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Accessibility in Institutional Repositories

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Purpose

Institutional repositories (IRs) are widely used for archiving, preserving, and disseminating scholarly works and making them available on the web. Much of the research and development in IRs has focused on platforms, workflows, and policies for adding content. In this study, the focus is to gauge practices to ensure accessibility of the digital content made available in IRs.

The purpose of this study is to:

1. Understand the current landscape of accessibility practices in institutional repositories in academic libraries.

2. Identify the average level of content accessibility implemented in institutional repositories in academic libraries.

For the purpose of this study, we have focused on the digital content collected in institutional repositories and workflows at academic libraries, rather than the websites and software platforms. The results of this study will establish a baseline measurement of current accessibility practices for IRs at academic libraries, and the potential for a longitudinal study of emerging best practices and standards.

Anonymized data from our survey is available in the Texas Data Repository. https://doi.org/10.18738/T8/LUGYPO

Literature Review

A review of literature relating to accessibility in library digital collections, including any related to institutional repositories, was reviewed before creating this survey. The primary interest was in finding articles about the accessibility of content in institutional repositories (IR). While libraries in general are committed to providing accessibility within their physical spaces and online resources, there are gaps in research specific to the content provided through university library IRs. Available research tends to be about formats and software platforms.

The Accessibility and Universal Design. SPEC Kit 358 (Spina & Cohen, 2018) provides information about wider library efforts to provide services to users with disabilities. The kit is primarily focused on assistive technologies and services, rather than IRs.

Several people have written about accessibility issues for PDFs. Çakir (2016) and Hewson & Tonkin (2011) wrote about general issues with accessibility of PDFs. Uebelbacher, et al. (2014), wrote about the creation of the PDF Accessibility Checker 2.0 to help validate accessibility. Nganji (2015) did a survey of journals to find out how accessible their journal articles were and Browder (2018) looked at workflows for making scanned documents accessible.

Additional articles on accessibility relate to other formats. For instance, Duke University made extensive customizations to their repository in order to improve the audio video (A/V) experience for users with disabilities (Aery, 2017). Clossen & Process (2017) investigated the accessibility of library tutorials and found many did not meet legal standards for accessibility. Stolley (2016) provided helpful information about best practices for making images accessible.

On the subject of accessibility of repository platforms, there are a few articles that were relevant to this project. One repository with a focus on accessibility is HathiTrust (Zaytsev, 2015). For HathiTrust, accessibility issues are a critical part of their efforts to both provide access and preserve scholarly works. Bankier & Gleason (2014) did a comparison of IR platforms that included some information on accessibility. Most repository platforms at that time did not provide a Voluntary Product Accessibility Template (VPAT) or meet Section 508 requirements. Walker & Keenan (2015) also compared IR platforms, but they explicitly were checking for accessibility. They looked at both Digital Commons and CONTENTdm and found neither platform did particularly well in real life testing. Skourlas et al. (2016) discussed how institutional repositories and learning management systems can be used to support accessibility to content for students who are disabled. Finally, Miller (2017) had an IR project with the honors college on their campus and in the process of working with them, developed workflows for captioning A/V content.

Methodology

A survey questionnaire was created in Qualtrics based on the Association of Research Libraries (ACRL) Accessibility and Universal Design SPEC Kit 358 (Spina & Cohen, 2018). Utilizing the guidelines and basis of the questionnaire in the ACRL Spec Kit 358, we filtered out questions to target those pertaining to institutional repositories and added questions related to demographics and specifics of accessibility of content and workflows. The survey included quantitative and qualitative questions for data collection to gauge both current practices as well as viewpoints relating to accessibility in institutional repositories. The survey included filter questions and not every participant was asked every question. The filter questions, using skip logic in Qualtrics, differentiated whether respondents are currently implementing certain measures for accessibility and only respondents answering "yes" were asked to elaborate on those practices. The survey was administered via email to public listservs from September 16, 2019 to October 11, 2019.

Survey Findings

Demographics

A total of 145 responses were collected from 20 countries with the majority of responses coming from the United States. Among those in the United States, 24 individual states were represented.
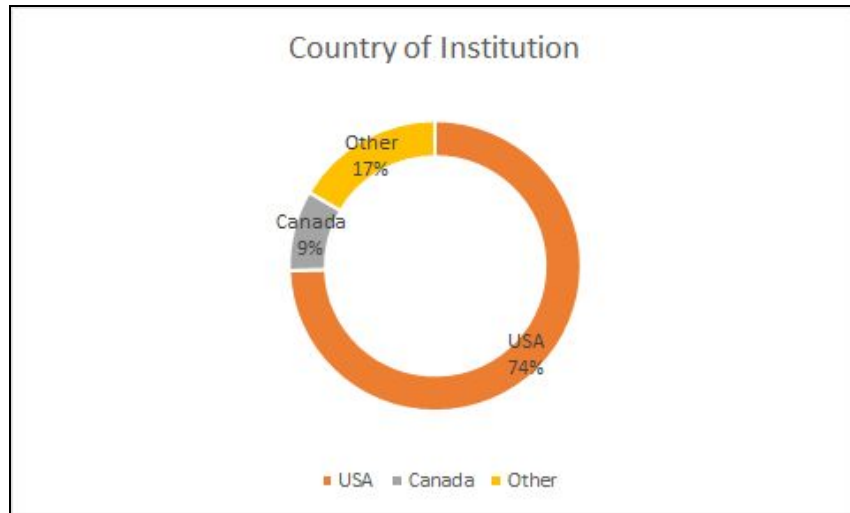

Figure 1: Respondent institutions by country

Of respondents from institutions in the United States, the majority were from Texas representing almost 20%, followed by New York (8%) and California (7%).
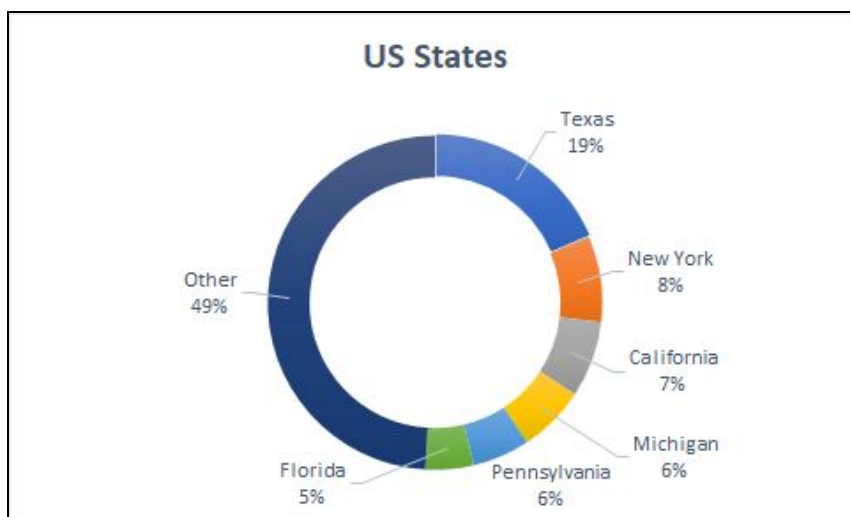

