Using a Tool to Build a Culture of Assessment: The Data Framework

Ashley Hall and Starr Hoffman
University of Nevada, Las Vegas, USA

Abstract

Academic libraries capture and report vast quantities of data; thus, keeping track of what needs to be gathered, how, when, and by whom is not a simple endeavor. The University of Nevada, Las Vegas (UNLV) Libraries first developed a data framework over a decade ago to track data points that were required to be collected and reported. Since data use at the libraries has grown exponentially, a major revision and reconfiguration was necessary.

The UNLV Libraries approached the revision project systematically, carefully investigating existing and missing data and reporting deadlines and other data collection factors. Creating a data framework model was an essential step in the revision process. This model served as a guide in creating and updating what data is collected (data points and definitions), who provides the data (hierarchy of data providers), how they collect it (step-by-step procedures), how often it is reported, its purpose, and identifying who needs the data (data requesters). This model allowed library faculty and staff to more fully understand the complex process of collecting accurate data. The end result is a data framework that emphasizes the purpose of data points and ensures that data is consistently checked for use and meaning, further growing assessment—not rote data collection—as an institutional value.

Introduction: The Data Matrix

In 2007, as external and internal data collection requirements expanded, the dean of the UNLV Libraries and the head of assessment decided to document the UNLV Libraries' data collection activities. The resulting data matrix (later renamed the data framework) outlined what data was collected, where that data was reported, who requested it, how often it was collected and reported, and who was responsible for reporting it. The data matrix was a useful administrative tool and information source for the dean and the head of assessment, organizing and streamlining the data collection process. Over time, maintenance of the matrix lagged partly due to other projects taking precedence, and also because it was used by few in the organization. In 2014 a new library data analyst was hired and tasked with updating the data matrix. Soon after, a Data Matrix Advisory Group was charged with defining the challenges with the current tool, determining data needs, and mapping out the data matrix revision process.

Related to this revision process, the data analyst was tasked with helping to foster a culture of assessment within the UNLV Libraries. The assessment unit, in conjunction with the dean and other library department heads, decided that the data matrix update could build a sense of ownership for the data collection process across the libraries. The data matrix update project evolved beyond updating a document; it became a journey to create a data framework that would guide the UNLV Libraries in the management of its data.

Vision for the New Data Matrix

Rethinking the data matrix was an efficient means for the data analyst to accomplish her two primary goals: updating the existing data matrix and growing the culture of assessment at the UNLV Libraries. In this organization, there has long been a respect for data-driven decision making. However, the assessment unit primarily managed the data collection process, and thus individual departments did not always understand the purpose of and many potential uses for the data they collected. In order to foster a healthy culture of assessment, it was important to actively involve everyone in the data collection and reporting process—including those who collect data (data providers), those who supervise data providers, and decision makers.

In order to encourage a sense of data ownership at all library levels, the newly formed Data Matrix Advisory Group envisioned a new tool to replace the data matrix. This tool would need to be more intuitive and feature-rich, thus encouraging consistent use. This consistent use and reliance upon

the tool would provide an incentive for keeping it updated.

Evaluating the Original Data Matrix

At the beginning of the update project, the advisory group identified challenges with the data matrix. First, staff thought of the data matrix as a tool that collected and/or reported data, rather than a manual that explained the data collection process. Second, despite the data matrix's list of data points gathered, staff turnover left many faculty and staff confused about what data was collected, how it was collected, when to do so, and why. The data matrix was also outdated, listing data points that were no longer gathered, or for which the metrics or collection procedures had changed. Finally, departmental-level data points (used for internal department purposes) were omitted because of the matrix's original role as an administrative tool. Thus, the data matrix was incomplete as a record of the institutional memory of data gathering. It would need to be expanded to fulfill its new purpose of growing the culture of assessment within the libraries.

A related issue with the data matrix, after this new vision for the tool was developed, was its name. The tool was originally named the data matrix because it was presented as a matrix (information arranged in rows and columns). This concept no longer applied to a tool that the libraries would use to map out data collection and reporting, to train new staff, and to use as a guide for procedural work to ensure the consistency of data collection. The new name selected was the data framework, reflecting that this tool would act as a foundational supporting structure for the organization's data collection and reporting process.

Finally, the data framework's original spreadsheet format was not conducive to its new role as a training and reference tool. Challenges associated with navigating the original framework included difficulty producing a list of data points for which a specific person was responsible. This was due, in part, to the spreadsheet's limited filtering capabilities. Thus, the libraries needed to select a new format for this tool.

