Report on August 2019 Meeting, Visualizing the Future
Ann Arbor, MI | August 7 to 9, 2019

Project Director

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Introduction

This report provides an overview of the *Visualizing the Future Symposia: A National Forum on Data Visualization in Libraries* in-person meeting that was held in Ann Arbor, Michigan from August 7 to 9, 2019.

The *Visualizing the Future Symposia* is an IMLS National Forum Grant focused on developing a community of praxis focused on data visualization literacy-based instruction for library and information professionals. In addition, the grant aims to set a research agenda that will work across institutions in order to advocate for a critical approach to understanding data visualization as both a research product and form of expression. One of our first tasks was selecting a cohort of fellows that would conduct research into areas of visualization guided by their institutional settings and interests. Leading up to the August meeting, our cohort attended four virtual meetings, in which we began to set the agenda for the meeting as well as developed and workshopped their research proposals.

The meeting brought together our cohort of 13 participants (or fellows) and the three primary organizers for three days of presentations, discussions, and activities. The stated goal for this meeting was to develop a shared vision for the challenges of supporting and developing instruction on visualization and to begin planning for future deliverables, including instruction modules.

Participants

Our 13 participants, representing 11 individual or pair research projects, were selected based on the potential of the project to address a critical topic in visualization instruction and the likelihood that the work would be relevant to a variety of libraries and institutions. The cohort of participants represents a wide range of institutions, including liberal arts colleges, state universities, private universities, a public library, and a campus empirical reasoning center outside of the library.

Negeen Aghassibake
Data Visualization Librarian
University of Washington Health Sciences Library

Delores Carlito
Information Literacy Coordinator & Liaison to English
University of Alabama at Birmingham

David Christensen
Data Analysis Librarian
The Seattle Public Library

Ryan Clement
Data Services Librarian
Middlebury College

Sally Gore
Manager of Research and Scholarly Communication Services
University of Massachusetts Medical School

Tess Grynoch
Research Data and Scholarly Communications Librarian
*Lamar Soutter Library,
University of Massachusetts Medical School*

Jo Klein
Geospatial/Data Visualization Librarian
UNC Greensboro University Libraries

Dorothy Ogdon
Emerging Technologies Librarian
University of Alabama at Birmingham

Megan Ozeran
Public Services Librarian
Folsom Lake College

Alisa Rod
Associate Director, Empirical Reasoning Center
Barnard College

Zoë Wilkinson Saldaña
Social Science and Geospatial Data Librarian
Cornell University

Matthew Sisk
GIS Librarian
University of Notre Dame

Amy Sonnichsen
Digital Initiatives Librarian
Mount Saint Mary's University - Los Angeles

Planning the Meeting

The meeting was designed and facilitated by the three primary organizers: Justin Joque, Angela Zoss, and Andy Rutkowski. The meeting was developed with input from the cohort as well as the advisory board. In planning for the meeting, we looked closely at our IMLS grant proposal and ensured that the meeting would help facilitate our stated deliverables and goals. In developing the agenda for the meeting, we took advantage of our monthly virtual meetings with the cohort to begin planning and sharing of ideas. The virtual meetings also helped to develop dialogue and interpersonal communication amongst our cohort and ourselves. All cohort members were familiar with one another's research and work before the start of the meeting. In addition, a dedicated staff member, Cengiz Salman, was assigned to help facilitate travel and on-the-ground arrangements.

In thinking about the content of the meeting, we were committed to designing a meeting that was structured yet offered flexibility so that participants could easily help shape the direction and goals. Several important aspects in developing the meeting included:

- Ensuring a code of conduct was shared with participants in advance of the meeting that was transparent and clear
- Providing multiple ways for participants to address any concerns that they might have during the meeting
- Ample time and opportunities for self-reflection
- Dedicated roles for facilitating, timekeeping, and notetaking
- Activities that provided a space for critical reflection and engagement
- Organizing, sharing, and utilizing Google documents for interactively sharing agendas and notes

Schedule and Activities

Prior to the meeting, fellows were asked to provide a one- to two-page position statement summarizing the research they had pursued leading up to the in-person meeting. All fellows read the position statements in order to have some common knowledge of each other's work at the start of the meeting.

