



INSTITUTE of
Museum and Library
SERVICES

Protecting America's Collections

Results from the Heritage Health
Information Survey

February 2019



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Information Survey

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Institute of Museum and Library Services

Dr. Kathryn K. Matthew, Director

About the Institute of Museum and Library Services

The Institute of Museum and Library Services is the primary source of federal support for the nation's libraries and museums. We advance, support, and empower America's museums, libraries, and related organizations through grant-making, research, and policy development. Our vision is a nation where museums and libraries work together to transform the lives of individuals and communities. To learn more, visit www.ims.gov and follow us on Facebook and Twitter.

As part of its mission, IMLS conducts policy research, analysis, and data collection to extend and improve the nation's museum, library, and information services. IMLS research activities are conducted in ongoing collaboration with state library administrative agencies; national, state, and regional library and museum organizations; and other relevant agencies and organizations. IMLS research activities are designed to provide consistent, reliable, and accurate indicators of the status and trends in library and museum services and to report timely, useful, and high-quality data to Congress, the states, other policymakers, practitioners, data users, and the general public.

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Archaeology: The Museum of Natural and Cultural History's collections range from cultural artifacts to fossils to modern

zoological collections. Photo courtesy of the Museum of Natural and Cultural History, University of Oregon.

The ArtWalk at Hartford Public Library is a modern, state-of-the-art exhibit space showcasing the city's talented artists. Photo courtesy of the Hartford Public Library.

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Contents

- List of Figures** iv
- List of Tables**..... iv
- Executive Summary**1
 - Background: 2014 Heritage Health Information Survey1
 - Analytical Approach1
 - Findings2
 - Conclusion.....4
- Purpose of the Study**.....5
 - Background: Heritage Health Information Survey5
 - Research Questions7
- Research Approach**.....8
 - Data Collection8
 - Response Rates and Representativeness8
 - Analytical Approach10
 - Alignment of Questionnaire Indicators and Research Questions12
 - Measurement and Presentation of Results13
- Findings**15
 - RQ1: What is the current state of tangible cultural heritage collections?15
 - RQ2: To what extent have institutions prioritized collection preservation?22
 - RQ3: To what extent have institutions developed emergency plans and trained staff28
 - to implement these plans to protect collections?
 - RQ4: To what extent have institutions assigned staff responsibilities in caring for collections?32
 - RQ5: What is the current state of the preservation of digital collections?.....36
- Conclusions**.....42
 - The Status of U.S. Collections42
 - Overview of Preservation and Emergency Preparedness Status in U.S. Collecting Institutions42
 - Relationship between Preservation and Emergency Preparedness and Institution Type and Size.....43
- Acknowledgements**.....44
- Appendix: Overview of Collections Preservation for Each of the Five Institutional Types**.....45

List of Figures

Figure 1.	U.S. Collecting Institutions by Self-Identified Type and Size.....	10
Figure 2.	Percentage of U.S. Collecting Institutions that Reported Their Mission Included Conservation/ Preservation by Institution Type	14
Figure 3.	Relative Numbers of the More than 13.2 Billion Items in U.S. Collections by Type of Item.....	17
Figure 4.	Sources of Damage or Loss among Institutions that Reported Damage or Loss in the Past Two Years	18
Figure 5.	Preservation Improvement Needs Cited by U.S. Collecting Institutions	19
Figure 6.	Institutional Commitment to Preservation: First Dimension.....	23
Figure 7.	Security and Environmental Controls: Second Dimension of Institutional Commitment to Preservation....	24
Figure 8.	Institutional Commitment to Preservation by Institution Type	25
Figure 9.	Security and Environmental Controls by Institution Type.....	26
Figure 10.	Emergency Planning and Staffing at U.S. Collecting Institutions.....	29
Figure 11.	Emergency Planning: Collections Records Management.....	29
Figure 12.	Emergency Planning by Institution Type	30
Figure 13.	Emergency Planning: Collections Records Management by Institution Type	30
Figure 14.	Number of Different Types of Personnel Assigned to Care for Collections and Specific Type..... of Personnel among Institutions (n = 18,391) that Reported Only One Type of Personnel	33
Figure 15.	Specific Type of Personnel among Institutions that Reported Only One Type of Personnel	34
Figure 16.	Distribution (by Volume) of the 387.1 million TB of Digital Collections by Item Type	37
Figure 17.	Participation in Born-Digital Preservation and Digitization of Collections by Institution Type.....	39
Figure 18.	Incidence of Planning for Born-Digital Preservation at U.S. Collecting Institutions that	39
Figure 19.	Collaboration and Digital Stewardship by Institution Type	40
Figure 20.	Relationship between Current Digital Preservation Activity and Preservation Improvement Needs	41

List of Tables

Table 1.	Adjusted Response Rates Based on Post Administration Deduplication and Eligibility (Unweighted).....	9
Table 2.	Number of U.S. Collecting Institutions (Population).....	9
Table 3.	General Characteristics of U.S. Collecting Institutions (Population).....	11
Table 4.	Alignment of Questionnaire Items and Research Questions	13
Table 5.	Type of Collections by Institution Type, Reported in Thousands.....	16
Table 6.	Sources of Damage or Loss among Institutions that Reported Damage or Loss in the Past	19
Table 7.	Preservation Improvement Needs Cited by U.S. Collecting Institutions by Institution Type.....	20
Table 8.	Preservation Improvement Needs Cited by U.S. Collecting Institutions by Institution Size	21
Table 9.	Definition of Institutional Commitment Levels Reported in Figure 6.....	22
Table 10.	Institutional Commitment to Preservation and Security and Environmental Controls by	27
Table 11.	Emergency Planning by Institution Size within Institution Type	31
Table 12.	Percentage of Institutions that Reported No One or Only Volunteers Were Assigned Specific	34
Table 13.	Specific Type of Personnel among Institutions that Reported Only One Type of Personnel..... Assigned to Care for Collections by Institution Size within Institution Type	35
Table 14.	Digital Collections, Volume (in Terabytes) by Item Type and Institution Type	38

PINCH TO ZOOM: A View of Our Nation's Collections

Foreword by Dr. Kathryn K. Matthew, Director of the Institute of Museum and Library Services

The nation's libraries, museums, historical societies, archives, and scientific institutions hold in their collections an incredible 13 billion items, from furniture to photos and sheet music to soil samples. These make up the tangible objects of our national heritage and are cataloged, shelved, stored, and protected. And in today's age, digital collections are now reaching new audiences and challenging institutions large and small.

In 2004, IMLS supported Heritage Preservation in conducting the Heritage Health Index survey. This survey assessed the preservation needs of America's cultural heritage institutions and provided a benchmarking tool for collections care practice. Ten years later, we took a look at where collections care and management challenges and opportunities stood. The results from the Heritage Health Information Survey, collected in 2014, show us that over the course of a decade, collecting organizations have:

- Reduced the incidence of damage from improper storage and light exposure by roughly 30%;
- Conducted more collection assessments, increasing by 50% the percentage of organizations that have done so, from 30% to 45%;
- Engaged in more planning for crises or emergencies, with the percentage of organizations with emergency plans more than doubling, from 20% to 42%; and
- Placed a greater financial priority on collections preservation, more than doubling (from 23% to 49%) the percentage of organizations reporting conservation/preservation was funded in their budgets.

These improvements are the result of local, state, and national investments in these organizations. It's encouraging, and reflects the value that staff, volunteers, donors, governments, and communities place in these institutions.

Who are these institutions, exactly? Looking more closely at the survey results, 35% of these collecting institutions are libraries, 47% museums, 12% historical societies, 3% archives, and 2% other scientific organizations, based on the 1,714 survey responses.

Some of the results also challenge traditional thinking about museums and libraries. For example, libraries hold books, of course, but they also hold 92% of our nation's photographic records. Museums hold archeological specimens and natural history objects, but also 96% of unbound sheets such as letters, artwork, notes, and other documents.

And yet, small organizations, while supported by their communities, continue to struggle. They are less likely to have security systems and tend to lack environmental controls (with the exception of small archives which are equivalent to their larger peers in these measures). Small institutions are less likely to undertake crisis and emergency planning and were less likely to hire curatorial staff, which might be due to the limited budgets of such organizations.

With the exception of archives, across the other institutional types, small organizations were much more likely (more than four times more likely, in the case of libraries) to have no one assigned (no volunteer or paid staff or consultants) to the care of their collections. This situation is not for lack of concern or lack of community support. Many—if not most— institutions with small budgets simply do not have enough resources to take on more to improve community wellbeing.

Compounding all of the above are the demands that all collecting institutions face as newer methods in archiving, conserving, and providing accessible digital resources to digital citizens have emerged. While having thousands of answers within the pinch of your index finger and thumb is the defining feature of our time, getting the right information (and the information right) is still challenging even to the best archivists, researchers, curators, and librarians at institutions large or small.

Digitized and born-digital materials are increasingly at risk of becoming orphaned, just as traditional artifacts have been and continue to be. What we now consider “collections” encompasses materials such as plastics, ink-jet prints, and even food. This exacerbates the complexity of collections stewardship, care, and conservation, creating challenges for all institutions no matter their size.

And finally, aspects that may have previously seemed to be tangential to other collections care priorities, such as disaster preparedness and disaster response and “green” or sustainable standards for collections stewardship, are now front and center.

How can any institution keep up? This isn’t just a local issue for a single local community to address. Small institutions hold important archives, maps, transactional records and other documents, which are irreplaceable artifacts of cultural, governmental and community contexts. The modest budgets of many small-town and rural organizations fail to give a fair notion of their importance in preserving our national heritage.

For IMLS, strengthening the stewardship, conservation and preservation of America’s collections has been and continues to be a high strategic priority. The national view of this study across organizations large and small, urban and rural, library, archive, museum, historical society, and scientific organizations, make the challenge of the appropriate investment of our national grant-making resources meaningful, real, and heartfelt.

Many of our grants have been providing specialized collections management support to institutions across the nation for years, such as the Collections Assessment Preservation program and Museum Assessment Program. Grants awarded under Museums for America, National Leadership Grants for libraries and museums, the Museum Grants for African American History and Culture program, and Native American and Native Hawaiian library and museum services programs support collections stewardship and increased access for their communities.

Newer funding opportunities include Inspire! Grants for Small Museums that aims to help smaller organizations. For those interested in applying for IMLS funding to improve collections stewardship, care, conservation, and preservation, or professional development in this area, I encourage you to visit imls.gov and investigate the funding opportunities available.

We hope this report provides illuminating information for libraries, archives, and museums, and helps grant-making organizations focus their investments and initiatives on core areas of need. We imagine that as communities engage in planning for sustainability and resiliency, that those stakeholders will consider their cultural heritage as part of their “social capital” for the benefit of all residents and visitors. Private donations, both from individuals and businesses, make a huge difference too, and we encourage them to consider how they can help institutions of any size improve community wellbeing.

While the Heritage Health Information Survey does not provide solutions to all of these complex challenges or resolution of enduring needs, we wish it to inspire this collective discussion, debate, inquiry, and the inclusion of many voices, hearts, and minds. Public and private, institution, community, or funder, let’s think of our cultural heritage as a widespread network with unique challenges and opportunities.

We welcome your thoughts, reflections, and vision for the future. Together, let’s work towards a world where our nation’s collections heritage is protected and accessible for all.

Executive Summary

Background: 2014 Heritage Health Information Survey

This report presents results of the 2014 Heritage Health Information Survey (HHIS), a 10-year follow-up to the Heritage Health Index study completed by Heritage Preservation in 2004. The 2005¹ summary publication, “A Public Trust at Risk: The Heritage Health Index Report on the State of America’s Collections”,² was distributed to more than 18,500 foundations, allied organizations, U.S. collecting institutions, media organizations, and members of Congress. Since then, a number of efforts—funded by the Institute of Museum and Library Services (IMLS), other federal agencies, and private entities—have sought to improve the capacity of collecting institutions to preserve collections and prepare for emergencies.

This report shows there have been some improvements in collecting institutions’ commitment to preservation based on limited comparisons to the 2004 report’s findings. For example, just 23% of institutions indicated preservation was included in their budgets in the 2004 report compared to nearly half (49%) reporting this in 2014. The 2014 survey findings also indicate opportunities for further improvement, especially with emergency planning. In 2014 just 24% of respondents reported having an emergency plan and trained staff to implement it, just four percentage points higher than the 20% who reported this in 2004. Additionally, the 2014 survey findings reveal the pressing need to improve preservation of rapidly-expanding digital collections: just 28% of institutions that preserve born-digital collections reported they had a digital preservation plan.

Analytical Approach

The 2014 survey included many questions similar to those in 2004 and introduced new questions about preservation of digital collections. The questionnaire was administered online or optionally in paper-and-pencil format. The 1,714 institutional respondents represent an estimated population of 31,290³ U.S. collecting institutions, defined as any institution that accepts responsibility for preserving non-living collections. The high representativeness index value of 0.85 (with a highest value of 1.00) mitigates concerns about bias associated with the low overall survey response rate (20%).

The analyses split the population into two sizes, large/medium and small (generally based on collections size), within the following five institution types:

- Archives (N = 966);
- Historical Societies (N = 3,872);
- Museums (N = 14,809);
- Scientific collections (includes archaeological repositories) (N = 773); and
- Libraries (N = 10,870).

Defining Collections

HHIS focused on nonliving tangible and digital collections and excluded those that were “meant to be used by visitors or patrons and are disposed of or replaced if they are lost or damaged.”

¹ Heritage Preservation and IMLS produced the 2005 report. For the 2014 study, the National Endowment for the Humanities (NEH) joined the project team.

² Online at: <http://www.conservation-us.org/docs/default-source/hhi/hhisummary.pdf?sfvrsn=2>

³ Because of the weights, totals sometimes sum to 31,289 and at other times to 31,290 due to rounding.

Research Questions

1. What is the current state of tangible cultural heritage collections?
2. To what extent have institutions prioritized collection preservation?
3. To what extent have institutions developed emergency plans and trained staff to implement these plans to protect collections?
4. To what extent have institutions assigned staff responsibilities in caring for collections?
5. What is the current state of the preservation of digital collections?

Among the five institution types, an overwhelming majority held small (96%) collections. Other key features of these U.S. collecting institutions in 2014 include:

- About half were non-profits (49%), with an additional 36% government-operated;
- These collecting institutions often provided multiple services, with 77% citing that they provided additional services beyond their primary “type;” and
- Most (82%) were museums and libraries.

Due to important methodological differences between the 2004 and 2014 studies, the report makes limited comparisons to the 2004 study. Specifically, comparisons are limited to published 2004 findings and are referenced only when there was an adequate level of alignment with the 2014 data analyses. Readers are cautioned that no comparative statistical analyses were performed, and therefore, these are subjective comparisons.

Findings

The report findings are presented in sequence for each of the five research questions that guided the analysis and are summarized in the box above. Findings are organized from general to specific, starting with estimates from all survey respondents for the entire population of 31,290 institutions and then proceeds to comparisons across the five institution types, and concludes with comparisons by size within each of the five institution types. The appendix provides detailed findings with two-page overviews for each of the five institution types.

1: What is the current state of tangible cultural heritage collections?

The 2014 survey results show that U.S. collecting institutions preserve a diverse array of materials representing our nation’s heritage. These institutions held nearly 13.2 billion items, plus 30.7 million cubic feet and 32.6 million linear feet of collections. While historic, ethnographic, archaeological, natural science, and art objects represent over 3 billion items (about 23% of all items), a much greater percentage of our heritage is captured and preserved in unbound sheets (33%) and photographic images (36%). At the other end of the spectrum, recorded sound and moving image items constituted a relatively small portion of the collections (less than 0.2% each, Figure 3).

Overall, just under one-third (32%) of U.S. collecting institutions reported damage or loss to collections in the two years prior to HHIS, with museums (35%) most likely to report this and archives (25%) and libraries (26%) least likely to do so. The most commonly cited source of damage or loss was water or moisture (56%) followed by improper storage or enclosure (45%) and handling (44%) (Figure 4).

While the survey results suggest progress has been made over the past decade in building the capacity of collecting institutions to care for all types of collection items, more than 50% of the respondents surveyed in 2014 cited the need for improvements in finding aids, condition assessments, environmental controls, staff training, treatment, and the preservation of digital collections (Figure 5).

2: To what extent have institutions prioritized collection preservation?

Just 45% of U.S. collecting institutions had completed a general assessment of their collections; therefore, the condition of collections at more than half of U.S. institutions remains unknown (Figure 4). This, nonetheless, signifies an improvement over the prior decade when only 30% of institutions in 2004 reported having completed a recent assessment of their collections.⁴ Institutions are aware of the requirement for more improvement with nearly two-thirds (65%) citing general condition assessments as one of the top two preservation improvement needs (Figure 5).

The HHIS data indicate that institutions vary in prioritizing collections preservation based on the type of institution, the size of the collection, and mission. There has been some progress since 2004 on indicators of institutional commitment, with 49% reporting that their annual budgets included conservation/preservation in 2014 (Figure 6) versus 23% ten years earlier. However, more can be done – just 27% of institutions in 2014 reported having a formal, written preservation plan, with only 3% reporting regularly updating it (Figure 6). Developing ways to better connect condition assessment and preservation planning might consequently be an effective reform. For example, the IMLS Collections Assessment for Preservation (CAP) program provides support to museums to receive a condition assessment; a preservation plan could represent a means of institutionalizing preservation practices as part of the routine work of the organization (i.e., enhancing post-award sustainability).

In addition, the survey findings reveal that the institutions vary in their needs based on their size. Large/medium institutions were more likely than small institutions of the same type to indicate that they had (1) completed a general assessment of their collections; (2) budgeted for conservation/ preservation activities; and (3) had a formal written conservation/preservation plan (Table 10). Larger/medium libraries (82%) additionally were more likely than small libraries (46%) to report that their mission included preservation (Table 10). Further discussion is warranted in examining these implications.

3: To what extent have institutions developed emergency plans and trained staff to implement these plans to protect collections?

Institutions were slightly more prepared for emergencies or disasters in 2014 than 2004. While just 20% of institutions in 2004 had an emergency/disaster plan, 42% reported this in 2014 (Figure 10). However, there again is room for improvement with just one-third of 2014 respondents reporting keeping a duplicate set of collection records off-site (Figure 11).

Archives (52%) were most likely among the five institution types to report having developed an emergency/disaster plan (Figure 12). Libraries were the least likely to report having collection records, with this particularly pronounced in 73% of small libraries stating this (Table 11). Across all five institutional types, small institutions were generally less likely to be prepared for emergencies and disasters than their large/medium counterparts (Table 11).

⁴ Since we use the 2004 summary report, our 2004 to 2014 comparisons are not comprehensive. Findings from the 2004 report cannot be fully compared statistically with those of 2014, as the sampling protocols were different.

4: To what extent have institutions assigned staff responsibilities in caring for collections?

The majority of U.S. collecting institutions (86%) reported that there was someone either on staff (paid or as a volunteer) or a consultant assigned to care for collections (Figure 14). As a point of reference, the 2004 HHI survey found that a moderately smaller percentage of institutions (78%) had at least one of these staffing arrangements to care for collections. Across institution types, libraries (27%) were most likely to report having no one assigned specific responsibilities to care for the collections for which they assumed preservation responsibility (Table 12), with small libraries (28%) more than four times as likely as large/medium ones (6%) to report this. Just 4% of institutions reported that they relied solely on a consultant for collections care (Figure 14), with museums (7%) most likely to report this staffing arrangement (Figure 15).

5: What is the current state of the preservation of digital collections?

The 2014 survey introduced new questions about digital preservation efforts, finding that nearly two-thirds (63%) of collecting institutions are involved in either digitizing their collections or preserving born-digital collections (Figure 17). They reported holding more than 387 TB of digital collections, over half of which were images, and with libraries accounting for nearly three-fourths (73%) of all digital collections. Archives were the most likely institution type to participate in digital preservation. Libraries (54%) were the most likely to be involved in third-party digital curation/preservation networks (Figure 19), and this institutional type held almost three-fourths (73%) of all digital collections (Table 14).

Planning for digital preservation remains a serious gap among the collecting institutions that preserve born-digital collections. Nearly three-fourths (73%) indicated they had neither a preservation plan nor an assessment of their digital collections with only 10% reporting having done both (Figure 18). With the rapid expansion of digital items – both born-digital content as well as the on-going efforts to digitize collections – attention to improving digital preservation practices is critical.

Conclusion

Preservation is part of the mission for a vast majority of U.S. collecting institutions. Yet many, especially small institutions, have not yet prepared for emergencies and have faced challenges in many actions related to preservation, including conservation practices with digital content. IMLS and others can use the report's findings to inform actions in the field, including individual institutions and their associated professional organizations in planning for the ongoing care and preservation of our nation's heritage.

Purpose of the Study

Background: Heritage Health Information Survey

The Heritage Health Information Survey (HHIS) was a 10-year follow-up to the Heritage Health Index study (HHI 2004) completed by Heritage Preservation in 2004. Heritage Preservation and the Institute of Museum and Library Services (IMLS⁵) jointly produced a summary publication in 2005 titled “A Public Trust at Risk: The Heritage Health Index Report on the State of America’s Collections,” which was distributed to more than 18,500 foundations, allied organizations, U.S. collecting institutions, media organizations and members of Congress. The HHI 2004 results were at the heart of the first-ever joint meeting of the National Association of Government Records Administrations (NAGARA), the Council of State Archivists (CoSA), and the Society of American Archivists (SAA), which has since become an annual event.



A number of efforts to improve the capacity of collecting institutions to preserve collections were built on the recommendations of the HHI 2004 study, including the IMLS Connecting to Collections program, launched in 2007. Connecting to Collections provided resources for U.S. states and territories in alignment with the 2004 HHI study’s findings, which stressed the importance of prioritizing collections care and emergency preparedness. The project evaluation of this IMLS initiative in 2015⁶ concluded that the results showed an “ongoing need for more quantitative data on the state of collections held in trust by libraries, archives, museums, historical societies, and comparable institutions; a recognition that emergency and disaster preparedness must be addressed by all institutions; and a desire to broaden the base of support for collections care to ensure that future generations have access to the cultural record that has been so painstakingly collected.”

Additionally, IMLS implemented the new Collections Assessment for Preservation (CAP) program in 2016, which builds on the previous CAP 24-year history to provide small and medium-sized museums, zoos, aquariums, arboreta, and botanical gardens support for a general conservation assessment from a qualified collections assessor and a building assessor. The new program is administered by the Foundation of the American Institute for Conservation of Historic & Artistic Works. In 2017, the program was enhanced with emergency CAP opportunities to provide conservation assessment support for museums of all sizes (large, medium and small) in federally-declared disaster areas.

⁵ In addition to IMLS, other funders of the HHI 2004 survey included: The J. Paul Getty Trust, The Henry Luce Foundation, The Samuel H. Kress Foundation, The Bay and Paul Foundations, The Peck Stacpoole Foundation, and The Gladys Kriebel Delmas Foundation. The HHIS in 2014 was supported by IMLS, the National Endowment for the Humanities, the Peck Stacpoole Foundation, Getty Foundation, Schloss Family Foundation, and the Samuel H. Kress Foundation.

⁶ Plummer, D.C. and T.F.R. Clareson. (2015). “Connecting to Collections: Analysis of IMLS C2C Statewide Planning Grants, 2008-2010” (Washington, DC: Heritage Preservation) [online <https://www.ims.gov/sites/default/files/publications/documents/c2cplanninggrantsreport.pdf> (23 December 2017)]. Statewide materials associated with Connecting to Collections can be viewed online at the Illinois Digital Environment for Access to Learning and Scholarship (IDEAL) website: <https://www.ideals.illinois.edu/handle/2142/34610>.



The private sector has also developed a number of tools for cultural heritage institutions to better preserve collections. The American Institute of Conservation makes available the Emergency Response Salvage Wheel. CoSA has developed a Pocket Response Plan (PReP) template, which is downloadable in English, Spanish and Portuguese. The CoSA website provides instructions for use of the template so that institutions of all sizes can be prepared to safeguard collections in the event of an emergency.

The National Endowment for the Humanities, Division of Preservation and Access makes Preservation Assistance Grants to “help small and mid-sized institutions—such as libraries, museums, historical societies, archival repositories, cultural organizations, town and county records offices, and colleges and universities—improve their ability to preserve and care for their significant humanities collections.”

Cultural heritage collections contain our history and identity and are the building blocks for research, education, and public programs in the humanities.

National Endowment for the Humanities

In this context of preservation initiatives that have taken place since 2004, the 2014 Heritage Health Information (HHI) Survey was conducted to:

1. Assess the current state of tangible and digital⁷ cultural heritage collections, which includes descriptions of:
 - a. Size – number and types of tangible and digital collections;
 - b. Condition; and
 - c. Preservation needs
2. Gauge progress on HHI 2004 recommendations to:
 - a. Prioritize collection preservation,
 - b. Develop and train staff on emergency plans to protect collections, and
 - c. Assign staff responsibilities in caring for collections.

This report presents findings from the 2014 data collection, which involved Heritage Preservation, IMLS, and the National Endowment for the Humanities (a new partner). While the HHIS survey was modeled on the HHI 2004 survey, the growth of digital preservation activities at collecting institutions over the decade since 2004 led to the expansion of the survey, with new questions about digital preservation. Due to substantial differences in survey methodology between the 2004 and 2014 studies, this report makes very limited comparisons to the HHI 2004 results. Readers are advised to interpret these comparisons with caution due to the analytical and methodological differences between the two studies. Specifically, the results published in the widely-distributed summary report⁸ titled “A Public Trust at Risk: The Heritage Health Index Report on the State of America’s Collections” will be made throughout this document at the population level when there is close alignment of 2014 questionnaire items with the published findings.

⁷ Digital items were added to the 2014 questionnaire.

⁸ The specific document can be found at: <http://www.conservation-us.org/docs/default-source/hhi/hhisummary.pdf?sfvrsn=2>

Research Questions (RQ)

Five research questions derived from the recommendations of the 2004 study and updated by the rise of digital collections, informed the analyses of data collected in the HHIS study:

- RQ1. What is the current state of tangible cultural heritage collections?
- RQ2. To what extent have institutions prioritized collection preservation?
- RQ3. To what extent have institutions developed emergency plans and trained staff to implement these plans to protect collections?
- RQ4. To what extent have institutions assigned staff responsibilities in caring for collections?
- RQ5. What is the current state of the preservation of digital collections?

The next section provides details about the research approach, including how each research question aligns with questionnaire items. Key methodological details are presented, to aid the reader in navigating the report. A series of appendices provides more details about the questionnaire, the analytical methodologies, and findings so that readers will be able to look up additional information on questionnaire items and the five types of collecting institutions: archives, historical societies, libraries, museums and scientific collections.⁹

The third section of the report provides findings on each of the five research questions. Each subsection concludes with a short overview of that research question's key findings. The final report section provides general conclusions based on the findings.

⁹ Scientific collections include archaeological repositories.