Figure 2: Respondent institutions from within the U.S. by state

Respondents from institutions in the United States were primarily from doctoral universities, based on the Carnegie Classification of Institutions of Higher Education[1].
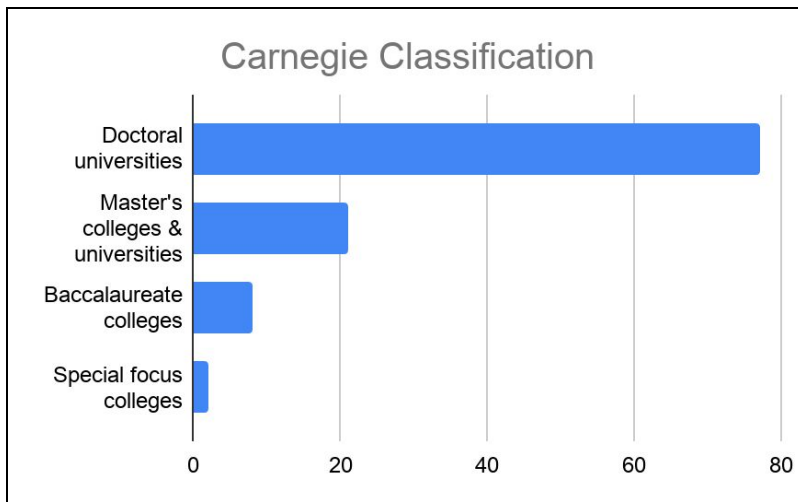
Carnegie Classification

Figure 3: Carnegie classification of respondent institutions in the U.S.

The majority of respondents reported an estimated student population of between 10,000 to 30,000 at their institution.
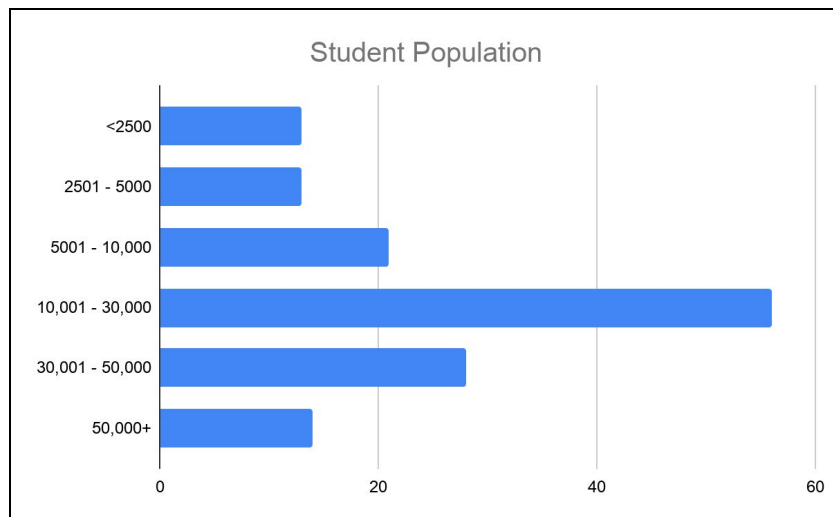
Student Population

Figure 4: Estimated student population at respondent institution

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[1] Carnegie Classifications of Higher Education https://carnegieclassifications.iu.edu/

DSpace and Digital Commons were the two most popular institutional repository (IR) platforms being used by respondents.
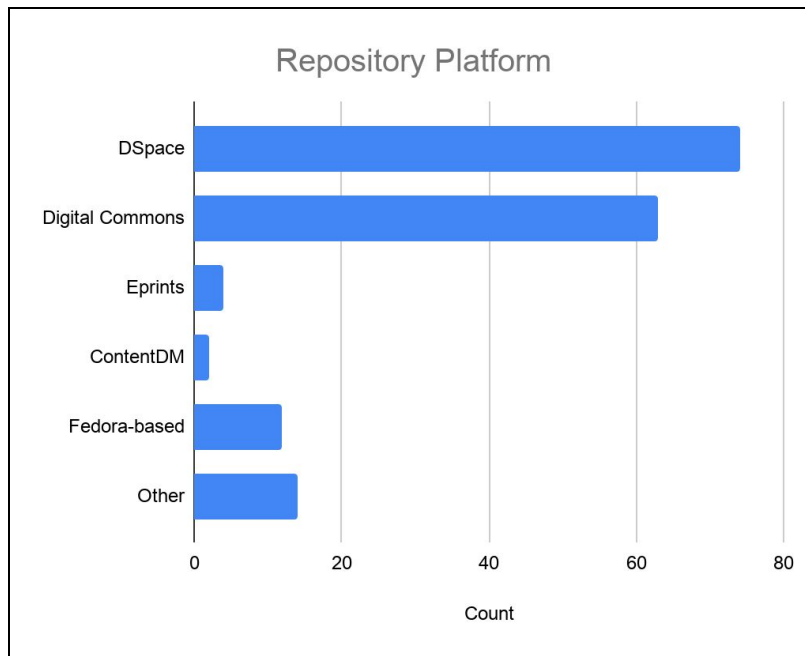

Figure 5: Repository platform

The majority of respondents' IRs include scholarly materials and Electronic Theses and Dissertations (ETDs). Some also house university archival materials, special collections, journals, Audio/Video (A/V) materials, and datasets, among other digital materials.
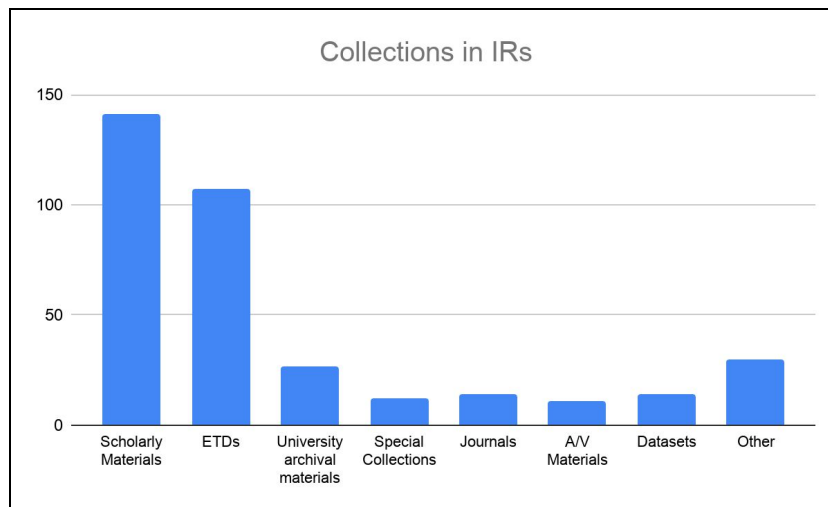

