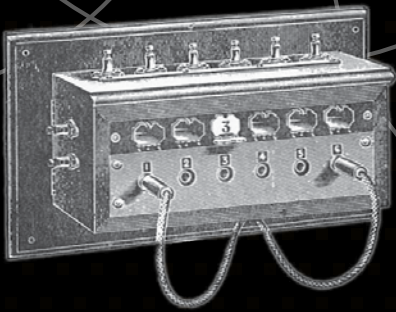




University of
Pittsburgh



Civic Switchboard

**Connecting libraries
and community
information networks**

This project was made possible in part because of IMLS grant #LG-70-17-0146-17



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Credits

The main text of the guide is authored by the Civic Switchboard project team:

Aaron Brenner, The University Library System at the University of Pittsburgh

Bob Gradeck, Western Pennsylvania Regional Data Center

Toby Greenwalt, Carnegie Library of Pittsburgh

Eleanor “Nora” Mattern, School of Computing and Information at the University of Pittsburgh

Liz Monk, Western Pennsylvania Regional Data Center

Kathy Pettit, National Neighborhood Indicators Partnership

Eleanor Tuft, Carnegie Library of Pittsburgh

This guide has been informed by the perspectives of many people, including participants in Civic Switchboard workshops and community of practice discussions. We thank everyone for their time and contributions. Case studies include material authored by the featured parties; specific attribution is included with each case study text.

Guide design and layout: Karen Sheets de Gracia

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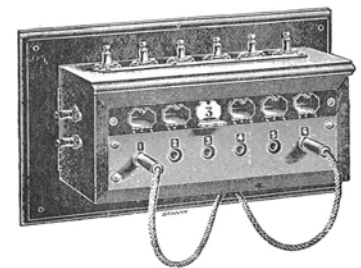
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Introduction

Welcome to the Civic Switchboard Guide, a living document designed to help libraries become more engaged in their local civic data ecosystems.

This work is the product of an Institute for Museum and Library Services funded project called [Civic Switchboard: Connecting Libraries and Community Information Networks](#).

We believe that strong partnerships between libraries and other local civic data intermediaries better serve data users, further democratize data, and support equitable access to information. This guide aims to support libraries and civic data intermediaries to establish and grow these partnerships. Over the project's active period, the guide has evolved as we gathered lessons about roles and relationships from civic data partners in the field.



What you'll find in this guide

This document is modular in nature, with practical guidance and case studies. It will help library workers and their data partners to:

- identify local needs and contexts for open civic data
- consider roles, practices, and governance in a regional civic data ecosystem
- find pathways for including libraries into civic partnerships
- anticipate and address common challenges encountered when helping the public apply and use open data
- measure the health and capacity of local ecosystems
- promote use of data in alignment with community-based concerns
- learn from examples of successful civic data partnerships

We organized this guide to reflect broad stages of work for libraries that are developing civic data partnerships and involvement. It begins with strategies for understanding the civic data environment in which you are working and

moves through guidance and case studies that reflect deepening engagement with civic data. However, the stages are not intended to be followed in strictly sequential steps. You may find that you'd like to begin to engage partners and begin your library's civic data work concurrent to mapping your ecosystem (as described in the "[Understanding Your Ecosystem](#)" section) or seeking out funding resources ("[Maintaining Momentum](#)" section). Rather than thinking of this guide as a checklist or chronological schedule of activities, use it as a flexible roadmap.

What you won't find in this guide

Our focus is on developing library roles and relationships around data in their communities, so we won't cover very general topics like "what is open data", nor very specific ones like "how to archive local community data sets". The good news is that many other people have created excellent guides and reports on topics like these! We'll point to many of these related resources in this guide.

Linking and URLs in this guide

While all the external links in this guide are clickable, the exact URLs to the most significant resources are written out in the Additional Resources section at the end of this guide. Links to the web are in orange, while internal links to sections within this guide are gray.



About

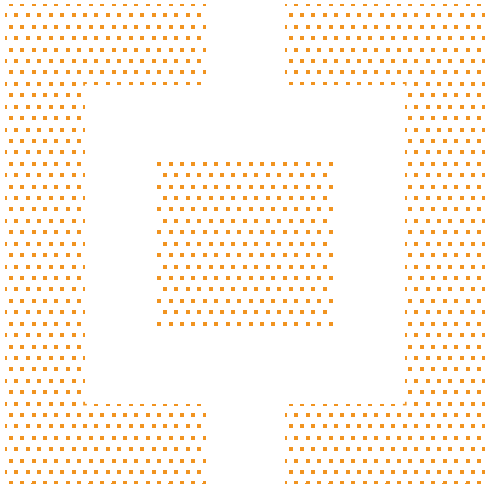
This guide has been created by the [Civic Switchboard project](#), with generous support from the Institute for Museum and Library Services (award #[LG-70-17-0146-17-1](#)).

About the Civic Switchboard project

The authors of this guide are part of regional partnership in Pittsburgh that brings together a public library system ([Carnegie Library of Pittsburgh](#)), an academic library system ([University of Pittsburgh Library System](#)), and a regional open data portal ([Western Pennsylvania Regional Data Center](#), hosted by the University of Pittsburgh Center for Social and Urban Research). We are joined by a national membership organization of non-library civic data intermediaries, the [National Neighborhood Indicators Partnership](#), coordinated by the [Urban Institute](#). The team members include Aaron Brenner (PI), Bob Gradeck, Toby Greenwalt, Julia Marden (from July 2019), Eleanor Mattern, Liz Monk (Project Manager), Kathy Pettit, Eleanor Tutt (until October 2018).

In Pittsburgh, our local situation has been unique in that both public and academic librarians work actively in close collaboration with other civic data publishers and users. Our librarians regularly partner with local governments, non-library intermediaries, civic organizations, student organizations, and data users in a variety of ways. They play a number of roles, including helping people discover civic information, building data literacy and technical skills, providing technical assistance in data management and documentation, creating feedback mechanisms to publishers, convening and hosting events, and connecting data users. Our experience shows that libraries and librarians should act as data intermediaries and play key roles in the continuing development of civic open data. Their expertise provides insights on a wide range of issues that affect both data publishers and users.

Many of our colleagues elsewhere, including librarians and other civic data intermediaries, have asked us how they can develop similar relationships and roles for librarians in their home communities. This guide is developed in response to this interest and expression of need.



Context and Concepts

Maybe you have come to this guide thinking “this sounds interesting . . .”, while at the same time wondering “what exactly are they talking about?” That’s a totally reasonable question! The next few pages give you a basic orientation to the concepts and landscape that underlie the more specific content in the rest of this guide. Read on!

An incredibly condensed look at the development of open civic data in the United States

Civic data is nothing new in the U.S. Since the founding of the nation, the decennial census collected data about people and communities, and local governments kept track of property ownership and other important information. Governments made some paper-based administrative records accessible, but being able to see the documents may have required a visit to the county courthouse or city hall. Over time, governments have digitized many of these records and an increasing number of datasets are now born-digital, enabling them to be easily replicated and accessed far from the place where they were created.

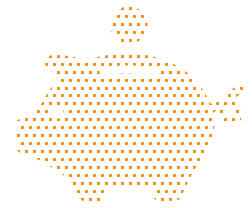
Beginning in the 1980s and 1990s people in some communities began to assemble digital federal and administrative data into community indicators systems. Building these systems required the development of relationships between academic institutions, public-sector agencies, and community organizations. Democratizing this data, the creators of these systems worked directly with residents and community organizations to equip them with information in order to have a say in the decisions being made about their communities. A number of these organizations came together in 1996 to form the [National Neighborhood Indicators Partnership \(NNIP\)](#), a national peer network of community information intermediaries.

A decade after the founding of NNIP, a movement to make public information freely and openly-accessible as a public resource began to build. This concept is rooted in earlier efforts to make scientific research and software openly and freely available to all, along with initiatives from groups like the [Sunlight Foundation](#) to make government more accountable and transparent to citizens. Some early leaders of these open data movements have roots in these open government, open science and open source software communities. Soon after early leaders of the movement outlined a set of [open data principles](#), the [U.S. Federal Government](#), and several local governments issued directives to release public information as open data, established open data portals, and published data.

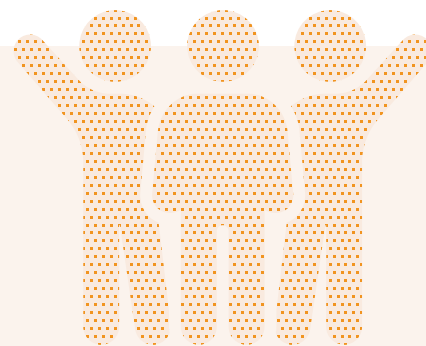
Civic-minded technologists were among the earliest users of open government data. Events like hackathons and hack nights were organized to encourage skilled volunteers to build digital tools and applications using available data. Groups of volunteers began to form organizations dedicated to “civic hacking” with encouragement of organizations like Code for America.

While there were many positive aspects to these early efforts, some felt that much of the data published was not terribly relevant, that development processes for digital tools were not inclusive of members of frequently-excluded communities, and that the tools developed did not have a long shelf-life.

As a result of these criticisms, more-recent open data efforts are beginning to adopt a demand-based perspective. The focus of these efforts is less oriented to output measures, such as number of datasets published or the number of tools developed, and more targeted to the impact data and technology can have in communities. Government agencies are now investing in efforts to improve data quality and use information as an organizational and community asset. There’s also a much greater awareness that digital tools must be built in collaboration with users, organizations, and institutions in the civic data ecosystem. In this way, contemporary open data initiatives are beginning to more-closely resemble the community indicators initiatives that began to take shape 25 years ago; this return to a strong community and user focus means that libraries are perfect partners to make key contributions in civic open data ecosystems.



Government agencies are now investing in efforts to improve data quality and use information as an organizational and community asset.



Ways of thinking about data

We said in our introduction that our guide is not a primer on Open Data. That's true, and we have compiled other recommended resources in this guide that do a good job covering the nitty-gritty of Open Data. Here we offer just a little information about some terms that we think they represent slightly different concepts.

Open data

Open Data generally describes data that are free to access, use, and reuse by anybody for any purpose; are available in a usable, often machine-readable format; and which can be modified and shared by others. The great accessibility and permissive use of open data make it very appealing. Substantial investments are often needed to prepare, describe, and reliably publish such data. Openness can conflict with privacy and ethical issues related to certain types of data.

Although we may assume that public data are electronic and web-accessible, much of it is not. There's plenty of data on paper, such as data published in print reports. And, in many cases when these kinds of publications are available digitally, the data is still contained in a table inside a PDF or may only be distributed on physical media such as DVD or CD. From a practical point of view, this is not truly web-accessible open data and may have limited usefulness to the public.

Open data as a concept is not associated with any one domain. However, two of the most prominent categories of open data are 1) research and science, and 2) government and civic data.

Civic Data

So, let's move on to *Civic Data*, which is the focus of the Civic Switchboard project. We like the term civic data because it is information that describes our communities. Civic data can include not only data produced by governmental organizations, but also non-profits, civic institutions (like libraries!), and other community-based organizations. Data created by or about individuals are also in scope; such data can powerfully represent alternative perspectives and stories. Sometimes law or policy requires that certain civic data be open to the public. However, not all civic data is open data. Sometimes that's because of the need to legitimately protect privacy or confidential information. Other times, data owners don't have sufficient resources required to prepare, describe, and publish the data in a usable format.

Defining a data intermediary

If you work in a library, much of what civic data intermediaries do will feel incredibly familiar to you! At their root, these are organizations or individuals who help people find, use, and apply public information. More specifically, The National Neighborhood Indicators Partnership has identified three main types of intermediary activities in a 2016 report by [Hendley, Cowan, Kingsley, and Pettit](#).

1. Assemble, transform, and maintain data.

This may seem, at first, just like the traditional collecting function of libraries. But with civic data, intermediaries often do some things a bit differently in ways that are helpful to know. While some data comes from publicly-accessible data sources such as the U.S. Census, intermediaries like Cleveland's Case Western Reserve University also often work with “raw” administrative data generated by business processes within state and local governments. Data like these are not always open, and not always accessible to a general audience in its original form, so data intermediaries often work to combine data from multiple sources, or otherwise transform data. In Denver, the Shift Research Lab has built Community Facts, an interactive website enabling users to view community indicators for neighborhoods across the region.

2. Disseminate information and apply the data to achieve impact.

A very basic level of disseminating information is to publish it online. You can get a snapshot of civic open data publishing in the United States through the [US City Open Data Census website](#) [*now deprecated*], run by the Sunlight Foundation, Code for America, and Open Knowledge International. Much of this data is available through city-based portals. But the work of data intermediaries often goes further, to make the data more applicable to specific users. Many publish paper reports with relevant community data. Some intermediaries build web-based tools that enable users to query and download data, create interactive maps and generate data visualizations. Intermediaries also collaborate with local partners to use data to inform conversations, influence policy, and improve communities. Partners of data intermediaries often include local government staff and elected officials, community and nonprofit organizations, community activists, journalists, and university researchers. The [Children's Trust](#), the NNIP Partner in Miami, holds community engagement sessions with parents, teachers, and other community stakeholders to share the neighborhood-level results of the kindergarten readiness tests. Together, they explore root causes, implications, and potential responses to better prepare their kids for school.

3. Use data to strengthen civic capacity and governance.

Data intermediaries help build a community's capacity to use civic information. Through training and technical assistance, intermediaries can help local stakeholders apply data to their work—aligning with information literacy efforts in libraries. The [Baltimore Neighborhood Indicators Alliance](#) trains librarians at the Pratt Library to use community data so they can help residents answer questions about conditions in their own neighborhood.

FROM THE CIVIC SWITCHBOARD TOOLKIT

Talking Points: Why Libraries Should be Key Participants in their Civic Data Ecosystems

This one-sheet provides a set of talking points developed by Civic Switchboard that you can use to advocate to yourself, your colleagues, your administrators, community groups, potential partners, and funders.

↓ PDF / PNG

github.com/civic-switchboard/guide/blob/master/toolkit

Civic Switchboard

Talking Points: Why Libraries Should be Key Participants in their Civic Data Ecosystems

This one-sheet provides a set of talking points you can use to advocate to yourself, your colleagues, your administrators, community groups, potential partners, and funders. Are we missing something? Let us know.

Working with Civic Data Probably Already Aligns with Your Library Mission

- Your library probably already considers **data literacy** as increasingly important for its staff and community to cultivate.
- It is also likely to consider community engagement, specifically **working to strengthen its communities**, equally important.
- Because it's a good strategy for addressing tough problems (and because funding is often tight), collaborating with strategic partners may be a point of emphasis.
- Developing your library's role in its civic data ecosystem can address all of these goals.

Helping to Lead and Grow Your Local Community

- The local level is where the most innovative and forward-looking ideas around open data are developing. The Sunlight Foundation has written, "cities are now setting the leading examples for public data, from policy, culture, collection to engagement and reuse... they are increasingly providing best practices and learning from experimentation that federal governments should learn from and adopt."
- Libraries are community anchors, firmly connected to local communities and practices: **libraries and their workers should be helping to lead the development of their civic data ecosystems.**

You Won't Go Alone: You Can Strengthen Existing Partnerships and Build New Ones

- Cultivating a healthy local civic data ecosystem takes the **coordinated efforts of a variety of data intermediaries**; no single entity can be expected to cover all of the necessary roles alone.
- As your library works in its own ecosystem, you'll continue to learn about other players and entities. Where possible, take on roles that complement and strengthen existing capacity.
- **Partnering includes working with other libraries, too!** If you are in an academic library, explore civic data partnerships with your public library, and vice-versa.

Sharing the Value of Library Workers' Expertise and Ethics

- The act of publishing data alone does not always result in community impact. Data intermediaries help the public apply and use open data to achieve impact.
- Data intermediaries build relationships among publishers, users, and other members of the ecosystem, improve data, statistical, and technological literacy, enhance data quality, provide feedback mechanisms to publishers, and build tools that enable broader data use.
- Libraries and librarians should act as core civic data intermediaries; our expertise adds value to a wide range of issues that affect both data publishers and users. As Shannon Mattern, Associate Professor at The New School, puts it:

"We must push our civic leaders to bolster their planning teams with experts in the ethical collection, organization, preservation, and dissemination of information resources. Urban data programs should be counseled by professionals who understand the complex issues of equity, privacy, and security. Libraries on the planning commission! Archivists in the police academy!... They are guardians of a critical, contextual approach to information, which is a public resource every bit as necessary as streets and sewer lines."

Mattern, S. (2016). Public to Formations. *Plaza Journal*. <https://plj.org/10.22209/161113>



This resource was created in 2019 by the Civic Switchboard Project Team. <https://civic-switchboard.github.io> CC-BY 4.0

Where do libraries fit in?

For a long time, libraries have helped their communities discover and understand civic data. Libraries have also historically played roles when such data could be collected and preserved. But recent developments around local civic open data have presented an opportunity—we would say a need—for library workers to be more directly involved in the entire distributed ecosystem of open data publication, use, and stewardship. This will take us beyond our library buildings, and involve relationships with people who may not consider themselves library users. This is a good thing!

One enduring strength of libraries is that they are local community anchors. Although a lot of civic open data exists, they vary in—just for starters—how it is published, who is supported to use it, and how it is stewarded. There's not one way to do it, and the form of a strong civic open data ecosystem will necessarily differ from place to place. This is a fantastic opportunity—it's at the local level that the most innovative and forward-looking ideas around open data are developing. Libraries are firmly connected to local communities; libraries and their workers should be helping to lead the development of their own civic data ecosystems.

Moreover, the act of publishing data alone is not likely to result in community impact. Data intermediaries are entities that help the public to apply and use data to achieve impact by building relationships among publishers, users, and other members of the ecosystem; improving data, statistical, and technological literacy; enhancing data quality; providing feedback mechanisms to publishers; and building tools that enable broader data use. Sound familiar? Libraries and librarians should act as data intermediaries; their expertise adds value to a wide range of issues that affect both data publishers and users.

But a key point for libraries is that this work is not conducted alone. Cultivating a healthy local civic data ecosystem depends upon the coordinated efforts of a variety of data intermediaries. No single entity can effectively cover all the necessary roles. As your library works in its own ecosystem, it can learn about other players and entities—our project provides guidance on this ecosystem mapping—and take roles that complement and strengthen existing capacity. This process has many benefits for your community (especially if you can make the process participatory and inclusive) as well as your institution.

Getting involved with civic data probably already aligns with your library mission. Your library probably already considers data literacy as increasingly important for its staff and community to cultivate. It is also likely to consider community engagement, specifically working to strengthen its communities, equally important. Because it's a good strategy for addressing tough problems (and because funding is often tight), collaborating with strategic partners may be a point of emphasis. Developing your library's role in its civic data ecosystem can address all these goals.



Engaging Partners

We designed the Civic Switchboard project around two strong convictions:

Cultivating a healthy local civic data ecosystem depends upon the coordinated efforts of a variety of data intermediaries. In other words, no single entity can effectively cover all of the necessary roles. Cultivating and strengthening data intermediary partnerships is a core objective of this project.

Local context is important. The variety of local civic data landscapes means that no single model can be made to fit every city or region. This can be seen, for example, across the network of [National Neighborhood Indicators Partnership data intermediaries](#). Because each community's civic data ecosystem is unique, the structure of local data intermediaries take different shapes. Proposing models for library involvement in civic data at the national level involves capturing a wide variety of successful local practices.

Driven by these values, we begin our guide with a section to help you establish relationships that will lead to action.

One of the first engagements you may need to make is with your own organization, about the relevancy and value of library involvement in civic data work. We offer strategies and examples of what has been successful in other places.

Next, we encourage you to build on your ecosystem mapping to identify potential civic data partners for libraries. We give you a list of people and groups to look for, and guidance on how to talk with them about developing partnerships.

Building libraries into civic data partnerships

Libraries and other civic data intermediaries are united in the type of work that they do: they help people find, use, and apply information. Similar values, goals, and missions create fertile ground for collaboration around civic data and an obvious opportunity to work together.

We're sharing some of the factors that have helped our collaboration in Pittsburgh. Our partnership involves three organizations: the [Western Pennsylvania Regional Data Center](#) (a joint project of the City of Pittsburgh, Allegheny County, and the University of Pittsburgh that is housed at the University Center for Social and Urban Research), the [Carnegie Library of Pittsburgh](#), and the [University Library System](#) at the University of Pittsburgh. Through this collaboration, we have worked together on joint projects, organized events in the region, engaged in information sharing and brainstorming, and connected our user groups with the partner organizations.

Connecting to your library's mission

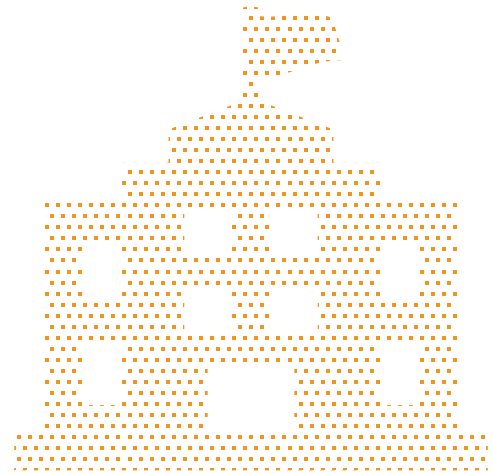
Collaborating around civic data means working across institutions. This kind of work often requires some organizational permission or, at a minimum, not getting blocked by your organization's leadership. Your library's leaders also might need to be on board if they are going to allocate resources—like your time!—to the work. If you can articulate how partnerships around civic data connect directly to your library's mission and values, you'll have a better chance of getting the buy-in and support that you need.

Every organization is a little different, and so the strategy of connecting the civic data work you want to do to your library's mission will be specific to you. Here's what it looked like for us:

Carnegie Library of Pittsburgh (CLP) recognizes data literacy is an increasingly important literacy for the staff and community to cultivate. Civic data partnerships are a core part of CLP's [Beyond Big Data](#), a multiyear initiative together with the people of Pittsburgh to activate and amplify our collective ability to use data to understand and improve our lives and communities. The importance of data work, partnerships, and civic participation are woven throughout the six areas of focus of CLP's [2018–2022 Strategic Plan](#). For example, the “Inclusive and Equitable” area of focus has a goal of promoting digital inclusion and facilitating fluency and our “Informative

and Empowering” area includes the commitment to inform the community on privacy rights and the reliability of information. All six areas emphasize the importance of community data to aid in planning and evaluation.

