

NOURISHING SMART CITY SOLUTIONS: DATA COLLABORATION AND FOOD POLICY

COMMUNITY SOLUTIONS NETWORK
RESEARCH BRIEF

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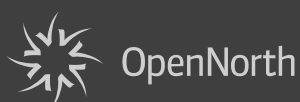
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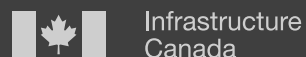


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Executive Summary

In this brief, we make the case that data collaboration, or the practice of using data to enhance partnerships, alliances, and strategic initiatives related to concrete policy problems, is a means of building engagement and trust with local communities in smart city programs. Not only are these necessary to overcome concerns about privacy and security, they are also foundational in designing and driving effective technology innovations. Data collaboration provides opportunities for local organizations to engage in partnerships with municipal administrations that are horizontal in nature and distributed in their impact. These opportunities have the capacity to support both organizations in building technological capacity in the community as well as the potential success of new initiatives in extending their reach to a broad, diverse array of communities.

We lay out the key features and considerations of data collaboration that are relevant to local policy makers. We illustrate this through a case study of food policy in Montreal and the community's response to food insecurity during the COVID-19 pandemic. We first highlight two actors—the Conseil Système Alimentaire Montréalais (CSAM), Montreal's

food policy council, and the 211 data platform—in local food policy. In doing so, we address their roles in three arenas of data use: the availability of data on the population that needs food, the collecting and sharing of data that characterize the people who access food aid and identify points of service, and the sharing of information across organizations who offer food aid in the various neighbourhoods of Montreal. We then turn to the specific challenge of COVID-19 and the response on the part of the emergency food services to coordinate on updating food bank hours, disseminating information to local emergency cells on resources and funding, and sharing information between local initiatives for mutual support as the pandemic unfolded. While providing focus to the combined efforts of local organizations, both the CSAM and 211 also faced challenges in this context. Finally, we address the lessons learned from this case and preparation for a second wave as insights for municipal officials to consider in data collaboration. These lessons are significant in highlighting the need for data collaboration to build technological solutions that are inclusive, flexible, and effective in overcoming barriers to information and trust in their communities.



Foreword

by *Open North*

First defined in 2018 by Lauriault, Bloom and Landry, an Open Smart City is one where all actors, including residents, collaborate in mobilizing data and technologies to develop their community through fair, ethical, and transparent governance that balances economic development, social progress, and environmental responsibility.

As Canadian communities across the country explore smart city initiatives, there is a pressing need to better understand the opportunities and risks presented by data and emerging technologies and put open smart city principles into practice.

Open North has commissioned a series of research briefs for policymakers and practitioners to provide insight into how data and technology intersect with challenges local communities are grappling with, such as food security and shared transportation. The research briefs identify complex policy issues from an open smart city lens, describe their importance and provide key considerations for policymakers.

This research brief explores the issue of data collaboration among local community partners, drawing lessons from efforts to address food insecurity during the first wave of the COVID-19 pandemic in Montreal. The pandemic underlined the critical role of local governments and grassroots organizations in rapidly responding to complex economic and social challenges, which requires collaboration across a wide range of actors with varying degrees of knowledge and capacity to meet local community needs. This research brief identifies critical considerations for how open smart city principles can be applied in data collaboration to identify community needs, foster trust and engagement among actors and drive forward potential solutions.

Acknowledgements

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These research briefs are produced for the Community Solutions Network, a community-centric platform for communities to connect and build a national centre of excellence in open smart cities. As the project lead, Evergreen is working with lead technical partner Open North and other partners to provide valuable information, learning opportunities, advisory and capacity building services to Canadian communities in key areas of data and technology, helping to improve the lives of residents.

We offer—at no cost to communities—a comprehensive Advisory Service for Canadian communities interested in developing and implementing open smart cities projects. To learn more about the Advisory Service, please visit communitysolutionsnetwork.ca.

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Introduction

The stresses on city agencies and municipal authorities, particularly during a time of a global health pandemic, have never been more apparent. Cities are responsible for rapidly responding to information and data needs in order to mobilize and disseminate effective responses to policy challenges. Yet they face barriers in terms of engagement and capacity in building technology solutions that are meaningful to citizens in their everyday lives. Citizens face barriers in finding relevant information and data to meet basic needs and/or make better decisions for their health and well-being.

