Assessment Information

[CoreTrustSeal Requirements 2020–2022](#)

Repository:	The Odum Institute Data Archive
Website:	https://odum.unc.edu/archive/
Certification Date:	30 October 2020

This repository is owned by: **The Odum Institute for Research in Social Science, University of North Carolina at Chapel Hill**

The Odum Institute Data Archive

Notes Before Completing the Application

We have read and understood the notes concerning our application submission.

True

CORE TRUSTWORTHY DATA REPOSITORIES REQUIREMENTS

Background & General Guidance

Glossary of Terms

BACKGROUND INFORMATION

Context

R0. Please provide context for your repository.

Repository Type. Select all relevant types from:

Domain or subject-based repository

Brief Description of Repository

The Odum Institute Data Archive (hereinafter referred to as "Odum Archive") is hosted by the H. W. Odum Institute for Research in Social Science ("Odum Institute") at the University of North Carolina at Chapel Hill ("UNC") and falls under the governance of the UNC Vice Chancellor for Research. Formally established in 1969, the Odum Archive houses one of the largest catalogs of machine-readable social science data in the United States. This catalog includes the Louis Harris Data Center, the National Network of State Polls, the Carolina Poll, the Southern Focus Poll, and the most complete collection of 1970 United States Census datasets. These and other dataset collections comprise the over 24,000 files that are publicly accessible through the Odum Institute Archive Dataverse hosted on the UNC instance of the Dataverse data repository system ("UNC Dataverse").

The focus of the Odum Archive is on the long-term preservation, discovery, access and reuse of social science research data and associated materials that provide context for use of the data. Due to the increasingly interdisciplinary nature of scientific research, we define social science data broadly to include data produced from research conducted in subject domains beyond the social sciences, but that includes a social component that supports understanding of society and social relationships. It is the Odum Archive collection of social science digital data curated and hosted by the Odum Institute that is the subject of this audit and certification.

Odum Archive infrastructure, policies, and workflows were developed and are managed in alignment with ISO 14721: Reference Model for an Open Archival Information System (OAIS) and other prevailing archival standards and best practices widely adopted by the professional data archives community. In addition, the Odum Archive has mechanisms in place to ensure that all systems and processes comply with applicable laws and regulations that govern the storage, management, handling, and transmission of digital research data. The Odum Archive applies a comprehensive data curation and ingest workflow to dataset packages to be included in its collections. This workflow consists of the following four stages:

- Deposit: Transfer of the submission information package (SIP) from the data contributor to the Odum Archive

- Triage: Review of SIP files to identify preservation and access requirements

- Processing: Processing, assembly, and ingest of the archival information package (AIP)

- Access: Testing and publication of the dissemination information package (DIP) with terms of use and applicable access restrictions in place

It should be noted that the UNC Dataverse also serves as a self-service repository that hosts collections beyond those curated by the Odum Archive and is maintained and managed by two units at the Odum Institute.

Odum Institute Research Data Information Systems (RDIS) manages and maintains the technical infrastructure of the UNC Dataverse installation of the Dataverse software. All technical requirements and standards are supported by RDIS in consultation with relevant entities such as UNC ITS, UNC Research Computing, and the Dataverse development team at Harvard University's Institute for Quantitative Social Science (IQSS). For any upgrades or changes to the UNC Dataverse platform, both the Odum Archive and RDIS staff work together to review and determine appropriate maintenance and upgrade schedules. Odum Archive staff regularly test and approve future upgrade deployments and features in the UNC Dataverse test deployment before any upgrades are approved for the UNC Dataverse production deployment.

The Odum Archive staff developed the UNC Dataverse policies in consultation with UNC General Counsel to ensure the terms of use comply with both archival practices and appropriate laws and regulations. Any future changes to policy or terms of use will be managed by the Odum Archive staff in consultation with UNC General Counsel as necessary. Odum Archive staff are responsible for all UNC Dataverse outreach and user support regarding using the platform for data archiving and dissemination. The UNC Dataverse repository platform executes basic data curation actions (e.g., standardized metadata generation, persistent identification, bit-level preservation) on all dataset files, with additional enhanced curation support (e.g., file normalization, variable-level metadata generation) for tabular dataset files.

The Odum Institute Data Archive is one collection within the UNC Dataverse. The distinction between the Odum Archive collections and other datasets in UNC Dataverse is the application of a comprehensive data curation workflow that includes curation activities beyond those supported by the UNC Dataverse system to datasets in the Odum Archive. This distinction is made apparent to users by providing access to the Odum Archive collections via a separate Odum Institute Archive Dataverse branded webpage, where the CoreTrustSeal badge would be displayed exclusively if audit is successful.

Odum Institute Data Archive Website
http://odum.unc.edu/archive/

Odum Institute Archive Dataverse
https://dataverse.unc.edu/dataverse/odum

UNC Office of the Vice Chancellor for Research Organizational Chart
https://research.unc.edu/files/2014/02/orgchart.pdf

ISO 14721: Reference Model for an Open Archival Information System (OAIS)

http://public.ccsds.org/publications/archive/650x0m2.pdf

Odum Institute Research Data Information Systems Website

https://odum.unc.edu/rdis/

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

Brief Description of the Repository's Designated Community.

Data in the Odum Archive collections are accessed and used primarily by members of the academic community engaged in social science research or research that includes a social component. These members include research faculty, students, and other individuals that participate in such academic research. Because the Odum Archive provides free and open access to the vast majority of its collections, data are also accessed by journalists, policymakers, citizen scientists, and others interested in the collections.

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

Level of Curation Performed. Select all relevant types from:

D. Data-level curation – as in C above; but with additional editing of deposited data for accuracy

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

Comments

The Odum Institute employs three primary levels of curation for its collections: minimal, routine, and intensive. These curation levels are assigned to data submissions based on the specific processing requirements of the data as well as the value of the data to the Designated Community as determined during a selection and appraisal process. In general, minimal curation is assigned to data for which a significant amount of the required processing has been completed by the depositor. In contrast, intensive curation is performed on data considered of great potential value to the designated community and/or are stored in endangered formats and are thus at risk of loss. For data submissions that require curation beyond the intensive level or otherwise require specialized processing beyond the capabilities of the Odum Archive, the Odum Archive will seek suitable partner archives to assume responsibility for stewardship of these data.

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

Insource/Outsource Partners. If applicable, please list them.

Aside from the use of cloud storage providers to enhance its preservation strategies, the Odum Archive—including its systems, policies, workflows, and staff—operate under the administrative and financial oversight of the Odum Institute at UNC and without outsourcing to partners.

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

Summary of Significant Changes Since Last Application (if applicable).

Reviewer Entry

Reviewer 1

Comments:

Reviewer 2

Comments:

Other Relevant Information.

The Odum Archive is a founding member of the Data Preservation Alliance for the Social Sciences ("Data-PASS"), which is a partnership of institutions and organizations dedicated to preserving and making accessible social science research. Members of Data-PASS collaborate on initiatives that address issues relevant to data management and archiving. Data-PASS members are bound by a membership agreement described in the Data-PASS Articles of Collaboration, which declares partner institutions' commitment to adopt and advocate for best practices in the preservation of digital social science data. In addition, the Articles of Collaboration includes an agreement that if any one partner institution becomes unable to provide adequate support for the data assets under its stewardship, assets will be transferred to one of the other partners to assume long-term stewardship.

