**Canadian Planning and Policy
Aménagement et politique au Canada**

A Needs Assessment for a Local Social Policy Data Sharing Program

Shannon L. Sibbald, Kimia Sedig (iD), Ross J. Graham, Simoni Haji (iD), Prabhnoor Chhatwal et Dan Lizotte (iD)

Citer cet article

Résumé de l'article

Les urbanistes cherchent des stratégies collaboratives et diverses afin d'adresser des défis complexes à travers le Canada. Dans la région de Waterloo, les gouvernements locaux et des parties prenantes ont adopté le « Waterloo Region Community Data Program » (WRCDP), un système de partage de données de politiques sociales qui contient de l'information sur le développement économique et social. Cette étude examine les besoins des utilisateurs du « Community Data Program » afin de déterminer si les CDP sont utilisés efficacement. Nous avons considéré comment l'utilisation optimale des données CDP pourrait avancer l'aménagement afin de résoudre des défis structuraux et comportementaux dans des municipalités. Nous avons interrogé 17 participants du WRCDP afin d'évaluer les besoins des membres organisationnels quant à l'accès aux données, l'analyse de données et le réseautage. Les participants ont exprimé de l'enthousiasme quant au potentiel du CDP, mais manquaient de l'entrainement sur l'accès et l'analyse des données disponibles. Une limitation de cette étude est la petite échantillon de participants et comment les résultats ne sont pas nécessairement généralisables à d'autres endroits. Les membres organisationnels demeurent optimistes quant au potentiel du système pour l'aménagement et la politique lorsque fournis avec l'appui nécessaire.

Cet article est diffusé et préservé par Érudit.

Canadian Planning and Policy

Améngement et politque au Canada

Volume 2023

A Needs Assessment for a Local Social Policy Data Sharing Program

Shannon L. Sibbald[a] (iD), Kimia Sedig[a], Ross J. Graham[b], Simoni Haji[a], Prabhnoor Chhatwal[a], Dan Lizotte[a]

[a] *Western University*
[b] *Community Services Department, Region of Waterloo*

Abstract

Planners seek collaborative and diverse strategies to address complex challenges across Canada. In the Region of Waterloo, local governments and stakeholders adopted The Waterloo Region Community Data Program (WRCDP), a social policy data-sharing system for information on economic and social development. This study examined the needs of Community Data Program (CDP) users to investigate whether CDPs are utilized effectively. We considered how optimal use of CDP data may advance planning to resolve structural and behavioral challenges in municipalities. We surveyed 17 participants from the WRCDP to assess needs of organizational members regarding accessing data, data analysis, and networking. Participants expressed enthusiasm for the CDP's potential but lacked training in accessing and analyzing available data. A limitation of this study is small participant sample size and how results may not be generalizable to other locations. Organizational members remained optimistic about the system's potential for planning and policy when provided with the necessary support.

Résumé

Les urbanistes cherchent des stratégies collaboratives et diverses afin d'adresser des défis complexes à travers le Canada. Dans la région de Waterloo, les gouvernements locaux et des parties prenantes ont adopté le « Waterloo Region Community Data Program » (WRCDP), un système de partage de données de politiques sociales qui contient de l'information sur le développement économique et social. Cette étude examine les besoins des utilisateurs du « Community Data Program » afin de déterminer si les CDP sont utilisés efficacement. Nous avons considéré comment l'utilisation optimale des données CDP pourrait avancer l'aménagement afin de résoudre des défis structuraux et comportementaux dans des municipalités. Nous avons interrogé 17 participants du WRCDP afin d'évaluer les besoins des membres organisationnels quant à l'accès aux données, l'analyse de données et le réseautage. Les participants ont exprimé de l'enthousiasme quant au potentiel du CDP, mais manquaient de l'entrainement sur l'accès et l'analyse des données disponibles. Une limitation de cette étude est la petite échantillon de participants et comment les résultats ne sont pas nécessairement généralisables à d'autres endroits. Les membres organisationnels demeurent optimistes quant au potentiel du système pour l'aménagement et la politique lorsque fournis avec l'appui nécessaire.

Keywords:

data, community planning, organizational collaboration, evidence-based decision making

Mots-clés:

données, aménagement communautaire, collaboration organisationnelle, prise de décision fondée sur des preuves

Introduction

Communities across Canada are facing significant and complex social challenges that have profound impacts on planning and policy implementation. These challenges are structural, including housing affordability, social isolation, unemployment, economic segregation, and crime; and they are also behavioral, characterized by changing resident attitudes towards community cohesion and trustworthiness of public and political institutions (Menec et al., 2019). With the continuous and complex growth of urban areas, government sectors are seeking new and innovative ways to mitigate these issues. Municipal government services are on the 'front-line' of trying to address these challenges through policing, social services, housing, public health, transportation, and land-use planning. Government actors are collaborating with diverse stakeholders including school boards, immigration settlement agencies, and many community nonprofits to address these problems through policy implementation and urban planning.

In 2018, the Social Sciences and Humanities Research Council (SSHRC) invited researchers from across Canada to identify strengths and gaps in current knowledge related to societal shifts in cities and rural communities. This project resulted in 30 reports that stakeholders were invited to examine in order to guide research agendas, practices, and policies (SSHRC, 2018). The project reinforces the idea that the government is interested in data collection which can be used towards addressing the aforementioned challenges through informed policy and planning practice. Data collection encompasses geospatial data which combines location, attribute, and temporal information (Stock & Guesgen, 2016). This can be categorized into disciplines such as public safety, disaster management, transportation, traffic control, health, environment, and utilities (Valachamy et al., 2020).