As municipal governments face complex decisions in developing and adopting new, smart technologies to solve public problems, central to their relative success or failure is the effectiveness with which they marshal information and data to improve citizens' everyday lives. Yet their ability to do so is contingent upon the participation of and engagement with local communities and citizens to build knowledge about the information and data they need. Traditionally, public consultations have been the primary means for cities to address this engagement, wherein local organizations and citizens participate in consultation sessions and submit briefings to municipal authorities. Ideally, the local government waits for this process to be complete before setting an agenda, priorities, and plan for future work. However, there are challenges to this model—especially for smaller and more rural communities: governments often lack capacity for public consultations and/or face limitations such as distance and time in constituents' participation. In relation to issues of technology and/or data-driven priorities, engagement faces an additional barrier to participation broadly: a lack of access to digital assets and resources, or the lack of adequate digital literacy. This is despite the fact that all of us increasingly rely on useful, user-friendly, and reliable data and information in our communities.

We propose that the need for information and data is itself an opportunity and vehicle to drive participation and engagement that, in turn, supports local communities more effectively. Data collaboration, involving local governments as partners with local organizations and other actors within a policy field, provides an opportunity to create a clearer picture of the needs of a given population, to develop a more adequate response through collective engagement, and to

foster engagement and participation in technology solutions. In doing so, it provides necessary pathways for cities to strengthen technological capacity at the community level and ensure investment in smart, open data solutions are deeply and broadly adopted.

In this brief, we provide an overview of data collaboration as a mechanism for engagement and discuss its role in collaborative innovation for smart city solutions. We do so through the lens of food policy and the landscape of actors and communities engaged in local food systems. At the municipal level, the system encompasses a host of organizations at various levels of government and across multiple sectors of citizen participation. Challenges to developing fresh, healthy food options for all through coordinated food policy requires engaging all of these actors and sectors to build effective solutions. Yet the landscape and the actors are disparate, often disconnected, and, in some cases, organizations and communities are in competition with one another. What they share is the need for information and data to understand their own communities as well as develop priorities to drive changes and solutions for local food systems. Data collaboration, focused on facilitating access, sharing, and coordination on information related to food systems, serves as a vehicle to develop a common understanding and framework for coordinated action. It also provides a meaningful opportunity to build and strengthen relationships and networks of trust. Both are central to building effective, broadly adopted, and resilient smart city solutions.

Data collaboration is a process that begins with the need to define and identify options to address local problems. The need for data is usually one step in the process of surveying the field for information on the issue at hand. In this brief, we also identify it as an important opportunity for collaboration; that is, smart city solutions and governance begin with data collaboration. Here, we note that smart governance models, with a focus on collaborative governance in partnership as well as technology, are significant in providing structure to relationships and data sharing (Meijar & Bolivar, 2016). Data collaboration provides the opportunity to make these relationships and structures meaningful by focusing on the intensity of ties between local governments and partners as well

as their position(s) within the network as significant to the success or failure of these structures (Yahia et al., 2019). In this respect, we emphasize a social network model of distributed networks and network structure, with the intensity of ties as significant to the success of data policy and solutions. Horizontal relationships between organizations—including local governments—are important to bridge the differences and build mutual understanding between local communities, community organizations, municipal authorities, and regional actors. Data collaboration enables partners to cooperate with one another on specific, tangible goals at each level and phase of policy development. Collaborative governance requires

data collaboration to build long-term, sustainable engagement in smart city policy and outcomes.

To demonstrate this process, we provide insight from a case study of the local food system and food policy in Montreal on the issue of emergency food aid. Specifically, we discuss the response on behalf of local policy and organizational partners in using data to shape a shared understanding of the issue as well as collaborate on building and updating 211, a data platform and support infrastructure for information-sharing (both online and over the phone) about local services that includes emergency food aid.



Defining Data Collaboration

Definition

Data collaboration has been defined in the smart city lexicon as synonymous with a wide variety of activities, from simply sharing information with external partners to “stitching” together data sets from a variety of sources and providing access to internal data sets with privacy agreements (Children, 2018). Here, we define data collaboration not as a set of activities or actions but as a process, wherein partners and participants have both the opportunity to share information and see the benefit of a data in a collaborative outcome. In this respect, it resembles the underlying approach to collaborative innovation defined by Ojasalo and Kauppinen (2016) in a smart city context that focuses on municipal officials’ ability to create horizontal relationships vis-à-vis external partners to coordinate data sharing and digital tools. However, it focuses on the opportunity to use direct, easily identifiable data goals in which there are reciprocal opportunities to contribute and benefit from the outcome between contributors and thus deepen ties between local governments and organizations. Here, we emphasize three essential “shifts” in perspective for data collaboration:

1. From Data Quantity to Data Quality: There is often a temptation, particularly at the start of an initiative, to collect all manner of information and marshal big data to direct social innovations and responses. Yet this is frequently a barrier to engagement and participation by those who cannot contribute and/or benefit directly from it. A high quality, specific, and tailored small sample can sometimes be preferable to big data (Faraway & Augustin, 2018). Specifically, data collaboration provides opportunities to draw in partners, collectively define problems, and enable partners to collaboratively contribute to both the development and use of data. By emphasizing quality over quantity data collection, both the selection of ideas and the potential to implement selected ideas are enhanced (Sørensen & Torfing, 2011).