For the University Library System, civic data partnerships align with both the goals of the University of Pittsburgh and the aims outlined in the library’s long range plan. In the University’s strategic plan, one of the five top-level strategic goals is to strengthen our communities “from the Pitt community, to our region, and the world around us[,] by expanding engagements, enriching connections, and embracing a global perspective.” The University Library System Long Range Plan includes a commitment to growing community strength through relationships that support the stewardship and discoverability of information about Pittsburgh and the region. By working with the WPRDC and CLP, the University Library System connected with a project that has regional impact and that supports the preservation and accessibility of regional information.



Once you’ve identified connections like these, what do you do with them? We try to include an explicit big-picture mission for our civic data partnerships and an articulation of how it connects with organizational goals whenever we create communications that our internal colleagues and administrators will see. We’ve incorporated text that frames our civic data partnerships in the context of our local goals and target audiences in internal presentations about our work to colleagues, in project proposals and charters, and in letters of support.

Playing distinct roles

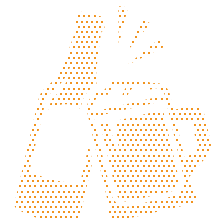
While commonalities in missions and goals provide a valuable starting point for collaboration, differences are equally critical. We believe strong teams have a variety of perspectives and skills, connect to different audiences, and access diverse resources. With our collaboration in Pittsburgh, our team brings together backgrounds and skills in digital libraries, GIS, data management, preservation, metadata creation, and community outreach. Each partner reaches a different audience and has access to different physical spaces.

We pool our resources with the common aim of helping people find, use, and apply civic information about the Pittsburgh region. The roles of the academic and the public library have been distinct in this collaboration; the Carnegie Library of Pittsburgh’s work has focused on increasing awareness of and access to WPRDC data throughout the community while simultaneously offering opportunities for data literacy learning across all age groups, and the University Library System at Pitt has worked closely with the WPRDC on metadata and data management. The roles that other public and academic libraries play in other civic data ecosystem will likely look different, depending on the individual expertise of those involved and organizational goals.

Experiencing mutual benefits

Our collaboration in Pittsburgh has allowed each organization to develop capacity and to experience individual benefits. When the University Library System began working with the WPRDC, it was at a time when library was growing its data management services and extending expertise in metadata and vocabularies into a University-facing metadata service. By working with the WPRDC, University Library System team members built capacity in these areas, while providing guidance in selection of the data portal technology, data documentation, and overall advice and guidance. Carnegie Library of Pittsburgh has leveraged WPRDC's data infrastructure to publish open Library data as a community partner. Because of the WPRDC's legal and technical infrastructure, the CLP did not have to figure out how to publish data on its own. Additionally, high profile events such as [Data Day](#), hosted by CLP in partnership with WPRDC, have been successful because they combine the perspectives, skills, and audiences of both our organizations as well as ULS and other partners within the larger civic tech and data ecosystem.

One of the core observations that informs the WPRDC work is that people don't talk to each other about how they're using data (or want to use it). Both libraries—CLP in particular—have helped to address this by providing space for users to come together to talk about civic data and how they have used data in practice. The WPRDC has a need for space to convene data users and providers and an interest in connecting users with one another; the libraries have space and core goals around facilitating access and use of information. The libraries' relationship with the WPRDC has resulted in data and GIS-focused programming for libraries' users and additional reach for the WPRDC. All of us are interested in fostering and growing our civic data community and have done so through a monthly Civic Technology and Open Data Roundtable meeting, which is used to build the capacity of and strengthen collaboration between organizations in our local civic technology and open data ecosystem.



As you seek to start or strengthen an open data community, you can't underestimate the value of low-stakes social events to help build weak ties among your peers.

Building genuine relationships

Writings on collaboration often cite trust, honest communication, and respect as key factors in effective collaborative relationships. From our experience, this is true and we've been fortunate to develop not only close working relationships, but also friendships within our team. (It also doesn't hurt that our organizations are all physically close to one another—though this might not be your circumstance.) This level of trust doesn't occur overnight, and it isn't likely to happen through formal meetings or planning sessions alone. As you seek to start or strengthen an open data community, you can't underestimate the value of low-stakes social events to help build weak ties among your peers. Events like the Data Drinks happy hour in Pittsburgh and the Data + Donuts speaker series in Los Angeles can set the stage for people to get to know one another and create future collaborations. Don't feel discouraged if your data ecosystem doesn't spring into being right away—like all good things, cultivating strong partnerships take time.

Finding partners in your ecosystem

In this section, we'll describe strategies for finding people and groups in your civic data ecosystem who could be potential partners to you and your library.

First, look for data intermediaries

Our first recommendation is that you look for partners among other data intermediaries in your ecosystem [see guide section [Defining a Data Intermediary](#)]. Why? Because data intermediaries are natural allies to libraries, perform similar and complementary roles, and usually have a broad understanding of your local community data and user needs.

Here are a set of recommendations for identifying a data intermediary in your city or region:

- **National Neighborhood Indicators Partnership:** One starting point, particularly if you are in an urban area, is to check for a local partner of the National Neighborhood Indicators Partnership (NNIP). NNIP is a collaboration between the [Urban Institute](#) and organizations focused on connecting people with community data (in the interest of full disclosure, NNIP is a partner on the project that is producing this guide). NNIP partner organizations are well-established data intermediaries that have positive and collaborative working relationships with a wide range of local institutions. Check the [list of NNIP partners](#) to see whether you have one in your area. Even if there is no NNIP partner in your immediate region, your nearest one may have recommendations on organizations in your area that are fulfilling data intermediary functions.

If there is no NNIP partner in your area, there are other offices and organizations that are likely working as an intermediary (at least in part) and might serve as initial contact points. Consider reaching out to:

- **Local government:** Your city and county governments collect and use data—all day, every day—and they may even be making it public! If you have a connection with someone who works in local government, ask for their thoughts on ways to connect. Some other offices/positions that would be likely suspects include: designated open data team members, [chief data officers](#), planning departments, Geographic Information System (GIS) staff.
- **Academic institutions** often engage with civic data and community partner groups through research, community service and coursework. If you already know somebody at a local university—engage them first and ask for their assistance connecting with their network. Potential contacts at a nearby university may be found in urban research centers, community engagement and extension offices, and schools, programs, and departments that use civic data (Information Science, Public Health, Social Work, Public Policy, and others).
- **Civic Tech groups in your region:** Many cities have a local brigade in the [Code for America network](#) or other informal community-oriented technology groups. Search for some combination of “civic,” “data,” and “tech” on Meetup or Eventbrite.

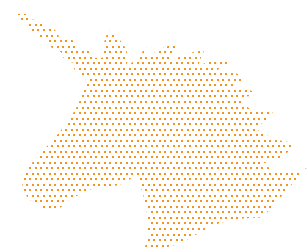
- **The US Census Bureau** networks are great resources. **The State Data Center Program** is a partnership between each state, Puerto Rico, the District of Columbia, island areas, and the U.S. Census Bureau. The Data Center program makes data available to the public through state agencies, libraries, and regional and local governments. A [list of participating agencies](#) can be found on the Census Bureau's website. The **Census Information Centers** provide local and community access, training, and technical assistance on census data to underserved communities.
- **Local nonprofits or civic organizations** often work with data to inform outreach, target practices, and better know the communities they serve. United Ways sometimes host indicators projects and support their grantees in using data to improve their programs. Local foundations may also be supporting data work to support local nonprofits and could have insight into the local civic data scene.

If you can't find other data intermediaries

There is a strong possibility that as you and your library start to do outreach to other civic data intermediaries you may discover an already active ecosystem.

There is also the chance that even though your initial scan did not turn up an active ecosystem, one might exist outside of your field of vision. Your library may not yet have relationships with the individuals or organizations who could serve as an entry point to the ecosystem. You may have to build a closer relationship with an intermediary who is more deeply ingrained in the ecosystem who can work with you to find a path for your library to build deeper connections. The work of libraries in the 21st century and the ways that library work aligns with data work may not be known by all players in the ecosystem. Taking time to build messaging around what libraries do and the commonalities that exist in missions and goals can be useful as you work to gain trust.

If you have explored your civic data ecosystem and found that there is indeed not a lot happening in your area, that's OK. You have the opportunity to start something extraordinary. You can start to bring people together to talk about data with an eye toward developing shared best practices. One way to bring people together involves inviting a speaker from a nearby community knee-deep in data intermediaries. Or, hold an open data conversation to connect with potential allies. You might even consider holding a training session on federal data tools, or an informal hack night using whatever community data is available to you. These types of actions and activities will help you see who else is interested in using civic data in your community, and (importantly) give you a chance to grab their contact information. They may also reveal some players/things going on that you missed in your original scan. We provide a typology of roles and activities in the [Library Roles](#) section of this guide on page 34.



If you have explored your civic data ecosystem and found that there is indeed not a lot happening in your area, that's OK. You have the opportunity to start something extraordinary.

Common barriers to getting started

Through this project, we've learned about common barriers to entry that libraries are navigating. This section overviews some of these challenges and points to places in guide that may provide help.



Feeling unqualified

You aren't! There are many roles the library can play when stepping into in this space. Check out [Library roles](#) (page 34) where we outline why libraries fit right in to civic data ecosystems. And draw inspiration from the varied work that libraries are doing by reading the [Case Studies](#) (page 55).

Lack of urgency

With constraints on library workers' time and library resources, you might find that some in your organization view building civic data capacity as a low priority. We offer some recommendations about connecting the work to your mission and finding resource support that may help prioritize this work: [Finding resources to support civic data work](#) (page 47); [Connecting to your library's mission](#) (page 15).

Finding capacity

Related to lack of urgency, civic data work isn't always top priority as a place to expend capacity. Starting small and building a proof of concept can help build momentum for your work and demonstrate that putting time and capacity into the work is worthwhile. Check out this guidance and read about the experiences of other libraries in this space: [Building libraries into civic data partnerships](#) (page 15); [Finding resources to support civic data work](#) (page 47); [Case Studies](#) (page 55).

Negotiating boundaries

You may be surprised by how robust of a data ecosystem already exists in your area. It may be unclear where your organization can—and should—contribute and how to avoid stepping on toes. You'll want to understand what other players in your ecosystem (and in your organization) are doing with civic data. Check out these resources to better understand and/or plan to work with other local organizations include: [Finding partners in your ecosystem](#) (page 16); [Library roles](#) (page 34); [Mapping your ecosystem](#) (page 22); [Project planning sheet](#) (page 88).

Building trust and credibility for the library in the civic data space

Libraries may be new to the civic data space and other entities may not know what new role the library intends. When conceptualizing your role in the space and how to be a trusted partner in your ecosystem, check out approaches for mapping the ecosystem and what roles and work other libraries are engaged in: [Mapping your ecosystem](#) (page 22); [Library roles](#) (page 34); [Case Studies](#) (page 55).

Common barriers to getting started, CONTINUED

Potential negative consequences from publicly available data

Open and civic data can be confusing—both in how it is defined and how it may be used. Transparency and clarity about your library’s goals, processes, partnerships can help quell fears in your organization and among your users about what might be done with open civic data. Here are some resources to take a look at: [Ways of thinking about data](#) (page 10); [8 considerations for libraries that want to host open data](#).

Lacking authority to create or encourage to create a single network

Take your time, build trust. Remember that you don’t have to be the authority. Check out [Mapping your ecosystem](#) (page 22) to see how players are (and aren’t) working together and our downloadable [“Talking Points: Why Libraries Should be Key Participants in their Civic Data Ecosystems”](#) one-sheeter to remind you why the library has a real role to play in this work.

Finding partners in your library

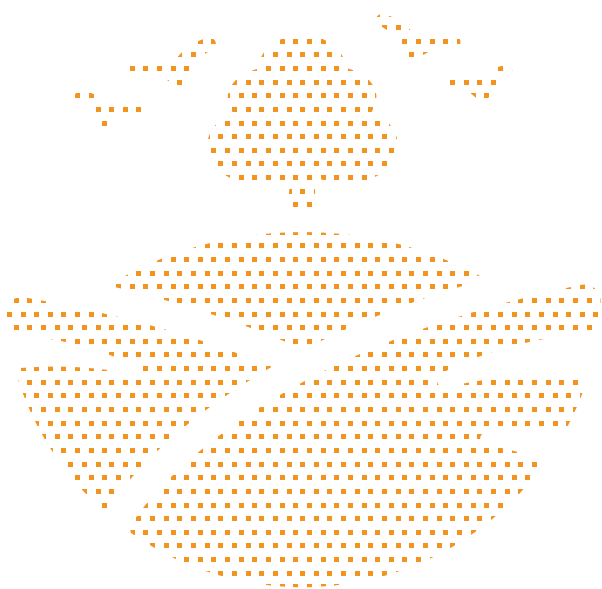
You may be interested in increasing your library’s engagement with community data but want to involve others in your organization rather than going it alone. There are a number of departments, units, and position types where you may find colleagues who are similarly interested in designing long-term strategic initiatives or programming around civic data.

If you’re in a public library setting, talk to your colleagues in these departments or with these areas of focus:

- Digital Strategy / Digital Initiatives
- Technology Services / Emerging Technology
- Adult Programming
- Information Services / Reference Services
- Nonprofit Resource Centers / Foundation Centers
- Workplace Development
- Outreach / Community Engagement

If you’re in an academic library setting, being with colleagues engaged in these areas:

- Data Services
- Digital Scholarship Services
- Government Documents
- Liaison librarian / Subject Specialists for urban studies, public health, public policy, or social work
- Administration, including the Assistant or Associate University Librarian for Research



Understanding Your Ecosystem

The previous section, [Engaging Partners](#), hopefully helped you to identify and establish relationships with other data intermediaries and participants in your local context. This section, Understanding Your Ecosystem, will help you to build on those relationships to understand the unique characteristics of your own civic data ecosystem. In this section, we'll share some techniques you can use to gain a deeper understanding what is already happening where you are. We believe this knowledge is crucial, and should be developed before taking actions described in the following section, [Library Roles](#).

Mapping your ecosystem

The ecosystem analogy appears in a variety of different spaces and disciplines including business, social science, and innovation. The idea of interconnectedness of actors, priorities, resources, and policies, as well as the need for sustained collaboration between organizations to create meaningful impact, is widespread even if the term “ecosystem” isn’t used. The important thing to remember is that an ecosystem approach recognizes that there are multiple participants and it is helpful to understand the relationships between those participants and their environments.

Civic data ecosystems consist of people/organizations connected with data in a local region and the infrastructure that supports this work. The Civic Switchboard project believes that libraries are valuable players in the civic data ecosystem and in those ecosystems where they aren't involved, they should be!

Who is in my civic data ecosystem?

As you think about who is in your ecosystem, these are the types of people and organizations you might consider:

- Local government agencies that are users and producers of data
- Regional planning or transportation agencies
- Non-profit organizations that use civic data
- Data intermediaries that help people find, use, and apply civic information
- Foundations that support nonprofit grantees and civic data initiatives
- Applied university centers
- Federal Reserve community development departments
- Journalists and individuals who make meaning of civic data
- Local businesses and others that add value to data by contextualizing it or creating access
- Coders and other volunteer groups that use technology and civic data
- Libraries—in whatever local role they play!

FROM THE CIVIC SWITCHBOARD TOOLKIT

Identifying Ecosystem Players

A series of prompts to consider when identifying the players in your civic data ecosystem. This double-sided sheet was developed for the Civic Switchboard workshop.



github.com/civic-switchboard/guide/blob/master/toolkit



Civic Switchboard Identifying Ecosystem Players

Who is the go-to in your community for _____?

- talking about equity and how data affects vulnerable populations
- reaching a lot of community organizations at once
- trainings around data literacy
- trustworthy reports about neighborhood data and trends
- offering classes on a range of technology skills
- funding for community projects
- organizing topical social events and connecting people
- facilitating door to door community engagement
- designing and implementing surveys
- tracking down a public dataset no one seems to have access to yet
- organizing a hackathon or meetup or work session
- expanding access to technology and internet so people can use data
- communicating data findings to a broader audience

• _____
• _____
• _____
• _____

(OVER)

Identifying Ecosystem Players by Civic Switchboard Project Team, May 2018
<https://civic-switchboard.github.io/> CC BY 4.0

The connections that exist among these players will take different forms depending on the community. They may include working together on projects and programming, providing funding and resources, and sharing missions and goals.

Mapping your Ecosystem

Due to the people, organizations, and relationships involved, ecosystems are complex! Inventorying or “mapping” your ecosystem can help you and your collaborators get a high level view of what is happening locally. An ecosystem mapping process can uncover players or relationships that aren’t documented, and start ecosystem discussions from a shared place of understanding.



In any mapping exercise, you will need to make these basic decisions about your method. Again, there aren’t right answers, and it is OK to pick an approach—whatever feels intuitive to you—and revise later as needed.

- 1. Are we mapping people or organizations or something else?** Relationships are often person to person, and you can map individuals. Alternatively, you may decide to assign these relationships to institutions as you map.
- 2. What counts as a connection? Is it a formal partnership?** Do both sides need to agree the connection is there? Some research methodologies survey a set of organizations about their connections and then specify in the end map whether connections are self-reported as uni- or bi-directional. If strengthening relationships is one of your goals, you may decide that connections should be coded with a numerical value for depth or length of time so that you have a baseline measure for the strength of your ecosystem connections.

Mapping approaches

There are a variety of approaches for mapping your ecosystem:

- 1. Independent:** In this model, you are independently recording what you and your internal colleagues know of the civic data players and the relationships among them. This approach may work well for you if you are deciding whether or not to become involved in community data conversations. You will obtain some understanding about the civic data space and where the library might fit in. Make sure you are prepared to revise your ecosystem map as you learn more!
- 2. Organic/Snowball:** This approach differs from the top-down method in that while you are doing this inventory independently, you are gathering information from other players in the ecosystem. Ask a person or

organization: who do you get data from? who gets data from you? what is your relationship with civic data? Find the people or organizations they reference and go along the chain(s) asking the same questions. This approach is useful if you don't yet know the scope of your ecosystem but need an entry point. As an example, the Alamo Regional Data Alliance in San Antonio, TX decided to crowdsource their ecosystem mapping, drawing from their members and others in the community.

3. Community Building/Convening: Bringing together a group of local civic data players to do the environmental scan collaboratively. Here the goal is not only the ecosystem map as an artifact, but the strengthening of the ecosystem relationships in real time through the research and decision making process. This is how we did it in [Pittsburgh!](#)

Interpreting the mapping

Depending on the mapping process and the complexity of your ecosystem, you might decide against a formal visualization at first—and that's ok! You might be satisfied with an ecosystem inventory of the players.

Often ecosystems are visualized as networks to emphasize the interconnectedness of different ecosystem players and components. Perhaps you have funders, Meetup groups, and advocacy organizations all interested in civic data—but they are only connected to the work and to each other via a single data intermediary. A network diagram helps visually represent the importance of that intermediary to the ecosystem as a whole.

Network analysis is a science all its own—and perhaps through this work you will even identify someone within your ecosystem interested in doing this deeper analysis. That said, without being a network analysis expert—we aren't, either!—there are some simple and intuitive things you might want to look at to start interpreting your ecosystem map.

1. Network size: As simple as it sounds! Do you have a lot of organizations, or just a few? What might this mean for how your ecosystem communicates?

2. Network density: Density is the measure of how many connections are present in your network divided by the total number of possible connections. In a dense network, ideas or news may spread more quickly than in a less dense one.

3. Centrality: Looking at centrality means identifying people (or organizations) within the network that are particularly important to the network. “Importance” can have different meanings in different scenarios, so there are multiple types of centrality measures, but regardless a central person is likely to have a high level of influence.

4. Bridges: If a single person connects two otherwise separate pieces of your network, they are serving as a bridge in that network and connecting otherwise unconnected sets of people. If that person were to leave your

FROM THE CIVIC SWITCHBOARD TOOLKIT

Exploring Other Ecosystem Maps

This double-sided, downloadable PDF, developed for the Civic Switchboard workshop, provides a series of prompts to use when looking at an ecosystem map created by someone else.



github.com/civic-switchboard/guide/blob/master/toolkit



Civic Switchboard Exploring Other Ecosystem Maps

Use your post-its to annotate other teams' maps using the following prompts:

- Put a blue post-it by a partner or connection that surprised/excited you to see
- Do you see a clear "center" to this ecosystem or are roles/work/power/influence more distributed?
- From this map, how would you describe the library's role in the civic data ecosystem?
- What types of partners/roles might be missing?
- Are there any potential vulnerabilities?
- What questions/comments/reactions do you have about this map?

(OVER)

Exploring Ecosystems by Civic Switchboard Project Team, May 2018
<https://civic-switchboard.github.io/>, CC BY 4.0

network (for example, if they moved to another city) they would leave a hole in the network. Another way to think about bridges would be to look for disconnected pieces of your network and think about whether you or another entity might broker relationships between them.

If you color code your visualization, it might also reveal gaps in certain sectors—do you have a robust network of partners all relying on a single core funder to support their work? Are there opportunities to diversify funding for civic data using the network diagram as evidence of how many organizations and projects can be impacted?

An interpretation of an ecosystem map should involve a thoughtful, collaborative review of gaps and opportunities. Although it may not be easily apparent from network diagram, you should also consider whether your ecosystem seems to be serving a specific subset of your community: are diverse perspectives represented? If not, this should be addressed. Perhaps your civic data community is less inclusive than it could be, perhaps the definition of a “data organization” needs to be broadened to recognize the types of data work that matter to different communities. Or perhaps your ecosystem mapping team simply isn’t aware of the totality of the ecosystem and the map itself (not the ecosystem) is what needs to be improved.

Feel free to also apply other organizational tools to your ecosystem map and see how it goes. For example, many organizations use the SWOT (Strengths, Opportunities, Weaknesses, Threats) model to evaluate current conditions.