Figure 6: Items represented in the institutional repository

Of the respondents, the majority have over 10,000 items available in their IR, with most other IRs reporting between 1,000 and 10,000 items.
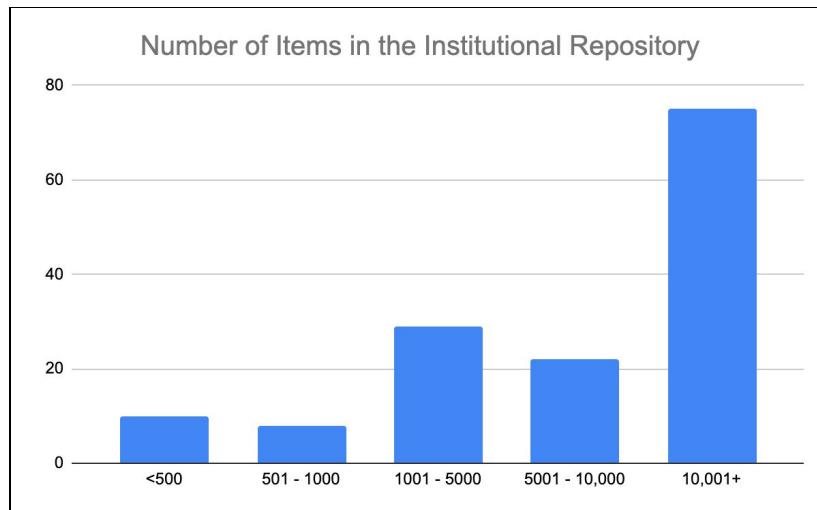

Figure 7: Total number of items in the institutional repository

Accessibility Policies

The majority of institutions have a library or institutional policy on accessibility, but not specific to the institutional repository (IR). Most others also have contact information available to inquire about accessibility for overall content and/or specific items in the IR and some have a policy on accessibility specific to the IR.
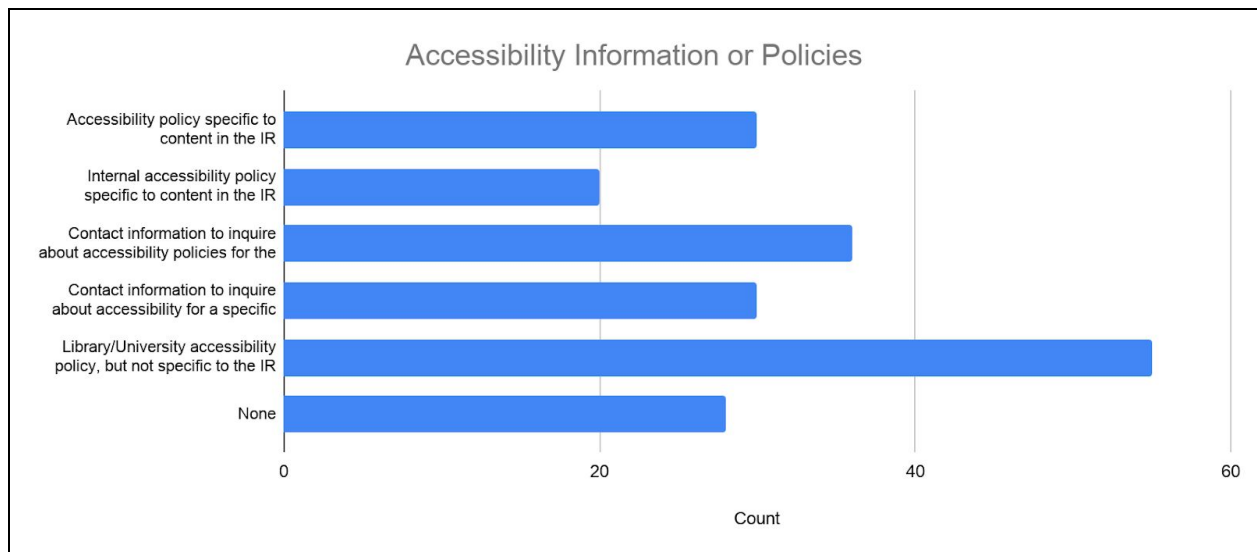

Figure 8: Policies on accessibility in the library or institution

Based on ranking the factors that impact the prioritization of accessibility practices for the institutional repository, the majority of respondents indicated the greatest impact was a personal commitment, followed by an emphasis on accessibility by library administration, and institutional or library pressure for legal compliance.
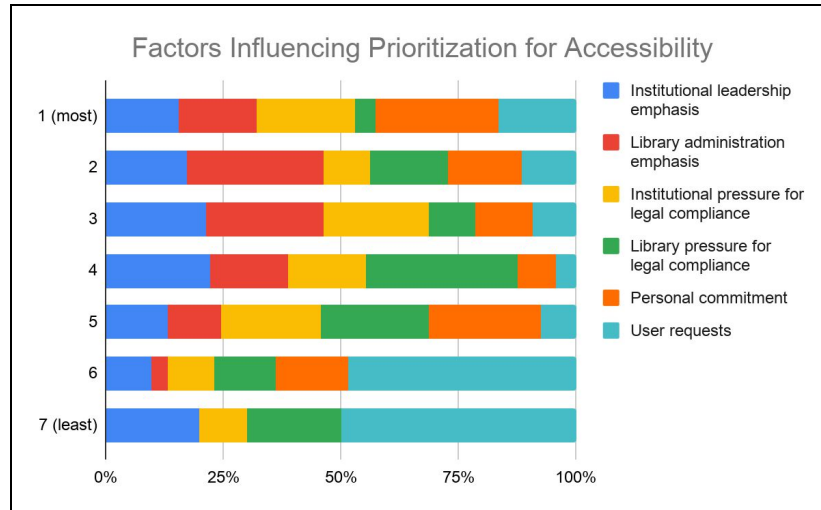

Figure 9: Factors influencing prioritization of accessibility in the institutional repository

Accessibility Practices

The majority of respondents indicated that they are not currently implementing accessibility practices for items deposited in the institutional repository (IR), though many noted that they are interested in this moving forward. Of those that are implementing accessibility practices, the majority are performing a combination of PDF editing, alternative text, pre-accession software tests (text-content), and transcribing texts.
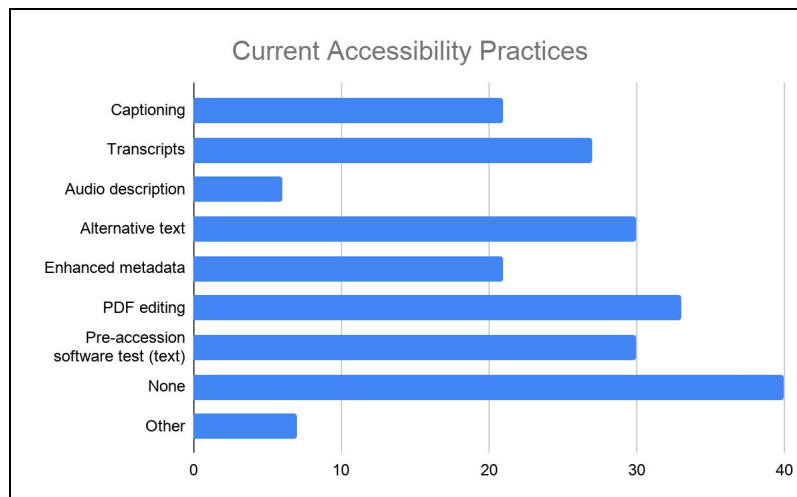