Day one was spent establishing ground rules for the meeting (i.e., distributing and discussing a code of conduct and discussion guidelines) and presenting the research fellows had already completed. Each participant (or group in the case of the two projects with two fellows) gave a short presentation that was open to the public (mostly librarians at the University of Michigan). Including the fellows, we had 20 to 30 individuals in the audience. Following the presentations, we asked the fellows to attempt to draw out key themes that spanned across the research projects. These were then arranged into a network visualization in order to explicate connections that could inform our planning for deliverables.
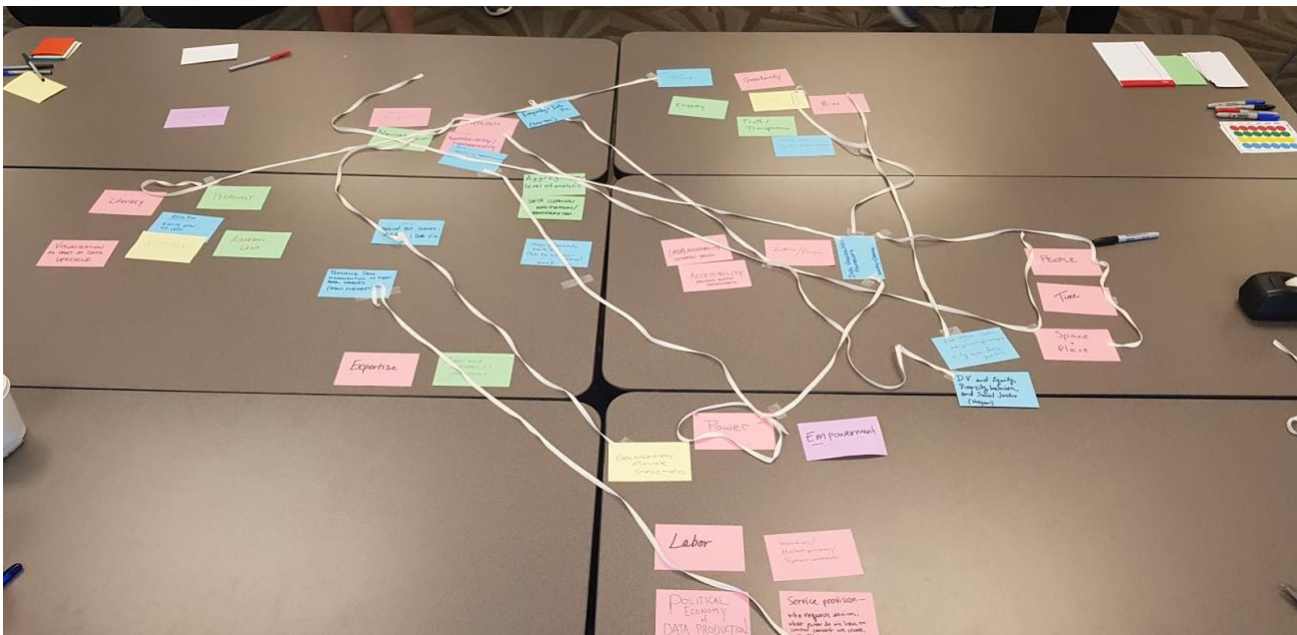
Figure 1: Network visualization of lightning talk themes.

On day two we brainstormed planned deliverables (see section below). Small groups divided by deliverable mapped the themes from the previous day onto the deliverable and drafted charges for the group that would ultimately be responsible for each deliverable. We then divided into groups that would ultimately put together each deliverable over the coming year and began planning workflows and deadlines. Each group was tasked with creating some kind of visual representation of their work. The day concluded with a guest talk by Lisa Nakamura on virtual reality, empathy and ethics, followed by a group dinner.

Day three was only a morning session, which was used for groups to continue planning their deliverable work and to wrap up the meeting, including making plans for next year's meeting and location. Following day three, participants were encouraged to create a personal visualization that covered some aspect of their experience at the meeting. Personal visualizations shared later ranged from visualizations that summarized the content of the discussions to visualizations of the types of beverages consumed or the number of times a participant used the stairs or elevators while changing locations.

Reflection on Discussions

While we had a well-defined structure for the discussions throughout the meeting, the content (such as what the deliverables would be and what format they would take) was largely left open so that we could integrate participants' ideas in real time. Because of this initial openness, it took a little bit of time for everyone to figure out exactly where the overall project was going, but everyone did an amazing job working together. By the middle of the second day, the project was brought into focus, and we were able to split up deliverables and begin planning for work during the year.

Proposed Deliverables

On day two, building off the lightning talks and reflections on day one, the organizers and fellows engaged in a full-group discussion to develop a list of desired deliverables for the grant. The initial brainstorm was unstructured and allowed participants to explore a variety of possibilities that might prove useful to either new or established visualization professionals in a library (or similar setting).

The full list of possible deliverables was then refined, both to combine similar or dependent ideas and also to prioritize ideas. The following list of six[1] primary deliverables was the result of the discussion:

1. Instructional Materials
2. Examples Repository
3. Materials for New Librarians
4. Website
5. Publications
6. White Paper

To allow the full group to participate in as much of the planning process as possible, we engaged in two separate small-group discussions of the deliverables. In the first discussion, participants organized themselves into small groups to discuss deliverables they found interesting but would not necessarily be interested in implementing. Thus acting as stakeholders for the deliverables, the groups created notes offering requests, suggestions, and questions for the implementation teams. In the second round of discussion, individuals organized into groups that would be in charge of guiding efforts for each deliverable for the remainder of the grant period. The second discussion period (and a third, shorter period on day three) allowed these implementation teams to review the stakeholder notes and draft a plan of action for each deliverable. Groups reported out at the end of each discussion to offer others an opportunity to provide feedback, and the notes documents also included requests for feedback on specific issues.

A summary of the goals of each deliverable follows.

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[1] Additional deliverables required by the grant or promised by grant co-PIs include: reports on the in-person meetings, hosting two in-person meetings, conference travel by participants, and regular assessments. These were excluded from discussion as they are managed by the co-PIs and described in the full grant proposal.