Measuring health and capacity

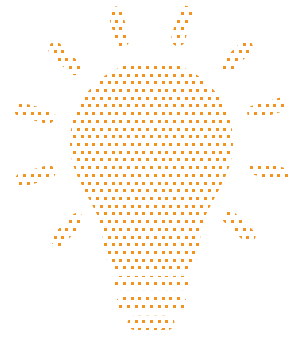
Why measure ecosystem health?

Civic data ecosystems are complex and challenging to assess. But measuring the health and capacity of your ecosystem—to establish a baseline when you begin your work and monitor through periodic check-ins—can help you quantify and communicate benefits, identify focus areas as you continue to cultivate your ecosystem, and justify the time and effort of maintaining strong ecosystems.

What is a healthy civic data ecosystem?

What is a healthy civic data ecosystem? One way of thinking about this question is to consider the ways that a region with a healthy ecosystem might differ from a region without one—what value does having a robust ecosystem lend above and beyond having a single strong partner or several unconnected partners? Cultivating a strong and healthy civic data ecosystem results in a variety of benefits to your work and communities. For example, a community with a strong civic data ecosystem may be more resilient, more connected, more agile, and more inclusive—although all these potential benefits take intentional work to realize.

You can also begin thinking about the value-add of being a member of a connected ecosystem to your own organization's work. When you have an innovative program idea, are you able to leverage resources (people, spaces, funding) from a diverse set of partners to make it happen? Are you able to quickly ramp up and respond to new challenges and opportunities within your community by sharing knowledge and connections within your ecosystem? Are you able to develop more effective solutions because you can easily obtain feedback from a wider range of user voices via your ecosystem partners? Are you able to address complex, systemic challenges by aligning work being done by different ecosystem partners?



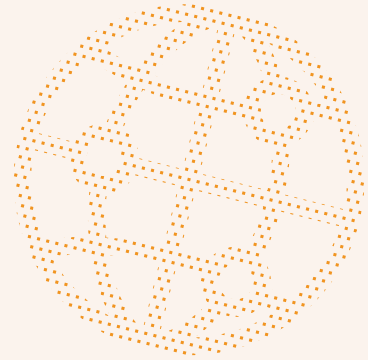
When you have an innovative program idea, are you able to leverage resources (people, spaces, funding) from a diverse set of partners to make it happen?

What to measure

Even if you are familiar with outcome measurement and evaluation generally, deciding how to evaluate your civic data ecosystem—likely a loose mesh of partners that you may not have close communication with—can pose a challenge. What are you even supposed to measure?

TERMINOLOGY Ecosystems versus networks

A civic data ecosystem is “network-like”—it can be visualized using a network diagram (that’s essentially what you created if you followed our framework for [mapping your ecosystem](#) on page 22) and it shares many qualities of a network. However, it often intentionally lacks the formal structures (membership dues, member accountability structures, centralized communication tools, ongoing shared policy goals) that might be in place for a network, coalition, or collective impact initiative.



Many resources that Civic Switchboard recommends for thinking about ecosystem evaluation were designed to measure the health and capacity of networks. For this section of the guide, we will use the term “network” if the source material uses that term—but we believe these tools and concepts are just as relevant to ecosystems as they are to networks.

Just remember to think through the potential differences for an ecosystem before applying network-specific evaluation tools to your ecosystem. Every civic data community is different—adapt these tools to fit your own needs based on your own ecosystem dynamics and desired collaboration structures.

A good starting point can be found in the report [Evaluating Networks for Social Change: A Casebook](#), jointly published in 2014 by Network Impact and Center for Evaluation Innovation. The report offers three pillars of network evaluation: connectivity, health, and results.

- 1. Network Connectivity:** The people and organizations participating in the network, the structure, and what information or resources flow through which connections.
- 2. Network Health:** Whether the network is sufficiently resourced and whether the internal systems, processes, and infrastructures are sufficient to support the network.
- 3. Network Results:** Interim outcomes or intended impacts, such as adoption of best practices or policy changes. This pillar is potentially the most complex to evaluate, especially because what results you are looking for will depend on your particular community.

We encourage you to take a closer look at the case studies included in the [Evaluating Networks for Social Change: A Casebook](#). Each one offers a specific example of what kinds of questions drove the measurements, what tools and methods were used, associated costs, and how the results were evaluated. You may find a case study that resonates with measures that are important to your local ecosystem.

How to measure

There are a variety of methods to measuring ecosystem health and capacity. Some will be small-scale and free to use while others will require tools and additional staff.

Measuring the health and capacity of your ecosystem can begin with the process of [interpreting your ecosystem map](#), which is most relevant to measuring network connectivity, but you can also think about measuring ecosystem capacity in ways that are not dependent on a visual map.

You might decide to create a custom survey to assess a specific quality of your ecosystem. You might decide to conduct interviews or focus groups with ecosystem members to collect qualitative data. You might research your community to identify trends and external strengths, weaknesses, opportunities and threats that may influence how your ecosystem functions.

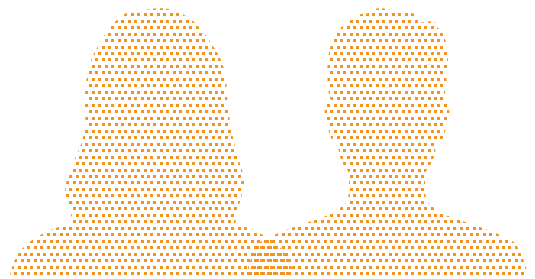
Several organizations have created network capacity tools you can use as a starting point, such as the [Evaluation Framework \(beginning on page 47\)](#) from the Centre for Social Innovation pocket guide's *Network Evaluation Cultivating Healthy Networks for Social Change* or the [Network Health Scorecard](#) from Network Impact.

Who to work with

Especially at first, you will likely want to think about small, bite-sized measurement techniques you can do with internal ecosystem partner staff. However, it is also worth considering external evaluation consultants if you can obtain funding or if you want to measure an aspect of your ecosystem that may be difficult for partners to talk about openly. A person or organization may not feel comfortable identifying ecosystem weaknesses if the evaluation is being done by a partner they rely on for funding or political support.

Regardless of whether you work with existing partners or an outside consultant, the [Cultivating Healthy Networks for Social Change](#) pocket guide referenced earlier identifies some of the skills a network evaluator—whether internal or external—should ideally possess or work to develop:

1. Being present in the network
2. Being an active listener
3. Recognizing patterns, synthesizing information
4. Seeing power dynamics and their impacts
5. Seeing simultaneously through multiple lenses
6. Identifying different forms of leadership
7. Giving people a voice to tell their stories



Consider these skills when you look within or outside your ecosystem for someone to assist with evaluation.

Projects related to ecosystem mapping

It is worth taking a closer look at what kinds of results we might expect a strong civic data ecosystem to support or accelerate—either related to shared goals of the ecosystem or, more commonly, the ability of specific partner organizations within the ecosystem to leverage their connections to create stronger, more impactful programs. Below are two potential resources.

1. The Knight Foundation report [Assessing Civic Tech: Case Studies and Resources for Tracking Outcomes](#) includes sample measurement techniques for five common civic tech objectives that are also applicable to many civic data ecosystems. These objectives are to (1) build place-based social capital, (2) increase civic engagement, (3) promote deliberative democracy, (4) support open governance, and (5) foster inclusion and diversity. These common objectives are good starting place if you are not yet sure what results you expect from your civic data ecosystem and want to think through how other communities have been thinking about similar work.
2. The [Civic Tech and Data Collaborative](#) project looked directly at the structure and impact of civic tech and data ecosystems and identified the key ingredients of a civic tech and data ecosystem in their [Civic Tech and Data Collaborative Toolkit](#). They emphasize the importance of, and offer resources related to, the cross-cutting areas of engaging low income residents, mobilizing for collective action, resourcing collaboratives and sustaining the gain. Mobilizing, resourcing, and sustaining ecosystems would likely fall under the evaluation pillar of Network Health. Engaging low income residents, in particular, is critical to ensure civic data ecosystems do not inadvertently contribute to inequities within communities and could be evaluated as a part of Network Connectivity (“who is participating”) as well as Network Results (“are the participating ecosystem partners reaching low income audiences?”). As part of their project, they also published a Guide to [Civic Tech and Data Ecosystem Mapping](#).

Finally . . .

Remember that your community’s civic data ecosystem is unique, and part of measuring the health and capacity of your ecosystem is keeping the goals and values of your ecosystem in mind during the process. What you measure depends on what you are collectively trying to achieve. If thinking about the ecosystem as a whole feels overwhelming, you can also think about your own organization and measure whether you are receiving benefits from your space in the ecosystem.

Understanding community data needs

Libraries interested in getting involved in their local civic data ecosystem should consider tailoring their role and their actions to local conditions. Some of the local circumstances libraries may want to account for in structuring their role include community interests, civic priorities, resident aspirations, data and technology infrastructures, and the capacity of data and service providers. Adopting a demand-based focus for their civic data work will help

libraries structure their role and their work to be relevant for people in the community, and align and coordinate efforts with other members of local civic data ecosystems.

The process of understanding community needs often starts with personal engagement, though we feel that it's important to state that there is no one model or road map to follow to learn more about the data needs of people in your community. Your approach could take the form of documenting interests and needs through your library's existing processes, programs, and interactions, such as recording data requests, or collecting feedback at training workshops. Be aware that not everyone hoping to work with data will come to you to talk about civic data, even if they're already visiting the library. To engage people that aren't already connected with your services, your library may also want to organize specific events and offer fun, engaging activities to learn more about how people and communities can benefit from civic data.

In this section of the guide, we present some ways that your library can learn more about community data needs organized around four key questions:

Adopting a demand-based focus for their civic data work will help libraries structure their role and their work to be relevant for people in the community.

1. What data are people looking for?

- If your library is providing data services, documenting the questions and requests can be one way to understand more about the kinds of data people are seeking.
- If other members of your ecosystem are also sharing data, you might also want to ask them more about the datasets that are most-popular. Here in Pittsburgh, the Western Pennsylvania Regional Data Center's [Performance Management Dashboard](#) allows people to see the most-frequently viewed and downloaded datasets.
- Your library may also want to put-out a dataset suggestion box to capture data requests, or go over the top like a series of partners did in Philadelphia in 2017 under the [OpenDataVote](#) project. The partners designed an entire nomination and voting infrastructure for civic data, complete with a voting booth. The project team then worked with partners at the City of Philadelphia to make the most-popular dataset nominations available as open data. More information is available in the OpenDataVote guide and the [project announcement](#).

2. How might people want to use data in your community?

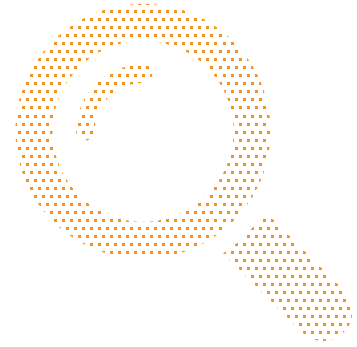
- If your library is already helping people find data, it can also ask them how they're hoping to make use of it, and recording those details along with the data request.
- In New York City, the NYC Planning Labs asked people to complete a prompt as part of the design process for an interactive version of [New York City's Zoning and Land Use Map](#). The prompt asked people to "fill in

the blanks” on the following statement: “As a ____ (type of user), I want ____ (some goal), so that ____ (some reason).” Asking people to complete a similar prompt and displaying the responses in the library can provide people with a look at how others in the community want to put civic data to use, and build momentum for making more data available.

- Your library can even go a step further and organize a gathering where people can build a community interested in using data around a particular topic or domain. Several different formats for these gatherings are included in the Sunlight Foundation’s [ROADMAP to Informed Communities](#).

3. How discoverable is your civic data?

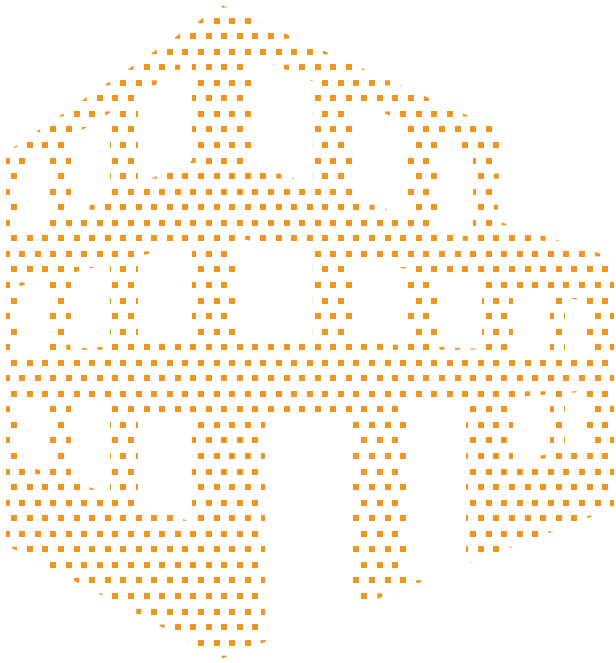
- One activity your library can organize to assess how easily people can find civic data in your community is a data scavenger hunt. In a data scavenger hunt, participants are tasked to answer several questions about their local community using publicly-accessible civic data. While the activity can be done remotely, structuring the data scavenger hunt as an in-person activity will enable event organizers to ask participants about their experience finding data at the conclusion of the event.
- Another related activity could involve having members of your community design questions for a civic data trivia contest or scavenger hunt to be played at your library. Having members of the community contribute questions will enable you to see what data they may have been most discoverable and most-interesting. The trivia contest itself can also be a way to engage members of the community in a data conversation.
- Your library may also want to organize or help conduct user or usability tests of available civic data tools. These tests are a valuable way of soliciting feedback about a users’ experience with an information tool or website. Participants in these tests are typically asked to perform a series of tasks, while a proctor observes and describes the participant’s experience. Results of these tests can be used to improve the quality of available data tools, and identify opportunities for training and other services that can help people find data more-easily. In 2013, the [Smart Chicago Collaborative created the Civic User Testing Group](#) as a model for conducting user tests of civic data tools, and the model has been deployed in Detroit and a number of other communities. The Federal Government’s [usability.gov](#) website also contains some valuable resources about conducting [usability tests](#).



4. What literacies and software competencies are people looking to build?

- Libraries offer a great place to provide prompts that patrons can respond-to in order to share more about their data skills. Patrons can deposit a token in a jar, or add a sticker to a diagram to create a participatory data visualization activity. Several questions that can be used in these activities can include:
 - I use the internet most often at . . . using (device).
 - How confident do you feel in using data to tell a story?
 - The data tool I most want to learn how to use is . . .

- A more-structured way to assess people’s skills and confidence when it comes to using data is through a formal survey. This information can be valuable in designing data literacy workshops and training classes. The survey instrument can be shared in general with people coming to the library, or on a more-focused audience, such as people requesting data services, or attendees of a workshop or training class. If your library needs a starting point, you’re welcome to adapt the [satisfaction survey](#) we share at our training workshops here in Pittsburgh.
- When you can, it can also be very informative to have actual conversations with people about their skills and data literacies. These can be structured through formal focus groups, but it’s also possible to engage people after a training session or workshops, or when they look to library staff for help when using data. Organizing tabling activities with a data focus, or holding a public demonstration of a civic data tool in the library can also present an opportunity to have a conversation about data needs.



Library Roles

Throughout this guide you've read why we believe libraries should be **key actors in civic open data ecosystems**.

This section of the guide offers roles that your library might play in your local civic data ecosystem. The specifics will (and should) be different in different regions.

These roles are meant as a list of possibilities and opportunities. We understand that it is unlikely your library will have the capacity to perform all of them. Libraries are different and at different stages of work with civic data. If you're at the very beginning of your civic data journey, we hope these descriptions can help you clarify why the library should/could be involved. If your organization has been engaging with civic and open data, these roles may provide you with new ideas and directions for your work.

As you consider potential roles for your library, remember the larger civic data ecosystem. Think about what is already taking place, who is already active, and where you might work in **partnership with other organizations**. Remember, other libraries can be partners, too! We have found many cases where different libraries (such as a public and an academic) have capacity and expertise that complements each other around these roles.

Connecting data users



WHAT'S THE NEED?

- Data users, even when living in the same region, are often separated. Users may be facing similar problems and may have solutions or complementary expertise to share.
- Together, data users can be stronger advocates for social change, for improving civic data, for making additional data available, and for the creation of tools to make data more useful.
- In-person connections can be fun and help strengthen local networks.

WHY THE LIBRARY?

- Your library is already a space for convening and connecting individuals to information.
- Your library has the infrastructure and skills to build community around civic data.

WHAT YOU CAN DO

- Attend or host a civic data community event like a Data Day or a coding challenge
- Promote civic data initiatives through the library's social media, events, and calendars
- Facilitate a local data user group around a specific dataset or topic (ex. housing data, environmental data)
- Host recurring data literacy trainings and workshops

INSPIRATION

- Pittsburgh, PA: [Pittsburgh's Data Day: Using Civic Data to Spark Hands-on Community Engagement](#)
- New York, NY: [NYC Open Data Event Calendar](#)
- Ottawa, ON: Open Data Ottawa's [Open Data Book Club](#)
- Cleveland, OH: [Data Days Cleveland](#)
- Baltimore, MD: [Baltimore Data Day](#)

RESOURCES YOU CAN USE

- Detroit Digital Justice Coalition: [Discovering Technology](#) ("DiscoTech"): From that page, see the "How to DiscoTech" zine for detailed principles and specific guidance!
- Roadmap to Informed Communities / Sunlight Foundation. "[Community Data Dialogues: Learn how to host events to engage non-technical audiences on open data](#)"
- Murray, Brittany, Elsa Falkenburger, and Priya Saxena. "[Data Walks: An Innovative Way to Share Data with Communities](#)." Urban Institute, June 4, 2016.
- Schlosser, Dan. "[When 'Awesome' Is Isolating: Making Hackathons Accessible](#)."

Connecting data producers



WHAT'S THE NEED?

- Data producers, even when working in the same region, are often separated.
- Data producers may be facing similar problems, and may have solutions or complementary expertise to share.
- Together, data producers can develop solutions for challenges around data governance, data publishing and sharing. They can advocate for infrastructure. And they can standardize the descriptions and availability of their data.

WHY THE LIBRARY?

- As a community hub and an advocate for the social good, your library has the capacity to act as a convener and a bridge between networks.
- Libraries have a special opportunity to include local groups that don't traditionally see themselves as belonging to the data space.

WHAT YOU CAN DO

- Convene a data producers council / working group
- Host ecosystem mapping events that bring together local data producers
- Hold workshops for organizations interested in publishing data. Topics could include data management, metadata, and privacy

INSPIRATION

- [Charlotte Mecklenburg Public Library Case Study](#) (page 60)
- [Pioneer Library System \(Ontario County, NY\) Case Study](#) (page 66)
- [Alaska State Library Case Study](#) (page 57)

RESOURCES YOU CAN USE

- Civic Switchboard Guide, [Mapping Your Ecosystem](#) (page 22)
- Arena, Olivia and Li, Crystal. [“Guide to Civic Tech and Data Ecosystem Mapping.”](#)

Showing the importance of civic data



WHAT'S THE NEED?

- Many people aren't aware of what civic data is, how it can be used, and how it is relevant to them.

WHY THE LIBRARY?

- The library supports broad and diverse audiences, many of whom may not be included in conventional discussions around data.
- Libraries are physical spaces for sharing activities, projects, and stories from the broader community

WHAT YOU CAN DO

- Promote, through storytelling and case studies, projects that use civic data
- Host data art installations, speaker series, data book clubs

INSPIRATION

- Pittsburgh, PA: Carnegie Library of Pittsburgh [Civic Data Zine Camp](#)
- Ottawa, ON: [Open Data Ottawa Book Club](#)
- Charlotte, SC: [Charlotte Mecklenburg Public Library Book Club](#)

RESOURCES YOU CAN USE

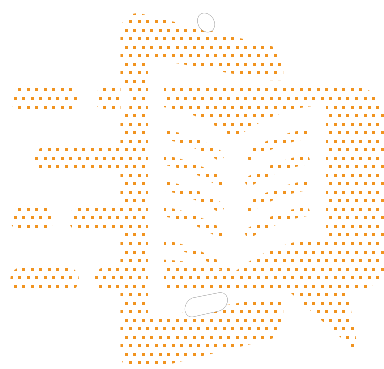
- Tess Wilson, Carnegie Library of Pittsburgh: [Civic Data Field Guide flyer](#) from Civic Data Zine Camp
- St. Paul Public Library, [Open Data Guide](#)

Civic Data Field Guide flyer from
Carnegie Library of Pittsburgh's
Civic Data Zine Camp

FLYER BY TESS WILSON



Developing civic data literacy



WHAT'S THE NEED?

- There is an increasing need for people to have data literacy skills for their careers.
- Many people would like to know how to better find and use civic data and, at the same time, understand its context and limitations.

WHY THE LIBRARY?

- Your library likely has lots of experience teaching information literacy.
- Your library is in the position to adapt existing services or information literacy curriculum to continue to help people access and make use of civic data.

WHAT YOU CAN DO

- Work with local community organizations to develop data literacy and skills training
- Tailor an existing data literacy training toolkit to local needs
- Fold data literacy into workforce development training workshops and programs
- Expand the roles and skill sets of library staff

Inspiration

- Houston, TX: [Fondren Library, Rice University Data Literacy Workshops](#) (page 63)
- Queens, NY: [Queens Public Library's Data Counts program](#) (page 72)
- Providence, RI: [Providence Public Library's Data Navigators program for teens](#) (page 68)

RESOURCES YOU CAN USE

- Carnegie Library of Pittsburgh and the Western Pennsylvania Regional Data Center: [Data 101 Toolkit](#)
- Data Equity for Main Street: [Open Data Curriculum](#)
- MIT Center for Civic Media: [Data Therapy](#)
- Data Pop Alliance: [Beyond Data Literacy: Reinventing Community Engagement and Empowerment in the Age of Data](#)
- Community Information Now: [What's Needed for a Community to be Good at Using Data?](#)
- Allied Media: [Opening Data Zine](#)
- University of Washington [Open Data Literacy Project](#)
- NNIP and Microsoft's Civic Technology Engagement Group: [Data and Tech Training Catalog](#)

Advocating for ethical, responsible, and accessible civic data



WHAT'S THE NEED?