Revision Process

Once these challenges were identified, updating the data framework began with a series of meetings between the assessment unit and each library department. After the advisory group outlined an initial plan and schedule, the data analyst drove these exploratory meetings through a series of prompts and questions, including: what data does your department currently collect, for what purpose is that data collected (how is it used), what data would your department like to collect (but currently is not), how do you feel about the data collection process as it stands, and how can the assessment unit help you use data to more effectively tell your departmental story? The data analyst also encouraged an exploration of how data could be used not only for mandatory external reports but also for internal decision making and improvements.

Based on information collected in these meetings, a rough plan for the update project was laid out which included:
1. describing the purpose and intent of the data framework to staff,
2. identifying missing or outdated data points within the current framework,
3. identifying problems with the current data framework via staff input (and suggesting improvements),
4. developing a model to update the new data framework,
5. designing and developing the new data framework interface,
6. training on the use of the new tool, and
7. sharing the tool via an easily accessible platform.

Describing Purpose. Describing the purpose of the data framework was an essential step. The assessment unit communicated its vision of maintaining data consistency and accuracy, preserving institutional memory of data gathering, and ensuring that all data is collected for a purpose. As a result, department heads gained enthusiasm and a sense of ownership for the update project.

Missing or Outdated Data. Some missing data points were easy to identify, such as those required by ACRL (Association of College and Research Libraries) or NCES' IPEDS (the National Center for Education Statistics' Integrated Postsecondary Education Data System). Other missing data points, including data collected by departments for their internal use (not centrally reported to the assessment unit) and data that was not collected at all (but could be), were more difficult to organize. A series of meetings with each department was required to identify: (1) what is collected now, (2) what should be collected but is not, and (3) what the organization would like to collect (but is not currently feasible).

This phase of the revision process was the most effective in fostering a culture of assessment. The assessment unit was able to define and describe not only the framework, but also the many possible uses of the data collected throughout the organization. Conversations with data providers led to a better understanding both of how their data was currently used by the broader organization, as well as the many potential uses of the data in their own work, including annual reports, sharing project accomplishments with the community, and telling their story. This led to excitement about the many possibilities of their data, transforming data collection from a mandatory activity to a meaningful and mutually beneficial practice.

The Data Framework Model. While considerable literature and examples exist for the research data lifecycle, few examples were available for how organizations arrive at a specific piece of data (what the assessment unit defined as a "data point"). A model was needed to understand how data is generated across the organization. The UNLV Libraries created a data framework model that outlined elements related to data collection (Figure 1).

UNLV Libraries Data Framework Model
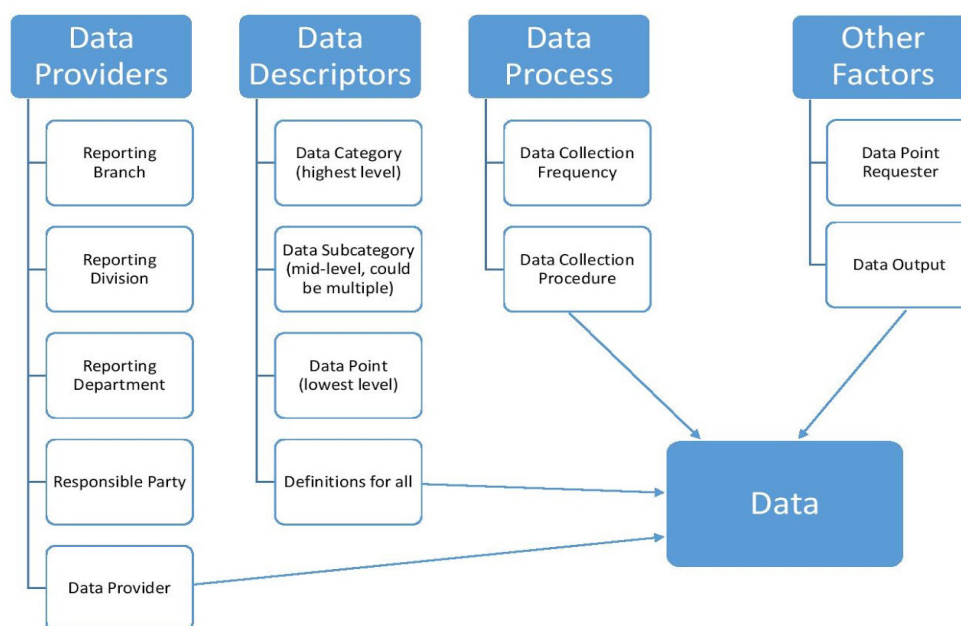
In this model, the UNLV Libraries outline four important considerations (or factors) that had to be considered for each piece of data collected: data providers, data descriptors, data process, and other factors. As outlined in Figure 1, each factor includes additional elements that help clarify what is essential to data collection. Definitions for the factors and elements appear below.