Data-PASS Website
http://www.data-pass.org/

Data-PASS Articles of Collaboration
http://www.data-pass.org/sites/default/files/collaboration.pdf

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

ORGANIZATIONAL INFRASTRUCTURE

1. Mission/Scope

R1. The repository has an explicit mission to provide access to and preserve data in its domain.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry
Reviewer 1

Comments:

4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:
4 – The guideline has been fully implemented in the repository

Response:

As written in the Odum Institute Data Archive Digital Preservation Policy, the mission of the Odum Archive is to "provide trusted long-term preservation and stewardship of research data assets to broaden scientific inquiry, promote research reproducibility, and foster data fluency now and into the future." This mission complements the broader Odum Institute mission, which is "to foster groundbreaking social research that improves the lives of people in North Carolina and around the world."

The current Digital Preservation Policy was approved by the Assistant Director for Archives and the Odum Institute Director and issued on January 24, 2020.

Odum Institute Data Archive Digital Preservation Policy
https://odum.unc.edu/files/2020/01/Policy_DigitalPreservation_2020200124.pdf

Odum Institute Mission
https://odum.unc.edu/mission/

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

2. Licenses

R2. The repository maintains all applicable licenses covering data access and use and monitors compliance.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

Comments:
4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:
4 – The guideline has been fully implemented in the repository

Response:

The Odum Archive issues and enforces policies, terms of use, and guidelines to clarify to all users the legal, proper, and intended uses of Odum Archive services and content. Information on license agreements, conditions of use, and non-compliance with conditions of access and use are included in formal documents as described below.

The UNC Dataverse Terms of Use, which applies to the Odum Archive collection, stipulates conditions of use of its services and content in accordance with laws and regulations that govern copyright and intellectual property, data security and confidentiality, and appropriateness of content. These Terms of Use dictate that data submissions must not infringe upon copyright or intellectual property or other laws including, but not limited to, those related to defamation or obscenity; contain information that could directly or indirectly identify human subjects that constitutes a violation of privacy, confidentiality, or any applicable law; or contain software viruses or any other programs that are designed to disrupt, interfere with, or limit UNC Dataverse services. In addition, the UNC Dataverse Terms of Use defines specific terms and conditions for user registration, data submission and download, and data usage license agreements.

The UNC Dataverse Terms of Use also describes the application of data usage license agreements to data submissions. Users who submit data materials to UNC Dataverse must accept the UNC Dataverse default Creative Commons "No Rights Reserved" (CC0) license that places the materials in the public domain, or provide an alternative custom data usage license agreement that establishes the acceptable uses, conditions, and/or restrictions of the submitted data materials. Users who access and download materials housed in UNC Dataverse must abide by the applicable data usage license agreement specified for each dataset and practice due diligence in ensuring that they do not download and/or use any datasets or other materials where prohibited by law.

The Odum Institute Data Archive Data Security Guidelines declares the Odum Archive's professional responsibilities for implementing all necessary measures to protect against unauthorized disclosure of personally identifiable information (PII) and protected health information (PHI) in accordance with the UNC Information Technology Services (UNC ITS) Information Security Policy and all applicable laws and regulations that govern the protection of PII and PHI. It also describes the systems, processes, and protective measures adopted by the Odum Archive to ensure adherence to these policies, laws, and regulations. Among these are policy protections that require contributors and users of the Odum Archive to read, understand, and agree to the aforementioned UNC Dataverse Terms of Use, which binds users to all applicable local, state, national, and international laws governing the handling of confidential data prior to using UNC Dataverse services and/or content.

For further protection, the Odum Archive may apply access restrictions to datasets based on licensing conditions, data

sensitivity, embargoes, or any other circumstances that require access restrictions. Restrictions may include system login requirements, certification of institutional affiliation, individual or group access authorization, and/or time-limited access. These restrictions are enforced primarily by applications integrated into the Dataverse software, which have the ability to identify and limit dataset access to authorized individuals, IP addresses, and members of defined groups. To ensure proper functioning of these applications, the Odum Archive executes workflows to test, manage, and extend system implementations of access restrictions.

At the time of this CoreTrustSeal application, the Odum Archive has neither discovered nor been alerted to any breach of the UNC Dataverse Terms of Use or associated policies, laws, and guidelines. Termination and Indemnification clauses are included in these Terms of Use, which describes measures to be taken in the event of noncompliance with conditions of use.

UNC Dataverse Terms of Use
https://odum.unc.edu/files/2020/01/Policy_UNCDataverseTermsofUse_20170501.pdf

Creative Commons CC0 1.0 Universal License
https://creativecommons.org/publicdomain/zero/1.0/legalcode

Odum Institute Data Archive Data Security Guidelines
https://odum.unc.edu/files/2020/01/Guidelines_DataSecurity_20170501-1.pdf

UNC Information Technology Services Information Security Policy
https://unc.policystat.com/policy/7107988/latest/

Dataverse Documentation
http://guides.dataverse.org/en/latest/

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

3. Continuity of access

R3. The repository has a continuity plan to ensure ongoing access to and preservation of its holdings.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Response:

Founded in 1924, the Odum Institute has a long history of providing research support services to the social science community and its stakeholders. Since 1969, these services have included the stewardship of data assets that have substantive and enduring value to the social science research community and others who comprise the Designated Community (see Section 0. Repository Context). The Odum Archive assumes responsibility for long-term preservation of these data assets to ensure that they are discoverable, accessible, understandable, and reusable now and into the foreseeable future, with a guaranteed preservation period of no fewer than 20 years. This responsibility is core to the Odum Archive mission, and is thus the primary objective of its systems, policies, and operations.

The Odum Institute Data Archive Preservation Policy describes its strategy for addressing risks to long-term digital preservation, which may include technological changes, shifts in normative research practice, increase in research interdisciplinarity, and expansion of archive roles and responsibilities. Annual formal and ongoing informal risk assessments are performed to anticipate these and any other organizational and financial events that may impact achievement of the Odum Archive's mission and objectives. In doing so, the Odum Archive is better prepared to respond to events or circumstances that require control measures to mitigate potential risk-related consequences.

As part of its long-term preservation strategy, the Odum Archive has in place a succession plan. As established in the Data-PASS Articles of Collaboration, the Odum Archive will transfer stewardship of its data assets to another partner institution should the Odum Institute no longer have the capacity to do so under its own auspices. Materials will be transferred to the most suitable partner institution as determined by the subject matter and content of the data holdings, as well as any economic obligations connected to the transfer.

