

Open Data and Rural Differences

KNOWLEDGE BRIEF



INTRODUCTION

Open data refers to datasets that are freely available to the public, in a usable and standardized format, for review and analysis.¹ For data to be considered completely open, there should be no limits on its use or redistribution. Most federal, provincial, and large municipalities provide open data through various data portals or platforms. Some online data portals allow users full access to download data (e.g., data.bc.gov), while others restrict users to view data online as an interactive map (e.g., geoportal.gc.ca). These organizations collect and maintain data on many different topics such as land use, business details, environmental impacts, and human demographics.² Open data platforms are a preferred method of sharing data with a wide variety of users such as researchers, students, local government departments, and businesses. Use of these datasets range by the equipment and skills required from viewing a spreadsheet on a home computer to advanced programming skills and specialized software.³ The extent of skills and resources needed for use can depend on the complexity of the data and its source. An example of differing use of open data is digital boundaries for land use zoning: BC Hydro uses this information to manage resources and respect park land; farmers may be interested in exploring the location of agricultural land for future expansion; and conservation students use zoning data to learn how best to balance park and watershed maintenance with industry interests. For each of these groups to collect their own data about land use and receive accuracy confirmation from local authorities, significant investment and collaboration is required. Therefore, a centralized platform to share previously collected and future datasets is essential to optimize resources.

BARRIERS TO OPEN DATA

Data that is not completely “open” may have limitations such as a fee or application procedure.¹ These barriers may be due to the privacy restrictions of the requested data, or the interests of the agency that authored the dataset. It is not yet standard practice for organizations to make their data freely available online, and many challenges are associated with this task. Many businesses and research groups collecting data lack the personnel and expertise to prepare and distribute these datasets, so often are unable to provide open data services.¹ The resources required to make data open are considerable and are often underestimated by potential users.³ Even those who are aware of the benefits of open data may still choose to keep datasets private for a variety of reasons. It is very challenging to anticipate the social context and implications of data that is released, and mitigating adverse effects of releasing data requires comprehensive review and input from experts.⁴ Data is often collected for a specific purpose and data consumers may not understand the full context, which could lead to misinterpretation and potential misuse. Some data can be more familiar to the public, and therefore easier to interpret (e.g., roads and highways). Other datasets can be quite complex, requiring training and more understanding (e.g., soils data). In cases of more complex datasets, a coding system is often used to represent different categories. A long-standing example is the Canada Land Inventory, which uses seven different categories to describe suitability of soils for agriculture.

Health and other human data, where individuals can be identified, follows strict privacy laws and is therefore never openly available, however can be obtained through applications in aggregated forms. Compiled health data can be very useful if identifying information such as age, sex, and location can be removed. Removing identifying details and properly aggregating data is a complex task that requires expertise in human-data science which is not often available throughout all levels of government.¹ The process of de-identifying data could include removing details such as names and addresses, but more commonly involves aggregating data to represent geographic regions such as an entire postal code or town. Maintaining privacy in smaller towns can pose an additional challenge. Considering these communities have a small population and are often close-knit, even aggregated data can sometimes not provide enough privacy, making individuals identifiable. Overall, providing open data requires significant resources and expertise to ensure data is easy to find, use, and understand.^{1,2,3} Therefore, the adoption of open data practices is slow, but evolving.

BENEFITS OF OPEN DATA

When data is open, economic development is improved through lowering barriers to entry into various industries, increasing competition and ultimately improving the quality of goods and services provided.¹ Moreover, all levels of government can have access to the same information, easing efforts to collaborate and understand issues, leading to more informed and regionally appropriate policies.^{1,2} Finally, when the public has access to the same data as government and industry, transparency is increased: holding these groups accountable for their decisions affecting citizens and consumers.^{1,2} Even if you may not be a direct user of open data, as a citizen you can benefit from the improvement in goods and services that this knowledge can provide. With the growing demand and widespread benefits of open data, the future includes standardized processes to generate high quality, secure, and privacy-sensitive datasets which are easy to find, obtain, and use.

CHALLENGES OF OPEN DATA IN RURAL COMMUNITIES

When compared to urban centres, rural and remote communities have a lower population density. There are far less people living in a much larger geographic area, with much land unoccupied (e.g., mountains, watersheds, agriculture). This lower population density equates to less resources financed through taxes, which makes it difficult to adopt the same level of technology as densely populated communities such as the Greater Vancouver Area. When we

wish to address issues specific to rural communities, it is important to consider how different smaller Canadian towns are from each other with respect to population, resources, and geographic isolation, as well as the residents living between these towns. Within this context, the concept of “rural” can change, and some towns which have abundant resources may be rural with respect to other services. While there are some forms of data that are common to rural communities and urban regions, such as parcel fabric data, the non-residential part of rural regions needs different types of data for planning and development than urban areas do. This could include data on ecosystems, forests, minerals and other natural features. Urban centres often have the resources and capacity to experiment with different methods for providing open data.⁵ By understanding what issues may be specific to making data open in rural communities, rural government groups and agencies can better anticipate issues when following urban models and develop successful and efficient data collection and sharing platforms. Rural open data policies and programs are not yet well developed and little information is available on successes and challenges among communities which have taken on this task.