- Civic data that is created through public funding should be well-known and easily accessible by the public. Realizing this often requires additional effort from data intermediaries.
- People appear in public datasets when they perform common activities such as obtaining a license, or making a 311 report. The public should be aware of how their activity is recorded and publicly distributed.
- The public interest in open data must be balanced with the protection of privacy

WHY THE LIBRARY?

- Libraries democratize access to information. This can and should apply to data too.
- Libraries protect patron privacy to support broad accessibility to information and freedom of inquiry.

WHAT YOU CAN DO

- Review how civic data is published in your region with an eye to access. Share what you find with civic data producers and publishers.
- Review how civic data is published in your region with an eye to personal privacy. Share what you find with civic data producers and publishers.
- Host workshops, speakers, film screenings, and other events that raise awareness of how individuals' personal traces might appear in civic data. Include guidance on protecting personal privacy.

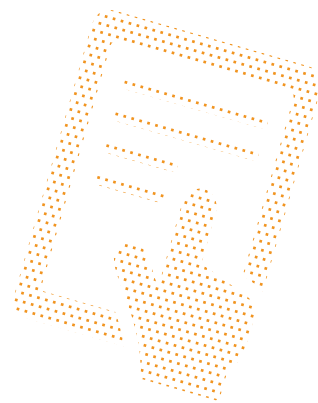
INSPIRATION

- San Jose, CA: [Virtual Privacy Lab](#)

RESOURCES YOU CAN USE

- Allied Media Project, [Our Data Bodies Playbook](#)
- Zimmer, Michael, and Bonnie Tijerina. "[Library Values & Privacy in Our National Digital Strategies: Field Guides, Convenings, and Conversations](#)." Milwaukee, WI, July 2018.
- Data Privacy Project, [Privacy Literacy Training](#)
- Responsible Data, [Responsible Data Principles](#)

Making civic data more usable



WHAT'S THE NEED?

- Data is often available but with barriers to use. Barriers include (but are not limited to) finding, obtaining, understanding, aggregating, applying, and contextualizing data.
- Data providers and intermediaries need insight from users to help prioritize open datasets and tool development.

WHY THE LIBRARY?

- Your library has always helped to make existing information more usable and useful to its communities.
- Library workers are uniquely positioned to know, communicate, and advocate for the information needs of their communities.
- Library workers have expertise around the user experience of digital information. How do users prefer to search? To browse? To evaluate results for relevance? To download and use digital content?

WHAT YOUR LIBRARY CAN DO

- Author data user guides for specific datasets or on broader topics.
- Create views of data that meet specific needs, for user groups, social justice organizations. One example might be creating analog presentations of data for communities that are non-digital.
- Partner with civic data initiatives to gather user feedback for improved services

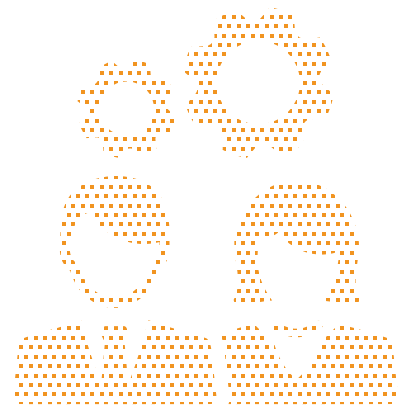
INSPIRATION

- Pittsburgh, PA: Western Pennsylvania Regional Data Center's [Data User Guides](#)
- Somerville, MA: Tufts's Hirsch Health Science Library guide, [Health Data and Statistics](#)
- Durham, NC: Duke University Library's guide, [US Economic Data](#), see "Local areas" for treatment of regional civic data

RESOURCES YOU CAN USE

- Robinson, P., & Mather, L. W. (2017). [Open Data Community Maturity: Libraries as Civic Infomediaries](#). *Journal of the Urban and Regional Information Systems Association*, volume 28.

Providing expertise on data management



WHAT'S THE NEED?

- Many civic organizations produce data and need support with managing and versioning files, standardizing data-related practices, addressing data privacy, determining retention of data, sharing data appropriately, and more.
- Many data publishers (such as managers of open data portals) need support with metadata and vocabularies, format standards, technical infrastructure strategies, and more.
- Many data users need strategies for personal data practices, including naming, labeling, storage, backups, deleting, and more.

WHY THE LIBRARY?

- Library workers have the skills to provide data management and data hosting services to organizations that may not otherwise have internal capacity to treat their data as an asset.

WHAT YOU CAN DO

- Consult with data producers, publishers, and users on:
 - Metadata used for datasets and data portals
 - Technical infrastructure for repositories
 - Data management planning
 - Protecting privacy when data sharing

INSPIRATION

- Pittsburgh, PA: [University of Pittsburgh Library System and Western PA Regional Data Center](#) metadata collaboration

RESOURCES YOU CAN USE

- Project Open Data. [Project Open Data Metadata Schema](#)
- World Wide Web Consortium. [Data Catalog Vocabulary \(DCAT\)](#)
- World-Wide Web Consortium. [Data on the Web Best Practices](#)
- Force11: [The FAIR Data Principles](#)
- Green, B., Cunningham, G., Ekblaw, A., & Kominers, P. (2017). [Open Data Privacy](#). *SSRN Electronic Journal*
- Data SF [4 Steps to Manage Privacy and De-Identification for your Open Data Program](#)
- Borgman, Christine (2018). [Open Data, Grey Data, and Stewardship: Universities at the Privacy Frontier](#). *Berkeley Technology Law Journal*, 33:2, 365–412

Creating civic data



WHAT'S THE NEED?

- As you advocate for sharing data, your library could set an example by sharing it yourself.
- Data about your library can help provide insight into your community.
- Historic information that could be used as data is often held in library collections, but not in machine-readable form.
- People want to collect and create data themselves but often need support. Not everyone has specialized tools (such as air quality monitors) to aid in data collection.

WHY THE LIBRARY?

- Your library likely collects data for annual reporting that could also be of interest to the public.
- Libraries have a long tradition of reformatting materials to support different forms of use, including microfilming and digitizing collections. Creating datasets from collections is a continuation of this work.
- Libraries have the infrastructure for loaning equipment (like air quality monitors) and can reach a broad and diverse audience.

WHAT YOU CAN DO

- Create and publish machine-readable datasets from library collections, resources, or operational data
- Loan equipment for citizen science data collection

INSPIRATION

- New York, NY: Brooklyn Public Library Open Data
- Pittsburgh, PA: Carnegie Library of Pittsburgh Open Data
- Chattanooga, TN: Chattanooga Public Library Open Data
- Phoenix, AZ: “Arizona State to Partner with Public Libraries on Citizen Science.” by Lisa Peet, *Library Journal*, October 26, 2017.
- San Diego, CA: “San Diego PL Enlists Citizen Scientists as Bug Collectors.” by Lisa Peet, *Library Journal*, April 8, 2018.

RESOURCES YOU CAN USE

- Always Already Computational—Collections as Data: This project has many resources and examples to inspire considering library collections as/containing data. A good starting place is their “50 Things” you can do list.
- SciStarter. “Calling all Librarians: Citizen Science Day 2019 Invitation”

Using civic data



WHAT'S THE NEED?

- Civic data can help libraries to better understand the communities they serve and, in turn, make more informed decisions about collections, staff, and programming.

WHY THE LIBRARY?

- Libraries are already data-driven organizations and collect internal data on how collections and spaces are used.
- If the library is advocating for the importance of civic data it is vital to demonstrate its importance at home.

WHAT YOU CAN DO

- Use Census data to create demographic profiles of the communities you serve; consider languages spoken, education levels, income, and employment
- Incorporating civic data into reporting can model great open data practices for patrons and the broader community.
- Consult state or municipal open data for data sources that can help you make your case for an upcoming grant or new library initiative.

INSPIRATION

- Topeka, KS: Mirza Sharma, D. (2016). [Using GIS to Assess Public Libraries](#). *Public Libraries Online*.

RESOURCES YOU CAN USE

- Hertel, K., & Sprague, N. (2007). [GIS and census data: Tools for library planning](#). *Library Hi Tech*, 25(2), 246–259.
- Adkins, D., & Sturges, D. (2004). [Library service planning using GIS and census data](#). *Public Libraries*, 43(3), 165–170

Publishing civic data



WHAT'S THE NEED?

- Many municipalities and regions have open data to share but need an institution to manage or coordinate a centralized data collection.

WHY THE LIBRARY?

- Libraries are trusted stewards of information and library workers have considerable expertise in managing data and protecting privacy.
- Libraries are leading many digital inclusion and data literacy efforts in their communities.
- As the priorities of elected officials change, having a third-party entity like a library host data from government organizations and other partners can also help to sustain community data initiatives.

WHAT YOU CAN DO

- Publish available non-sensitive public information (ex. Census data) about your community
- Build a prototype program using cloud-based data storage services like Dropbox, Box, or Google Drive to host data
- Manage a civic data portal

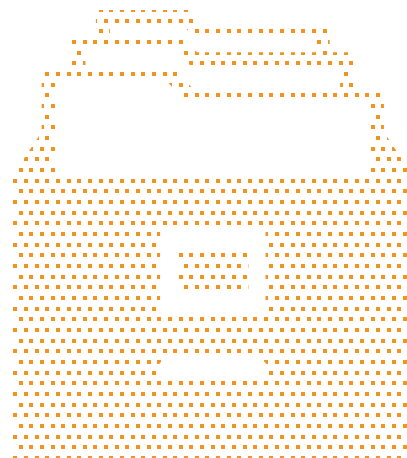
INSPIRATION

- Chattanooga, TN: [Open Data portal](#) hosted by the public library
- Albuquerque, NM: [Open Data infrastructure](#) using existing server infrastructure and simple protocols like FTP

RESOURCES YOU CAN USE

- Civic Switchboard Project. (2019). [8 Considerations for Libraries That Want to Host Open Data.](#)
- Linda Poon. (2019) "[Should Libraries Be the Keepers of Their Cities' Public Data?](#)" CityLab.
- Sullivan, K. (2018). [Can Libraries Accelerate Local Open Data Publishing?](#) Medium post.

Archiving civic data



WHAT'S THE NEED?

- Open data publishers, whether individual organizations or aggregators, are often not built with long-term stewardship in mind. Specifically, they may not account for dataset versioning, digital preservation workflows and metadata, or a long-term commitment to data availability

WHY THE LIBRARY?

- Libraries have experience in preserving resources for future use, particularly items created by governments or other public entities.

WHAT YOU CAN DO

- Archive and preserve civic data in a library-managed repository or in partnership with an external repository.

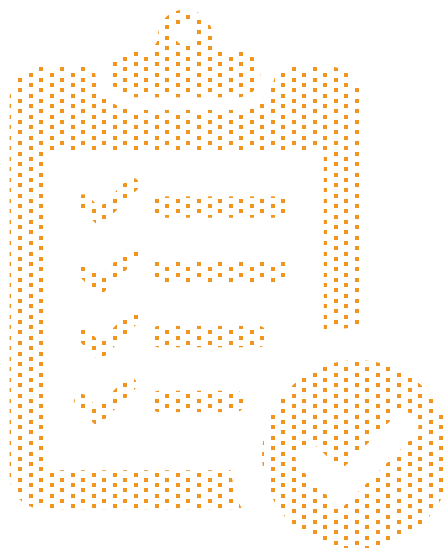
INSPIRATION

- United States: [Data Refuge](#)
- United States: [End of Term Presidential Harvest](#)

RESOURCES YOU CAN USE

- Temple University Libraries. "[Future Proofing Civic Data: Exploring the Challenges of Preserving Open Civic Data for the Long Term](#)"

Increasing the library's capacity to do all of the above



WHAT'S THE NEED?

- To be sustainable, many of the roles in this section require ongoing commitments of people, resources, and expertise.

WHY THE LIBRARY?

- Libraries are relatively stable organizations and are used to long-term planning and infrastructural thinking.

WHAT YOU CAN DO

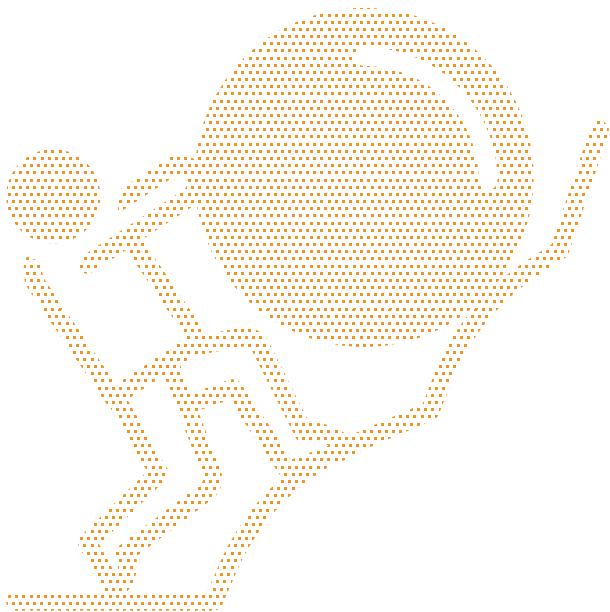
- Make the case about the importance of this work to your library's leadership and funders.
- Determine what a baseline of civic data awareness might look like for you and your library colleagues; then work on developing it through whatever means works best in your library (trainings, discussion groups, projects with community partners).
- Modify existing staff positions to include responsibilities around civic data; support people in these roles with training and meaningful project work.
- Create and hire new positions with responsibilities around civic data.
- Cross-pollinate civic data conferences.

INSPIRATION

- Evansville, Indiana Area: [Jerica Copeny | Movers & Shakers 2018—Innovators](#)
- Pittsburgh, PA: Civic Switchboard. "[Library Partners Reflect on NNIP Meeting](#)," June 6, 2018.

RESOURCES YOU CAN USE

- [Talking Points: Why Libraries Should be Key Participants in their Civic Data Ecosystems](#), see also page 12.



Maintaining Momentum

We've been using the metaphor of the ecosystem throughout this guide. While ecosystems are dynamic and can be expected to change, they also require care to stay healthy and sustainable.

In this section, we look at ways that libraries can sustain their roles in civic data ecosystems. It can be a real challenge to continuously energize, build, and fund libraries in civic data work. Building partnerships, joint projects and institutionalizing the roles are strategies to share the challenge and maintain momentum. You might find help in: [Finding resources to support civic data work](#) (page 47); [Library roles](#) (page 34); [Building libraries into civic data partnerships](#) (page 15).

Finding resources to support civic data work

Engaging in local civic data initiatives will mean finding new resources, redirecting existing resources, and balancing this work among your other responsibilities. This section provides a starting point for locating funding

for your civic data efforts by highlighting organizations that have supported known projects in this space. We also provide thoughts on making a case to your own organization about why activities in this area are relevant to library work and a valuable investment in time and, potentially, organizational funds.

Funding sources

As a starting point for civic data work, build an understanding of the philanthropic organizations in your area and whether your library has an existing relationship with them. Talk to your internal colleagues who are engaged in development and grant writing to craft this picture. Local corporations may also sponsor community events or provide technology volunteers. Your local data intermediaries will be able to contribute to your understanding of the lay of the land as well.

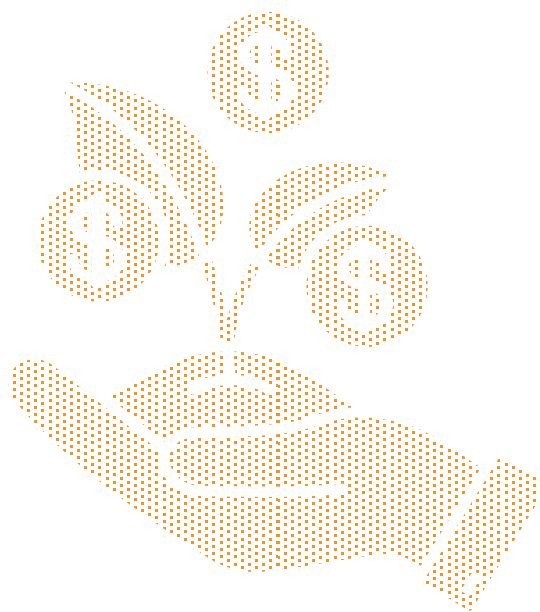
In their June 2018 brief “[Collaborating for 21st Century Solutions](#),” the Urban Institute provides a useful starting point for identifying philanthropic groups that have supported civic data initiatives and for developing strategies to diversify resources. They remind us that resources can be in a form other than a check and stress that managing “in-kind support for labor, space, data, or technology” will be key to civic data projects. The [CivTech St. Louis](#), for example, has found support in the form of time from University of Missouri-St. Louis professors and students and radio air time for promotion.

Local funding is the most likely route to pursue when seeking resources and national foundations and agencies are indeed longer shots. While not an exhaustive list, the following funders have supported civic data initiatives in communities.

Rita Allen Foundation

<http://ritaallen.org/civic-engagement/>

Promoting civic engagement and literacy is an area of emphasis for the foundation: “Our investments include innovative approaches to strengthening civic engagement in the United States through new technology, information and tools for citizens. Supported projects are nonpartisan, encouraging an informed and vibrant democracy without promoting particular political parties or policies.” In 2016, for example, the Rita Allen Foundation awarded \$200,000 to the Digital Democracy project at Cal Poly San Luis Obispo, an online platform featuring a searchable database of transcribed state legislative committees hearings.



W.K. Kellogg Foundation

<https://www.wkcf.org/>

This civically-minded Foundation focuses on advancing children and creating equitable communities for them. In support of this mission, the Foundation has funded local civic information projects; for example, The Kellogg Foundation awarded the Santa Fe Community Foundation \$250,000 to “[c]atalyze positive change for vulnerable children and families by increasing community access to data through [SHARE New Mexico](#), an online data platform that connects information, ideas and people.”

Knight Foundation

📄 <https://knightfoundation.org/>

The Knight Foundation’s commitment to “informed and engaged communities” is reflected in awards it has made to civic data initiatives, including library-focused projects. In 2016, for example, Temple University received a Knight grant to explore “ways libraries can support preservation and long-term access to open civic data through community information portals such as OpenDataPhilly.”

Omidyar Network

📄 <https://www.omidyar.com/>

The Omidyar Network is an international “philanthropic investment firm,” with support areas that include Governance and Civic Engagement work. The group “on the principles of openness and participation, favors solutions that leverage technology, and funds organizations and businesses that provide citizens with the information and tools they need to ensure their interests are represented and to hold their leaders to account.”

What Works Cities

📄 <https://whatworkscities.bloomberg.org/>

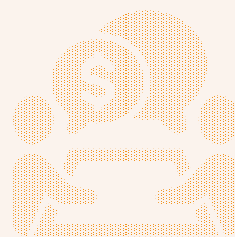
Initiated by Bloomberg Philanthropies and supported by a collective of civic data experts, What Works Cities is “designed to accelerate cities’ use of data and evidence to improve people’s lives.” Cities can join What Works Cities to connect with a community of experts and peers and to access resources as they work toward improving their citizens’ access and use of civic data. Libraries should check with their local governments to see if there is a role for their organization in this initiative.

Institute of Museum and Library Services (IMLS)

📄 <https://www.imls.gov/>

The funder for the Civic Switchboard project, the IMLS is the primary source of federal funding for libraries, archives, and museums. [IMLS’s priority areas](#) that align with civic data engagement include Digital Initiatives, Community Catalyst Initiative, and Civic Engagement. [The Supporting Librarians in Adding Data Literacy Skills to Information Literacy Instruction](#) is an example of a project focused on empowering users to make use of open data.

Making a case for resources



We've seen some successful angles for making a case for internal and external resources—and have put some of these strategies to work ourselves!

Connect to the mission. Finding interconnections between your organizational mission and your civic data activities is an effective way to gain support from your upper management. You will also need to make the connections for foundation staff how your activity fits into their goals. Find thoughts on how the two intersect in our section [“Building Libraries into Civic Data Partnerships”](#) (page 15).

Provide examples from other places. The case studies and resources in this guide can be used to demonstrate the potential payoff of civic data projects to library leadership and potential funders.

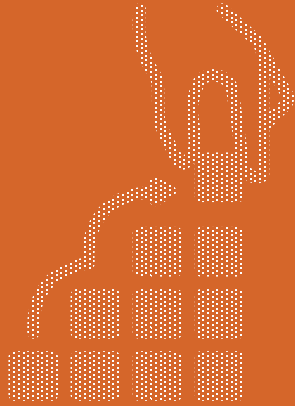
Don't go it alone. In our experience (and at the foundation of this project), civic data work can have greatest impact when it involves multiple partners in your ecosystem. Moreover, highlighting collaborations helps funders get excited about projects.

Leverage existing larger organizational initiatives. Making connections to other projects, even ones that don't have a specific civic data focus, can be a strategy to give your work and civic data partnerships an initial spark. If there is a wider grant/initiative taking place at your library, you might be able to carve out a small piece of it dedicated to civic data efforts. For example, Carnegie Library of Pittsburgh holds [The Labs Summer Skills Intensives](#), week-long camps for teens dedicated to exploring a specific aspect of literacy. Data literacy programming fit into this initiative and a curriculum was developed to allow teens to explore open data through a zine camp.

Start small. A good way to start is a small, focused project that can then be pointed to as a successful example is to tap into local foundations geographic focus. In Pittsburgh, there are small local foundations that focus on specific regions in and around the city. We were able to find support for [Pittsburgh's Data 101 training and toolkit](#) by targeting the trainings in specific neighborhoods served by the funder.

Track impact. Numbers talk! Use your local tracking system to record consultations, reference interviews, and outreach efforts related to data literacy and open data. Having this evidence can help others in your organization understand why civic data work is relevant to your audience and library mission.

Advocate for grant funded positions to become to permanent lines in your organization. Make a case for temporary resources to be turned into sustaining ones and use the reference and outreach data you record to do so. In Pittsburgh, we are very fortunate to have an open data and knowledge manager as a full time position at the Carnegie Library of Pittsburgh. This is a new position and it was made permanent after it was initially funded through a local grant awarded to the public library.