Odum Institute Data Archive Digital Preservation Policy
https://odum.unc.edu/files/2020/01/Policy_DigitalPreservation_2020200124.pdf

Data-PASS Articles of Collaboration
http://www.data-pass.org/sites/default/files/collaboration.pdf

4. Confidentiality/Ethics

R4. The repository ensures, to the extent possible, that data are created, curated, accessed, and used in compliance with disciplinary and ethical norms.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Response:

To ensure that data housed in the Odum Archive meet standards of quality and usability according to applicable disciplinary norms, the Odum Archive enforces the Odum Institute Data Archive Collection Development Policy, which establishes the selection and appraisal criteria that determine the suitability of data submissions for inclusion in the Odum Archive collections. These criteria, which are informed by the requirements and preferences of the Designated Community, consider substantive value of the data as well as the quality and rigor of the data.

If data meet the standards outlined in the Collection Development Policy, the submitter must read, complete, and sign the Odum Institute Data Archive Data Deposit Form. This document provides guidance on acceptable data content, formats, and PII/PHI disclosure management. Submitters must confirm that they have de-identified the data and have permission and/or the authority to submit the data to the Odum Archive for archiving, dissemination, and any other lawful purpose. By signing the Data Deposit Form, they also confirm that they have read, understood and agree to the UNC Dataverse Terms of Use prior to submission.

Data accepted for inclusion in the Odum Archive undergo a data curation and ingest process as described in the Odum Institute Data Archive Data Curation Workflow, which is aligned with prevailing standards and best practices for data curation as defined by the professional data archives community. This workflow is executed according to Odum Institute Data Archive Standard Operating Procedures: Data Deposit, which standardizes workflow tasks executed during each of the four stages of the curation and ingest process (deposit, triage, processing, access). Should the presence of PII and/or PHI be discovered during the initial review of the submission information package (SIP) during the triage phase of the workflow, files are returned to the data submitter via secure transfer along with specific information about the sensitive nature of the data and the UNC Dataverse Terms of Use regarding sensitive data.

In some cases, the Odum Archive may accept data submissions containing PII/PHI for which the Odum Archive will apply the necessary adherence measures to manage disclosure of confidential information. The Odum Institute Data Archive Data Security Guidelines describe these adherence measures, which include de-identification, statistical disclosure control, and usage restrictions to manage disclosure of confidential information. Procedures for handling sensitive data, including secure storage, electronic transmission, and file encryption, are documented in the Odum Institute Data Archive Standard Operating Procedure: Sensitive Data Handling. The Odum Archive and its systems are also bound by the UNC ITS Information Security Policy and all other applicable ITS policies and guidelines for the storage, management, handling, and transmission of data. As a member of Data-PASS, Odum Archive also prescribes to the Data-PASS Confidentiality Policies. In addition to specific training on the handling of sensitive materials, all staff members are required to successfully complete Human Research Ethics Training prior to assignment of data curation and ingest workflow tasks.

The UNC Dataverse Terms of Use also sets conditions for use of data in the Odum Archive. By agreeing to these terms, users agree to practice due diligence in ensuring they do not download and use any datasets or other materials where prohibited by applicable law. In addition, users must read and understand the Dataverse Community Norms, which states that users must not abuse the data that relate to human subjects by obtaining information that could directly or indirectly identify any research subjects or obtain information to attempt to directly or indirectly identify any research subjects.

Odum Institute Data Archive Collection Development Policy
https://odum.unc.edu/files/2020/01/Policy_CollectionDevelopment_20170501.pdf

Odum Institute Data Archive Data Deposit Form
https://odum.unc.edu/files/2020/01/Form_DataDeposit_201705.pdf

UNC Dataverse Terms of Use
https://odum.unc.edu/files/2020/01/Policy_UNCDataverseTermsofUse_20170501.pdf

Odum Institute Data Archive Data Security Guidelines
https://odum.unc.edu/files/2020/01/Guidelines_DataSecurity_20170501-1.pdf

Odum Institute Data Archive Data Curation Workflow

https://odum.unc.edu/files/2020/01/Pipeline_201703.pdf

Odum Institute Data Archive Standard Operating Procedure: Data Deposit

https://odum.unc.edu/files/2020/01/SOP_Deposit_201703.docx

Odum Institute Data Archive Standard Operating Procedure: Sensitive Data Handling

https://odum.unc.edu/files/2020/01/SOP_SensitiveDataHandling_201704.docx

UNC Information Technology Services Information Security Policy

https://unc.policystat.com/policy/7107988/latest/

Data-PASS Confidentiality Policies

http://www.data-pass.org/sites/default/files/confidentiality.pdf

University of North Carolina Human Research Ethics Training

https://research.unc.edu/human-research-ethics/getting-started/training/

Dataverse Community Norms

http://best-practices.dataverse.org/harvard-policies/community-norms.html

5. Organizational infrastructure

R5. The repository has adequate funding and sufficient numbers of qualified staff managed through a clear system of governance to effectively carry out the mission.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Response:

The Odum Archive is one of several units within Odum Institute at UNC that provides social science research support. The Odum Institute falls under the governance of the UNC Office of the Vice Chancellor for Research. Both the Odum Institute and UNC provide financial and administrative support for the continued operations of the Odum Archive. See the UNC Office of the Vice Chancellor for Research Organizational Chart and the Odum Institute Organizational Chart for an illustration of the governance structure.

The Odum Institute receives funding support from several primary and secondary sources. The majority of support is financed through State of North Carolina annual budget allocations. Additional supplementary funding sources include contracts that support Odum Archive services for specific individuals and organizations that request dedicated or specialized data services. The Odum Archive also pursues and has been awarded grant funds from federal agencies and private foundations to support the ongoing development and maintenance of infrastructure and workflows. Contracts and grants are administered through the UNC Office of the Vice Chancellor for Research.

Odum Archive systems and operations are managed and implemented by Odum Institute staff working in various units. The Odum Archive employs three permanent FTE who include the Assistant Director for Archives and two Research Data Archivists. All have LIS graduate degrees and a combined total of over 30 years of professional archives-related experience. A full-time temporary staff member, who holds a BSIS, provides additional archival support as needed. Graduate Research Assistants fill part-time positions to support specific projects and assist with general Odum Archive operations. Archive staff work closely with Research Data Information Systems staff, which provides IT and research computing support. They include the Assistant Director for Research Data Information Systems, two Systems Programmers/Analysts, an Applications Analyst, and a Systems Administrator. All have graduate degrees in information science, computer science, or related fields, and are full-time permanent staff members. Administrative support is provided by the Odum Institute Managing Director and Administrative Assistant, both of whom are full-time permanent staff members. The Odum Institute also has full-time permanent staff members who serve as social science domain experts providing guidance and training on statistics, methodologies, and data science. The Odum Institute Data Archive Digital Preservation Policy provides more information on these positions and their associated responsibilities.

To keep pace with the evolving needs of its Designated Community, the Odum Archive is committed to ensuring that staff members receive the necessary ongoing training and professional development to enable them to be responsive to changes in technology, research culture and practice, relevant policies, and standards that inform Odum Archive

workflows and operations. Participation in training programs and engagement with scholarly communities is part of annual performance plans and appraisals for Odum Archive staff. The Odum Institute provides funding support for conference and training program attendance, with tuition benefits (i.e., tuition and fee waivers) for UNC course enrollment provided by UNC.