Challenges surrounding open data are like that of urban centres, however, may be exaggerated due to the overall lack of resources.⁶ Rural organizations providing data, and those using it, will experience issues that urban communities do not need to consider. Despite a desire and awareness for open data, small rural communities often lack the resources and capacity required for providing the same level of open data access as found in bigger cities. The ability to use open data effectively also requires technological expertise. This disparity could be solved through regional open data platforms that collaborate with rural and remote municipalities and accessible training to improve data use. This disparity in resources could be solved through regional open data platforms that collaborate with rural and remote municipalities. While users in a rural setting face similar issues such as knowing what data they need and how to get it, additional barriers are present. Although internet access has been identified as a basic service in Canada, updating these services for rural and remote communities takes time. Without adequate access to the internet, it is very challenging for end-users, including students, to become familiar with open data sets and download them efficiently. Similarly, these technological advances are required for local government and agencies to provide the data.

Issues faced by rural communities in providing and accessing open data are understudied. Identifying and evaluating this problem is essential to understand this multifaceted issue and provide knowledge to advocate for improved resources.⁷ Although Canada-wide datasets exist in open formats, the data often covers the entire country, not allowing for a fine enough geographic scale for local decision making or research within towns or regions. Many large urban centres have the resources for a municipal technology and data department to oversee open data platforms. Therefore, Canada-wide platforms include major highways, and the Greater Vancouver Area provides laneway datasets, whereas rural and remote communities are limited to major roads and have not had the opportunity to update these datasets with detailed local road information. Perhaps this type of municipal department in urban centres would benefit rural and remote communities at the regional level, where resources could be pooled, however datasets could be more appropriate to the needs of these communities and fine enough for local research and government management.

CONCLUSION

Improving resources to assist agencies in making data open, and aid users in accessing and using this data, comes with many benefits to the community. Similar to benefits for any open data systems, these platforms allow for interdisciplinary collaborations, better informed policy decisions, understanding of local problems and accountability for government decisions.⁷ Rural

communities could benefit in many unique ways, such as reducing disparities in educational opportunities, potentially leading to improved job prospects. Additional benefits include land resource management across government departments and private industry to optimize industrial interests, while protecting public land and mitigating potential natural hazards. Improved open data access in rural towns promotes a culture of technological awareness that can see benefits beyond the exchange of high-quality data.⁷ These services will require advanced technologies as well as education for the next generation of data collectors and users. Rural and remote regions in Canada support healthy, happy lifestyles. Open data can contribute a wealth of knowledge that can enable these rural communities to advance alongside urban centres while continuing to enjoy their home and lifestyle.

REFERENCES AND RESOURCES

1. Tran, Emmie, and Ginny Scholtes. "Open data literature review." (2015).
2. Davies, Tim. "Open data, democracy and public sector reform." *A look at open government data use from data. gov. uk* (2010).
3. Janssen, Marijn, Yannis Charalabidis, and Anneke Zuiderwijk. "Benefits, adoption barriers and myths of open data and open government." *Information systems management* 29, no. 4: 258-268 (2012).
4. Zuiderwijk, Anneke, Marijn Janssen, Sunil Choenni, Ronald Meijer, R. Sheikh Alibaks, and R. Sheikh_Alubaks. "Socio-technical impediments of open data." *Electronic Journal of e-Government* 10, no. 2: 156-172 (2012).
5. Gurstein, Michael B. "Open data: Empowering the empowered or effective data use for everyone?." *First Monday* 16, no. 2 (2011).
6. Davies, Tim, and Fernando Perini. "Researching the emerging impacts of open data: revisiting the ODDC conceptual framework." *The Journal of Community Informatics* 12, no. 2 (2016).
7. Schaffers, Hans, Nicos Komninos, Marc Pallot, Brigitte Trousse, Michael Nilsson, and Alvaro Oliveira. "Smart cities and the future internet: Towards cooperation frameworks for open innovation." In *The Future Internet Assembly*, pp. 431-446. Springer Berlin Heidelberg, 2011.

The Selkirk Geospatial Research Centre (SGRC) is a leading-edge research centre specializing in geospatial technologies to aid in solving critical issues pertaining to environmental and socio-economic problems.

Visit www.sgrc.selkirk.ca for more information.