Many data implementation strategies are being employed and evaluated for their efficacy in addressing social challenges. Two data-utilizing approaches have become increasingly popular in efforts toward addressing Canada's complex social challenges: interorganizational collaboration, and the employment of data-driven strategies. In this study, the objective was to examine the needs of Community Data Program (CDP) users, to investigate whether CDPs are used effectively. Understanding the optimal use of CDP data may advance planning to resolve structural and behavioral challenges in municipalities.

Interorganizational Collaboration

Interorganizational collaboration between municipal actors is a popular approach due to the interdependence within communities and organizations in addressing social challenges. Interorganizational collaboration, sometimes known as cross-organizational collaboration, is a dynamic process that involves the strategic allyship, partnership, and complex management of multiple organizations to achieve issues transcending the "domain" of any single organization alone (Schruijer, 2020; Vangen & Huxham, 2003). Succinctly summarized by Gray (1985), interorganizational collaboration is necessary when traditional methods of problem-solving have proved to be ineffectual, and when there is "increasing environmental turbulence" – a phenomenon where the competing actions of organizations, including for-profit, non-profit, and governmental, result in incoherent results that do not sustainably address the problems at hand (Gray, 1985).

Interorganizational collaboration can present benefits to sharing expertise and resources, allowing novel strategies to evolve in addressing interconnected issues, which may be unfeasible with independent solutions. (Nezami et al., 2023). Interorganizational collaboration can address

disparities in equity and risk among organizations, by providing equitable opportunities for flexible knowledge sharing (Nezami et al., 2023). A vital component of interorganizational collaboration includes the need to work towards a collaborative and common goal that encompasses all member organizations (Schruijer, 2020). This can lead to more interorganizational collaboration, as members can be connected by a common goal and work collectively with stakeholders to address and embrace various viewpoints. This can create increased exposure for organizations and allow them to exchange varying skills, perspectives, and experiences as well as develop more innovative problem-solving initiatives (Adomako & Nguyen, 2023).

With the increasing demand for collaborative problem-solving, the coming-together of different organizations, each possessing different strengths, aptitudes, access to information, and interests, has been anticipated to result in both improved effectiveness and progressed democracy of organizational work (Gray, 1985). The collaboration between municipal actors such as governments and local organizations allow beneficial interaction, and participation resulting in the improvement of policy development and delivery by fostering mutual enrichment and shared expertise. However, interorganizational collaboration can also prove a difficult and complex endeavor; negotiation of knowledge-sharing, competing organizational interests, and the complicated need for trust-building are only some of the many variables that require careful facilitation in order for the collaboration to be effective (Boughzala & Briggs, 2012; Vangen & Huxham, 2003). Nevertheless, the potential benefits have been repeatedly deemed worth the efforts required (Gray, 1985; Schruijer, 2020).

Data Driven Strategies for Addressing Social Challenges

There are more data and analytical tools available than ever before to help governments and community organizations monitor and understand community needs. Urban planners can use this data to determine where resources should be allocated and improve resource management—a critical tool in building more efficient and productive cities. The use of data can improve social conditions by enabling organizations to better assess and monitor needs, develop tailored policies, plan and deliver targeted services, access resources, assess impacts, as well as communicate with stakeholders and the public regarding pertinent issues (Voida, Harmon, & Al-Ani, 2011). However, other evidence has also demonstrated that local governments and community organizations face a myriad of challenges when they attempt to access and use data and analytics to improve community outcomes (Voida, Harmon, & Al-Ani, 2011). Johnson and colleagues (2018) reported that data-driven social development work could often be driven by the technology available, and not by social need: "...the analytics, smart cities and big data movements ... often appear more interested in technologies, markets and data than in ways that they can engage underrepresented communities and define outcomes in terms that are relevant to diverse groups of citizens." (Johnson et al., 2018, p. 1187).

Similarly, in an examination of community usage of geographic data tools, Johnson and Sieber (2017) found that even if data were available, community organizations might not have had the knowledge, skills, or resources to translate data into improved services effectively, potentially hindering planning or policy implementation.

The Waterloo Region Community Data Program

The Waterloo Region Community Data Program (WRCDP) is an example of an effort that combines interorganizational and data-driven approaches. The program is in the Regional Municipality of Waterloo, Ontario, which consists of three cities and four townships spanning a land mass of 1369 square kilometers. As of 2019, this region is home to an estimated 617,870 people, a population that is increasing at an average rate of 1.58% per year (Region of Waterloo, 2019). It was created in the mid-1990's by the Canadian Council on Social Development (CCSD) which later transitioned to Canadian Community Economic Development Network (CCEDNet) in September 2019 (Community Data Program, 2020). To our knowledge, no research has been previously conducted on the WRCDP.

The WRCDP is a partnership between local government and community stakeholders with a focus on social policy and is hosted by the Region of Waterloo's Social Services, Public Health, and Planning departments. It operates as part of a national network of Community Data Programs (CDPs) which includes 19 consortiums across Ontario and 31 across Canada (Community Data Program, 2020). The WRCDP implements the Consortium Model of governance, in which municipal governments, community services, and other municipal organizations, often coined as "members", are grouped with a lead representative of the Region of Waterloo ("leaders") that convey information between members (Community Data Program, 2020). Members were able to work towards a common public service goal, while accessing data, training, and networking opportunities (Community Data Program, 2020). CDPs were created with the aim to consolidate and share databases for greater access and reduced cost across Canada by providing data that organizations and municipalities could use to study economic and social development trends at the smallest geographical scale (Community Data Program, 2020). The accessible data is expected to help organizations plan, deliver, and evaluate services, as well as network to implement public policy. To enhance partnerships and increase community capacity, CDPs are membership-based communities that allow organizations to join consortia based on geographical location. Conditions of membership include an annual membership fee paid to the CCEDNet and the requirement to be an organization that has a local mandate and is not for profit (Community Data Program, 2020).