Figure 10: Current accessibility practices for the institutional repository

Of the respondents providing captioning and transcription for institutional repository (IR) content, no one is using a campus-based service. Many respondents are using Artificial Intelligence (AI), a vendor, or requiring the depositor to provide the captions or transcripts.
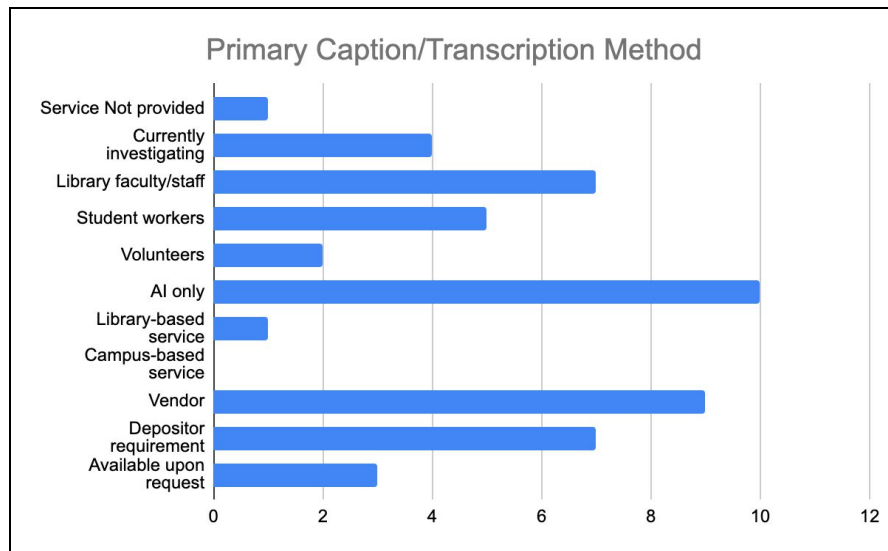

Figure 11: Primary methods used for captioning and transcription in the institutional repository

The majority of respondents that are providing captioning or transcription services indicated that there are less than 50 items processed for this service for their institutional repository per year.
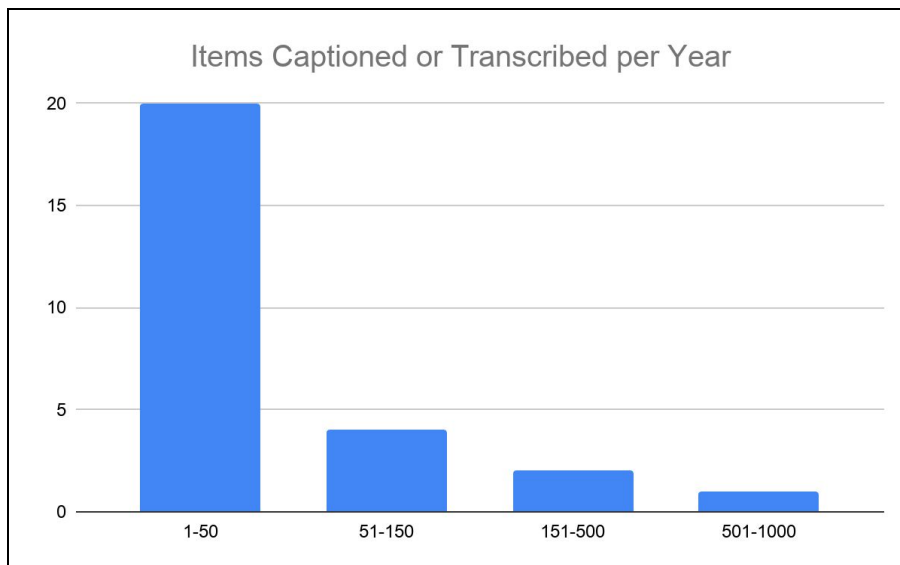

Figure 12: Number of items captioned or transcribed for the institutional repository per year

Audio description of video provides information about actions, characters, scene changes, on-screen text, and other visual content. Although six respondents indicated that they were using audio descriptions for accessibility for content in their institutional repositories (IRs), further elaboration on the question indicates that this is primarily being investigated and no respondents are currently offering audio descriptions for content in their IRs or have not received any such requests.
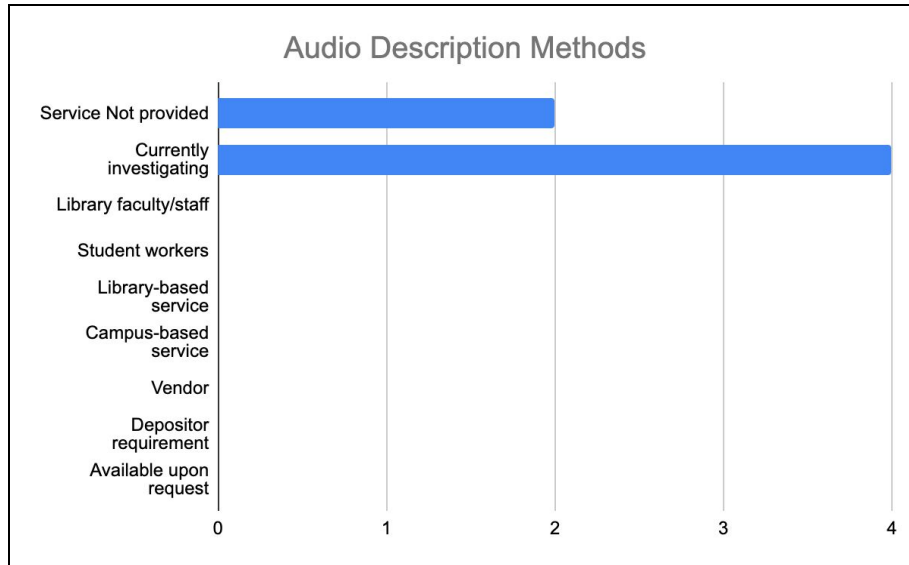

Figure 13: Primary methods used for audio descriptions in the institutional repository

Of the respondents indicating that they are using item-level metadata to enhance accessibility in their IRs, the majority are providing contact information, alternative text, or audio description.
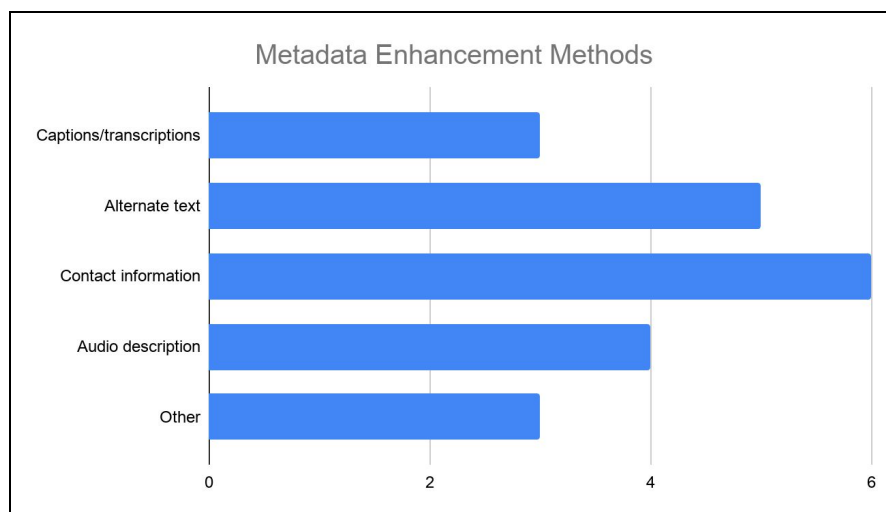
Figure 14: Metadata enhancements utilized to improve accessibility