Research Approach

Data Collection

HHIS 2014 followed an approach similar to that of the 2004 Heritage Health Index Study for organizing the universe of U.S. collecting institutions by five assigned types¹⁰ and three sizes (generally based on collections size and contingent upon the institution type). The 15 distinct strata defined by these two dimensions were sampled in different ways, with various methods of verifying universe entities for eligibility to complete the HHIS questionnaire. All institutions categorized as either large or medium, along with small archives—11 of the 15 distinct strata—were automatically included. The remaining four strata, consisting of more than 44,000 small institutions initially identified by the survey contractor, were randomly sampled, at the following rates: historical societies (38%), libraries (23%), museums (14%), and scientific collections¹¹ (73%).

All institutions for which there was an email address were sent an online survey (see *Heritage Health Information Survey User's Guide and Data File Documentation* for the questionnaire, size parameters, glossary, and FAQ). A paper survey was sent to those institutions for which there was not an email address or who requested a paper survey¹².

As was the case with the HHI 2004 study, the 2014 survey focused on nonliving items, which means that those zoos, aquariums, arboreta and botanic gardens that held only living specimens were not included and those that did complete the study were asked to report only on the preservation status and activities associated with the nonliving items within their care.

Response Rates and Representativeness

Table 1 shows the final adjusted response rates for each of the 15 strata, while Table 2 shows the population of institutions based on the weights assigned to each case. As shown in Table 1, response rates varied greatly across each of the 15 sampling strata, ranging from 78% for the Large Archives to 13% for Small Libraries. Social scientists have been concerned about the decline in response rates in survey research and the associated implications for the extent to which

Definition: Collecting Institution*

For the HHIS study, collecting institution was any institution that accepts responsibility for preserving collections of non-living items. According to the Frequently Asked Questions for HHIS, the following clarification was provided about "Collections for which you accept preservation responsibility":

"Not all collections that are important to your institution are meant to be preserved. Some are meant to be used by visitors or patrons and are disposed of or replaced if they are lost or damaged. Others are not accessioned into the collection because they fall outside the institution's mission or could be replaced if necessary."

* Additionally, the following text was also provided for respondents: "Some examples of collections for which you do not accept preservation responsibility might be: current books, magazines, DVDs, sound recordings or which multiple copies exist at the institution, and/or could be replaced if lost or damaged and/or are deemed expendable; reference books or materials that aid staff in research but are not part of the accessioned collections; teaching aids or collections (e.g., commonly found specimens, hands-on exhibits); replicas of historic objects."

¹⁰ The term "assigned type" is used to indicate that the universe was a priori defined based on the survey contractor's assumptions about the type of organization—i.e., archive, historical society, museum, library, scientific collection; in many cases institutional respondents indicated a primary mission that differed from the assigned type. To some extent this was due to the complexity of institutional roles. For example, an historical society that operated a museum may have been assigned to the museum category, but in response to the survey, indicated that their self-identified type was "historical society." In all, 20% of institutional respondents reported a "type" that differed from the one assigned by the survey contractor. Additionally, especially with scientific collections, the survey contractor found that many such collections were subsidiary to museums, which were already included in the survey; therefore, this source of duplication in the universe was removed.

¹¹ Scientific collections include archaeological repositories.

¹² Additional details concerning the sampling frame, data collection, and data processing for HHIS are available in the technical project documentation (i.e., the *Heritage Health Information Survey User's Guide and Data File Documentation*).

the survey results can be taken to represent the universe of collecting institutions from which the respondents were drawn. To address this concern, this report uses new indicators of representativeness, along with related adjustments to the sample weights¹³ that are now in common use to make appropriate adjustments to the HHIS strata weights. Questionnaires were sent to 8,561 organizations via e-mail or regular mail. The 1,714 institutions that responded represent a universe of 31,290 collecting institutions in the United States.

Table 1. Adjusted Response Rates Based on Post Administration Deduplication and Eligibility (Unweighted)

SIZE	ARCHIVES	HISTORICAL SOCIETIES	LIBRARIES	MUSEUMS	SCIENTIFIC COLLECTIONS ¹⁴	ALL TYPES
Large	78%	67%	58%	57%	30%	59%
Medium	28%	67%	27%	42%	21%	33%
Small	30%	18%	13%	17%	14%	16%
All Sizes	36%	20%	18%	22%	15%	20%

A follow up sample of non-respondents was conducted, whereby a short questionnaire with key survey items was administered. There was a sufficient number of respondents from small museums, libraries and historical societies to perform comparisons of these respondents those who originally completed the HHIS questionnaire. More details of these analyses are included in the *HHIS Public Use Data File User's Guide and Data File Documentation*, show how respondents from these small institutions differed from non-respondents. In short, biases exist and readers are cautioned to interpret the findings and conclusions associated with these three types of small institutions with appropriate caveats.

Additionally, in this report, adjustments were made to weights consistent with relatively new survey research procedures that assess representativeness across the population segments (i.e., the 15 segments in Table 1, above). A representativeness index was computed using the methodology of Schouten, Cohen, and Bethlehem (2009). The representativeness index for the entire HHIS dataset was high at 0.85 (with a maximum possible value of 1). Along with additional adjustments in the sample weights, this relatively high representativeness index mitigates concerns about survey bias based on the low overall survey response rate (20%).

Table 2. Number of U.S. Collecting Institutions (Population)

SIZE	ARCHIVES	HISTORICAL SOCIETIES	LIBRARIES	MUSEUMS	SCIENTIFIC COLLECTIONS	ALL TYPES
Large	75	38	216	220	37	586
Medium	44	12	372	286	29	743
Small	847	3,822	10,282	14,303	707	29,961
All Sizes	966	3,872	10,870	14,809	773	31,290 ¹⁵

The *Heritage Health Information Survey User's Guide and Data File Documentation* provides more details about the computations to validate the HHIS sample, including information on the process by which the respondent cases were weighted to account for different sampling rates, response propensity (representativeness), and post-processing universe specification.

¹³ See, for example, National Research Council. (2013). *Nonresponse in Social Science Surveys: A Research Agenda*. Roger Tourangeau and Thomas J. Plewes, Editors. Panel on a Research Agenda for the Future of Social Science Data Collection, Committee on Statistics. Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press.

¹⁴ Includes archaeological repositories.

¹⁵ Because of the weights, totals sometimes sum to 31,289 and at other times to 31,290 due to rounding.

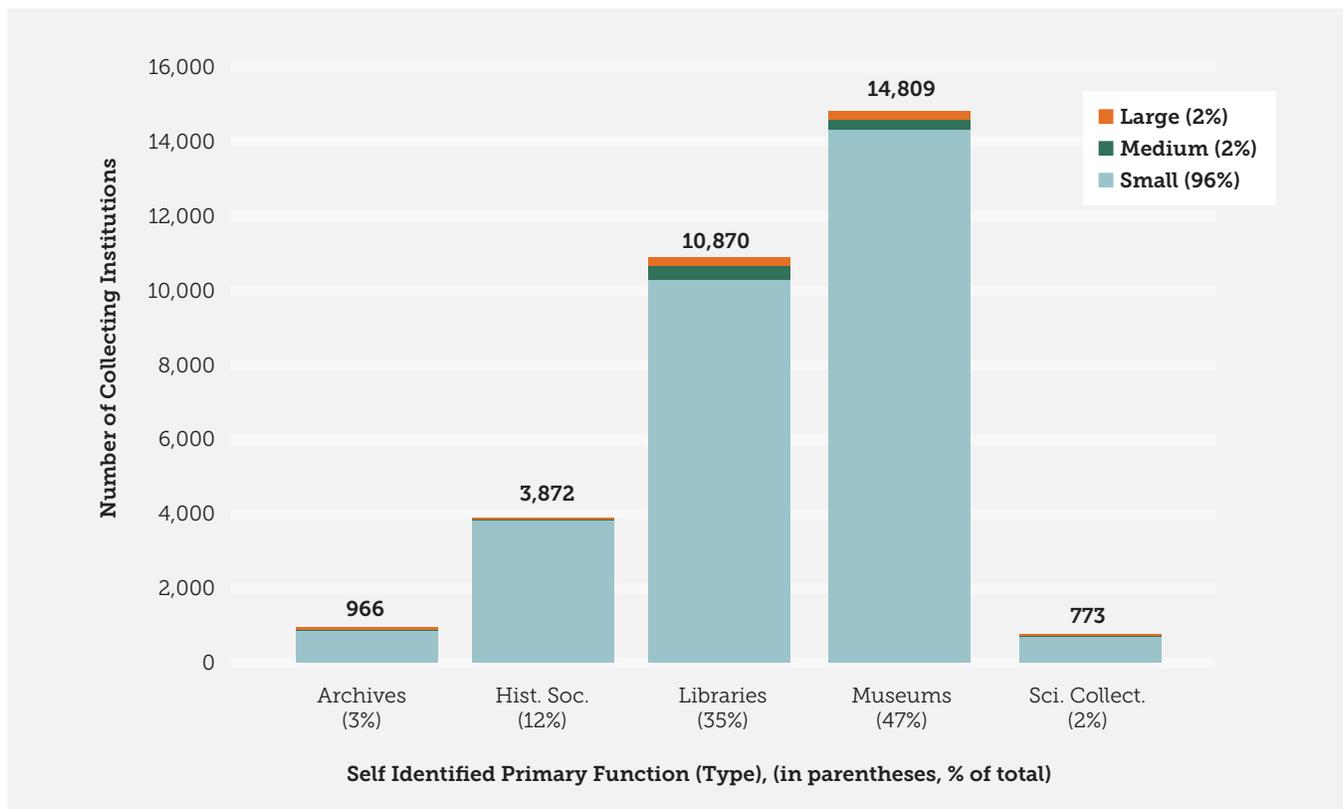
Analytical Approach

The universe depicted in Figure 1 is based on the generalization from the self-identified institution type and size associated with the sampling strata.¹⁶ In this report, self-identified institution types (hereafter “institution type”) provide the primary means of organizing results. As shown, small institutions account for the overwhelming number of collecting institutions (96%). With so few large and medium-sized organizations, a combined large/medium category was analytically expedient and aligned with sampling methodology. Additional institution-specific results in the appendix show more detailed analyses that compare large and medium institutions (as a combined category) to small institutions within each of the five institution types.

Several statistics were used to determine the statistical significance of findings. Because the indicators were categorical, the chi-square test was used in concert with the Z-test of two proportions¹⁷ to determine statistically significant differences for each of the five institution types when compared to the overall percentage for all institutions and to compare proportions of large/medium sized institutions to small-sized institutions within each of the five institution types.

Findings from the 2004 HHI summary report were incorporated as points of comparison. Only a limited number of such comparisons were possible for questions that were nearly identical in 2004 and 2014. No statistical analysis was done using the 2004 dataset. Differences in sampling protocols precludes statistical inference testing of the 2014 findings and those from the 2004 summary report. Readers should exercise caution in interpreting these subjective comparisons.

Figure 1. U.S. Collecting Institutions by Self-Identified Type and Size



¹⁶ The gap between the assigned type and self-identified type was widest for scientific collections. Among the 1,714 respondents, 151 were originally assigned to the scientific collections category, but just under half of these (49%) self-identified as a scientific collection. Of the “misidentified” scientific collections, 87% self-identified as museums. Furthermore, a majority of the self-identified scientific collections (72%) were at colleges/universities.

¹⁷ The chi-square test was used to indicate that there were significant differences across all five types of institutions. The Z-test of two proportions provided a way to make multiple pairwise comparisons to determine which of the five institution type(s) were statistically different in their responses.

Table 3 provides an overview of the universe of U.S. collecting institutions. Key findings include:

- About half of collecting institutions are non-profits (49%), and another 36% are administered by government entities;
- Collecting institutions are complex, often providing multiple services, with 76% citing that they provided additional services beyond their primary “type;”
- About 82% of collecting institutions are museums and libraries; and
- Most (96%) institutions were small.

Table 3. General Characteristics of U.S. Collecting Institutions (Population)

	NUMBER	PERCENT*
Institutional governance		
Non-Profit	15,253	49
College/University	4,878	16
Federal government	824	3
State government	2,043	7
Local/Tribal government	8,234	26
Region (American Alliance of Museums [AAM])		
New England	3,001	10
Mid-Atlantic	5,449	17
Southeast	6,193	20
Midwest	7,088	23
Mountain Plains	4,915	16
West	4,643	15
Number of additional services provided by institution		
None	7,422	24
1	9,275	30
2	6,131	20
3	3,891	12
4	3,150	10
5 or more	1,420	5
Self-identified type		
Archives	966	3
Historical societies	3,872	12
Libraries	10,870	35
Museums	14,809	47
Scientific collections ¹⁸	773	2
Size		
Large	586	2
Medium	742	2
Small	29,961	96
Total	31,290	

*Numbers may not sum to 100% due to rounding.

¹⁸ Includes archaeological repositories.

Alignment of Questionnaire Indicators and Research Questions

Table 4 provides the conceptual framework used to answer each of the five research questions based on the HHIS questionnaire items. RQ1 asks about the current state of tangible cultural heritage collections. As a broad question, its answer necessitated using many questionnaire items from the survey to describe the scope and condition of collections as well as the preservation needs indicated by respondents.

RQ2 asks about the extent to which institutions have prioritized collection preservation. The questionnaire items used to address RQ2 feature two principal dimensions: institutional commitment to preservation based on preservation-related activities; and the use of security and environmental controls, reflecting the institution's commitment to address its specific physical environment within which it conserves collections. On seven of the eight questions, there was a main question with a follow-up item that was answered only by those who had said "yes" on the main question (as noted in the box, the follow-up items are italicized in Table 4). The use of the main item and its follow-up item provides a means of showing a spectrum of conservation/preservation, with institutions who answered "no" or "don't know" on the main item at one end of the spectrum, those that answered "yes" on the main item and "no" on the follow-up item in the middle, and those that answered "yes" on both the main and follow-up items at the "strongest commitment" end of the spectrum.

Similarly, as shown in Table 4, RQ3, has two dimensions, reflecting two aspects of emergency planning, which is the topic of this research question. With the follow-up questions associated with the main questionnaire items, two different spectra of care can be specified to describe U.S. collecting institutions' readiness for emergencies or disasters: one explicitly associated with planning (that they have a plan and that staff have been trained to implement the plan); and a second associated with the status of collections records (that there are collections records and that a copy is kept off-site).

In some cases, additional metrics were derived from other variables included in the dataset. For example, RQ4 asks about the extent to which institutions have assigned staff responsibility for collections care. Institutions were provided a series of six items to indicate what type of staff were assigned these responsibilities. First, we performed analysis to examine how many types of staff were reported across these six categories and then looked, specifically, at the staff type in the case when an institution reported only one type. We then looked at the extent to which, "No staff assigned responsibility for care of collections," based on the institution's responses to these other six questionnaire items. Further, as noted in Table 4, the "volunteers" category for RQ4 combines two questionnaire items, which measured use of full-time and part-time volunteers.

Finally, RQ5 uses questionnaire items about digital collections preservation that were not included in the HHI 2004 study. The analyses here were highly limited due to technical and measurement problems with the survey instrument¹⁹. As such, this report uses only those items for which Subject Matter Experts (SMEs) and statistical analysts could agree met adequate standards.

Italicized and indented text in tables indicates that the referenced item is associated with a follow-up question contingent on the main questionnaire item under which the text is indented. For example, in Table 4, an institution may have "a formal written plan for conservation / preservation," reflecting one level of commitment to preservation, but the strongest level of commitment is reflected when the responding institution also indicated "the plan was regularly updated" on the follow-up question.

¹⁹ Specifically, question sequencing in which institutions' responses were contingent on previous questions were not adequately precise to permit identification of the object about which respondents were answering.

Table 4. Alignment of Questionnaire Items and Research Questions

<p>RQ1: WHAT IS THE CURRENT STATE OF TANGIBLE CULTURAL HERITAGE COLLECTIONS?</p> <p>Three Aspects:</p> <p>1. Size and Scope of Collections There were nine categories with 46 subcategories of physical materials collections. Most were reported as numbers of items, with some reported as either cubic feet or linear feet.</p> <p>2. Damage / Loss Status Institution reported that there has been damage or loss within the past two years (<i>12 causes of damage or loss</i>)</p> <p>3. Preservation Needs Series of items, referencing 10 areas of need.</p>	<p>RQ3: TO WHAT EXTENT HAVE INSTITUTIONS DEVELOPED EMERGENCY PLANS AND TRAINED STAFF TO IMPLEMENT THESE PLANS TO PROTECT COLLECTIONS?</p> <p>Two Dimensions:</p> <p>1. Emergency Plan Institution has a written emergency/disaster plan <i>Institution has staff to carry out the emergency plan</i> <i>Institution has a written emergency/disaster plan that is regularly updated</i></p> <p>2. Collection Records Institution has collections records for items in its collections <i>Collection records are stored off-site</i></p>
<p>RQ2: TO WHAT EXTENT HAVE INSTITUTIONS PRIORITIZED COLLECTION PRESERVATION?</p> <p>Two Dimensions:</p> <p>1. Institutional Commitment to Preservation Institutional mission includes collection preservation Conservation/preservation activities are included in annual budget <i>A line item in the annual budget for conservation/preservation</i> Institution has a formal written plan for conservation/preservation <i>Regularly update the formal written plan for conservation/preservation</i> Institution has completed a general condition assessment <i>Regularly update the condition assessment of the full collection</i></p>	<p>RQ4: TO WHAT EXTENT HAVE INSTITUTIONS ASSIGNED STAFF RESPONSIBILITIES FOR CARING FOR COLLECTIONS?</p> <ul style="list-style-type: none"> • Full-time, paid staff responsible for care of collections • Part-time, paid staff responsible for care of collections • Volunteer staff (full or part time) responsible for care of collections (two items combined) • Staff from another department • Consultants/contractors responsible for care of collections • DERIVED, based on answers to the above items: No staff or consultants/contractors assigned responsibility for care of collections
<p>2. Security and Environmental Controls Security systems <i>Areas with security systems</i></p> <p>Temperature controls <i>Areas with temperature controls</i></p> <p>Light controls <i>Areas with light controls</i></p> <p>Humidity controls <i>Areas with humidity controls</i></p>	<p>RQ5: WHAT IS THE CURRENT STATE OF THE PRESERVATION OF DIGITAL COLLECTIONS?</p> <p>Two Aspects:</p> <p>1. Size and Scope of Collections</p> <p>2. Preservation Status Institution reported it preserves [born] digital collections <i>Institution has developed a preservation plan for care and management of digital collections within the past five years</i> Institution reported it digitizes collections <i>Institution has participated in a digital curation/preservation repository, digital library, digital archive, or network operated by a third party</i></p>

Measurement and Presentation of Results

On most questions (except on some of the italicized, subordinate questions), respondents provided Yes/No/Don't Know responses. In reporting about conservation/preservation in the tables and figures showing results, we report on the percentage of institutions that replied "yes" projected to the population using the appropriate weights.

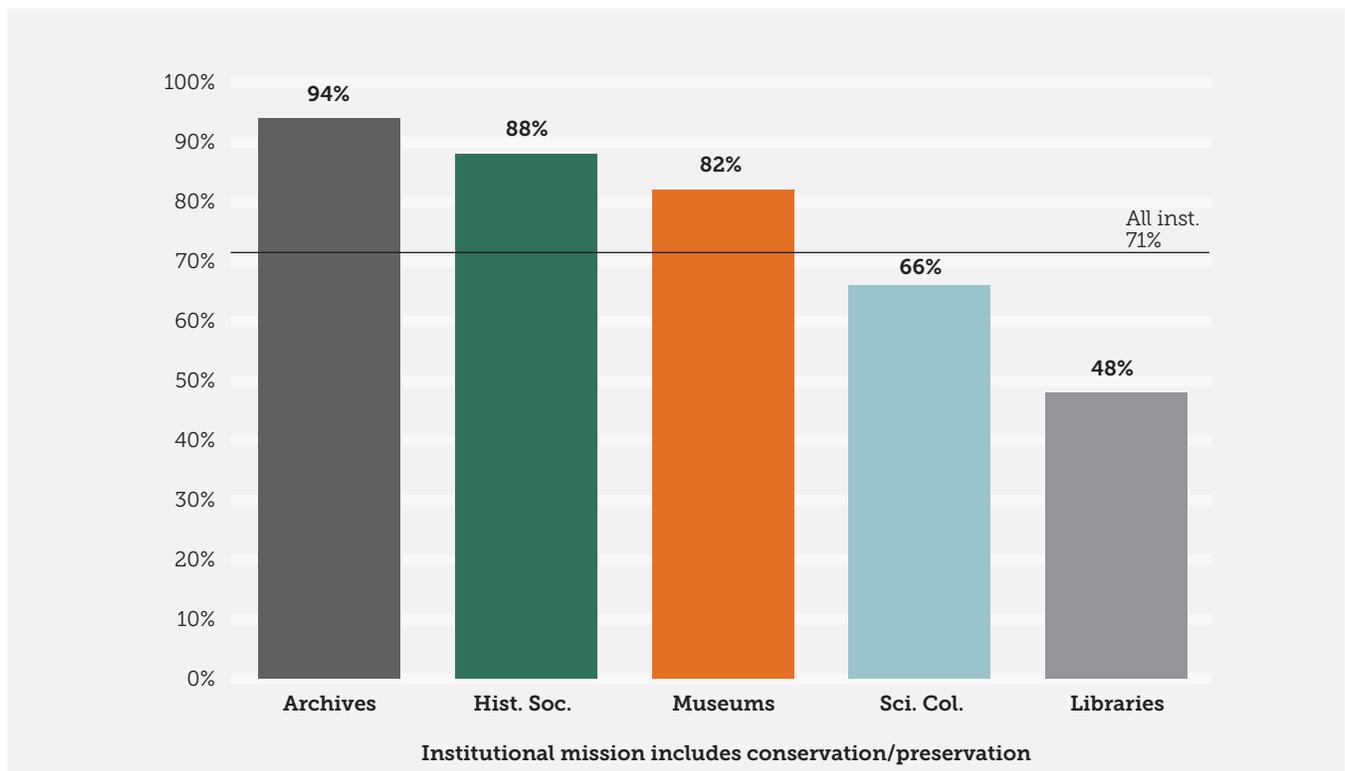
At the broadest level of analysis (i.e., the universe of U.S. collecting institutions), the follow-up items enable description of a spectrum of care, which is shown in graphical forms as green-yellow-red, signifying a moderate level (yellow), a stronger level (green), or the lack of reporting associated with care practices (red). The appendix, which features two-page summaries for each of the five institution types, includes spectrum of care presentations for selected questionnaire items.

At a middle level of analysis (i.e., across Institution Type), findings are provided on only the main questionnaire items associated with each research question, not the follow-up items, usually as bar charts. The bars in all report graphics are

presented in the order shown in Figure 2 (i.e., based on the percentage of institutions within each institution type that indicated its institutional mission included conservation/preservation), and use the same colors for each institution type. Additionally, these charts include a line indicating the overall response for all institution types on the relevant item as a means of benchmarking. Notations on the charts reference the statistical significance ($\alpha = 0.05$) of each of the bars *relative to the benchmarking line* associated with each item. Because the vast majority of such comparisons were statistically significant, the differences that were *not* significant were noted with text “n.s.” in a blue box at the top of the relevant bar within the chart (in the example in Figure 2, all of the bars are significantly different from the overall percentage of 71% reported on the benchmarking line).

Furthermore, statistical significance was not the only criterion used to determine which results to call out in this report. In general, when the difference between two percentages was less 5 percent, such small differences were often not called out. Moderate differences of between 5 and 9 percentage points were sometimes highlighted, but those of 10 percentage points or more were often the focus of the narrative. In general, the report cites the “highest” and the “lowest” on many of the metrics.

Figure 2. Percentage of U.S. Collecting Institutions that Reported Their Mission Included Conservation/Preservation by Institution Type



Finally, at a finer-grained level of analysis, Tables 8, 10, 11, and 13 show the differences in responses on main questionnaire items within each institution type by size. These tables are grouped by institution type with columns for large/medium and small sized institutions within each type. Columns labeled “Rel.” (short for “relationship”) report on the statistical significance of the difference between the large/medium versus small institutions within each type. A “=” sign indicates that there is no statistically significant difference ($\alpha=0.05$, Z-test of two proportions) for large/medium and small institutions. A “>” or “<” symbol indicates the direction of statistically significant differences when comparing data for large/medium to small institutions.

The five two-page summaries for each of the five institution types in the appendix includes graphics similar to those for the higher-level results throughout this report.

Findings

This section presents results for each of the five research questions, in a series of five subsections, as detailed in Table 4. The results start with the full population of U.S. collecting institutions and then provide comparisons across the five institution types, followed by a comparison of institutions of different sizes (i.e., large/medium, combined, versus small) within each institution type. As described in the previous section “Measurement and Presentation of Results,” findings associated with each research question provide spectrum of care analyses at the broadest level of analysis (i.e., all 31,290 U.S. collecting institutions), making use of the main and follow-up questionnaire items detailed in Table 4. At the next two levels of analysis, first showing comparisons across institution types then showing comparisons by size within each of the five institution types, results for only the main questionnaire items associated with each research question are presented. The appendix provides a two-page overview of findings for each of the five institution types. At the end of each subsection, a short summary of results provides a high level answer to the associated research question.

RQ1: What is the current state of tangible cultural heritage collections ?

The data show that collections in the United States contain an enormous store of cultural heritage materials of various types. Respondents reported data about collections using three units of analysis (number of items, linear feet, and cubic feet) in nine main categories with 46 associated subcategories (see *Heritage Health Information Survey User’s Guide and Data File Documentation* for the full list). The term “items” suggests a common unit of analysis, but the varied nature of items suggests caution. For example, within the 46 subcategories, materials such as “Philatelic and numismatic artifacts” and “Geological specimens” can be quite small and numerous, while “Furniture” can be large. The “Grand Total” row in Table 5 sums all of these very different items.

The totals for the nine main categories are shown in Table 5²⁰, along with the relevant units for measuring each collection type. Most collections categories data were based on items, with U.S. collecting institutions reporting a total of more than 13.2 billion items, as shown in Table 5. In addition to these 13.2 billion items, U.S. collecting institutions cared for collections measured in two other ways with about 30.7 million cubic feet and 32.6 million linear feet.

Photographic items account for the largest number of items for archives, historical societies, and libraries. The composition of collections at scientific collections differs in comparison to the other four institution types, with natural science specimens the largest portion (nearly 417 million specimens) followed by 55.1 million archaeological items; these two categories of collections account for 98% of items held by scientific collections, while the 1.8 million cubic feet of archeological items account for 97% of items measure in cubic feet. Unbound sheets are the largest collection at museums, accounting for 60% of the items museums hold, with archaeological items and natural science specimens representing an additional 34% of items at museums.

²⁰ The HHIS Public Use Data File includes data about collections. However, to avoid disclosing institutional identities that might be apparent for institutions with very large collections, the 12 variables associated with collections were topcoded. The analyses presented in this report use the original values rather than the topcoded values. More information about this procedure is available in the *Heritage Health Information Survey User’s Guide and Data File Documentation* available at www.ims.gov/hhis.