Instructional Materials

The discussion around instructional materials was of great importance to the meeting because of its tie to the core mission of the grant. The *Visualizing the Future* National Forum is meant to help fellows and co-PIs collaboratively develop improved approaches to teaching visualization in libraries. In the full-group brainstorm, many topics related to instruction emerged, including: incorporating fellows' work on literacy frameworks, building lesson plans or modules suitable for short interactions with learners, finding or creating a place to store and distribute materials, exploring possible overlap with Software/Data/Library Carpentries training, and developing an assessment tool for any workshops developed. Two other top-level deliverables are tightly connected to the work of the instructional materials team -- the examples repository and the materials for new librarians.
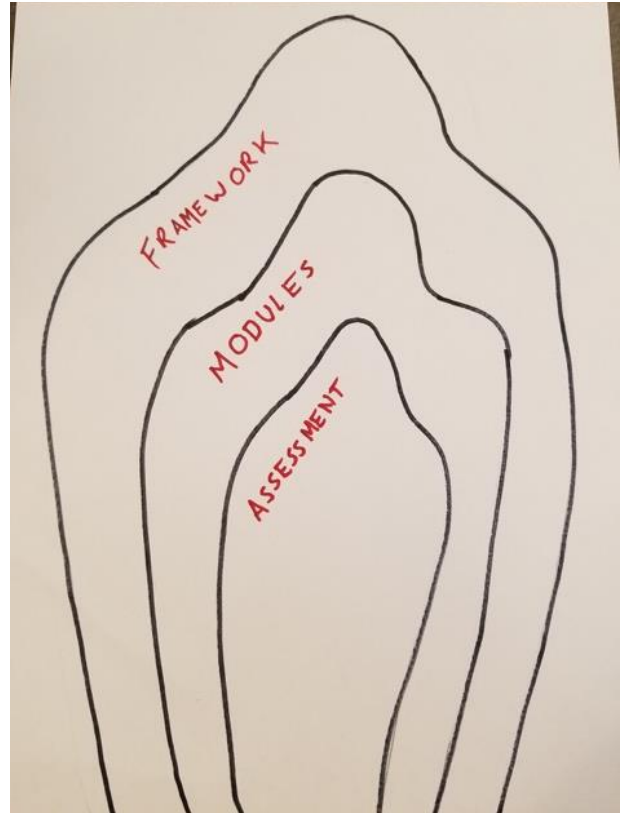
Figure 2: The Instructional Materials team drew this representation of their work.

After reviewing suggestions from the project stakeholders, the implementation team developed a set of tasks and an initial timeline, tightly connected to the work of the fellows who are building a visualization literacy framework:

- framework completed (mid-November)
- collect ideas for modules, including feedback and a priority list (now-December)
- create modules and guidance on course/curriculum development (end of January)
- create assessment (end of January)
- test modules and assessment and revise as needed (February to July)

Examples Repository

Closely related to the instructional materials deliverable was the suggestion of a repository of examples and resources useful for teaching data visualization concepts. The group remarked on the difficulty of finding both datasets and visualizations with properties that illustrate pragmatic and ethical concerns around data visualization. In addition to developing instructional content, like slide decks or recorded videos, the group suggested building a repository of teaching examples for people working on new instruction around data visualization.

The stakeholders for the examples repository expanded on this discussion by thinking through requirements in more detail. Desired features included: a robust metadata schema to assist in pedagogy-specific discovery, inclusion of both datasets and visualizations (linked to each other when appropriate), ways to highlight both positive and problematic features of the example, links between examples and existing instructional material, commenting functionality, versioning or forking for examples, connections to other similar projects (e.g., R's Tidy Tuesday project), a way to collect examples into a sequence or progression, a peer review system to help submitters nervous about sharing their work, and possibly the inclusion of publications in addition to examples to create an annotated bibliography.

As the implementation team discussed the different features, they began brainstorming possible metadata fields (image below). In addition, they remarked on the existence of visualization surveys or galleries that may be used as a resource for building a useful schema. The team developed a plan focusing on two major components of the deliverable - the metadata schema and the repository platform. Both components require prototyping and feedback from stakeholders. For the metadata schema, the team proposed an initial survey of the VTF fellows to learn more about discovery needs, as well as a general call to individuals in related library communities for anyone interested in metadata for visualizations. For repositories, the team proposed conducting an environmental scan for existing repositories and reviewing the repositories for schema and interface features.
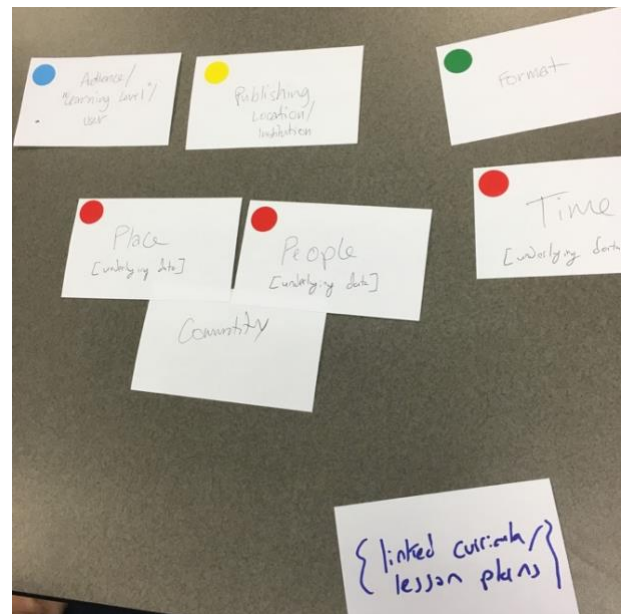

Figure 3: The Examples team used index cards to begin working on a metadata schema.

Materials for New Librarians

When brainstorming possible deliverables for the grant, participants felt strongly that it would be meaningful to develop materials targeted toward a new librarian tasked with offering services or instruction on visualization-related topics. Stakeholders for this group suggested several specific types of materials, including: reassurance for new librarians, an annotated bibliography of essential readings, a bibliography for collection development, an annotated list of training materials, a list of local and national networking opportunities, and a roadmap of what to do in the first 6, 12, etc. months of the position.

The implementation team created a visualization to think more about these possible outputs. The outputs were charted in terms of difficulty of implementation and potential impact. Each output was also represented by how long it might take to consume and its "decay time" – how rapidly the information might become dated.

