraction of

¹⁰⁹ “FAQ – Digital Object Identifier (DOI)” (National Park Service, 2020), <https://irma.nps.gov/DataStore/DownloadFile/646289>.

PDF files improves, the content of old NRHP files on DOI pages could retroactively be made more web-based and machine readable.

Certain bibliographic software such as Zotero have built-in functionality to retrieve files and corresponding bibliographic records (ie publication date, author, title, etc) automatically when a user provides just a DOI. Graduate research papers and National Register nomination forms alike make extensive references to past nominations. Making these past nominations easier to locate and cite with a DOI, especially in conjunction with bibliographic software, would allow for more efficiency for academic researchers and nomination form preparers.¹¹⁰

NPS web page links to National Register nominations

Findings: Although the ‘Property ID’ column of the National Register Excel file represents a unique ID for each listing, the web addresses used by the NPS to point users to NRHP nomination files do not use a consistent formatting scheme. Within various subpages of the NPS website, including the list of NRHP sample nominations, there are at least four different URL types used to point users to NRHP nomination files:

- <https://irma.nps.gov/DataStore/DownloadFile/699583>
- <https://npgallery.nps.gov/NRHP/AssetDetail/89f205e3-90cf-405f-94c2-68a2e75e3326>
- <https://catalog.archives.gov/id/77849721>
- https://www.nps.gov/subjects/nationalregister/upload/100007205_508.pdf

Recommendations: A DOI system as outlined above would allow for a consistent and permanent method of linking to NRHP records from within NPS websites and documents.

A DOI system would also be beneficial to Wikipedia and Wikidata editors in providing a consistent approach to linking to nomination forms from websites and platforms outside of the NPS websites.

Finding: The NRHP articles on Wikipedia generally cite an NPS website as the location of the nomination file. These are often formatted as “<https://npgallery.nps.gov/AssetDetail/NRIS/100003443>” for example, where ‘100003443’ is the

¹¹⁰ “Research Guides: Zotero: Add Item(s) by Identifier,” accessed June 12, 2024, <https://guides.nyu.edu/zotero/collecting-add-items-by-identifier>.

unique NRIS number. However, a large number of these URLs don't actually have a file located there.

Recommendation: Future NRIS and NRHP website updates should consider the ways that this data can be useful to Wikipedia editors in maintaining what is likely the largest example of re-use of the NRHP as an open data set. As per the DOI recommendation above, a consistent naming convention would allow for Wikipedia articles to more easily link back to the nomination itself.

National Register Bulletins

Findings: Most official guidance offered by the NPS through *National Register Bulletins*, and more recently, the quarterly *Best Practices Review*, are published only in PDF format.

Recommendations: Use the aforementioned DOI system to catalog all official NRHP bulletins and publications, and create web-based version of the content for any guidance which still remains in effect. These publications should be easily citable by nomination preparers and researchers as DOIs. These publications should meet accessibility requirements for users with assistive screen readers as outlined above.

Links to other historic resource inventories

Findings: Early NPS publications about NRHP data management frequently mention the need for interoperability with other inventories and databases, in particular those operated by SHPOs or other federal documentation programs such as HABS/HALS/HAER. Figure 18 shows an illustration from 1987 depicting the records of the same historic building in three different historic resource inventories.

Currently, there is no HABS/HALS/HAER identifier listed in the NRIS Excel file. HABS/HALS/HAER records on the Library of Congress website do make reference to an NRIS number in some cases. There is no way to query both bulk data sets at once.

Recommendations: The document titled *Metadata Systems for the U.S. Statistical Agencies, in Plain Language, and mention GIS standards*, written in 2020 by group of U.S. Federal statistical agency representatives, highlights the advantages of adopting standards using a consensus process: “a specification built on consensus by a group including more stakeholder communities stands a better chance of being accepted by users and satisfying the needs of those communities.” The NPS, along with other preservation stakeholders and partners, should create a “formal, accessible, shared, and broadly applicable language for knowledge representation” as outlined in the Interoperability

principle of the FAIR framework. The primary goal would be linking the various metadata fields of an NRHP database with other important databases such as HABS/HAER and other inventories maintained at state and city levels. This would allow queries across multiple databases at once.¹¹¹

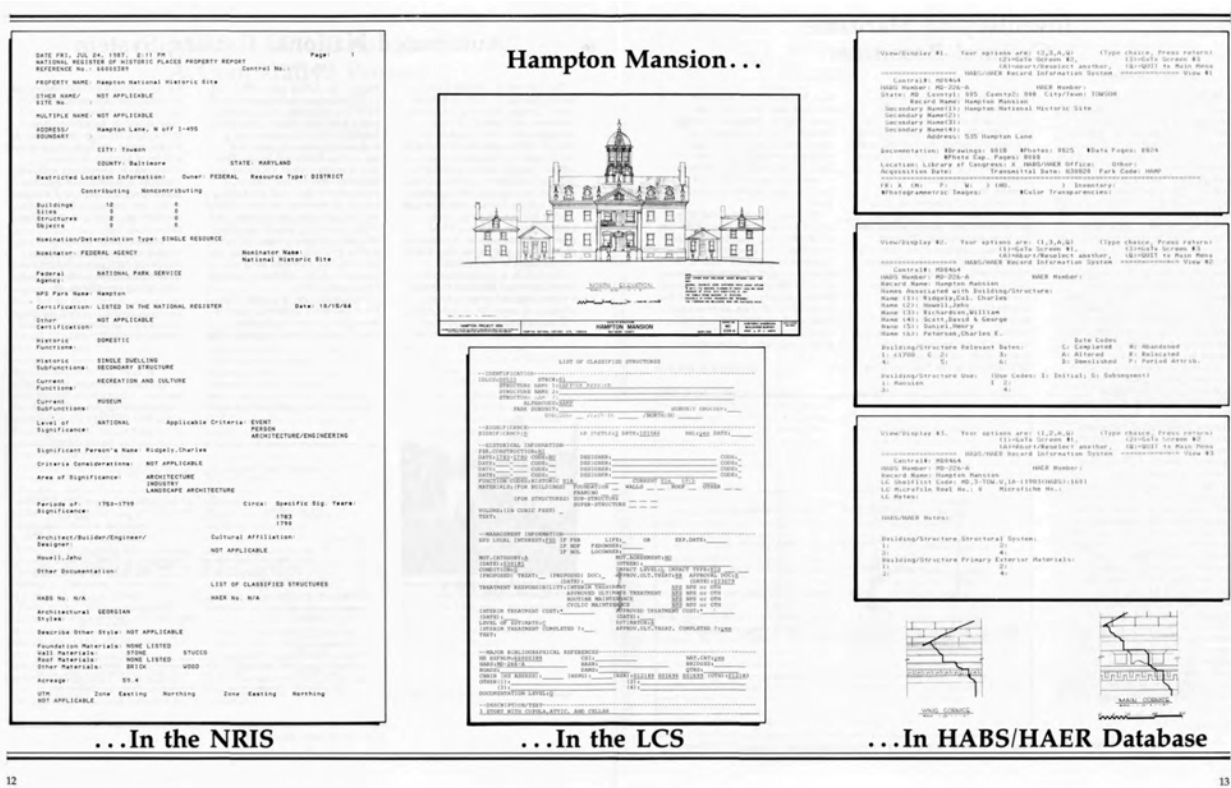


Figure 18: Illustration from 1987 showing the Hampton Mansion in the NRIS, LCS, and HABS/HAER Database

Access to NRIS by the public

Finding: The National Register Information System (NRIS) is described by the NPS as “an internal workflow application developed to manage the receipt, processing, and status of National Register-related documentation.”¹¹² The Excel file that is downloadable through the NPS website represents a catalog of the information about nominations that have already been listed. As such,

¹¹¹ SCOPE Metadata team, “Metadata Systems for the U.S. Statistical Agencies, in Plain Language,” July 10, 2020.

¹¹² “NATIONAL REGISTER INFORMATION TRACKING SYSTEM (NRIS) TERMINOLOGY” (National Park Service, n.d.), https://www.nps.gov/subjects/nationalregister/upload/NR-NHL-NRIS-terms_20210805.pdf.

NRIS is not directly accessible by the public (nor should it be accessible in its entirety, given that it tracks restricted and sensitive information).

However, in years past, the NPS did make available portions of NRIS to download in database format, given that “a small percentage of relatively sophisticated users may want to manipulate database information in their local computer environment.”¹¹³ In 2006, the NRIS website allowed users to query by Architect/Builder/Engineer.¹¹⁴ This data field is currently not offered in the Excel file. Carol Shull describes there being forty-five NRIS data fields in 2003, whereas the current NRIS Excel file is only 24 columns.¹¹⁵

Recommendations: The National Register database (specifically the portions that don’t represent restricted properties) should be made accessible for download by the general public, or for querying through an online interface.

Improving access and use of National Register administrative archives

National Park Service newsletters

Finding: There is a large collection of newsletters (such as the NPS *CRM* publications from 1978-2011, or the NCPTT *Notes*) that contain valuable history about the development of technology in the practice of preservation, and specifically the automatization and computerization of the National Register. These newsletters and other publications by preservation professionals also offered general introductory articles about accessing new technology at the time such as the Internet. These articles are primarily written records, but include visuals of printouts or screen captures. These visuals are possibly the only remaining record of these iterations of the technology. Some of these newsletters are accessible on NPS hosted sites. Some NPS listings point to PDF scans on archive.org. Others are hosted on npshistory.com (an unofficial document NPS repository). These records represent a valuable resource in understanding the trajectory of ‘d/Discourse’ of the National Register and preservation in this country. These records represent important first-hand accounts by the NPS staff who were developing information management technology.

The newsletters are not just valuable for the views and information contained within, but for the documents they make reference to. Mentions of two such titles, the IBM *An Information System for*

¹¹³ “NRIS General,” accessed June 14, 2024, <https://web.archive.org/web/20060615020111/http://www.nr.nps.gov/general.htm>.

¹¹⁴ “NRIS Search by Name,” accessed June 14, 2024, <https://web.archive.org/web/20060702055704/http://www.nr.nps.gov/nrname1.htm>.

¹¹⁵ Carol Shull, “Searching for Women in the National Register of Historic Places,” in *Restoring Women’s History through Historic Preservation*, ed. Gail Lee Dubrow and Jennifer B. Goodman (Johns Hopkins University Press, 2003).

the National Register (1969) and the graduate paper *Analysis of the National Register and of the problems concerning accuracy of the data used in the analysis* (1974), were first encountered by me as references in these NPS newsletters, and are key documents in understanding the history of data management and the National Register. Copies were provided to me by the National Register archivist and through the NC State University library system, respectively.

Recommendation: All historic NPS publications should be cataloged on a Digital Object Identifier (DOI) system proposed above, for the same reasons of findability and citability by researchers, and to meet long-term archival best practices. All these resources should also be accessible through a search and research interface suited for archival periodicals (for example, similar to the one available at newspapers.com). The individual issues should be easily citable. Future ‘data recovery’ efforts might break up individual issues which are accessed or downloaded most frequently into individual articles, so that citation of the article authors is easier.

National Register administrative and institutional knowledge

Finding: The NPS defines administrative history as “the history of its parks as parks and its various programs and activities, as distinct from the history it commemorates and interprets to the public.” The guidance offered on researching and writing and administrative history is “clearly applicable to any organization.”¹¹⁶ The newsletters mentioned above, and the institutional knowledge held by current and past NPS staff who have developed information management technology are a valuable and important resource.

Recommendation: The NPS and preservation partners should develop administrative history of preservation information technology which specifically documents the history of NRHP data management. This could include an oral history component, and a call for tech-related artifacts and ephemera from SHPO archives. The story relayed on the *A Preservation Partnership: Digitizing the National Register of Historic Places and National Historic Landmark Records* webpage only outlines the efforts to scan NRHP records beginning in 2014 but otherwise omits any references to NRIS or the beginnings of NRHP data management in the 1960s. This story deserves a more comprehensive representation and recognition.

Relevant documents stored with nomination forms

¹¹⁶ “CRM Vol. 16 No. 1: Administrative History,” CRM (National Park Service, 1993).

Finding: Digitized versions of older nomination forms can include a significant amount of supporting documentation bundled together in the PDF archives offered on the NARA website. These accompanying documents include correspondence between the nominating party and the respective SHPO office or NPS employees regarding the proposed nomination. They can also include other photos, research, and notes. These documents were likely either provided by the party nominating the property for listing, or by the SHPO that reviewed that nomination.

For example, the Wainwright Building, designed by Adler and Sullivan and built in 1891, was added to the National Register in 1968 (but a nomination form was not prepared until 1977). The link to the NPS Gallery site has a PDF with the nomination form from 1977 of just 12 pages. However, the PDF of the nomination form on the National Archives website is a formidable file of 401 pages, and includes records of the building's process of listing as a National Historic Landmark in 1968. In addition to the nomination form itself, the scanned documents in this single PDF include a pamphlet titled *The Wainwright Building, a Public Appeal for Preservation*, which was an open letter to the president and regional politicians urging for preservation funding and awareness to a deteriorating building. The pamphlet's author solicited help from architects, and printed responses in support from Buckminster Fuller, Sibyl Moholy-Nogy, Lewis Mumford, and Minoru Yamasaki among others. This compendium of documents and correspondence represents a valuable set of knowledge about the efforts to preserve the building, but also about the practice of preservation at the time.

These supporting documents are bundled and stored alongside the respective nomination form, but generally not easily findable. For example, a search for the term "The Wainwright Building, a Public Appeal for Preservation" on Google results in a few documents that mention the title of this publication, but no actual way to access or download the contents itself. A search for the same term on the National Archives search interface itself returns no results whatsoever. So although a digital version of this publication exists in a downloadable format, unless a user happens to stumble upon this, they would have no way of finding it even if they knew what they were looking for. The documentation for the Wainwright building is just one example of what is stored in the National Register PDF files on the National Archives website; there are likely thousands more nomination files with useful content alongside the nominations.

Recommendation: The National Archives should consider setting up an effort through their Citizen Archivist program to split up these PDF files into separate records with suitable labels

and other record finding mechanisms. This effort could be managed and promoted similar to the dozens of other ‘Missions’ through the Citizen Archivist program.¹¹⁷

Recommendation: The Excel file of National Register properties shows that 75,762 listings have corresponding National Archives links (see Appendix A). A research team with suitable computing power could download all these PDFs and run a script to sort the files by page count, and attempt to locate or uncover previously uncataloged materials such as the documents related to the Wainwright building mentioned above. Researchers may also try to extract and catalog different types of documents using novel machine learning or large language model approaches.

Comprehensive technology inventory

Finding: The scope of information found in this NRHP Wikiproject ‘Resources’ page (which includes a list of available digital databases for each state) is strikingly similar to the report titled *Computer Use In State Historic Preservation Offices*, which was published as part of the Cultural Resources Information Management Series by the National Park Service in 1990. This report provided “an overview of the state of automated cultural resources management in State Historic Preservation Offices” The data was compiled through a telephone survey of all SHPOs. The authors hoped that it could be updated yearly as a way to “make the cultural resources community aware of new efforts and innovations on the part of their members.”¹¹⁸

Recommendation: A thorough inventory of SHPO databases and digital tools, such as the one carried out in 1990, should take place. This should be done to document and highlight innovative uses of technology, as was the intent of the authors in 1990. SHPO offices implementing successful open data projects, especially those that relate to the National Register, should be given opportunities to present their processes and tools at preservation conferences and in preservation periodicals.