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Respondents that are editing the PDFs for accessibility in their institutional repositories are primarily adding tags, adjusting the title recognition, and converting to a PDF/A copy.
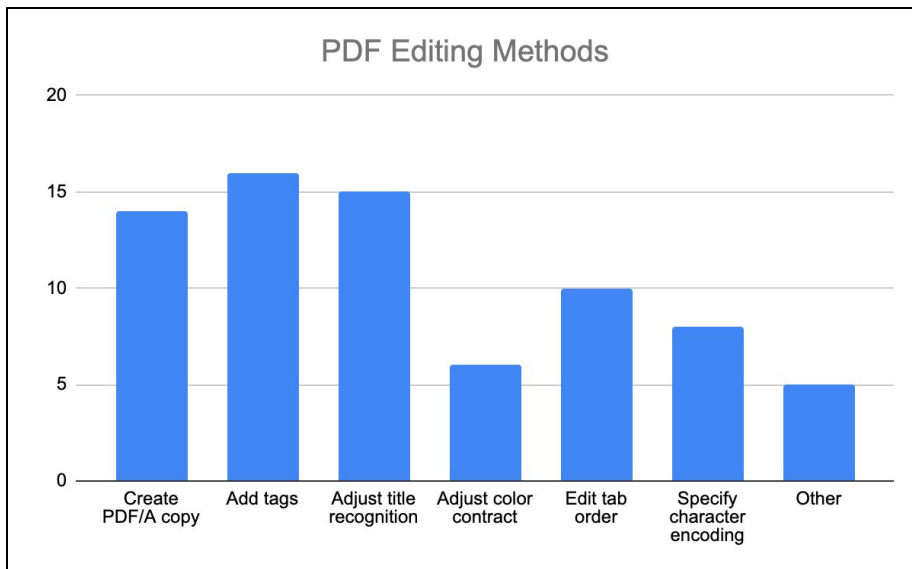
Figure 15: Methods for editing PDFs to enhance accessibility

Of the respondents that are performing a check of text-based materials for deposit in their institutional repository, the majority are using Adobe Acrobat software or Microsoft Word.
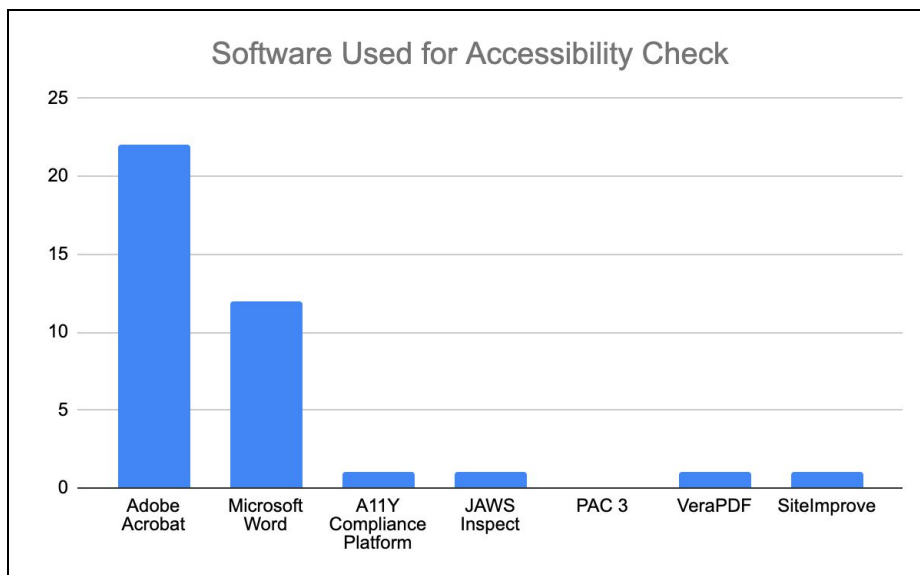
Figure 16: Methods to check text-based items for accessibility

Regardless of whether respondents performed any accessibility checks or editing of materials to enhance accessibility for items in their institutional repository (IR), all were asked which features they believe can be found in the majority of text-based items in their IR. Based on the

responses, it appears many IR managers are not confident in the accessibility of text-based items in their repositories. The majority responded that none of the features could be found in the majority of their text-based materials, though some respondents indicated that headings may likely be included in most items.
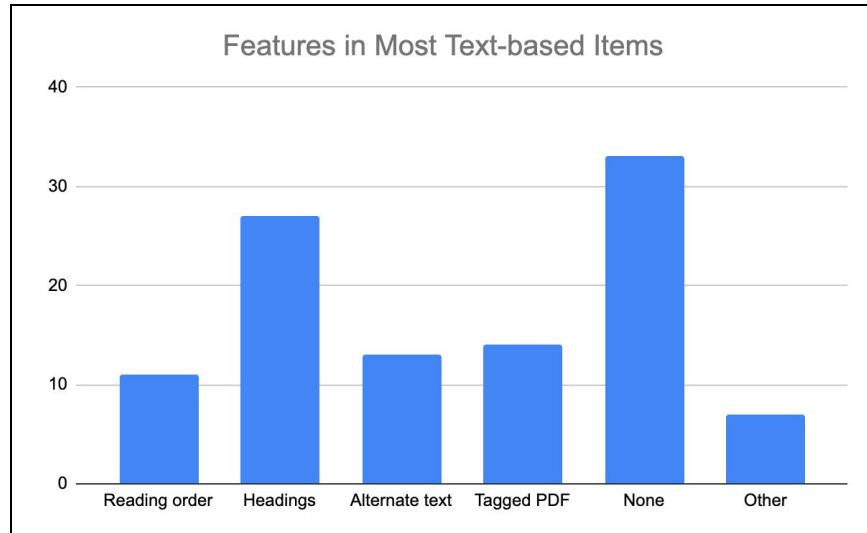
Figure 17: Accessibility features most likely in the majority of text-based items

When asked to assess the level of accessibility for specific items in the IR and the web pages, respondents are more confident in accessibility of text-based items, and images. The majority indicated that they do not feel that most audio and video files are accessible.
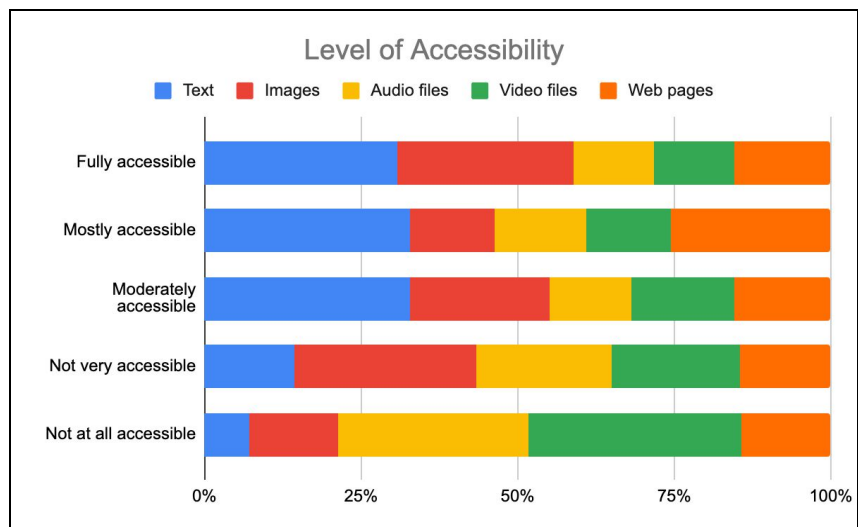
Figure 18: Level of accessibility of items and web pages