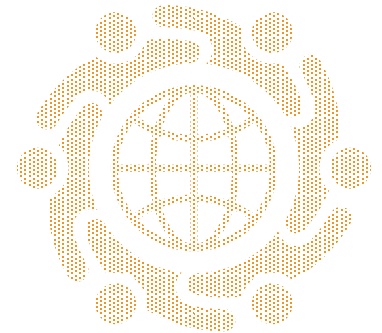


Sometimes you have to self-initiate when you don't have the backing of a funder or express resources from your organization.

As many of us know, sometimes in order to get things off the ground or make the case that a particular type of project is worthwhile, you may have to forge ahead and start a small project with excited partners. You can invite library leadership or potential funders to the event to begin to build relationships. It will also provide an example of a successful partnership when making the case for more funding.

Support networks and communities of practice

In this guide, we've talked a lot about the community you work with locally: the people in your town, city, or region. But through your work, you are also part of other communities, distributed around the country and the world. These are groups of people—whether library workers, data intermediaries, or others interested in aspects of civic data—who form support networks and communities of practice. Library roles around local civic data are still emerging and evolving. Leaning on support networks for advice, examples, and inspiration can help you to maintain your work.



The Civic Switchboard project was designed, in part, to help facilitate a community of practice among people working to connect libraries with civic data in their local communities. We've hosted workshops and conference calls, written blog posts, and are working to get an online discussion group started. But in this part of our guide, we'd like to highlight some other relevant networks and communities you may wish to connect with or explore.

There are a number of groups that bring together data intermediaries. These organizations are varied and have published resources on civic data, hold conferences and webinars, or host mailing lists you can join.

National Neighborhood Indicators Partnership (NNIP)

📄 <https://www.neighborhoodindicators.org/>

NNIP partner organizations are well-established data intermediaries that have positive and collaborative working relationships with a wide range of local institutions. The NNIP has made a rich set of resources available in the form of webinars and guides (check out, for example, "[NNIP Lessons on Local Data Sharing](#)" and "[Guide for Community Training on Data and Technology](#)").

Community Indicators Consortium (CIC)

📄 <https://communityindicators.net/>

Community indicators “are measures that refer to population groups rather than individuals. (They indicate what’s happening at the community level, rather than the individual level.)” ([University of Kansas, Community Tool Box](#)). The CIC is a group focused on supporting availability and use of community indicators.

Code for America Brigade Network

📄 <https://brigade.codeforamerica.org/>

Code for America is a “national alliance of community organizers, developers, and designers that are putting technology to work in service of our local communities.” There are currently 85 official brigades around the country that are hosting hackathons, community events, and programming Data Day and the National Day of Civic Hacking. Join the conversation on the [Code for America Slack channel](#) or check out your [local brigade](#).

DLF Interest Group on Government Records Transparency and Accountability

📄 <https://www.diglib.org/groups/transparency-accountability/>

The Interest Group on Government Records Transparency and Accountability “seeks to support a broader culture of records transparency in the digital age.” One of the group’s signature efforts is the [Endangered Data Week](#), a series of events that “shed light on public datasets that are in danger of being deleted, repressed, mishandled, or lost.” There’s a monthly call and Google Group, and you can begin to get involved by visiting the Group’s [Wiki](#).

Environmental Data & Governance Initiative (EDGI)

📄 <https://envirodatagov.org/>

The Environmental Data & Governance Initiative (EDGI) analyzes federal environmental data, websites, institutions, and policy. Among the group’s efforts is the archiving of environmental datasets to ensure continued access. You can sign up for the EDGI newspaper and check out the group’s publications [here](#).

Civic Analytics Network

📄 <https://datasmart.ash.harvard.edu/civic-analytics-network>

An initiative of Harvard’s Ash Center for Democratic Governance and Innovation, the Civic Analytics Network is a network of urban Chief Data Officers. You’ll find case studies on open data initiatives throughout the country, white papers, and recommendations for open data programs.

Data Across Sectors for Health (DASH)

📄 <https://dashconnect.org/about-dash/>

DASH is focused on “identify[ing] barriers, opportunities, promising practices and indicators of progress for multi-sector collaborations to connect information systems and share data for community health improvement.” For library workers interested with health information, you’ll find resources about navigating data sharing, privacy, and regulations like HIPAA.

Civic Data Operators

🔗 <https://civic-switchboard.github.io/group/>

The Civic Data Operators group allows those working to connect libraries with civic data in their local communities to exchange information, ideas, and resources. While the Civic Switchboard project has been a promoter of this community, the group is intended to have its own identity and sense of ownership beyond any particular project. Visit the [Google group](#) to join the list.

Institutionalizing

You've made a case for resources and institutional buy-in, but there are some strategies you may consider for institutionalizing this work as central to your organization.

Expand core and ongoing work of organization to include civic data

Consider service areas that can be framed as inclusive of civic data work. For example, public and academic libraries alike have instructional services that help library users to identify and access information resources and build information literacy skills. Defining this service area as inclusive of data literacy and building data resources into discovery sessions can help to embed civic data into your organization's work. Or perhaps your government documents program can be broadened to focus on local government information, in addition to the federal depository program.

Discuss creating operations-funded staff positions, with either full or partial responsibility for civic/open data

Consider your organization's priorities (and check out our [Library Roles](#) section on page 34) when defining the positions.

Rewrite positions to include civic data

If civic data engagement is being led by individuals in your library who do not have the work expressly written in their job positions, consider formalizing and defining positions to include this work. This will help to ensure that civic data work persists, even if there is employee turnover.

Advocate for grant funded positions to become to permanent lines in your organization

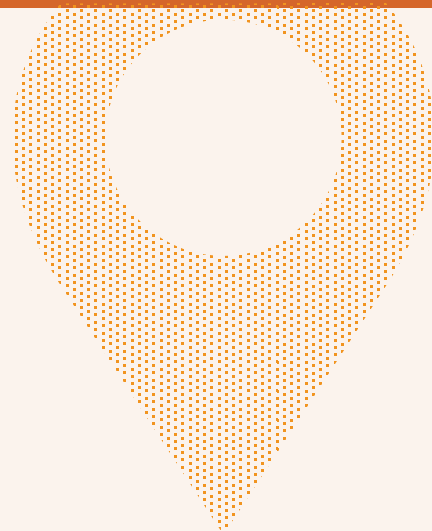
Make a case for temporary resources to be turned into sustaining ones and use the reference and outreach data you record to do so.

Connect to institutions that are long-living and resourced

Within your ecosystem, (see [Mapping your ecosystem](#), page 22) there may be players that are deeply entrenched and act as sustained partners. Consider finding them to ensure your work is similarly sustained.



Case Studies



The following libraries led projects in 2019 with support from the Civic Switchboard Project. Each project worked with one or more local community data partner organizations to increase the library's capacity in their local civic data ecosystem. The resulting case studies, drawn mostly from each project team's own writing, give insight into the variety that can be found across local data ecosystems and provide real-world examples of roles that libraries can play within them.

CASE STUDY 1 | PAGE 57

Coordinating statewide data players through ecosystem mapping

ALASKA STATE LIBRARY, JUNEAU

CASE STUDY 2 | PAGE 60

Organizing a local civic data council as groundwork for an open data portal

CHARLOTTE MECKLENBURG (NC) PUBLIC LIBRARY

CASE STUDY 3 | PAGE 63

Democratizing data through data literacy training

FONDREN LIBRARY, RICE UNIVERSITY, HOUSTON, TX

CASE STUDY 4 | PAGE 66

Expanding regional data sharing practices to support substance abuse prevention

PIONEER LIBRARY SYSTEM, ONTARIO COUNTY, NY

CASE STUDY 5 | PAGE 68

Engaging teens to tell local data stories with paper and electronics

PROVIDENCE (RI) PUBLIC LIBRARY

CASE STUDY 6 | PAGE 72

Partnering to provide data literacy trainings to improve census outcomes

QUEENS (NY) PUBLIC LIBRARY

CASE STUDY 7 | PAGE 75

Joining open data and archival collections for neighborhood stories

ROBERT L. BOGOMOLNY LIBRARY AT THE UNIVERSITY OF BALTIMORE, MD

CASE STUDY 8 | PAGE 78

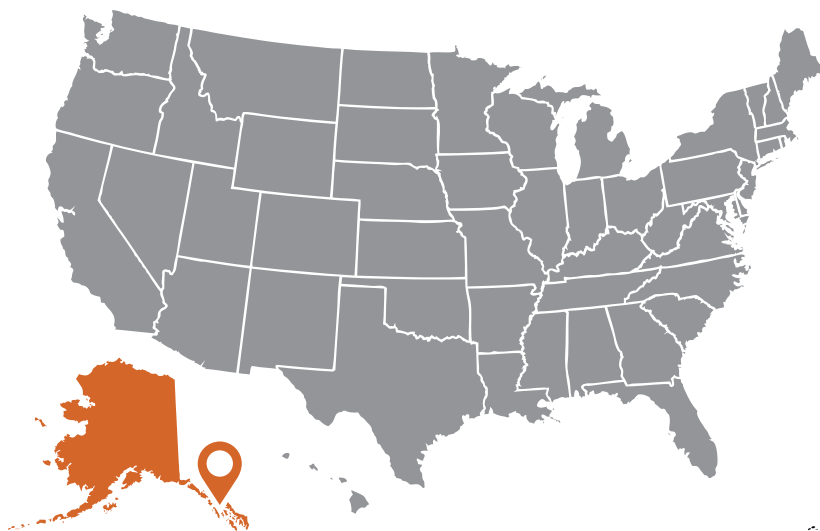
Increasing awareness of open data through community conversations

ST. PAUL (MN) PUBLIC LIBRARY

CASE STUDY 9 | PAGE 81

Clarifying library roles in an expansive regional civic data ecosystem

WESTERN NEW YORK LIBRARY RESOURCES COUNCIL



Partner organizations

[Alaska Office of Management and Budget](#)

[Alaska Office of Information Technology](#)

Library roles played

Connecting data producers
(see page 36)

Connecting data users
(see page 35)

CASE STUDY 1

Alaska State Library, Juneau

Coordinating statewide data players through ecosystem mapping

This project shows the important role that state libraries can take in coordinating civic data at the state level. State libraries, as with Alaska, often have mandates to collect and provide access to state information. These mandates can provide stimulus for initiatives that specifically address open data.

While the Alaska team's project has a large scale goal in mind—the eventual creation of a statewide data hub—a lot of groundwork was necessary to begin the process. The Alaska State Library played the role of convener by hosting a two-day Alaska Community Innovation Summit that included an ecosystem mapping exercise. As they observe in their case study, building and strengthening relationships was a significant outcome of the Summit, and put the state in a better position towards its goal of a statewide data hub.

Alaska is geographically large, but fewer than 800,000 people live here. There is little capacity within many of our communities for robust data collection, dissemination and transformation. Much of this work is carried out in silos at the state level by Alaska state agencies and the University of Alaska system, rather than at the local

government level. At the same time, The [Alaska State Library](#) has a statutory mandate to promote a system for centralized access to data produced at both the state and local government levels, and the State of Alaska is engaged in an effort to build a robust data and digital asset management program.

To mitigate data siloing and fulfill the library's mandate, the Alaska State Library (Library), Alaska Office of Management and Budget (OMB), and Office of Information Technology (OIT) are planning a Statewide Data Hub (Data Hub). The Data Hub will incorporate data catalog services and tools enabling data users, producers, and intermediaries to share, use, and transform State of Alaska data.

To aid in the development of a project plan and requirements we worked on mapping and analysis of the State data ecosystem. This work was driven by a focus on three overall aspects of the ecosystem that would most help in the

development of a Data Hub project plan and proposal:

1) identifying State data that is most frequently shared and used; 2) the benefits generated by sharing and use of State data; and 3) the relationships and trust among data producers, intermediaries, and users.



Alaska Community Innovation Summit.

Photo by Katie Fearer, CC BY-NC.

This project had a few different components, including the creation and dissemination of a survey to people and organizations that use State data and the convening of a two-day Alaska Community Innovation Summit meeting with stakeholders, including data intermediaries, community organizations, businesses, and State agencies. The

Summit included presentations, small group discussion, and business modeling sessions designed to identify how data users and intermediaries access and transform State data. The Library helped to develop and publicize the survey and compile survey results, identify data ecosystem members who would present diverse perspectives at the Summit, and organize the logistical details of the Summit.

Through the Summit, we learned that there are some gaps in the State's data ecosystem. There are few data intermediaries which transform or support transformation of State data. In addition, agencies themselves often lack the capacity to publish their data and users sometimes don't know that the data exists or who to contact to obtain it. And we identified a need for data literacy training among both the public and State personnel.

“One of the greatest successes of this project was simply building relationships between members of the ecosystem. This would not have been possible without a forum for open and honest discussion.”

There is a fear among some data producers that they will lose control over their data. In order to foster the change in culture necessary for a successful Data Hub, we used the Summit to build trust among stakeholders. Stakeholders valued the opportunity to gather together at the Summit, make connections, learn from each other, and become familiar with the State data ecosystem as well as the general concept of a Data Hub and the benefits that it might yield.

This work helped us to develop relationships, understanding of our State's data ecosystem, and use cases necessary to bolster support for the Data Hub. But also, we've been developing workgroups with representatives from various State agencies. Having agencies involved in the planning process gives them some ownership of the process. One of the greatest successes of this project was simply building relationships between members of the ecosystem. This would not have been possible without a forum for open and honest discussion. The Library's role as a trusted and unbiased community center can't be underestimated. As the State develops the Data Hub, the Alaska State Library can and should continue to provide a place for citizens and government to learn from each other.



Partner organization

[UNC Charlotte Urban Institute](#)

Library roles played

Connecting data producers
(see page 36)

Showing the importance
of civic data
(see page 37)

CASE STUDY 2

Charlotte Mecklenburg (NC) Public Library

Organizing a local civic data council as groundwork for an open data portal

The [Charlotte Mecklenburg Library](#) initially partnered with UNC Charlotte Urban Institute with the hope of launching a Civic Data Council comprised of local data providers. Both partners experienced leadership changes mid-stream and the library ended up working mostly on its own. The project revealed a clear need around organizing local data providers, and early results supported the library was optimally positioned to fill this role. Moving forward, the library will need to 1) coordinate how to turn the council's ideas into reality, and 2) gather institutional support where those ideas require investments of time and resources.

Our project was designed to expand access to civic data and empower users to utilize the benefits of civic data within their everyday lives. We hoped to accomplish this by first forming our own Civic Data Council between the Library, the UNCC Urban Institute, and the multiple municipalities and data providers within Mecklenburg County. From this group we would begin laying the ground work and foundation for future collaborative initiatives that highlight the importance of data literacy and data access.

The data landscape within Mecklenburg County is complex. Charlotte as a city effectively has two major government systems (The City of Charlotte and Mecklenburg County) each generating their own siloed datasets within the areas of their purview. In addition, Mecklenburg County houses several townships that each have their

“From our initial meeting nearly all of the stakeholders relayed to us that they were excited about the Library stepping up and gathering this group, and they thought that it aligned perfectly to the library’s charge, even though it did represent a new direction for our institution.”

own data reporting mechanisms—these municipalities include Matthews, Mint Hill, Pineville, Huntersville, Cornelius, and Davidson. The civic data ecosystem remains complex, which is a perfect use case for the Library to come in as a neutral party to convene and organize the collaborative activities of this group.

Our first tactic was engaging the potential stakeholders and explaining our charge in building out a civic data council with the hope of creating better on-ramps for community members to access and leverage their civic data. We also took this conversation outside of our workplace choosing to strategically meet at a local breakfast joint called the Famous Toastery, creating an environment that was non-threatening, casual, and collaborative from the get-go (plus who can turn down a

free breakfast?). From our initial meeting nearly all of the stakeholders relayed to us that they were excited about the Library stepping up and gathering this group, and they thought that it aligned perfectly to the library’s charge, even though it did represent a new direction for our institution.

Unfortunately, our project went through some massive leadership changes during its first year causing delays in our progress. It became more important in terms of the Library’s sustainability to work as a convener and organizer of these public datasets, instead of being the owner and operator of a community data portal. It will be interesting to see what conflict may arise when the Civic Data Council begins to “cost” something so that we remain collaborative with the group. As the project begins to build momentum, the Library’s CIO will allocate resources from the Innovation Fund accordingly, as well as seek out additional funding from grants and other interested funders. Stakeholders may also contribute.

The major success was that the stakeholders that were gathered were excited and enthusiastic about the library convening the group. Several of the representatives identified areas where we could better collaborate including:

- Surveying and auditing the dataset landscape
- Establishing a metadata standard across all the stakeholder datasets



**Civic Data Council
at the Famous Toastery.**
Photo by Seth Ervin, CC-BY.

- Creating data literacy training modules via the Library's Digital Branch
- Working intentionally to involve all the townships via leveraging and aligning with the Livable Meck Plan
- Developing a MOU to help define and communicate the group's charge and collaboration.

The main takeaway is that at least in our local context, there is a real hunger for someone (anyone?) to take the lead in organizing data providers within the community. From my impression, it seemed that many of the other stakeholders felt relieved that the Library was establishing this role as our institution remains largely neutral and aligned for the public's best interests.

Project Team

- **Seth Ervin**, Chief Innovation Officer, Charlotte Mecklenburg Library
- **Keisha Portis**, Digital Channel Leader, Charlotte Mecklenburg Library



Partner organization

[Kinder Institute for Urban Research, Rice University](#)

Library roles played

Developing civic data literacy
(see page 38)

Showing the importance of civic data
(see page 37)

Connecting data users
(see page 35)

CASE STUDY 3

Fondren Library at Rice University (Houston, TX)

Democratizing data through data literacy training

The Fondren and Kinder Institute team piloted data literacy workshops with community members and then incorporated what they learned into a ‘train the trainers’ workshop for the United Way of Greater Houston. Rather than designing the workshops around a particular technical skill or tool, the Houston team’s workshop design deliberately emphasized general principles of data, and ways data might support participants’ decision-making.

Through our project, we attempted to break down barriers to data access and engagement by introducing young community members in two under-resourced and underserved communities to the fundamentals of data and its applications.

In the original proposal, we planned to host three workshops with nonprofits that are interested in engaging clients with data training. We decided to change the format and instead offer the first two data literacy workshops directly to underserved communities. We used those workshops as case studies and opportunities to create curricula that are appropriate for an audience with varying levels of data literacy and exposure to data concepts. By sharing the first-hand experiences and our lessons-learned with nonprofits (along with the training materials), we could help nonprofit staff members gain a better understanding of how to deliver an effective data literacy training.

After our pilot data literacy trainings, we reflected on and organized our learnings to create a “train the trainers” workshop that was conducted in collaboration with the United Way of Greater Houston. With this final training in our three-part series, we wanted to expand our reach and impact by equipping nonprofit professionals (who work in direct service roles in the fields of workforce development and financial coaching) to guide their diverse clients through the data literacy frameworks we generated for the first two trainings.



High school students attending data literacy workshop.

Photo by Rice University's Kinder Institute for Urban Research and Fondren Library

Throughout the creation and facilitation of our trainings, we were careful not to conceptualize data literacy as the mastery of a particular skill or proficiency in certain technologies, etc. Rather, we strived to create curricula that enhance participants’ understanding of the underlying principles of data and facilitate the use of data in a way that supports participants’ arguments or decision-making processes. We wanted to empower participants to comprehend, interpret and use the data they encounter—and even to produce and analyze their own data.

One of our challenges was understanding how to target our training efforts, since it wasn’t clear what prior knowledge or learning goals participants would bring to the workshops. With our first workshop, we were able to conduct a pre-assessment, which helped us to understand how much our group of high school students already knew about data literacy. We also consulted with our workshop hosts to learn more about our participants and their interests and needs. We learned about the value of connecting our training with programs that have set clear expectations for participants.

The Kinder Institute for Urban Research seeks to facilitate the practical use of data by city and community leaders for decision-making and capacity building in Houston’s disadvantaged communities. The Kinder Institute team members on this project were able to leverage their community connections and training-related learnings during the planning and execution of this project.

In the Library’s recent strategic plan, there is an aim to enhance training in, managing, analyzing, and visualizing data and to engage with Houston and the world. Fondren currently offers workshops and consulting on topics such as data management and software skills; we also work with the local community by developing archival collections and by hosting tours and events.

Through our partnership with the Kinder Institute, the Fondren team was able to develop a more nuanced understanding of data literacy and to work more closely with local organizations, especially those focused

on underserved communities. The Kinder Institute team members on this project were able to leverage their community connections and training-related learnings during the planning and execution of this project.

This project demonstrated the value of partnering with a leading civic research organization in order to deepen the library's impact on the community. Through Kinder Institute's relationships with the Urban Enrichment Institute and the United Way, we were able to shape a curriculum that met the needs of participants and draw an engaged audience. It also showed the effectiveness of a playful, hands-on data literacy curriculum, particularly with younger audiences. In our discussion with the public library, we also learned that adult library patrons are another potential audience, as several of their patrons expressed interest in data training. The librarians were very receptive to and supportive of our work and seem open to future collaborations. We are exploring the possibility of partnering to develop and deliver data literacy training for area nonprofits.

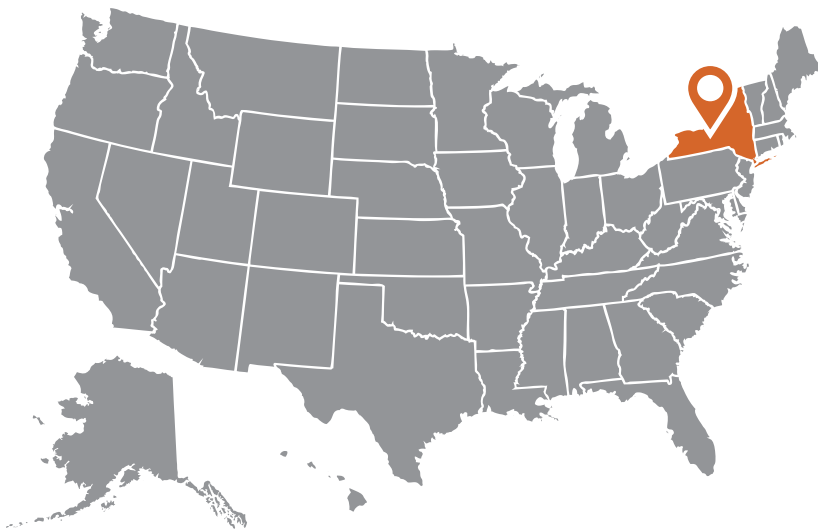
"This project demonstrated the value of partnering with a leading civic research organization in order to deepen the library's impact on the community."