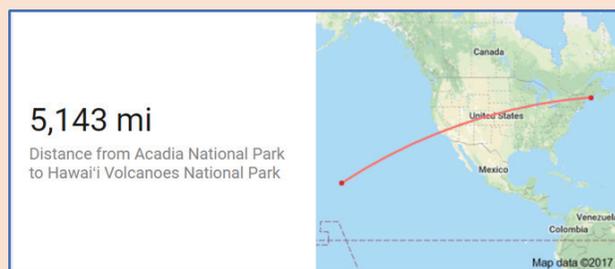
Table 5. Type of Collections by Institution Type, Reported in Thousands²¹

TYPE OF COLLECTION AND MEASUREMENT UNIT*	TOTAL	ARCHIVE	HISTORICAL SOCIETY	LIBRARY	MUSEUM	SCIENTIFIC COLLECTION
Unbound sheets						
Number of items	4,323,250	3,128	33,270	133,162	4,152,147	1,544
Cubic feet	22,299	8,826	1,028	11,745	647	54
Linear feet	32,562	1,062	1,912	27,685	1,693	210
Archaeological						
Number of items	1,437,779	428	5,368	742	1,376,107	55,134
Cubic feet	8,370	2	446	23	6,039	1,859
Books/bound volumes	1,055,931	6,888	22,309	975,413	47,147	4,173
Photographic	4,773,560	109,576	97,650	4,371,791	190,854	3,688
Moving image	32,386	6,542	479	22,712	2,612	41
Recorded sound	24,331	1,885	360	20,346	1,731	8
Art objects	25,179	1,714	1,758	3,172	18,445	89
Historic and ethnographic	168,416	425	5,703	670	161,254	365
Natural science specimens	1,370,653	2	325	27	953,592	416,708
Grand Totals						
Number of items	13,211,485	130,588	167,224	5,528,035	6,903,889	481,749
Cubic feet	30,669	8,828	1,474	11,769	6,686	1,913
Linear feet	32,562	1,062	1,912	27,685	1,693	210

*All collections are reported as thousands of items, thousands of cubic feet or thousands of linear feet. Shading indicates relative size within each institutional type.

Figure 3 breaks down the relative numbers of each type of collection item, showing that unbound sheets (even when counting only the number of items and not including cubic and linear feet) represent one-third (33%) and photographic items over one-third (36%) of all items held at U.S. collecting institutions. Additionally, as shown by the inset, 95% of all collection items are held by large/medium institutions.

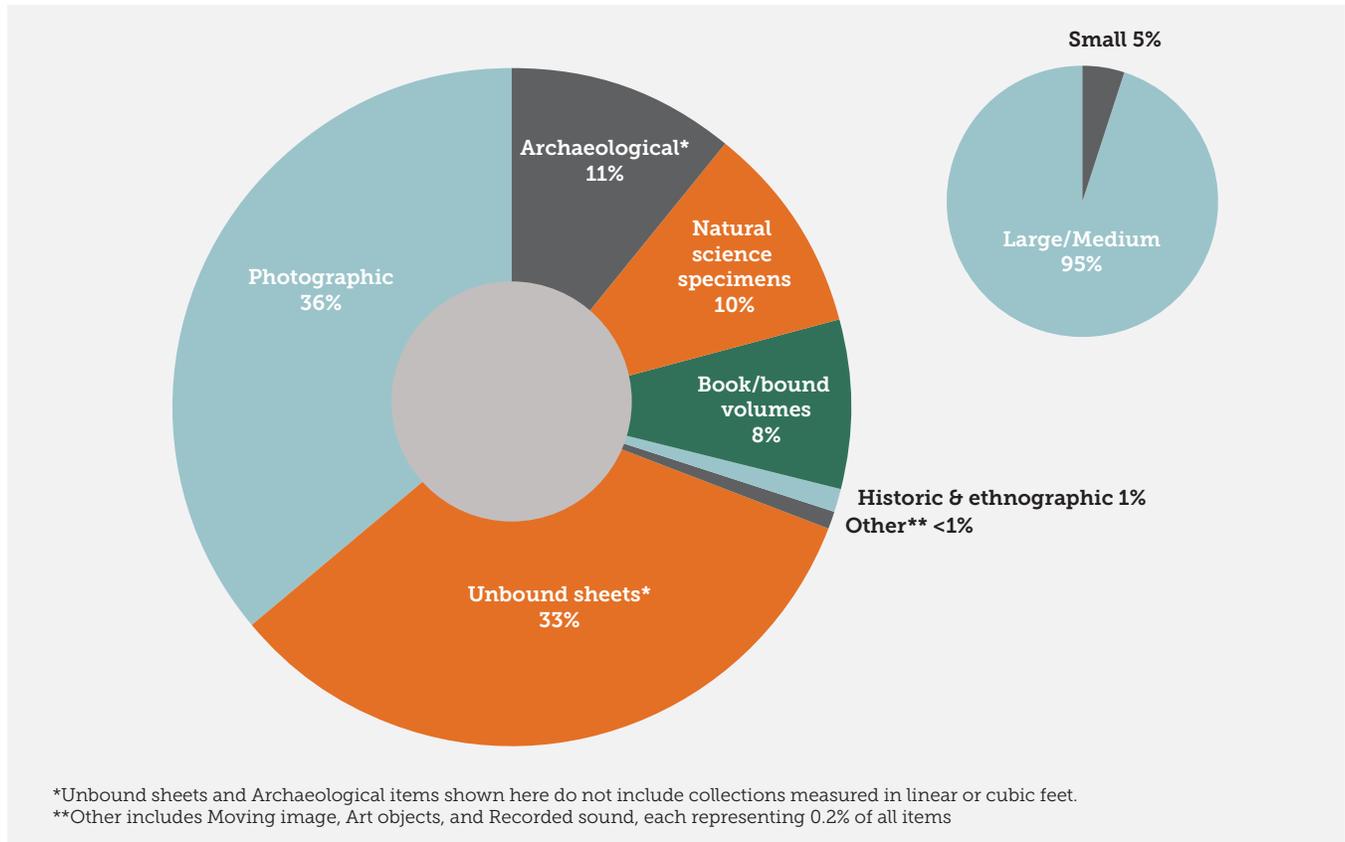
The nation's 32.6 million linear feet of unbound sheets would stretch farther than the distance from Acadia National Park (NP) in Maine to Hawai'i Volcanoes NP. (50% at large/medium; 50% at small inst.)



The nearly 30.7 million cubic feet of unbound sheets and archaeological items would fill 347 Olympic-sized swimming pools. (86% at large/ medium, 14% at small inst.)

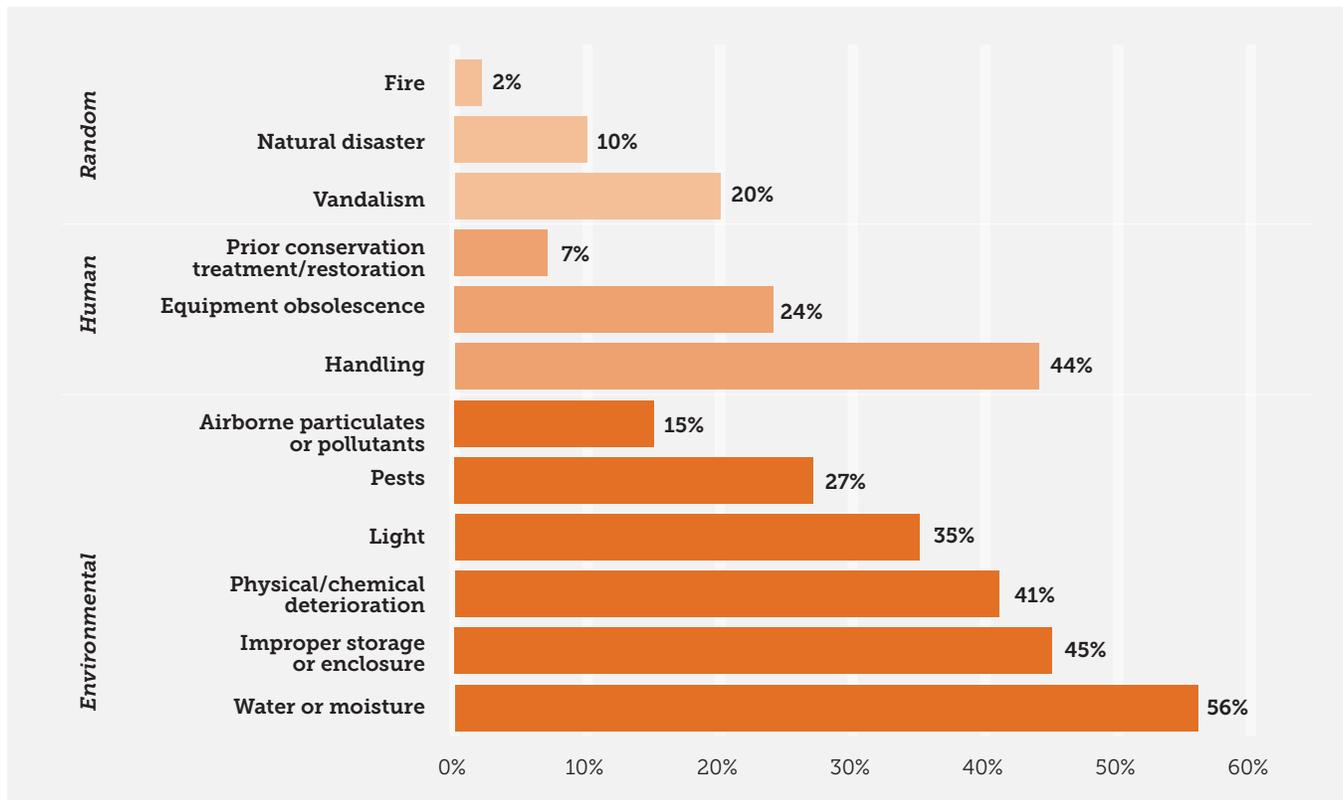
²¹ Analyzing outcomes based on the type of collection material is another way to understand conservation / preservation. Such analyses are outside the scope of this report but could be performed at a later date. For example, the data in Table 5 indicate that there are three broad categories of institutions by the predominance of collection type: Museums (mainly unbound sheets), Scientific Collections (mainly Natural History specimens), and Libraries, Archives, and Historical Societies (mainly books and pictures).

Figure 3. Relative Numbers of the More than 13.2 Billion Items in U.S. Collections by Type of Item



For the 32% of collecting institutions that reported some type of damage or loss in the past two years, Figure 4 shows 12 causes organized in three groups: environmental, human, and random. Environmental factors—notably, water or moisture (56%)—were the most commonly reported source of damage or loss. With respect to human factors, under half (44%) indicated damage or loss due to problems with handling. Finally, random factors were rarely cited as causes of damage or loss with only vandalism (20%) exceeding 10%.

Figure 4. Sources of Damage or Loss among Institutions that Reported Damage or Loss in the Past Two Years



In comparing the 2004 report findings with the 2014 results illustrated in Figure 4, three findings stand out. First, 53% of institutions in the 2004 survey report attributed damage or loss to water or moisture, but a slightly higher percentage (56%) reported this source ten years later in 2014. Second, improper storage or enclosure was cited by 45% of institutions that reported damage or loss in the past two years in 2014, which is much lower than the 65% that reported this in the 2004 results. Third, while 59% of institutions reported damage or loss due to light in 2004, just 35% reported this source of damage or loss in 2014.²²

Table 6 provides insight into the sources of damage or loss reported by each of the five institution types. The top row shows that 32% of institutions overall reported damage or loss, with three institution types significantly different from the overall. Museums (36%) were most likely to report damage or loss, while archives (25%) and libraries (26%) were least likely to report this.

For all institution types except scientific collections, water or moisture was cited as the most common form of damage, with 74% of those archives that had experienced damage/loss in the previous two years indicating this reason. Similarly, handling was cited by 40% or more of all institution types except historical societies as another important source of damage/loss. Additionally highlights by institutional type include:

- 64% of archives reported equipment obsolescence as a source of damage/loss;
- 44% of historical societies reported light as a source of damage/loss;
- 46% of museums cited improper storage as a source of damage/loss;
- 54% of scientific collections cited pests as a source of damage/loss; and
- 50% of libraries cited improper storage or enclosure as a source of damage/loss.

²² Since we use the 2004 summary report, our 2004 to 2014 comparisons are not comprehensive. Findings from the 2004 report cannot be fully compared statistically with those of 2014 as the sampling protocols were different. Even with this caveat, the 24 percentage point decrease in light as a source of damage between the two surveys is likely a meaningful difference.

Table 6. Sources of Damage or Loss among Institutions that Reported Damage or Loss in the Past Two Years by Institution Type

CAUSE		ALL INST.	ARCHIVE	HISTORICAL SOCIETY	MUSEUM	SCIENTIFIC COLLECTION	LIBRARY
Percentage of institutions that reported damage/loss within the past 2 years		32%	25%*	32%	36%*	32%	26%*
Environmental	Water or moisture	56%	74%*	56%	57%	41%*	55%
	Improper storage or enclosure	45%	50%*	29%*	46%	44%	50%*
	Physical/chemical deterioration	41%	34%*	36%*	40%	43%	45%
	Light	35%	32%*	44%*	36%	10%*	33%
	Pests	27%	4%*	23%*	35%*	54%*	12%*
	Airborne particulates or pollutants	15%	9%*	12%	17%	4%*	16%
Human	Handling	44%	50%*	28%*	42%	44%	54%*
	Equipment obsolescence	24%	64%*	26%	18%*	3%*	32%*
	Prior conservation treatment/restoration	7%	27%*	2%*	7%	3%*	6%
Random	Vandalism	20%	6%*	20%	21%	1%*	22%
	Natural disaster	10%	6%*	2%*	12%	6%*	10%
	Fire	2%	3%	0.2%*	3%	0%*	0.2%*

* Indicates that the percentage reported for the institutional type is outside a 95% confidence interval on the percentage for all institutions (All Inst.) reported in the first column in red. Italicized text indicates findings based on a contingency item (i.e., the top row highlighted in green is the screening item), including only those institutions that indicated they had experienced damage/loss with the past two years.

Figure 5 shows institutions' reported needs for preservation improvement. The top need, cited by 67% of institutions, was for finding aids/catalogues (which includes inventorying and/or cataloguing of collections), followed by general condition assessments (65%). Eight percent of institutions indicated none of the referenced needs. In comparison, the top cited need in the 2004 report was for greater environmental controls. Additionally, 58% of institutions cited staff training as a need for improvement in 2014 compared to 71% in the 2004 study.

Figure 5. Preservation Improvement Needs Cited by U.S. Collecting Institutions

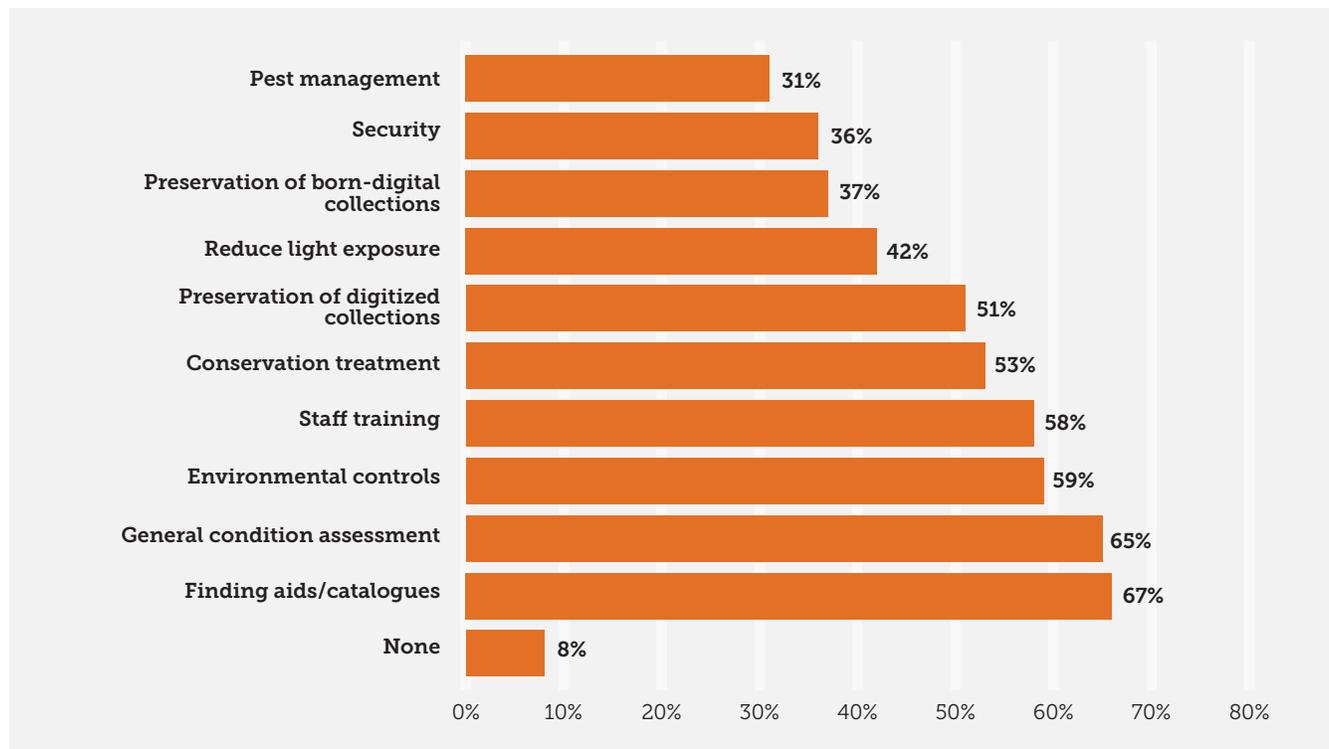


Table 7 reports preservation improvement needs by institution type. Finding aids/catalogues and general condition assessments were the top two cited needs by historical societies (73% and 68%, respectively), museums (73% and 67%, respectively) and scientific collections (71% and 74%, respectively). For libraries, general condition assessments (62%) and staff training (58%) were the top cited preservation improvement needs. Archives were unique among the five types of collecting institutions in citing preservation of born-digital collections as the top preservation need (59%), with fewer than 40% of any of the four other institution types referencing this preservation need. Scientific collections were least likely among all institution types to reference a need to reduce light exposure (24%, versus 35%-45% of other types) and for staff training (45%, versus 56-59% of other types) but were most likely to cite general condition assessment (74% versus 53%-68% of other types). Historical societies and museums generally had similar ratings of preservation needs, with statistically similar percentages of institutions citing seven of the ten areas for preservation improvement needs²³. Finally, archives and libraries were twice as likely as the other three institution types (11% and 12%, respectively) to indicate that none of the listed preservation needs was relevant for their institution.

Table 7. Preservation Improvement Needs Cited by U.S. Institutions by Institution Type

PRESERVATION NEED	ALL INST.	ARCHIVE	HISTORICAL SOCIETY	MUSEUM	SCIENTIFIC COLLECTION	LIBRARY
Finding aids/catalogues	67%	56%*	73%*	73%*	71%*	56%*
General condition assessments	65%	53%*	68%*	67%	74%*	62%*
Environmental controls	59%	42%*	64%*	63%*	67%*	53%*
Staff training	58%	57%	56%	59%	45%*	58%
Conservation treatment	53%	39%	52%	60%*	52%	45%*
Preservation of digitized collections	51%	50%	48%*	52%	59%*	50%
Reduce light exposure	42%	35%*	44%	45%*	24%*	39%*
Preservation of born-digital collections	37%	59%*	38%	36%	28%*	37%
Security	36%	31%*	35%	38%	36%	35%
Pest Management	31%	25%*	36%*	38%*	37%*	21%*
None	8%	11%*	5%*	5%*	3%*	12%*

* Indicates that the percentage reported for the institutional type is outside a 95% confidence interval on the percentage for all institutions (All Inst.) reported in the first column in red.

Table 8 presents more granular analysis within each of the five institution types to show the extent to which preservation improvement needs varied by size (large/medium versus small). These data indicate:

- Size was generally more important for libraries than other institution types:
 - » While large/medium libraries cited preservation of both born-digital and digitized collections as the top two needs (79% and 74%, respectively), small libraries cited general condition assessments (62%) and staff training (58%);
 - » About one-in-eight (13%) of small libraries versus just 2% of large/medium libraries indicated none of the ten listed preservation improvement needs;
- Small museums were more likely than large/medium ones to report five of the ten preservation improvement needs; however, the top needs were similar for museums regardless of size with both finding aids/cataloging and general condition assessments as the top two needs;

²³ These seven included: Finding aids/cataloging, General condition assessment, Security, Environmental controls, Reduce light exposure, Preservation of born-digital collections, and Pest management.

- Size was a far less important factor in reported preservation needs for archives (with nine of 11 possible needs found not significantly different), with preservation of digitized collections one notable exception (61% reported for large/medium archives versus 49% for small ones).
- Four items were statistically significant by size for historical societies, particularly large/medium ones ranking preservation of digitized collections and born-digital collections (both at 83%) as their top preservation improvement needs compared to just 47% and 38%, respectively, for their small peers;

Table 8. Preservation Improvement Needs Cited by U.S. Collecting Institutions by Institution Size within Each Institution Type

Preservation Need	ARCHIVES			HISTORICAL SOCIETIES			LIBRARIES			MUSEUMS			SCIENTIFIC COLLECTIONS		
	Large/ Medium	Rel.*	Small	Large/ Medium	Rel.*	Small	Large/ Medium	Rel.*	Small	Large/ Medium	Rel.*	Small	Large/ Medium	Rel.*	Small
Finding aids/catalogues**	64%	=	55%	66%	=	73%	61%	>	56%	66%	<	73%	100%	>	68%
General condition assessments	47%	=	53%	63%	=	68%	73%	>	62%	64%	=	67%	95%	>	72%
Staff training	58%	=	56%	66%	=	56%	64%	>	58%	53%	<	59%	79%	>	42%
Security	25%	=	32%	38%	=	35%	44%	>	35%	33%	<	38%	46%	=	35%
Environmental controls	41%	=	43%	53%	=	64%	70%	>	53%	55%	<	64%	72%	=	67%
Reduce light exposure	31%	=	36%	26%	<	44%	55%	>	38%	34%	<	45%	51%	>	22%
Conservation treatment**	43%	=	38%	72%	>	51%	53%	>	45%	57%	=	60%	67%	>	51%
Preservation of digitized collections	61%	>	49%	83%	>	47%	74%	>	48%	64%	>	52%	64%	=	59%
Preservation of born-digital collections	63%	=	58%	83%	>	38%	79%	>	35%	53%	>	35%	43%	>	27%
Pest Mgmt	18%	=	26%	38%	=	36%	39%	>	20%	35%	=	38%	57%	>	35%
None	3%	<	12%	0%	=	5%	2%	<	13%	4%	=	5%	0%	=	4%

Notes:

* Rel. references the relationship between Large/Medium as compared to Small institutions within each institutional type. The symbol "=" means that there was no statistically significant difference in the percentages of Large/Medium versus Small institutions that referenced the preservation need. The ">" or "<" symbol shows that direction of the statistically significant difference between the Large/Medium and Small institutions that indicated the preservation need.

** Finding aids/catalogues includes inventorying and/or cataloguing of collections; Conservation treatment includes specimen preparation.

RQ1. Summary/Answer: What is the current state of tangible cultural heritage collections?

There are about 13.2 billion items along with an additional 30.7 million cubic feet and 32.6 million linear feet of bulk items and unbound sheets within the collections of the nation's 31,290 collecting institutions. While it is perhaps no surprise that libraries hold 92% of the nation's books and bound volumes that are held for preservation, they also were the largest repository of photographic items (92%), recorded sound (84%), moving image (70%), and unbound sheets measured by length (53%) or volume (85%) (Table 5).

Overall, just under one-third (32%) of U.S. collecting institutions reported damage or loss to collections in the two years prior to the HHIS, with museums (36%) most likely and archives (25%) and libraries (26%) least likely to report this (Table 6). Across institutional types, water or moisture was the leading cause of damage or loss at 56% (overall) and within all institution types except scientific collections, which reported pests (54%) as the top reason for damage or loss. Additionally, 64% of archives reported damage or loss due to equipment obsolescence, which is in stark contrast to the 24% of all institutions overall that reported this problem.

Around two-thirds of collecting institutions cited finding aids as a key need for improving preservation (Table 7). As shown in this same table, around two thirds also reported making general condition assessments as another key need.

Finally, institutional size and institution type were interrelated in complex ways. At one end of the spectrum, the collections held by and preservation needs cited by large/medium archives were very similar to those reported by small-sized archives. At the other end of the spectrum, the collections held at and needs cited by small libraries were most different from those of large/medium libraries.

RQ2: To what extent have institutions prioritized collection preservation?

The survey includes a number of items that provide evidence of the extent to which institutions have prioritized collection preservation. As described in Table 4, these items reflect two dimensions of institutional actions related to preservation. The first relates to institutional commitment to preservation, based on four main questionnaire items:

- the mission includes collection preservation²⁴;
- conservation/preservation activities are funded in the budget;
- the institution has a formal, written plan for conservation/preservation; and
- the institution has performed a general condition assessment.

Follow-up survey questions on the latter three items provided a way to assess a spectrum of care with respect to commitment to preservation, ranging from strong commitment to not reported, as shown in Table 9.

Table 9. Definition of Institutional Commitment Levels Reported in Figure 6

DIMENSION	STRONGEST COMMITMENT	PARTIAL COMMITMENT	NOT REPORTED
Condition assessment	An assessment of the entire collection has been completed and it is regularly updated every five years.	A general condition assessment of institution's collections has been done.	No condition assessment reported.
Formal, written plan	There is a preservation plan that has a regularly scheduled update.	Institution has a formal written long-range preservation plan for care of its collections.	No plan reported.
Budget includes conservation / preservation	Budget line item.	Conservation/preservation activities are included in the annual budget.	Conservation/preservation activities are not budgeted.

The second dimension associated with RQ2 used four questionnaire items about the institution's security systems and environmental controls (light, humidity, and temperature). The spectrum of care related to these items was assessed using relevant follow-up questions from the survey. After institutions reported that they used security systems and each of the three environmental controls, they then indicated whether they used these in some areas of their institution or in all areas. Those that did not report using security systems or environmental controls were at the lowest level on the spectrum of care (i.e., "No areas"), versus those reporting these in all areas (i.e., highest commitment).