UNC Office of the Vice Chancellor for Research Organizational Chart
https://research.unc.edu/files/2014/02/orgchart.pdf

Odum Institute Organizational Chart
https://odum.unc.edu/files/2020/01/Org_Chart_Current_1-2020-1.pdf

Odum Institute Data Archive Digital Preservation Policy
https://odum.unc.edu/files/2020/01/Policy_DigitalPreservation_2020200124.pdf

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

6. Expert guidance

R6. The repository adopts mechanism(s) to secure ongoing expert guidance and feedback (either inhouse or external, including scientific guidance, if relevant).

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

Comments:
4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:
4 – The guideline has been fully implemented in the repository

Response:

The Odum Archive operates with support from other Odum Institute units that provide in-house expertise to ensure the sustainability and effectiveness of Odum Archive technical infrastructure, workflows, and services. Research Data Information Systems staff develop and maintain the underlying technical infrastructure and software platforms for the Odum Archive and develop custom applications to enhance and/or extend system capabilities. The Odum Archive consults regularly with Odum Institute social science subject experts in qualitative, quantitative, mixed methods, data science, and survey research to identify trends in research practice and technology that may warrant changes to Odum Archive services. The Odum Institute administration staff oversees Odum Archive budgets and staffing to ensure the financial sustainability and operational viability of the Odum Archive. The Odum Institute Data Archive Digital Preservation Policy describes the role of staff members in more detail.

Beyond in-house support, the Odum Archive actively engages with the broader community of data archives professionals and its stakeholders to obtain expert guidance and feedback on its operations. The Odum Institute is a founding member of Data-PASS, which is a well-established community of practice composed of reputable data archives that shares resources and expertise to achieve a common goal of preserving social science data assets. The Odum Archive gains a global perspective from its leadership position in the International Federation of Data Organizations (IFDO), which is dedicated to data sharing and preservation of social science data around the world. The Odum Institute also has led the effort to establish the Global Dataverse Community Consortium (GDCC), which facilitates collaborative efforts among data curators, software developers, and researchers to leverage economies of scale and expertise to promote the ongoing development and sustainability of the Dataverse software and the institutions that host Dataverse repository instances.

Odum Archive staff members are also active members of various professional organizations including the International Association for Social Science Information Services & Technology (IASSIST), the Research Data Alliance (RDA), and the Future of Research Communications and e-Scholarship (FORCE11). Every year, Odum Archive staff attend meetings of these and other organizations to disseminate information on research, services, and other Odum Archive outputs and to solicit feedback from community experts and stakeholders.

The Odum Archive keeps open lines of communication with its Designated Community, who are welcome to provide feedback, questions, and/or concerns by sending messages via email and through social media channels. They can also send direct messages through the Support link located within the Odum Institute Data Archive Dataverse user interface. Odum Archive staff often communicates with members of the Designated Community to learn more about their needs and preferences during collaborative work on research projects for which the Odum Archive provides data support. Regular participation in social science domain-based professional conferences (e.g., American Political Science Association, Population Association of America) and meetings also provide opportunities for Odum Archive staff to learn about new trends, preferences, and needs of the Designated Community that may affect Archive operations.

Odum Institute Data Archive Digital Preservation Policy
https://odum.unc.edu/files/2020/01/Policy_DigitalPreservation_2020200124.pdf

Data-PASS Website

http://www.data-pass.org/

IFDO Website

http://www.ifdo.org/

GDCC Website

http://dataversecommunity.global/

IASSIST Website

https://iassistdata.org/

RDA Website

https://www.rd-alliance.org/

FORCE11 Website

https://www.force11.org/

DIGITAL OBJECT MANAGEMENT

7. Data integrity and authenticity

R7. The repository guarantees the integrity and authenticity of the data.

Compliance Level:

4 – The guideline has been fully implemented in the repository

4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:
4 – The guideline has been fully implemented in the repository

Response:

To support data integrity and authenticity, the Odum Archive uses the integrated versioning functionality of the Dataverse system. Upon file ingest, Dataverse captures and displays the MD5 hash for the file along with the file type and size. This information allows the Odum Archive to compare this with the same information recorded manually upon receipt of the submission information package during the triage phase of the Odum Institute Data Archive Data Curation Workflow to confirm that no unintended changes were made to files during the ingest process. The MD5 is also used to check the integrity of preservation copies housed in geographically distributed storage locations.

All dataset records in the Dataverse must include a minimum set of citation metadata, which follows the DataCite Metadata Schema. For datasets in the Odum Archive collection, additional rich descriptive metadata is generated using the Data Documentation Initiative (DDI) Metadata Specification to provide structured information on the kind of data, unit of analysis, collection mode, and related materials. The Odum Institute Data Archive Metadata Guidelines describe general metadata requirements, with detailed information on how these standards are applied with respect to standard content values and representation rules outlined in Odum Institute Data Archive Standard Operating Procedure: Cataloging.

If revisions to the metadata or dataset files are necessary after the dataset record has been published, the Dataverse system will generate a new version of the record upon publication of the updated record, which is indicated in the data citation. In addition, the Dataverse system preserves and displays each version along with information on who published the version (including the initial version), the date the version was published, and the specific changes made to the metadata and/or files.

Should it become necessary to remove a dataset from the Odum Archive collection, the dataset record is deaccessioned. Deaccessioning removes access to dataset files, but retains access to the persistent identifier, which resolves to a tombstone page. The tombstone page provides an acknowledgement of prior existence of the dataset and the reason(s) for removal. It may also direct users to alternative sources of the data if applicable.

Odum Institute Data Archive Data Curation Workflow
https://odum.unc.edu/files/2020/01/Pipeline_201703.pdf

Odum Institute Data Archive Digital Preservation Policy
https://odum.unc.edu/files/2020/01/Policy_DigitalPreservation_2020200124.pdf

Odum Institute Data Archive Metadata Guidelines
https://odum.unc.edu/files/2020/01/Guidelines_Metadata_20170501.pdf

Odum Institute Data Archive Standard Operating Procedure: Cataloging

https://odum.unc.edu/files/2020/01/SOP_Cataloging_201704.docx

Dataverse Documentation

http://guides.dataverse.org/en/latest/

8. Appraisal

R8. The repository accepts data and metadata based on defined criteria to ensure relevance and understandability for data users.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Response:

To ensure that data housed in the Odum Archive meet standards of quality and usability according to applicable disciplinary norms, the Odum Archive enforces the Odum Institute Data Archive Collection Development Policy, which establishes the selection and appraisal criteria that determine the suitability of data submissions for inclusion in the Odum Archive collections. These criteria, which are informed by the requirements and preferences of the Designated Community, are based on substantive value of the data as well as the quality and rigor of the data.

Data submitters are required to include in their submission information package (SIP) a completed and signed Odum Institute Data Archive Data Deposit Form, which describes data package requirements, preferred file formats, and PII/PHI disclosure management. By submitting a completed, signed Data Deposit Form, the submitter agrees to, among other things, allow the Odum Archive to store, translate, copy, or reformat the data in any way as needed for long-term preservation and future accessibility. The Data Deposit Form also requests from the submitter their contact and affiliation information, and a description of the data including a title, abstract, keywords, and citations to related materials. The submitter also defines in the Data Deposit Form the dataset terms of use with the option of applying the CC0 public domain dedication or providing custom terms of use that declares the terms and conditions for use of the submitted dataset.