Learn more

- [Data Literacy Trainings Toolkit](#)
- Daniel Koh and Katie Wang, "[Rice collaboration uses data to engage and empower local communities](#)," Urban Edge blog, Sep 4, 2019
- Julia Kress, "[Grant-Funded Data Literacy Workshops Pair Fondren and Kinder Institute](#)," News from Fondren, Spring 2019

Project Team

- **Katie Floyd Wang**, Kinder Institute for Urban Research, Rice University
- **Lisa Spiro**, Fondren Library, Rice University
- **Jie Wu**, Kinder Institute for Urban Research, Rice University
- **Miaomiao Rimmer**, Fondren Library, Rice University
- **Daniel Koh**, Rice University



Partner organization

[Substance Abuse Prevention
Coalition of Ontario County](#)

Library roles played

Connecting data producers
(see page 36)

Connecting data users
(see page 35)

Showing the importance
of civic data
(see page 37)

CASE STUDY 4

Pioneer Library System (Ontario County, NY)

Expanding regional data sharing practices to support substance abuse prevention

Substance abuse prevention is an issue of concern for Ontario County, NY. The county already had a cross-sector group, the Substance Abuse Prevention Coalition (SAPC) of Ontario County, with an interest in the availability and sharing of data. The [Pioneer Library System](#), a multi-county cooperative system serving 42 public libraries, collaborated with SAPC to hold an ecosystem mapping event to better understand how local organizations obtain, use, and share data. Going forward, SAPC is working to find a permanent home for the ecosystem map while the library considers if it has the capacity to prioritize civic data work.

Having a data conversation for the Substance Abuse Prevention Coalition (SAPC) has been a long time coming. Everyone there collects data to some degree but don't think of themselves with that hat [i.e, coordinating data sharing].

The project kicked off with a half-day session hosted by the Pioneer Library System. The event was open to all community members and included a presentation, time for relationship building, ecosystem mapping activity and lunch. Attendees included people affiliated with the Substance Abuse Prevention Coalition, mental health, education, and other players in the prevention or harm reduction arena. The conversation was scaffolded,

beginning by unpacking “what is data?”, continued through the SAPC data collection/sharing journey, description of data roles, then moved through an introduction to ecosystem mapping, leading to the development of the map.

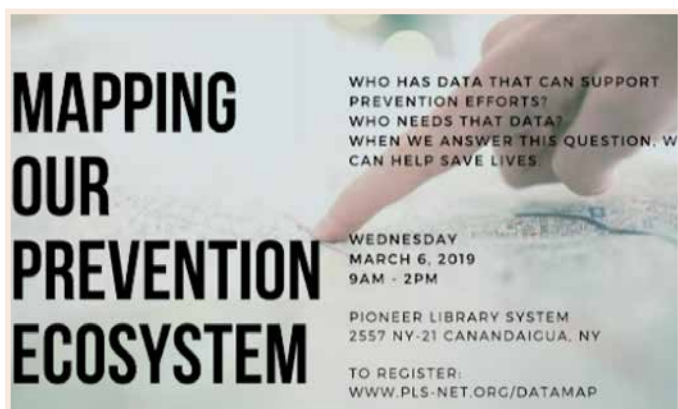
Community members in attendance split into two—it was easier for people to participate in smaller groups—and began to work though mapping the prevention ecosystem. The discussion was lively as the groups sorted out their approach to realizing the ecosystem. The conclusion of the event brought everyone together which allowed for a deeper discussion on the map visualization.

“The discussion was lively as the groups sorted out their approach to realizing the ecosystem.”

After the initial kickoff event, subsequent conversations and collaborative activities were held as part of an Ontario County Substance Abuse Prevention Coalition meeting, which provided additional opportunities to share the map from the workshop with law enforcement, local government and community members. This exercise exposed the amazing potential this map could provide to stimulate discussion about data sharing, as well as important relationship building, within the Ontario County prevention ecosystem. As an example, at the coalition meeting the police chief and mayor were interested in tobacco data and someone there was representing a tobacco action group. They began talking and are now data sharing.

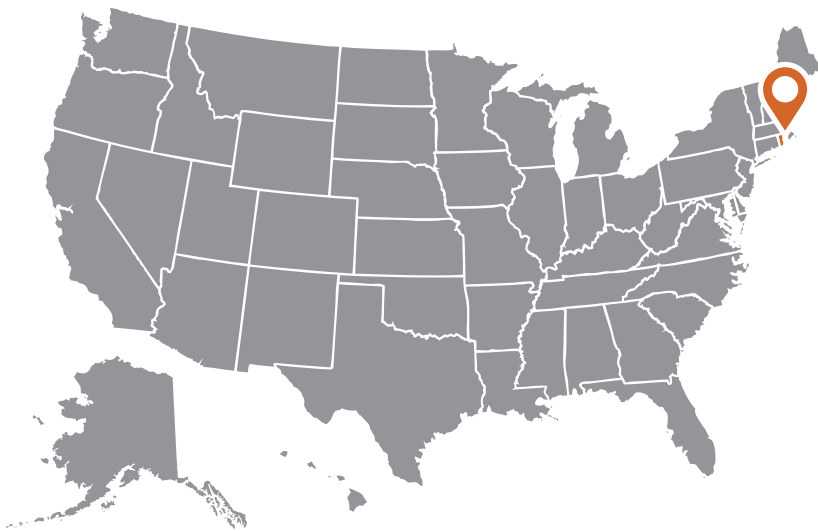
While we gained some real traction, it is unclear how high of a priority that data in general has and the importance of the transparency of our data collecting, sharing, reporting capabilities have in the prevention ecosystem. In the prevention world, people ask for the same data all the time, but the term “data” as it is, often causes a loss of interest. Its necessity seems to score a low priority with many, which continues to be a challenge.

We completed the first phase a semi live map, the implications are endless but there is so much left to be done. Once completed it will need to be updated at least once a year to remain current. There may be some interest in the United Way taking over this project, but it is uncertain if the focus of the map would remain on understanding the data relationships or would pivot to primary functions/activities/programs that each of their programs are running.



Ecosystem Mapping Event Flier.
Created by Marcella Maier Lambrecht.

While the library system doesn’t do anything directly with substance abuse data itself, the ecosystem mapping activity showed how we could do this kind of work with any kind of information, in any area that we could be a key player in. As a library system, we are interested in data for knowing what’s making the largest impact in communities so that the local libraries can partner with community groups, and community development in general. We are interested in increase or decline in funding sources, and helping libraries make decisions about funding models.



Partner organizations

[NEXMAP](#) (non-profit civic tech organization)

[Chibitronics](#) (STEAM-learning craft & electronics)

Library roles played

Developing civic data literacy (see [page 38](#))

Showing the importance of civic data (see [page 37](#))

CASE STUDY 5

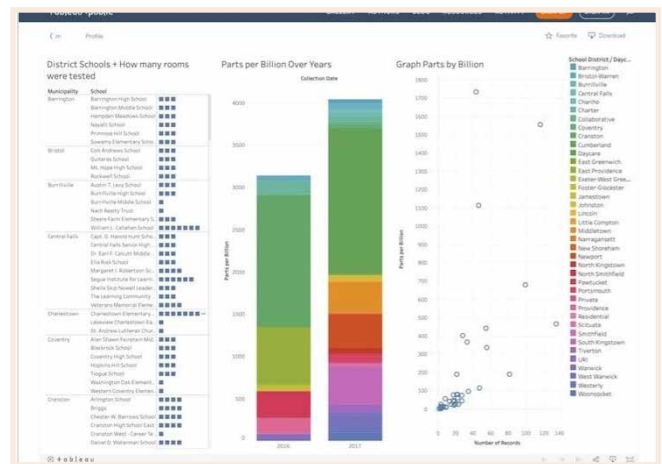
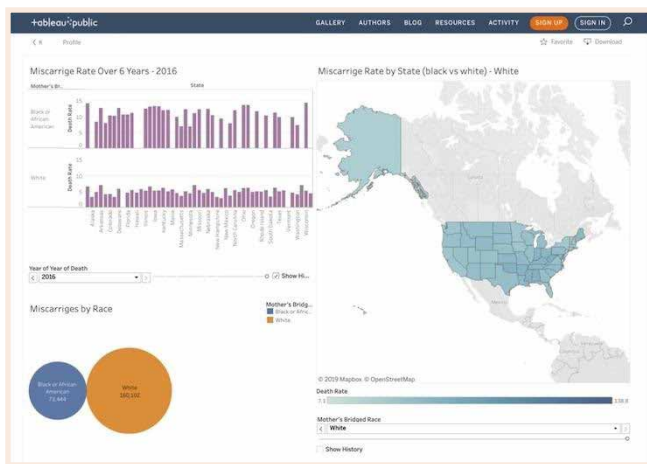
Providence (RI) Public Library

Engaging teens to tell local data stories with paper and electronics

Providence Public Library (PPL) worked with trainers and learning designers at NEXMAP and Chibitronics to develop a teen-focused paper circuit data visualization activity to complement an ongoing PPL data literacy and workforce readiness initiative. The workshop took a unique approach to data literacy by promoting hands-on learning as a complementary strategy for sharing introductory data experiences with hard-to-reach audiences. The library hopes to apply this workshop model, blending hands-on, materials-based explorations with 21st century tools and skill-building, in additional learning settings with community partners.

Data Fluency is emerging as a recognized learning competency thanks to the ubiquity of networked technologies and computational platforms. With more and more job skills requiring hands-on use of technology and data skills, it is more important than ever to make data something that resonates with young learners.

Providence Public Library is actively working on this challenge and opportunity through its [Data Navigators 2.0](#) program, which guides teens through learning data analytics basics, including 1) posing a question 2) collecting relevant data 3) cleaning the data using spreadsheet software 4) visualizing that data using Tableau and 5) analyzing data for insightful trends and correlations.



Sample Student Tableau Workbooks, Photo by Providence Public Library. Screenshots by PPL Staff, CC BY.



Data Stories and Illuminated Infographics for Student projects. Photos by PPL Staff, CC BY-NC 4.0.

The pilot group, high school students from the Rhode Island Nurses Institute Middle College Program, a charter school, found it difficult to relate to the course material as working with data can be very abstract. By developing complementary ways for students to gain introductory data exploration skills—using not only screens and computational tools but craft techniques and physical materials—we sought to help learners find more concrete, visual, and hands-on ways to understand data and relevant topics.

Project partner [NEXMAP](#) works at the intersection of literacy, technology, craft, and open data. NEXMAP and Chibitronics developed a “push-in” activity for the introductory course on Tableau offered in the Data Navigators 2.0 program. This supplemental “making” activity used craft materials in the form of paper, copper tape, binder clips, pens and markers, along with electronics from [Chibitronics](#) (circuit stickers and a “Chibi Chip,” a programmable microcontroller board) to make data explorations more accessible and translatable for learners new to data encounters. NEXMAP provided coaching and logistical support during the program with initial Skype sessions and a mid-semester site visit.

Teens weren’t the only ones who were excited to utilize their art skills and create functioning circuits. The Field Project team and collaborators also hosted an adult professional development workshop on paper circuitry, and

many of the attendees were highly engaged and interested in learning more about these tools. The experience was engaging and useful as an accessible way to explore and share data findings. The teens' craft projects—which used light as an output to evoke aspects of a dataset—served as a highly effective supplement to their data work. From an article by one of our NEXMAP collaborators:

What we found with the groups in Providence, where making and physical computing were completely new ideas, is that the simple set of materials allowed participants to be playful and articulate what they were seeking to share. Calculations and decisions about how to contextualize information so it could be read in an output and interaction on paper—a blinking LED and a switch, say—turned into useful exercises at reverse engineering a kind of word problem. How shall I use a light to render a mortality rate for a given region? What's my blink rate for what period of time? What's the division and arithmetic I need to get a number and an output that's meaningful?*

Throughout the program, we were really pleased to see how quickly and competently staff and students were able to learn and master basic techniques for creating simple circuit systems. We could see how effective this kind of project can be when participants are doing pre-work and exploration work with data, taking an active role in researching and exploring datasets as a way to develop a lens on a chosen topic. These “making” projects helped motivate the students, and served as a great learning tool to help them grasp data visualization concepts. Overall, this project brought new expertise and exposure and new skills to Providence Public Library, and will help us continue to iterate, broaden, and grow our data literacy programming.

In the future, we are interested in exploring different local data sources, and spending more time with the Adult Data Pathway learners. We would like to see civic data and paper circuitry used with middle school-aged youth as an



Project Showcase, Tableau Workbook and Paper Circuit Project.

Photo by Providence Public Library. Photo by PPL Staff, CC BY-NC 4.0.

“The learning and co-creation work we were able to accomplish with this collaboration holds potential for a sustainable open data teaching and learning initiative for libraries looking to blend an outreach, skill-building, and workforce readiness experiences with civic engagement projects.”

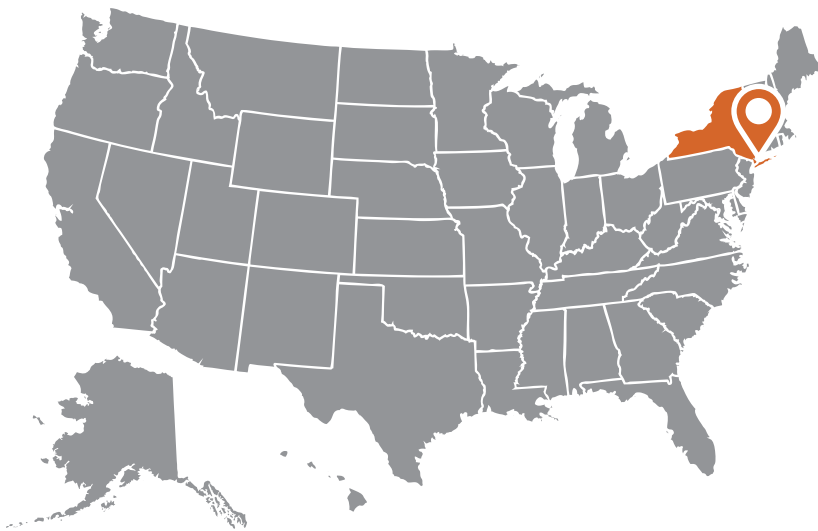
onboarding tool for our teen coding and data analytics classes. The learning and co-creation work we were able to accomplish with this collaboration, combining domain expertise on a dataviz platform and a literacy/information design and communications experience, holds potential for a sustainable open data teaching and learning initiative for libraries looking to blend an outreach, skill-building, and workforce readiness experiences with civic engagement projects.

Learn More

- [Data Navigators 2.0 Resources](#)
- *David Cole and Hannah Perner-Wilson, “Getting Lost and Unlearning Certainty: Material Encounters in an Electronic Craft Practice,” in Loes Boger and Letizia Chiappini (eds), *Critical Maker Reader*, Amsterdam, [Institute of Network Cultures](#), 2019, pp. 116–123. PDF available at: <https://networkcultures.org/wp-content/uploads/2019/11/CriticalMakersReader.pdf>

Project Team

- **Kate Aubin**, Providence Public Library
- **Cate Burlington**, Providence Public Library
- **Mireille Sturman**, Providence Public Library
- **Karisa Tashjian**, Providence Public Library
- **David Cole**, NEXMAP
- **Natalie Freed**, Chibitronics



Partner organization

[Mayor's Office of Data Analytics](#)

Library roles played

Developing civic data literacy
(see page 38)

Making civic data more usable
(see page 40)

Showing the importance
of civic data
(see page 37)

CASE STUDY 6

Queens (NY) Public Library

Partnering to provide data literacy trainings to improve census outcomes

The [Queens Public Library](#) (QPL) project, *Data Counts*, trained library staff to provide open data workshops in hard-to-count census tracts, provided training and resources to partner organizations working with hard-to-count populations, and developed a community trainer program in collaboration with the NYC Mayor's Office of Data Analytics that was designed to increase public engagement with the city's open data portal. QPL was able to maximize their reach by targeting multiple audiences with trainings, making the training curriculum public, and implementing community trainers to promote open data. The library continues to expand its community trainer program and Census outreach with multiple NYC public library partners.

We designed Data Counts at Queens Public Library (QPL) as an intervention that could help mitigate the threat of an undercount in the upcoming 2020 Census. Based on 2010 mail response rates for Queens County, more than 67 percent of county residents live in 'hard-to-count' census tracts. Additionally, populations that the Census Bureau defines as hard to count (children ages 0 to 5, people with low incomes, racial and ethnic minorities, renters, and undocumented and recent immigrants) make up a large portion of not only county residents, but also QPL cardholders. We approached Data Counts with the belief that we could support a safe and accurate count in 2020 by increasing both awareness of open data resources and training participants on using

these resources to better understand and advocate for their communities.

Data Counts identified three key areas to address data literacy: staff development, partner engagement, and public facing workshops. While data literacy was a new strategic area for QPL—save for some previous one-off collaborations with the New York City (NYC) Mayor’s Office of Data Analytics (MODA)—our roles as project managers, training providers, and connectors were ones we have long served.

For the staff development and partner engagement components, we convened a consultant in December 2018 to design and lead a three-part, 7.5 hour training for QPL staff on locating, understanding, and utilizing open data resources. Staff development workshops occurred at our Central Library in February 2019, reaching 21 staff members from QPL locations serving hard-to-count census tracts.

We decided to start with staff workshops so that library workers at these locations could bring these open data resources into reference interactions throughout the year leading up to Census 2020.

Our consultant also designed a three-hour training based off this curriculum (see below) to use with partner organizations that also serve hard-to-count populations (NYC Housing Authority program providers, Queens Borough President’s Immigration Task Force member organizations, etc.).

For our final component—public-facing data literacy workshops—we worked with our local civic data agency, the [Mayor’s Office of Data Analytics](#), to train a cohort of volunteer ‘Open Data Ambassadors.’ MODA sub-contracted with BetaNYC, a civic tech firm, to design and lead a training for 14 ambassadors in July 2019 at our Long Island City Community Library. These public workshops began in September 2019, with 28 sessions scheduled across 20 locations in September and October. These workshops will continue leading up to Census Day on April 1, 2020.

Deeper partnerships with our project collaborators has been the most exciting success to come out of this initiative. Serving as a training resource for other organizations working with hard-to-count populations has helped us make connections that will continue into 2020 as we prepare for Census Day.

Many of our workshop participants attended a training we hosted with the [New School’s Digital Equity Lab](#) on preparing community based organizations to conduct census outreach and engagement. Similarly, our partnership

QUEENS PUBLIC LIBRARY

NYC OPEN DATA 101

Want to know more about how your local government and city agencies work? Curious how you can use open data to better understand and advocate for change in your community? Join us for this introductory workshop to learn how to access, filter, and analyze information about your neighborhood from New York City's open data platform.

FREE ADMISSION

Mondays, September 9; October 21 6pm RIDGEWOOD 20-12 Madison Street • (718) 821-4770	Thursday, September 19 5:30pm EAST ELMHURST 95-06 Astoria Boulevard • (718) 424-2619
Mondays, September 16; October 28 6pm LEFFERTS 103-34 Lefferts Blvd., Richmond Hill • (718) 843-5950	Thursdays, September 19; October 24, 6pm CORONA 38-23 104 Street • (718) 426-2844

NYC Open Data Flier

with MODA has been a major success. We had worked with MODA for the past two years to host library events during NYC Open Data Week, but this is our first time collaborating on an extended project. We are thrilled to be piloting an Open Data Ambassadors program that we hope can expand to our sister systems at Brooklyn Public Library and New York Public Library to make open data accessible to all New York City residents.

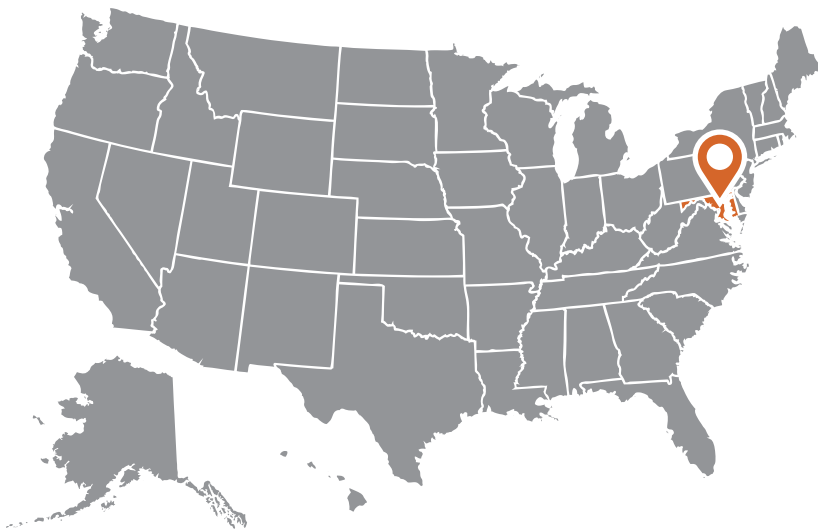
One major learning for us at QPL has been that open data literacy is civic literacy. The curriculum designed by our colleagues at BetaNYC grounds open data in place, asking participants to think about all the layers of city government representing them.

From State Senator all the way down to Community Board, resources shared on open data platforms are tools to hold elected officials accountable and to provide recourse for community members by identifying inequities or inconsistencies in services. So many people are intimidated by the word ‘data,’ or by the technology we are teaching to understand and analyze that data, that they miss this key point. For libraries who feel like they do not have the technical capacity on staff, or that the interest is not there in their patrons, I would share this framing.

“Deeper partnerships
with our project
collaborators has been
the most exciting success
to come out of this
initiative.”