As a second phase, the team then reviewed the outputs and grouped them into priority levels. The first priority level – those outputs with high impact and relatively low difficulty – includes the roadmap, the annotated bibliography, help for imposter syndrome, and curated training materials. Priority level two includes networking resources and reassurance for new librarians beyond the help for imposter syndrome. Priority level three includes the bibliography for collection development, which was rated much lower for impact, with a medium level of difficulty to produce and a high consumption time.

Since the August 2019 meeting, the team has sought feedback on the placement of the outputs and the prioritization levels. A proposed timeline for work on these components suggest devoting a month to each output, going in order of priority.
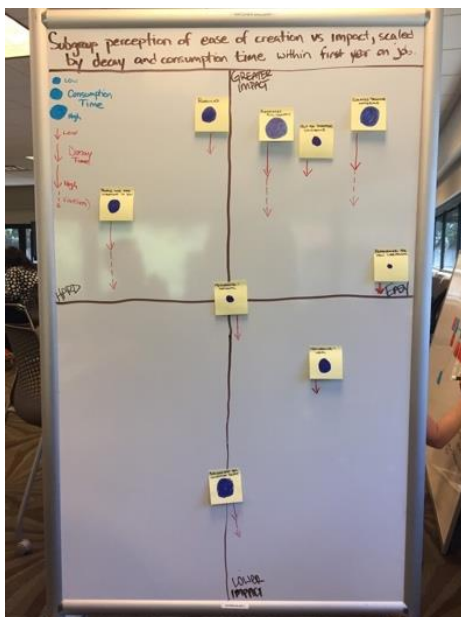

Figure 4: The team working on materials for new librarians charted possible outputs in terms of difficulty to produce, impact, consumption time, and decay time.
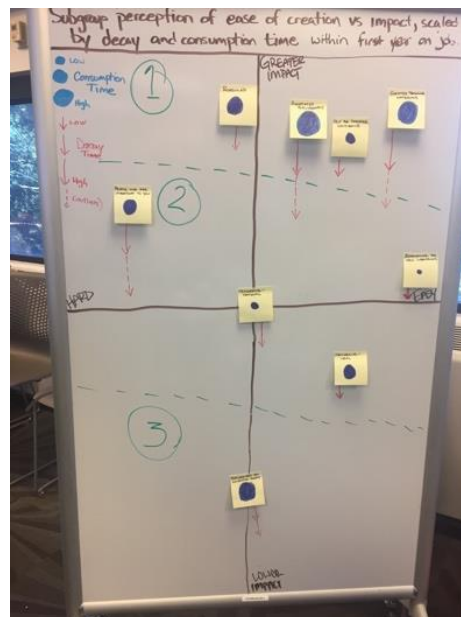

Figure 5: The team added priority levels to the charted outputs.

Website

The website team was tasked with making decisions about how our grant deliverables are stored and disseminated, including coming up with solutions for hosting, thinking through the possibility of hosting a blog, establishing consistent visual design and branding across deliverables, and managing a public-facing email list.

Other topics that came up during the planning discussions included the architecture/structure of web content, developing new content, accessibility, and sustainability. The group is actively gathering input on platform decisions and plans to target the end of June, 2020, for a web presence rollout that covers the various deliverables.
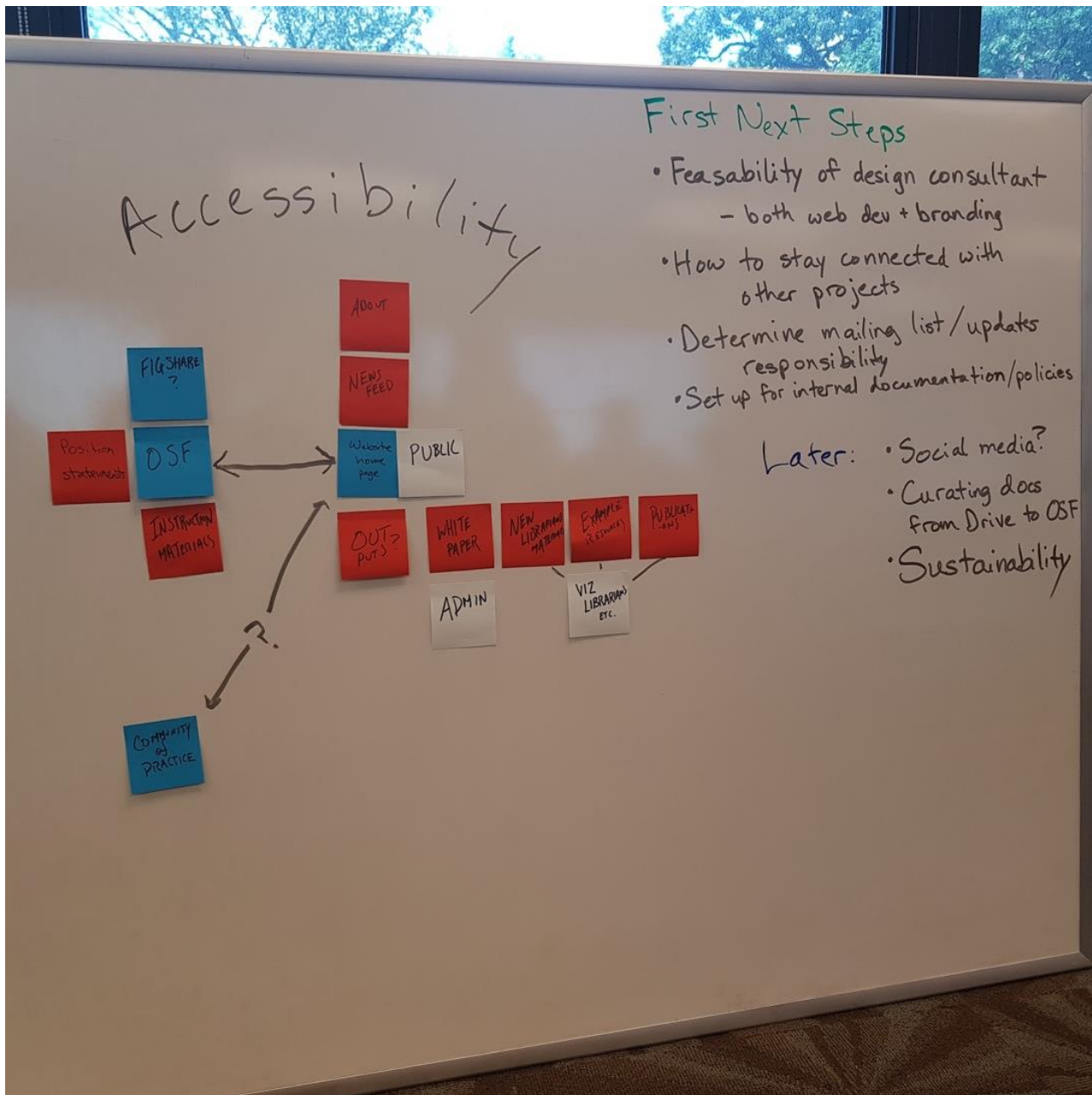
Figure 6: The Website team used diagrams and whiteboards to organize their thoughts.