Improving digital literacy and community engagement

Stakeholder Surveys

Finding: The use of surveys and stakeholder input is important in gauging the interest and familiarity the public have with a certain topic (whether that be using the internet in the 1990s, or

¹¹⁷ “Citizen Archivist Missions,” National Archives, accessed June 12, 2024, <https://www.archives.gov/citizen-archivist/missions>.

¹¹⁸ Noriko Wood and Betsy Chittenden, “Computer Use In State Historic Preservation Offices” (National Park Service, September 1990).

the survey conducted as part of this terminal project which asked about understandings of openness) and as a way of ensuring technology tools and interfaces are informed by real-world users and their needs. Surveys can help identify knowledge gaps. The digital.gov website suggests that “by evaluating the user experience on federal websites and digital services, agencies can increase customer satisfaction, build public trust, and reduce burden on the public.”¹¹⁹

Recommendation: The NPS, along with partners such as the ACHP, NCPTT, or other academic institutions, should solicit feedback from NRHP users about the nomination and submission and listing processes and websites. This would ask questions specifically about the user’s experience in navigating the nomination process, and the tools and technologies used in the nomination process. User feedback could guide improvements to the NRHP websites “including available features, content, interface design, prospective functional design, and related policies.”¹²⁰ To the extent possible, publish anonymized or aggregated survey data on an annual basis. The survey should be standardized and reproducible over time, as a way to assess long-term changes and trends.

Wikipedia editors and the National Register

Finding: There exists a precedence for GLAMS (Galleries, Libraries, Archives, Museums, and Special Collections) to engage with the Wikipedia community and content in a variety of ways. This includes designating a staff within a library to participate in Wikipedia and being available to help Wikipedia editors find the information they need. An example of this is the Wikipedian In Residence program, which is a partnership between the Wikimedia foundation and dozens of different government and cultural institutions, including the Smithsonian Institution and the National Archives.¹²¹

Dominic Byrd-McDevitt, who served as the NARA Wikimedian in Residence in 2011 described the value for the Wiki community and NARA alike:

I am excited because this means our efforts engaging the Wikimedia projects are not just benefiting visitors to their own sites, but are also adding value directly back to our own site. Researchers using the National Archives’ catalog will benefit even if they had never heard of Wikisource or Commons before, and wouldn’t have visited them to find information about our documents. Finally, unreservedly recommending these sites as a resource, which the catalog now does, should hopefully also help demonstrate to the Wikimedia community that

¹¹⁹ “User Experience – Digital.Gov,” accessed June 14, 2024, <https://digital.gov/topics/user-experience/>.

¹²⁰ Kim M. Nazi et al., “A Decade of Veteran Voices: Examining Patient Portal Enhancements Through the Lens of User-Centered Design,” *Journal of Medical Internet Research* 20, no. 7 (July 10, 2018): e10413, <https://doi.org/10.2196/10413>.

¹²¹ “Wikimedian in Residence - Meta,” accessed June 14, 2024, https://meta.wikimedia.org/wiki/Wikimedian_in_residence.

the National Archives supports and appreciates work by Wikimedians which adds value to its collections, and encourage more of it.

Other institutions promote ‘editathons’, which are events or gatherings where participants coordinate work to improve a specific article or topic on the Wiki platform.

Recommendation: NPS and SHPO staff should engage with the NRHP Wikiproject community in an official capacity. The NPS and SHPOs could consider this part of their larger strategy for social media and online presence. This online presence includes the National Register of Historic Places account on the photo sharing website Flickr. This Flickr account has listed over 21,906 photos, including from the official National Register and National Historic Landmarks archives (“courtesy of the respective State Historic Preservation Offices (SHPO) or nomination preparers”) and of National Register staff members.¹²² In 2011, the National Register account created a Flickr group titled ‘National Register’s County Challenge’, and invited members of the public on Flickr to participate in the initiative. “Together we will try and represent each county of each state that has a property listed; a snapshot of America’s historical properties and places. Remember, not all Register listings have decided to attach a plaque to their buildings – you may be surprised at the number of listings around you!” This serves as an example of how NPS staff have connected with a group of people outside of the official National Register listing process as a way of crowdsourcing information with the stated intent of recordkeeping completeness. The NRHP Wikiproject community has demonstrated a similar interest in recordkeeping organization and research centered on the National Register.

Articles such as *Integrating Wikidata at the Library of Congress*¹²³ and *Association of Research Libraries White Paper on Wikidata: Opportunities and Recommendations*¹²⁴ are very helpful guides. The International Federation of Library Associations and Institutions’ two papers, *Opportunities for Public Libraries and Wikipedia* and *Opportunities for Academic and Research Libraries and Wikipedia* are also excellent resources.

¹²² “About National Register of Historic Places | Flickr,” accessed June 14, 2024, <https://www.flickr.com/people/nationalregister/>.

¹²³ Meghan Ferriter, “Integrating Wikidata at the Library of Congress | The Signal,” webpage, The Library of Congress, May 22, 2019, <https://blogs.loc.gov/thesignal/2019/05/integrating-wikidata-at-the-library-of-congress>.

¹²⁴ Judy Rutenberg, “ARL White Paper on Wikidata: Opportunities and Recommendations” (Association of Research Libraries, April 18, 2019).

Data analysis and literacy in preservation curriculum

Finding: The article by Jennifer L. Most titled *The Case for Data Analytics in Preservation Education and Practice*, which was highlighted in the literature review portion of this terminal project, offers a good overview of the need for “necessary tools and training to engage with data in meaningful ways” in the preservation profession.

Recommendation: Designers of graduate preservation curriculum should take into consideration Most’s chapter when updating curriculum and course offerings. Whenever possible, hire instructors who have experience managing large cultural heritage data sets. Schools that offer both historic preservation and information science degrees should find ways to develop courses together. Assignments for a data analytics class must include the National Register data set as part of the coursework. The following two books are good examples of books that a data analytics class might use for assigned readings:

Watson, B. M., Alexandra Alisa Provo, and Kathleen Burlingame. *Ethics in Linked Data*. Series on Critical Information Organization in LIS ; Number 1. Sacramento, CA: Library Juice Press, 2023.

Roued-Cunliffe, Henriette. *Open Heritage Data: An Introduction to Research, Publishing and Programming with Open Data in the Heritage Sector*. 1st ed. Facet, 2019.
<https://doi.org/10.29085/9781783303618>.

Conclusion

The recommendations listed here were not organized within a comprehensive timeline, nor do they take into consideration the significant budgets required for initiatives like this. This is similar to the approach as Betsy Chittenden in an article in the 1989 CRM Bulletin titled *Cultural Resources Information Management Strategy (A Working Draft)*:

This month's column is a work-in-progress summary of a proposed information strategy for cultural resources. This paper does not talk about activities, or tasks, or budgets. Instead, the proposed strategy presents a way of thinking about ourselves and an information strategy that will work for us.¹²⁵

Indeed, many of the information management challenges documented in Chittenden’s article, as well as “The Nucleus of a Proposed Information Management Strategy” are still relevant

¹²⁵ “CRM Bulletin Vol. 12 No. 3” (National Park Service, 1989), 20.

today. Chittenden invited feedback about the proposal: “What will work? What won't work? What do you think? This draft isn't perfect and it isn't polished, but it is intended to stimulate the intensive discussion needed to flush out all the issues.” The above recommendations are also intended to stimulate discussion about the ways the National Register can be managed with an open data framework, and help present day preservationists better describe “a way of thinking about ourselves and an information strategy that will work for us.”

Throughout the course of research, I came across several examples of digital platforms and projects that had been funded by grants from the Institute of Museum and Library Services. Preservation stakeholder groups eligible for funding through the IMLS should consider applying for grants that address some of the recommendations outlined above as a way of funding small-scale projects related to National Register and other historic inventory data. Successful projects could then be shared and replicated at larger scales. For example, the funding for the Washington Rural Heritage community digital archives included an IMLS grant. This project is compliant with the standards set by the Open Archives Institute, which provide “mechanism for repository interoperability.” Such interoperability allows portions of the Washington Rural Heritage database to be aggregated and accessed through larger websites such as the Digital Public Library of America (DPLA).¹²⁶

By making the collection of National Register data and nomination forms compliant with standards such as the Open Archives Institute, the content could be incorporated into search engines beyond just the National Archives. Such repository interoperability could allow, for example, National Register listings to appear in search results through public and university library portals.

The DPLA, which gathers and stores metadata from across many partnering institutions, also sees the value in sharing its collection elsewhere, such as with the Wikimedia Commons, the platform where multimedia content used in Wikipedia articles is stored. DPLA has made over 3.7 million images available, and made sure that the corresponding metadata (such as copyright status and license, creators, subjects, identifiers, contributing institutions, description, title, and collection) is also stored and displayed correctly on the Wikimedia Commons.¹²⁷

¹²⁶ “Washington Rural Heritage - Washington Rural Heritage,” accessed August 15, 2023, <https://www.washingtonruralheritage.org/digital/about>; “Washington Rural Heritage Metadata Guidelines, Version 3.1, 2018,” n.d.; “Search Results | DPLA,” accessed June 15, 2024, <https://dp.la/search?collection=%22Washington+Rural+Heritage%22>.

¹²⁷ Giovanna Fontenelle and Dominic Byrd-McDevitt, “Culture Heritage and Structured Data: How DPLA Became the Biggest Institution to Contribute to Structured Data on Commons,” *Diff* (blog), September 7, 2023, <https://diff.wikimedia.org/2023/09/07/culture-heritage-and-structured-data-how-dpla-became-the-biggest-institution-to-contribute-to-structured-data-on-commons/>; “DPLA to Make Cultural Treasures Freely Available on Wikipedia with

Researchers and writers of future National Register nominations will come across increasingly digitized archives such as the one offered by the Washington Rural Heritage, the Northwest Digital Heritage project or even websites like Wikipedia. Improvements to the access of information at small or local scales can improve the overall digital experience of National Register stakeholders, and remedy some of the frustrations described in the survey portion of this terminal project.

Whenever possible, the National Register data management should lead the way in setting the example for best practices, innovation and novel data research methods in the field of cultural resource management, including those outlined in this terminal project. In areas where the National Register has lagged in its use of technology or where funding hasn't been prioritized, stakeholders can rely on an increasingly interconnected data landscape elsewhere to fill in the gaps and gain knowledge about tools and ideas to incorporate into their own preservation work.

The 1991 report *Computer Use In State Historic Preservation Offices* included a diagram, shown in Figure 19, titled 'NCSHPO Super SHPO System,' which was a conceptual model showing the relationship between several different aspects of preservation inventories, offices, archives and projects. This "model integrated database" showed how all aspects of cultural resources management could be integrated into one system. Over three decades later, the possibilities of a single 'Super SHPO System' that does everything and stores all National Register or SHPO data in a single integrated database seems unlikely. A single integrated database also becomes less necessary as more preservation stakeholders embrace open data approaches to knowledge management. Preservation stakeholders will be able to use the data they need for their work and research from multiple places as long as it is findable and accessible.

The cost to improve the National Register database must be weighed with the costs of not doing anything at all. The article *Taming Technology for Preservation*, referenced in the introduction to this terminal project, recognized this: "The wealth of accumulated experience in preservation is not systematically collected, coordinated and made available to those who could benefit from the knowledge. The lack of sharing through a highly developed communications network leads to the squandering of precious time and resources."¹²⁸

New Sloan Foundation Support," Digital Public Library of America, accessed December 5, 2023, <https://dp.la/news/dpla-to-make-cultural-treasures-freely-available-on-wikipedia-with-new-sloan-foundation-support>.

¹²⁸ John I. Mesick, "Taming Technology for Preservation."

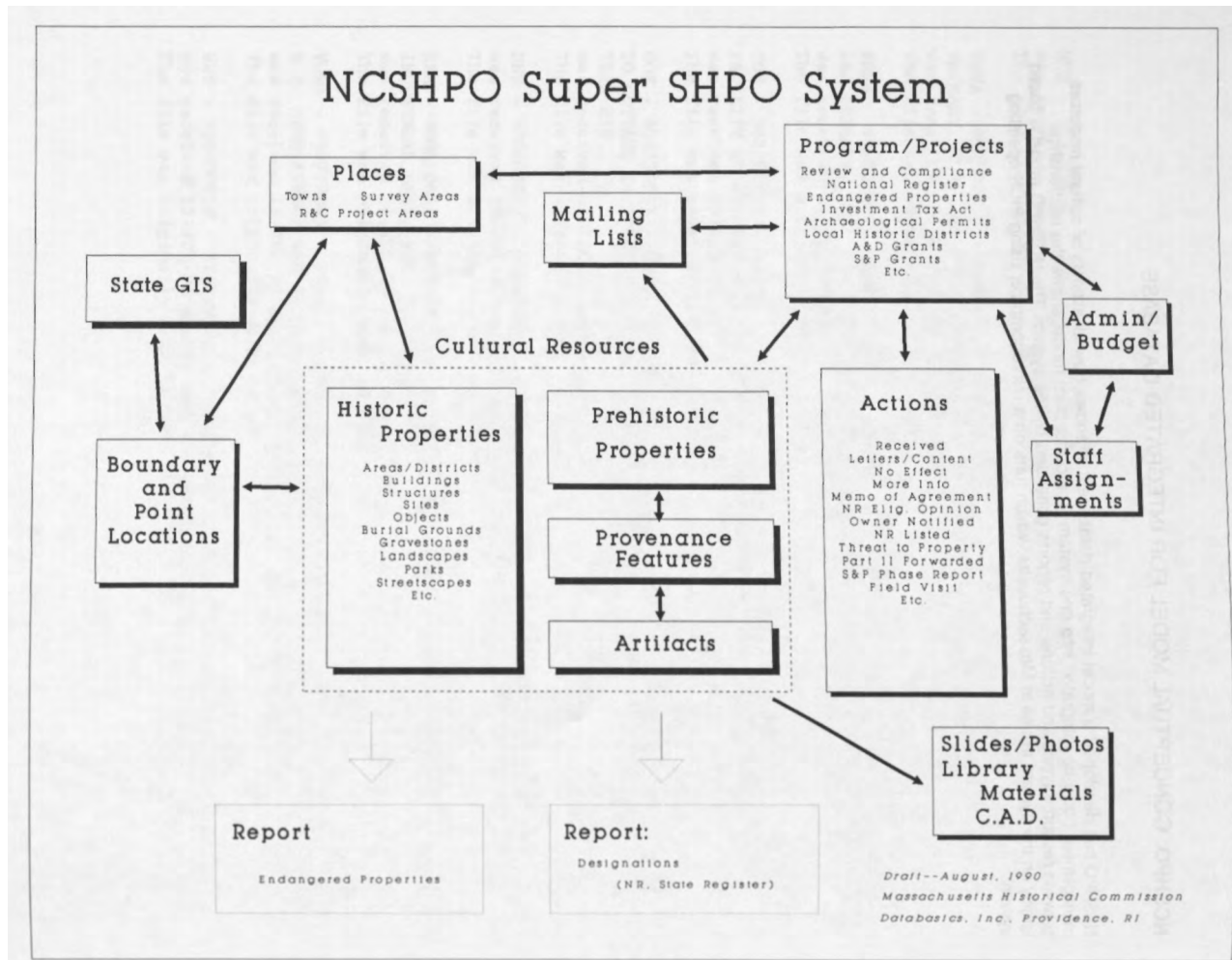


Figure 19 'NCSHPO Super SHPO System'¹²⁹

¹²⁹ Wood and Chittenden, "Computer Use In State Historic Preservation Offices."