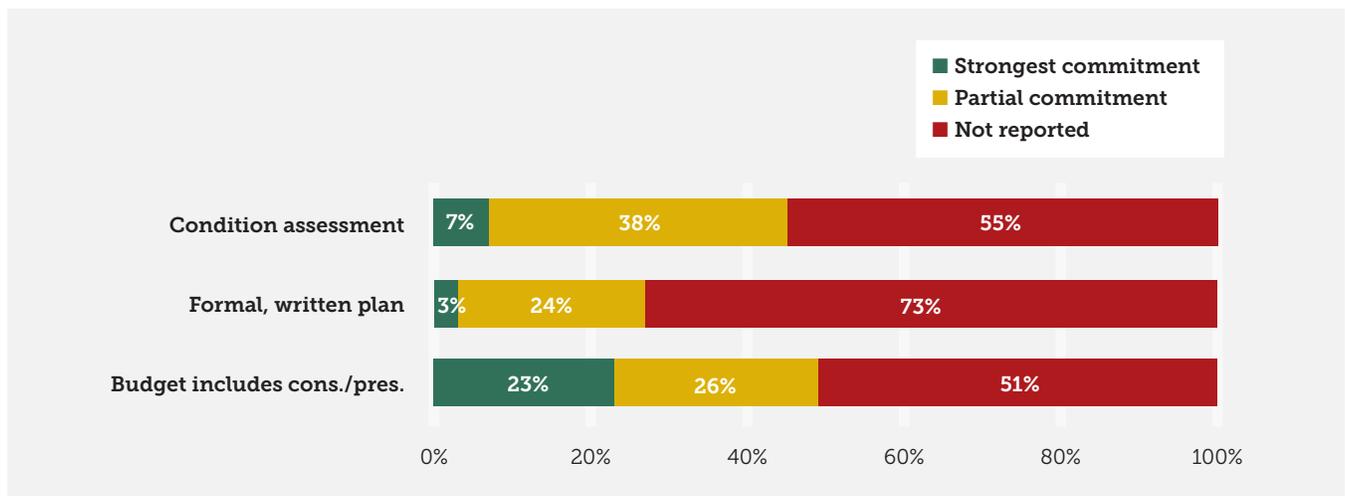
²⁴ As a reminder, the HHIS questionnaire indicated that "Not all collections that are important to your institution are meant to be preserved. Some are meant to be used by visitors or patrons and are disposed of or replaced if they are lost or damaged. Others are not accessioned into the collection because they fall outside the institution's mission or could be replaced if necessary."

Figures 6 and 7 illustrate the findings associated with the first dimension in RQ2 from the spectrum of care point of view, with the following principal findings (with limited comparisons to the 2004 HHI report, not separately shown in Figures 6 and 7):

- Less than half of institutions (45%) have performed a condition assessment but only 7% have assessed the entire collection and regularly update the assessment every five years (in comparison, the 2004 HHI report showed that 30% of institutions had a current assessment of their collections);
- Most institutions (73%) lacked formal written plans for conservation/preservation and among those with plans, just 3% reported it was regularly updated;
- Just under half of institutions (49%) have budgeted conservation/preservation activities (in comparison, 23% of institutions reported this in the 2004 survey²⁵);
- More than half of institutions (52%) have security systems in all areas; and
- One-third or fewer institutions reported temperature (33%), light (23%), or humidity controls (20%) in all areas.²⁶

Figure 6. Institutional Commitment to Preservation: First Dimension

(4 main items*, 3 follow-up items)



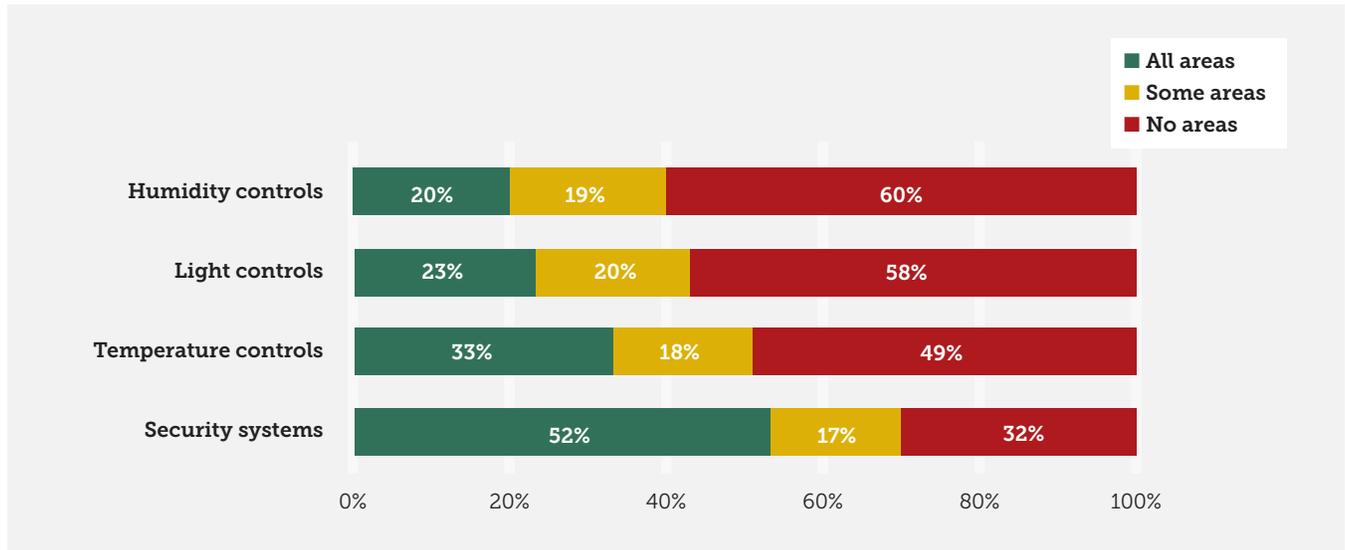
* Not shown here, "Institutional mission includes collection preservation." Overall 73% of U.S. collecting institutions indicated their mission included collection preservation. Since this item did not have any subordinate items, however, it does not fit the spectrum of care framework.

²⁵ Again, since we use the 2004 summary report, our 2004 to 2014 comparisons are not comprehensive. Findings from the 2004 report cannot be fully compared statistically with those of 2014 as the sampling protocols were different. Even with this caveat, the 26 percentage point decrease in light as a source of damage between the two surveys is likely a meaningful difference.

²⁶ "All areas" refers to both the exhibit and storage areas.

Figure 7. Security and Environmental Controls: Second Dimension of Institutional Commitment to Preservation

(4 main items, 4 follow-up items)

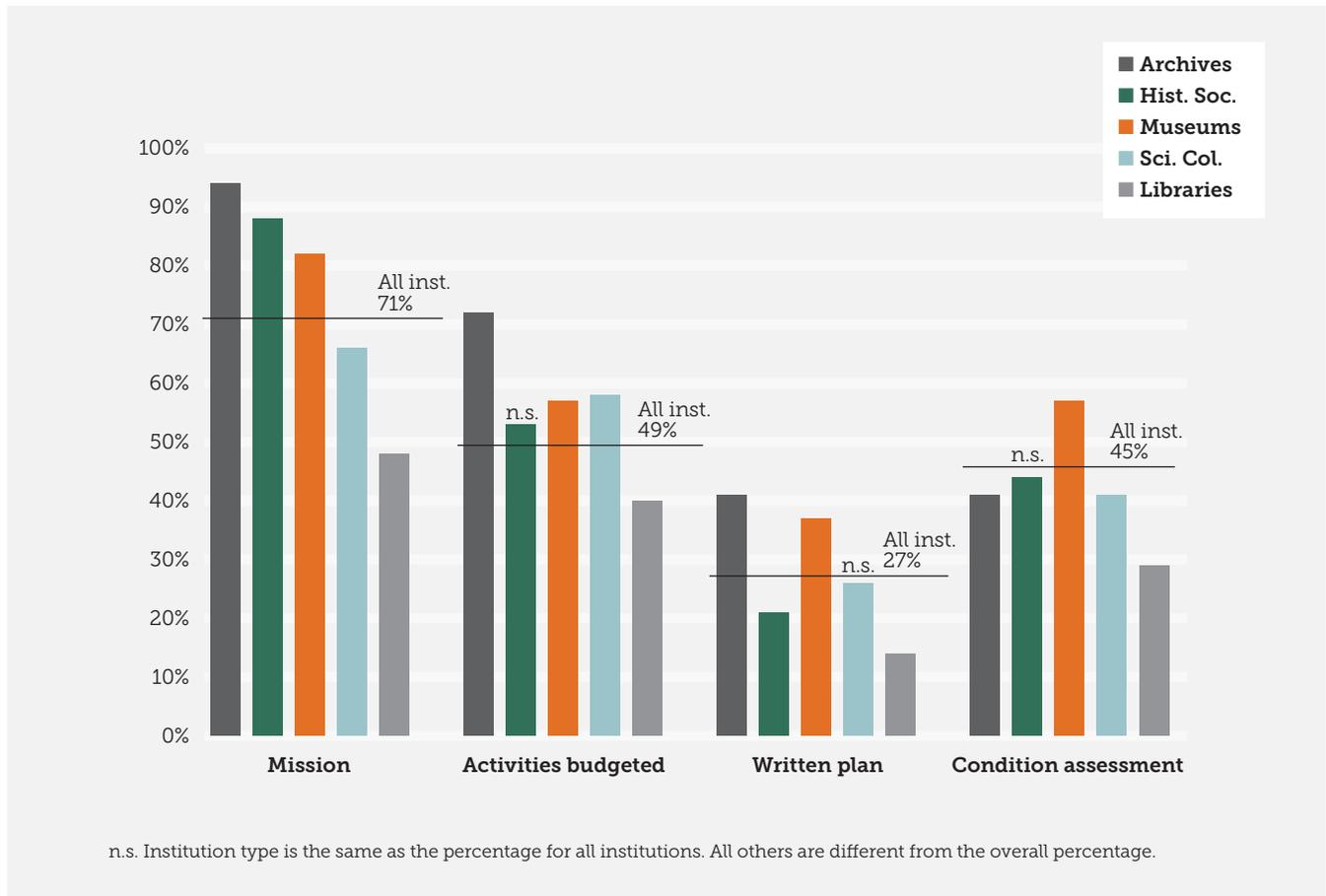


Figures 8 and 9 indicate substantial and statistically significant differences for comparisons of responses to the eight main items in both dimensions by institution type. The overall average percentage of collecting institutions for each item is shown as a horizontal line with the label “All Inst. XX%” to provide a comparative benchmark. Looking at the first set of four items associated with institutions’ commitment to preservation in Figure 8, substantial differences exist, with 80% or more of archives, historical societies, and museums indicating their institution’s mission includes a commitment to preservation compared to just 66% of scientific collections, and 48% for libraries.

Additionally, as shown in Figure 8:

- Libraries were least likely to have responded affirmatively on any of the other three indicators of institutional commitment to preservation;
- Archives (72%) were most likely to have activities budgeted;
- Museums were most likely to have completed a general condition assessment (57%); and
- Archives (41%) and museums (37%) were most likely (and statistically equally likely) to say they had a formal, written conservation plan.

Figure 8. Institutional Commitment to Preservation by Institution Type



Key findings from Figure 9 about the use of security and environmental controls by institution type include:²⁷

- Libraries were least likely to report using all three types of environmental controls²⁸
- Archives were most likely to report using temperature (86%) and humidity controls (78%);
- Museums were most likely to report having security systems (81%); and
- Scientific collections were least likely to report having security systems (43%).

²⁷ The subordinate items associated with seven of the eight RQ2 survey items are not separately reported here for each institution type. More details on these items are provided in the two-pagers in the appendix.

²⁸ Scientific collections (31%) and libraries (27%) were statistically equally likely to use humidity controls.

Figure 9. Security and Environmental Controls by Institution Type

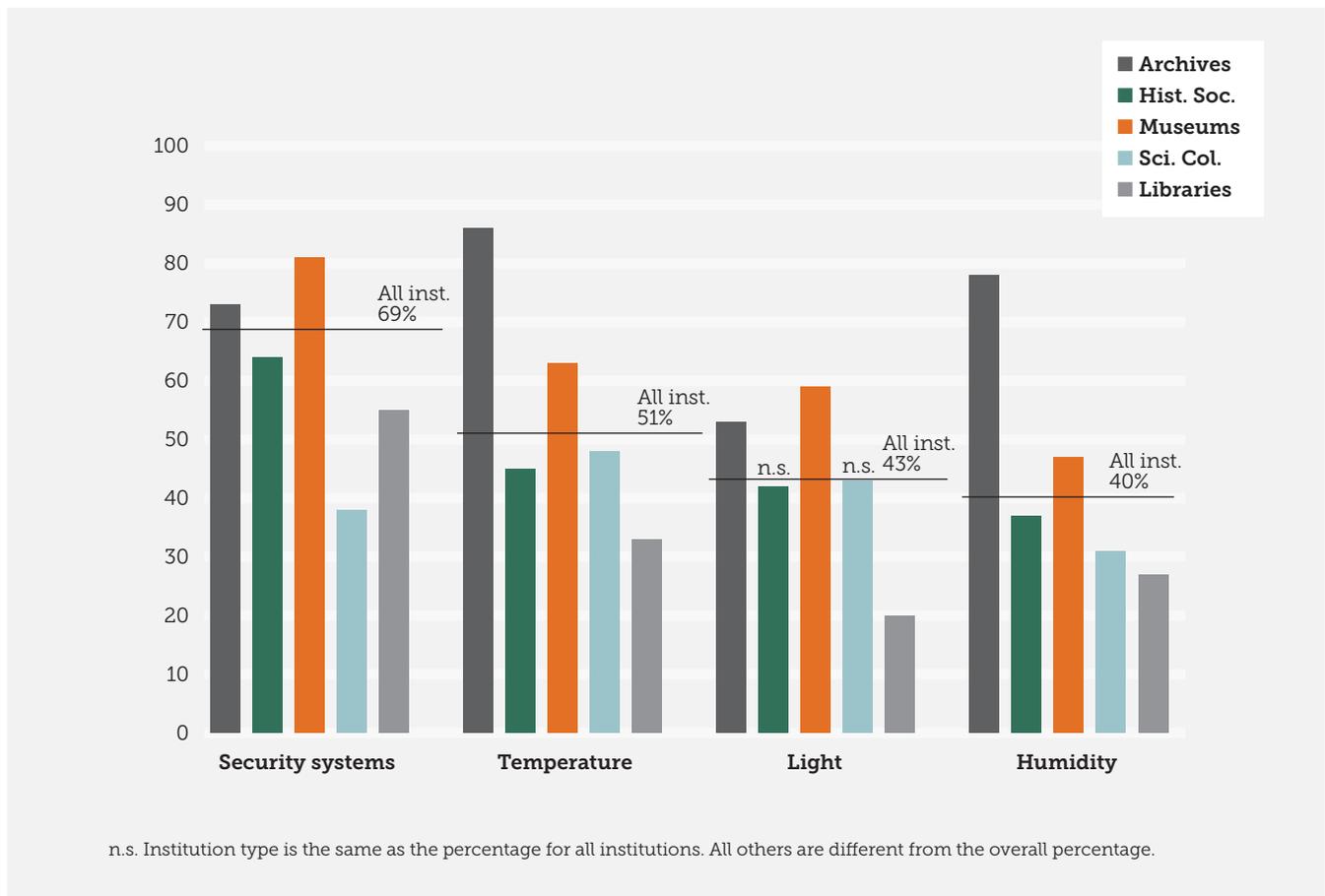


Table 10 provides results for the eight main questionnaire items associated with RQ2 for institutions by size separately within each of the five institution types. Large/medium institutions were more likely than small institutions of the same type to indicate that they:

- completed a general assessment of their collections,
- budgeted for conservation/preservation activities, and
- had a formal written conservation/preservation plan.

Additionally, large/medium libraries, museums and historical societies were more likely than small ones to report using security systems and all three types of environmental controls. Notably, small archives were as likely as large/medium ones to use security systems, temperature, and humidity controls. Finally, with the exception of libraries, size of archives, museums, historical societies, and scientific collections was not significantly related to the institution reporting that its mission included conservation/preservation; small libraries (46%) were substantially less likely than large/medium libraries (82%) to indicate their mission included conservation/preservation.

Table 10. Institutional Commitment to Preservation and Security and Environmental Controls by Institution Size Within Institution Type

	ARCHIVES			HISTORICAL SOCIETIES			LIBRARIES			MUSEUMS			SCIENTIFIC COLLECTIONS		
	Large/Medium	Rel.*	Small	Large/Medium	Rel.*	Small	Large/Medium	Rel.*	Small	Large/Medium	Rel.*	Small	Large/Medium	Rel.*	Small
INSTITUTIONAL COMMITMENT TO PRESERVATION															
Mission includes conservation / preservation	97%	=	93%	96%	=	88%	82%	>	46%	86%	=	82%	68%	=	66%
Conservation/ preservation activities included in annual budget	82%	>	71%	77%	>	52%	76%	>	38%	87%	>	56%	76%	>	57%
Has a formal written plan for conservation/ preservation	52%	>	39%	38%	>	21%	36%	>	12%	59%	>	36%	49%	>	23%
Has completed a general condition assessment	84%	>	35%	82%	>	43%	57%	>	28%	76%	>	57%	60%	>	40%
SECURITY AND ENVIRONMENTAL CONTROLS															
Security systems	78%	=	73%	96%	>	63%	91%	>	53%	95%	>	81%	67%	>	35%
Temperature controls	92%	=	86%	94%	>	44%	79%	>	31%	92%	>	63%	76%	>	48%
Light controls	74%	>	50%	84%	>	42%	59%	>	17%	90%	>	58%	40%	=	44%
Humidity controls	78%	=	78%	88%	>	36%	71%	>	25%	87%	>	46%	40%	=	30%

Notes:

* Rel. references the relationship between Large/Medium as compared to Small institutions within each institutional type. The symbol "=" means that there was no statistically significant difference in the percentages of Large/Medium versus Small institutions that referenced the preservation need. The ">" or "<" symbol shows that direction of the statistically significant difference between the Large/Medium and Small institutions that indicated the preservation need.

RQ2. Summary/Answer: To what extent have institutions prioritized collection preservation?

Institutions varied in the extent to which they reported their missions included preservation, which was defined in the HHIS questionnaire as a specific process associated with irreplaceable items that were not loaned out to patrons. Archives led on this indicator (94%) compared to just 48% of libraries (Figure 8), with a statistically significant difference between large/medium (82%) and small (46%) libraries.²⁹ For all institution types, apart from libraries, size was not a significant determinant of institutions' likelihood of indicating preservation as part of their mission (Table 10).

There were key differences in reporting on the three main indicators of institutional commitment to preservation by institution type. For example, while 72% of archives indicated that conservation/ preservation activities were included in their institution's budgets, fewer than 60% historical societies, museums, and scientific collections³⁰ and 40% of libraries reported this (Figure 8). Consequently, these findings suggest that programmatic approaches to conservation/ preservation need to adapt to how institutions execute preservation within the context of other aspects of their missions.

²⁹ There may be some key ways in which small versus large/medium libraries differ on other variables, such as the types of collections held, which could be at the heart of this large gap.

³⁰ No statistically significant difference among these three types of institutions on whether their budgets included funding for conservation/preservation activities. As shown in Figure 10, only all percentages, except that for historical societies, differed significantly from the overall of 49%.

Use of security systems and environmental controls varied by both institution type and size (Figure 9 and Table 10). Archives and museums were most likely among the five institution types to deploy measures to control humidity and temperature and to have security systems (museums and scientific collections were most likely to control for light). Small institutions (except archives) were less likely to report use of security systems to protect collections from the elements or theft when compared to large/medium institutions of the same type.

RQ3: To what extent have institutions developed emergency plans and trained staff to implement these plans to protect collections?

Emergency preparedness is critical to ensure preservation of cultural heritage items in the event of an accident or disaster. Since 1995 the Heritage Emergency National Task Force³¹, a coalition of more than 40 federal agencies and non-profit cultural heritage stakeholders, has collaborated to develop resources and engage in outreach to raise institutions' awareness of the importance of having emergency plans and staff to implement plans in the event of an emergency to preserve heritage collections.

To address RQ3, we analyzed two main and three follow-up survey questions associated with two dimensions of emergency planning. The first dimension concerned whether the institution has a written emergency/disaster plan. Two follow-up questions were used to define a spectrum of care based on whether the institution had staff trained³² to carry out the plan and whether the plan was updated regularly. The second dimension, whether the institution has collection records³³, defined the spectrum of care based on responses to the follow-up question on which institutions could report whether these records were stored off-site, which is important in the event of an emergency.

Analysis of the main and follow-up items is completed at the broadest level among all survey respondents to generalize to all 31,290 U.S. collecting institutions. Findings for each of five institution types are then compared. Finally, analyses examine how size, within each of the five institution types, was related to emergency planning. More detailed analyses, showing results for each of the five institution types by size are included in the summary graphics in the appendix.

Figures 10 and 11 summarize these two dimensions for U.S. collecting institutions. As a benchmark, the 2004 HHI summary report³⁴, showed that 20% of U.S. collecting institutions reported having an emergency/disaster plan. In the 2014 survey, key findings shown in Figures 10 and 11 include:

- 42% of all U.S. collecting institutions reported having an emergency/disaster plan;
- Just one-in-four (24%) U.S. collecting institutions has both an emergency plan and staff trained to carry out the plan;
- A majority of U.S. collecting institutions (83%) have collection records;
- But just one-third (33%) keep a duplicate set of collection records off-site.

³¹ For a history of the Heritage Emergency National Task Force visit <https://culturalrescue.si.edu/hentf/about-hentf/history-and-initiatives>

³² The questionnaire did not specify what was meant by the term "staff trained", leaving this up to the respondents' interpretation.

³³ Collections records were defined in the HHI questionnaire glossary as follows: "Collections records can include inventory, catalog, or insurance policies as documents that contain information about an object. These records can be redundant and/or electronic records." As is always the case in survey research, respondents' interpretations of this definition might vary.

³⁴ Since we use the 2004 summary report, our 2004 to 2014 comparisons are not comprehensive. Findings from the 2004 report cannot be fully compared statistically with those of 2014 as the sampling protocols were different.

Figure 10. Emergency Planning and Staffing at U.S. Collecting Institutions

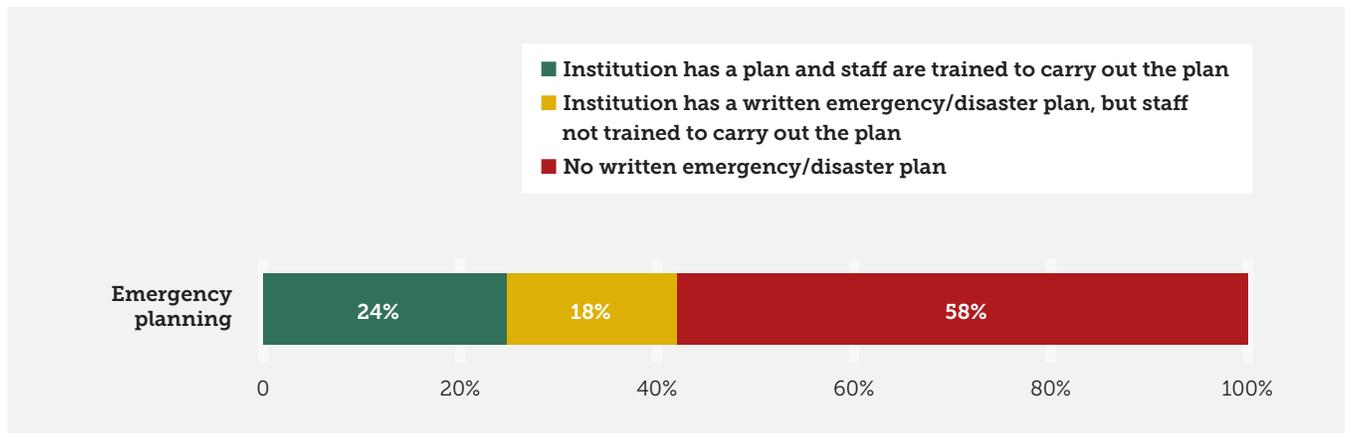
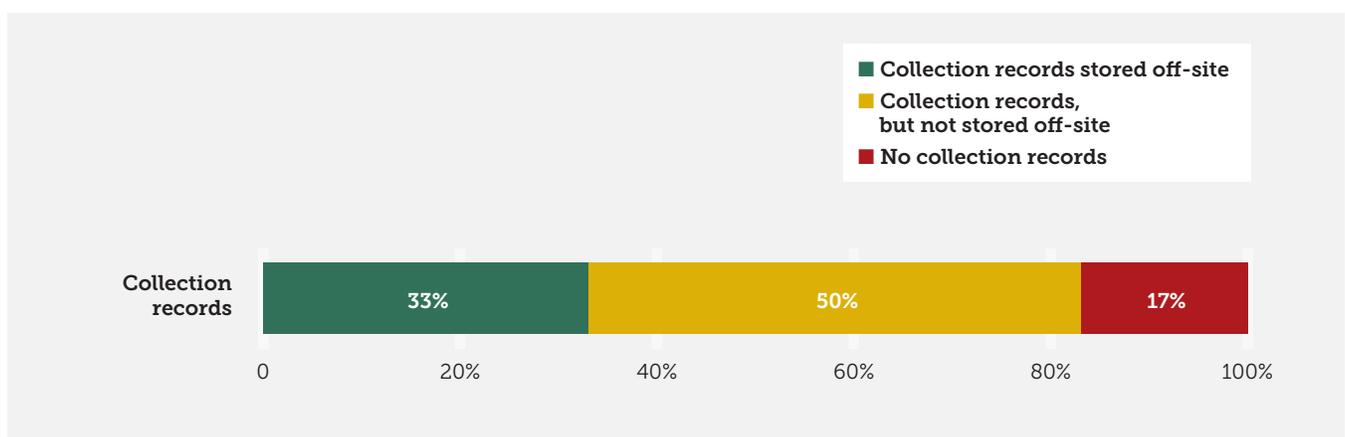


Figure 11. Emergency Planning: Collections Records Management



Figures 12 and 13 present emergency planning findings across institution types. Figure 12 shows that more than half of each type of institution, except for archives (48%) lacked a written emergency/disaster plan, with scientific collections (80%) the least likely to have a plan. Archives and museums were most likely to report (30% and 28%, respectively) that they had an emergency plan and that staff were trained to carry out the plan at their institution. Scientific collections (8%) were least likely to have this highest level of emergency planning.

In contrast to the clear institutional differences shown in Figure 12, the data shown in Figure 13 reveal less differentiation across institutions with respect to emergency planning associated with collections records. With the exception of archives, around one-third of all other types of institutions reported that they had collection records stored off-site, which could include cloud storage. While archives were least likely to report their collection records were stored off-site (26%), libraries were most likely to indicate that they lacked collection records³⁵ (26%).

³⁵ Subject matter experts indicated that given the sequencing of survey items related to collection records storage (and the glossary definition), library respondents were unlikely to view their catalogs as “collections records” from a preservation standpoint. Libraries approach records and preservation from the item level perspective.