Respondents were asked to rank several potential challenges to accessibility for their IRs on a scale of 1 being the most important and 11 being the least important. Limited staffing and finances were ranked as the greatest challenges, followed by lack of expertise.
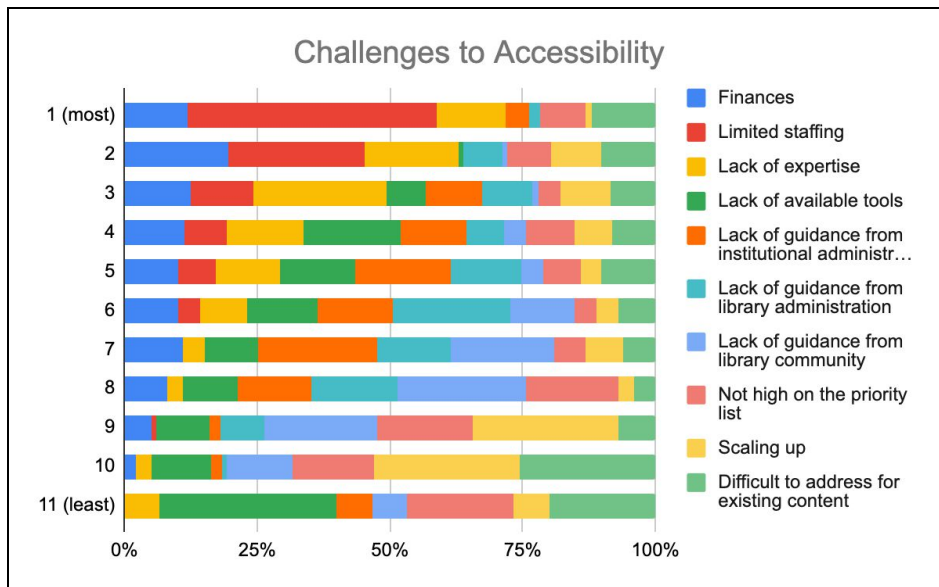
Figure 19: Ranking of the challenges to accessibility for the institutional repository

The vast majority of respondents indicated that they do not restrict access to certain materials in the IR strictly because they do not meet accessibility standards.
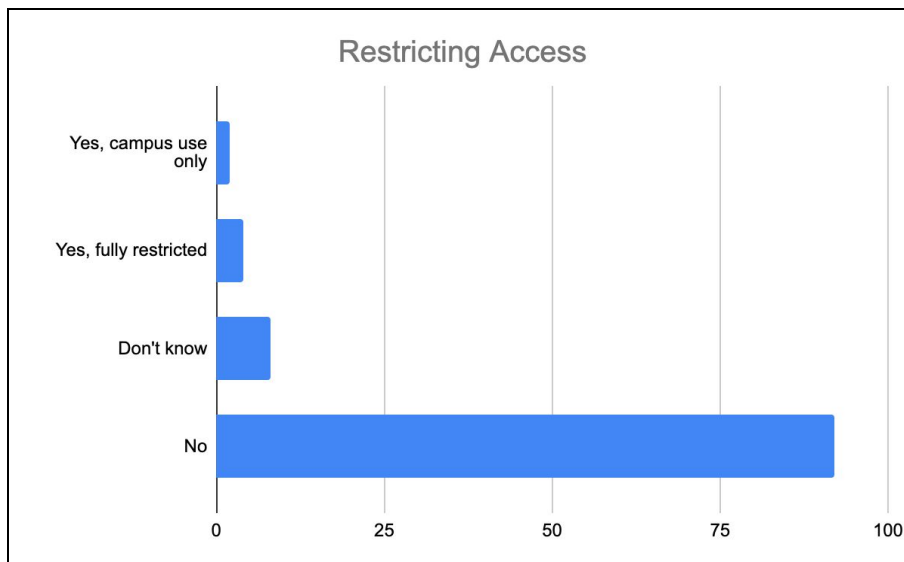
Figure 20: Restricting access to items in the institutional repository based on accessibility standards

Campus Relationships

The majority of institutional repository managers or related staff indicated that they do not currently consult with, or have a formal partnership with, their institutional Office of Disability Services (or equivalent institutional office).
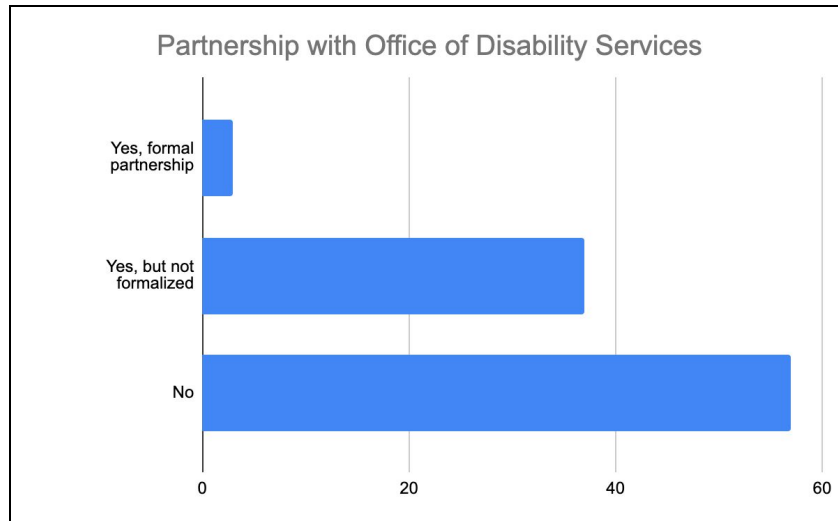
Figure 21: Partnerships with campus Office of Disability Services or equivalent

Standards and Assessment

When asked to assess the current state of accessibility of the materials currently in the institutional repository (IR) overall, most respondents feel they are moderately accessible or not very accessible. Only a small few felt that materials overall are fully accessible.
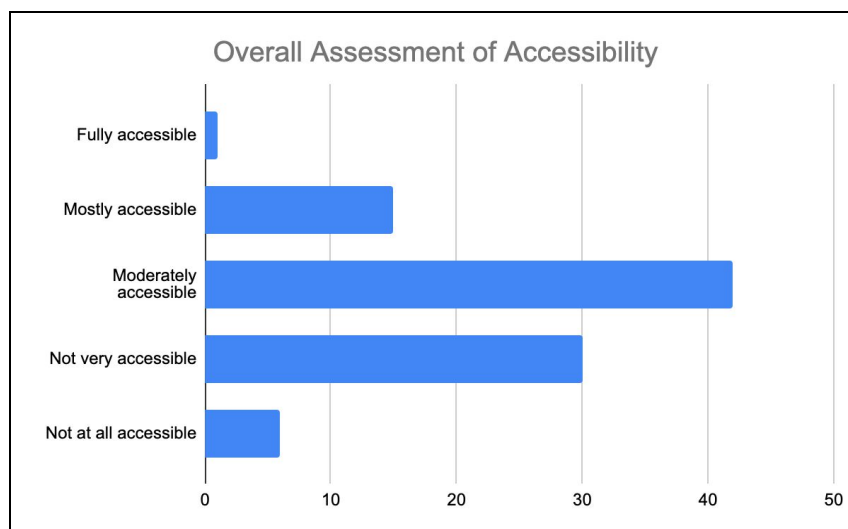
Figure 22: Overall assessment of accessibility for materials currently in the institutional repository

Over the past year (approximately 2018 - 2019), the majority of respondents indicated they did not receive any requests for accessible materials or an accessible version of content in the IR.