Reflections and Conclusions

How can an open data framework inform the way National Register nominations are published and accessed as an institutional collection?

An open data framework has provided the language and ideas helpful to preservationists and stakeholders of the National Register who are interested in discussing their information management needs. As seen by the variety of ways open data intersects with cultural resource management, and the ways that data management principles have ethical, technical and policy implications, it is difficult to point to one exact, magic, all-encompassing approach or platform that would meet all stakeholders' needs and resolve the experiences of friction and frustration users had while writing or researching National Register nominations.

An outcome of this research was to prioritize an understanding of process surrounding the stewardship of an important institutional knowledge base, and explore ways that collaborative knowledge creation and sharing can be central in future updates to the data management infrastructure on which the Historic Register relies. The National Register will still need to serve its necessary regulatory and bureaucratic uses, but should also be able to offer preservation professionals and the general public a trustworthy and easy to use web interface at the same time.

Amidst the many frameworks and technical standards that operate under the label 'open', their suitability for use in administering the National Register will depend on stakeholders navigating many technical, policy, ideological and budgetary conversations. These conversations should be open to public input and participation whenever possible.

Furthermore, the ideologies, philosophies and technologies outlined in this report will continue to adapt and evolve, especially as GLAMS (galleries, libraries, archives, museums and special collections), universities, and other stakeholders reflect on successes, challenges and new opportunities of open data. Any recommendations set forth in this report will be outdated sooner than later. It is up to the historic preservation community to embrace data management as an ongoing and central conversation.

What started as a curiosity of mine about the ways that the National Register could be modernized turned into a broader exploration of how digital scholarship can be a tool in historic preservation. As mentioned in the recommendations of this terminal project, there is a need for digital skills to be prioritized in graduate preservation curricula. Better digital fluency can mean using new tools to look at old information in a different light, but it can also mean new ways of thinking

about the digital footprint preservationists are currently leaving for researchers in years or centuries from now.

The research paper, and in particular the survey experience, is in and of itself an example of the “conversations” part of the open data framework proposed at the beginning of the report. Presenting my research at the Association for Preservation Technology International conference in Seattle and at the Montana History Conference in the fall of 2023 was a good opportunity to foster discussion and to meet other people who are interested in cultural heritage data management.

My stated assumptions at the beginning of this report were that the National Register is an important research tool, and that stakeholder input matters when considering new ways of doing things, which is why I wanted to include a survey portion. And yet, there were many other assumptions I made, some which are clearer now after almost two years of mulling this topic over. This terminal project began with a desire to look at the many exciting ways that other fields have grappled with the ideas and implementations of ‘openness’, with the goal of finding other examples in related fields that could point to a way for technological modernization of a central tool in preservation, the National Register.

Indeed, I spend a lot of my time during the initial phase of my research project looking outside of the preservation field for answers. The discussions being had by GLAMS around the topic and use of Linked Open Data were particularly inspiring and enlightening. My assumption was that ‘openness’, in all its manifestations was somehow being perfected and practiced elsewhere. I found that the debate around openness is a lot more nuanced than I imagined, as are technological implementations of openness. By focusing on outside fields, I was able to give less attention to the ways technology has already been conceptualized, debated and implemented within the preservation community, especially in the earlier decades of the National Register.

Although terms like ‘open data’ didn’t enter mainstream conversations or gain attention until the 21st century (with websites like data.gov in 2009), the Discourse of openness, as a “way of being in the world,” is present in the early decades of the National Register, and to a certain extent, in present day professional and academic preservation settings. However, as evidenced by the survey results, most stakeholders didn’t feel they or the preservation field were familiar with the topic.

Increasing the familiarity and enthusiasm of present preservationists for an explicit open data approach seems like a chicken and the egg situation. Have the NPS and SHPOs not embraced explicit ‘open data’ language and approaches because preservation stakeholders are not familiar with it, or are preservation stakeholders less familiar with ‘open data’ Discourse because it hasn’t been

explicitly embraced by the NPS and SHPOs? This seemingly endless feedback cycle doesn't have a clear causal beginning, but it will likely begin to turn to a trend of preservation stakeholders fostering and adopting a more explicit open data stance, especially as it relates to the National Register.

During the course of my project, I was encouraged to learn about conversations around open data that are continually being explored and researched by others. For example, the *Advancing FAIR+CARE Practices in Cultural Heritage* project conducted a survey in May of 2024 and aims to “develop, disseminate, and promote ethical good practice guidance and digital data governance models integrating FAIR+CARE practices.”¹³⁰ The project includes working groups that meet regularly to address specific research goals. Listed participants include NPS, SHPO and THPO representatives.

In the *Computer Forum* column of the 1997 *APT Bulletin*, Barrett Kennedy discussed the symbolism of the *khadi*, “a homespun fabric that represented Mahatma Ghandi’s principle of self-reliance.” Kennedy called for preservationists to “define a virtual *khadi* for the Information Age. That is, we must not only be willing but also capable of weaving our own preservation fabric on the Web.” While I think the use of Mahatma Ghandi’s revolutionary symbolism as an analogy is misplaced, the call for information technology, for and by preservationists, is well taken and still relevant to any discussion about novel technologies.

The *Bending the Future* essay collection begins by asking “Who is a preservationist?” and also whether preservation is due for a grassroots movement. An open data framework can be adopted by both preservationists in grassroots settings and in mainstream agencies like the NPS. I hope this paper can be a useful resource for anyone wishing to engage with and learn more about an open data framework.

¹³⁰ “Advancing FAIR+CARE in Cultural Heritage,” The Alexandria Archive Institute, accessed May 7, 2024, <https://alexandriaarchive.org/fair-care/>.

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Appendix A: National Archive link calculations

This data analysis took the ‘national-register-listed-2024115.xlsx’ Excel file, and used a pivot table functionality to tabulate annual data for the following counts. Data with ‘Listed Date’ of anything outside of 1966-2023 were discarded. The calculations below only include ‘Request Type’ of ‘Single’ and ‘Multiple’, and exclude the ‘Request Type’ of ‘Add. Doc’, ‘Federal DOE’, ‘Move’, ‘Multiple Cover Sheet’, ‘Resubmission’, and ‘NHL’.¹³¹

- **Count of Restricted and Unrestricted:** This is a total count of listings that have the ‘Restricted’ field with a value of either ‘TRUE’ or ‘FALSE’
- **Count of Unrestricted:** Total count of listings that have the ‘Restricted’ value of ‘FALSE’
- **Count of Restricted:** Total count of listings that have the ‘Restricted’ value of ‘TRUE’
- **Count of External NARA Link (Restricted and Unrestricted):** Count of all listings, Restricted and Unrestricted, which have a link to the National Archive website
- **Count of External NARA Link (Unrestricted):** Count of only Unrestricted listings which have a link to the National Archive website
- **Percentage of Unrestricted properties with NARA Link:** Takes the value from ‘Count of External NARA Link (Unrestricted)’ and divides it by ‘Count of Unrestricted’

Year	Count of Restricted and Unrestricted	Count of Unrestricted	Count of Restricted	Count of External NARA Link (Restricted and Unrestricted)	Count of External NARA Link (Unrestricted)	Percentage of Unrestricted properties with NARA Link
1966	848	749	99	690	684	91%
1967	27	26	1	23	23	88%
1968	54	54		49	49	91%
1969	351	311	40	299	299	96%
1970	867	802	65	740	738	92%

¹³¹ “Data Downloads - National Register of Historic Places (U.S. National Park Service).”

1971	1,034	937	97	847	846	90%
1972	1,498	1,386	112	1,265	1,263	91%
1973	2,149	1,989	160	1,790	1,788	90%
1974	2,162	1,866	296	1,736	1,734	93%
1975	1,943	1,709	234	1,537	1,537	90%
1976	2,070	1,946	124	1,755	1,753	90%
1977	1,456	1,371	85	1,195	1,195	87%
1978	3,150	2,804	346	2,608	2,603	93%
1979	3,574	3,451	123	3,265	3,265	95%
1980	4,291	4,123	168	3,939	3,938	96%
1981	617	583	34	567	567	97%
1982	4,673	4,451	222	4,074	4,073	92%
1983	4,374	4,287	87	3,973	3,973	93%
1984	3,738	3,483	255	3,258	3,258	94%
1985	3,372	3,179	193	3,001	3,001	94%
1986	3,150	3,008	142	2,862	2,861	95%
1987	2,267	2,130	137	1,982	1,982	93%
1988	2,960	2,809	151	2,513	2,511	89%
1989	2,537	2,412	125	2,243	2,243	93%
1990	2,196	2,109	87	1,933	1,932	92%
1991	1,987	1,810	177	1,623	1,621	90%
1992	1,840	1,741	99	1,374	1,374	79%
1993	1,550	1,404	146	1,227	1,227	87%
1994	1,590	1,489	101	1,363	1,363	92%
1995	1,507	1,431	76	1,246	1,245	87%
1996	1,522	1,458	64	1,307	1,307	90%
1997	1,568	1,431	137	1,340	1,340	94%
1998	1,539	1,488	51	1,366	1,364	92%
1999	1,510	1,464	46	1,329	1,329	91%
2000	1,521	1,478	43	1,377	1,374	93%
2001	1,401	1,352	49	1,216	1,215	90%
2002	1,666	1,632	34	1,492	1,490	91%
2003	1,359	1,312	47	1,197	1,194	91%
2004	1,526	1,483	43	1,324	1,323	89%
2005	1,587	1,542	45	1,359	1,356	88%
2006	1,253	1,217	36	1,052	1,050	86%
2007	1,406	1,373	33	1,178	1,177	86%

2008	1,301	1,255	46	1,090	1,089	87%
2009	1,225	1,134	91	968	967	85%
2010	1,088	1,055	33	945	940	89%
2011	1,063	1,019	44	901	899	88%
2012	1,166	952	214	835	835	88%
2013	1,075	1,021	54	134	133	13%
2014	1,142	982	160	6	6	1%
2015	1,015	961	54	1	1	0%
2016	906	870	36	1		0%
2017	1,169	1,125	44	1	1	0%
2018	1,001	953	48	1	1	0%
2019	1,027	994	33	8	8	1%
2020	931	911	20	85	84	9%
2021	1,088	1,045	43	146	145	14%
2022	957	933	24	91	91	10%
2023	859	836	23	87	87	10%
Grand Total	98,791	93,214	5,577	75,824	75,762	81%

Appendix B: Sampling of National Register listings

As outlined in the ‘Getting familiar with the National Register’ section of this terminal project, a random sampling of 10 National Register listings from year 2022 were used to get a sense of how easy it is to locate PDF files of nominations, and the type of content within those files.

Reference ID	Property name	State	Able to find and access PDF?	Pages of text (form only, no photos)	Images	Footnotes	Bibliographic References (including newspaper articles)
100008070	Roberto Clemente Walker Crash Site	Puerto Rico	Google leads to SHPO	16	42	99	131
100008005	Graves Homeplace	Louisiana	SHPO emailed me after I couldn't find it on the SHPO database.	12	11	15	17
100007678	Presbyterian Church	Iowa	No, Iowa SHPO website refers user back to NPS database. No email contact for SHPO office provided.				
100007697	Arreguin, Alfredo & Susan Lytle, House and Studio	Washington	SHPO website	13	23	7	69
100007905	Forest Grove Cemetery	Missouri	SHPO website (No text search available)	25	17	57	33
100008421	Main Street and Murray Avenue Historic District	Massachusetts	SHPO website	27	11	2	33
100006515	Ballard, Samuel F., House	New York	SHPO website	15	15	5	5
100007732	Main and Franklin Streets Historic District	Massachusetts	SHPO website	32	55	9	59
100007680	Daubner, George H. and Frances, House	Wisconsin	SHPO emailed me	21	22	28	49
100008315	Florence Commercial Historic District	Nebraska	SHPO emailed me	34	59	81	15
			Average:	22	28	34	46

As described in the main body of the report, on March 21, 2023, I used the news.google.com portal to search for the term “National Register of Historic Places,” and picked the first 10 links that were shown to me.

Link to news story	Link to SHPO or NPS website in any capacity?	If yes, was the nomination form accessible on SHPO site?	Does the article quote nomination form?	Note
https://www.htrnews.com/story/news/local/2023/03/20/manitowoc-west-of-the-lake-joins-national-register-historic-places/70028610007/	Yes		No	
https://www.southwesttimes.com/news/drapper-historic-district-added-national-register	No		Yes	
https://www.whitehouse.gov/briefing-room/presidential-actions/2023/03/21/a-proclamation-on-the-establishment-of-the-castner-range-national-monument-2023/	No		No	The press release mentions that the new Castner Range National Monument includes three NRHPs
https://eastcobbnews.com/tag/hyde-farm-nomination-national-register-of-historic-places/	Yes	N/A	N/A	This is about a county resolution to submit this nomination, listing hadn't yet happened.
https://www.northsidesun.com/state-press-releases/mdah-greenvilles-live-oak-cemetery-added-national-register-historic-places#sthash.vAD2ICBP.dpbs	Yes	No	No	press release from the Mississippi Department of Archives and History
https://www.expressnews.com/news/article/san-antonio-national-register-historic-places-17836230.php	No		Yes	
https://www.latimes.com/travel/list/national-register-of-historic-places-los-angeles	No		No	
https://news.mt.gov/Montana-Historical-Society/Anaconda-Property-Listed-in-National-Register-of-Historic-Places	Yes	Yes	Yes	
https://www.whitehouse.gov/briefing-room/statements-releases/2023/03/21/fact-sheet-president-biden-designates-avi-kwa-ame-national-monument/	No		No	New National Monument designation which includes a NRHP location
https://www.rgi.com/story/news/2023/02/21/tribes-want-thacker-pass-added-to-national-register-of-historic-places/69925128007/	No	N/A	N/A	This is about a recent application, listing hadn't yet happened.

Appendix C: Resources with helpful glossaries

“Case Studies & Examples | Resources.Data.Gov.”

<https://resources.data.gov/categories/case-studies-examples/>.

“Cultural Resource Spatial Data Transfer Standards: Guidelines for Use and Implementation.”

Cultural Resource GIS Facility, Preservation Assistance Programs, National Park Service, January 2014. <https://irma.nps.gov/DataStore/Reference/Profile/2206878>.

Deidre McCarthy. “Historic Preservation Response Methodology Based on the Hurricane Katrina Model.” Cultural Resource GIS Facility, Heritage Documentation Programs, National Park Service, n.d.