Figure 12. Emergency Planning by Institution Type

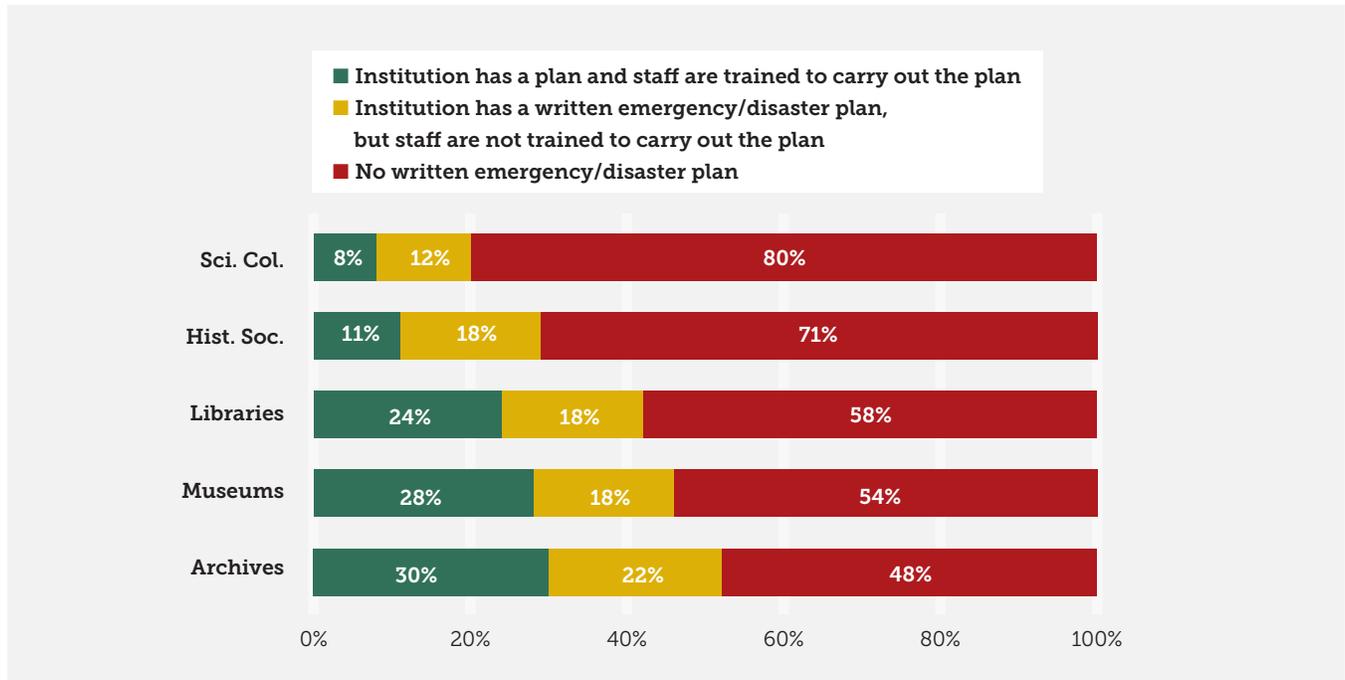


Figure 13. Emergency Planning: Collections Records Management by Institution Type

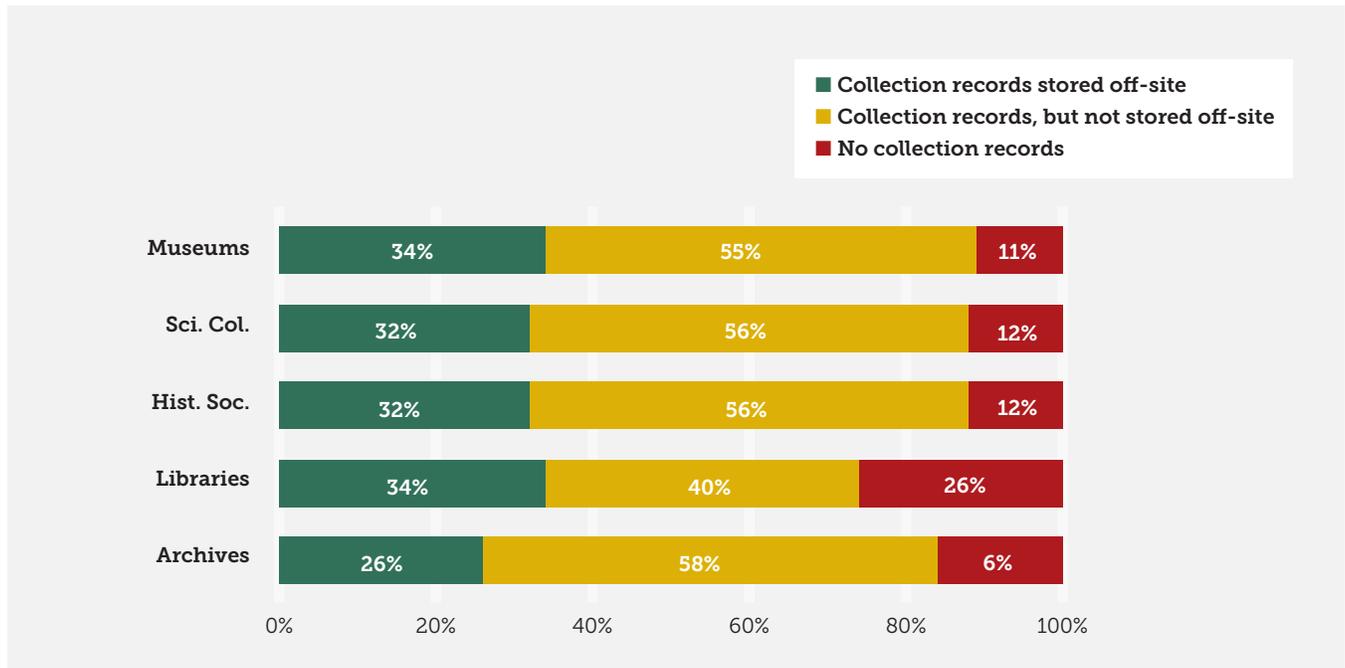


Table 11 extends this analysis to compare responses to the two main emergency planning questions by size within each of the five institutional types. It shows small institutions were significantly less likely than large/medium ones to have emergency plans and to have collections records within each institutional type. A majority of large/medium archives, historical societies, museums and libraries (79% or more) had written plans but fewer than half of small institutions (17-47%) reporting a plan. Small scientific collections (17%) were least likely to have emergency/disaster plans. A majority of all institutions, regardless of size reported having collection records, with small libraries (73%) least likely to have such records for items they preserved.

Table 11. Emergency Planning by Institution Size Within Institution Type

	ARCHIVES			HISTORICAL SOCIETIES			LIBRARIES			MUSEUMS			SCIENTIFIC COLLECTIONS		
	Large/Medium	Rel.*	Small	Large/Medium	Rel.*	Small	Large/Medium	Rel.*	Small	Large/Medium	Rel.*	Small	Large/Medium	Rel.*	Small
A written emergency/disaster plan	86%	>	47%	84%	>	28%	79%	>	40%	85%	>	45%	58%	>	17%
Collections records for items in its collections	92%	>	82%	100%	>	87%	94%	>	73%	99%	>	89%	100%	>	87%

Notes:

*Rel. references the relationship between Large/Medium as compared to Small institutions within each institutional type. The symbol “=” means that there was no statistically significant difference in the percentages of Large/Medium versus Small institutions that referenced the preservation need. The “>” or “<” symbol shows that direction of the statistically significant difference between the Large/Medium and Small institutions that indicated the preservation need.

RQ3. Summary/Answer: To what extent have institutions developed emergency plans and trained staff to implement these plans to protect collections?

Emergency/disaster plans, updating them on a regular basis and having staff in place to execute them are important actions for collections preservation. Overall, fewer than half of all U.S. collecting institutions had an emergency/disaster plan (42%). As seen in Figure 10, just under one-in-four (24%) had both an emergency plan and staff trained to carry out the plan, similar to the 20% of institutions who reported this in the 2004 survey.³⁶

Archives were most likely among the five institution types to report having an emergency/disaster plan (52%) and were as likely as museums to report that staff were trained to execute the plan (30% of archives and 28% of museums). Fewer than half of the remaining types of institutions reported having such plans (Figure 12). Except for archives at 26%, about one-third of all institution types reported that they had a set of collection records stored off-site, which may include cloud storage (Figure 13). Libraries were least likely to report having collection records and this issue was particularly pronounced for small libraries at 73% compared to 94% for large/medium libraries (Table 11). In general, based on both main indicators of emergency preparedness (emergency disaster plans and collections records), small institutions were less likely than large/medium ones across all five types to be prepared for emergencies/disasters (Table 11).

³⁶ Since we use the 2004 summary report, our 2004 to 2014 comparisons are not comprehensive. Findings from the 2004 report cannot be fully compared statistically with those of 2014 as the sampling protocols were different.

RQ4: To what extent have institutions assigned staff responsibilities in caring for collections?

The survey included several questions that shed light on the types of staff with collections care responsibilities. Respondents checked boxes to indicate which of five³⁷ different types of staff they used for these purposes:

- Paid conservation/preservation staff (separately for full and part time);
- Volunteers in conservation/preservation;
- Contracted provider(s) or consultant(s) responsible for conservation/preservation; and
- Staff from another department.³⁸

A final category, “No assigned staff,” was residual derived by combining the positive answers associated with the other staffing categories. In other words, respondents who checked none of the boxes were coded as having “No assigned staff” (which includes the lack of consultants). Because responding institutions could select more than one category of staff responsible for collections care, these data cannot be directly summed.

Figure 14 provides an overview of the staff dedicated to collections care at all 31,290 U.S. collecting institutions based on responses from all survey respondents, showing that 14% of institutions reported that there was no one (paid or unpaid, regular or contractor) assigned responsibilities for collections care. In comparison, in the 2004 HHI survey, 22% of institutions reported this.³⁹ Figure 14 also shows:

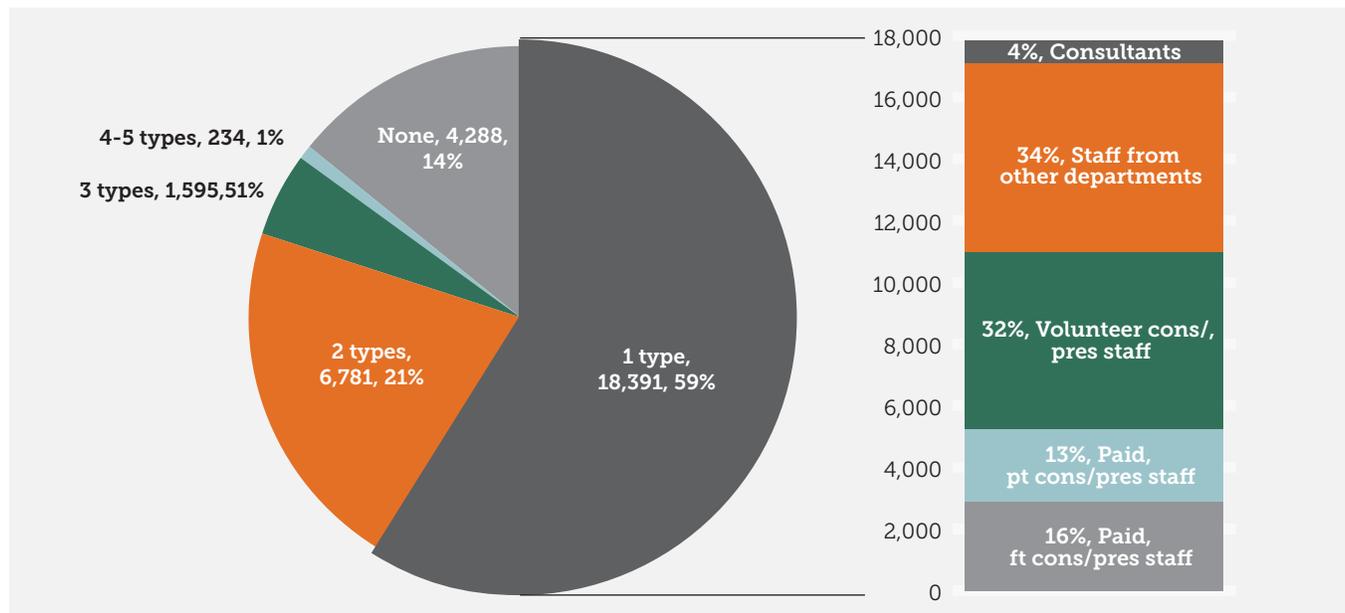
- More than half of institutions (59%) reported only one type of labor that was assigned to care for collections with an additional 22% that reported using a mix of two types of staff;
- Among those institutions that specified just one type of personnel:
 - » 29% reported paid conservation/preservation staff (full or part time);
 - » 32% reported volunteers;
 - » Just 4% of institutions indicated they relied solely on contracted provider(s) or consultant(s) for conservation/preservation.

³⁷ Respondents were asked about six types, with volunteers reported separately as either part time or full time. However, there were only 53 institutions (unweighted) that reported full time volunteers, so part and full time volunteers were combined into one category, producing the five analytical staffing categories used here.

³⁸ Staff from other departments, though not specified as such, were likely paid. The distinction is between whether such staff were dedicated to conservation/preservation or were in some other department and assigned conservation/preservation responsibilities. In the 2004 survey, the intent was to understand the extent to which collecting institutions had staff dedicated specifically to conservation/preservation versus being assigned conservation/preservation as additional duties.

³⁹ Since we use the 2004 summary report, our 2004 to 2014 comparisons are not comprehensive. Findings from the 2004 report cannot be fully compared statistically with those of 2014 as the sampling protocols were different. The eight-percentage point difference is of moderate size.

Figure 14. Number of Different Types of Personnel Assigned to Care for Collections and Specific Type of Personnel among Institutions (n = 18,391) that Reported Only One Type of Personnel



As with other analyses in this report, we compared staffing for each of the five institution types (Figure 15), followed by analysis of staffing by institutional size within each of the five types (Tables 12 and 13). Overall, just 14% of institutions reported having no staff or consultants assigned responsibility for collections care (left chart in Figure 14), with the rate highest for libraries (27%) and most notably small libraries (28%) versus large/medium ones (6%) (Table 12). Overall 19% of institutions relied only on volunteers for collections care but notably more than half (55%) of small historical societies and just over one-fifth of small museums relied on volunteers.

Additionally, as shown in Figure 15 and Table 13, among the institutions that reported *just one type of labor* to care for collections:

- Archives were most likely to report having paid staff responsible for collections care (90% overall, with 71% with staff specific to conservation/preservation, and small archives more likely to report part-time workers (21%) than large/medium ones (8%);
- Historical societies (18%) were least likely to report having paid personnel, instead relying heavily upon volunteers (80%) all of which contributed their skills to collections care at small historical societies;
- Museums used varied staffing to care for collections and were the most likely institution type to report that contractors or consultants were their sole source of conservation/preservation labor (7% overall) with large/medium museums (11%) more likely than small ones (7%) to hire consultants; and
- Large/medium and small scientific collections were relatively similar in the kind of personnel who performed collections care, with the exception that large/medium ones were much more likely to have a full-time staff member (47%) than were small scientific collections (22%).
- Libraries most often reported relying on care for collections with staff from another department (56%), which was more pronounced in small libraries (57%) than large/medium ones (36%).

Figure 15. Specific Type of Personnel among Institutions that Reported Only One Type of Personnel by Institution Type

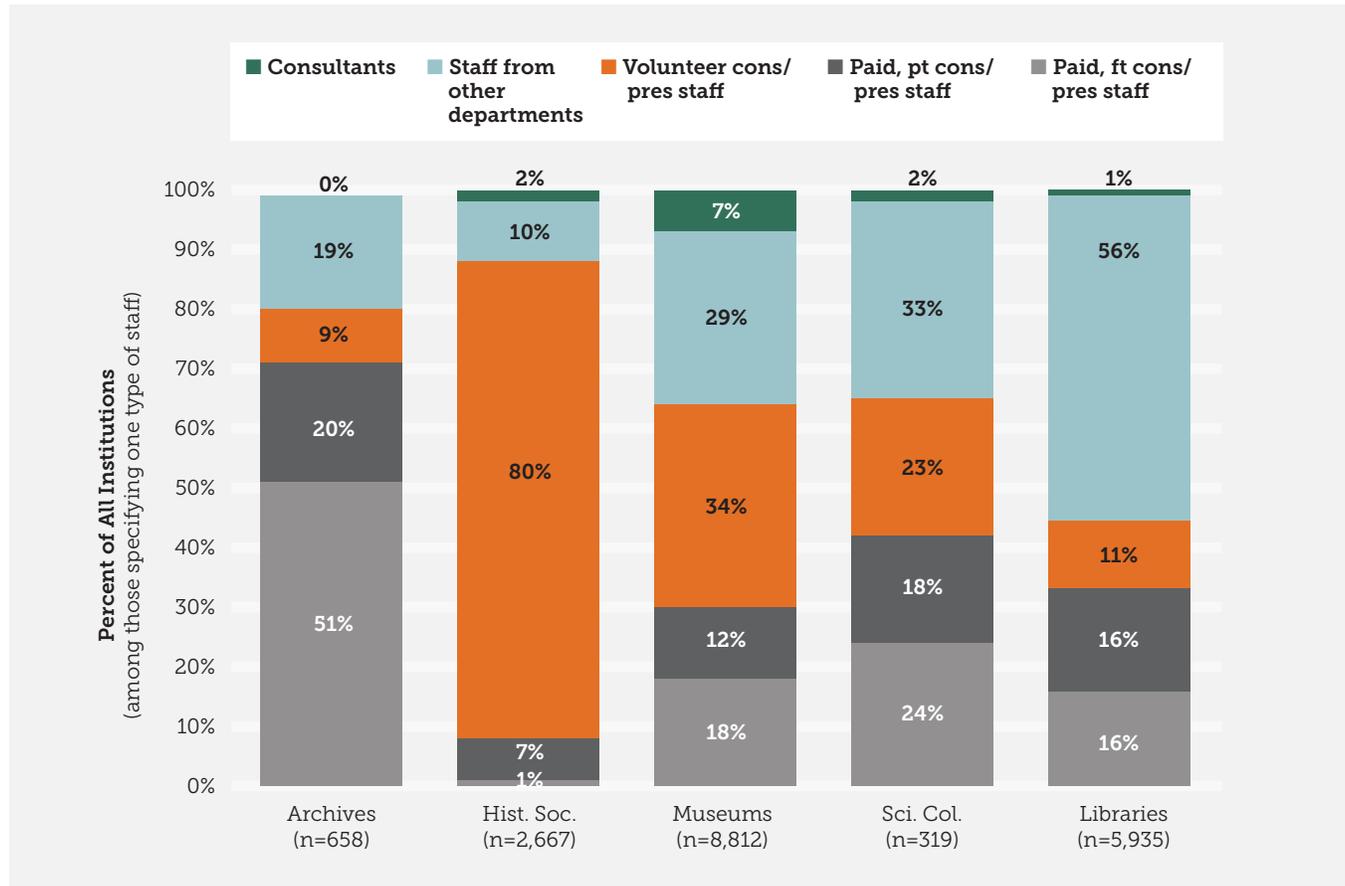


Table 12. Percentage of institutions that reported that no one or only volunteers were assigned specific responsibilities to care for collections (held for preservation⁴⁰)

	NO ONE ASSIGNED				ONLY VOLUNTEERS ASSIGNED			
	LARGE/MEDIUM	SIG.	SMALL	OVERALL	LARGE/MEDIUM	SIG.	SMALL	OVERALL
Archives	3%	=	3%	3%	6%	=	6%	6%
Historical Societies	0%	<	6%	6%	0%	<	56%	55%
Museums	3%	<	7%	7%	0%	<	21%	20%
Scientific Collections	0%	<	10%	10%	8%	=	9%	9%
Libraries	6%	<	28%	27%	2%	<	6%	6%

⁴⁰ Again, collections held for preservation are a subset of an institution's holdings. Please refer to the definition in the orange box on p. 12 in the "Research Approach" section.

Table 13. Specific Type of Personnel among institutions that reported only one type of personnel assigned to care for collections by Institution size within institution type

	ARCHIVES			HIST. SOCIETIES			LIBRARIES			MUSEUMS			SCI. COLLECTIONS		
	Large/ Medium	Rel.*	Small												
Paid															
Full time	52%	=	51%	30%	>	1%	35%	>	15%	61%	>	17%	47%	>	22%
Part Time	8%	<	21%	20%	=	8%	19%	=	16%	8%	=	13%	12%	=	18%
Volunteer															
Full time	10%	>	0%	0%	=	5%	0%	=	0%	0%	<	2%	0%	=	3%
Part Time	0%	<	9%	1%	<	75%	4%	<	11%	1%	<	31%	20%	=	20%
Other Department	29%	>	18%	46%	>	10%	36%	<	57%	19%	<	29%	20%	=	34%
Consultants	0%	=	0%	2%	=	2%	6%	>	1%	11%	=	7%	1%	=	2%
Number of institutions	71		587	20		2,601	279		5,649	186		8,558	25		294
Percent of institutions	59%		69%	39%		68%	47%		55%	37%		60%	38%		42%

**Rel. references the relationship between Large/Medium as compared to Small institutions within each institution type. The symbol “=” means that there was no statistically significant difference in the percentages of Large/Medium versus Small institutions that referenced the preservation need. The “>” or “<” symbol shows that direction of the statistically significant difference between the Large/Medium and Small institutions that indicated the preservation need.

RQ4. Summary/Answer: To what extent have institutions assigned staff responsibilities in caring for collections?

The majority of U.S. collecting institutions (86%) reported that there was someone (paid staff, volunteer, or a consultant) assigned to care for collections (Figure 14). As a point of reference, the 2004 HHI survey report found that a moderately smaller percentage of institutions (78%⁴¹) had at least one of these staffing arrangements to care for collections. Across the five institution types, libraries (27%) were most likely to report that there was no one assigned specific responsibilities to care for the collections for which they assumed preservation responsibility (Table 12).⁴² However, it is notable that small libraries (28%) were more than four times as likely as large/medium ones (6%) to report no staff assigned collections care responsibilities (Table 13).

Volunteers were important for collections care with 19% of all institutions reporting this was their only staff assigned these responsibilities. But volunteers were predominantly used by small rather than large/medium institutions. More than half of all small historical societies (56%) and 21% of small museums relied solely on volunteers for collections care responsibilities.

Most institutions (59%) reported they used just one of the five possible types of labor to care for their collections held for preservation. Overall, just 4% reported that they relied solely on a consultant for collections care with museums (7%) most likely to do so (Figure 15). In general, different institution types tended to use different kinds of staff for collections care. For example, archives (51%) were most likely to use paid staff, while historical societies (80%) were most likely to use volunteers. Museums were most likely to rely on a mix of staff types and were most likely to only use consultants (7%). Scientific collections tended to use a mix of staff from other departments (33%) and paid full-time staff (24%). Finally, libraries mostly relied on staff from other departments (56%) rather than specialized conservation/preservation staff.

⁴¹ Since we use the 2004 summary report, our 2004 to 2014 comparisons are not comprehensive. Findings from the 2004 report cannot be fully compared statistically with those of 2014 as the sampling protocols were different.

⁴² Again, it should be noted that in a library context not all holdings are considered collections for which preservation responsibility is accepted per the instructions associated with the survey described in the “Research Approach” section earlier in this report.

RQ5: What is the current state of the preservation of digital collections?

Survey questions about digital collections were new in the 2014 survey, providing an opportunity to learn about preservation of these collections, which have been expanding with great rapidity since the 2004 HHI survey. Digital preservation consists of a series of actions undertaken by institutions. While digitization may be one step in this process, subsequent activities are necessary to preserve digital collections. Standards for digital preservation have been established by the Center for Research Libraries.⁴³ Additionally, reports⁴⁴ from the National Digital Stewardship Alliance (NDSA) indicate five factors to consider in assessing the level of digital preservation: storage and geographic location; file fixity and data integrity; information security; metadata; and file formats.

Within this context of digital preservation, this section uses only items on which internal SMEs could agree were valid and reliable with many questions dropped from the analysis due to ambiguity in responses.⁴⁵ As previously described in Table 4, this section will review:

1. The size and scope of digital materials collections, and
2. The status of preserving digital collections.

Size and Scope of Digital Materials Collections

For the 2014 survey, U.S. collecting institutions were asked to report on the total *volume*⁴⁶ of files but not the *number* of files. Therefore, Figure 16 shows the relative size of files by type of content for digital collections, which exceeded 387 million TB at the time of the survey in 2014. The composition of digital collections indicates that half of the volume of digital collections consisted of images of various formats, with electronic records accounting for another 40%.⁴⁷ As with tangible collections, the unit in which digital content is measured suggests caution should be exercised in describing digital collections. For example, while the general category of electronic records constitutes 40% of collections, the number of files represented by this collection category may well exceed that of the number of images. Text files, which are likely included with electronic records, are much smaller in volume than image files.

Every day, we create 2.5 quintillion bytes of data. To put that into perspective, 90 percent of the data in the world today has been created in the last two years alone – and with new devices, sensors and technologies emerging, the data growth rate will likely accelerate even more.

“What is big data” (November 2016, cited in IBM Marketing Cloud 2017)

⁴³ “The Trustworthy Repositories Audit & Certification (TRAC) Metrics” [Online: <http://www.crl.edu/archiving-preservation/digital-archives/metrics-assessing-and-certifying/trac> (8 November 2017)].

⁴⁴ Atkins, W., C. Ghering, M. Kidd, C. Kussman, J. M. Perrin, M. Phillips, S. Schaefer, and K. Talbot. 2017. “Staffing for Effective Digital Preservation, 2017.” [Online: http://ndsa.org/documents/Report_2017DigitalPreservationStaffingSurvey.pdf (15 December 2017)].