Publications

The publications deliverable focuses on how grant participants can share grant work through more formal publication venues. In the group brainstorm, many specific ideas about publication venues arose. In addition, however, the discussion suggested additional publication-related outputs, like a summary of the library publication landscape and a bibliometric study of library journals.

The publications stakeholders elaborated on these ideas by isolating specific outputs -- an annotated list of places to publish, a set of boilerplate slides, a keyword list, and the creation of writing groups to support grant participant work in this area. The team also identified a series of specific publication topics:

- The state of data visualization across disciplines
- Tracking and reporting/acknowledging librarian participation in data visualization
- Publishing visualizations themselves as research products
- Advocate for metadata standards for visualization
- Bibliometric study of articles indexed with "data visualization"
- Creating/updating wikipedia pages

The publications team created a visual representation of these desired publications resources and projects, using the metaphor of a spider plant with offshoots.

A proposed timeline from the team sets milestones for developing the various resources and projects. The team also identified possible collaborations with other deliverables teams and internal dependencies.
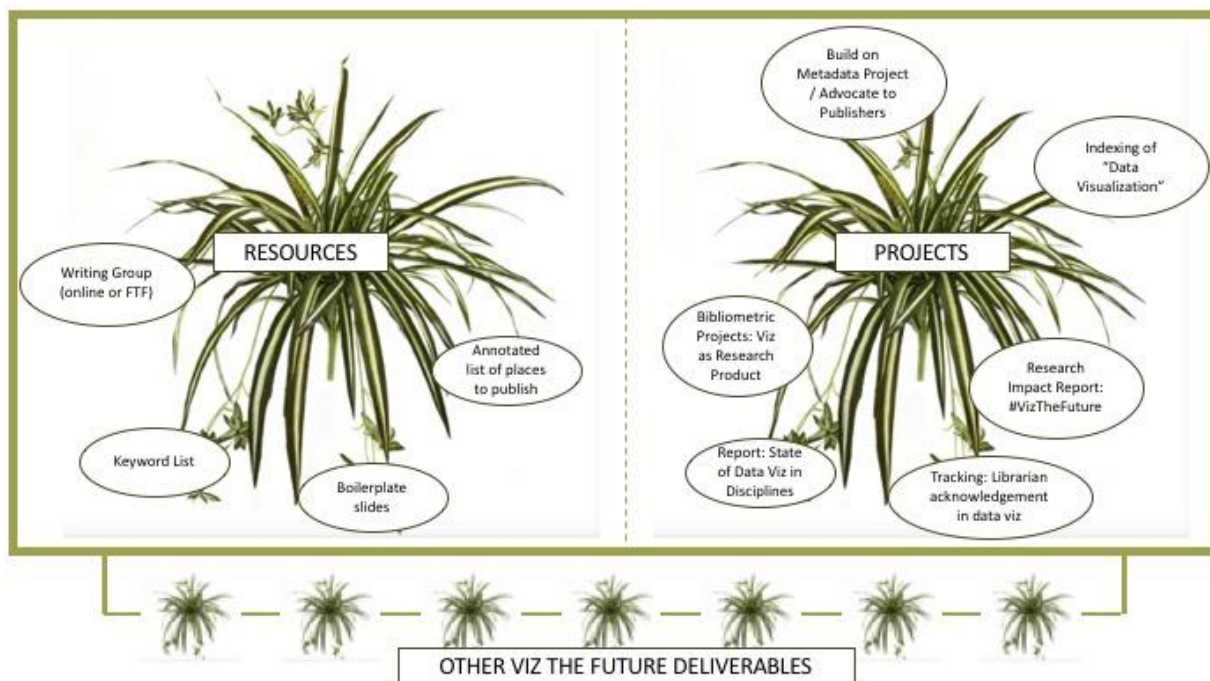

Figure 7: The publications group conceptualized their work as spider plants with offshoots.