“International Image Interoperability Framework : How It Works.”

<https://iiif.io/get-started/how-iiif-works/>.

Oral History Association. “Principles and Best Practices Glossary.”

<https://oralhistory.org/best-practices-glossary/>.

“PREMIS Data Dictionary for Preservation Metadata, Version 3.0.” PREMIS Editorial Committee, Library of Congress, June 2015.

SCOPE Metadata team. “Metadata Systems for the U.S. Statistical Agencies, in Plain Language,” July 2020.

“Section508.Gov : Glossary.”

<https://www.section508.gov/content/glossary/>.

Senate Sub-Committee on Open Access. “Open Access White Paper.” University of Oregon SENATE SUB-COMMITTEE ON OPEN ACCESS, 2021.

<https://scholarsbank.uoregon.edu/xmlui/handle/1794/27084>.

“Structural Metadata – Oral History in the Digital Age.” Accessed November 16, 2022.

<https://ohda.matrix.msu.edu/gettingstarted/glossary/archiveglossary/>.

Appendix D: UO Research Compliance Services Review

Prior to recruiting survey respondents, I submitted a research plan to the University of Oregon's Research Compliance Services (RCS), as I would be working with human subjects. RCS determined that this terminal project was exempt from formal oversight by the Institutional Review Board given that my primary research method of a survey constituted a low risk for harm for the participants.

As outlined in the research plan provided to RCS, the recruitment methods for my survey included:

- reaching out directly to individuals who had been suggested to me by my terminal project committee members
- reaching out directly to individuals who had been suggested to me by other instructors I have had for classes in the University of Oregon Historic Preservation program
- reaching out directly to individuals who I have met through my own fieldwork, internship, professional networking, conferences or academic settings in the field of Historic Preservation
- reaching out directly to individuals whose public online presence (ie news article or website biography) includes clear references to interest and familiarity with the National Register for Historic Places
- posting the survey link on online forums or social media sites that target Historic Preservation professionals

In all of the above cases, the same recruitment message was used. A copy of the survey recruitment messaging, the informed consent language presented to the user at the start of the Qualtrics survey, and the RCS paperwork may be requested from the author.

Appendix E: Survey Responses

The following pages contain the survey responses from each of the 35 survey participants. A .csv file containing the responses in a tabular format may be requested from the author.

Name and Survey Completion Date: Mara Saxer (Respondent01), July 3, 2023

Affiliation: Historic Preservation Professional (Private sector or consultant)

Question 1: The act of putting together a nomination is sometimes an opportunity to generate new first hand sources in the form of interviews and uncovering unpublished documentation, which otherwise may never have been made available.

Question 2: The specifics of language and format can be complex, with opaque requirements, which can be frustrating.

Question 3: My local SHPO has been the most useful resource, but I do wish it were easier to find things without having to contact them directly.

Question 4: Data that is shared publicly, both to be viewed and to be manipulated by anyone with an interest to do so.

Question 5: I'm not sure there is one! Would love to be proven wrong about that going forward.

Question 6 (multiple choice): Underinformed

Question 6 (other):

Question 7 (multiple choice): Curious

Question 7 (other):

Question 8: I feel like I have learned the most about open data from people I know working more in software and tech fields and then gone off myself to see how it might apply to the preservation field. The state archives have proven to be a useful resource as well.

Question 9: I find that the earlier part of this acronym is easier than the later - finding and accessing are one thing, but making further use of the information, beyond just use as a citation, is not always feasible.

Question 10: Greater flexibility/creativity in the consideration of what is eligible, looking more holistically at sites and the way they interact rather than as individual islands of historic importance, making the NPS website more use friendly

Question 11: Most of the questions I am asked relate to specifics of building materials and age, this is what I find myself checking nominations for the most

Question 12: I would like to be able to see more mapping and visual representation of sites

Name and Survey Completion Date: Phebe Davis (Respondent02), July 3, 2023

Affiliation: Student

Question 1: Preserving an important part of history for a community

Question 2: The formatting and inconsistency in the paperwork

Question 3: Local maps websites, such as Portland Maps

Question 4: Data that is openly available

Question 5: I'm not really sure

Question 6 (multiple choice): Underinformed

Question 6 (other):

Question 7 (multiple choice): Curious

Question 7 (other):

Question 8:

Question 9: Most of them are available to be looked at

Question 10: By including a better guide for anyone to be able to write one

Question 11: What types of properties have been listed in the past

Question 12: I wish there were better options for cultural resources for minority groups

Name and Survey Completion Date: Anonymous03 (Respondent03), July 6, 2023

Affiliation: Student

Question 1: My favorite part of authoring a National Register nomination would have to be the sense that I was making a material difference to the individuals and community associated with the resource I was writing about in representing a previously underrepresented story. The one NR nomination that I've worked on was located in a relatively isolated area, in a part of the state with very few state or federally recognized historic resources. Authoring a NR nomination felt like a genuine step towards the creation of a more representative historical record, and an important step in assisting the stakeholders in restoring and maintaining their historic building.

Question 2: Lack of consistency/clarity at the state level (in terms of authoring a NR nomination). In terms of accessing previous NR nominations, it can sometimes be difficult to track down specific nominations. Having previous NRHP documents split across two different repositories (the NARA database for pre-2013 nominations and the NPGallery for more recent ones) is awkward, and I've found both to be difficult to search at times.

Question 3: I'm a big Zotero fan, and I've found it to be pretty useful for organizing research - both research involved in writing a NR nomination and storing/organizing NR nominations I read/access for other research projects.

Question 4: My understanding is that the term 'open data' refers to data that is accessible by any member of the public, at any time, and is easy to share/access/utilize by someone without an especially high level of technical expertise.

Question 5: Probably similar to my understanding of the term. It's not a topic that I've seen/heard brought up a lot, so while I'm sure there are preservationists out there with a more nuanced sense of what open data is, there are probably a lot of other folks who either have no idea what it is, or a fairly basic understanding (like me).

Question 6 (multiple choice): Underinformed

Question 6 (other):

Question 7 (multiple choice): Curious

Question 7 (other):

Question 8:

Question 9: Given the relatively limited quantity of metadata associated with NR nominations in both the NARA and NPGallery system, I think the findability of NR nominations is less than ideal. Similarly, while the online NR repositories described above are generally publicly accessible, I think that interoperability is fairly poor.

Question 10: I think a lot of the issues I've had with accessing NR information is lack of digitization - while many NR nominations have been scanned, often their text isn't searchable, and people trying to access them are limited to searching by state, city, site name, etc. Obviously digitization and applying more detailed metadata to nominations would be an immensely time- and labor-consuming process, but a more robust search system would be useful for accessing NR information.

Question 11: I've typically been able to determine whether or not a National Register nomination exists for a specific property fairly easily, based on geographical data which allows me to narrow down search results to identify a specific resource.

Question 12: One type of question/search that isn't currently supported is filtering for multiple . For example, if I was writing a NR nomination about a resource that I thought had connections to the theme of maritime history under Criterion A, I might want to search for previous nominations that had also been nominated under that theme, with the same level of significance, within the same state, in order to draw more detailed comparisons between them. While I can search the NARA spreadsheet for one of these factors, I can't filter for multiple at a time; similarly I think being able to search for which nominations reference other nominations would be an interesting/useful way of interacting and researching National Register information.

Name and Survey Completion Date: Anonymous04 (Respondent04), July 7, 2023

Affiliation: Historic Preservation Professional (Federal, State, Tribal or Local government)

Question 1: Conducting oral histories (authoring)

Question 2: Not knowing how to navigate the NPS website or SHPO website to locate a specific nomination; I often just Google search the title of the nomination and find it on other websites (accessing); writing section 7, because it's tedious (authoring); editing a draft nomination that blurs the distinction between section 7 and section 8 (reviewing)

Question 3:

Question 4: A data set that can be contributed to and revised by any member of the public.

Question 5: Data that isn't trustworthy because it isn't curated or safeguarded by cultural resource professionals

Question 6 (multiple choice): Underinformed

Question 6 (other):

Question 7 (multiple choice): Skeptical

Question 7 (other):

Question 8:

Question 9: Newer nominations on the NPS website and SHPO websites are often optimized for OCR, which makes searching their full text possible and makes research more efficient.

Question 10: Require professionals to upload National Register nominations in a way that makes their display more flexible, for optimized reading for people with visual and auditory impairments

Question 11: How has the architecture of a historic district or an individual building evolved over time?

Question 12: Why has a particular resource been deemed ineligible by the keeper of the NRHP?

Name and Survey Completion Date: Anonymous05 (Respondent05), July 10, 2023

Affiliation: Historic Preservation Professional (Federal, State, Tribal or Local government)

Question 1: My favorite part is learning about a random corner of history that I otherwise would not have sought out or researched. This is particularly meaningful for the local level of significance where the event/person is very important to the small community, but I had never heard of them.

Question 2: Combating common misunderstandings about the National Register (If I list my property the government will control what I can do with it

Question 3: The National Register Bulletins are very helpful and always my first stop when I have questions about eligibility or integrity. See appendix F (Researching your Historic Montana Property for Nomination to the National Register) of Montana's Consultation guideline for a full list of helpful resources and tools I have used (<https://mhs.mt.gov/Shpo/Archaeology/ConsultingWith>)

Question 4: Information that is easily publicly accessible. It can be found via a google search or other common practice and does not include confidential or restricted information of any kind. There is no cost associated with accessing the information and it can be shared.

Question 5: Information that is not confidential or restricted and can be shared publicly.

Question 6 (multiple choice): Uninformed

Question 6 (other):

Question 7 (multiple choice): Accepting

Question 7 (other):

Question 8: none?

Question 9: Findable/Accessible (I'm not sure the distinction between these terms) - the NPS website to find national register properties is a bit cumbersome and not particularly user friendly. As a preservation professional with full awareness of the process and players I struggle to find information on the Nationwide pages. However, I have great success using more local pages about the National Register such as Montana SHPO (<https://mhs.mt.gov/Shpo/index1>); Interoperable - National register nominations are typically PDFs which make them very easy to share and use; Reusable - National Register Nominations make great references and I often pull up old NR Noms as a starting point to research other topics

Question 10: Some Reviewers of the National Register set the bar very high in terms of research and documentation for the average person to be able to complete a NR Nom independently. Giving SHPOs more funding so that their NR staff can be more engaged with individual properties would be helpful.

Question 11: What significance did early farmsteads/irrigation networks/ mines have in X county/community

Question 12: How many of X properties are located in Y area. I would love to search to understand how many NR listed homesteads there are in the Northern Plains, or how many Airway beacons are recorded nationally. This would give me a better sense of the integrity thresholds for possibly uncommon resource types.

Name and Survey Completion Date: Anonymous06 (Respondent06), July 22, 2023

Affiliation: Student

Question 1: The national register's ability to convey layers of history is my favorite aspect of reviewing and authoring nominations. Contemporary iterations of the nomination form encourage long form narratives where an author can include significant historic context to a site's significance untempered by the physical characteristics of the site.

Question 2: Searching the National Register is very limited. The clunky interface often misses key words, is unable to perform searches with several data points reliably, and makes consulting the National Register for particular types of properties or sites associated with specific histories almost useless. The limitations of the current database's public face prove difficult to perform meaningful analysis of previously nominated properties.

Question 3: I use Miro for visualizing and organizing data.

Question 4: Data freely available to the public without restrictions on its utilization or distribution.

Question 5: Information regarding National Register nominations, GIS mapping data illustrating locations and relationships of local and national historic sites, and information related to the significance and preservation of historic sites.

Question 6 (multiple choice): Underinformed

Question 6 (other):

Question 7 (multiple choice): Other:

Question 7 (other): I have never heard a cultural heritage professional talk about open data. My impression is open data is not a commonly broached topic and not a central tenant to their practice or ethos regarding the dissemination of information.

Question 8: I have had few if any conversations about open data regarding Historic Preservation outside of those held with this research's author.

Question 9: If a nomination has been identified and is listed in the National Register, it can be found. However, the content is not available in multiple forms, lacks easy interoperability, and the formatting and data quality are not presented in a way that promotes its public reuse.

Question 10: Enhancing digital accessibility with a user-focused platform that prioritizes user interaction, offering improved search capabilities, visual data tools such as GIS maps, and detailed layers of information about the properties. Establishing an open data interface that enables researchers to freely access and utilize data from the National Register of Historic Places for external projects and applications. Incorporating analytical and visualization tools for the data within the National Register (such as GIS, trend mapping, timelines, and pattern tracking over time). Integrating AI or machine learning to identify potential properties, address gaps in the National Register, and enhance the recognition of significant histories that may have been excluded from the current database.

Question 11: A list of properties within a specific geographical area, time period, or associated with a particular historical pattern

Question 12: I would compare the physical characteristics of properties associated with a given historic period across a wide geographical area and take note of the emerging patterns in specific regions. Moreover, I would investigate properties linked to social histories within specific geographical areas or time periods and create maps to visualize their interactions and potential points of intersection. By extracting data related to the number of properties with specific characteristics, I could design maps that analyze the rates of certain histories being identified on the National Register. Enhancing the National Register to allow for data extrapolation, comparative analysis, mapping, and statistical models would transform it from being merely a repository to a valuable tool for future investigations. This would not only increase its utility to the field of preservation but also to the general public. By making it more accessible and user-friendly, we can utilize the National Register in meaningful ways, facilitating its development and fostering its practical application in historical research and preservation efforts.

Name and Survey Completion Date: Anonymous07 (Respondent07), August 25, 2023

Affiliation: Student

Question 1: I love how the nominations have a tendency to contain thorough histories of the place.

Question 2: They're not easy to locate. They're in PDF format. Some have terrible image quality.

Question 3:

Question 4: Open Data is not only the fact that the data is transparent and inclusive, but also easily accessible and search optimized.

Question 5: I don't have experience with this and can't answer this question.

Question 6 (multiple choice): Underinformed

Question 6 (other):

Question 7 (multiple choice): Curious

Question 7 (other):

Question 8:

Question 9: They do use location tags in the metadata sometimes.

Question 10: I would love to see a GIS/map searchable option. I would also like to see the PDFs converted into a webpage. Some PDFs I've seen aren't OCR optimized (text searchable).

Question 11: I was able to learn the history of a school integration event through the school building's National Register nomination.

Question 12: I would love to see more source citations used in nominations. This would help students and researchers.

Name and Survey Completion Date: Anonymous08 (Respondent08), August 25, 2023

Affiliation: Academic

Question 1: Learning about new places, understanding other perspectives about places' significance

Question 2: Accessing - when nominations are not available digitally or parts are missing

Question 3:

Question 4: Data that is easily accessible by the general public

Question 5:

Question 6 (multiple choice): Underinformed

Question 6 (other):

Question 7 (multiple choice): Curious

Question 7 (other):

Question 8:

Question 9: Nominations are hard to find, which makes them inaccessible. Many are not available online. I don't know what interoperable means. Once found, they are easy to reuse, I guess.

Question 10: Information should be online. Even downloadable .pdfs are increasingly clunky. I'm imagining a searchable database where you could enter key words like "modern" "theater" and "Indiana" and get a list of results.

