Appendix A. Interview Survey Instrument

Data Information Literacy Competencies

For each of the competencies listed below, indicate the importance of each competency and how well your graduate students fulfill the competency.

1. Data storage and security

Skills may include:

Recognizes that effective data storage is more than storing bits. Familiar with different types of data storage media, and their strengths and weaknesses. Understands security issues in storing data (unauthorized access, data loss) and takes steps to mitigate these issues.

Please indicate how important you believe it is for your graduate students to be knowledgeable in this competency by the time they graduate:

1	**2**	**3**	**4**	**5**
Not important	Somewhat important	Important	Very important	Essential

I don't know or NA

How would you describe your graduate students' knowledge and skills in data storage currently?

1	**2**	**3**	**4**	**5**
Deficient	Needs Improvement	Acceptable	Proficient	Outstanding

I don't know or NA

2. Data sharing

Skills may include:

Recognizes that data may have value beyond the original purpose, to validate research, or for use by others. Is familiar with the practices, values, norms and resources of his/her chosen field, discipline, or sub-discipline as they relate to sharing data. Understands and complies with data sharing mandates from funding sources. Knows how to cite a data set.

Please indicate how important you believe it is for your graduate students to be knowledgeable in this competency by the time they graduate:

1	**2**	**3**	**4**	**5**
Not important	Somewhat important	Important	Very important	Essential

I don't know or NA

How would you describe your graduate students' knowledge and skills in data sharing currently?

1	2	3	4	5
Deficient	Needs Improvement	Acceptable	Proficient	Outstanding

I don't know or NA

3. Data discovery and acquisition

Skills may include:

Locates and utilizes external sources of relevant data. Evaluates the quality of data from external sources and selects data that are appropriate for his/her purpose and intent. Familiar with disciplinary data repositories, their content and services, and how to use them effectively. Imports data from external sources and converts them when necessary, so they can be used locally.

Please indicate how important you believe it is for your graduate students to be knowledgeable in this competency by the time they graduate:

1	2	3	4	5
Not important	Somewhat important	Important	Very important	Essential

I don't know or NA

How would you describe your graduate students' knowledge and skills in data discovery and acquisition currently?
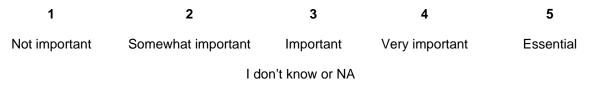
1	2	3	4	5
Deficient	Needs Improvement	Acceptable	Proficient	Outstanding

I don't know or NA

4. Data documentation and organization

Skills may include:

Recognizes, documents, and resolves any apparent discrepancies, incompletions, or corruption of data sets. Utilizes metadata or other sources of documentation to facilitate an understanding of potential problems with data sets. Documents data sufficiently enough to enable the reproduction of the research results and the data by others. Tracks data provenance and clearly delineates and denotes versions of a data set. Employs naming conventions or other means of organizing files and materials.

Please indicate how important you believe it is for your graduate students to be knowledgeable in this competency by the time they graduate:

1	2	3	4	5
Not important	Somewhat important	Important	Very important	Essential

I don't know or NA

How would you describe your graduate students' knowledge and skills in data documentation and organization currently?

1	2	3	4	5
Deficient	Needs Improvement	Acceptable	Proficient	Outstanding

I don't know or NA

5. Metadata and Description

Skills may include:

Understands the rationale for generating metadata and proficiently annotates and describes data so they can be understood and used by self and others. Develops the ability to read and interpret metadata from external disciplinary sources. Understands the structure and purpose of standards (including controlled vocabularies, ontologies, etc.) in facilitating better sharing of data.

Please indicate how important you believe it is for your graduate students to be knowledgeable in this competency by the time they graduate:

1	2	3	4	5
Not important	Somewhat important	Important	Very important	Essential

I don't know or NA

How would you describe your graduate students' knowledge and skills in metadata currently?

1	2	3	4	5
Deficient	Needs Improvement	Acceptable	Proficient	Outstanding

I don't know or NA

6. Data lifecycle and workflows

Skills may include:

Understands that data change as they progress from a "raw" stage to their eventual depictions in publications. Develops data management plans that account for how the data set will grow and change over the course of their lifecycle. Keeps track and accounts for components of the data set, particularly

the relation of subsets or processed data to the original data sets. Creates standard operating procedures for data management and documentation.

Please indicate how important you believe it is for your graduate students to be knowledgeable in this competency by the time they graduate:

1	**2**	**3**	**4**	**5**
Not important	Somewhat important	Important	Very important	Essential

I don't know or NA

How would you describe your graduate students' knowledge and skills in data lifecycle and workflows currently?

1	**2**	**3**	**4**	**5**
Deficient	Needs Improvement	Acceptable	Proficient	Outstanding

I don't know or NA

7. Data curation and preservation

Skills may include:
Ability to distinguish which elements of a data set are likely to have future value for self and for others. Understands that curating data is a complex, often costly endeavor that is nonetheless vital to research. Recognizes that data must be prepared for their eventual curation throughout their lifecycles. Understands the basic technology, resources, and organizational components of preserving data. Articulates the potential long term value of his/her data for him/herself or others and is able to determine an appropriate preservation timeframe.

Please indicate how important you believe it is for your graduate students to be knowledgeable in this competency by the time they graduate:

1	**2**	**3**	**4**	**5**
Not important	Somewhat important	Important	Very important	Essential

I don't know or NA

How would you describe your graduate students' knowledge and skills in data curation and preservation currently?

1	**2**	**3**	**4**	**5**
Deficient	Needs Improvement	Acceptable	Proficient	Outstanding

I don't know or NA

8. Data visualization and/or representation

Skills may include:

Proficiently uses basic visualization tools of discipline. Avoids misleading or ambiguous representations when presenting data in tables, charts, diagrams, etc. Chooses the appropriate type of visualization, such as maps, graphs, animations, or videos, based on his/her understanding of the reason / purpose for visualizing or displaying data.

Please indicate how important you believe it is for your graduate students to be knowledgeable in this competency by the time they graduate:

1	2	3	4	5
Not important	Somewhat important	Important	Very important	Essential

I don't know or NA

How would you describe your graduate students' knowledge and skills in data visualization and/or representation currently?

1	2	3	4	5
Deficient	Needs Improvement	Acceptable	Proficient	Outstanding

I don't know or NA

Are there any competencies, skills or issues that we haven't covered that we should consider?