White Paper

The "white paper" deliverable grew out of a desire to craft a larger position statement on the role of libraries in the field of visualization instruction, as well as to report on the discussions undertaken as part of this grant. During the group brainstorm, many topics emerged that seemed like a good fit for this kind of document:

- Why data vis is important to libraries
- Ethical relationship to data and representation
- Future research agenda
- Outreach/advocacy materials to help build up a community of practice
- Documentation for administrators at places considering spinning up visualization services
- Meta-environmental scan of data visualization in libraries, potentially built from individual project work

The white paper team split the topics up into those that made sense as part of the white paper and those that focused more on outreach and advocacy. Using the white paper topics as section headings, the team also brainstormed more specific themes and associated them with the paper sections. The result of that association was visualized as a network diagram. The team then assigned paper sections to different team members and built a detailed timeline for writing and revising the white paper.
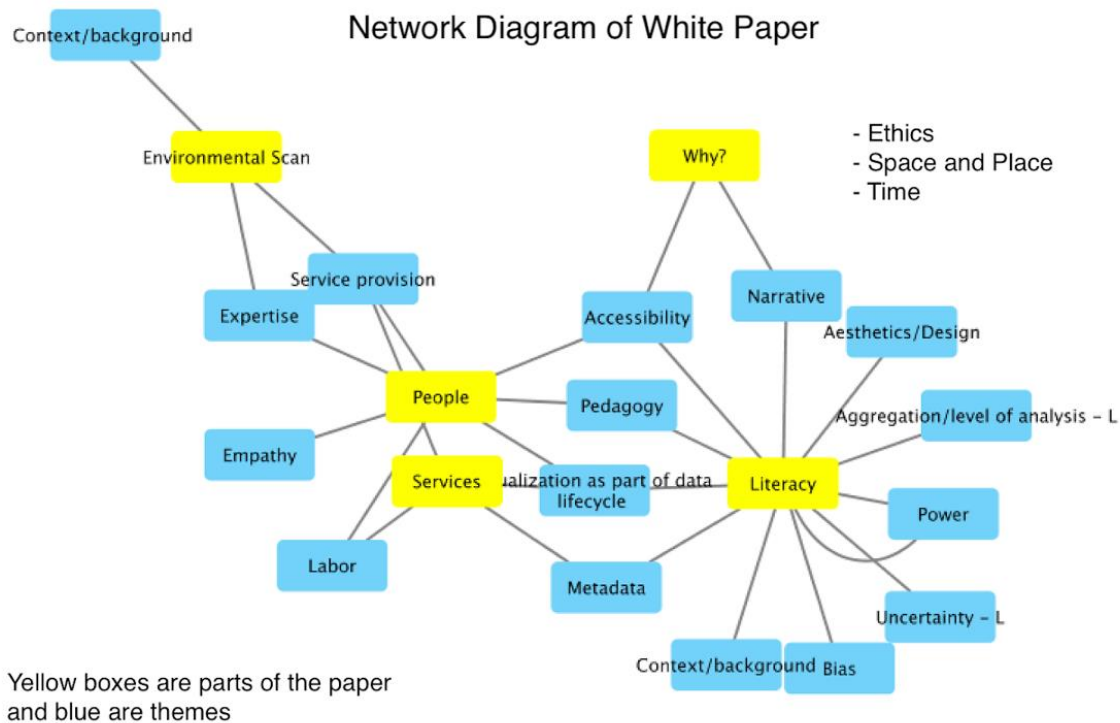

Figure 8: The whitepaper group identified paper sections and then created a network diagram to match themes to sections.

Assessment and Lessons Learned

During the final day of the meeting, the co-PIs led the group in a discussion of how the meeting went. The co-PIs also sent a follow-up survey to ensure that individuals could share feedback anonymously. Only nine of the 13 fellows were able to complete the survey, but feedback across the discussion and survey responses was consistent.

Successes

The meeting succeeded in many of its objectives. Especially strong were the travel and meeting planning components of the organization. Largely, the grant fellows felt that the meeting was structured effectively and that the meeting organization facilitated supportive and inclusive discussion. Participants also seemed to enjoy that the meeting including visualization activities.

Free text responses and discussion comments suggested that the food provided was both well selected and an important component to the meeting success. Other successes include the amount of break time included, the distance between the hotel and the primary work space, the proximity to good restaurants and places of interest in Ann Arbor, the inclusion of a guest speaker, the duration of the meeting, and the general progression of meeting topics.