Question 11: I mostly use information in NR nominations to inform other research. Questions like "why was this place preserved"? Or "what is the history of this place"?

Question 12: There are so many! With open data it would be so much easier to do content analysis, spatial analysis, longitudinal analysis and more.

Name and Survey Completion Date: Barry Stiefel (Respondent09), August 25, 2023

Affiliation: Academic

Question 1: I use older nomination forms as primary source documents to study how people have been working on the forms has changed over time.

Question 2: I haven't really had a negative experience.

Question 3: I uses the databases of the National Archives and Records Administration, the Library of Congress, and state library/archives to assist in doing research on older National Register nominations.

Question 4: open access without restrictions

Question 5: Preservation-related date that is openly accessible, exploitable, editable and shared by anyone for any purpose.

Question 6 (multiple choice): Underinformed

Question 6 (other):

Question 7 (multiple choice): Other:

Question 7 (other): Unaware

Question 8: The Architectural Works Copyright Protection Act (AWCPA) of 1990

Question 9: Generally, I have found National Register nominations to be FAIR for the information I am looking for. Some minor exceptions related to military facilities where some materials were still classified.

Question 10: Creating some sort of cross reference between the databases with National Register nomination documents with Ancestry.com. This could potentially unveil a lot more information about common people in the past.

Question 11: Who, what, where, when, why, and how people have done National Register nominations since the late 1960s. This is been particularly interesting related to early minority preservationists, such as the work of the Afro-American Bicentennial Corporation.

Question 12: I haven't had lack of access to nomination forms that were successfully listed to the National Register. Though I would be interested in a database of nomination forms of properties that were not successfully listed to the National Register (as well as delisted). I would like to know if people of minority background (especially BIPOC) are over represented as having more failed or delisted nominations as well as the explanations from the SHPOs and NPS as to why these places were rejected or delisted.

Name and Survey Completion Date: Anonymous10 (Respondent10), August 25, 2023

Affiliation: Historic Preservation Professional (Private sector or consultant)

Question 1: Learning fascinating and important histories

Question 2: inconsistency between reviewers both within single SHPOs as well as state-to-state; increasingly complex or elaborate requirements for successful NRs; inconsistency in being able to access NRs from different states

Question 3:

Question 4: easily accessible and searchable

Question 5: available to the public

Question 6 (multiple choice): Underinformed

Question 6 (other):

Question 7 (multiple choice): Accepting

Question 7 (other):

Question 8: very few

Question 9: some states have easily accessible NRs within searchable databases and/or maps. these can be found by anyone with no training.

Question 10: nominations should be instantly digitized and easy to access

Question 11: when accessible, other NRN are helpful to provide context and comparables

Question 12: finding comparable NR nominations for reference can be very difficult because there isn't a good, centralized, searchable database that includes most nominations digitized. The NPS database is woefully incomplete and very difficult to use.

Name and Survey Completion Date: Anonymous11 (Respondent11), August 25, 2023

Affiliation: Academic

Question 1: Learning about historic places and repurposing historic buildings for a productive use.

Question 2: Documenting photography and working with outdated data bases. I also dislike GIS systems that certain states use.

Question 3: Webpages from SHPO's on the NRHP

Question 4: Accessible to everyone.

Question 5: Accessible to everyone.

Question 6 (multiple choice): Other:

Question 6 (other): informed.

Question 7 (multiple choice): Accepting

Question 7 (other):

Question 8: GIS systems from the UK

Question 9: Accessibility to NR nominations have greatly improved over the past ten years.

Question 10: Better user friendly GIS systems.

Question 11: NRHP nominations are a valuable source of primary source data for research.

Question 12: Why are the early nominations (from the 1960s) not updated?

ame and Survey Completion Date: Anonymous12 (Respondent12), August 25, 2023

Affiliation: Academic

Question 1: Working with community members who care deeply about the historic resource and its connection to their life and community.

Question 2: The sheer amount of time required to prepare and follow a nomination through the process. It is far more burdensome than necessary.

Question 3: Dropbox, Google Drive (historical databases)

Question 4: not sure

Question 5: no

Question 6 (multiple choice): Uninformed

Question 6 (other):

Question 7 (multiple choice): Other:

Question 7 (other): Don't think about it at all.

Question 8: Not educated on the topic. It is new to me

Question 9: It is almost impossible for an everyday person to find a National Register Nomination. In PA, the PA-SHARE system is so difficult to use that it is inconceivable that anyone will find or access info unless they are a staff or HP professional. The NPS has no public access. It is a major flaw in the entire process. All applications should be easy to access by anyone anywhere for free.

Question 10: The entire process is archaic, burdensome, and biased. It has been badly warped by the focus on tax credits and compliance. It is almost impossible for a novice to access or understand the process.

Question 11: I have tried to learn about African American history in PA. The effort is largely worthless--the system is too poorly organized to facilitate that type of research.

Question 12: Almost anything with social history

Name and Survey Completion Date: Anonymous13 (Respondent13), August 25, 2023

Affiliation: Historic Preservation Professional (Private sector or consultant)

Question 1: Using the NRHP form to learn about properties that have particular cultural significance or associations

Question 2: The quality of earlier nominations (e.g. from the 1970s/80s) can be low, often with only a page of context and not very much information so relying on older nominations gets tricky and they often need to be updated

Question 3: The NRHP database is pretty clunky and I find that Wikipedia is often the easiest way to search listed properties by region or type before using the NRHP database to access the forms

Question 4: Data that is publicly accessible and downloadable

Question 5: That historic preservation professionals and members of the public should have free and open access to the documents and forms that are part of the public historic record

Question 6 (multiple choice): Uninformed

Question 6 (other):

Question 7 (multiple choice): Other:

Question 7 (other): Generally accepting, although archaeologists (if considered part of the profession) need data to stay confidential/secure, which would probably have some people feeling a bit skeptical

Question 8: ESRI's Living Atlas and ArcGIS Online, Wikipedia, NP Gallery, state registers available online, Library of Congress, Data Clearinghouses, Internet Archive, Google :)

Question 9: the NP Gallery is the best place to download older forms, but searching for information is not easy

Question 10: It would be great if we could search for forms based on multiple search criteria (e.g. region, building type, significance, architect, key word, date range, etc)

Question 11: Often times it helps to do a comparative analysis of other, similar properties that have been listed or are eligible and gathering those different forms is important. Also, sometimes the easiest way to find information about a more obscure architect's life

Question 12: What sites have been nominated for specific criteria (e.g. C), that are now eligible for significance under additional criteria (e.g. A or B, perhaps due to events or associations occurring after the initial period of significance); so would it be possible to highlight sites that have been listed where additional significance potentially exists? A specific example is the Biltmore Hotel in Los Angeles, which was listed under Criterion C, but later became an important site for LGBTQ activists in the 1970s. Therefore, could be tag or flag that listing as one that may need to be updated or re-visited based on new information?

Name and Survey Completion Date: Anonymous14 (Respondent14), August 25, 2023

Affiliation: Historic Preservation Professional (Federal, State, Tribal or Local government)

Question 1: The research and finding the new information that puts a place into the context of its period and areas of significance, then sharing that new understanding with owners and the public.

Question 2: The irregularity of decisions by SHPO staff. Dismissiveness or lack of an open mind to see the "A" significance of "not pretty" historic properties. Dismissiveness of SHPO staff in considering that Post WW2 historic resources have potentially been "historic and not just old" for nearly 30 years! Haphazard state by state inventory and NR database systems. Consultants who do not even try to find the survey data and NR listing data. The never-ending "revisions" to the NPS website (and LOC) to access NR nominations.

Question 3: Hmmm. Not sure that I have used anything that is truly helpful. The city office I staff does not provide for subscriptions to newspaper search sites, but when they are available it is helpful. I have said for over 20 years that the NC SHPO and NPS MUST get together to create a uniform survey/inventory database system that is used by ALL states, so that consultants, local staff, and the public can learn one system/database used by all SHPOs and THPOs. It is ridiculous that each SHPO creates its own system and software. (At least as far as I know.)

Question 4: I have no idea--not my field. As a hopeful guess it means that it is data open and accessible to all.

Question 5: I don't understand, so I don't know of a common understanding. It is a phrase new to me.

Question 6 (multiple choice): Uninformed

Question 6 (other):

Question 7 (multiple choice): Other:

Question 7 (other): I do not know- I am curious, but I don't know what others know.

Question 8: None- but I will look now.

Question 9: Findable= very random and it takes some creativity; sometimes if it is more recent it isn't findable. Accessible= Kind of the same as "F" but accessible could also relate to level of education and the ability of creativity and context in a search. Interoperable= Do not know what that means--guessing accessible and not proprietary? Reusable= I do not know- You can download it for your own record?

Question 10: I think the universal survey and inventory software or database would be innovative and simplify work for consultants who work in many states. Far easier and more uniform DOE decisions and processes. Easier fillable forms. I am working with a consultant who failed SHPO Technical Review because of page number problems. Better provide for nominations of significant automobiles via the methodology of the National Historic Vehicle Register.

Question 11: Primarily finding similar nominations for similar properties (in other states) than can inform arguments and context for our applications.

Question 12: Mainly access to the latest nominations in a more timely and accessible way.

Name and Survey Completion Date: Anonymous15 (Respondent15), August 25, 2023

Affiliation: Historic Preservation Professional (Federal, State, Tribal or Local government)

Question 1: learning new things and the deep dive in local events of various events

Question 2: The aversion to adequate photography in comparison to the tedious written descriptions. The outdated styles and outdated dependence on style categories really make it difficult to find comparable properties

Question 3: Zotero and Endnote are the only things that make a decent bibliography feasible. SHPO databases

Question 4: Something that is full-text searchable at no cost to the user, preferably with specific mandatory data fields that can make more useful queries than just identifying the appearance of a word in a text

Question 5: I doubt there is any

Question 6 (multiple choice): Uninformed

Question 6 (other):

Question 7 (multiple choice): Skeptical

Question 7 (other):

Question 8: Getty's Arches project seems to be a decent foundation for exposing people to the idea

Question 9: I would say that "findable" is the only one that applies. Even then, those in academic history either do not consider them to be valid sources or are unaware they exist. NARA is making progress on accessibility with OCR. Interoperable and Reusable do not exist

Question 10: All blanks on the form must be indexed as an individual data field with a controlled, but expandable vocabulary as necessary. Several SHPO databases are not searchable by architect. NPS and NARA do not index architect names at all

Question 11: They are an unmatched source when doing local history research

Question 12: Catalogs of architects works, construction dates, periods of significance. Relationship to cultural/social/ethnic groups.

Name and Survey Completion Date: Anonymous16 (Respondent16), August 25, 2023

Affiliation: Historic Preservation Professional (Federal, State, Tribal or Local government)

Question 1: Researching and writing NR nominations

Question 2: Reviewing nominations that simply tell the history of a site without explaining WHY it is significant. Also nominations that dont give relevant context needed to determine why a site should be listed.

Question 3: Google Books, JStor, Haithi Trust for authoring

Question 4: Full online access to a resource

Question 5:

Question 6 (multiple choice): Underinformed

Question 6 (other):

Question 7 (multiple choice): Accepting

Question 7 (other):

Question 8:

Question 9: The NRIS system is not easy to search. Most states do not post NR nominations on the internet. So NOT findable or accessible.

Question 10: Current section 7 should be subordinate to Section 8. The current system places more value on architecture than cultural significance and a community's regard for their heritage. Way too much emphais is placed on integrity, which has little bearig on how important a site or object may be in history

Question 11: Have been able to determine if a specific sitehas ben listed.

Question 12: Abilty to search types of resources. For instance, I recently nominated an African American boating club, but did not kow how to use NRIS to see if any are currently listed and to read them

Name and Survey Completion Date: Amanda Morrow (Respondent17), August 25, 2023

Affiliation: Historic Preservation Professional (Federal, State, Tribal or Local government)

Question 1: Using local resources to conduct research to write NR noms - sometimes I'm the only person who has ever used these resources and including them in the NRN gives them publicity and can help future researchers

Question 2: Huge variation in expectations between SHPOs. While each state has its own priorities, this makes navigating the process challenging and expensive. Additionally the incentive to list on the NR means it is subject to the whims of real estate developers much of the time.

Question 3: The process of searching for a nomination can be painful; however, it has improved tremendously over the past decade. I personally enjoy the ESRI tools developed by states like Washington that are visually searchable. Archivegrid is a great way to see institutional archival holdings and is invaluable to research.

Question 4: Accessible without an account

Question 5: A lot of archaeologically-sensitive data is certainly not open data, nor should it be. Most of our work, though, really is for the public and should be accessible to community members who want to learn more.

Question 6 (multiple choice): Well-informed

Question 6 (other):

Question 7 (multiple choice): Curious

Question 7 (other):

Question 8: Not sure

Question 9: Using tags for alternative names/addresses for properties certainly helps. Additionally, consolidating all nominations in one website would be best. Also, continued investment in scanning historic nominations.

Question 10: The current system involves a lot of downloads and weird usage of a pdf inside of a website, so it's definitely not the most search-optimized. However, in opening a specific nomination, the search function is pretty good.

Question 11: I have been able to find nominations easily and consult them in my own research.

Question 12: I think having more insight into the process could help in the study of the history of preservation itself - how have these documents been modified? Who is the approving official? What does the NPS value? What hasn't been successfully listed?

Name and Survey Completion Date: Anonymous18 (Respondent18), August 25, 2023

Affiliation: Historic Preservation Professional (Private sector or consultant)

Question 1: Learning something new or interesting, then getting to write it in a way that conveys the resource's significance. I also love getting comments from reviewers like "Oh, I didn't know that!"

Question 2: Inconsistent comments from agencies - we shouldn't need to write NRs differently for different states.

Question 3: Accessing NRs - use the excel file provided by the NPS on the data downloads page - it gives links to everything that's at NARA (all of the NR data is at NARA now).

Question 4: easily accessible, no paywalls, egalitarian

Question 5: I don't think there is one, to be honest.

Question 6 (multiple choice): Misinformed

Question 6 (other):

Question 7 (multiple choice): Skeptical

Question 7 (other):

Question 8:

Question 9: None of those, really. Reusability would imply the existence of MPDFs or context statements that would mean an author doesn't need to essentially reinvent the wheel every time they do an NR even if its for a common resource type in a location.

Question 10: Update the guidance from 1995. Codify all of the submittal requirements instead of issuing separate white papers. Insist on MPDFs and context statements for resources like apartment buildings.

Question 11: Development of ethnic neighborhoods in Boston

Question 12: percentage of listed resources associated with people of color, underdocumented histories.