Requests for Accessible Materials in Past Year

Category	Value
Fewer than 5	~10
Between 5 and 50	~4
Between 51 and 500	~3
None	~86
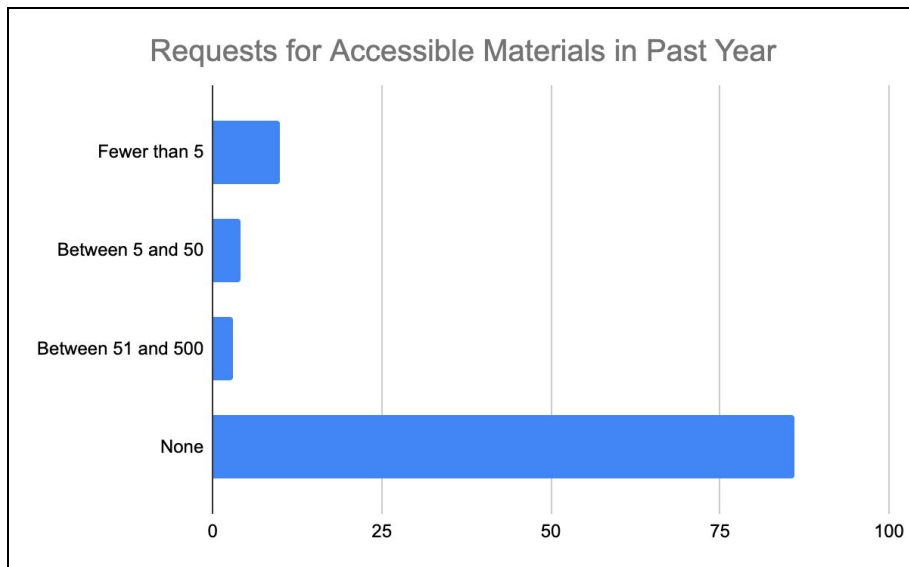
Figure 23: Requests for accessible material or version of content in the institutional repository

Of the standards being used for accessibility testing of the IR, most respondents are using the Web Content Accessibility Guideline (WCAG) 2.x - AA[2], Section 508 of the United States Rehabilitation Act of 1973[3], and/or standards outlined by their institution.

Accessibility Standards Used

Category	Value
WCAG 2.x - AA	~27
WCAG 2.x - AAA	~3
Section 508	~17
Institutional standards	~17
None	~5
Other	~5

Figure 24: Standards used for accessibility testing of the institutional repository

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[2] WC3 Web Accessibility Initiative https://www.w3.org/WAI/standards-guidelines/wcag/
[3] Section 508 of the U.S. Rehabilitation Act https://www.section508.gov/manage/laws-and-policies

The majority of respondents indicate that they are not conducting accessibility testing of their IR, with some unsure about any testing and others in a planning phase. Responses to this question were grouped into primary categories for reporting.

Figure 25: Accessibility testing conducted for the institutional repository

Discussion

Given that this initial study was intended as a baseline measurement for establishing the average level and current accessibility practices of institutional repositories, many of the results were not surprising. It is clear that most universities have not achieved a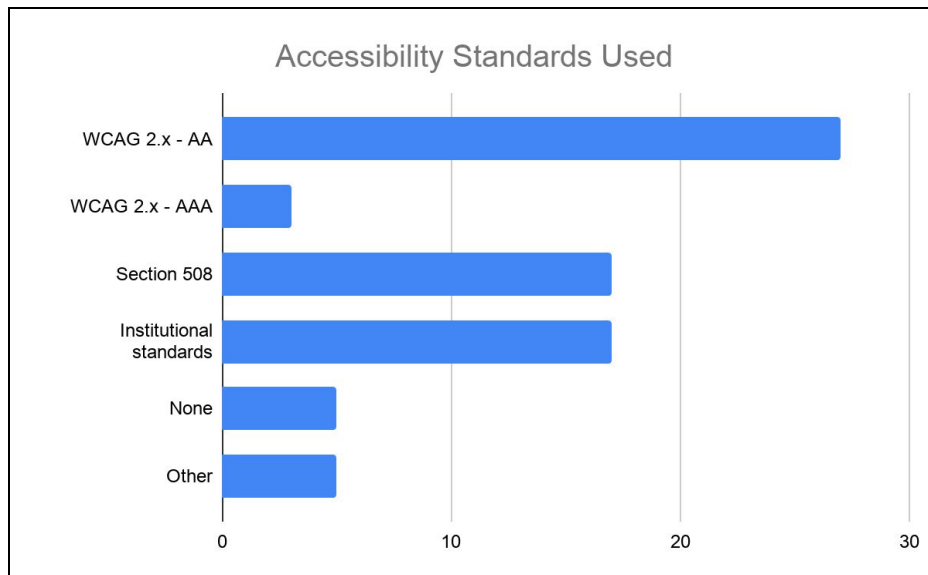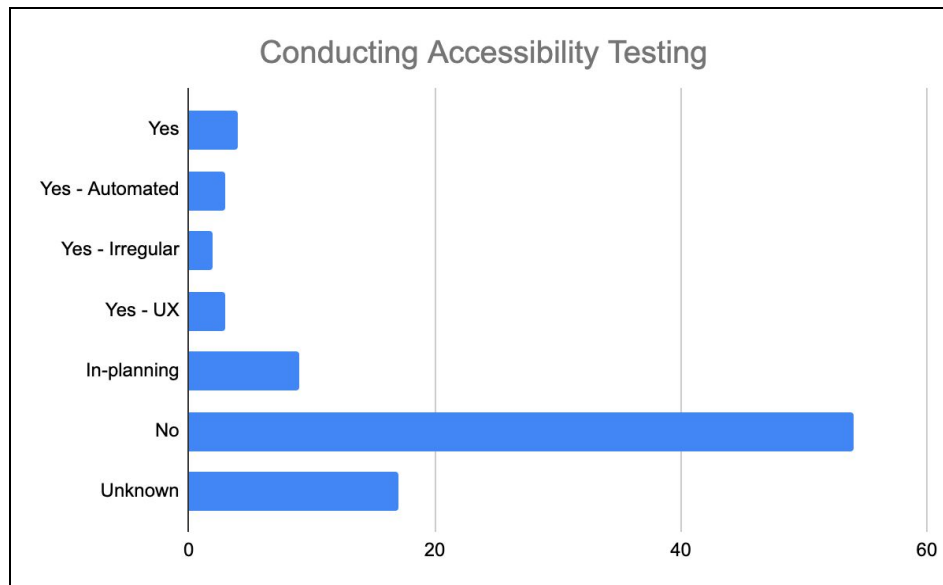n ideal level of accessibility to all materials in their institutional repositories. According to survey respondents, this is not for lack of desire or interest in content accessibility on the part of IR practitioners. When asked, a majority of respondents indicated that personal commitment rather than library or institutional initiatives have the greatest impact on the prioritization of accessibility activities. What remains, then, is to investigate the challenges or hurdles that survey takers face in remediating content. A few themes emerged that should be highlighted.