One specific process that seemed to work well was the stages of discussion on grant deliverables. Starting the discussion with the full group and then allowing people to offer feedback on projects that wouldn't be their primary project choice generated many ideas and allowed participants to contribute more actively to multiple teams. For the future, this model should be considered again, but it may be necessary to reserve additional time for the final project team to work as a group and make progress in person.
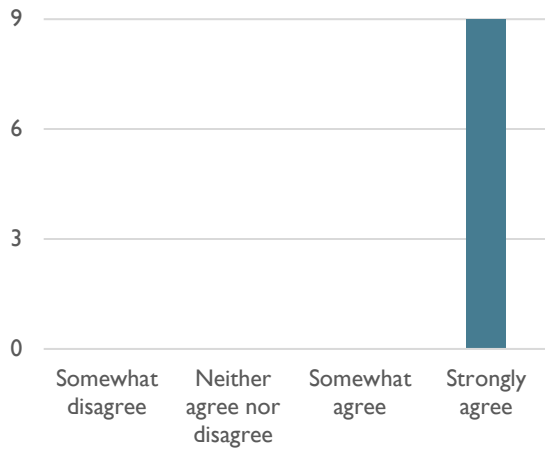
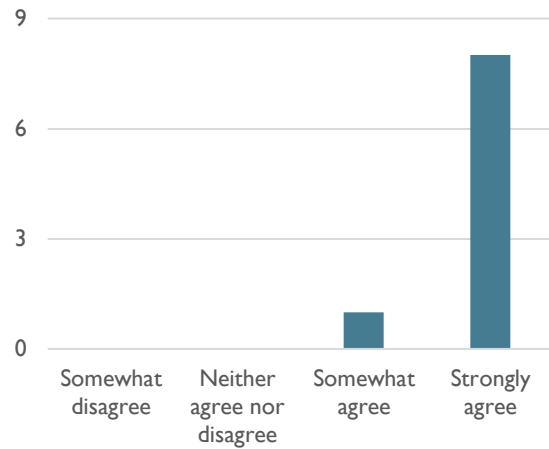I had enough information to plan my travel successfully.
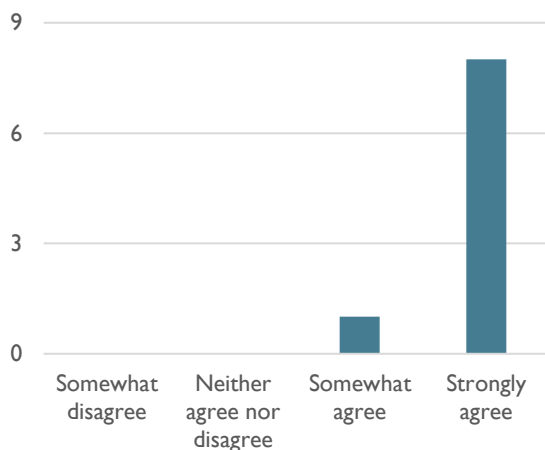
I felt that the facilitation of the meeting (e.g., time-keeping, discussion moderation) was effective.
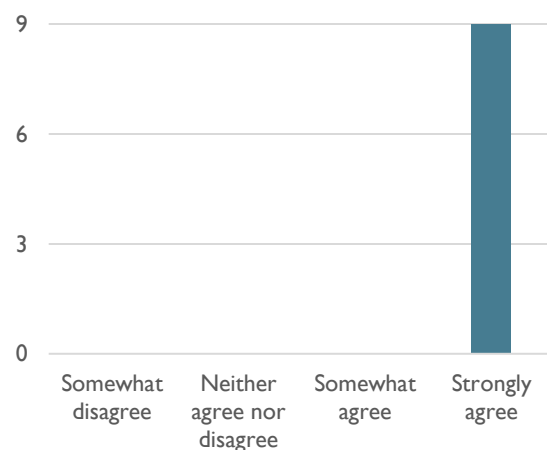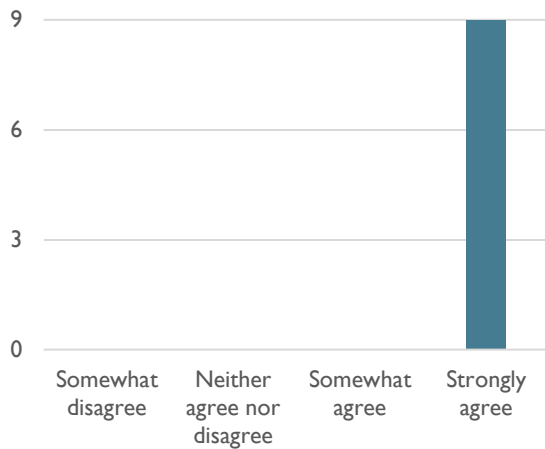
I felt that the agenda of the meeting (e.g., types of activities, time spent on activities) was effective.
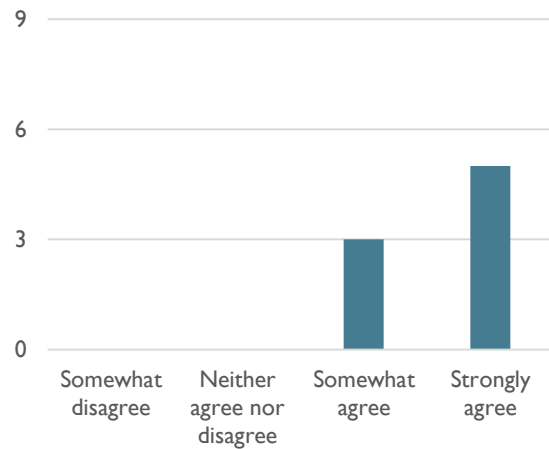

I felt that the structure provided for note-taking was effective.

The meeting was organized in a way that made me feel included and free to express myself.

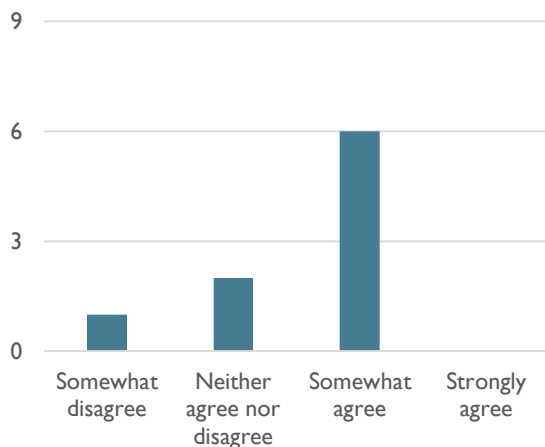**I appreciated that the meeting included visualization activities.**

Challenges

Several components of the meeting, however, were less successful. The primary issues occurred with communication between co-PIs and fellows. The fellows felt under-prepared for some of the meeting activities, including the lightning talks and the participation of members of the University of Michigan Libraries staff. As organizers, we will need to improve how we share information about activities that require preparation on the part of the participants, making sure they know what to expect of the environment and what output we would like to see from them.