Name and Survey Completion Date: Anonymous19 (Respondent19), August 25, 2023

Affiliation: Historic Preservation Professional (Federal, State, Tribal or Local government)

Question 1: Authorthing

Question 2: Reviewing

Question 3: State CR GIS that include DOEs prior to formal NR nomination and state CR GIS that allow searches to find caprative properties

Question 4: Open to the public at large

Question 5: Open to professionals only

Question 6 (multiple choice): Misinformed

Question 6 (other):

Question 7 (multiple choice): Skeptical

Question 7 (other):

Question 8: Working with the publci to successfully nominate properties

Question 9: I have not. Saved psfs cannot be serached for content online or even with download w/o the right program

Question 10: Standardazation of process, review criteria, and forms ised by all states and territories

Question 11: Many- if I download. Post 1990 nominations usually have good contexts that can be referenced when looking at simiar properties

Question 12:

Name and Survey Completion Date: Bob Zybach (Respondent20), August 26, 2023

Affiliation: Other Cultural Heritage Professional

Question 1: Completion and acceptance of application process.

Question 2: Excessive paperwork and jargon.

Question 3: Variable. Reports? Photos? Google? Email?:

Question 4: I wouldn't. I prefer "information freely available online."

Question 5: Not sure there is a "common understanding."

Question 6 (multiple choice): Other:

Question 6 (other): Don't think there is a single acceptable definition at this juncture

Question 7 (multiple choice): Other:

Question 7 (other): No idea.

Question 8: None. No need to "educate." Have proven thoughts and practices.

Question 9: None.

Question 10: Have not actively engaged for 10+ years, in large part because of excessive forms.

Question 11: None.

Question 12: None.

Name and Survey Completion Date: Jeremy Wells (Respondent21), August 26, 2023

Affiliation: Historic Preservation Professional (Private sector or consultant)

Question 1: The sense of discovery and revealing some aspect of the past that was not well known.

Question 2: The unnecessarily rigid requirements in how the nomination must be drafted to sustain NPS policy.

Question 3: Use of a database (e.g., FileMaker); text parsing tools

Question 4: Public access to qualitative and/or quantitative data underlying a publication; data can be analyzed to replicate/uphold or reinterpret/expand the original publication.

Question 5: There is no common understanding. This is not a well-used or understood term.

Question 6 (multiple choice): Underinformed

Question 6 (other):

Question 7 (multiple choice): Curious

Question 7 (other):

Question 8: Again, this is not a common or known term in historic preservation.

Question 9: Most nominations can be individually accessed, but the data from which the narrative was written, is not typically available. "Data" that is part of the nomination is difficult to access because much of it is not available via database searches. The NPS makes it unnecessarily difficult to download multiple nominations.

Question 10: The NPS needs to reformat the NR nomination into discrete fields that are then stored in a relational database.

Question 11: I've accessed individual nominations for a better understanding of significance, but have not undertaken a comparison across or between nominations because this task is so difficult.

Question 12: Which nominations primarily base their significance on associations with people who have minoritized identities.

Name and Survey Completion Date: Samuel Wylie (Respondent22), August 26, 2023

Affiliation: Student

Question 1: Researching the history of the resource and writing an argument for its importance.

Question 2: The state-specific, minute differences in formatting; the completely outdated photography guidelines; the lack of a centralized database for finding previous nominations or documentation.

Question 3: city building records, academic archives, Zotero (citation management), public GIS maps

Question 4: Accessible to any/everyone and/or constantly being improved and expanded

Question 5: Publicly-available information without cost; e.g., government-published GIS maps with datasets for free download.

Question 6 (multiple choice): Other:

Question 6 (other): I can't speculate on the knowledge level of the profession as a whole

Question 7 (multiple choice): Skeptical

Question 7 (other):

Question 8: academic articles

Question 9: Some nominations are published on state-run websites or NPS webpages for download, usually in PDF or Word formats which are fairly universal. This does not seem to be true of many or most nominations, however, especially older ones.

Question 10: The creation of a federal, centralized database-- potentially one that uses machine learning to scrape metadata and make nominations keyword searchable

Question 11: What did the property look like at a certain date? Why is it culturally important to a community? How was the argument for its significance constructed? What are some of its character-defining features? Who prepared the nomination form?

Question 12: How many other buildings by this architect are nominated nation-wide? Are there any other resources that have similar building techniques or character-defining features?

Name and Survey Completion Date: Anonymous23 (Respondent23), August 28, 2023

Affiliation: Historic Preservation Professional (Federal, State, Tribal or Local government)

Question 1: Working with interested individuals to help list their eligible properties. I encourage non-professionals to do their own nominations. In that way, they take ownership of the information and often learn much, much more than they anticipated.

Question 2: Dealing with property owners who see listing as a way to economic gain. Those who see the Historic Preservation tax credit as a right and not a benefit.

Question 3: I've never really considered this. In the age of the internet, there are so many tools and avenues open for researchers. My answers would be different depending on the perspective (author, reviewer, access) and thus too numerous to list. One aspect common to the first two is access to digital maps, both contemporary and historic. The National Register is inherently about "place" and having good, accessible maps is important in understanding context.

Question 4: I don't

Question 5: Never thought about it.

Question 6 (multiple choice): Underinformed

Question 6 (other):

Question 7 (multiple choice): Other:

Question 7 (other): I doubt that most feel anything about it

Question 8: This survey is the first time I've ever considered it

Question 9: Nominations are findable through many sources. They are accessible to those who have a decent computer and ability to tap into the internet. As far as "assessible" in terms of ADA, they are not so..

Question 10: The process is set by law and regulation. The creation of a nomination and getting it into the process could be streamlined to an extent. However, creating a new framework (digital forms/submission) that works across 56 nominating authorities is challenging and can be expensive. The Federal allocation to administer the program at the state level (Historic Preservation Fund) has been going down in real dollars and is sometimes barely enough to support the many other activities required of SHPOs. The funding at the Federal level is also negligible and eaten up by other priorities. And even if there was a new system, it does not obviate the need to provide adequate information within the documents themselves.

Question 11: You name it..

Question 12: I really can't answer this one as worded. What I can say is that National Register information - data - and its availability is a product of time. The NHPA was passed in 1966. The first state nomination came in in 1969. The quality and quantity of information in subsequent nominations has varies over the years. The kind of data collected and how it is formatted has changed over the years. Much of the information (or lack thereof) was dictated by the technology of the day. Old databases had limited space, so the amount of information added to that database was limited. Successive generations of databases allowed for more information collection, but legacy data was still lacking. And, as a federal system, each state has a different character and "personality" in how it runs its program. Recognizing this, the NR has never tried to make everything "standard" in terms of some terminology that might be captured in a database. True, this limits some usefulness. But it avoids putting too many square pegs into round holes. So while it is great to consider the NRHP has a research tool, you must remember its primary purpose as a Federal planning tool. That is why it was created and why it is expanded - to provide the Federal government information necessary in considering undertakings.

Name and Survey Completion Date: Anonymous24 (Respondent24), August 28, 2023

Affiliation: Historic Preservation Professional (Private sector or consultant)

Question 1: My favorite aspect of authoring National Register nominations is the opportunity to conduct in-depth research into unique aspects of our nation's history and potentially explore the hidden untold stories behind our built heritage.

Question 2: The National Register imposes sometimes arbitrary limitations on the kinds of properties that can be included. They often want you to show that it is the only one of its kind, or the best, or largest. This limits the potential of the National Register and the buildings and places that can be preserved. In general, the idea of 'historically significant' can be subjective and subject to the personal perspectives of the reviewers.

Question 3: Existing National Register nominations can provide a good source for further research, but finding an applicable nomination can be tricky, as many of the search functions at the state and federal level only include base-level information.

Question 4: To me, open data would be publicly available information that can be viewed and cited.

Question 5: Not sure

Question 6 (multiple choice): Underinformed

Question 6 (other):

Question 7 (multiple choice): Other:

Question 7 (other): Not sure

Question 8: It's not something I particularly think about

Question 9: Inconsistent. Not all nominations are publicly available, and sometimes it takes a variety of different Google searches to find a nomination, if its even digitized.

Question 10: Having some kind of database that includes more in-depth search terms and easily accessible PDFs. Furthermore, broadening of the types of properties that are eligible for inclusion. A property shouldn't need to be the only example of its kind, or the best example, but simply a valuable historic resource.

Question 11: I am unclear on this question

Question 12:

Name and Survey Completion Date: Anonymous25 (Respondent25), August 28, 2023

Affiliation: Historic Preservation Professional (Federal, State, Tribal or Local government)

Question 1: There isn't really a fun part. The nomination process is just like defending a dissertation, a step or check offs that have no meaning other than a ritualistic set of check boxes.

Question 2: The Keeper's office lack of any consistency in reviewing a nomination. If you follow a recent nomination form for guidance on how to complete a form, the reviewer will reject your current nomination. The other issue is that tribal site must be 100% perfect to be approved. The bias against tribal sites is enormous and egregious.

Question 3: Talking to the SHPO

Question 4: A colonial definition that demands Indigenous people to share their data.

Question 5: Demanding to share all data with no strings attached.

Question 6 (multiple choice): Misinformed

Question 6 (other):

Question 7 (multiple choice): Other:

Question 7 (other): It's racist and colonial.

Question 8: There is no good source

Question 9: FAIR is a lie and a way for archaeologists to make unreasonable demands for data from tribes.

Question 10: Larger staff for the Keeper's office, bias training for Keeper's office, better electronic forms for submission

Question 11: The forms are not for research. Most forms have not been updated since they were completed when the NRHP was formed.

Question 12: I am a THPO I don't have lack of access to forms.

Name and Survey Completion Date: Adrienne Burke (Respondent26), August 29, 2023

Affiliation: Historic Preservation Professional (Private sector or consultant)

Question 1: Working with the community and doing the historic research, as well as reading other nominations to learn more about sites

Question 2: Level of information that is required now compared to nominations of yesteryear. It has become almost like a thesis or dissertation, which makes the process more inaccessible and more expensive. Especially when there is so much discussion around the need to nominate more diverse sites, these substantial requirements are a major hurdle to accomplishing that. It also seems that the thresholds for what is acceptable varies quite widely by SHPO.

Question 3: I've used NPS Gallery for accessing, but what is digitized is hit or miss. For authoring or reviewing, the research tools vary and are many.

Question 4: Good question, I'm not a tech person! I think it's something that is accessible to everyone online.

Question 5: I don't think there is much discussion about this amongst most practitioners.

Question 6 (multiple choice): Uninformed

Question 6 (other):

Question 7 (multiple choice): Other:

Question 7 (other): Not on their radar for the most part

Question 8: I haven't done this.

Question 9: What is digitally accessible online varies, so I would say it's not consistently findable and accessible.

Question 10: Online nominations would be great. More standardized review and expectations for what goes in a nomination. Less expectation to have a thesis.

Question 11: I've been able to find information on similar sites to a project I've been working on, I've used information from NR-listed sites elsewhere to support local designations and provide context for a resource type.

Question 12: I don't even know! Just having uniform access to all listed nominations would be amazing as a start.

Name and Survey Completion Date: Isaac Ullah (Respondent27), August 29, 2023

Affiliation: Academic

Question 1: That it is a centralized repository of important information about tangible historical resources of importance to this country.

Question 2: The forms are not particularly accessible or well documented. It takes a lot of training to be able to understand how to fill them out correctly.

Question 3: Historic archives, local historical groups, etc.

Question 4: Data that is accessible and comes with a non-commercial license. Adheres to the FAIR principles.

Question 5: "Free" as in beer.

Question 6 (multiple choice): Underinformed

Question 6 (other):

Question 7 (multiple choice): Skeptical

Question 7 (other):

Question 8: Well, I've written about it extensively so I've read a lot about it in the academic literature.

Question 9: Nope.

Question 10: Go all digital. Incorporate metadata from the start. Allow digital recordation techniques (including 3D).

Question 11: I've not really done that kind of work. Mostly on the process of digital recordation.

Question 12: I'd love to be able to access digital scans and other digital data (oral histories, etc.)

Name and Survey Completion Date: Anonymous28 (Respondent28), August 29, 2023

Affiliation: Historic Preservation Professional (Private sector or consultant)

Question 1: Figuring what the story is and how to tell it effectively

Question 2: Trying to access consistent high-level data across NRIS, NPGallery, and CRGIS

Question 3: Not sure what you mean by research or data management tools. Also, authoring, reviewing, and accessing are very different tasks so this question is difficult to answer.

Question 4: Data that is easily accessible to the general public? No idea.

Question 5: No idea.

Question 6 (multiple choice): Underinformed

Question 6 (other):

Question 7 (multiple choice): Other:

Question 7 (other): I don't think we think about open data.

Question 8: I have never thought about open data. This is not part of my work or a need that I have.

Question 9: You can look up individual nominations on NRIS or NPGallery, if they have been digitized or were created digitally.

Question 10: I don't think there's an issue with the nomination and listing process. It just is what it is. You may be trying to solve a problem that's not really a problem for professionals.

Question 11: What do you mean by "related to NR nominations"? Is that different than "contained in"? Not sure what you mean here.

Question 12: Not sure what you mean by "ask of the National Register".

Name and Survey Completion Date: Kristen Minor (Respondent29), September 1, 2023

Affiliation: Historic Preservation Professional (Private sector or consultant)

Question 1: Seeing more nominations tell the stories of marginalized groups

Question 2: Trying to explain to owners that there is not a huge burden on them to be listed on the NR

Question 3: Replying only to authoring a NR nom for marginalized populations: interviews/transcripts, searchable newspaper databases, historical archives at city and state level.

Question 4: Information that can be downloaded or accessed without having to pay for it, as from a library or other public repository

Question 5: same as above? Don't really know

Question 6 (multiple choice): Underinformed

Question 6 (other):

Question 7 (multiple choice): Curious

Question 7 (other):

Question 8: Feeling underinformed about now

Question 9: Nominations are findable, somewhat accessible, and each one can individually be searched for terms, but there is a long way to go before contexts in nominations are linked to more general topics, places, or people. This is a big drawback of searching for pre-existing nominations that cover a specific topic.

Question 10: The NR process has a very strong bias toward architectural significance and integrity that will mostly be a result of high-income owners of that property over time. It is time to lighten up on that focus, but that needs to start at the survey level. Nominations still need owner consent, but perhaps there could be a historic context piece (kind of "Section 8") that could allow for some degree of public recognition even when an owner does not consent. Finally, the database could be much more searchable.

Question 11: Have found information about specific property types (i.e. "stadium")

Question 12: More contextual information, like nominations that include women's experience during WWII, or that include the development and modernization of hospitals in the Pacific NW.

Name and Survey Completion Date: Samantha Gordon (Respondent30), September 5, 2023

Affiliation: Historic Preservation Professional (Private sector or consultant)

Question 1: Having digital access to NRHP nominations, especially photographs, sketch maps, and historical maps is invaluable in providing ****accessible**** sources to a wealth of detail from the historic period and when the property was nominated.

Question 2: NPS/NRHP/National Archive website changes and outages -- Sometimes the database will be down for no apparent reason, and I have "lost" bookmarks to helpful guidance documents when the Park Service's website is reorganized. The search tools for both NPS and National Archives can also be frustrating in their limitations.

Question 3: Oregon Historic Sites Database map function, WISAARD map function, Oregon state archives digitized materials, Salem Public Library digital photo collection, and Oregon SHPO guidance materials have been helpful for both review/access and authorship of NRHP nominations.

