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TECHNOLOGY

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Column Editors



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Librarians and Open Government Data: Opening Possibilities

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Open Government Data (OGD) is a growing movement in which data collected by federal, state, and local government is made freely available to the public for use, re-use, and redistribution. While OGD can be intimidating, it is another information resource that public services librarians can introduce to their users. While it has its challenges, OGD is full of potential. As a resource for information and civic engagement, it is important for librarians to familiarize themselves with its benefits, challenges, and the obstacles to finding and using it. This paper aims

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to introduce the concept of OGD, describe some of its strengths and weaknesses, explain why it matters to librarians, and suggest how librarians can get involved in this movement.

KEYWORDS *open government data, public services librarians, academic librarians, civic engagement*

INTRODUCTION

Libraries are in the business of information. Librarians are experts at connecting users with the information they need by teaching them where to search, how to search, and how to access information resources. There is a growing information movement which librarians should know about so they can share this information with library users. Most librarians are familiar with the term *open access*, but fewer are familiar with the term *open government data*. According to OpenDataHandbook.org ([n.d.](#)), “Open data is data that can be freely used, reused and redistributed by anyone.” Open government data (OGD) is data that was collected by a government entity and made freely and publicly available for use, reuse, and redistribution. These datasets may include information about crime, health, poverty, economics, transportation, and other topics at the city, state, and federal level.

In 2009, President Barack Obama signed a memorandum stating that government should be transparent, participatory, and collaborative and that federal government entities should make their data freely available to the American public. In a 2013 Executive Order, President Obama further mandated an Open Data Policy which requires this data to be published in open, machine-readable formats while also safeguarding privacy, confidentiality, and security (Executive Order No. 13642). Machine-readable files, such as CSV, JSON, or XML, can be automatically processed by computers, unlike PDFs or images, which can be read by humans but not by computers. On March 29, 2017, the Open, Public, Electronic, and Necessary Government Data Act (OPEN Government Data Act, [2017](#)) was introduced in the U.S. House of Representatives. If it passes, this bill will require non-confidential government data to be made public. Data would be required to be (1) machine readable, (2) non-proprietary, and (3) freely and openly available to the public with no restrictions on copying, publishing, distributing, transmitting, citing, or adapting it (H.R. 1770, 2017). As of the writing of this paper, the bill has not yet come to a vote, but it does have the support of the American Library Association (ALA) and the Association of College & Research Libraries (ACRL).

Open government data continues to be a growing information trend as governments increase efforts to be more transparent with the public. As a growing source of information, OGD should be on the radar of public services librarians, who can add it to their information toolbox. This paper

aims to introduce the benefits and challenges of open government data, describe why Public Services librarians should be familiar with OGD, and provide ideas for how librarians can get involved and contribute to the growing OGD movement.

BENEFITS & CHALLENGES OF OGD

Providing the public with free access to government data has enormous potential, but there are challenges which can lessen or undermine the positive impact of governments sharing their data publicly. The degree to which OGD can be beneficial is dependent on a variety of factors related to technology, standards, and the technical skills of data users.

Benefits of Open Government Data

Sharing government data with the public can have a range of benefits. Open government data is believed to contribute to improved accountability, trust, and citizen satisfaction (Janssen, Charalabidis, & Zuiderwijk, 2012). Providing citizens with access to government data allows them to keep watch of what their government is doing, identify areas for improvement, determine trends or issues that the government may not be aware of, and reuse the data to develop tools that enhance quality of life. The following sections describe these benefits in more detail.

GOVERNMENT TRANSPARENCY

Having access to government data allows citizens to monitor some of the services and outcomes resulting from their tax dollars. It allows citizens to fulfill their duty and right to participate in their government (Attard, Orlandi, Scerri, & Auer, 2015). In a city, certain datasets can help citizens track the monthly and yearly progress of street improvements approved by voters. Likewise, if citizens are concerned that their neighborhood is targeted for code violations at a higher rate than other neighborhoods, code enforcement data could either confirm or disprove their claims. Further, this same set of data could be plotted onto a map, along with a crime dataset, to determine whether there is a correlation between the crime rate in a neighborhood and the number of code enforcement violations. Citizens have the opportunity to answer a variety of questions by using OGD.

IMPROVED SERVICES

Open government data can be used to identify inefficiencies in current services and procedures or identify a need for services that do not yet exist. For example, datasets can be used to create maps showing the distribution of low-income

households, neighborhoods that do not have easy access to a grocery store, or the types of crimes in the city and where those crimes happen. A visualization of the data, like a map, can sometimes be the key to demonstrating a need or a problem to city leaders and initiating the conversation towards a solution.