It is worth noting that repondants repeatedly highlighted the challenges they face in making their institutional repository content more accessible. As described in Figure 19, the most cited obstacles were lack of staffing, finances, and lack of expertise. The qualitative responses bear this out as well. One survey taker encapsulated the staffing situation at her institution this way, "At my mid-sized institution, limited staffing and resources means that it's up to me alone to educate myself and others about accessibility. I do what I can as I have to juggle other non-IR responsibilities (e.g., collection management, instruction, research, committee service, reference)." Other respondents highlighted the sheer amount of content making content accessibility initiatives prohibitive at current staffing levels. As noted in Figure 7, a majority of

practitioners indicated that their repositories contain over 10,000 individual items. The limited staffing evident in many institutions only compounds the other challenges discussed here.

In addition to the challenges that the survey asked practitioners to rank (Figure 19), most responses to the final survey question, which asked survey takers to share any additional information about the accessibility of their institution's repository, centered on the reasons why respondents have not been able to do more. One of the more interesting reasons mentioned in twenty-four survey responses, is the self-deposit model that so many institutional repositories rely upon. One respondent noted, "It's up to the faculty who submit to make their work accessible when they publish it. It's hard enough to get them to submit without having to require them to do a lot of work to the file. We don't edit the files afterwards because of trust. We want faculty to trust that we won't edit their work." Another practitioner noted that more could be done to train faculty and students on preparing accessible submissions, which would reduce the remediation required of IR staff.

Another persistent challenge, both ranked highly (Figure 19) and mentioned several times in qualitative responses is the relative lack of policy or standards around accessibility at both the local and professional level in the library field. One respondent stated, "One of the biggest challenges has been to establish [a] threshold for accessibility that is consistent with our institutional standards, because at this time there is no institutional standard. In that regard, we have been the driving force for an accessibility standard that addresses content produced by the University." While over fifty practitioners indicated that they do link to institutional accessibility policies when answering (Figure 8), progress may be hampered by the fact that at some institutions, content is not part of the accessibility guidelines.

While some of these challenges-particularly staffing and finances-will persist, especially in the course and eventual wake of the Covid-19 pandemic, the gaps uncovered in lack of policies and standards could provide future opportunities.

Next Steps

It's clear there is a lack of standardized guidance for accessibility of content in institutional repositories. Given the staffing and financial issues identified in this survey, it seems likely that overall accessibility of content in IRs won't improve unless some barriers to wider adoption can be removed.

We feel there are some steps the community could take to make the process of improving accessibility of content more straightforward for repository managers. Some institutions indicated they had existing accessibility policies (both public and internal). It would be useful to review and compare those policies to identify commonalities and perhaps create example policies that institutions could customize. The community could create accessibility best practices for institutional repositories, with particular attention on content accessibility.

Institutions that have developed workflows to smooth the creation of accessible documents should be encouraged to share those widely with the larger IR community. Since electronic theses and dissertations (ETDs) were identified as a major content type in IRs, any ETD style guides that incorporate accessibility standards would be of huge value to other IR managers. Finally, creating a maturity matrix for IR accessibility would help institutions understand where they are and how to incrementally scale up.

Moving forward, we hope that studies such as this will help inform the wider community of the challenges and obstacles faced by institutional repository (IR) managers and staff in ensuring accessibility to content.

References

Aery, S. (2017). Accessible AV in the Duke Digital Repository [blog post]. Retrieved from https://blogs.library.duke.edu/bitstreams/2017/10/24/accessible-av-duke-digital-repository/

Bankier, J.G., & Gleason, K. (2014). Institutional Repository Software Comparison. http://dide.minedu.gob.pe/handle/123456789/2899

Browder, R. (2018). Scanning print to Pdf: Opportunities and obstacles for screen reader accessibility, *Library Technology Reports*, *54*(4), https://journals.ala.org/index.php/ltr/article/view/6672

Çakir, A. (2016). Usability and accessibility of portable document format, Behaviour & Information Technology, 35:4, 324-334. https://doi.org/10.1080/0144929X.2016.1159049

Clossen, A., & Proces, P. (2017). Rating the Accessibility of Library Tutorials from Leading Research Universities. Portal: Libraries and the Academy, 17(4). https://preprint.press.jhu.edu/portal/sites/ajm/files/17.4clossen.pdf

Hewson, A., & Tonkin, E. (2011). Supporting PDF Accessibility Evaluation: Early Results from the FixRep Project in New Trends in Qualitative and Quantitative Methods in Libraries. Pp. 417-424 https://doi.org/10.1142/9789814350303_0051

Miller, A. (2017). A case study in institutional repository content curation: A collaborative partner approach to preserving and sustaining digital scholarship. *Digital Library Perspectives, 33*(1), pp.63-76. https://doi.org/10.1108/DLP-07-2016-0026

Nganji, J.T. (2015). The Portable Document Format (PDF) Accessibility Practice of Four Journal Publishers. Library & Information Science Research, 37(3), p. 254-262. https://doi.org/10.1016/j.lisr.2015.02.002

Skourlas, C., Tsolakidis, A., Belsis, P., Vassis, D., Kampouraki, A., Kakoulidis, P., & Giannakopoulos, Georgios A. (2016). Integration of institutional repositories and e-learning platforms for supporting disable students in the higher education context. Library Review, 65(3), 136-159. https://doi.org/10.1108/LR-08-2015-0088

Spina, C. & Cohen, M. (2018). *Accessibility and Universal Design. SPEC Kit 358.* Washington DC: Association of Research Libraries. https://doi.org/10.29242/spec.358

Stolley, K. (2016). Image Accessibility, Part I: Beyond alt Attributes [blog post]. Retrieved from http://www.digitalrhetoriccollaborative.org/2016/06/15/image-accessibility-part-i-beyond-alt-attributes/

Uebelbacher A., Bianchetti R., Riesch M. (2014). PDF Accessibility Checker (PAC 2): The First Tool to Test PDF Documents for PDF/UA Compliance. In: Miesenberger K., Fels D., Archambault D., Peňáz P., Zagler W. (eds) Computers Helping People with Special Needs. ICCHP (2014). Lecture Notes in Computer Science, vol 8547. Springer, Cham https://doi.org/10.1007/978-3-319-08596-8_31

Walker, W., & Keenan, T. (2015). Do You Hear What I See? Assessing Accessibility of Digital Commons and CONTENTdm, Journal of Electronic Resources Librarianship, 27:2, 69-87. https://doi.org/10.1080/1941126X.2015.1029395

Zaytsev, Angelina. (2015). HathiTrust and a Mission for Accessibility. *On Access, 18*(3). doi: http://dx.doi.org/10.3998/3336451.0018.304