Learn More

- Microsoft Excel Basics with Open Data : [Introduction](#), [Formulas and Functions](#), [Pivot Tables and Charts](#)
- [Data Counts Curriculum](#) (staff workshop and partner workshop)
- [Open Data 101](#) (patron-facing workshop)



Partner organization

[Baltimore Neighborhood Indicators Alliance at the University of Baltimore](#)

Library roles played

Showing the importance of civic data
(see page 37)

Developing civic data literacy
(see page 38)

Making civic data more usable
(see page 40)

CASE STUDY 7

Robert L. Bogomolny Library at the University of Baltimore (MD)

Joining open data and archival collections for neighborhood stories

Many libraries maintain archives that are rich with information about local history and civic life. Archival collections containing qualitative information, drawn from many points in time, can be a valuable compliment to local civic data, which are often contemporary and quantitative.

The Baltimore project team members designed learning modules that connected the library's archival collections to the neighborhood indicators partner's community-based open data. Being mindful of sustainability, the project found ways to build their work onto existing programs, structures, and organizational goals. This case study also shows that when forming new partnerships, it is important to take dedicated time for each partner to learn about the other; this lays a foundation necessary for successful collaboration.

The Baltimore Regional Study Archives (BRSA) at the [Robert L. Bogomolny Library](#) contains a treasure of archival information on Baltimore's neighborhoods. Additionally, the Baltimore Neighborhood Indicators Alliance (BNIA) also at the University of Baltimore (UB) hosts a great deal of community-based, open data about and for Baltimore. However, the Library and BNIA do not generally have internal resources to work together to provide assistance to potential users. The purpose of this collaboration was to create scaffolded learning experiences and pedagogical supports to better understand how to access both archival materials as well as open data to empower everyone who cares about neighborhoods to effectively "tell their story". Before our initiative

to connect these two resources, there was not a clear pathway that allowed potential users to make this link. We hoped that making step-by-step guidelines would produce positive contributions to UB faculty and students as well as Baltimore communities and the wider public audience.

The collaboration was organized around a three-week classroom activity in the spring Introduction to Information Literacy course at the University of Baltimore. The course focused on helping UB students learn to work with community information

stored in Library archives and contemporary information systems developed by BNIA. Secondary goals included building awareness of these resources both among faculty and other members of Baltimore's community.

"We had to learn how to speak each other's language and learn how to communicate in ways that made sense across disciplines."

or trends that began in the 1960's are present in the early 21 century as reflected through BNIA's Vital Signs indicators. The connection to qualitative data about neighborhoods was particularly welcomed by community organizations.

Since this project was the first official collaboration between the Library and BNIA, we had to familiarize ourselves with the resources available and services provided by one another. We had to learn how to speak each other's language and learn how to communicate in ways that made sense across disciplines. Another challenge we faced involved finding relevant connections between the archival collections and available civic data. Finally, the students in the class were participating remotely, and the online environment required more engagement and guidance by the instructor and limited potential community interactions.



Presentation by Fatemeh Rezaei at Baltimore Data Day in Baltimore.

Photo By Seema Iyer, CC.

We focused on creating a specific learning module that provided step-by-step instructions on how to access one representative collection from the Archives' Model Urban Neighborhood Demonstration (MUND) Collection and explore the community data in Vital Signs. Joining archival sources with contemporary community-based open data prompts students to examine how a community changed over time and if initiatives

While the funding for this project was significant, it was not enough to alter the course of existing work loads for staff either at the Library or at BNIA, nor should it have been. To become a truly sustainable resource, we had to create linkages that enhance ongoing activities and events. These included classroom instruction and links to student learning outcomes (Library), community engagement (BNIA), online resources (Library and BNIA) and our annual workshop Baltimore Data Day (UB).

This project allowed us to demonstrate the role the collaboration could play in publicizing our collective resources to Baltimore communities, UB faculty, and UB students. We learned how our resources can provide complementary content for community initiatives, and BNIA hopes one day to integrate a librarian or student of library science with their team to support data management activities. Other academic libraries and community civic data initiatives should consider partnerships to promote the availability of archival and civic data on campus and in communities surrounding the institution.

Learn More

- [Project Website](#)
- [Learning module to link archives and open data \(with assignments\)](#)

Project Team

- **Seema D. Iyer**, PhD, Baltimore Neighborhood Indicators Alliance—Jacob France Institute
- **Kristin Conlin**, Robert L. Bogomolny Library
- **Fatemeh Rezaei**, Robert L. Bogomolny Library



Partner organization

[Saint Paul's Office of Technology
and Communications](#)

Library roles played

Connecting data users
(see page 35)

Showing the importance of civic data
(see page 37)

Developing civic data literacy
(see page 38)

Increasing the library's capacity
(see page 46)

CASE STUDY 8

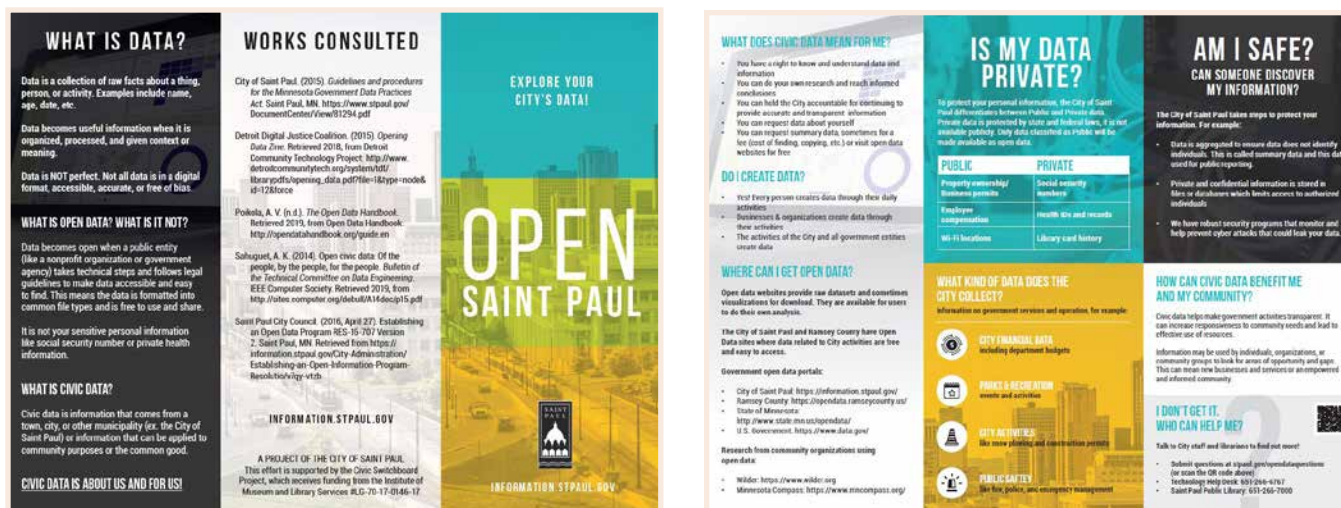
Saint Paul (MN) Public Library

Increasing awareness of open data through community conversations

[Saint Paul Public Library](#) worked with local government to increase awareness of civic data through multiple strategies: creating informational media describing local open data, presenting public events, and offering trainings for library staff. The work they were doing was emergent, so the team needed to be adaptive to learning about audience needs and changing roles within the team itself. To further the work, the team proactively designed strategies to institutionalize the library's role in the local civic data ecosystem.

For our project, we identified an opportunity to create a more data literate community and a more responsive, inclusive city government by: (1) increasing awareness of the civic data available in general and in particular the City of Saint Paul's Open Information portal, (2) creating opportunities for both connected and disconnected residents to engage more deeply with data that is relevant to their community, and (3) developing a framework for gathering and responding to feedback and common questions.

To increase awareness of open data, we created an Open Saint Paul brochure to illustrate what open data is, what is collected, how it is shared, and what are the benefits, rights, and responsibilities of both civic data owners and everyday users.



Open Saint Paul Brochure (front/back)

We also designed and presented a series of events aimed at giving residents the opportunity to understand and discuss civic data opportunities and challenges. We held the events at three of our most visited libraries, all in diverse neighborhoods that have historically experienced an under-investment in technology. The events included panel discussions with local experts and data intermediaries, with questions focused on the use of open and civic data in community settings. To further engage attendees and boost data literacy, we gave an overview of the information portal, replicated hands-on activities from [Detroit Digital Justice Coalition's DiscoTech model](#), and most importantly provided healthy food and drinks at every session.

We also provided training for library staff, which included an introduction to the City's open data properties as well as the technical knowledge necessary to help library patrons with its operation. We realized that this training was necessary, as there was a general lack of awareness about open data across the City. We completed multiple training sessions before our events started to ensure that library staff would be prepared to answer questions once we had our events as well as our paper guide available for the public.

Reaching disconnected residents at the scale we intended proved to be challenging. The formality of a panel structure may have caused some apprehension, but our promotion of the events was not as dispersed in the community as we initially intended. We promoted the events through the brochure, flyers and a social media campaign that were well received and piqued the interests of individuals and organizations seeking to share their projects or work with the City. However, we did not see as much in-person interest and perhaps more print or earned media was needed. Where we saw the most interest from people without a data background was at the events themselves. During our second event, we were in a busy combined Library and Parks & Recreation space where after 15 minutes of zero attendees, an announcement was made over the loudspeaker. Soon we had an all-ages crowd that had questions for almost every panelist and were excited to jump into activities. This led us to think that less emphasis on splashy marketing and more informal pop-up or tabling events would be better received.

“As team roles changed throughout the project, we decided to write a project charter about halfway through to outline the opportunity, scope, roles and expectations. We recommend doing this from the start to keep momentum and communication going through the sometimes inevitable staff and organizational changes of public service.”

As team roles changed throughout the project, we decided to write a project charter about halfway through to outline the opportunity, scope, roles and expectations. We recommend doing this from the start to keep momentum and communication going through the sometimes inevitable staff and organizational changes of public service.

This project helped to elevate the importance of the work and has allowed us to develop our project with an eye towards sustaining it into the future. We have been able to not only create events to meet our current objective but have taken the time to develop smaller versions of our events.

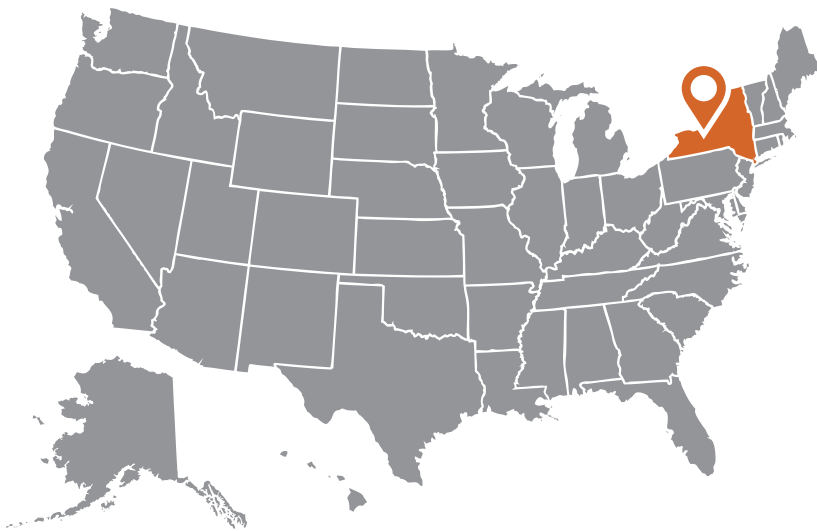
To give us the space to continue the work, we have included leadership in our plans to develop a template-building component related to this project and tied it to overall department strategic objectives. We will be able to use these templates in our individual departments as well as in our collaboration.

Learn more:

- [Open Data Guide](#)

Project Team:

- **Xenia Hernández**, Saint Paul Public Library
- **Derek Engelking**, City of Saint Paul



Partner organizations

[rprrt, LLC](#)

[Butler Library at
SUNY Buffalo State](#)

Library role played

Increasing library capacity
(see [page 46](#))

CASE STUDY 9

Western New York Library Resources Council

Clarifying library roles in an expansive regional civic data ecosystem

The [Western New York Library Resources Council](#) (WNYLRC)—a not-for-profit consortium of libraries and library systems serving six counties—saw a need to examine and assess the open civic data environment in the region. They worked with a consultant to analyze how local municipal websites were making data public and found civic data in the region to be disparate and in clear need of organization. The library council felt that there was a potential role for the library—one team member said, “people will go through elaborate backflips to get primary source data and don’t think of going to a library”—and saw multiple avenues to potentially pursue, whether convening a data producer coalition, providing data literacy trainings for librarians, or providing data management expertise to local municipalities. The team was able to connect with Queens Public Library and learn about their staff data literacy trainings. While the scale of open data uncovered by the team’s environmental scan seemed too big to get a handle on, WNYLRC ultimately found a path forward by choosing to pursue a specific, small scale training project based on the Queens’ curriculum.

Our project goal was to try to identify and describe the open civic data environment in the region so that we could begin to develop a sense of direction for the involvement of libraries in growing awareness and use of open civic data in our communities.

The Western New York region encompasses roughly seven counties. Although not geographically large in area, it is very diverse in many ways. There are extremes of wealth and poverty, racial and ethnic diversity in some areas,

rural and urban areas, and a complex web of municipal government entities throughout. Without basic literacy skills and, without access to the digital tools and resources to access data that could be quality of life changers, a great number of people in Western New York are at a distinct disadvantage. The one institution found in nearly every community where there are some resources to help overcome these obstacles is the library. Not just public libraries, but academic and school libraries are also where access to information is provided equally.

The region has experienced some developments in raising awareness of and addressing issues of open civic data. For example the City of Buffalo recently launched an open data portal with an associated “Data 101” training course. However, the efforts to date have not taken a broader regional approach, nor have they really involved the library community. We observed that of the several government and non-government entities involved in creating, managing and using open civic data, that none have extended an “invitation” to libraries to participate in their work, and none have taken the lead in trying to establish a broader coalition of entities to address issues of open civic data and their potential impact in our communities.

“We will have a core group of librarians who will be able to reach out to stakeholders in an informed way to start building networks.”

Our hope was to initiate an environmental scan of the region to identify sources of open civic data, types of data and possible gaps in coverage; identify key stakeholders in the local civic data ecosystems; help raise public awareness of and promote greater public engagement with open civic data and; develop training for librarians to become “open civic data intermediaries” for their communities.

The project team hired analytics firm rprrt, LLC to conduct this scan. Their research allowed us to make some general observations about the potential for an open civic data ecosystem in the region: the amount of open civic data is limitless and growing; open civic data can be obscure and hard to find; and open civic data is not homogeneous: there is no single standard for indexing, describing or governing the use of open civic data, making it difficult to reuse. Our scan showed us that our initial thoughts of the open civic data ecosystem as finite and easy to identify were incorrect!

Based on these observations, we convened a small group of librarians as a next step in identifying the major stakeholders in the region regarding open civic data. This discussion served to lay out a way to raise public awareness, promote public engagement, and enhance the role of librarians as open civic data intermediaries, with the ultimate goal of creating a training document for area librarians.

Through this project, we’ve really come to terms with the scope of building an open civic data ecosystem. This is such a “new” concept for so many in the region. Neither municipal nor private entities have taken the lead in forming a coalition of interests and resources to address the issues shared by all. We are reluctant to have libraries “take the lead” at this point since we do not have the knowledge base to do so.

That said, we've made some really useful connections with other stakeholders in the state. We were able to connect with fellow Civic Switchboard field project team members from Queens Public Library. Their training tools will likely prove useful for future training in Spring 2020. Our hope is that once the training takes place, we will have a core group of librarians who will be able to reach out to stakeholders in an informed way to start building networks.

As a regional organization, we have the communication network to be able to learn what the types of libraries in the region may be doing in relation to open civic data. We can also help disseminate information about ongoing activities. If we can successfully organize the librarians in the region—despite differences in systems or types—to come together on the topic of open civic data, we might be able to serve as a model for the region's municipal and private entities that are stakeholders in open civic data.

Learn More

- [Municipal Website Analysis report](#)

Project Team

- **Heidi Ziemer**, Western New York Library Resources Council
- **Jamie Bono**, rprrt, LLC



Additional Resources

In the following sections we have gathered a list of references to tools, reports, articles, websites, and other resources that are relevant to various parts of the Civic Switchboard project.

DOWNLOADABLE MATERIALS | PAGE 86

Materials created for the Civic Switchboard workshops that can be downloaded and/or repurposed for your initiative

REPORTS, ARTICLES AND WEBSITES | PAGE 89

Links to outside web pages mentioned in the Guide, grouped thematically

GLOSSARY | PAGE 95

Terms relevant to open civic data that may assist you in understanding this Guide and communicating/educating your partners

Downloadable materials

With this section of the guide, we share materials created for the Civic Switchboard in-person workshops. All of the material is licensed under [Creative Commons Attribution license](#) unless otherwise described (license statements are also included directly on the documents).

Talking Points: Why Libraries Should be Key Participants in their Civic Data Ecosystems

This one-sheet provides a set of talking points developed by Civic Switchboard that you can use to advocate to yourself, your colleagues, your administrators, community groups, potential partners, and funders. [[PDF](#) | [PNG](#)]

Civic Switchboard

Talking Points: Why Libraries Should be Key Participants in their Civic Data Ecosystems

This one-sheet provides a set of talking points you can use to advocate to yourself, your colleagues, your administrators, community groups, potential partners, and funders. Are we missing something? Let us know.

Working with Civic Data Probably Already Aligns with Your Library Mission

- Your library probably already considers **data literacy** as increasingly important for its staff and community to cultivate.

- It is also likely to consider **community engagement**, specifically **working to strengthen its communities**, equally important.

- Because it's a good strategy for addressing tough problems (and because funding is often tight), **collaborating with strategic partners** may be a point of emphasis.

- Developing your library's role in its civic data ecosystem can address all of these goals.

Helping to Lead and Grow Your Local Community

- The local level is where the most innovative and forward-looking ideas around open data are developing. The Sunlight Foundation has written, "cities are now setting the leading examples for public data, from policy, culture, collection to engagement and reuse...they are increasingly providing best practices and learning from experimentation that **federal governments** should learn from and adopt."

Wunderlich, J., & Sunlight Foundation. (2017, May 23). <https://sunlightfoundation.com/2017/05/23/trump-threats-to-data-act-us-cities/>

- Libraries are community anchors, firmly connected to local communities and practices. **Libraries and their workers should be helping to lead the development of their civic data ecosystems.**



This resource was created in 2019 by the Civic Switchboard Project Team, <https://civic-switchboard.github.io/> CC-BY 4.0

You Won't Go Alone: You Can Strengthen Existing Partnerships and Build New Ones

- Cultivating a healthy local civic data ecosystem takes the **coordinated efforts of a variety of data intermediaries**; no single entity can be expected to cover all of the necessary roles alone.

- As your library works in its own ecosystem, you'll continue to learn about other players and entities. Where possible, take on roles that complement and strengthen existing capacity.

- **Partnering includes working with other libraries, too!** If you are in an academic library, explore civic data partnerships with your public library, and vice-versa.

Sharing the Value of Library Workers' Expertise and Ethics

- The act of publishing data alone does not always result in community impact. Data intermediaries help the public apply and use open data to achieve impact.

- Data intermediaries build relationships among publishers, users, and other members of the ecosystem, improve data, statistical, and technological literacy, enhance data quality, provide feedback mechanisms to publishers, and build tools that enable broader data use.


- Libraries and librarians should act as core civic data intermediaries; our expertise adds value to a wide range of issues that affect both data publishers and users. As Shannon Matten, Associate Professor at The New School, puts it:

"We must push our civic leaders to bolster their planning teams with experts in the ethical collection, organization, preservation, and dissemination of information resources. Open data programs should be curated by professionals who understand the complex issues of equity, privacy, and security. Librarians on the planning commission? Archivists in the public academy... They are guardians of a critical, contextual approach to information, which is a public resource every bit as necessary as streets and sewer lines."

Matten, S. (2016). Public Information. *Phoenix Journal*. <https://doi.org/10.22269/161115>

Identifying Ecosystem Players

A series of prompts to consider when identifying the players in your civic data ecosystem [PDF]



Civic Switchboard
Identifying Ecosystem Players

Who is the go-to in your community for _____?

- talking about equity and how data affects vulnerable populations
- reaching a lot of community organizations at once
- trainings around data literacy
- trustworthy reports about neighborhood data and trends
- offering classes on a range of technology skills
- funding for community projects
- organizing topical social events and connecting people
- facilitating door to door community engagement
- designing and implementing surveys
- tracking down a public dataset no one seems to have access to yet
- organizing a hackathon or meetup or work session
- expanding access to technology and internet so people can use data
- communicating data findings to a broader audience

• _____
• _____
• _____

(OVER)

Identifying Ecosystem Players by Civic Switchboard Project Team, May 2018
<https://civic-switchboard.github.io/> CC-BY 4.0


Stuck? Here are some likely suspects for your map:

- Local government (and other) agencies that are producers of data
- Non-profit organizations that use civic data
- Data intermediaries that help people find, use, and apply civic information
- Foundations that support civic data initiatives
- Journalists and individuals who make meaning of civic data
- Local businesses and others that add value to data by contextualizing it or creating access
- Coders and bridge groups that use technology and civic data
- People and organizations that help data users build their skills
- Libraries -- in whatever local role they play!

Identifying Ecosystem Players by Civic Switchboard Project Team, May 2018
<https://civic-switchboard.github.io/> CC-BY 4.0

Exploring Other Ecosystem Maps

A series of prompts (developed for the the Civic Switchboard workshop) to use when looking at an ecosystem map created by someone else [PDF]



Civic Switchboard
Exploring Other Ecosystem Maps

Use your post-its to annotate other teams' maps using the following prompts:

- Put a blue post-it by a partner or connection that surprised/excited you to see
- Do you see a clear "center" to this ecosystem or are roles/work/power/influence more distributed?
- From this map, how would you describe the library's role in the civic data ecosystem?
- What types of partners/roles might be missing?
- Are there any potential vulnerabilities?
- What questions/comments/reactions do you have about this map?