TOOL DEVELOPMENT

A wide array of tools can be created using OGD. In New York City, individuals used OGD to develop a mobile app to help senior citizens locate nearby food pantries and a Death Map (<http://www.deathmapnyc.com>) that marks the locations of New York City homicides and traffic fatalities in 2015 and 2016 (Okamoto, 2016). Users can look for patterns by viewing deaths by vehicle, crime, police, or at work. In Denton, Texas, OGD has been used to create dashboards that display key indicators related to housing, safety, demographics, and economics (<http://data.cityofdenton.com>). Average citizens can use these dashboards to view graphs, charts, and other visualizations of data they find interesting. As more citizens interact with and utilize OGD, the variety and number of tools created is likely to increase, potentially contributing to an improved quality of life for citizens.

Challenges of Open Government Data

While OGD is full of potential, it only has value when it is used (Janssen et al., 2012). Some governments may believe the myth that merely publishing data is all that is required to make it findable and usable, when there are many other factors that contribute to findability and usability (Janssen et al., 2012). There are technical barriers that prevent OGD from being as user-friendly as it could be. The more complex the task a user wishes to complete, the more barriers must be overcome (Janssen et al., 2012). While a key purpose of OGD is to increase transparency and encourage citizen participation, this goal falls flat when the data is difficult to interact with or understand. In a systematic review about open government data initiatives, Attard et al. (2015) found five key challenges identified in the literature: data formats, data ambiguity, data discoverability, data representation, overlapping scope, and public participation.

DATA FORMATS

Two key requirements of open data is that it should be machine readable and non-proprietary. Nevertheless, some open data portals continue to include file formats, such as PDFs, which are not machine readable. This data can be viewed and read by a human, but it cannot be reused or analyzed using a computer. Government data portals may also contain files which require a user to purchase proprietary software, such as Microsoft Excel, in order to view or

interact with the data. This creates a barrier for use, because users may have to purchase software in order to access or use the data. Ignoring the need for machine-readable data that can be used with non-proprietary software presents obstacles for users hoping to interact with the data for a specific purpose.

DATA AMBIGUITY

Users may be able to locate and access datasets, but this does not guarantee that they understand the data or its context. Datasets can be unclear about which units of measurement are being used for the data. They may also use codes to label rows and columns without defining what each code represents. This can make it difficult for users to understand the data and to interpret it in a meaningful way. A tool or analysis derived from data which is not clear is less credible and useful than those created with data that can be interpreted with confidence.

DATA DISCOVERABILITY

Due to a lack of standards, time, or concern, government entities may use inconsistent metadata or no metadata at all. Metadata, such as the names of publishers, authors, and creation date are essential to making datasets findable (Janssen et al., 2012). Citizens cannot use datasets that they cannot find. Likewise, they may be able to find the dataset they were looking for but, due to missing or incomplete metadata, may not be able to confirm that it is the correct one. High-quality metadata is necessary for interpreting the datasets that are found. Before utilizing a dataset, it is helpful to know when it was created, who created it, and whether it is original or edited data.

DATA REPRESENTATION

Data can be represented using a variety of methods, including spreadsheets, charts, graphs, and maps. The manner in which data is represented is dependent on the type of data. For example, budgetary data is represented differently from crime data. One dataset represents dollars and cents while the other represents frequency and geographical data. Users can access and use the data, but if the datasets are organized in a variety of ways, a higher degree of user skill is required in order to combine the data for meaningful analysis. A lack of standards in many OGD portals exacerbates this issue of data heterogeneity.

OVERLAPPING SCOPE

Government data can travel through and be used by multiple departments, which can lead to multiple versions of what is essentially the same dataset.

Likewise, two or more departments may gather data on a very similar topic but come to different results or simply duplicate information, which can confuse users (Kucera & Chlapek, 2014). Citizen users of this data may not know which dataset is the original, which has been altered, or which should be considered more authoritative.

PUBLIC PARTICIPATION

If governments are using open data portals to increase transparency and citizen involvement, then public participation is a key measure of success. Public awareness and interaction with open government data portals continues to require innovative strategies to encourage use (Chan, 2013; Foulonneau, Martin, & Turki, 2014; Janssen et al., 2012; Okamoto, 2016). In a study of how OGD has been used in New York City, Okamoto (2016) found that the vast majority of active users had a technical and/or quantitative background. Similar challenges related to the cultural domain may explain lower-than-desired citizen participation in OGD (Attard et al., 2015). Whether low participation is due to lack of technical skill or poor usability of the portal or data itself, data use by the public still has ample room to grow.

WHY OGD MATTERS FOR PUBLIC SERVICES LIBRARIANS

Despite knowledge of the benefits of OGD, it can feel irrelevant to public services librarians. It may appear to require an extensive background to search, but that does not have to be true. The role of a public services librarian is not necessarily to understand or use the data. Instead, it is the primary job of a librarian to connect library users to OGD, which facilitates civic engagement and participation in democracy. However, librarians are not limited only to helping users find and access OGD information. Information professionals have valuable skill sets which can be utilized to improve OGD initiatives in their community. Open government data matters as an information resource and a tool for civic engagement.