All CDPs aim to provide their members with low-cost, membership-based access to >$1M worth of relevant and credible Canadian secondary data products, training, and capacity building resources. Staff working at a CDP member organization have access to the entire network of CDP data holdings. This network contains information collected through survey data and other quantifiable data from organizations such as Census Canada and Statistics Canada. Some CDPs hold regular meetings to support networking and capacity-building; others are supported by host organizations that provide 'backbone' analysis services and support to smaller nonprofits. The use of a CDP provides urban planners with necessary data for evaluating existing policies to inform and improve policy decisions. A Wellington-Dufferin-Guelph Public Health Report from 2017 found that their local CDP resulted in cost savings, greater and easier access to data, enhanced partnerships, and increased community capacity (MacLeod, 2017). It is unclear whether these benefits are presumed based on the availability of data and training or its actual use. However, a previous study noted in their findings that members do not have enough time or training to assess planning reports properly (Seasons, 2008). It is important to determine an appropriate analytical

approach to using data based on the situation present. For instance, one may need more detailed information regarding a population with more confounding variables or policies because the nature of the intervention is likely to be more complex and requires an understanding of other factors.

Membership of the WRCDP consists of five local municipalities (each with multiple participating departments) and ten non-profit organizations. Effectively sharing georeferenced data to support a growing and dynamic geospatial research community can be crucial in planning and decision making (Richardson et al., 2015; Valachamy et al., 2020). Studying the needs of community agencies is important to the WRCDP leadership (and to CDPs across Canada) because governments want to ensure that resources directed to CDPs have maximum impact and meet their members' needs, and that they in turn support member organizations to engage in data-driven service planning and delivery. However, despite the popularity and potential of CDPs, there is a dearth of evidence evaluating their operations or outcomes.

Understanding the Value of Community Data Access

The purpose of this study was to determine the needs of member organizations within a CDP regarding data access, use, and capacity building, and to uncover the barriers and limitations members faced when using the CDP data holdings. The WRCDP was used as a case study to determine feasibility and demonstrate the need to study CDP function across all CDPs. The analyses of CDP of Waterloo Region can provide the basis for evaluating other CDPs for their functionality and effectiveness. As CDPs network and communicate within themselves, a harmonized dissemination of results from data holdings is possible. This was done by obtaining feedback from over 50 leaders and users.

This study drew on the expertise and practical experience of the local users to help WRCDP leaders determine the best approaches to address the needs of its membership and to generate ideas that may be helpful for CDPs across Canada. The WRCDP leaders were motivated to support this study as they were in the midst of "reinvigorating" the partnership.

Our research question was: what were the needs of the organizational members of the CDP regarding (a) accessing data, (b) data analysis, and (c) networking (the three purported benefits of a CDP). Through uncovering the barriers and limitations faced, specific aspects of WRCDP can be improved to better meet the needs of its organizational members and support municipal policymakers and planners in future decision-making processes. While not undertaking a formal evaluation, we were loosely guided by a formative evaluation approach (Stetler et al., 2006; Scott et al., 2019). Formative evaluations are often used in quality improvement efforts, and to determine the strengths and potential areas for improvement in the early stages of a program or effort's implementation (Stetler et al., 2006; Scott et al., 2019)

Methods

Data Collection

An online cross-sectional survey was administered to staff who represent current organizational members of the WRCDP. Survey development used an integrated knowledge translation strategy, where a student investigator developed survey questions in consultation with (a) the research team, (b) WRCDP leaders, and (c) WRCDP members at one of their regular quarterly meetings. This consultation discussion was focused on understanding the goals of WRCDP leaders, the role of research in furthering their needs, and developing survey ideas. Integrated knowledge translation was used in order to align the

study design as closely as possible with the **WRCDP** context, while still ensuring the methodology can produce results that accurately reflected the **WRCDP** (Kothari, McCutcheon & Graham, 2017).

The survey contained 20 questions (8 open- and 12 closed-ended). The questions pertained to the employment status, education level, training role, familiarity with **CDP** data holdings, and collaboration with other end-users within and outside the program. In this situation, end-users refer to those who access and utilize the **CDP** data. The survey was inclusive of the usefulness of job-specific software and information about respondent perceptions of their organizations' data needs. The general themes that were explored in the survey include the rationale and frequency in accessing **CDP** data, types of data sources used, and level of collaboration, that aim to assess the needs of the organizational members of the **WRCDP**. Simple descriptive statistics were used to summarize the quantitative survey responses. Qualitative survey data was analyzed using content analysis (Vaismoradi et al., 2013) as it allows for a combination of description and interpretation, enabling the researcher to distinguish between obvious themes and more latent themes (Vaismoradi et al., 2013). The survey has been included as an Appendix.

A conventional content analysis was used where coding categories were derived directly from the text data. The advantage of a conventional approach led the research team to gain direct information from study participants without imposing preconceived categories or theoretical perspectives (Hsieh & Shannon, 2005). To ensure inter-rater reliability, all responses were repeatedly read to achieve immersion and to obtain a sense of the data by members of the research team. Similar ideas were then grouped into themes, which were presented to both the **WRCDP** team and the entire research team for assessment, discussion, and finalization. The

coding comparison technique between coders allowed for eliminating the potential for interpretive bias that could be introduced by a single researcher (McAlister et al., 2018). Direct quotes were extracted and reported below to help illustrate key themes and draw conclusions.