The concerns about how work will proceed after the meeting relate to both the number and diversity of ideas generated by both grant organizers and fellows. The energy of the group during the meeting was truly remarkable, but following through on the ideas presented will be a challenge. As we discovered in our assessment of the recruitment process, efforts to block out time for work on this project have not been universally successful. (See responses to the question, "Obtaining the letter of support facilitated my ability to reserve time for this project.") As one of the survey participants succinctly stated, "The goals are very lofty and we are spread pretty thin."

A related area of general concern is the connections or transitions between individual projects and group deliverables. Most fellows arrived at the meeting in August without having had enough time to complete their individual project, and the meeting generated additional work for everyone. By the time participants returned to their home institution, their time was largely devoted to their primary job responsibilities and preparing for the fall semester, making it difficult to capitalize on the momentum of the meeting. A stronger understanding of how much effort is expected on the various project components would have been useful, but this would likely require active collaboration with fellows to settle on a commitment that is realistic but sufficient to make progress on both individual and group objectives.

Other problems include the provision of physical materials and plans for the future. Concerns about the physical materials provided likely refer to the need for microphones for speakers, power strips for laptops, and additional white boards or large pieces of paper. Finally, feedback confirmed that our day one connections and themes (network visualization) activity was not especially successful for identifying commonalities across projects and was not considered a great use of time.
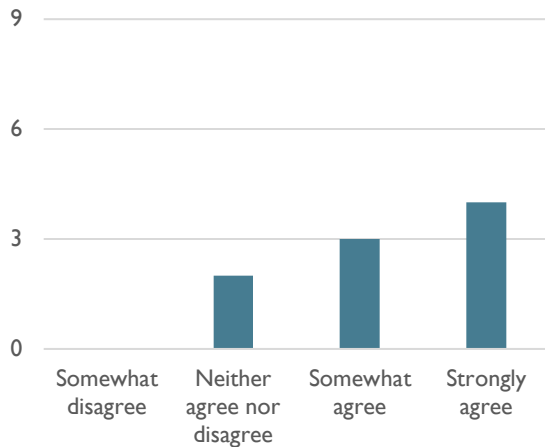
I had enough information to plan my contributions to the meeting successfully (e.g., lightning talk, discussions).
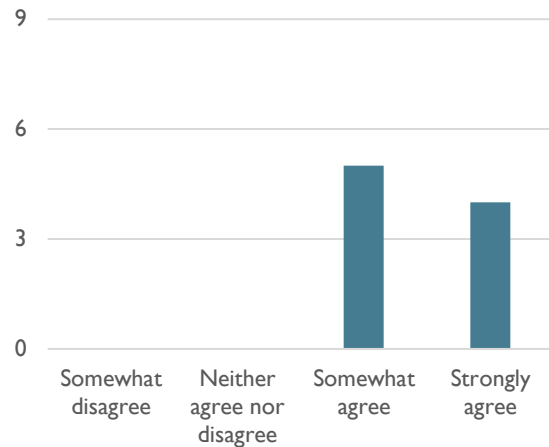
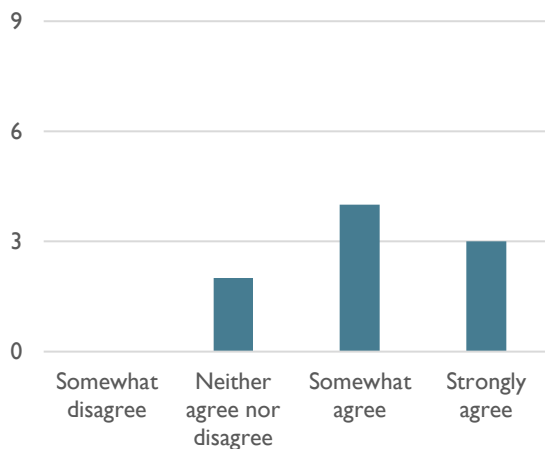I felt that the physical materials provided for the meeting were effective.
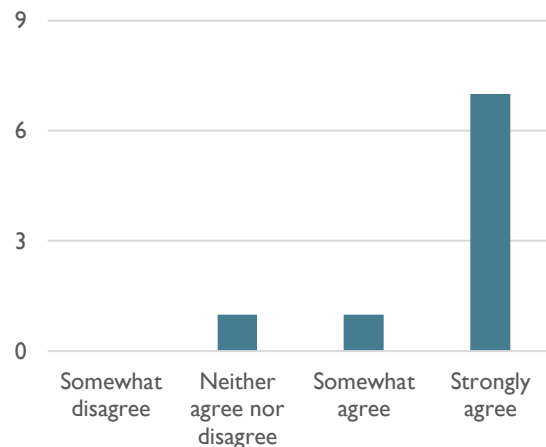
I appreciated that members of the University of Michigan Library staff were invited to a portion of the meeting.

I left the meeting with a clear understanding of the work that needs to be done going forward.

I left the meeting confident that the plans we made as a group are achievable.

Future Work

We are collectively spending this year working on the deliverables outlined above and preparing for our second and final in-person meeting in July 2020. We will also be using this year to start attending conferences and presenting on various aspects of the work that we have been doing. We intend to have all deliverables mostly completed at that point and use the final meeting to discuss, publicly share and plan for future work.