OGD as Information

Open government data can be a valuable resource for library users. It is important for public services librarians to understand its value, how it can be used, and what the common challenges are to finding, accessing, and using it. Users may need government data in order to complete research related to transportation, homelessness, crime, or economic indicators in the community. Librarians who understand the organization and shortcomings of open government data portals can provide better guidance to these users and help them know what to expect from these portals.

Okamoto (2017) notes that librarian involvement in OGD provides an opportunity to teach users about accessing and assessing open data, furthering open access goals, and educating the public about data privacy and data literacy. It is a rich resource that librarians can tap into and share with the users they serve.

OGD as Civic Engagement

Libraries are hubs for information and idea sharing. They also serve as a conduit between resources that may not otherwise become connected. While academic libraries tend to focus their attention on the campus community, an argument can be made for the benefits of reaching out to and partnering with the community surrounding the campus. Barry, Lowe, and Twill (2017) argue that librarians have a responsibility to be civically engaged and to utilize their skills to contribute to the common good. Courtney (2009) notes that some universities have community outreach included in their mission and that libraries can use this mission to participate in civic activities, such as OGD.

Interaction with and use of open government data is a method of civic participation which can further the overall health of a community. Teaching students and faculty how to find and access open government data furthers the mission of government transparency and citizen participation. Librarians can also lend their expertise into making the OGD movement an informational asset to the community, strengthening the quality, findability, and usability of the data uploaded into an open government data portal.

HOW LIBRARIANS CAN GET INVOLVED

Open government data faces a series of challenges, which were outlined earlier. Librarians have a unique skillset that can be used to improve the quality of these data portals. These skills include knowledge of metadata standards and practices, an understanding of where and how to locate information, and familiarity with writing policies and standards. To improve the existing open data portals or to facilitate citizen use of OGD, librarians can get involved in efforts that already exist in their community or organize their own efforts to gather individuals who are interested in using and improving OGD.

Open Data Day

Every year in March, people from all over the world participate in Open Data Day. The purpose of Open Data Day is for citizens to use their local open data to demonstrate the benefits of open data and to promote “adoption of open data policies in government, business and civil society” (Open Data

Day, [n.d.](#)). OpenDataDay.org emphasizes that this day is for everyone, including designers, developers, statisticians, public servants, and everyday citizens. This column's author has participated in two Open Data Day events in Denton, Texas. The first year, she bridged the information gaps of more technically skilled participants and volunteered to organize spreadsheets into more usable, consistent formats. The second year, she used her knowledge of searching trends and tutorial video creation to lead a group of individuals in creating an introductory video for the City of Denton Open Data Portal. Even librarians who feel that they lack the skill to participate in Open Data Day can find a role to play.

Open Government Data Hackathons at the Library

Libraries serve as a hub of information by providing information resources and showing users how to access and utilize these resources. They also create space for users to share information with each other. Libraries can participate in OGD by hosting hackathons or other events which encourage participants to create something useful using government data. These hackathons could take place on Open Data Day or any other time that the library chooses. While these events do not typically result in lasting innovations or services, they can increase awareness of OGD among participants (Foulonneau et al., 2014). When concrete tools are created at these events, the university can increase its visibility in the community as an entity that is interested in making a positive impact on its host city.

Librarians as Volunteers

Librarians can contact the coordinator of their local open data portal, if there is one, to volunteer their time to help improve the standards and organization of the portal. Tasks could include identifying key challenges and limitations with the current data portal and making recommendations on how these challenges could be improved. The ways in which a librarian could be helpful include, but are not limited to

- assessing the usability of the portal search functionality and recommending improvements;
- evaluating the quality of metadata and identifying where it is lacking;
- recommending and/or creating online tutorials to help users learn how to find and access data in the portal;
- identifying and recommending portal standards that improve consistency, context, findability, and usability of data.

The degree to which a librarian can participate in the improvement of an OGD portal depends on the technical skill of the individual librarian.

However, a librarian does not need to be technically skilled in order to provide valuable advice or feedback. Public services librarians are highly familiar with information searching, the searching habits of users, and the features of both good and subpar search tools. At the very least, a librarian can contribute to a more usable open data portal by identifying what could be improved or clarified.

CONCLUSION

As the OGD movement continues to grow, Public Services librarians would be wise to familiarize themselves with its strengths, shortcomings, and future potential. Librarians who are familiar with how to locate open government data can provide their users with an additional source of information which can be used to assess and develop solutions for a variety of issues related to health, crime, transportation, economics, and other community challenges.

In addition to familiarizing themselves with OGD, librarians can go a step further in contributing to the common good by volunteering to participate in or organize events that focus on the use or improvement of the open data in their communities. Whether technically skilled or not, librarians can play a valuable support role to programmers, designers, and other more advanced users who wish to develop tools or resources using open government data.

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