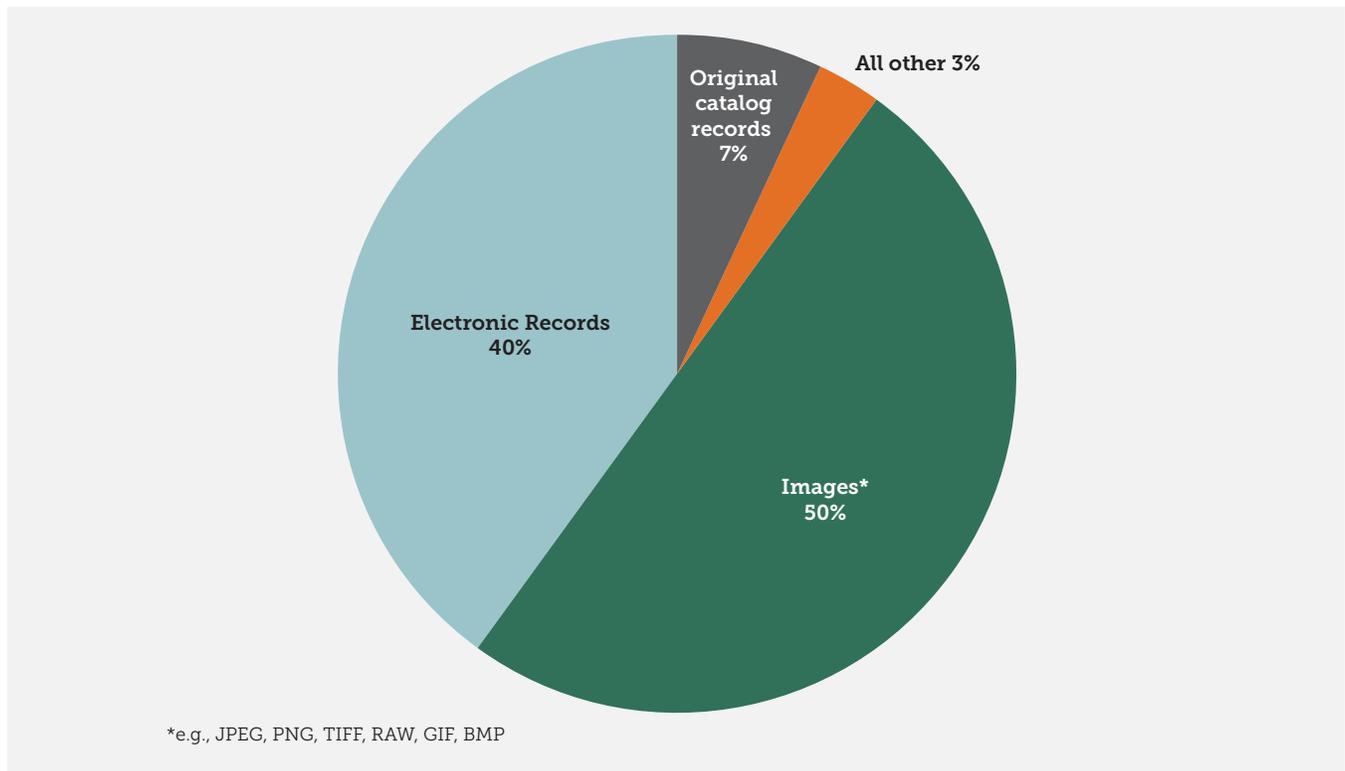
Phillips, M., J. Bailey, A. Goethals, and T. Owens. 2013. “The NDSA Levels of Digital Preservation: An Explanation and Uses.” [Online: http://www.digitalpreservation.gov/documents/NDSA_Levels_Archiving_2013.pdf (27 December 2017)].

⁴⁵ This analysis includes one item that suffers from a measurement problem due to interest in results to IMLS SMEs

⁴⁶ Descriptions of big data often refer to the “three V’s” of volume, velocity, and variety when describing data. Institutions reported the size of holdings and indicated they were reporting in Gigabytes, Terabytes, or Petabytes. The survey contractor synchronized all digital collections data to be in Gigabytes (GB) and in this report, we often use Terabytes (TB, 1,000 GB), given the order of magnitude of the data when summed across all institutions.

⁴⁷ As a point of comparison, the dominance of image files was also found in the NDSA staffing reports (2012 and 2017), which used a qualitative assessment of the number of files to ascertain the relative types of digital content. In contrast to the HHI’s use of file volume, the NDSA’s use of the qualitative assessment of the number of files suggests that text files, rather than electronic records, comprised the second largest portion of digital collections. Additional caveats are necessary in using the NDSA data as a point of comparison. The NDSA staffing survey used a convenience sample solicited via “national and international mailing lists associated with digital preservation.” With nearly half (46%) of the 168 survey respondents being academic libraries or archives and a non-probability sample, generalizability to a larger and U.S.-specific universe should not be performed. Self-referred convenience studies are likely to garner responses from highly motivated respondents. Additionally, as a survey developed and administered within the library and archives digital preservation community that built upon experience with an earlier instrument (2012), the 2017 study represents more refined and focused measurement of issues associated with digital preservation. The lower level of participation of other types of collecting institutions—notably museums (8% of NDSA respondents) and historical societies (3% of NDSA respondents)—suggests care should be exercised in comparing NDSA results with HHI, which included more heterogeneous collecting institutions.

Figure 16. Distribution (by Volume) of the 387.1 million TB⁴⁸ of Digital Collections by Item Type



Note: "All other" includes software (1.4%), texts (0.5%), audio (0.4%), geospatial media (0.4%), datasets (0.2%), video (0.1%), exhibit media (0.05%), websites (0.001%) and games (0.00001%). Numbers may not sum due to rounding. No further details about what is included in "Electronic records" were included in the survey documentation.

Table 14 compares the volume of digital collections by item type for each of the five institution types. Images occupy the most space in digital collections held by archives, historical societies, libraries, and scientific collections. In contrast, electronic records account for the largest portion of space for digital collections at museums.

Other findings include:

- Overall, by volume, 73% of all digital collections were reported at libraries, with an additional 26% at museums;
- Museums report holding nearly all exhibit media and software digital collections;
- Libraries reported holding nearly all digital content by volume associated with texts; and
- While the majority of geospatial media files were reported held by libraries (85%), historical societies reporting holding about 15% of content by volume of geospatial media.

How big is a TB of data?



The entire print collection of the Library of Congress is more than 200 TBs. (Taylor, 2011)

⁴⁸ Reference for the box "How big is a TB?" Taylor, N. (2011, July). "Transferring "Libraries of Congress" of Data" [Online at: <https://blogs.loc.gov/thesignal/2011/07/transferring-libraries-of-congress-of-data/> (3 January 2018)].

Table 14. Digital Collections, Volume (in Terabytes) by Item Type and Institution Type⁴⁹

ALL MEASUREMENTS IN TERABYTES	TOTAL*	ARCHIVES	HISTORICAL SOCIETIES	LIBRARIES	MUSEUMS	SCIENTIFIC COLLECTIONS
Images	191,175,300	1,457,100	3,712,900	170,174,100	15,660,000	171,300
Electronic records	156,153,600	872	2,400	83,680,000	72,383,800	100
Original catalog	27,741,900	12,885	3,700	22,663,200	5,062,100	<100
Software	5,512,300	12,900	<100	<100	5,512,200	<100
Texts	1,947,200	600	500	1,940,500	3,700	1,900
Geospatial media	1,456,900	<100	222,500	1,231,400	2,800	200
Audio	1,433,600	300	28,300	1,377,900	26,900	<100
Datasets	893,300	29,400	<100	863,300	500	<100
Video	494,800	2,700	800	331,500	159,800	<100
Exhibit media	174,400	<100	<100	<100	174,300	<100
Other	103,400	600	<100	102,800	<100	<100
Web sites	5,000	1,400	<100	2,600	900	<100
Games	<100	<100	<100	<100	<100	<100
Grand Total*	387,091,700	1,518,800	3,971,100	282,367,300	98,987,000	173,500

*Note: Totals based on unrounded data and may differ from the sums of constituent items in table due to rounding. Shading indicates relative size of each type of digital material within institutional type.

Status of Digital Preservation

The 2014 questionnaire included two items that provide the basis for understanding the extent to which U.S. collecting institutions were involved in digital preservation. Figure 17 shows that 40% of institutions were involved in preservation of born-digital collections, with more than half (58%) digitizing collections. Overall, 63% of institutions were engaged in at least one of these two digital stewardship activities.

The extent to which institutions were involved in digital activities associated with preservation varied across institution types. Archives were most likely to report both preserving born-digital (73%) and digitizing collections (87%), followed by scientific collections (58% and 73%, respectively). Libraries, museums, and historical societies did not significantly differ in the incidence of these two activities and tended to be clustered around the benchmarking line with either small or statistically insignificant percentage differences. Indeed, around one-third of libraries, museums and historical societies were engaged in neither of these activities.

Though 40% of U.S. collecting institutions preserve born-digital collections, Figure 18 shows that the vast majority (84%) had no plan for digital preservation, with only 10% of institutions that preserved born-digital collections reporting both a plan for digital preservation and a completed a condition assessment of these digital collections.

⁴⁹ The HHIS Public Use Data File includes data about digital collections. However, to avoid disclosing institutional identities that might be apparent for institutions with very large collections, the 11 variables associated with the volume of digital collections were topcoded. The analyses presented in this report use the original values rather than the topcoded values. More information about this procedure is available in the HHIS User's Guide and Data File Documentation available at: [INSERT WEB LINK HERE](#).

Figure 17. Participation in Born-Digital Preservation and Digitization of Collections by Institution Type

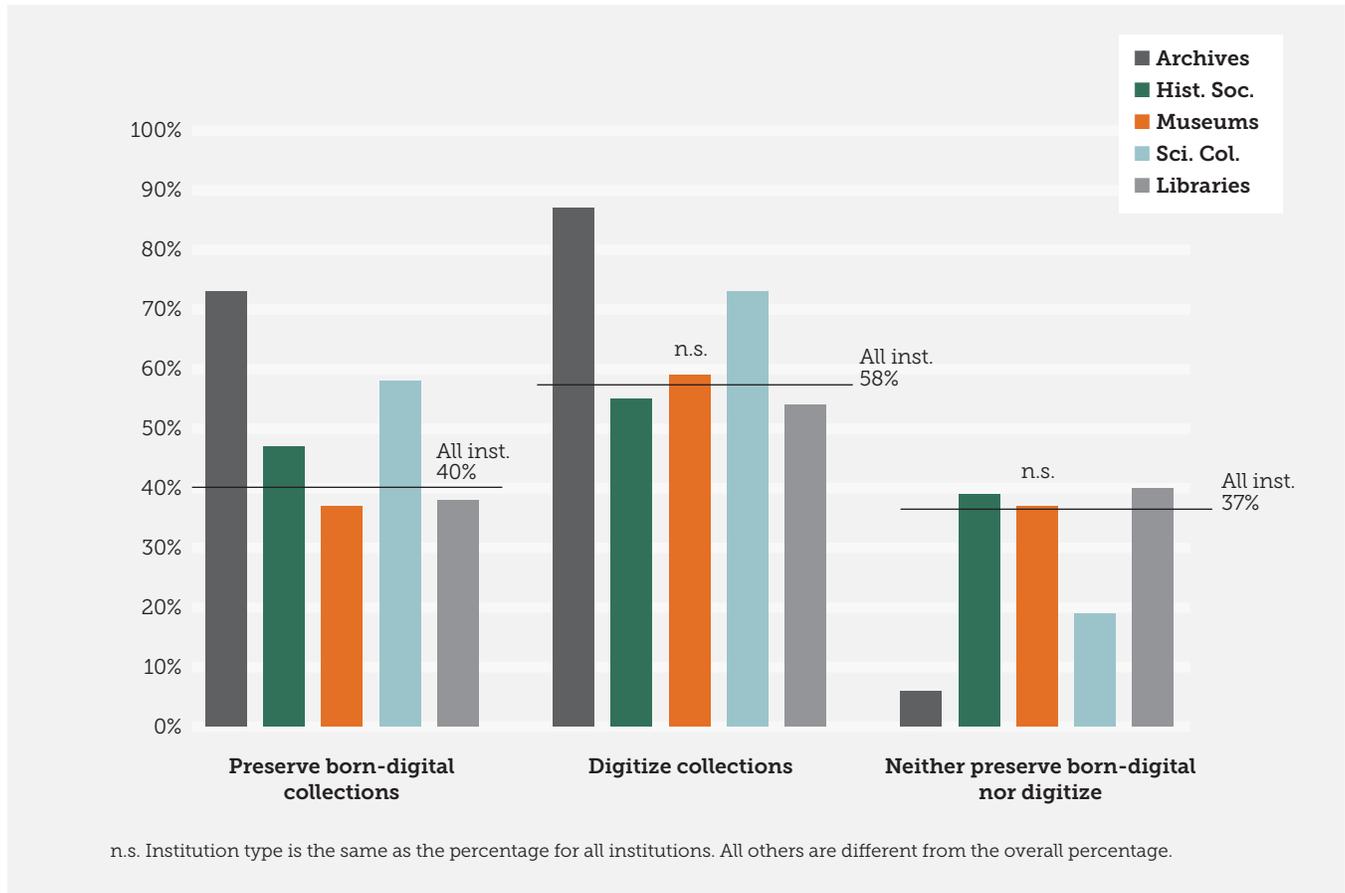


Figure 18. Incidence of Planning for Born-Digital Preservation at U.S. Collecting Institutions that Preserve Born-Digital Collections

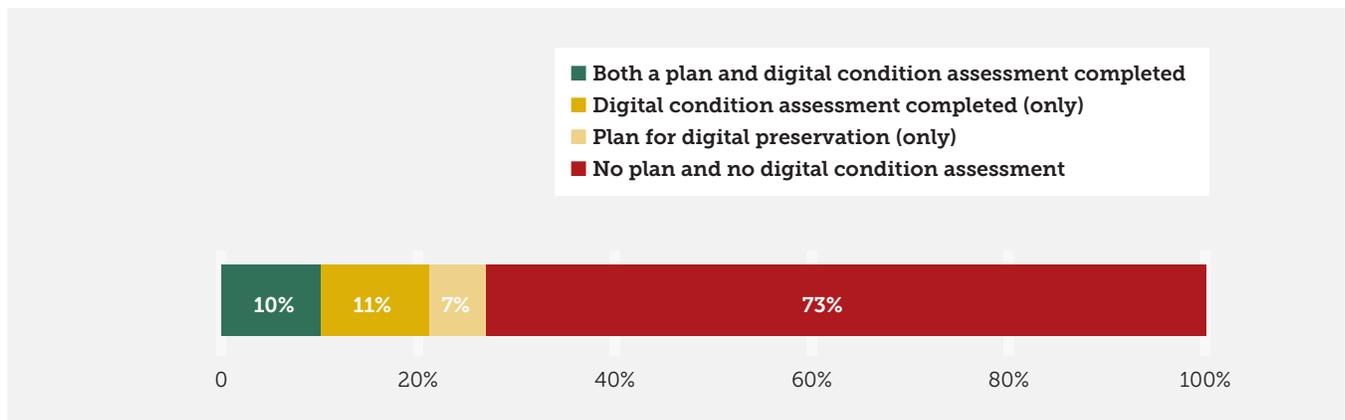
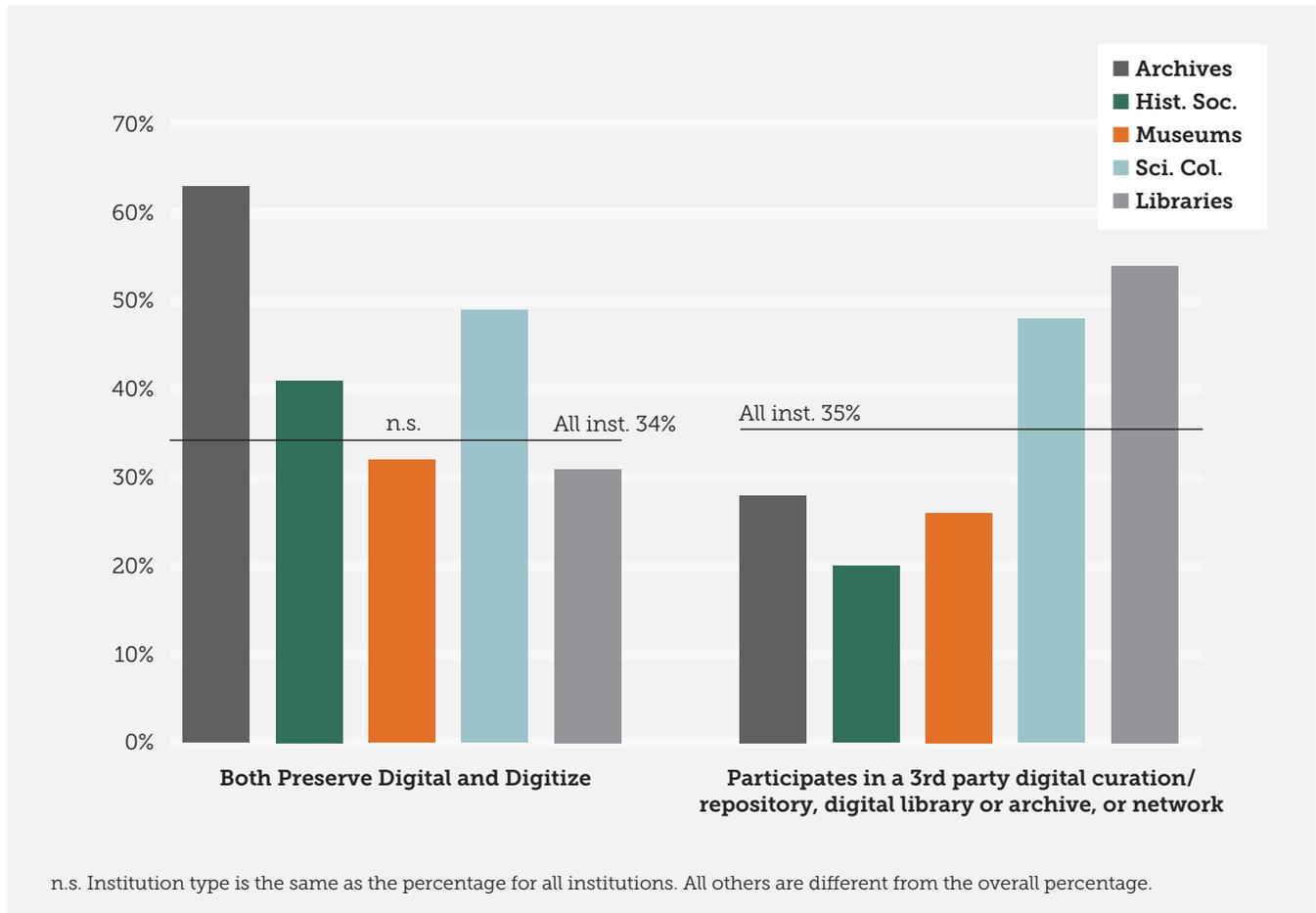


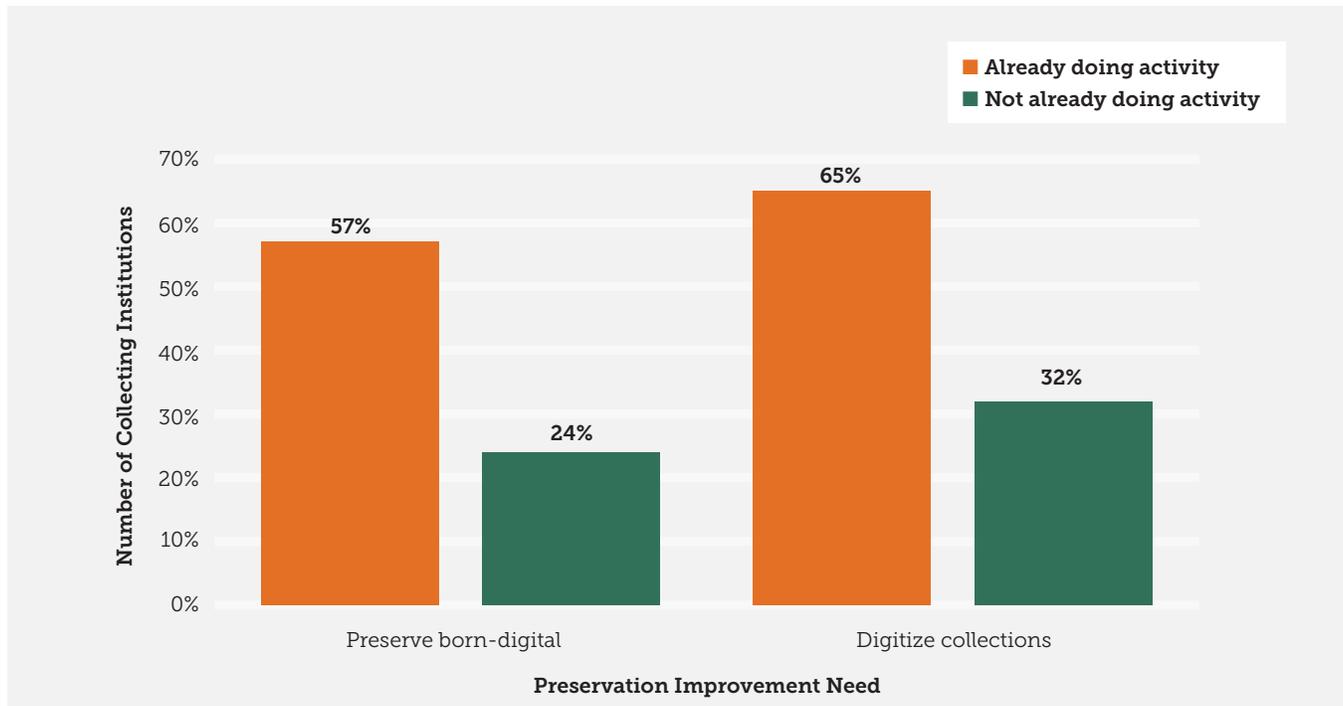
Figure 19 reports the extent to which those institutions with the fullest participation in digital stewardship (i.e., those that reported they preserved born-digital collections *and* digitized collections) participated in a third party digital curation/preservation repository, digital library or archive, or network. The bars on the left side of the chart indicate that 34% of institutions overall preserved both born-digital content and digitized content with archives (63%) most likely to do this, followed by scientific collections (49%). While libraries (31%) were least likely to both preserve born-digital and digitize collections, as seen in this figure's right chart, they also were most likely to report participation in a third party digital curation/preservation repository, digital library or archive, or network at 54%, far above the overall average of 35%.

Figure 19. Collaboration and Digital Stewardship by Institution Type



Earlier in this report, Figure 5 summarized two questionnaire items that asked about the needs for preservation improvement for born-digital and digitized collections cited by all U.S. collecting institutions. We now compare the responses to these items to look at the relationship between current participation in digital stewardship activities and the incidence of indicating these as areas of preservation improvement need. Figure 20 shows, as might be expected, those institutions already engaged in either preservation of born-digital or digitization activities were much more likely than those not already engaged in these activities to say that these were areas of preservation improvement need. However, it is notable that a significant minority of those institutions that are not already preserving born digital or digitizing collections still indicate this as a preservation improvement need.

Figure 20. Relationship between Current Digital Preservation Activity and Preservation Improvement Needs



RQ5. Summary/Answer: What is the current state of the preservation of digital collections?

Overall, nearly two-thirds (63%) of U.S. collecting institutions were involved in either digitizing their collections or preserving born-digital collections (Figure 17). These digital collections, which comprised over 387.1 million TB of data in 2014. Half of this volume of digital collections consisted of images, similar to the prevalence of photographic items as the dominant element among the tangible items held by U.S. collecting institutions. Electronic records accounted for another 40% of the volume of digital collections. The size of digital collections expands on a daily basis (Table 14).⁵⁰

The prevalence of participation in digital preservation varied greatly across institution types, with archives the most involved, and libraries, museums, and historical societies least involved. Additionally, when institutions were involved in digital preservation, the extent to which they collaborated with third party digital curation/preservation repositories, libraries, archives, or networks varied. When libraries were involved in digital preservation, they were most likely to be involved in third-party digital curation/preservation networks (54%), followed by scientific collections (48%) (Figure 19). Within this context, it is important to note that libraries held almost three-fourths (73%) of all digital collections by volume (Table 14).

Among the 41% of U.S. collecting institutions involved in preserving born-digital content, just 21% had completed a digital condition assessment of their collections and only 17% had a plan for preservation of this content (Figure 18). Institutions that were already involved in either digitizing collections or preserving born-digital collections were much more likely than those not involved in either of these digital activities to indicate the need to improve both preservation of born-digital collections and of digitized collections (Figure 20). Yet importantly, about one-third of institutions not already involved in digitizing collections and one-fourth of those not involved in preserving born-digital collections indicated these areas of preservation need, signaling a general awareness of preservation needs associated with rapidly expanding digital collections.

⁵⁰ "What is big data" (November 2016, cited in IBM Marketing Cloud 2017)

Conclusions

This report sought to answer five interrelated questions about preservation activities of U.S. collecting institutions. The analyses reported here used data collected in a comprehensive questionnaire completed by 1,714 institutions representing a population of 31,290 archives, museums, libraries, historical societies, and scientific collections across the nation.

Each research question was first addressed at the broadest level by inferring from all survey respondents to the population of all 31,290 collecting institutions. Additional analyses compared the findings across the five institution types, and then drilled down deeper to examine the impact of institutional size within each of the five institution types. In this section, we review the answers to the five research questions at the population level, with limited attention to some of the important findings related to institution type and size. As a note, more detailed analyses about institutions are available in the appendix, which summarizes findings for each of the five institution types.

The Status of U.S. Collections

U.S. collecting institutions are preserving a diverse array of materials representing the nation's heritage. While historic, ethnographic, archaeological, natural science, and art objects represent over 3 billion items (about 23% of all materials), a much greater percentage of our heritage is captured and preserved in unbound sheets (33%) and photographic images (36%) (Figure 3). At the other end of the spectrum, recorded sound and moving image items constituted a relatively small portion of the collections (less than 0.2% each, Figure 3).

While the survey results suggest progress has been made in building the capacity of collecting institutions to care for collections, more than 50% of respondents cited the need for improvements in finding aids, condition assessments, environmental controls, staff training, treatment, and the preservation of digital collections (Figure 5). Small institutions account for the largest share of collecting institutions (Figure 1), yet small institutions, in particular, were both less likely to respond to the survey and, when they did respond, to reveal that preservation needs were even more pressing when compared to larger institutions of the same type.

Overview of Preservation and Emergency Preparedness Status in U.S. Collecting Institutions

There are differences between emergency preparedness, which consists of practices generally applicable regardless of the nature of an institution's collections, and preservation, which is of particular significance to collecting institutions. Additionally, it is likely that the types of items held by collecting institutions could have an impact on emergency preparations. Such differences suggest a need to develop solutions for resolving the specific needs of emergency preparedness and preservation, based on the institutions' relationship to collections, as highlighted in the report.

The report showed that U.S. institutions held nearly 13.2 billion items plus 30.7 million cubic feet and 32.6 million linear feet of collections. Just 45% of U.S. collecting institutions had completed a general assessment of their collections, therefore, the condition of collections at more than half of U.S. institutions was unknown (Figure 6). This, nonetheless, signifies an improvement over the prior decade when only 30% of institutions reported having completed a general condition assessment in 2004.⁵¹ The HHIS data further showed that the institutions are aware of this issue with nearly two-thirds (65%) citing general condition assessments as one of the top two preservation improvement needs (Figure 5).

⁵² Since we use the 2004 summary report, our 2004 to 2014 comparisons are not comprehensive. Findings from the 2004 report cannot be fully compared statistically with those of 2014 as the sampling protocols were different.

The HHIS data indicate that institutions vary in the extent to which they have prioritized collections preservation based on the type of institution, the size of the collection, and mission. There has been some progress since 2004 on indicators of institutional commitment, with 49% reporting that their annual budgets included conservation/preservation in 2014 (Figure 6) versus 23% in 2004. However, just 27% of institutions in 2014 reported they had a formal, written preservation plan, with only 3% reporting the plan was regularly updated (Figure 6). Developing ways to better connect condition assessment and preservation planning might consequently be an effective reform. For example, the IMLS CAP program provides support to museums to receive a condition assessment; a preservation plan could represent a means of institutionalizing preservation practices as part of the routine work of the organization (i.e., enhancing post-award sustainability).