Data Providers: This factor describes the person who reports a data point, and all elements related to them, including: the reporting branch (physical library location), reporting division (the highest level in the libraries' organizational hierarchy), reporting department (the next level in the organization), responsible party (the position ultimately responsible for ensuring that data points in their area are recorded—this is usually the supervisor of

the data provider), and the data provider (the person responsible for reporting specific data points).

Data Descriptors: This factor describes the various categories that the data point belongs to, as well as detailed definitions of each. The specific elements include: data category (this is the highest level and indicates the kind of data—for instance, collections, expenditures, etc.), data subcategory (further separates the broad data category; each data point could have multiple subcategories, for instance: collections > digital and electronic collections (subcategory 1) > e-books (subcategory 2)), data point (this describes the data that is collected; for instance, in the previous example of e-books, a data point might be the count of e-books), and definitions (definitions are provided not only for each data point but also for each category and subcategory).

Data Process: this describes the act of collecting data, including data collection frequency (how often the data is collected), and data collection procedure (describes the reports or queries or other collection methods used to obtain the data).

Other factors include data point requester (the person or entity requesting the data—may be an external agency or an internal stakeholder) and data output (a specific report or publication using that data, such as the ACRL Academic Library Trends and Statistics Survey or a departmental report). This factor could be expanded to include additional elements as needed.

Design and Development. Designing and developing the data framework consisted of several draft versions that had to be vetted. The goal was to design a simple and clear interface, as the tool needed to be intuitive to encourage use. The assessment unit decided to store the descriptive elements of the framework in an Excel spreadsheet and to display that information in a Tableau-driven user interface (data visualization software). The Excel back-end consists of over 700 rows and over a dozen columns of descriptive elements, which is difficult for users to navigate. Separating the actual framework information from the user interface ensured that the framework elements remained static (and protected from unintended changes) in the back-end, while users only interacted with the front-end Tableau interface.

The end result is a Tableau interface that displays the basic framework elements in a dashboard. The main body of the dashboard only shows data categories and data points, while descriptive information, such as division, data providers, data requester and department (among others) is presented via small dropdown filters. The expanded data definitions and data collection procedures had to be displayed to users simply, rather than cluttering the framework view with an overwhelming amount of information. To accomplish this, the definitions and procedures were placed on a separate dashboard, accessed via the data points (through hyperlinks). To read definitions or procedures, a user need only click on a data point to be taken to a definitions dashboard that displays only the definitions and procedures of the data point they clicked on. Due to this change, the framework is a streamlined interface and a much more usable tool, as it allows users to customize their view via filters and definitions, to match their specific needs.

Sharing and Training. A beta version of the data framework tool was shared with the libraries via a presentation and a downloadable file that allowed staff to test out the design. The draft was considered a success, as most staff members were able to intuitively navigate the tool without significant problems.

Next Steps

Now that the data framework is nearly complete and the beta release is available to library faculty and staff, the next steps include expanding staff training. The data framework is accessible to staff through two methods. First, those with Tableau Server accounts can log in online and use a continuously updated version of the tool. This provides fast, easy access without the hassle of downloading files or updating software. Second, everyone can download the most up-to-date version of the data framework from the internal staff website, which also provides a link to the free Tableau Reader software.

Training for faculty and staff has begun and will continue as new staff are on-boarded. The most crucial step in training has proven to be defining the tool—clarifying that it is a data dictionary, not a data collection tool. Our goal with this training is not only to promote regular use of the tool, but also to prepare staff for a shorter annual revision process so that procedures are updated regularly. Training also includes instruction on how to use the tool when

reporting data to the assessment unit or elsewhere, and emphasizes its importance for preserving institutional memory about the data that we collect. The data framework is a crucial tool for training new faculty and staff on data collection procedures, and for ensuring that when staff retire or move on, that their knowledge is preserved.

End Result

The revised data framework enables the UNLV Libraries staff to provide clean, accurate, and consistent data. The content and format of the framework allows staff to deepen their understanding of the data they provide, creating a sense of staff ownership for data collection. Illustrating data use throughout the organization (from the internal departmental level, to administrative needs, to external reporting) contextualizes data collection and helps foster a culture of assessment. The expanded data framework emphasizes the purpose of data points and ensures that data is consistently checked for use and meaning, further growing assessment—not rote data collection—as an institutional value.

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