Participants

Potential participants were engaged using purposive sampling, which involved using expertise and logic to select participants whose insights are most representative of the topic studied (Lavrakas, 2008). Inclusion criteria were that participants must be an active employee at an organization that was a member of the **WRCDP** and have knowledge of, or have used, **CDP** data. Former employees were excluded from the study. This exclusion was done to ensure that the survey could collect data and results on the current needs of the **WRCDP** in relation to up-to-date data access, analysis, and networking practices. Alongside this, changes in the **CDP** and its current use may not be accurately reflected by past users or non-users. Potential participants were invited to participate via email by the **WRCDP** lead (who had email addresses via administration of the program). A survey was used as opposed to other strategies such as conducting informant interviews in order to collect data in a time-efficient manner. Alongside this, conducting a survey allowed greater flexibility towards participants, who were able to control the time they allocated towards responding and providing their insights.

Ethical Consideration

This study was approved by the Western University Research Ethics Board (Protocol #112000).

Results

Seventeen respondents completed the survey. The majority of respondents had completed at least basic data or statistical/analytical training in addition to a

Table 1. Respondent demographic information.

Demographic Table	#
Employment Status	
Full time	17
Highest Level of Education Completed	
Bachelor's Degree	6
Graduate Degree	10
Professional Degree	1
Duration with their Organization	
<1 Year	1
1-4 Years	4
5-15 Years	10
16+ Years	2
Types / Level of Data-related Coursework Completed	
Graduate Level	9
Undergraduate or College Level Training	8
Job-Specific Analytical Training	6
Job-Specific Statistical Training	6
Evaluation	1

graduate degree. Respondents' demographic information and responses can be found in Table 1 and Table 2.

Accessing CDP Data within the WRCDP

The primary rationale for accessing CDP data for participants was to prepare presentations (88%, n=15), reports (76%, n=13), data visualizations (71%, n=12) or to analyze data (82%, n=14). 82% of respondents (n=14) indicated that they accessed secondary data sources through the CDP data sets. Approximately half of participants (n=8) reported having viewed CDP datasets at least four times per month, while responses ranged from zero to 60.

While participants were enthusiastic about the ability to access and use CDP data, the majority felt they were not using CDP data to its full potential. Multiple people commented on an 'information overload' with overwhelming amounts of content and insufficient support with training. While most respondents reported a desire to better understand the contents of the CDP data holdings and methods to access data beneficial to their organizations, they consistently described feeling overwhelmed when utilizing the CDP data holdings.

> "I've been overwhelmed by the volume of information and the technical descriptions ... it has been useful to learn what's out there, but the learning curve for us has been steep ... we continue to try and to take training because we know

Table 2. Respondent responses.

	Percentage of Respondents
Rationale for Accessing CDP Data	
Presentations	88% (n=15)
Reports	76% (n=13)
Data Visualizations	71% (n=12)
Analyze Data	82% (n=14)
Access Secondary Data Sets	82% (n=14)
Data Related Responsibilities and Demands	
Had some level of responsibility for training or educating colleagues on data-related matters	94% (n=16)
Requested Access to More Data-Related Training and Supports	70% (n=12)
Support Needed for Job Specific Statistics Training	59% (n=10)
Support Needed for clarification on different geographic and administrative boundaries used in Waterloo region	59% (n=10)
Agree that CDP datasets are useful to support decision making	59% (n=10)
Data Sources Used	
Accessed Secondary Data Sources	82% (n=14)
Analyzed Secondary Data Sources	53% (n=9)
Analyzed Primary Data Sources	71% (n=12)
Unspecified Data Sources	12% (n=2)
No Mapping or Analysis of Data	6% (n=1)
Collaboration Efforts and Interests	
Collaboration with employees within their organization	59% (n=10)
Interest in collaborating more within their organization	41% (n=7)
Collaboration with employees outside their organization	53% (n=9)
Interest in collaborating more outside their organization	24% (n=4)
No interest in collaborating more outside their organization	18% (n=3)
Interest in collaborating with other WRCDP members on data analysis or data-related projects	82% (n=14)

there's good data in there that would be helpful." (Participant 2, Manager)

Some participants described the website as easy to navigate with few technical issues to find the datasets they need. However, many were not aware of the types of datasets available, and were unable to see how they could be utilized or contextualized within their own organizations. Training was identified by most participants as a factor that would increase their likelihood of using CDPs. While most respondents (94%; n=16) had some level of responsibility for training or educating their colleagues on data-related matters in their home organization, 65% (n=11) of respondents requested access to more data-related training and supports, including definitions and limitations of the datasets. The majority (70%; n=12) of participants wanted a better understanding of the scope, strengths, and limitations of prominent CDP

datasets, to improve their knowledge about the data and its implementation.

> "I know about the census data, but I know little to nothing about the other sources on the CDP and how they are useful/not useful. I generally steer clear of anything that isn't census related so more info about the other data would help me use it." (Participant 3, Planner/Researcher)

Over half of the participants (59%; n=10) believe clarification on different geographic and administrative boundaries used in the Waterloo region is also crucial to ensure the data they access is appropriate for their use. Having better clarity about the geographic and administrative boundaries of the data can allow users to implement data-driven processes for the purpose of developing solutions and plans for issues in a specific geographic area.

Analyzing CDP Data within the WRCDP

59% (n=10) of participants indicated that the CDP datasets would be useful to support decision making in their organization in the future. Despite 82% (n=14) of respondents accessing secondary data sources, only 53% (n=9) analyzed secondary data sources, while 71% (n=12) analyzed primary data and two additional respondents (12%) indicated that they analyzed data but did not specify its source. In addition, 47% (n=8) of respondents mapped available data. Only one participant did not report mapping or analyzing data, instead using it for data quality management and preparation of reports and presentations. Access to job-specific statistics training would also be useful to about 59% (n=10) of the participants.

Similar to data access, respondents indicated that they wanted more training and support on how to use the CDP in order to maximize its full potential.