(OVER)

Exploring Ecosystems by Civic Switchboard Project Team, May 2018
<https://civic-switchboard.github.io/> CC-BY 4.0

After the Walk Around: Debrief with Partner


Pick just one or talk through all of these with your partner:

- Choose an organization on the edge and center them and see if that changes how you think about the ecosystem or what players need to be there. **What would it look like with library centered** (if they aren't already)? What if you centered a community data user, such as a block captain?
- Look at points of entry - how would a new partner or a user learn about full ecosystem - who are the ecosystem members who interface with community at large?
- Is your ecosystem inclusive of everyone in your community. Which members of your community may not be represented? Would all partners agree to their role? If you showed the map to organizations on it, would they agree there are partnerships?
- **Is this a "real" map or an aspirational map?**
- Based on how you've drawn your ecosystem, are there certain partners that are critical? if they closed down, would you severely alter the ecosystem?
 - Would there be partners that no longer communicated? Would you end up with two unconnected ecosystem blobs?

Exploring Ecosystems by Civic Switchboard Project Team, May 2018
<https://civic-switchboard.github.io/> CC-BY 4.0

A Typology of Library Roles in Civic Data Partnerships

A growing list of how libraries can be active participants in their local ecosystems [PDF]



Civic Switchboard
A Typology of Library Roles in Civic Data Partnerships

- Consulting with civic data stakeholders on
 - metadata for datasets and portals
 - technical infrastructure for repositories
 - privacy and strategies to protect it
 - agreements for data sharing
 - data management planning
 - publishing priorities
- Authoring [data user guides](#) for civic data
 - for specific datasets, to provide important context and scenarios for use
 - on broader topics, to showcase the range of available data and how it might be used together
- Archiving and preserving civic data
 - in a library-managed repository
 - by performing curation tasks in partnership with an external repository
- [Creating and publishing](#) machine-readable datasets from library collections, resources, or operational data
- Managing a civic data portal
- Hosting civic data community events
- Delivering data literacy and skills training
- Gathering user feedback on civic data initiatives and portals

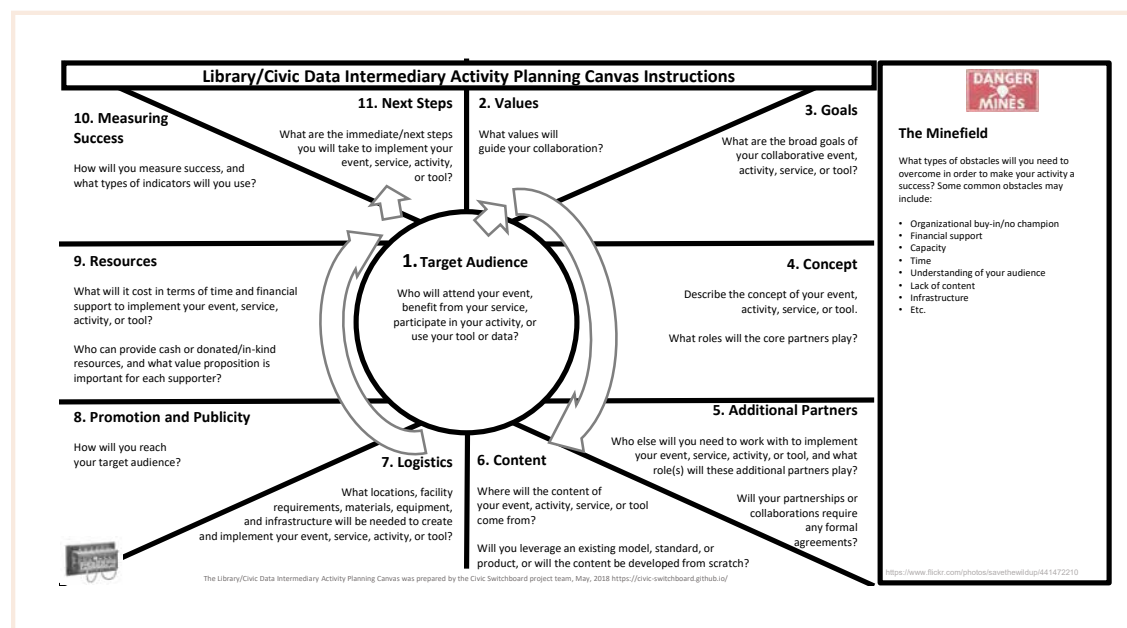
A Typology of Library Roles in Civic Data Partnerships by Civic Switchboard Project Team; May 2018, updated August 2018;
<https://civic-switchboard.github.io/> CC-BY 4.0

- Loaning equipment for citizen science data collection
- Promoting civic data initiatives through library social media, events, and calendars
- Storytelling and sharing case studies of projects using civic data
- Developing library staff to build capacity for sustained library participation in civic data ecosystems
 - through defining and hiring new positions
 - through expanding the roles and skill sets of existing staff

A Typology of Library Roles in Civic Data Partnerships by Civic Switchboard Project Team; May 2018, updated August 2018;
<https://civic-switchboard.github.io/> CC-BY 4.0

Civic Switchboard Activity Canvas

A project planning sheet, inspired by [lean canvas](#), to be used by library workers and data intermediaries together [PDF]. An empty sheet is also provided.



Reports, articles, and websites

Open data and civic data

Detroit Digital Justice Coalition. “Opening Data.” Edited by Diana J Nucera, 2015.

📄 https://www.alliedmedia.org/files/ddjc_zine-final-rgb.pdf

Farias Lóscio, Bernadette, Caroline Burle, and Newton Calegari, eds. “Data on the Web Best Practices.” W3C, January 31, 2017.

📄 <https://www.w3.org/TR/dwbp>

Headd, Mark J. “Open Data Guide,” 2016.

📄 <http://opendata.guide>

Living Cities. “Field Scan of Civic Technology.” November 26, 2012.

📄 <https://www.livingcities.org/resources/131-field-scan-of-civic-technology>

Mattern, Shannon. “Public In/Formation.” *Places* (November 2016).

📄 <https://placesjournal.org/article/public-information/>

Mozilla Science Lab. “Open Data Primers,” 2017.

📄 <https://mozillascience.github.io/open-data-primers>

Obama, Barack. “Transparency and Open Government.” whitehouse.gov, January 21, 2009.

📄 <https://obamawhitehouse.archives.gov/the-press-office/transparency-and-open-government>

Open Knowledge International. “The Open Data Handbook.”

📄 <http://opendatahandbook.org>

Pew Research Center. “Americans’ Views on Open Government Data,” April 2015.

📄 <http://www.pewinternet.org/2015/04/21/open-government-data>

Sunlight Foundation. “Open Data Policy Hub.”

🔗 <https://opendatapolicyhub.sunlightfoundation.com>

“Why Open Data?” Open Data Policy Hub.

🔗 <https://opendatapolicyhub.sunlightfoundation.com/why-open-data>

Sunlight Foundation, Code for America, and Open Knowledge. “US City Open Data Census.”

🔗 <http://us-city.census.okfn.org/year/2016>

“The Annotated 8 Principles of Open Government Data.” OpenGovData.org.

🔗 <https://opengovdata.org>

Wilkinson, Mark D., Michel Dumontier, IJsbrand Jan Aalbersberg, Gabrielle Appleton, Myles Axton, Arie Baak, Niklas Blomberg, et al. “The FAIR Guiding Principles for Scientific Data Management and Stewardship.” *Scientific Data* 3 (March 15, 2016): 160018.

🔗 <https://doi.org/10.1038/sdata.2016.18>

World Wide Web Foundation. “Open Data Barometer.”

🔗 https://opendatabarometer.org/?_year=2017&indicator=ODB

Data literacies

Bhargava, Rahul, Erica Deahl, Emmanuel Letouzé, Amanda Noonan, David Sangokoya, and Nathalie Shoup.

“Beyond Data Literacy: Reinventing Community Engagement and Empowerment in the Age of Data.” Data-Pop Alliance, October 2015.

🔗 <http://datapopalliance.org/wp-content/uploads/2015/11/Beyond-Data-Literacy-2015.pdf>

Carnegie Library of Pittsburgh, and Western Pennsylvania Regional Data Center. “Data 101 Toolkit.” WPRDC, October 2, 2018.

🔗 <http://www.wprdc.org/news/data-101-toolkit>

“Civic Data Guides: Thinking Critically about Digital Public Records.” Georgia Institute of Technology.

🔗 <https://serve-learn-sustain.gatech.edu/civic-data-guides-thinking-critically-about-digital-public-records>

Community Information Now. “What’s Needed for a Community to Be Good at Using Data.”

🔗 <http://cinow.info/wp-content/uploads/2016/09/Whats-Needed-for-a-Community-to-be-Good-at-Using-Data-20160810.pdf>

“Creating Data Literate Students.”

🔗 <http://datalit.sites.uofmhosting.net>

Crusoe, David. “Data Literacy Defined pro Populo: To Read This Article, Please Provide a Little Information.” *The Journal of Community Informatics* 12, no. 3 (October 8, 2016).

🔗 <http://ci-journal.net/index.php/ciej/article/view/1290>

EU Science Hub. “DigComp—Digital Competence Framework for Citizens.” EU Science Hub, June 10, 2015.

🔗 <https://ec.europa.eu/jrc/en/digcomp>

Library Carpentry.

🔗 <https://librarycarpentry.github.io/lessons>

Matthews, Paul. “Data Literacy Conceptions, Community Capabilities.” *The Journal of Community Informatics* 12, no. 3 (October 22, 2016).

🔗 <http://ci-journal.net/index.php/ciej/article/view/1348>

“We’re Convening a Data Literacy Consortium.” FabRiders (blog), February 12, 2019.

🔗 <https://www.fabriders.net/data-literacy-consortium>

“Youth Data Literacy: Exploring Data Worlds at the Public Library.”

🔗 <http://www.youthdataliteracy.info>

Partnerships and community-building

Advancement Project–Healthy City Community Research Lab. “Participatory Asset Mapping, a Community Research Lab Toolkit.”

🔗 <http://www.communityscience.com/knowledge4equity/AssetMappingToolkit.pdf>

Center for Community Health and Development at the University of Kansas. “Community Tool Box.”

🔗 <http://ctb.ku.edu/en>

Hendey, Leah, Jake Cowan, G. Thomas Kingsley, and Kathryn L.S. Pettit. “NNIP’s Guide to Starting a Local Data Intermediary.” Urban Institute, May 2016.

🔗 <https://www.urban.org/research/publication/nnips-guide-starting-local-data-intermediary>.

Living Cities, National Neighborhood Indicators Partnership, and Code for America. “The Civic Tech and Data Collaborative Toolkit.” Medium (blog), 2018.

🔗 <https://medium.com/civic-tech-data-collaborative/toolkit/home>

Reynoso, Elizabeth, Kathryn L.S. Pettit, and Christopher Whitaker. “Collaborating for 21st Century Solutions,” June 2018.

🔗 https://www.neighborhoodindicators.org/sites/default/files/publications/21Century%20Solutions%20w%20date_CTDC_Web.pdf

Schalkwyk, François van, Michelle Willmers, and Maurice McNaughton. “Viscous Open Data: The Roles of Intermediaries in an Open Data Ecosystem.” *Information Technology for Development* 22, no. sup1 (August 30, 2016): 68–83.

🔗 <https://doi.org/10.1080/02681102.2015.1081868>

“The Citizen’s Handbook.”

🔗 <http://www.citizenshandbook.org/toc.html>

The Engagement Lab @ Emerson College in partnership with Living Cities. “Public Engagement Roadmap.”

🔗 <https://engage.livingcities.org>

Understanding your ecosystem

Arena, Olivia and Crystal Li. Guide to Civic Tech & Data Ecosystem Mapping. June 2018.

📄 https://www.urban.org/sites/default/files/publication/98649/guide_to_civic_tech_and_data_ecosystem_mapping.pdf

Donker, Frederika Well and Bastiaan van Loenen. “How to Assess the Success of the Open DataEcosystem?”

International Journal of Digital Earth 10, no. 3 (2017): 284–306.

📄 <https://doi.org/10.1080/17538947.2016.1224938>

Knight Foundation and Network Impact. “Assessing Civic Tech:Case Studies and Resources for Tracking Outcomes,” March 2015.

📄 <https://knightfoundation.org/reports/assessing-civic-tech-case-studies-and-resources-tr/>

Malinsky, Eli and Chad Lubelsky. “Network Evaluation: Cultivating Healthy Networks for Social Change.” Toronto: Centre for Social Innovation.

📄 http://socialinnovation.ca/sites/socialinnovation.ca/files/NetworkEvaluation_Pocket_english.pdf

O’Neil, Daniel X. and the Smart Chicago Collaborative. “The CUTGroup: Civic User Testing Group as a New Model for UX Testing, Digital Skills Development, and Community Engagement in Civic Tech.”

📄 <https://www.cutgroupbook.com/>

Open Data Institute (UK). “Mapping Data Ecosystems.” March 23, 2018.

📄 <https://theodi.org/article/mapping-data-ecosystems/>

Taylor, Madeline, Peter Plastrik, Julia Coffman, and Anne Whatley. “Evaluating Networks for Social Change: A Casebook,” 2014.

📄 http://www.networkimpact.org/wp-content/uploads/2014/10/NetworkEvalGuidePt2_Casebook_Rev.pdf

Library roles in civic data ecosystems

Auraria Library. “Data to Policy Project.” Text. Auraria Library.

📄 <https://library.auraria.edu/d2pproject>

Bertot, John Carlo, Brian S. Butler, and Diane M. Travis. “Local Big Data: The Role of Libraries in Building Community Data Infrastructures,” 17–23. *dg.o 14: Proceedings of the 15th Annual International Conference on Digital Government Research*, 2014.

📄 <https://doi.org/10.1145/2612733.2612762>

Brenner, Aaron, Bob Gradeck, Eleanor Mattern, and Michael Bolam. “Libraries Will Be an Asset for Us: Emerging Roles for Academic Libraries in Civic Data Partnerships.” In CNI: Coalition for Networked Information. Washington DC, 2015.

📄 <https://www.cni.org/topics/digital-curation/libraries-will-be-an-asset-for-us-emerging-roles-for-academic-libraries-in-civic-data-partnerships>

Caravan Studios. “On Libraries, Communities, and Open Data.” Caravan Studios (blog), August 20, 2018.

📄 <https://medium.com/@caravanstudios/on-libraries-communities-and-open-data-a95d8be25457>

Emmelhainz, Celia. “Data Librarians in Public Libraries » Public Libraries Online,” May 18, 2015.

📄 <http://publiclibrariesonline.org/2015/05/data-librarians-in-public-libraries/>.

“Enabling Open Government for All: A Roadmap for Public Libraries.” Center for Technology in Government,

📄 https://www.ctg.albany.edu/publications/enabling_open_gov_for_all/.

“Introducing the Public Library Innovation Exchange (PLIX).” MIT Media Lab.

📄 <https://www.media.mit.edu/posts/introducing-the-public-library-innovation-exchange>

Jaeger, Paul T., Ursula Gorham, John Carlo Bertot, Natalie Greene Taylor, Elizabeth Larson, Ruth Lincoln, Jonathan Lazar, and Brian Wentz. “Connecting Government, Libraries and Communities: Information Behavior Theory and Information Intermediaries in the Design of LibEGov.Org.” *First Monday* 19, no. 11 (October 27, 2014).

📄 <http://firstmonday.org/ojs/index.php/fm/article/view/4900>

“Library Innovation Focus of Five Projects Receiving Nearly \$1 Million in New Support from Knight Foundation.” Knight Foundation.

📄 <https://knightfoundation.org/press/releases/library-innovation-focus-of-five-projects-receiving-nearly-1-million-in-new-support-from-knight-foundation>

Mattern, Shannon. “Local Codes: Forms of Spatial Knowledge.” Public Knowledge.

📄 <https://publicknowledge.sfnoma.org/local-codes-forms-of-spatial-knowledge>

Mersand, Shannon, Mila Gasco-Hernandez, Xiaoyi Zhao, J Ramon Gil-Garcia, G Brian Burke, Megan Sutherland, and Miguel Figueroa. “The Role of Public Libraries in Engaging Citizens in Smart, Inclusive, and Connected Communities.” The Research Foundation of State University of New York, 2018.

📄 <https://www.ctg.albany.edu/media/pubs/pdfs/Theroleofpubliclibrariesinsmartcommunities.pdf>

Murray, Brittany, Elsa Falkenburger, and Priya Saxena. “Data Walks: An Innovative Way to Share Data with Communities.” Urban Institute, June 4, 2016.

📄 <https://www.urban.org/research/publication/data-walks-innovative-way-share-data-communities>

Partlo, Kristin. “From Data to the Creation of Meaning Part II: Data Librarian as Translator.” *IASSIST Quarterly*, 2014, 4.

📄 <https://doi.org/10.29173/iq774>

Poon, Linda. “Libraries Want to Change Your Relationship With Public Data.” CityLab.

📄 <https://www.citylab.com/life/2019/02/libraries-public-information-city-data-digital-archive/581905>

———. “Should Libraries Be the Keepers of Their Cities’ Public Data?” CityLab, February 11, 2019.

📄 <https://www.citylab.com/life/2019/02/libraries-public-information-city-data-digital-archive/581905>

Roadmap to Informed Communities and Sunlight Foundation. “Community Data Dialogues.” (n.d)

📄 <https://communities.sunlightfoundation.com/action/data-dialogues/>.

Robinson, Pamela, and Lisa Ward Mather. “Open Data Community Maturity: Libraries as Civic Infomediaries.” *Journal of the Urban and Regional Information Systems Association* 28 (December 2017).

📄 http://www.urisa.org/clientuploads/directory/Documents/Journal/Vol28_final.pdf

Sandberg, Scott, Cele Morris, and Timothy Sutherland. “The Northwest Indiana Center for Data and Analysis: A Case Study of Academic Library Community Engagement.” *Metropolitan Universities* 24, no. 3 (2013): 46–61.

📄 <https://files.eric.ed.gov/fulltext/EJ1092778.pdf>

Sullivan, Kathleen. “Can Libraries Accelerate Local Open Data Publishing?” Medium (blog), August 9, 2018.

📄 <https://medium.com/open-data-literacy/can-libraries-accelerate-local-open-data-publishing-34caaf6a767f>

“Two State Officials Are on a Mission to Make Libraries the Public’s Hub for Government Data.” StateScoop, April 25, 2018.

📄 <https://statescoop.com/how-public-libraries-are-becoming-the-place-where-citizens-can-turn-to-for-government-data>

Wilson, Tess. “Civic Data Zine Camp,” September 28, 2017.

📄 <http://yalsa.ala.org/blog/2017/09/28/civic-data-zine-camp/>

———. “I’m a Public Librarian. This Is Why I’m Also a Civic-Tech Advocate.” Technical.ly, June 27, 2018.

📄 <https://technical.ly/2018/06/27/carnegie-library-pittsburgh-teens-civic-tech-open-data-tess-wilson-guest-post>

Archiving and preservation of civic and government data

“Data Refuge.”

📄 <https://www.datarefuge.org>

Jacobs, James A., and James R. Jacobs. “A Long-Term Goal For Creating A Digital Government-Information Library Infrastructure.” 2017-02-17. Libraries+ Network (blog).

📄 <https://libraries.network/blog/2017/3/7/a-long-term-goal-for-creating-a-digital-government-information-library-infrastructure>

Janz, Margaret Miller. “Maintaining Access to Public Data: Lessons from Data Refuge,” *Against The Grain* 29:6 March 5, 2018.

📄 <https://doi.org/10.31229/osf.io/yavzh>

Lippincott, Sarah K. “Environmental Scan of Government Information and Data Preservation Efforts and Challenges.” Atlanta, GA: Educopia Institute, December 2018.

📄 <https://educopia.org/pegi-environmental-scan>

Mayernik, Matthew S., Robert R. Downs, Ruth Duerr, Sophie Hou, Natalie Meyers, Nancy Ritchey, Andrea Thomer, and Lynn Yarmey. “Stronger Together: The Case for Cross-Sector Collaboration in Identifying and Preserving at-Risk Data.” Earth Science Information Partners, April 2017.

📄 <https://www.esipfed.org/press-releases/stronger-together>

PEGI Project.

📄 <https://www.pegiproject.org>

Temple University Libraries. “Future Proofing Civic Data: Exploring the Challenges of Preserving Open Civic Data for the Long Term T,” September 29, 2017.

📄 <https://docs.google.com/document/d/1vymMtPf0PP17qchPeKXSCu-87mJ0lvnEf9IKypXWWRA/edit#heading=h.a45xpv99a5p>

Glossary

This glossary of terms is intended to serve as a reference point as you read through this guide, but also as you engage with your communities and partners.

API: Standing for “Application Programming Interface,” an API is set of instructions that allow two web applications to receive requests and complete transactions over the web.

Chief Data Officer (CDO): A state or local position focused on building data-driven government. CDOs may lead open data programs, manage data analytics projects, and apply GIS to address government challenges.

Civic Data Ecosystem: The people and organizations connected with data in a local region and the infrastructure that supports data work.

Civic Data Hackathon: An event that brings together people who are interested in using technology and civic data to address a community need.

Civic Hacking: The use of technology and data to create tools and approaches for addressing civic issues and improving civic workflows.

Civic Tech: Technology that facilitates access to government information and data and that supports government services.

Data Curation: The processes involved with managing, preserving, and providing access to data.

Data Intermediary: Organizations or individuals who help people find, use, and apply public information; NNIP identifies three main categories of activities for data intermediaries: 1. assemble, transform, and maintain data; 2. disseminate information and apply the data to achieve impact; 3. use data to strengthen civic capacity and governance

Data Literacy: The ability to access, work with, and critically evaluate data.

Data Portal: Web-based libraries designed to make open data findable and usable by others. Datasets in data portals are accompanied by metadata records, which describe and provide information about the data.

Digital Equity: An environment in which individuals and communities have access to the technology and digital information that is needed for full engagement with civic life.

Digital Literacy: The ability to use digital technologies and the web to locate, access, evaluate, and create digital information and media.

Digital Scholarship: Scholarship that involves the use of digital data, methods, tools, and authoring and publishing systems.

Metadata: Data about an information object—such as a book, photograph, or civic dataset—that help users to identify, discover, manage, and preserve it. A common definition for metadata is “data about data.”

Open Data: Information released by an organization or government entity that is free to access and use, can be reused by anybody for any purpose, are available in a usable format, and can be modified and shared by others.