Question 4: Similar to other "open" movements such as open-source software, I would define "open data" as A) an ideological movement championing freely accessible and editable raw data, either specifically government-collected data or a more broad spectrum of data including both public and private entities and corporations or B) accessible data that falls into one of these categories. "Accessibility" in this framework is defined as not having monetary or credential barriers to access, data range/type limitations, intellectual property (IP)/copyright laws and licensing agreements, or commercial value.

Question 5: Free digital access to government archives and sources of raw government data unbounded by licensing limitations

Question 6 (multiple choice): Underinformed

Question 6 (other):

Question 7 (multiple choice): Curious

Question 7 (other):

Question 8: There is some discussion of open data within the Dismantle Preservation movement and amongst Gen X, Millennial, and Gen Z cultural resources professionals. However, this discussion is fairly limited in scope and depth. More generally, I follow the work of

Question 9: At present, my experience is that NRHP nominations to generally meet the minimum requirements of the FAIR model. They are findable (sometimes with a bit of legwork) on multiple online databases. They are accessible, insofar as I do not need to pay money to access them; however, accessibility from a disability standpoint is often limited, as nominations are often scanned PDFs of older documents, some of which are degraded in quality and most of which cannot be parsed by a screen reader and do not have alternate text available for images. They are interoperable and reusable in that I can download them, print them, and cite them as sources in my own research. Since NRHP nominations are generally available as PDFs, interoperability and reusability are limited because the files can become unstable or break, may not open correctly in some free PDF viewers/editors, and it may be difficult to copy or save text and images.

Question 10: There is a great deal of discussion currently being had on the definitions and importance of various aspects of integrity and interpretation of the nomination criteria that does not need to be re-hashed in a short-form survey response by a non-expert. That being said, digital submission methodology does not currently reflect best practices advocated for by digital archivists, and the actual forms provided by NPS and most state SHPOs are clunky, inflexible, and often wildly outdated.

Question 11: I have been able to answer a wide variety of questions including (but not limited to) finding information on a particular architect and their works, assessing trends for a particular architectural style within a geographic area, a historical event or trend

Question 12: In order to do a quick visual assessment of NRHP listing density, I would need to download a huge amount of aggregate data and process it myself using a GIS program. Additionally, some resources have non-intuitive names and/or no situs address. To address both of these, I would love to see a version of the NRHP digital database with a map/GIS integration for search and visual assessment purposes. Additionally, associating keywords with NRHP nominations so the data could be search for all resources relating to a particular theme, event, or other topic would be extremely helpful for assessing aggregate trends or finding resources similar to one I am currently researching/assessing.

Name and Survey Completion Date: Anne Delano Steinert (Respondent31), September 9, 2023

Affiliation: Academic

Question 1: Finding the information that I need.

Question 2: Early nominations are so sparse that they often do not provide the level of detail I would need to make them useful for research or as models for future nominations.

Question 3: None.

Question 4: Material (usually online) that is open to the general public without pay walls or qualifications. I would also say that open data is open to anyone who wants to change or augment the data in the way that wikipedia can be updated by Average Joe.

Question 5: As well as anywhere else.

Question 6 (multiple choice): Underinformed

Question 6 (other):

Question 7 (multiple choice): Skeptical

Question 7 (other):

Question 8: I haven't tried to educate myself on this topic.

Question 9: Well some of them are findable and accessible. Not all.

Question 10: Could be much more user friendly and intuitive and could link to resources that would allow lay people/community historians to complete the nominations (like style guides and models of best practices).

Question 11: Why a building was significant, dates of construction, condition of the building at the time of nomination, etc...

Question 12: I would want to know more about boundary justification. I feel like there is often a political or negotiation process that determines what gets into a district and what is left out. As time goes by these considerations change but it would be useful to know why and how boundary decisions were made at the time of the designation.

Name and Survey Completion Date: Anonymous32 (Respondent32), September 16, 2023

Affiliation: Historic Preservation Professional (Private sector or consultant)

Question 1: I primarily interact with NRHP nominations as a preparer, a user (typically in relation to compliance projects), and an instructor in NRHP nomination. My favorite aspect of preparing NRHP nominations is typically working with stakeholders (especially descendants of those who used the resource during its period of significance) and compiling/sharing primary source research that fills out the story of the resource in a way that has never been done before. As a user, my favorite thing about NRHP nominations is the wealth of information about a single resource contained in a single document. As an instructor, I also have a deep appreciation of the way that NRHP nominations require a number of different skillsets and challenge students to exercise their research, technical writing, persuasive writing, cartography, and photography skills.

Question 2: As a preparer, I am most frustrated by the limited aspects of integrity and the form's overemphasis on physical fabric. I'm also frustrated by inconsistencies in expectations and form composition between different SHPOs. As a user, my least favorite thing is also... inconsistencies in the information contained in the form, especially in older forms. When I'm accessing a form in relation to a compliance project, I'm also always a little disappointed when the preparer hasn't specifically identified the resource's character-defining features. As an instructor, it's frustrating to have to teach students how to prepare a form that in many ways falls short. I also want to add that as a preparer, I have conflicting feelings about the complicated and technical nature of the nomination form and the ways that this precludes authorship by non-professionals. I really do think that professionals produce better NRHP nominations, and to be frank, I like my job and want to get to continue doing it. However, I struggle with the inaccessibility of the form, especially to communities without the resources to hire a professional preparer, and the resulting disparity in representation of resources on the NRHP.

Question 3: For accessing a NRHP nomination, I often find that Wikipedia is an easier and faster way to find the nomination than the NPS's clunky spreadsheet. In Oregon, the Oregon Historic Sites Database is also a good resource, but more recent nominations aren't always uploaded. Helpful research tools that I have used as a nomination preparer include the National Register Bulletins (especially 15 and 16A, although I wish they could be updated!), online newspaper databases, USGS Earth Explorer, the Library of Congress, and PastPortland and PortlandMaps (only relevant for Portland properties, obviously).

Question 4: To my understanding, "open data" is information that can be freely used and shared.

Question 5: I think many people in the field of preservation consider technical information, including property data, to be "open data."

Question 6 (multiple choice): Underinformed

Question 6 (other):

Question 7 (multiple choice): Curious

Question 7 (other):

Question 8: While I've heard this discussed before, I haven't sought out any resources on the topic.

Question 9: Most NRHP nominations are readily available online (it depends on the state and recentness of the nomination), so I do find them accessible. In some compliance projects, a nomination can stand as a determination of eligibility for a resource, and in that way the document is reusable.

Question 10: The nomination itself can be restructured to place less emphasis on physical fabric and to facilitate Criterion A and B arguments. The definition of integrity, and ideas about how it applied to properties that are culturally significant rather than architecturally significant, could also be reexamined and revised. Accepted nominations could be more easily searchable, possibly through a GIS platform.

Question 11: So many! All kinds of questions about exterior appearance, materials, and changes over time, as well as questions about what happened in/at a particular resource and how that resource fits into its broader historical context. NRHP bibliographies can also

Question 12: I have a lot of questions about aggregate data and questions related to comparative analysis. It would be extremely helpful to be able to identify similar types of listings (in terms of form, function, context, etc.).

Name and Survey Completion Date: Allison Geary (Respondent33), September 26, 2023

Affiliation: Historic Preservation Professional (Private sector or consultant)

Question 1: Depending on year and author, the most rewarding part of using nominations is the thorough documentation of the resource.

Question 2: The lack of a search options and the unintuitive organization. Specifically finding the author of the document.

Question 3: I largely used nominations as a resource for contextualizing resources and documenting change overtime. I do not typically use a separate data management tool while accessing nominations. Typically I source nominations from OR SHPO historic sites database, WISAARD, the NPS website, or google the resource. Even when i know a nomination exists, it can be difficult to find.

Question 4: Free to use and manipulate

Question 5: Above

Question 6 (multiple choice): Underinformed

Question 6 (other):

Question 7 (multiple choice): Skeptical

Question 7 (other):

Question 8: None really, havent much time investigating. Excited for your project!

Question 9: I believe the NPS site has searchable fields, but in my experience i can not tailor the search specifically.

Question 10: The ability to set up specific cues and the integration of GIS. The ability to export and manipulate data sets if GIS was incorporated.

Question 11: Off hand, i cant recall specifically, but i think ive tried name or resource, type or location.

Question 12: It would be nice to be able to query type, region, period of construction for cross analysis.

Name and Survey Completion Date: Josette Katcha (Respondent34), September 27, 2023

Affiliation: Historic Preservation Professional (Private sector or consultant)

Question 1: Authoring: Getting the final letter from SHPO when the building has been successfully listed, considering the process is lengthy! Reviewing: Finding key information that helps identify character defining features or periods of significance to support a rehabilitation project. Accessing: It's rewarding to simply find a nomination.

Question 2: Authoring: Having to wait for the cyclical SACHP meeting for final review. Reviewing: Hunting through a maze of narrative to find key information. The form sections are jumbled and the narrative is not often straight-forward. Accessing: the online NR Database is accessed via a roundabout method, and many nominations are not yet digitized.

Question 3: Authoring: local repositories and online image catalogs hosted by history museums and orgs. Reviewing and Accessing: limited to the NR Database.

Question 4: accessible and online

Question 5: Same as above?

Question 6 (multiple choice): Underinformed

Question 6 (other):

Question 7 (multiple choice): Enthusiastic

Question 7 (other):

Question 8: Online databases such as NR Database AKA NPGallery, Library of Congress for HABS-level documentation, etc. But these are limited.

Question 9: Online, they are limited to the NPGallery. I've often had to reach out to the property owner or agency to find it elsewhere. The NP Gallery frequently gives search results that are not applicable

Question 10: Digitize the forms further - not just PDF scans. Make the forms searchable. Reformat them to summarize primary categories on the cover: Date of Construction, Style/Architect, Criteria, Statement and Period of Significance, CDFs, Chronology of Alterations (this should be added!)

Question 11: Most of the above categories, but often times they are buried in the narrative and really hard to find.

Question 12: Chronology of building alterations

Name and Survey Completion Date: Anonymous35 (Respondent35), September 28, 2023

Affiliation: Historic Preservation Professional (Federal, State, Tribal or Local government)

Question 1: Building arguments for significance within a historic context - applying criterion A in creative ways

Question 2: Explaining aspects of integrity to consultants who should already understand it, because they're getting paid more than I get paid and have more years of experience in the field

Question 3: Cultural resource information system in state database - resources listed by Township range section

Question 4: A data system that is built on user contribution, regardless of professional affiliation or education level

Question 5: Data that is publicly accessible but that cannot necessarily be trusted, since virtually anyone-not only trained CRM professionals-can contribute

Question 6 (multiple choice): Other:

Question 6 (other): Dismissive

Question 7 (multiple choice): Other:

Question 7 (other): Dismissive

Question 8:

Question 9: OCR is increasingly used on newer nominations in state database

Question 10: Search function for NRHP on NPS website needs to be way more obvious to find on the page

Question 11: Ownership of properties; importance of bldg or site to a community

Question 12: What are important cultural landscapes in [a given place, to a given community]?

Appendix F: Survey Qualitative Analysis Code Summary

A copy of the Dedoose coded excerpts, codes, and code categories may be requested from the author (either as a project readable in Dedoose, or as an export that meets the REFI-QDA Standard for use in a different qualitative data analysis software package). Following is a tabulation of the counts of the use of codes for each question. For example, a Code Count of 2 for ‘Process completion’ code means that 2 excerpts were coded as such. Cumulative Code Count represents a cumulative total of the code counts within that category.

Q1 What has been your favorite or most rewarding part(s) of your experience authoring, reviewing, or accessing a National Register nomination?

Cumulative Code Count	Code Category	Code Count	Code	Description
6	Outcome: Connection with communities			Respondent makes reference (implicit or explicit) to working with populations that are not preservation professionals
		1	conducting oral histories	
		1	Empowering, encouraging, or educating non-professionals	
		4	Working with communities in general	
4	Outcome: General			General outcomes of the nomination process, including those that aren't related to knowledge generation, research, or learning
		1	Feelings of making a difference	
		1	No favorite parts, just a process	
		2	Process completion	Favorite part was finishing the process
16	Outcome: Knowledge Generation, Publication, or Contribution			Respondent highlights the completed nomination process as a contribution to the profession and public.

		1 Contribution to other researchers	
		5 Creation of a more representative or complete historical record	
		4 Reuse, repurposing, or preservation of old buildings	Favorite part is the preservation related outcomes following the nomination process
		2 Sharing or communicating history in general	
		1 Storytelling beyond just physical building	
		3 Writing about importance or significance	
23	Outcome: Research and learning		Responses that referred to the reading, researching, and accessing of records and archives. This is a more inward oriented category, as opposed to the knowledge generation category which is more outward oriented.
		5 Accessing or compiling new, local, or primary sources, resources and information during research	
		9 possibility of accessing important information	These responses specifically make mention of listed NR forms in the research process of new NR forms
		8 Research or learning in general	
		1 Use of interdisciplinary skills or tools	

Q2 What has been your least favorite or the most frustrating part(s) of your experience authoring, reviewing, or accessing a National Register nomination?

Cumulative Code Count	Code Category	Code Count	Code	Description
31	Administrative Process			Generally includes the burdens or barriers experienced or perceived by those working through the nomination process
		1	Bias against tribal sites	
		8	Burdensome aspects of nomination form or process	Respondents refer to complex, elaborate, lengthy or highly technical requirements involved with nomination or listing
		2	Cost	
		1	Form's overemphasis on physical fabric	
		2	Hurdle to diverse representation	
		9	Inconsistent reviewing across and within SHPOs and NPS	
		3	Narrow or limiting interpretations of eligibility and significance	
		2	Outdated guidance, styles and categories	
		2	Requires specialized knowledge or training	
		1	Section 7	Writing, editing, reviewing, or authoring Section 7
12	Existing Nominations and Data			Aspects and shortcomings of dealing with nominations that are already listed
		2	Difficulty locating specific nominations	
		2	Difficulty locating specific information within a nomination	

		1	Forms that lack character-defining features	
		1	Lack of clear arguments for significance	
		1	Layout of NR form	
		2	Low quality and usefulness of older nominations	
		1	PDF format	
		1	Poor image quality	
		1	Preference towards written instead photos	
21	Existing UI/UX and infrastructure			Frustrations related to specific technology-related issues of National Register process, does not include administrative concerns
		1	Database or website malfunction	Including outages
		6	Difficult UI/UX	
		2	Difficulty locating specific histories or property types	User doesn't just say they dislike a search functionality, they offer types of information that is difficult to be located
		3	Duplicated web interfaces	User isn't sure what portal is the best place to look for a document
		2	Lack of digitization	
		4	Lack of standardized access and websites across states	Databases and interfaces vary significantly across states and NPS
		1	Limited analysis possibilities	
		1	Link rot and website changes	
		1	Paperwork formatting	
5	Public perception and engagement			Points of friction or frustration preservation professionals have. Ways that people outside preservation profession misunderstand or are uninformed or resistant to NR process.

		2	Common misunderstandings about the National Register	
		1	Dealing with undertrained consultants	
		2	Influence or involvement of real estate developers/owners	

Q3 What are some helpful research or data management tools you have used while authoring, reviewing, or accessing a National Register nomination?