Specifically, participants wanted training and information regarding data analysis, including how datasets could be used and under what circumstances. Participants indicated that for the CDP to be used effectively in the future, some elements required improvement. Of these, a major element is redesigning the software interface to be more intuitive and user friendly. Most participants (n=12) indicated that improvement in graphical information software and the 'Beyond 20/20 Professional Browser' would be useful. Having access to software that can manipulate and visually present data can be useful for analyzing trends in a more accessible and simpler format.

Key themes evolving out of this data include differences in the amount of data that is assessed and analyzed, the need for job specific statistics training, and improvements to the convenience of software. These insights shows how the program could be more valuable if data users had increased access to knowledge on its use, as well as more accessible and user-friendly interfaces to make its implementation simpler.

Networking with the WRCDP

Participants spoke most highly of the networking opportunities (internally with employees in the same organization or externally with employees of other organizations) provided within their CDP, which met their needs in terms of producing better products and services. Most participants responded that they currently collaborate with employees within their organization (59%; n=10) or want to collaborate more (41%, n=7). Similar responses were received about current collaboration with employees outside of their organization (53%, n=9), whereas only four (24%) indicated wanting more collaboration and three (17%) indicated they did not collaborate at all.

The majority (82%) also expressed interest in collaborating with other WRCDP members on data

analysis or data-related projects (either continuing a current inter-organization collaboration or starting a new collaborative project). Seeing this interest, collaboration can be encouraged by creating more opportunities for data users to connect with other WRCDP members through interorganizational partnerships.

A few participants (n=3) noted they would need a better understanding of local demographics to better contextual the data products. Participants consistently reported their optimism regarding the benefits of discussing the data with members from other organizations, including gaining a better understanding of local data, augmenting existing data sets, avoiding duplication, and connecting similar ongoing projects.

"Working together with others within the Regional Municipality of Waterloo has been very collaborative and mutually supportive." (Participant 8, Planner/Researcher)

"I've found that collaborative workspaces help promote to teamwork. If I can share information and ideas across a desk with a colleague, we have a better chance of coming up with creative solutions to problems." (Participant 16, Manager)

However, some respondents expressed concern about collaboration with other organizations – one of the positive outcomes of employing CDP. They described past experiences where collaboration was time-consuming and hindered by incompatible organizational goals. They reported these barriers to be particularly true for highly bureaucratic organizations which were, in their opinion, excessively protective of their data.

"Challenges and benefits of collaborations vary from case to case. One general comment is that I notice sometimes within collaborative data/research/planning-related groups, the knowledge and skills for people in such positions can vary dramatically, from role to role, or from different organizations. As a result, I worry at times that the output from such groups has the appearance of being more rigorous (i.e., decision-makers or non-expert staff trust it because came from the "data experts") than it sometimes is in reality." (Participant 6, Other; Epidemiologist)

Despite respondents reporting varying levels of satisfaction with past collaborative data experiences, most participants still believed CDP could support or enhance collaboration between organizations in their region. Participants had suggestions on what the WRCDP can do to improve the collaborative experience.

"Provide linkages – if you know someone is working on a similar project, help to make the connection. Could be by email." (Participant 3, Planner/Researcher)

"Host training sessions in addition to meetings, more interactive learning style. Maybe if an organization is hitting a wall with a problem, it can be worked through and "solved" in a teaching environment. As well as having that learning available to those unable to make it (e.g., Video tutorial)." (Participant 9, Analyst)

Feedback from participants suggests that there is value to the CDP when there is effective collaboration. It was suggested that CDPs should not

only collaborate amongst themselves to understand and compare current projects and troubleshoot problems, but with other CDPs across Canada as well.

> "[Reach] out to other cities who have had more success with CDP and figure out a way to collaborate, or share ideas on what they did right both at the management of CDP and at the organizational level. Maybe even a mentor relationship if similar organizations are willing to across areas." (Participant 15, Analyst)

Discussion

This study aimed to determine the needs of WRCDP member organizations regarding data access, data use, and data-capacity building, and to uncover barriers and limitations that members faced when using the CDP data holdings. We also considered how the use of geographic information can improve planning and policy implementation to mitigate social and behavioral challenges across Canadian municipalities. Participants expressed the most enthusiasm for current networking opportunities and experiences as a result of CDP membership, despite identifying drawbacks to collaboration between member organizations. Accessing and analyzing the data had the least realized potential within WRCDP, with nearly unanimous calls for additional support and training to understand how and when to use datasets. Despite these shortcomings, participants remained optimistic that CDP membership will be very useful if properly supported. Results of this study identified several areas for improvement as expressed by WRCDP members who were surveyed.

Building upon the capacity for CDP members to manage and access datasets can inform policies and practice, strengthening coordination and collaboration between public and private sectors toward achieving desired goals and outcomes (Schwalbe et al., 2020). Data collection can also provide insights into strategies to measure the impact of various policies and interventions, promoting continuous quality improvement.

Participant Feedback

Participants expressed a strong desire for more job-specific information on available data holdings and more frequent team meetings to address organizational needs. They also requested capacity building and training opportunities to better enable their use of the database, as well as workspaces which promoted collaborative data projects with other member organizations. These results could guide the WRCDP leaders as well as other data-oriented interorganizational community partnerships. According to participant feedback, the WRDCP has been dormant; it has provided little support, communication channels, networking opportunities, or capacity-building tools to its members. We have distilled participant feedback into three broad recommendations for action:

Improve the organization of the database

Given that the database is being accessed by individuals from different educational and training levels, the data should be organized in a way that is easy to use and navigate. Taking time to solicit feedback on the usefulness, perceived 'ease of use,' and user acceptance has long been established as essential in the creation of any information technology system or approach (Hambling & Goethem, 2013). Studies now discuss elements of a system that should be in place to support usability including an intuitive interface, user-friendly design (O'Brien, Rogers and Fisk, 2008) as well as security features (Jing, Yan, & Pedrycz, 2018). Feedback from the interviewees indicate that although the data may be accessible, the lack of ability to translate this data

into improved services leads to the need for additional training. In addition to employee training, changes made to the database to make it more user-friendly and intuitive will allow for individuals to implement the data more constructively.