Data accepted for inclusion in the Odum Archive undergo a data curation and ingest process as described in the Odum Institute Data Archive Data Curation Workflow, which is aligned with prevailing standards and best practices for digital curation as defined by the professional data archives community. This workflow is executed according to Odum Institute Data Archive Standard Operating Procedures: Data Deposit, which standardizes workflow tasks executed during each of the four stages of the ingest process (deposit, triage, processing, access). Should issues of confidentiality, copyright, data package deficiencies, or other issues that raise ethical concerns or affect the understandability and/or usability of the data, the Odum Archive will correspond with the data submitter to assist them in addressing these issues.

The Odum Institute Data Archive website provides additional guidance on recommended file formats, data documentation and metadata, and protecting confidentiality and privacy. Odum Archive staff also avail themselves to users to assist with data submissions.

Odum Institute Data Archive Collection Development Policy
https://odum.unc.edu/files/2020/01/Policy_CollectionDevelopment_20170501.pdf

Odum Institute Data Archive Data Deposit Form
https://odum.unc.edu/files/2020/01/Form_DataDeposit_201705.pdf

Odum Institute Data Curation Workflow
https://odum.unc.edu/files/2020/01/Pipeline_201703.pdf

Odum Institute Data Archive Standard Operating Procedure: Data Deposit
https://odum.unc.edu/files/2020/01/SOP_Deposit_201703.docx

Odum Institute Data Archive Website
https://odum.unc.edu/archive

Reviewer Entry
Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

9. Documented storage procedures

R9. The repository applies documented processes and procedures in managing archival storage of the data.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

Comments:
4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:
4 – The guideline has been fully implemented in the repository

Response:

Relevant processes and procedures for managing archival storage of data were established in accordance with ISO 14721: Reference Model for an Open Archival Information System (OAIS), which outlines recommended practices for preserving digital data for long-term discovery, access, and use. Processes and procedures also comply with UNC ITS Information Security Policy, which prescribes minimum key security controls for storage technology and associated information systems.

The Odum Archive storage systems are protected with an extensive backup and preservation infrastructure that prevents archive downtime while ensuring long-term viability of data collections. This preservation infrastructure combines various technological solutions to create a multi-layered archival storage solution. As a first line of defense against system failure, a Unitrends hardware backup appliance performs file-level backups of the Dataverse database, file systems, and ingest workflow storage to be stored both locally and in Unitrends-managed private cloud storage. A virtual machine (VM) image snapshot is taken regularly using Veeam Backup software to provide additional backup, replication, and recovery support. The iRODS rules-based storage system provides geographically distributed storage redundancy by migrating the Dataverse database and files to a local iRODS staging server on the Amazon EC2 cluster to be replicated and synchronized automatically across three remote preservation network nodes (offsite local server, Amazon S3 storage in

Northern Virginia, Amazon S3 storage in Northern California) on a regular basis. These three iRODS-generated copies along with the copy in the Unitrends private cloud provide four geographically distributed offsite preservation copies. Upon deposition of copies at their storage locations, checksums are verified to ensure that files have maintained their integrity during transfer. The Odum Institute Data Archive Systems + OAIS document provides additional information on Odum Archive storage procedures.

The Odum Institute Data Archive Digital Preservation Policy also addresses data storage by describing digital preservation strategies and techniques, which ensures application of all reasonable efforts to ensure the integrity, authenticity, and completeness of the digital content it acquires and distributes. Specifically, the Odum Archive has adopted file format normalization and migration as its main digital preservation strategy. For tabular data files, a software-agnostic tab-delimited file derivative is generated and preserved alongside the original file to protect against software obsolescence. Other non-preferred file formats are normalized and/or converted to optimal preservation formats as recommended by the Library of Congress Recommended Formats Statement for bit-level preservation. An annual review of Archive systems and content is conducted to determine the necessity of hardware and software migration based on media longevity and viability, susceptibility to physical damage, and user preferences for data file access and use.

ISO 14721: Reference Model for an Open Archival Information System (OAIS)
http://public.ccsds.org/publications/archive/650x0m2.pdf

UNC Information Technology Services Information Security Policy
https://unc.policystat.com/policy/7107988/latest/

Odum Institute Data Archive Systems + OAIS
https://odum.unc.edu/files/2020/01/OAIS.pdf

Odum Institute Data Archive Digital Preservation Policy
https://odum.unc.edu/files/2020/01/Policy_DigitalPreservation_2020200124.pdf

Library of Congress Recommended Formats Statement
https://www.loc.gov/preservation/resources/rfs/

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

10. Preservation plan

R10. The repository assumes responsibility for long-term preservation and manages this function in a planned and documented way.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Response:

The Odum Institute Data Archive Digital Preservation Policy documents the comprehensive standards-based digital preservation strategic plan that supports the Odum Archive's commitment to the long-term management and preservation to its digital data collections to enable access now and into the foreseeable future. This strategic plan addresses the seven attributes of a trusted digital repository as defined by the Digital Curation and Preservation Framework--OAIS compliance, administrative responsibility, organizational viability, financial sustainability, technological and procedural suitability, systems security, and procedural accountability.

The Odum Archive preserves, manages, and distributes digital data assets and associated materials acquired in accordance with the Odum Institute Data Archive Collection Development Policy referenced in the Digital Preservation Policy. The Collection Development Policy specifies the criteria with which data are selected and appraised based on the collecting scope of the Odum Archive, quality of the materials, and file formats. Based on these criteria, the Odum Archive applies one of three levels of curation according to the specific processing requirements of the data as well as the value of the data to the Designated Community. At a minimum, all files are preserved at the bit-level, with automatic generation of tabular files to a software-agnostic tab-delimited file to be preserved alongside the original file.

The Odum Institute Data Curation Workflow illustrates the preservation actions taken on files during four defined stages of the ingest process: deposit (transfer of SIP from the data submitter to the archive), triage (file review and data management planning), processing (AIP generation), and access (delivery of DIP to data consumers). To ensure proper execution of the data curation workflow, Odum Institute Data Archive Standard Operating Procedures: Data Deposit provides standardized procedures for ingesting data files in accordance with archival standards and best practices including quality control inspections, file normalization, and metadata generation.

By submitting a completed, signed Odum Institute Data Archive Data Deposit Form, depositors give their assurance that

they give permission to the Odum Archive to use the data for any lawful purposes including without limitation to store, translate, copy, or reformat the data in any way to ensure its long-term preservation and future accessibility, and to allow the Odum Archive to use and re-disseminate the data. This permission is extended to any lawful method of transmission, analysis, processing, translation, publication, copying, or storage. Depositors also grant these permissions to the Odum Archive by agreeing to the UNC Dataverse Terms of Use, which is required prior to deposit.