The 2014 survey asked about digital preservation efforts, finding that two-thirds of institutions are involved in digitizing collections and/or preserving born-digital collections. U.S. collecting institutions reported holding more than 387 TB of digital collections, over half of which were images. Planning for digital preservation was identified as a gap: the vast majority of institutions (83%) that preserve born-digital collections have not yet developed plans to preserve these collections (Figure 18). Nearly three-fourths (73%) of institutions that preserve born-digital content indicated they had neither a preservation plan nor an assessment of their digital collections (Figure 18). With the rapid expansion of digital items – both born-digital content and on-going efforts to digitize collections – attention to digital preservation is critical.

Institutions were slightly more prepared for emergencies or disasters in the 2014 than in 2004. While just 20% of institutions in 2004 had an emergency/disaster plan, 42% reported this in 2014 (Figure 10). Additionally, just one-third said they kept a duplicate set of collection records off-site (Figure 11). The HHIS data show that various other kinds of emergencies, besides natural disasters, were more likely to affect collections. For example, in the two years prior to completing the questionnaire, about one-third (32%) of institutions reported they had experienced damage or loss (Table 6), most often as a result of water or moisture problems (56%), improper storage or enclosure (45%) or handling (44%). In just 10% of the cases were natural disasters reported as the cause of damage or loss, suggesting a need for communications about these more prevalent causes of collections damage (Figure 4).

Relationship between Preservation and Emergency Preparedness and Institution Type and Size

This report highlights that institution type and size are critical to understanding how heterogeneous collecting institutions approach preservation activities. As described earlier, almost every factor considered was significantly related to institutional size within each institution type. In general, small institutions of all types were less prepared for emergencies and less likely to plan and execute preservation activities, as shown by results reported in Tables 8, 10, 11 and 13. For example, in comparisons to large institutions, small ones were less likely to indicate that they had:

- Completed a general assessment of their collections;
- Budgeted for conservation/preservation activities;
- Developed a formal, written conservation/preservation plan;
- Developed emergency plans; and
- Stored collection records off-site (Figure 11).

Additionally, with the exception of archives, the report's findings reveal the different preservation needs of small libraries, museums, historical societies, and scientific collections as compared to their larger peers (Table 8). For example, while large/medium libraries cited preservation of both born-digital and digitized collections as their top two needs, small libraries cited general condition assessments and staff training as their top two needs.

In closing, the survey findings show that preservation is part of the mission for the vast majority of U.S. collecting institutions. Yet many, especially small institutions, have not yet prepared for emergencies and have faced challenges in many actions related to this preservation mission. The report's findings can be used to inform actions by IMLS, but can also be useful for the field, including individual institutions and their associated professional organizations in planning for the ongoing care and preservation of our nation's heritage.

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Appendix

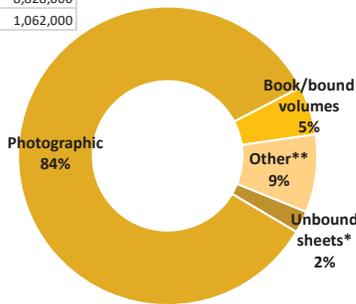
Overview of Collections Preservation
for Each of the Five Institutional Types

Overview: Collections Preservation at Archives

Collecting Institutions	<ul style="list-style-type: none"> Based on responses to the 2014 Heritage Health Information (HHI) Survey, in 2014 there were 847 small and 118 large/medium archives that accepted preservation responsibility for collections. Large/medium archives in the survey were mostly operated by state and federal governments (58%), whereas small archives were operated by non-profits and colleges/universities (70%).
Status of Collections (Chart A)	<ul style="list-style-type: none"> Photographic items (84%) were the main items in archives' collections. In the previous two years, 25% of archives reported damage or loss to collections.
Damage/Loss (Chart B)	Water or moisture was the top source of damage/loss cited by archives with 25% of large/medium and 18% of small archives reporting this.
Emergency Planning (Chart C)	Two-thirds (67%) of large/medium archives have an emergency plan with trained staff to carry out the plan. In comparison, just 24% of small archives are ready for emergencies.
Commitment to Preservation (Chart D)	Conservation/preservation were part of nearly all archives' missions but just over half (52%) of large/medium and less than half (39%) of small archives had a formal, written plan for conservation/preservation.
Digital Stewardship (Charts E and F)	<ul style="list-style-type: none"> Nearly two-thirds of all archives were involved in both digitizing collections and preserving born digital collections. Nearly half (49%) of large/medium only 8% of small had digital preservation plan and had completed a digital condition assessment.
Preservation Improvement Needs (Chart G)	Finding aids/catalogues, general conditions assessments and staff training were the preservation improvement needs cited by more than half of all archives, both large/medium and small.

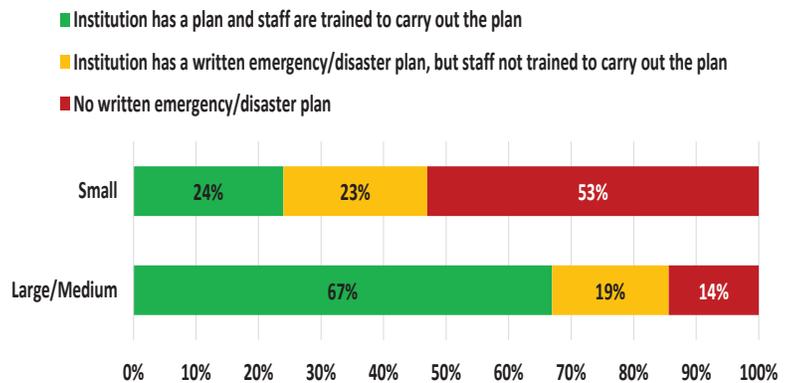
Chart A: Status of Collections

Number of items:	130,587,000
Cubic feet:	8,828,000
Linear feet:	1,062,000



* Unbound sheets shown here do not include collections measured in linear or cubic feet. Archives reported an additional 8.8 M cubic feet and 1.1 linear feet of unbound sheets.
 **Other includes Archaeological, Natural science specimens, Historic & ethnographic, Moving image, Art objects, and Recorded sound, each representing

Chart C: Emergency Planning for Collections



25% of archives reported damage/loss in previous two years – causes in Chart B

Chart B: Damage/Loss

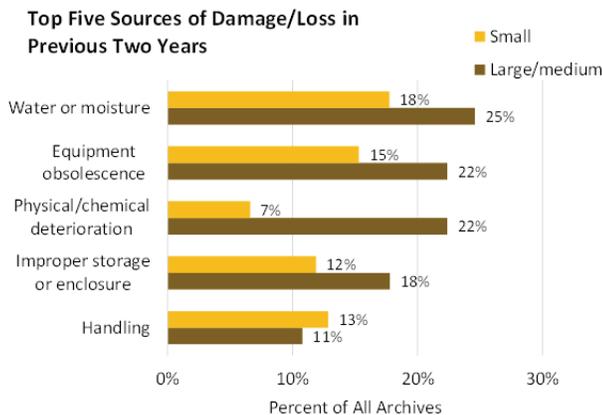
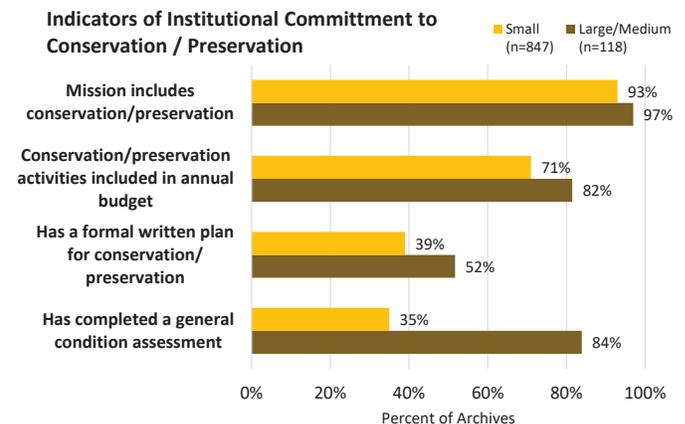


Chart D: Commitment to Preservation



Overview: Collections Preservation at Archives

Chart E: Digital Stewardship

Percentage of archives that preserve born-digital and/or digitize collections
(No meaningful difference by size)

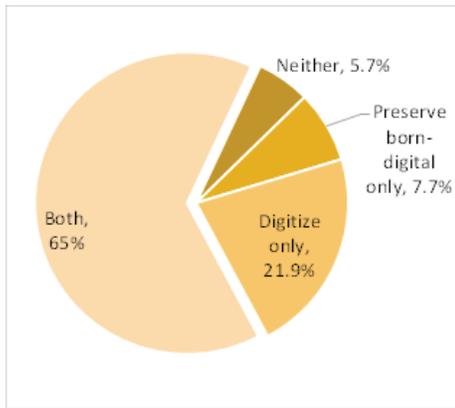


Chart F: Digital Stewardship

Among archives that preserve born-digital, percentage with a preservation plan and conditions assessment

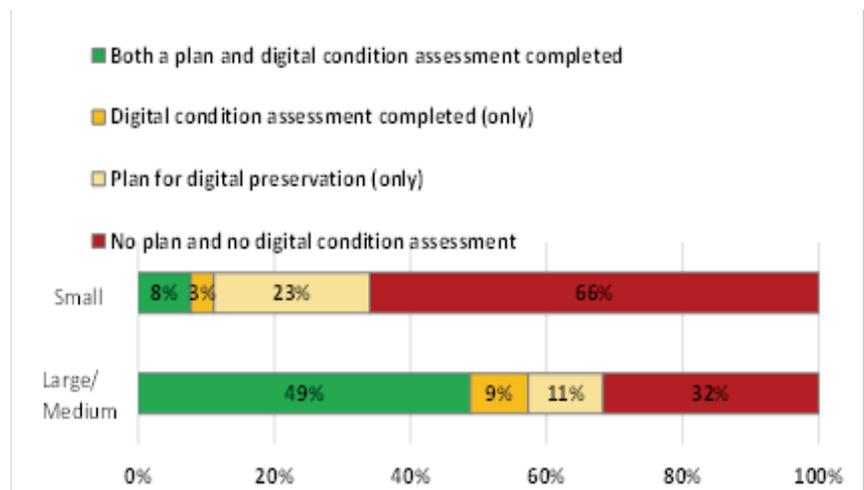
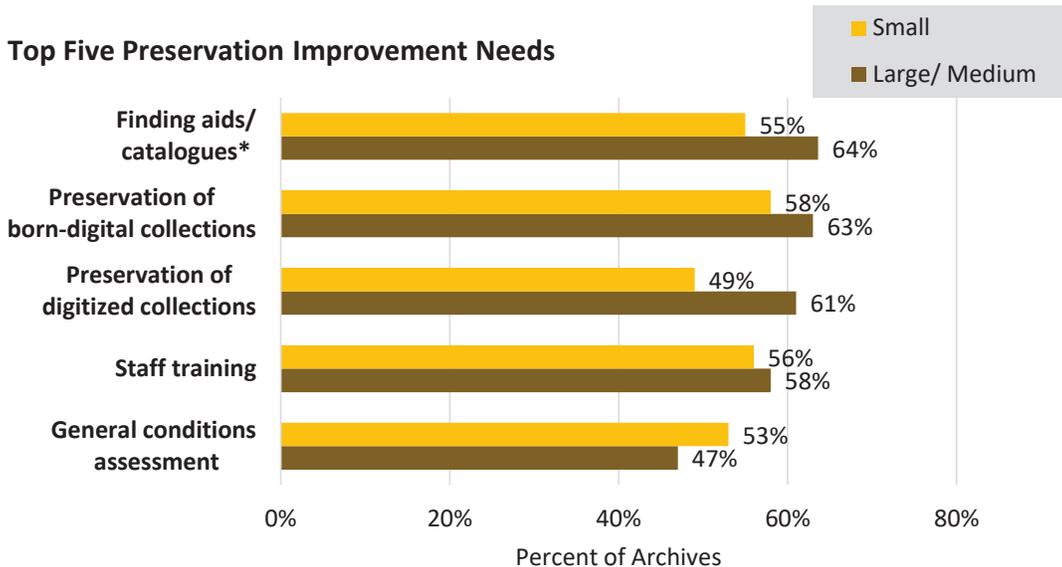


Chart G: Preservation Improvement Needs

Top Five Preservation Improvement Needs



* Finding aids/catalogues includes inventorying and/or cataloguing of collections; Conservation treatment includes specimen preparation.

Definitions

Born-digital: items that were originally created in digital form and are now managed in digital form.

Collecting institutions: those organizations that accept responsibility for preserving collections of non-living items. These are collections that are not easily replaced if lost or damaged and exclude those items that are meant to be used by visitors or patrons. (Collections accepted for preservation are a subset of a library's holdings.)

Digital curation/digital preservation: the active selection, preservation, management, and archiving of digital content over time to ensure ongoing access. Digitization is not the same as digital preservation, but it is one step towards digital preservation.

Emergency/disaster plan: a comprehensive, systematic document that provides a means for recognizing and preventing risks, and for responding effectively to emergencies.

General condition assessment: an assessment based on a visual inspection of the collection and the areas where it is exhibited or stored.

Preservation plan: a document that describes a multi-year course of action to meet an institution's overall preservation needs for its collection.

Staff: includes temporary, hourly, and volunteer workers but not hired consultants.

Small: Fewer than 1,000 linear feet of unbound sheets.

For more details, visit www.ims.gov/hhis

Overview: Collections Preservation at Historical Societies

Collecting Institutions	<ul style="list-style-type: none"> Based on the responses to the 2014 Heritage Health Information (HHI) Survey, in 2014 there were 3,822 small and 51 large/medium historical societies that accepted preservation responsibility for collections. Most large/medium (72%) and small (92%).historical societies were operated by non-profits. The remaining 28% of large/medium historical societies were operated by state governments.
Status of Collections (Chart A)	<ul style="list-style-type: none"> Photographic items (60%) were the main items in historical societies' collections. In the previous two years, 32% of historical societies reported damage or loss to collections.
Damage/Loss (Chart B)	<ul style="list-style-type: none"> Water or moisture, improper storage or enclosure, and handling were the top sources of damage/loss cited by large/medium historical societies (34% each). Water or moisture was also an important source of damage/loss for small historical societies (17%) followed by light (14%).
Emergency Planning (Chart C)	<ul style="list-style-type: none"> Over one-third (37%) of large/medium historical societies have an emergency plan with trained staff to carry out the plan. In comparison, just 10% of small historical societies are ready for emergencies.
Commitment to Preservation (Chart D)	<ul style="list-style-type: none"> Conservation/preservation were part of the overwhelming majority of historical societies missions but just 21% of small and 38% of large/medium had a formal, written plan for conservation/preservation.
Digital Stewardship (Charts E and F)	<ul style="list-style-type: none"> Large/medium historical societies were more involved with digital stewardship activities than small ones. Relatively few of both large/medium (26%) and small (16%) historical societies that were involved in preservation of born-digital materials have a digital preservation plan.
Preservation Improvement Needs (Chart G)	<ul style="list-style-type: none"> For large/medium historical societies, preservation of digital collections are the top two priorities. Small historical societies were more likely to rank finding aids/catalogues and general conditions assessments as their top preservation improvement needs.

Chart A: Status of Collections

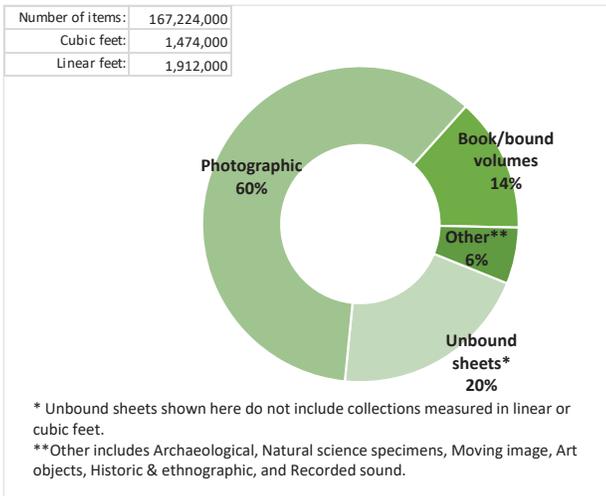
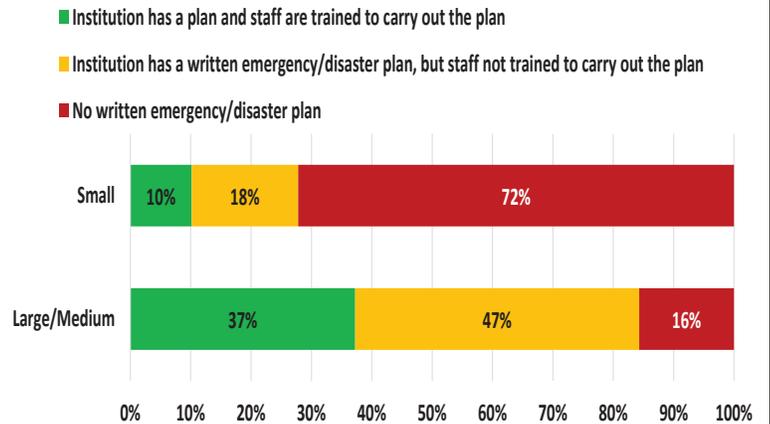


Chart C: Emergency Planning for Collections



32% of historical societies reported damage/loss in previous two years – causes in Chart B

Chart B: Damage/Loss

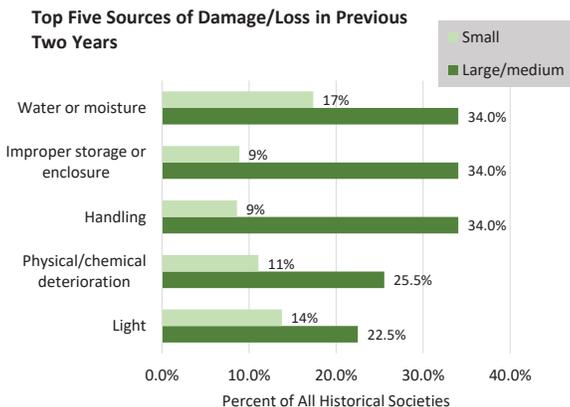
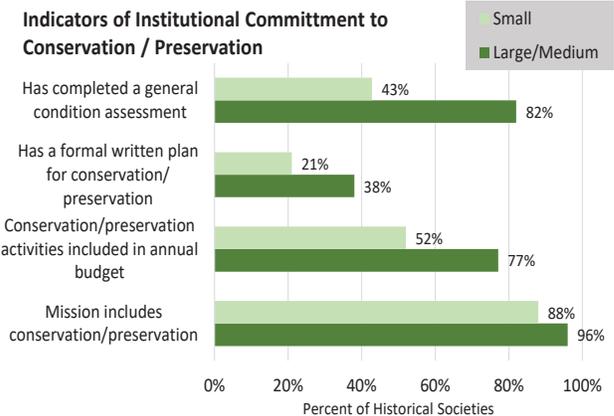


Chart D: Commitment to Preservation



Overview: Collections Preservation at Historical Societies

Chart E: Digital Stewardship

Percentage of historical societies that preserve born-digital and/or digitize collections

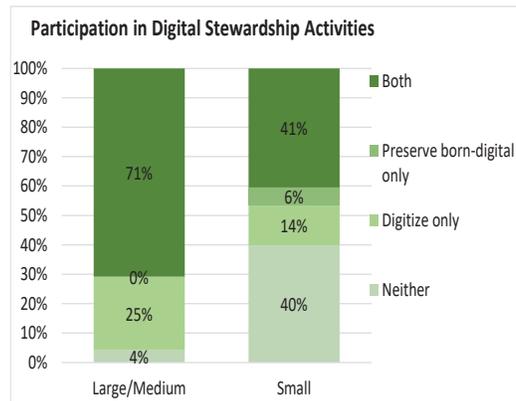


Chart F: Digital Stewardship

Among historical societies that preserve born-digital, percentage with a preservation plan and digital condition assessment

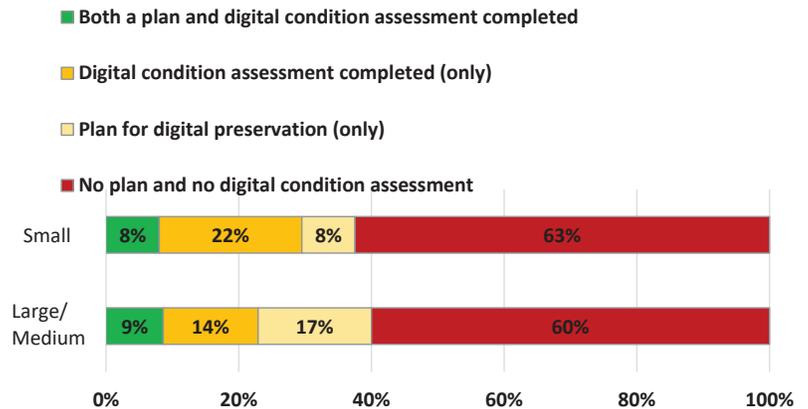
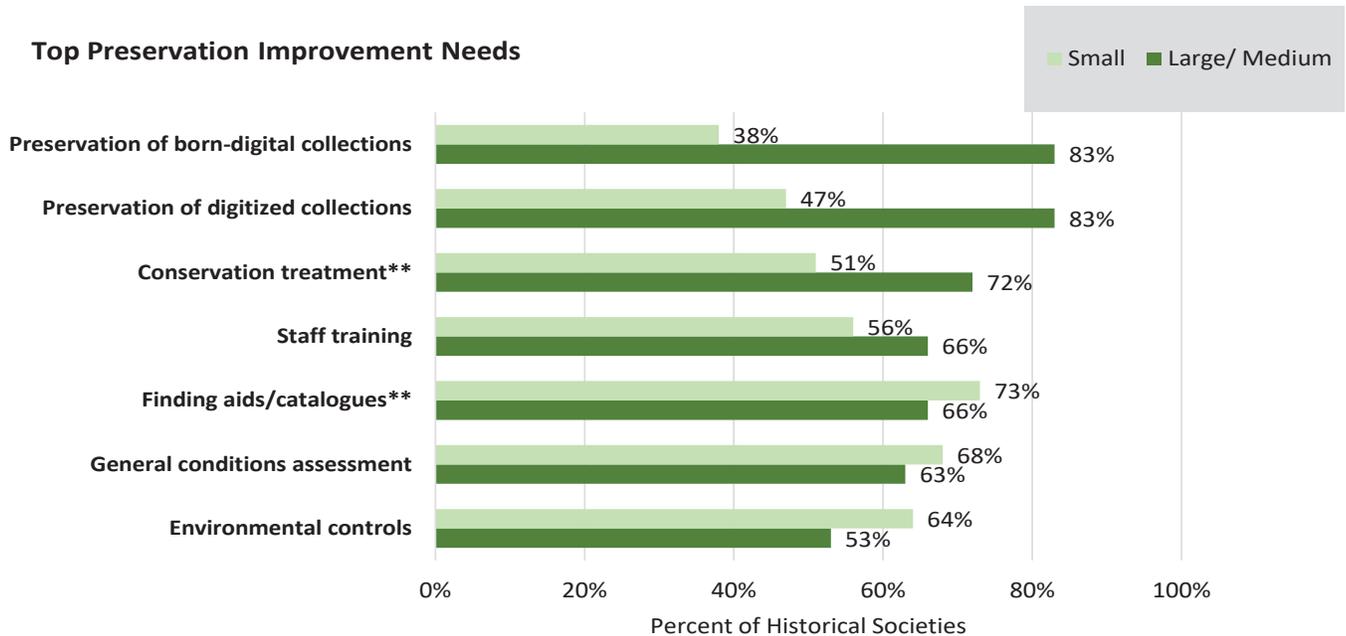


Chart G: Preservation Improvement Needs

Top Preservation Improvement Needs



* Finding aids/catalogues includes inventorying and/or cataloguing of collections.

**Conservation treatment includes specimen preparation.

Definitions

Born-digital: items that were originally created in digital form and are now managed in digital form.

Collecting institutions: those organizations that accept responsibility for preserving collections of non-living items. These are collections that are not easily replaced if lost or damaged and exclude those items that are meant to be used by visitors or patrons.

Digital curation/digital preservation: the active selection, preservation, management, and archiving of digital content over time to ensure ongoing access. Digitization is not the same as digital preservation, but it is one step towards digital preservation.

Emergency/disaster plan: a comprehensive, systematic document that provides a means for recognizing and preventing risks, and for responding effectively to emergencies.

General condition assessment: an assessment based on a visual inspection of the collection and the areas where it is exhibited or stored.

Preservation plan: a document that describes a multi-year course of action to meet an institution's overall preservation needs for its collection.

Staff: includes temporary, hourly, and volunteer workers but not hired consultants.

Small: institutions with budgets of less than \$500,000.

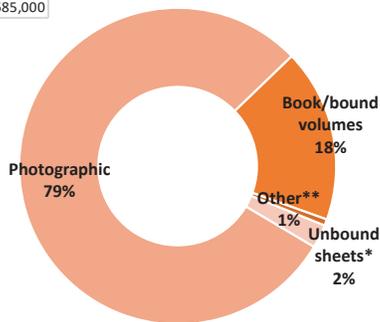
For more details, please visit www.ims.gov/hhis

Overview: Collections Preservation at Libraries

Collecting Institutions	<ul style="list-style-type: none"> Based on responses to the 2014 Heritage Health Information (HHI) Survey, there were 10,281 small and 588 large/medium libraries that accepted preservation responsibility for collections. Large/medium libraries that responded to the HHI survey were mostly operated by Colleges/universities (60%), whereas small libraries were operated by local/tribal governments (52%).
Status of Collections (Chart A)	<ul style="list-style-type: none"> Photographic items (79%) were the main items in libraries' collections. In the previous two years, 26% of libraries reported damage or loss to collections held for preservation.
Damage/Loss (Chart B)	<ul style="list-style-type: none"> Water or moisture was the top source of damage/loss cited by libraries with 47% of large/medium and 13% of small libraries reporting this.
Emergency Planning (Chart C)	<ul style="list-style-type: none"> Over half (56%) of large/medium libraries have an emergency plan with trained staff to carry out the plan. In comparison, just 22% of small libraries are ready for emergencies.
Commitment to Preservation (Chart D)	<ul style="list-style-type: none"> Conservation/preservation were part of 82% of large/medium libraries' missions, but these were part of the mission of just 46% of small libraries.
Digital Stewardship (Charts E and F)	<ul style="list-style-type: none"> Large/medium libraries were more involved with digital stewardship activities than small libraries. Among those libraries that were involved in preservation of born-digital materials, relatively few (34% of large/medium libraries and 12% of small libraries) have a digital preservation plan.
Preservation Improvement Needs (Chart G)	<ul style="list-style-type: none"> While general conditions assessments were the top preservation improvement need for small libraries (62%) and important to large/medium ones (73%), digital stewardship activities were the top priorities for large/medium libraries. These included: preservation of born-digital collections (79%) and digitizing collections (74%).