Create a specific database navigation training program for end-users of CDPs

For this high volume of data to be efficiently understood and used effectively, end-users need to be able to both navigate the system and understand what the information means and how it can be actioned upon. Creating a specific training program for end-users can lead to a performance improvement-oriented training program and better results from training (Brown, 2002). Capacity-building exercises that improve end-users' ability to interpret and analyze data are needed and can enhance usability (Lee-Kelley & Blackman, 2012). When end-users are empowered to understand and navigate the data, they are more likely to use it (Gurstein, 2011). For the CDP to actualize its potential, users must be literate in navigation of the database and be able to easily and fluidly identify data relevant to any given project. Training can enhance users' perceived self-efficacy regarding their capacity to use the technological system comfortably (Saadé, 2007). Further development of this capacity to engage with data would ensure a valid interpretation of the data for project planning and execution.

Nurture collaborative projects and information sharing

Participants expressed a desire for increased collaborative experiences with other users, including shared instructional sessions/training, shared project support, and shared decision-making. A collaborative approach could work to mitigate gaps in knowledge and to build interprofessional relationships that promote the sharing of best practices much like a

community of practice (Dinter et al., 2016; Li et al., 2009). While CDP members already meet regularly, there is room for collaboration outside of these meetings. In essence, this collaboration functions as integrated knowledge exchange – helping data users operate within a framework of evidence-informed planning and decision making (Graham, Kothari, & McCutcheon, 2018; Oxman et al., 2009). This could support both the knowledge gap in 'how' to use the system and 'how' to make data-driven decision using the system.

When the data is used efficiently and effectively, the community-based data programs are an important tool for tackling social challenges through evidence-informed and data-driven decision-making (Bowen et al., 2009). The health and social data within such databases can provide detailed knowledge of the realities on the ground through the regular surveillance activities and surveys. It is noted that "decision making that relies on the collection, analysis, and interpretation of data to inform practice and policy [...] is viewed as more rigorous, productive, and transparent" (Harrison & Pardo, 2020, p. 2) than alternatives. Despite barriers, the groundwork for successful application of data to decision-making is present in the WRCDP. Developing actions to foster better use of available data and improving the training of end-users will contribute to better informed decision-making and evidence-based policy making by local non-profit organizations and municipalities (Rousseau, 2018; Sallis et al., 2016). Facilitating collaboration among diverse stakeholders can allow for a wider range of perspectives and expertise, to identify disparities among urban planning initiatives and develop holistic mitigation strategies.

Limitations

This survey was administered to a small sample of individuals in one region in Canada to gain their perspectives on their needs to better utilize and

interact with CDP data. Results may not be generalizable to other geographic locations and contexts. This study demonstrates the necessity to conduct more formal evaluations at WRCDP and others across Canada by demonstrating that CDP members' needs are not being met and feel more training and support is necessary to capitalize on CDPs' full potential. It will be beneficial to involve a larger group of stakeholders from the community in the context of an existing collaboration and conduct research at additional CDPs in the future (Morestin, 2020). This survey holds value in recognizing the gaps in data use and the needs of CDP members, showing the necessity for future research to investigate how amendments can be made to offer better opportunities for members to take advantage of the benefits that CDPs offers.

Conclusion

The appropriate use of data and analytics is imperative to understanding and improving urban planning and delivery outcomes in municipalities. The CDP offers a wealth of data to its users, and its utilization for informed decision-making can be optimized through employee feedback and end-user empowerment. Our study found that WRCDP members could benefit from rethinking of the design of WRCDP software provided by CDP, as well as increased employee training support, to better navigate the abundant database and regular meetings. These facilitative actions, in turn, could help to promote cross-organizational collaboration among municipal planners.

This study demonstrates that while WRCDP member organizations are using CDP data sources, they are doing so inconsistently and feel under supported in data retrieval and analysis training. Given the volume of resources dedicated to the CDP network, this suggests that there is room for improvement that should be explored in greater depth across CDPs. This may lead to a greater understanding of common needs across CDPs which can help municipal-level initiatives determine the most effective use of data resources. Future deliberation on this topic will be necessary given the popularity of the CDP model and to determine the best practices across different organizational contexts. Specifically, future researchers could (i) compare and contrast operations between two or more CDPs; (ii) perform case studies to report the outcomes of a particular data project; (iii) offer a framework for improved interorganizational relationships, including across the national CDP network; and (iv) contrast CDP models which have a host organization providing support through analysis services with those that do not.

For decisions to be evidence-based, there needs to be an appreciation for the available data, along with an understanding for what might be missing. Empowering end-users to use available data through intuitive and easy-to-use technology will ensure decisions are data driven in the process of community service planning, delivery, and evaluation.

Acknowledging that this study focused on the WRCDP, remaining uncertainties arise regarding the use of data among other consortiums in the provincial and national level. This can be addressed in future investigations to compare urban planning and delivery outcomes beyond municipalities to further generate practical, wide-spread and evidence-based improvements.

Acknowledgements

acknowledge the work of Swathi Anphalagan and Rosa Nguyen for their work on editing the manuscript.

Notes on Contributor

Sibbald is an Associate Professor in Health Studies (Health Sciences), Family Medicine, and the Interfaculty Program in Public Health (Schulich School of Medicine and Dentistry). As a health systems researcher, her interests span the healthcare continuum. Her research focuses on implementation and evaluation of interprofessional teams and integrated care.