Cumulative Code Count	Code Category	Code Count	Code	Description
15	Government and public online platforms			Does not include non-profit or commercial systems
		1	Academic archives	
		7	GIS, map, or visual search	Including those offered through SHPO websites
		2	Library of Congress	
		1	National Archives and Records Administration	
		4	SHPO databases	Responses where mention of GIS or mapping wasn't referenced alongside SHPO databases
9	Groups or institutions in general			Includes mentions of public entities, but not specific access to online platforms or technology
		2	History museums and organizations	
		2	SHPO	SHPO as a resource for research, but no specific mention of databases or technology
		5	State, city or general library or archive	
6	Limitations and desire for other ways			Frustrations and limitations encountered by users, and suggestions for improvement

		1 Databases not kept up to date	
		1 Documents difficult to find	
		1 Limited Search abilities	
		1 More materials online	
		1 Outdated SHPO or NPS guidance	
		1 Unified or uniform online platform across NPS, SHPO and THPO	Duplicated web interfaces
12	Publications		
		2 Existing NR nominations	
		1 Interviews and transcripts	
		3 Newspaper archives	
		1 NPS Excel file	
		2 NR bulletins	
		3 SHPO Publications	
7	Software		General software or desktop-based programs
		1 Email	
		1 Endnote	
		1 Filemaker	
		1 Word Processor	
		3 Zotero	
15	Website or online platform		
		1 Archivegrid	
		1 Dropbox	
		4 Google products	Including Google search, Google Books and Google Drive
		1 Hathi Trust	
		1 JSTOR	
		1 Miro	
		3 NPS Gallery etc	

		1	Specialized map tools	
		2	Wikipedia Q03	

Q4 How would you define the term 'open data'?

Cumulative Code Count	Code Category	Code Count	Code	Description
25	General Descriptions			General descriptions of openness, with few/no details or distinction of how, why, or who
		13	Available to Public	
		7	Ease of access	
		4	Not Sure or no idea	
		1	Openly Available	
4	Philosophy and ethics			Descriptions that relate to values, and the 'why' of openness, or a critique thereof
		1	Colonial definition	
		1	Egalitarian	
		1	Ideological movement	
		1	transparent and inclusive	
43	Specific outcomes and descriptors			Respondent expands on general descriptions and includes specific descriptor and things that can be done with open data
		6	Access at no cost	
		5	Access online	
		3	Accessible without an account, credentials, or qualifications	
		1	Adheres to FAIR principles	
		1	Approachable to layperson	
		1	Can be (re)analyzed by anyone	
		1	Can be cited	
		2	Can be downloaded	

		1	Can be shared	
		7	Can be viewed, manipulated, or edited	No mention of 'without restriction', 'freely', etc
		1	Confidentiality or restrictions respected	
		1	Continuously being improved or expanded	
		1	Data with no commercial value	
		1	Data with no licensing, IP, or copyright limitations	
		2	Findable via search engine	
		1	Has useful metadata for querying	
		2	Is searchable	
		1	Made available by libraries or public repositories	
		1	Only used for non-commercial purposes	
		4	Use, access, distribute, or analyze freely or with no restrictions	

Q5 What do you think is a common understanding of the term 'open data' in the field of Historic Preservation?

Cumulative Code Count	Code Category	Code Count	Code	Description
4	Examples of data that is considered open			Respondents gave examples of data in the historic preservation field they believe is generally considered open
		1	GIS or map data	
		1	Information regarding NR nominations	
		1	information regarding significance and	

		preservation of sites	
		1 Technical information or data about property	
10	General Descriptions Q05		
		1 accessible	
		1 No strings attached	
		7 Openly or publicly accessible	
		1 Similar to mine	
14	Lack of Definition		Respondents either knew there wasn't a common understanding, or weren't sure if there was one
		5 Doesn't exist	
		2 Not a topic discussed much	
		7 Not sure Q05	
2	Limitations to the scope of openness		Types of data that isn't considered open
		1 Archaeological data	
		1 Open to professionals only	
12	Specific outcomes or descriptions		
		1 "Free" as in beer	
		1 Available online	
		2 can be shared publicly	
		2 Exploitable or editable	
		1 Free or no cost	
		1 Not confidential or restricted	
		2 Not trustworthy or authoritative	
		1 Unbounded by licensing limitations	
		1 Use, access, or distribute with no restriction	

Q6 How would you describe the level of knowledge most cultural heritage professionals have about the topic of 'open data'?

- Underinformed: 21 (60%)
- Misinformed 3 (9%)
- Uninformed: 6 (17%)
- Well-informed: 1 (3%)
- Other: 4 (11%)

The 'Other' option allowed the respondent to write in an open ended response, which resulted in the following: "Dismissive", "I can't speculate on the profession as a whole", "Informed" and "No single acceptable definition."

Q7 How would you describe the way most cultural heritage professionals feel about the topic of 'open data'?

- Skeptical: 8 (23%)
- Accepting: 4 (11%)
- Enthusiastic: 1 (3)
- Curious: 10 (29%)
- Other: 12 (34%)

The 'Other' write-in responses included "Dismissive", "Generally accepting", "It's racist and colonial", "unaware", and 8 responses that were grouped within the code 'Respondent doesn't know', such as "I do not know- I am curious, but I don't know what others know", "I don't think we think about open data", "I doubt that most feel anything about it", or "I have never heard a cultural heritage professional talk about open data."

Q8 What resources have you found helpful in educating yourself or others about 'open data' in the field of Historic Preservation?

Cumulative Code Count	Code Category	Code Count	Code	Description
6	General Resources			
		2	Academic Articles	
		1	Architectural Works Copyright Protection Act	
		1	Data Clearinghouses	
		2	Self-education or discovery	

16	No Examples of Resources Given		
		11	New or unfamiliar topic to respondent
		5	None or very few resources
11	Online Resources and Platforms		
		1	Getty's Arches project
		1	GIS systems from the UK
		1	Google Q08
		1	Internet Archive
		2	Library of Congress
		2	NP Gallery
		2	State registers or archives
		1	Wikipedia
8	Specific communities or organizations		
		1	Activists and public educators
		1	Dismantle Preservation movement
		1	Electronic Freedom Foundation
		1	ESRI Products
		1	Gen X, Millennial, and Gen Z cultural resource professionals
		1	Open Knowledge Foundation
		1	Software or tech people
		1	Working with public to nominate properties

Q9 One common ‘open data’ framework is the *FAIR* model, which stands for *Findable, Accessible, Interoperable, and Reusable*. In what ways have you found the content of National Register nominations to be *Findable, Accessible, Interoperable* or *Reusable*?

Cumulative Code Count	Code Category	Code Count	Code	Description
8	Accessibility			Codes that specifically address aspects of accessibility (abbreviated as A.)
		1	A. as in no cost	
		1	A. easier in some states with searchable databases	
		1	A. has improved over past ten years	
		1	A. Limited by database searches	
		1	A. requires internet access	
		1	access limited to nominations that have been digitized	
		1	generally publicly A.	
		1	Not A. from an ADA context	
16	Comparison or qualification of different aspects of FAIR			Multiple aspects of FAIR addressed or compared in one excerpt
		1	A. depends on F.	
		1	F. and A. easier than I. and R.	
		2	F. and A. require specialized training	
		3	F. or A. limited to a few states with nominations posted online	
		1	F.A.I.R. is inequitable to tribes	

		3 Inconsistency from one nomination to next	
		3 It isn't F.A.I.R	
		1 NR is only F. but not A.I.R.	
		1 NR nominations generally F.A.I.R.	
11	Findability		Codes that specifically address aspects of findability (abbreviated as F.)
		1 F. almost impossible for everyday person	
		1 F. can require reaching out to property owner or agency	
		2 F. is limited	
		1 F. requires using multiple online databases	
		1 F. sometimes easiest through Google	
		1 Local or SHPO databases better than nationwide search	
		1 NRIS system is not easy to search	
		2 older forms generally more F.	
		1 Search terms only possible within individual nominations	
5	Interoperability		Codes that specifically address aspects of interoperability (abbreviated as I.)
		1 I. is fairly poor	
		1 I. PDFs easy to share or reuse	
		1 lacks easy I.	
		2 Unsure what I. means	
8	Reusability		Codes that specifically address aspects of reusability (abbreviated as R.)

		1 Content not available in multiple forms	
		1 difficult to copy or save text and images.	
		1 R. as a way of avoiding duplicate research for common resource type	
		1 R. in a reference for DOE context	
		1 R. is limited without access to original sources	
		1 R. limited by formatting and data quality	
		1 R. Nominations make great references and research tools	
		1 Unsure what R. Means	
6	Things I can do with FAIR data		
		3 access OCR optimized nominations	
		1 download them, print them, and cite them as sources in my own research	
		1 Limited to citations	
		1 Most of them can be looked at	
5	Wishlist and criticisms		
		1 Consolidate all nominations into one website	
		1 contexts in nominations are linked to more general topics, places, or people	
		1 Continue digitizing historic nominations	

		2 NPS website not user friendly	
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Q10 In what ways can the National Register nomination and listing process be more innovative and modern?

Cumulative Code Count	Code Category	Code Count	Code	Description
18	Barriers and Frustrations			Similar topics to Question 2 (least favorite aspects of nomination process)
		1	archaic, burdensome, and biased	
		2	Excessive or clunky forms	
		1	Formatting issues	
		1	Limited digitization	
		1	Limited funds at state or federal level	
		2	Limited search terms	
		2	Nomination process too rigorous for average person	
		1	PDFs not user-friendly	
		2	prioritization or valuing of architecture and integrity over community experience	
		2	Scanned nominations not text-searchable	
		1	Submissions do not reflect digital archival best practices	
		1	Too focused on tax credits and compliance	
		1	unfriendly UI/UX and reliance on PDFs	
32	General Nomination Process and Administration			Generally about the process of nomination reviews and the larger context of historic preservation practice

		1 Allow digital recordation techniques	
		1 Alternatives and flexibility around owner consent	
		3 Approachable to a wider public	
		3 Better or updated guidelines	
		1 Bias training for Keeper's office	
		1 Codify submittal requirements	
		1 Easier or more uniform eligibility decisions	
		7 Fillable, electronic, or online forms with indexed data fields	
		1 Increase funding for SHPOs	
		1 Increase use of MPDFs	Multi Property Documentation Forms
		1 Larger staff for the Keeper's office	
		1 More flexible or creative considerations of what is eligible	
		3 More holistic, inclusive criteria for eligibility	
		1 No issue with nomination or listing process	
		1 Place less emphasis on physical fabric and to facilitate Criterion A and B arguments	
		1 Reformat nominations to summarize primary categories on cover sheet	

		2 Standardize forms and review criteria across and within states and territories	
		1 Streamline the process	
		1 Take cues from other adjacent CRM fields	
31	National Register Websites and databases		Generally about the technology and interfaces encountered by a user to find or access listed nominations
		1 Access or analysis of bulk data	
		1 Better access for users with disabilities	
		1 Better metadata	
		5 Better or more GIS and visual tools	
		1 Implement an API	
		9 Improved search functionality	
		2 Increase digitization or availability online	
		1 Instant digitization and access	
		1 Interoperability with other data sets	
		3 Make More User Friendly	
		1 Offer alternatives to PDFs	
		2 Unified or universal software across states	
		2 Use of AI or Machine Learning	
		1 Use of controlled or authoritative vocabularies	

Q11 What kind of research questions have you been able to ask and answer based on access to information related to National Register nominations?

Cumulative Code Count	Code Category	Code Count	Code	Description
16	Questions regarding individual properties			
		8	Building or property details	Such as age or materials, context/comparables, significance, ownership
		2	General research about the history or preservation of a place	
		2	How has the property evolved over time?	
		1	How was the argument for its significance constructed?	
		2	Whether or not a property is listed	
		1	Who prepared the nomination form?	
24	Questions Regarding nomination forms in aggregate			Topics or questions that are answered by accessing multiple nominations at once
		2	A list of properties meeting a set of search criteria	"A list of properties within a specific geographical area, time period, or associated with a particular historical pattern"
		5	About a specific topic or property types	
		4	Comparative analysis of similar properties	
		2	Information about a specific architect's life and work	
		4	Significance of certain property type to or	The context could be geographic or a specific community

			within a certain context	
		5	Source for research	
		1	The study of the history of the use of the NR over decades	
		1	Types of properties listed in the past	

Q12 What kind of research questions would you ask of the National Register that you can't currently ask due to lack of access to information?

Cumulative Code Count	Code Category	Code Count	Code	Description
26	Roadblocks, deadends, unanswerable questions			Example of questions or searches to help answer that question
		3	A topic or property type in a certain geographic area	
		2	Lists of properties by a specific architect	
		1	Question regarding geographic distribution of properties	
		3	Questions regarding a specific topic	
		3	Questions regarding equity or representation	
		5	Questions regarding specific aspect or outcome of nomination process	
		8	Questions that require search across multiple metadata fields	Could be metadata codes that already exist in spreadsheet column headers, or new ones altogether (eg architect)

		1 Sites or properties that have new significance or associations since first being listed	
21	Wishlist		
		2 Better management of Citation or links within and across nominations	
		2 Better options for cultural resources for social, ethnic, or minority groups	
		5 Better ways to analyze data about multiple NR properties at once	Cross analysis Comparative analysis
		2 Centralized uniform searchable database	
		1 Clarity and transparency regarding rejected nominations	
		1 Keeping track of information about sites that could be updated	
		5 Maps, GIS, spatial, visual and multimedia tools	
		1 More timely access to newest nominations	
		2 Ways to understand change over time	

Appendix G: Colophon

This report was written using the Google Docs platform. The Garamond typeface is used for the body of text, while the Twentieth Century typeface is used for headings and titles. The [draw.io](#) website was used to create illustrations. Other charts and tables were edited and formatted in Google Sheets and Microsoft Excel.

[Zotero](#) was used to manage and store documents (including PDFs and other files), research notes and bibliographic information. The use of [Zotero Connector](#) for Chrome browser enabled two important functionalities: 1) The automated saving of websites and PDFs from Chrome into Zotero and 2) the insertion of citations and bibliography from Zotero into Google Docs. While searching records of library holdings at the University of Oregon and Portland State University, bibliographic records in the RIS file format¹³² were downloaded from the online search interface and opened into Zotero whenever possible as a way of avoiding manual data entry.

[Cross Reference](#), a Google Docs extension, allowed for automated numbering of figures within the body of the text.

The [Unpaywall](#) Chrome browser extension allowed for easy location and download of PDF files of journal articles. “We harvest content from legal sources including repositories run by universities, governments, and scholarly societies, as well as open content hosted by publishers themselves.”¹³³

Survey responses were collected in [Qualtrics](#), and analyzed using [Dedoose](#).

¹³² “RIS (File Format),” in *Wikipedia*, July 17, 2023, [https://en.wikipedia.org/wiki/RIS_\(file_format\)](https://en.wikipedia.org/wiki/RIS_(file_format)).

¹³³ “FAQ | Unpaywall,” accessed August 14, 2023, <https://unpaywall.org/faq>.

Errata

The author will publish corrections and updates to this research project at his website
<https://openpreservation.xyz>.