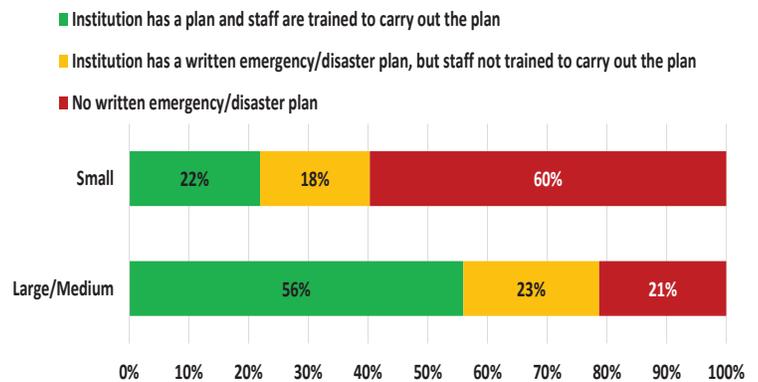
Chart A: Status of Collections

Number of items:	5,528,035,000
Cubic feet:	11,769,000
Linear feet:	27,685,000



* Unbound sheets shown here do not include collections measured in linear or cubic feet.
 **Other includes Archaeological, Natural science specimens, Moving image, Art objects, Historic & ethnographic, and Recorded sound.

Chart C: Emergency Planning for Collections



26% of libraries reported damage/loss in previous two years – Causes in Chart B

Chart B: Damage/Loss

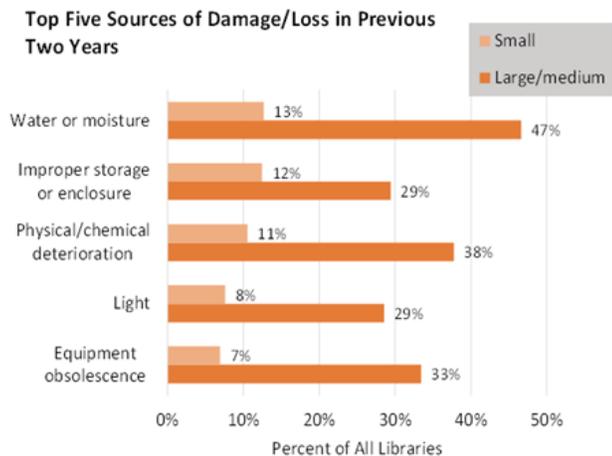
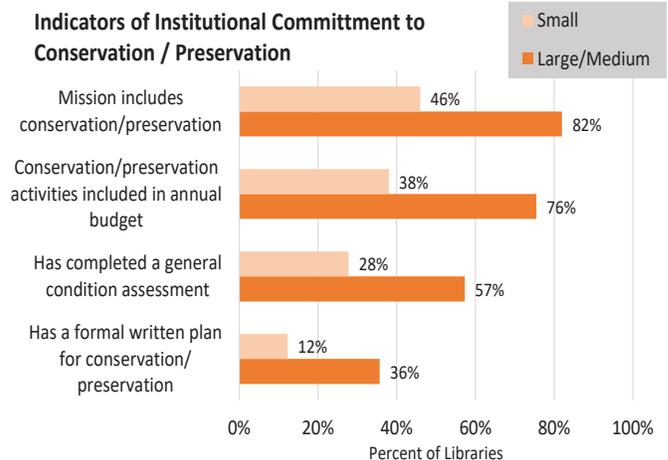


Chart D: Commitment to Preservation



Overview: Collections Preservation at Libraries

Chart E: Digital Stewardship

Percentage of libraries that preserve born-digital and/or digitize collections

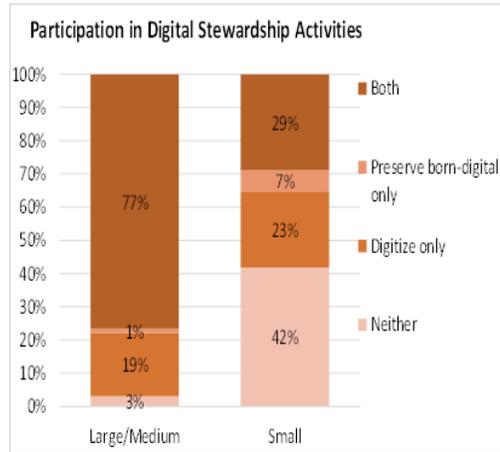


Chart F: Digital Stewardship

Among libraries that preserve born-digital, percentage with a preservation plan and digital condition assessment

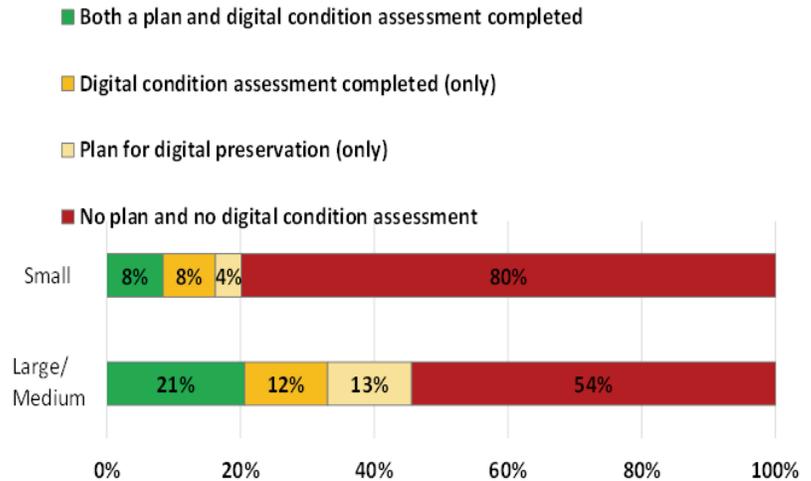
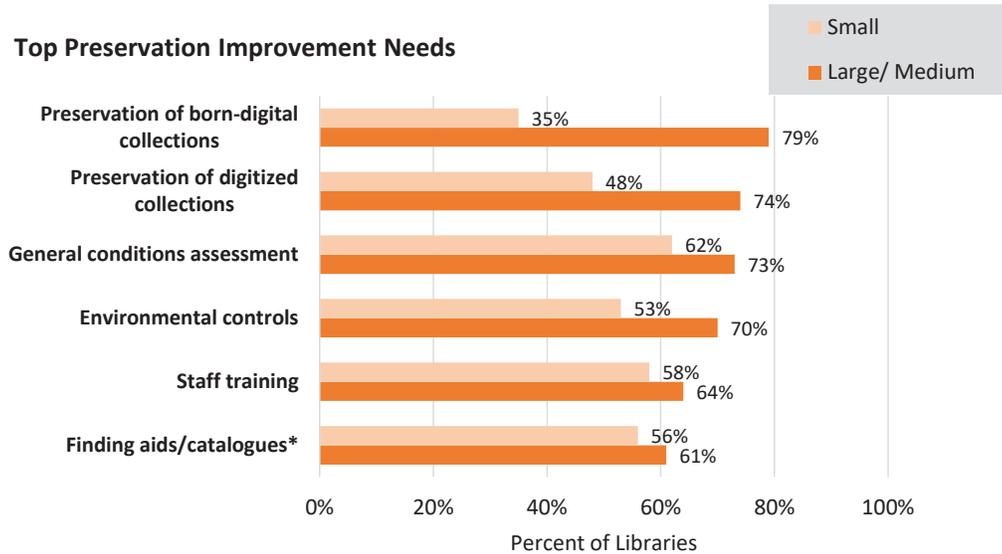


Chart G: Preservation Improvement Needs

Top Preservation Improvement Needs



* Finding aids/catalogues includes inventorying and/or cataloguing of collections

Definitions

Born-digital: items that were originally created in digital form and are now managed in digital form.

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Emergency/disaster plan: a comprehensive, systematic document that provides a means for recognizing and preventing risks, and for responding effectively to emergencies.

General condition assessment: an assessment based on a visual inspection of the collection and the areas where it is exhibited or stored.

Preservation plan: a document that describes a multi-year course of action to meet an institution's overall preservation needs for its collection.

Small: Public libraries that served populations of fewer than 25,000 or academic/research libraries with fewer than 25,000 total volume holdings.

Staff: includes temporary, hourly, and volunteer workers but not hired consultants.

For more details, please visit www.ims.gov/hhis

Overview: Collections Preservation at Museums

Collecting Institutions	<ul style="list-style-type: none"> 14,808 small and 505 large/medium museums with non-living collections* Mostly operated by Colleges/universities and Non-profits (76% Large/medium; 74% small)
Status of Collections (Chart A)	<ul style="list-style-type: none"> Dominant collection type: unbound sheets (60%), followed by Archaeological items (20%) 36% of museums reported damage or loss in the previous two years
Damage/Loss (Chart B)	<ul style="list-style-type: none"> Handling was the most common as a source of damage/loss reported by Large/medium museums (39%), followed by Physical/chemical deterioration (33%) Improper storage or enclosure was the most common source of damage/loss reported by Small museums (16%) followed by Handling and Physical/chemical deterioration (14% each)
Emergency Planning (Chart C)	<ul style="list-style-type: none"> Substantial differences between Large/Medium and Small museums 65% of Large/Medium but only 26% of Small museums have an emergency plan with staff trained to carry out the plan
Commitment to Preservation (Chart D)	<ul style="list-style-type: none"> More than 80% of museums' missions include conservation/preservation A majority of Large/medium museums have completed a condition assessment and budget for conservation/preservation Fewer than 60% of museums have a formal, written conservation plan regardless of size
Digital Stewardship (Charts E and F)	<ul style="list-style-type: none"> Museum size is related to participation in digital stewardship, with Large/medium museums more involved than Small ones Only 9% of Small and 22% of Large/Medium museums have a digital preservation plan and have completed a digital condition assessment – most lack these elements of digital stewardship
Preservation Improvement Needs (Chart G)	<ul style="list-style-type: none"> Finding aids/catalogues and general condition assessments were the top two preservation improvement needs cited by museums

Chart A: Status of Collections

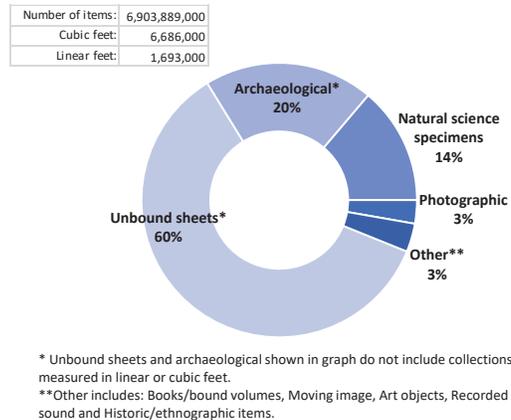


Chart C: Status of Emergency Planning for Collections



36% of museums reported damage/loss in previous two years – Causes in Chart B

Staff includes temporary, hourly, and volunteer workers but not hired consultants. Emergency/disaster plan: a comprehensive, systematic document that provides a means for recognizing and preventing risks, and for responding effectively to emergencies.

Chart B: Damage/Loss

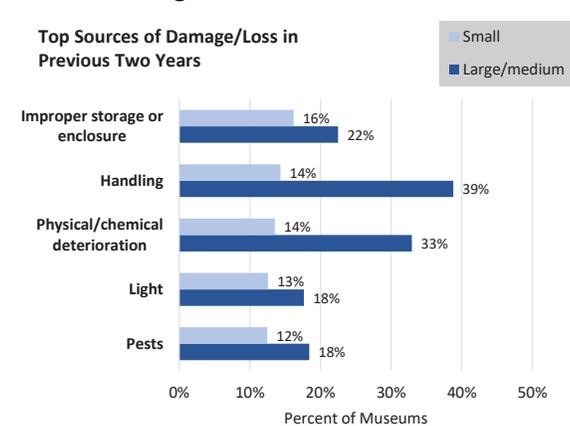
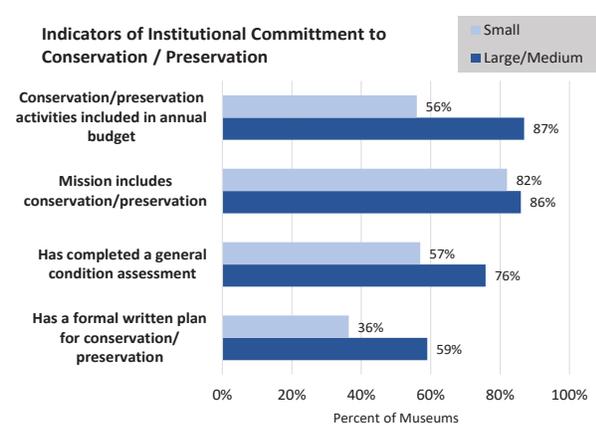


Chart D: Commitment to Preservation



Overview: Collections Preservation at Museums

Chart E: Digital Stewardship

Percentage of museums that preserve born-digital and/or digitize collections

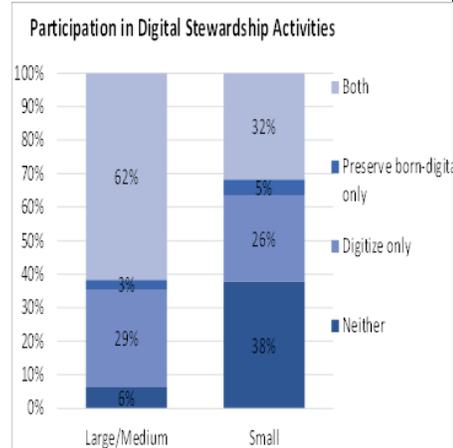


Chart F: Digital Stewardship

Among museums that preserve born-digital, percentage with a preservation plan and digital condition assessment

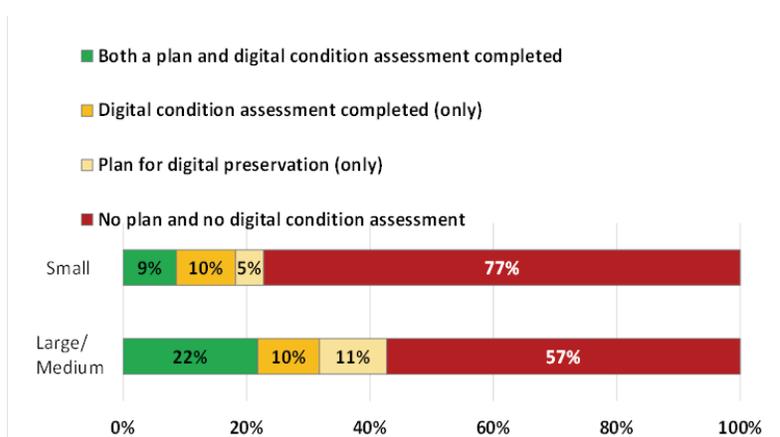
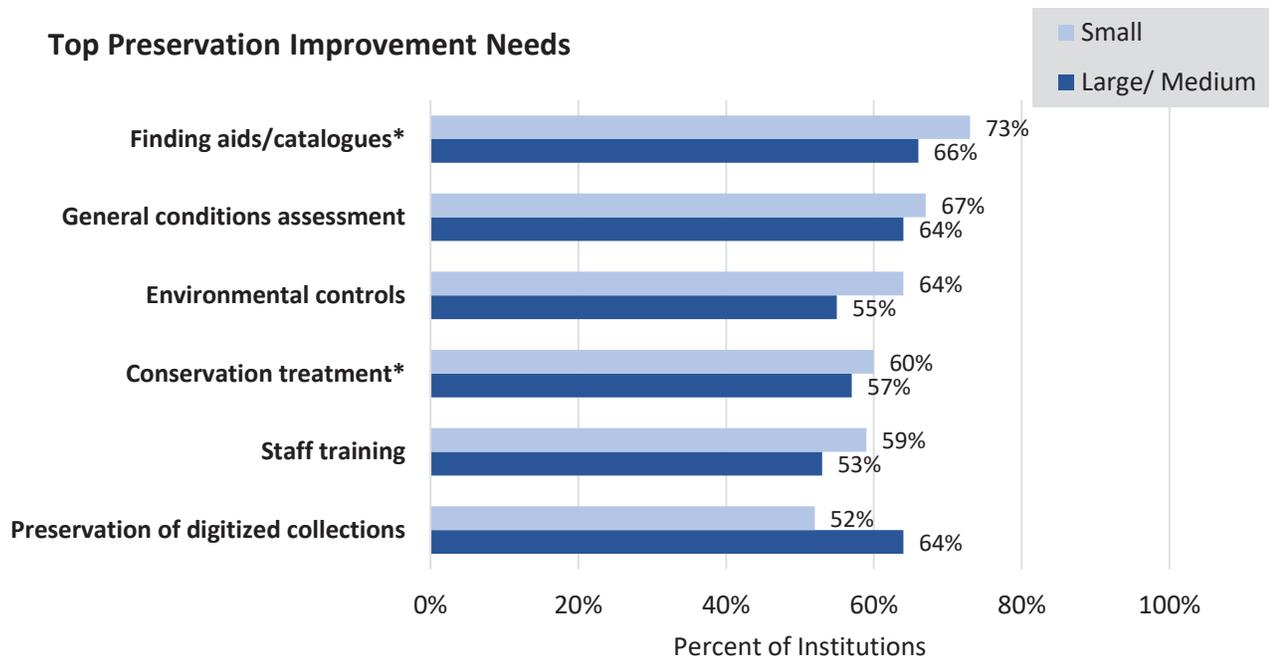


Chart G: Preservation Improvement Needs

Top Preservation Improvement Needs



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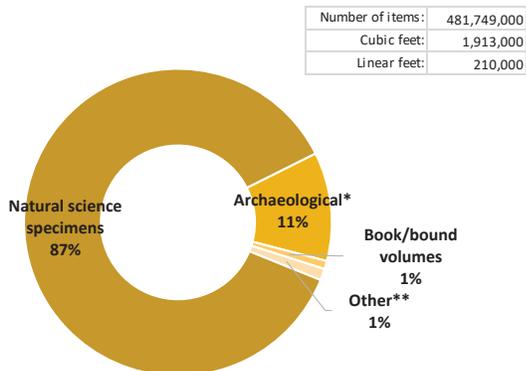
Staff: includes temporary, hourly, and volunteer workers but not hired consultants.

For more details, see the full IMLS HHI 2014 report at: <http://www.imls.gov>

Overview: Collections Preservation at Scientific Collections

Collecting Institutions	<ul style="list-style-type: none"> Based responses to the 2014 Heritage Health Information (HHI) Survey, there were 707 small and 66 large/medium scientific collections. Scientific collections in the study were mostly operated by colleges/universities (67% large/medium and 73% of small).
Status of Collections (Chart A)	<ul style="list-style-type: none"> Natural science specimens (87%) were the main items held in scientific collections. In the previous two years, 32% of scientific collections reported damage or loss.
Damage/Loss (Chart B)	<ul style="list-style-type: none"> Physical/chemical deterioration was the top source of damage/loss cited by large/medium scientific collections (33%). 14% of small scientific collections reported pests and improper storage or enclosure, which were the top two sources of damage/loss.
Emergency Planning (Chart C)	<ul style="list-style-type: none"> Only 23% of large/medium scientific collections have an emergency plan with trained staff to carry out the plan and just 7% of small scientific collections are ready for emergencies.
Commitment to Preservation (Chart D)	<ul style="list-style-type: none"> Just about two-thirds of scientific collections' missions include conservation/preservation. However, more than half of small (57%) and a majority of large/medium (76%) of scientific collections indicated that their annual budgets included conservation/preservation activities.
Digital Stewardship (Charts E and F)	<ul style="list-style-type: none"> Most large/medium scientific collections (81%) were more involved with digital stewardship activities than small ones. Small scientific collections that were involved in preservation of born-digital materials were more likely (19%) than large/medium ones (6%) to have both a digital preservation plan and to have completed a digital condition assessment.
Preservation Improvement Needs (Chart G)	<ul style="list-style-type: none"> Finding aids/catalogues and general conditions assessments were the top two preservation improvement needs for both small and large/medium scientific collections.

Chart A: Status of Collections at Scientific Collections



* Archaeological items shown here do not include collections measured in cubic feet.
 **Other includes Unbound sheets, Photographic items, Moving image, Art objects, Historic & ethnographic, and Recorded sound.

32% of scientific collections reported damage/loss in previous two years – Causes in Chart B

Chart B: Damage/Loss

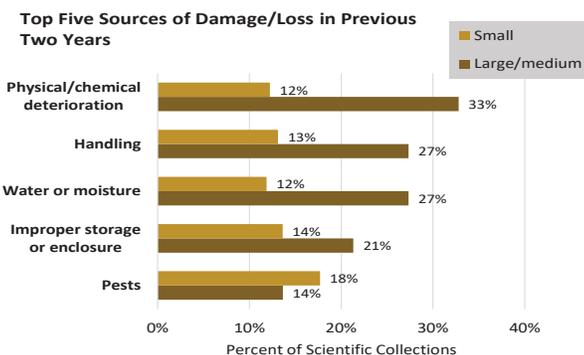


Chart C: Emergency Planning at Scientific Collections

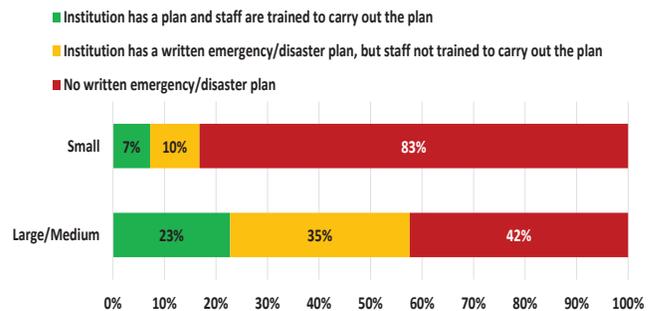
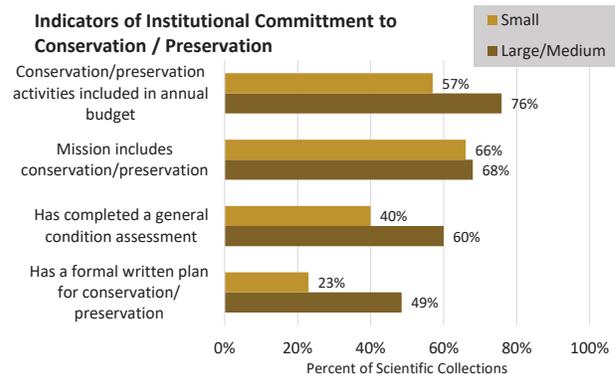


Chart D: Commitment to Preservation



Overview: Collections Preservation at Scientific Collections

Chart E: Digital Stewardship

Percentage of scientific collections that preserve born-digital and/or digitize collections

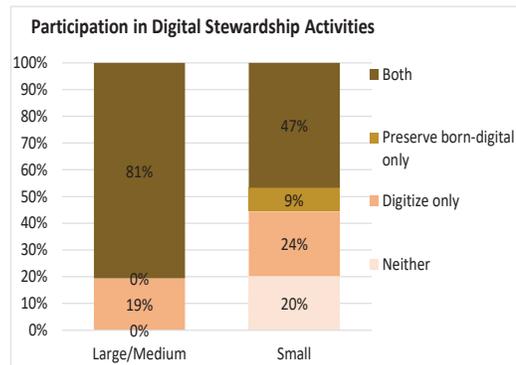


Chart F: Digital Stewardship

Among scientific collections that preserve born-digital, percentage with a preservation plan and digital condition assessment

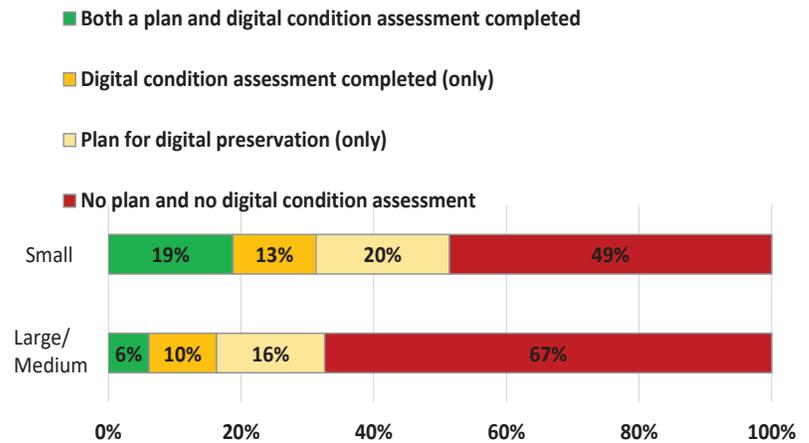
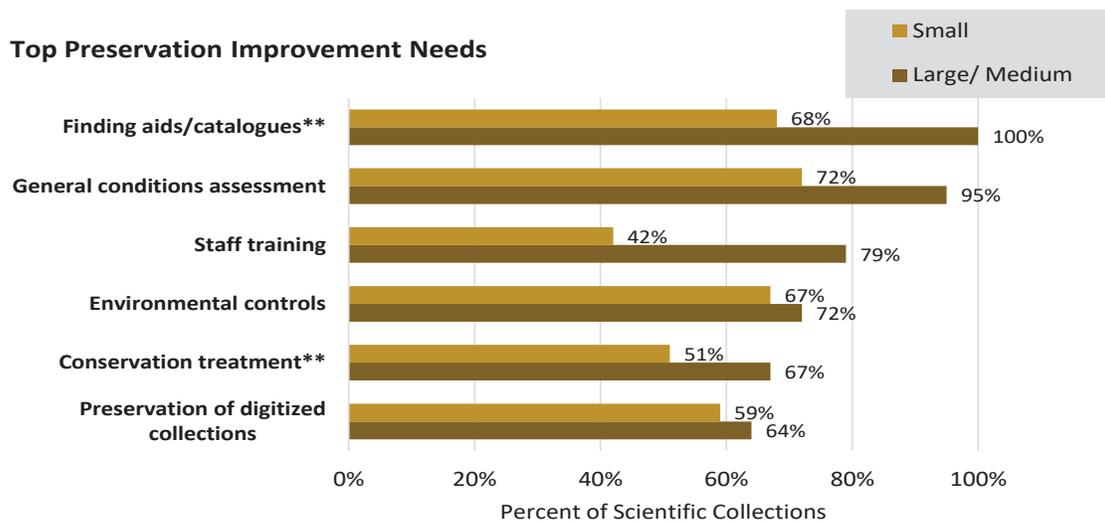


Chart G: Preservation Improvement Needs

Top Preservation Improvement Needs



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 **Conservation treatment includes specimen preparation.

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Emergency/disaster plan: a comprehensive, systematic document that provides a means for recognizing and preventing risks, and for responding effectively to emergencies.
General condition assessment: an assessment based on a visual inspection of the collection and the areas where it is exhibited or stored.
Preservation plan: a document that describes a multi-year course of action to meet an institution's overall preservation needs for its collection.
Small: 50,000 or fewer botanical/zoological specimens or 10,000 or fewer geological/paleontological specimens, or fewer than 5,000 individually cataloged archaeological collections and/or fewer than 1,000 cubic feet of bulk archaeological items.
Staff: includes temporary, hourly, and volunteer workers but not hired consultants.

For more details, see the full IMLS HHI 2014 report at: <http://www.imls.gov>