Declaration of Interest Statement

The authors have no relevant financial or non-financial competing interests to report.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author, SLS, upon reasonable request.

Appendix

Survey Questions

1. What is your employment status?

- Full-time
- Part-time

2. What is your level of education?
- Bachelor's Degree
- Graduate Degree
- Professional Degree

3. How long have you been at your current organization?
- <1 year
- 1-4 years
- 5-15 years
- 16+ years

4. Within the Community Data program, there are multiple roles available to CDP users including:
- Data User: One who collects, analyses, or otherwise works with data within their role.
- Organizational Representative: One who attends WRCDP meetings on behalf of their organization.

5. Are you familiar with the Community Data Program?
- Yes
- No

6. In the past year, on average how many times per month have you used the Community Data Program. Please drag the slider bar to indicate the amount, your response will appear to the right of the slider.

7. Please describe your experience with CDP. We are interested in both the positives and negatives (barriers/limitations) you have experienced.

8. Indicate the level of quantitative, analytical and/or statistical training you have received, and/or coursework you have completed. Please check all that apply.
- Graduate Level
- Undergraduate or College Level Training
- Job-Specific Analytical Training
- Job-Specific Statistical Training
- Evaluation

Regarding the use of CDP Data.

9. What is your rationale for accessing CDP Data?
- Presentations
- Reports
- Data Visualizations
- Analyze Data
- Access Secondary Data Sets

10. Did you find that the CDP datasets were useful to support decision making?

11. What types of data sources were used? Select the following that apply to you.

- Accessed Secondary Data Sources
- Analyzed Secondary Data Sources
- Analyzed Primary Data Sources
- Unspecified Data Sources
- No Mapping or Analysis of Data

12. Regarding key datasets (For example: Census data, tax data), what have you found to be the most useful?

13. Does your current position include responsibilities for training, educating, or developing the knowledge/skills of colleagues regarding data, data analysis, and/or data communication? Select the following that apply to you.
- Had some level of responsibility for training or educating colleagues on data-related matters.
- Requested access to more data-related training and supports.
- Support needed for job specific statistics training.
- Supported needed for clarification on different geographic and administrative boundaries used in Waterloo Region.

14. Please describe your role. We are interested in how you collaborate.

15. By collaboration, we mean working together on a shared project, sharing resources, and/or coordinating services. Which of the following apply to you?
- Collaboration with employees within their organization.
- Interest in collaborating more within their organization.
- Collaboration with employees outside their organization.
- Interest in collaborating more outside their organization.
- No interest in collaborating more outside their organization.
- Interest in collaborating with other WRCDP members on data analysis or data-related projects.

16. Please indicate your collaboration with the following partner.

17. If applicable, please describe your experience collaborating. (This can include challenges, benefits, and/or the type of collaboration).

18. What can the Waterloo Region Community Data Program do to support collaborative data projects between different local organizations?

19. What would make it easier for you to use the Community Data Program?

20. Any other comments or suggestions you would like to add regarding the CDP?

References

Adomako, S., & Nguyen, N. P. (2023). Digitalization, inter-organizational collaboration, and technology transfer. *The Journal of Technology Transfer*.

Boughzala, I., & Briggs, R. O. (2012). A value frequency model of knowledge sharing: an exploratory study on knowledge sharability in cross-organizational collaboration. *Electronic Markets*, 22(1), 9–19.

Bowen, S., Erickson, T., Martens, P. J., & Crockett, S. J. (2009). More Than "Using Research": The Real Challenges in Promoting Evidence-Informed Decision-Making. *Healthcare Policy*, 4(3), 87–102.

Brown, J. B. (2002). Training Needs Assessment: A Must for Developing an Effective Training Program. *Public Personnel Management*, 31(4), 569–578.

Canadian Community Economic Development Network (CCEDNet). (2020). *Community Data Program (CDP) Annual Report 2019-202*.

Combining Open Innovation and Knowledge Management for a Community of Practice - An Analytics Driven Approach. (2016). In B. Dinter, C. Kollwitz, K. Möslein, & A. Roth (Eds.), *AMCIS 2016 Proceedings*.

Community Data Program. (2020). *Annual Report 2019-2020*. Retrieved August 13, 2020.

Graham, I. D., Kothari, A., & McCutcheon, C. (2018). Moving knowledge into action for more effective practice, programmes and policy: protocol for a research programme on integrated knowledge translation. *Implementation Science*, 13(1).

Gray, B. (1985). Conditions Facilitating Interorganizational Collaboration. *Human Relations*, 38(10), 911–936.

Gurstein, M. B. (2011). Open data: Empowering the empowered or effective data use for everyone? *First Monday.*

Hambling, B., & Van Goethem, P. (2013). *User Acceptance Testing: A Step-by-step Guide.* BCS, The Chartered Institute for IT.

Harrison, T. M., & Pardo, T. A. (2020). Data, Politics and Public Health. *Digital Government: Research and Practice,* 2(1), 1–8.

Hsieh, H., & Shannon, S. E. (2005). Three Approaches to Qualitative Content Analysis. *Qualitative Health Research,* 15(9), 1277–1288.

Jing, X., Yan, Z., & Pedrycz, W. (2019). Security Data Collection and Data Analytics in the Internet: A Survey. *IEEE Communications Surveys and Tutorials,* 21(1), 586–618.

Johnson, M. P., Midgley, G., & Chichirau, G. (2018). Emerging trends and new frontiers in community operational research. *European Journal of Operational Research,* 268 (3), 1178–1191.

Johnson, P., & Sieber, R. E. (2017). The Geoweb for community-based organizations: Tool development, implementation, and sustainability in an era of Google Maps. *The Journal of Community Informatics.* 13(1), 92-108

Kothari, A., McCutcheon, C., & Graham, I. D. (2017). Defining Integrated Knowledge Translation and Moving Forward: A Response to Recent Commentaries. *International Journal of Health Policy and Management,* 6 (5), 299–300.