Odum Institute Data Archive Digital Preservation Policy
https://odum.unc.edu/files/2020/01/Policy_DigitalPreservation_2020200124.pdf

Digital Curation and Preservation Framework
https://dpworkshop.org/dpm-eng/workshops/management-tools/policy-framework/model-document

Odum Institute Data Archive Collection Development Policy
https://odum.unc.edu/files/2020/01/Policy_CollectionDevelopment_20170501.pdf

Odum Institute Data Curation Workflow
https://odum.unc.edu/files/2020/01/Pipeline_201703.pdf

Odum Institute Data Archive Standard Operating Procedures: Data Deposit
https://odum.unc.edu/files/2020/01/SOP_Deposit_201703.docx

Odum Institute Data Archive Data Deposit Form
https://odum.unc.edu/files/2020/01/Form_DataDeposit_201705.pdf

UNC Dataverse Terms of Use
https://odum.unc.edu/files/2020/01/Policy_UNCDataverseTermsofUse_20170501.pdf

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

11. Data quality

R11. The repository has appropriate expertise to address technical data and metadata quality and ensures that sufficient information is available for end users to make quality-related evaluations.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Response:

The Odum Archive's approach to data and metadata quality is informed by archival standards and best practices as well as requirements set forth by the Designated Community. Odum Archive full-time permanent staff, who are required to have completed formal LIS graduate training and participate in ongoing professional development, actively engage with the professional archive community and domain experts during conferences and meetings and in collaborative projects to confirm the appropriateness of Odum Archive policies for data and metadata quality.

The Odum Archive addresses data quality requirements in the Odum Institute Data Archive Collection Development Policy based on the intended outcome that data in the Odum Archive be "independently understandable for informed reuse," thus enabling the Designated Community to make quality-related evaluations. Therefore, the Collection Development Policy sets requirements for quality standards for data accuracy and interpretability, completeness and readability of documentation, and acceptability of file formats. During the triage phase of the Odum Institute Data Curation Workflow, the Odum Archive performs a data quality review to ensure that all the files necessary to interpret and use the data are present in the SIP (i.e., data file(s), codebook, methodology reports, instruments, etc.), files are in acceptable formats and render properly, codebooks include definitions for all variables and values, and the dataset file is free of PII/PHI, inconsistencies, or other errors. These processes are outlined in the Odum Institute Data Archive Standard Operating Procedure: Data Deposit.

The Dataverse system enforces metadata standards through the use of a user input form that specifies a minimum set of required citation metadata that follows the DataCite Metadata Schema. For datasets in the Odum Archive collection, additional rich descriptive metadata is generated using the Data Documentation Initiative (DDI) Metadata Specification to provide structured information on the kind of data, unit of analysis, collection mode, citation links to related materials, and other contextual information to enhance understanding and usability of the data. In addition, the Dataverse applies variable-level metadata to tabular data files automatically upon ingest to enable data exploration for value-added functionality. The Odum Institute Data Archive Metadata Guidelines describe general metadata requirements, with detailed information on how these standards should be applied with respect to standard content values and representation rules outlined in the Odum Institute Data Archive Standard Operating Procedure: Cataloging. Prior to publishing data in

the Odum Institute Data Archive Dataverse, the records undergo a quality inspection to ensure proper application of standard content values and representation rules to descriptive metadata.

The Odum Archive publishes its contact information to allow the members of the Designated Community to comment on, provide feedback, or ask questions about data and metadata in the Odum Archive collections. In addition, the Odum Institute Data Archive Dataverse webpage displays a support link that enables users to submit information directly to Odum Archive staff.

Odum Institute Data Archive Collection Development Policy
https://odum.unc.edu/files/2020/01/Policy_CollectionDevelopment_20170501.pdf

Odum Institute Data Curation Workflow
https://odum.unc.edu/files/2020/01/Pipeline_201703.pdf

Odum Institute Data Archive Standard Operating Procedure: Data Deposit
https://odum.unc.edu/files/2020/01/SOP_Deposit_201703.docx

Odum Institute Data Archive Metadata Guidelines
https://odum.unc.edu/files/2020/01/Guidelines_Metadata_20170501.pdf

Odum Institute Data Archive Standard Operating Procedure: Cataloging
https://odum.unc.edu/files/2020/01/SOP_Cataloging_201704.docx

Dataverse Documentation
http://guides.dataverse.org/en/latest/

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

12. Workflows

R12. Archiving takes place according to defined workflows from ingest to dissemination.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Response:

Odum Archive workflows and business processes are based on ISO 14721: Reference Model for an Open Archival Information System (OAIS), which outlines recommended practices for preserving digital data for long-term discovery, access, and use, and defines the primary functional entities of an OAIS. The Odum Institute Data Archive Systems + OAIS document applies these definitions to its business processes from data ingest to data dissemination.

The Odum Institute Data Archive Curation Workflow document outlines the general archiving workflow in four stages: deposit (transfer of SIP from the data submitter to the archive), triage (file review and data management planning), processing (AIP generation), and access (delivery of DIP to data consumers). This information along with Odum Archive policies and guidance documents are published on the Odum Archive website for purposes of transparency to depositors and users.

To ensure proper execution of the data curation workflow, Odum Institute Data Archive Standard Operating Procedures: Data Deposit establishes standardized procedures for file ingest in accordance with archival standards and best practices. These practices include quality control inspections, file normalization, and metadata generation. The Odum Institute Data Archive Standard Operating Procedures: Data Deposit are supplemented by the Odum Institute Data Archive Standard Operating Procedures: Cataloging, which sets forth proper application of controlled vocabularies and generation of standardized metadata.

The Odum Archive has in place special procedures for handling data containing PII and/or PHI. Odum Institute Data Archive Standard Operating Procedures: Sensitive Data Handling provides guidelines on dealing with dataset files containing or potentially containing PII, PHI, or information otherwise considered to be sensitive in nature. To mitigate disclosure risk, the Odum Archive has established rules and provisions for secure storage, electronic transmission, and file encryption that must be applied to any dataset file containing or potentially containing sensitive information. In addition, the Odum Institute Data Archive Security Guidelines identifies additional measures (i.e., de-identification, statistical disclosure control, usage restrictions) used to protect against unauthorized disclosure of PII/PHI in compliance with applicable laws and regulations.

These measures are applied to sensitive data for which the Odum Archive has agreed to accept in accordance with the

Odum Institute Data Archive Collection Development Policy and to bear the cost and responsibility for applying adherence measures to eliminate the presence of direct and/or indirect identifiers. All other data must be de-identified prior to submission, according to the UNC Dataverse Terms of Use and the Odum Institute Data Archive Data Deposit Form. Should PII/PHI be discovered during the triage phase of the the data curation workflow, the files are returned to the data submitter via secure transfer along with specific information about the sensitive nature of the data and the UNC Dataverse Terms of Use regarding sensitive data.

Other issues that may arise during triage may include data relevance and data quality. Based on the Collection Development Policy, data submissions must have substantive value to the Designated Community and meet quality standards for usability according to a set of selection and appraisal criteria. For the Odum Archive, data should be of significance to the study and understanding of society and social relationships, particularly those that focus on topics related to the Southern region of the United States and state-level public opinion polls. For submissions that do not fall within this collecting scope, the Odum Archive will assist the submitter in identifying a trusted repository that has the appropriate expertise and infrastructure in place to provide long-term stewardship of the data. In terms of data quality issues, the Odum Archive makes clear to submitters expectations for complete and readable documentation and preferred file formats in the Odum Institute Data Archive Data Deposit Form. The Odum Archive addresses deficient SIPs through direct correspondence with the data submitter to assist them in addressing these issues.