Lavrakas, P. J. (2008). *Encyclopedia of Survey Research Methods.* SAGE Publications.

Lee-Kelley, L., & Blackman, D. (2012). Project training evaluation: Reshaping boundary objects and assumptions. *International Journal of Project Management,* 30(1), 73–82.

Li, L. C., Grimshaw, J. M., Nielsen, C. P., Judd, M., Coyte, P. C., & Graham, I. D. (2009). Evolution of Wenger's concept of community of practice. *Implementation Science,* 4(1).

MacLeod, J. (2017). *Population Health Monitoring.* Wellington-Dufferin-Guelph Public Health.

McAlister, A. M., Lee, D., Ehlert, K. M., Kajfez, R. L., Faber, C. J., & Kennedy, M. S. (2018). Qualitative Coding: An Approach to Assess Inter-Rater Reliability. In *ASEE Annual Conference & Exposition.*

Menec, V., Newall, N. E., Mackenzie, C. S., Shooshtari, S., & Nowicki, S. (2019). Examining individual and geographic factors associated with social isolation and loneliness using Canadian Longitudinal Study on Aging (CLSA) data. *PLOS ONE,* 14(2), e0211143.

Morestin, F. (2020). *How to collaborate with municipalities? A practical guide for public health actors.* National Collaborating Centre for Healthy Public Policy.

Nezami, M. R., de Bruijne, M. L. C., Hertogh, M. J. C. M., & Bakker, H. L. M. (2023). Inter-Organizational Collaboration in Interconnected Infrastructure Projects. *Sustainability,* 15(8), 6721.

O'Brien, M. A., Rogers, W. A., & Fisk, A. D. (2008). Developing a Framework for Intuitive Human-Computer Interaction. *Proceedings of the Human Factors and Ergonomics Society . . . Annual Meeting,* 52(20), 1645–1649.

Oxman, A. D., Vandvik, P. O., Lavis, J. N., Fretheim, A., & Lewin, S. (2009). SUPPORT Tools for evidence-informed health Policymaking (STP) 2: Improving how your organisation supports the use of research evidence to inform policymaking. *Health Research Policy and Systems,* 7(S1).

Region of Waterloo. (2019). *Year-End 2018 Population and Household Estimates for Waterloo Region* (PDL-CPL-19-14). Region of Waterloo Planning, Development and Legislative Services.

Richardson, D. B., Kwan, M. P., Alter, G., & McKendry, J. E. (2015). Replication of scientific research: addressing geoprivacy, confidentiality, and data sharing challenges in geospatial research. *Annals of GIS,* 21(2), 101–110.

Rousseau, D. M. (2018). Making evidence-based organizational decisions in an uncertain world. *Organizational Dynamics,* 47(3), 135–146.

Saadé, R. G., & Kira, D. (2007). Mediating the impact of technology usage on perceived ease of use by anxiety. *Computers & Education,* 49(4), 1189–1204.

Sallis, J. F., Bull, F., Burdett, R., Frank, L. D., Griffiths, P., Giles-Corti, B., & Stevenson, M. (2016). Use of science to guide city planning policy and practice: how to achieve healthy and sustainable future cities. *The Lancet,* 388 (10062), 2936–2947.

Schruijer, S. (2020). The Dynamics of Interorganizational Collaborative Relationships: Introduction. *Administrative Sciences,* 10(3), 53.

Schwalbe, N., Wahl, B., Song, J., & Lehtimaki, S. (2020). Data Sharing and Global Public Health: Defining What We Mean by Data. *Frontiers in Digital Health,* 2.

Scott, V. C., Alia, K. A., Scaccia, J., Ramaswamy, R., Saha, S., Leviton, L. C., & Wandersman, A. (2020). Formative Evaluation and Complex Health Improvement Initiatives: A Learning System to Improve Theory, Implementation, Support, and Evaluation. *American Journal of Evaluation,* 41(1), 89–106.

Seasons, M. (2003). Monitoring and Evaluation in Municipal Planning:Considering the Realities. Journal of the American *Planning Association,* 69(4), 430–440.

Social Sciences and Humanities Research Council. (2018). *Canada in an Interconnected, Evolving Global Society.* Government of Canada.

Stetler, C. B., Legro, M. W., Wallace, C. M., Bowman, C., Guihan, M., Hagedorn, H., Kimmel, B., Sharp, N. D., & Smith, J. L. (2006). The role of formative evaluation in implementation research and the QUERI experience. *Journal of General Internal Medicine,* 21(S2), S1–S8.

Stock, K., & Guesgen, H. (2016). *Geospatial Reasoning With Open Data. In Automating Open Source Intelligence* (pp. 171–204). Elsevier Inc.

Vaismoradi, M., Turunen, H., & Bondas, T. (2013). Content analysis and thematic analysis: Implications for conducting a qualitative descriptive study. *Nursing & Health Sciences,* 15 (3), 398–405.

Valachamy, M., Sahibuddin, S., Ahmad, N. A., & Bakar, N. A. A. (2020). Geospatial Data Sharing: Preliminary Studies on Issues and Challenges in Natural Disaster Management.

Proceedings of the 2020 9th International Conference on Software and Computer Applications.

Vangen, S., & Huxham, C. (2003). Nurturing Collaborative Relations: Building Trust in Interorganizational Collaboration. *The Journal of Applied Behavioral Science,* 39(1), 5–31.

Voida, A., Harmon, E., & Al-Ani, B. (2011, May). Homebrew databases: Complexities of everyday information management in nonprofit organizations. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 915-924).