Workflows may be updated to reflect changes in technology, policies, and/or requirements of the Designated Community. Policies, guidelines, and standard operating procedures documents are subject to a three-year review or upon discovery of landscape changes that impact workflow outcomes, whichever may come first.

ISO 14721: Reference Model for an Open Archival Information System (OAIS)
http://public.ccsds.org/publications/archive/650x0m2.pdf

Odum Institute Data Archive Systems + OAIS
https://odum.unc.edu/files/2020/01/OAIS.pdf

Odum Institute Data Archive Curation Workflow
https://odum.unc.edu/files/2020/01/Pipeline_201703.pdf

Odum Institute Data Archive Standard Operating Procedure: Data Deposit
https://odum.unc.edu/files/2020/01/SOP_Deposit_201703.docx

Odum Institute Data Archive Standard Operating Procedure: Cataloging
https://odum.unc.edu/files/2020/01/SOP_Cataloging_201704.docx

Odum Institute Data Archive Standard Operating Procedure: Sensitive Data Handling
https://odum.unc.edu/files/2020/01/SOP_SensitiveDataHandling_201704.docx

Odum Institute Data Archive Data Security Guidelines

https://odum.unc.edu/files/2020/01/Guidelines_DataSecurity_20170501-1.pdf

Odum Institute Data Archive Collection Development Policy

https://odum.unc.edu/files/2020/01/Policy_CollectionDevelopment_20170501.pdf

UNC Dataverse Terms of Use

https://odum.unc.edu/files/2020/01/Policy_UNCDataverseTermsofUse_20170501.pdf

Odum Institute Data Archive Data Deposit Form

https://odum.unc.edu/files/2020/01/Form_DataDeposit_201705.pdf

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

13. Data discovery and identification

R13. The repository enables users to discover the data and refer to them in a persistent way through proper citation.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

Comments:
4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:
4 – The guideline has been fully implemented in the repository

Response:

The Odum Archive collections are made publicly available online via the Odum Institute Data Archive Dataverse. The Dataverse repository platform includes browse and search functionality, which is enhanced by enforcement of metadata standards that require all data records to include a minimum set of metadata, which is specified in Odum Institute Data Archive Metadata Guidelines. Users can discover datasets using faceted browsing that filters dataset records based on defined categories (e.g., author name, subject, production date) mapped to standardized metadata fields. Basic search performs a full-text query across all metadata fields to return dataset records that contain specified terms. Advanced search functionality allows for more directed queries by allowing users to search for dataset records with specified terms appearing within a particular metadata field.

Each dataset is automatically assigned a persistent unique digital object identifier (DOI) upon ingest, which provides a resolvable, interoperable link to the dataset record (older records in the Data Archive were assigned a handle (hdl), which is also a persistent unique identifier). The DOI is included in a formal data citation generated by the Dataverse system, which allows users to download the citation in various formats (e.g., RIS, BibTeX). Also included in the formal citation is the version number of the dataset record, which is recorded whenever metadata and/or data files are edited. To further distinguish among versions, a Universal Numeric Fingerprint (UNF) is generated for tabular dataset files, which is a unique signature of their semantic content. The UNF is included in the formal citation for the dataset as well as in the formal citation for the individual files.

Odum Archive metadata is crosswalked to the Dublin Core Metadata Initiative Metadata (DCMI) Specification to enhance machine interoperability. The Odum Archive exposes its metadata for machine harvesting via the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) to allow other repositories or service providers to harvest Odum Archive metadata. The Odum Archive metadata catalog has been harvested by the Harvard Dataverse and the Leibniz Institute for the Social Sciences (GESIS) for display to their users for discovery of and access to data housed in the Odum Archive. Information about the Odum Archive repository is indexed in the Registry of Research Data Repositories (re3data), FAIRsharing, and OpenDOAR registries.

Odum Institute Data Archive Metadata Guidelines
https://odum.unc.edu/files/2020/01/Guidelines_Metadata_20170501.pdf

Harvard Dataverse
https://dataverse.harvard.edu/

gesisDataSearch
https://datasearch.gesis.org/start

Registry of Research Data Repositories (re3data)
https://www.re3data.org/

FAIRsharing
https://fairsharing.org/

OpenDOAR
https://v2.sherpa.ac.uk/opendoar/

Dataverse Documentation
http://guides.dataverse.org/en/latest/

14. Data reuse

R14. The repository enables reuse of the data over time, ensuring that appropriate metadata are available to support the understanding and use of the data.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Response:

The Odum Archive requires a minimum set of DataCite citation metadata to ensure the discoverability of datasets in the collections. Additional rich descriptive metadata follow the Data Documentation Initiative (DDI) Metadata Specification, which has been adopted internationally for describing data produced in the social, behavioral, and economic science domains. DDI provides a standard mechanism for documenting data in various stages of the research lifecycle to ensure

the Designated Community can understand, interpret, and use the data. The Odum Institute Data Archive Metadata Guidelines describe general metadata requirements, with detailed information on how these standards are applied with respect to standard content values and representation rules outlined in the Odum Institute Data Archive Standard Operating Procedure: Cataloging.

Along with structured metadata, the Odum Institute Data Archive Data Deposit Form requires that data submitters provide the necessary data documentation (e.g., codebooks, methodology reports, instruments) and metadata to allow for understanding and use of the data. These contextual materials are preserved and made available alongside data files. For SIPs that do not include the necessary documentation, the Odum Archive addresses deficiencies through direct correspondence with the data submitter to assist them in resolving these issues.

To address inevitable file format evolution, the Odum Institute Data Archive Dataverse automatically generates and preserves a software-agnostic tab-delimited derivative file that is less prone to obsolescence and additional structural DDI metadata at the variable level for tabular dataset files upon ingest. In doing so, the Dataverse is able to reconstruct data into formats compatible with both current and new or updated software applications as preferred and/or required by the Designated Community. At present, the Dataverse provides options to download tabular dataset files (.sav, .por, .dta, .xlsx, .RData, .csv) in their original, the tab-delimited, and RData formats, all of which are in common use by the Designated Community. As part of the Odum Institute Data Archive Digital Preservation Policy, the Odum Archive performs an annual review of systems and content to determine the necessity of hardware and software migration.

Odum Institute Data Archive Metadata Guidelines
https://odum.unc.edu/files/2020/01/Guidelines_Metadata_20170501.pdf

Odum Institute Data Archive Standard Operating Procedure: Cataloging
https://odum.unc.edu/files/2020/01/SOP_Cataloging_201704.docx

Odum Institute Data Archive Data Deposit Form
https://odum.unc.edu/files/2020/01/Form_DataDeposit_201705.pdf

Odum Institute Data Archive Digital Preservation Policy
https://odum.unc.edu/files/2020/01/Policy_DigitalPreservation_2020200124.pdf

Dataverse Documentation
http://guides.dataverse.org/en/latest/

Reviewer Entry
Reviewer 1

Comments:
Accept

Reviewer 2

Comments:

Accept

TECHNOLOGY

15. Technical infrastructure

R15. The repository functions on well-supported operating systems and other core infrastructural software and is using hardware and software technologies appropriate to the services it provides to its Designated Community.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

Comments:
4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:
4 – The guideline has been fully implemented in the repository

Response:

Odum Archive hardware and software infrastructure was developed and is maintained by the in-house Odum Institute Research Data Information Systems unit in accordance with ISO 14721: Reference Model for an Open Archival Information System (OAIS). Implementation of OAIS is described in the Odum Institute Data Archive + OAIS document, which defines the six primary OAIS functional entities in the Odum Archive context: data ingest, data storage, data management, administration, preservation planning, and data access. The Odum Archive technical infrastructure was designed to perform the functions associated with each functional entity. Many of these functions are performed within or interface with the Dataverse open source repository application, which supports Odum Archive workflows and services.

Dataverse software is supported by a growing international community of developers, researchers, information professionals, and other stakeholders who actively contribute to the ongoing development of Dataverse. Recently, this community was officially formalized as the Global Dataverse Community Consortium (GDCC) with membership representing data archive organizations located across six continents. GDCC facilitates collaborative efforts to improve the software and leverage economies of scale and expertise to promote the ongoing development and sustainability of the Dataverse software and the institutions that host Dataverse repository instances. Individuals engage frequently with

community members via weekly community conference calls, an online forum, a public GitHub code repository, the annual Dataverse Community Meeting, and through other informal correspondence. Dataverse software documentation, development roadmaps, and guides are maintained and made available via the Dataverse Project website.

The UNC Dataverse installation is managed using a redundant VM image on an Odum Institute-managed VMware computing cluster. This cluster has the ability to migrate VMs on the fly from server to server in the event of hardware outages or during maintenance. Redundant power and network links across servers help to eliminate any single point of failure and provides the appropriate bandwidth necessary for data delivery. Cluster storage is provided by two redundant NetAPP storage appliances for trusted storage for Dataverse systems. As mandated by UNC ITS Information Security Policy in compliance with ISO 27002: Code of Practice for Information Security Controls, these servers are protected by both a local software firewall and a UNC-maintained campus hardware firewall to prevent unauthorized access. Regular security scans of these systems are performed to monitor for system vulnerabilities and for oversight of firewall configuration requests. A regular patch management system is in place to maintain approved version levels of the base operating system and other critical components. The UNC Dataverse production deployment is also supported by a test deployment that is regularly updated with the latest version of Dataverse for testing and approval prior to deployment on production systems.

The Odum Archive is committed to upholding established archival systems standards and best practices as described in the Odum Institute Data Archive Digital Preservation Policy, and thus has adopted technologies appropriate as described above for the services it provides to its Designated Community. The Digital Preservation Policy is subject to three-year review or upon the emergence of new standards and best practices, whichever may come first. Research Data Information Systems and Archive staff regularly participate in international conferences and training events to learn about emerging data management tools, solutions, and standards.

ISO 14721: Reference Model for an Open Archival Information System (OAIS)
http://public.ccsds.org/publications/archive/650x0m2.pdf

Odum Institute Data Archive + OAIS
https://odum.unc.edu/files/2020/01/OAIS.pdf

Global Dataverse Community Consortium (GDCC)
http://dataversecommunity.global/

Dataverse Project Website
https://dataverse.org/

UNC Information Technology Services Information Security Policy
https://unc.policystat.com/policy/7107988/latest/

ISO 27007: Code of Practice for Information Security Controls

https://www.iso.org/standard/54533.html

Odum Institute Data Archive Digital Preservation Policy

https://odum.unc.edu/files/2020/01/Policy_DigitalPreservation_2020200124.pdf

16. Security

R16. The technical infrastructure of the repository provides for protection of the facility and its data, products, services, and users.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Response:

The physical infrastructure supporting UNC Dataverse and the Odum Archive is managed by the Odum Institute Research Data Information Systems unit staffed with five permanent full-time staff including the Assistant Director for Research Data Information Systems, two Systems Programmers/Analysts, an Applications Analyst, and a Systems Administrator. All have graduate degrees in information science, computer science, or related fields, and have extensive experience in designing, developing, and maintaining systems and software applications.

Storage and compute clusters are housed at UNC in two separate computing centers shared with UNC Information

Technology Services. These computing centers are designed with redundant power and cooling to ensure continued access to the UNC Dataverse systems. Physical access controls are in place and enforced by staff 24/7 to prevent unauthorized entry to facilities. Remote access to these systems is controlled by Virtual Private Networks, Virtual Local Area Networks, and strong password authentication as required by UNC ITS Information Security Policy in compliance with the ISO 27002: Code of Practice for Information Security Controls. In addition, Odum Archive systems are protected by both a local software firewall and a UNC-maintained campus hardware firewall to prevent unauthorized access. Regular security scans of these systems are performed to monitor for system vulnerabilities and to provide oversight of firewall configuration requests, with a regular patch management system in place to maintain approved version levels of the base operating system and other critical components.

Regular patch management strategies are employed to ensure the infrastructure is in compliance with industry standards following guidelines generally defined in ISO 17799: Code of Practice for Information Security Management for information security management. Automated processes aid the identification of required patches to software and firmware, with the deployment of these patches managed by infrastructure administrators.

The Odum Research Data Information Systems unit has a disaster recovery plan in place in the event of a physical disaster. Research Data Information Systems staff have the ability to access systems at any time during such disasters. Industry standard backup and restoration processes have been designed to manage system recovery that minimizes downtime and supports long-term viability of Odum Archive collections. This is part of a technologically diverse multi-layered strategy as previously described in R9 above.

Ongoing risk assessments are performed at both the Odum Research Data Information Systems level and the campus UNC Information Technology Services level to identify and address potential threats to system security. Risk assessments are also conducted during the Odum Research Data Information Systems unit's annual review of hardware and software requirements for managing Odum Archive systems, content, and services.

UNC Information Technology Services Information Security Policy
https://unc.policystat.com/policy/7107988/latest/

ISO 27007: Code of Practice for Information Security Controls
https://www.iso.org/standard/54533.html

ISO 17799: Code of Practice for Information Security Management
https://www.iso.org/standard/39612.html

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:

Accept

APPLICANT FEEDBACK

Comments/feedback

These Requirements are not seen as final, and we value your input to improve the CoreTrustSeal certification procedure. Any comments on the quality of the Requirements, their relevance to your organization, or any other contribution, will be considered as part of future iterations.

Response:

The submission fields themselves do not have a text editor enabled, which makes it a little tedious when copy/pasting text from a draft document. Additionally, it would be nice to have a separate section underneath each requirement where you can share links that are actually active.

Reviewer Entry

Reviewer 1

Comments:

Reviewer 2

Comments:
We appreciate receiving the comments about the features and capabilities of the CoreTrustSeal Application Management Tool and form, and will refer to such comments to inform their improvement.