2. From Consultation and Coordination to Orchestration: Consultation, while a standard practice and model for citizen engagement familiar to local governments, can be limited by the considerations addressed above as well as the relative level of communication and participation by local

citizens. Orchestration builds upon informal opportunities and networks to offer responsive and specific opportunities for partners to work alongside one another. Rather than determining relationships with local partners and designing opportunities for engagement through formal processes based on a policy consultation model, cities here instead constitute their role as amplifiers and facilitators of local needs. In this, they take stock of the data they collect, provide open opportunities for partners to understand its implications, and answer directly the data needs of partners. Orchestration is responsive to the context and the opportunities as they arise in the process of responding to data-driven needs. This leaves the opportunity for innovation to arise in the context of ongoing discussion (Ojasalo & Kauppinen, 2016).

3. From Collaborative Governance to Collaborative Networks: Data collaboration involves focusing on tangible, identifiable information goals for the city as well as partners to meet a specific and community-driven need; this has the benefit of building and reinforcing collaboration between partners with incremental investment of resources in the effort. It can thus overcome the risk associated with concept and process ambiguity that can muddy relationships and lead to conflict (Zuzul, 2019). While formal collaborative governance structures are important to long-term relationships and institutional accountability, the opportunity to collaboratively define and contribute to data that is responsive to immediate needs also provides opportunities to orchestrate engagement and thus strengthen informal, dense networks with partners.

Through this process, data collaboration provides a framework to build on small, tangible, and needs-driven data solutions that foster trust and build capacity in intergovernmental, inter-organizational cooperation. That said, it is important to note that this cooperation leads to trust when the organizations and partners meet the following criteria:

1. Partners are accountable for their results to local populations and communities. While the range of partners can include business, religious, non-governmental organizations, and social economy organizations, they must be accountable and serve primarily the needs of all local residents. There is risk in working together on data and

sharing information without the formal arrangements and guarantees of legal agreements and structure. To mitigate this risk and ensure that data collaboration is meaningful, partners should be drawn from the local community. This is central to governance as well in building a framework and relationships that primarily serve local citizens and are integrated into the community. Thus, while local businesses are important partners to consider, multinational corporations that provide a service but are responsive primarily to their shareholders cannot be partners in data collaboration.

2. The collaboration serves the objectives of the organizations involved. Partners should both be able to contribute to and benefit directly from the investment in collaboration. This is for several reasons: to ensure that the data itself meets the needs of a diversity of partners, to ensure that their engagement is meaningful, and to ensure that the outcomes and data produced has relevance for the community. This is particularly the case when considering the engagement of local, community-led organizations. Community organizations often lack the resources to consider data as an important part of their work. The question of relevance to their mission and their meaningful role in contributing to the outcome benefits both their capacity and ability to participate.

While this can be described and defined as a process, finding one's way to good data collaboration is difficult to pin down. Below, we provide an analysis of data collaboration as it unfolded among partners in Montreal. With the lessons learned from the foundations of their work as the pandemic unfolded, we address key contributions of data collaboration to policy.

Real-Life Example of the Issue

In March 2020, the COVID-19 pandemic reached Montreal and drastic sanitary measures were imposed in an attempt to slow its propagation. Confinement and economic closures had an immediate impact on the population's food security. Here we lay out how data collaboration between city agencies and partners prior to and during the pandemic which shaped the deployment of emergency food aid.

Food aid in Montreal, as in many cities, depends on a variety of actors: provincial and municipal government, philanthropic organizations, and community groups. These groups, as well as other actors such as research institutions, are part of a diverse network coordinated by the city's food policy council (Conseil du Système Alimentaire Montréalais, or CSAM), launched in 2018. In the same year, the United Way launched 211, a data platform for social services tested in Montreal in 2018 and expanded in 2020 across Canada. 211, the organization funded by Centraide that staffs, updates, and organizes information related to the platform and both communicates and coordinates with local organizations to populate it, provides users with information about social services from government and non-clinical community-based resources. Based on a database of community resources, 211 provides information to the public through several means. First, there is a searchable user interface with a map online that includes, as of COVID, a dashboard of needs broken down by neighbourhood. Additionally, personnel staff a multilingual free phone line from 8 a.m. until 6 p.m.; residents can call 211 to access information about community resources via the website or phone service.

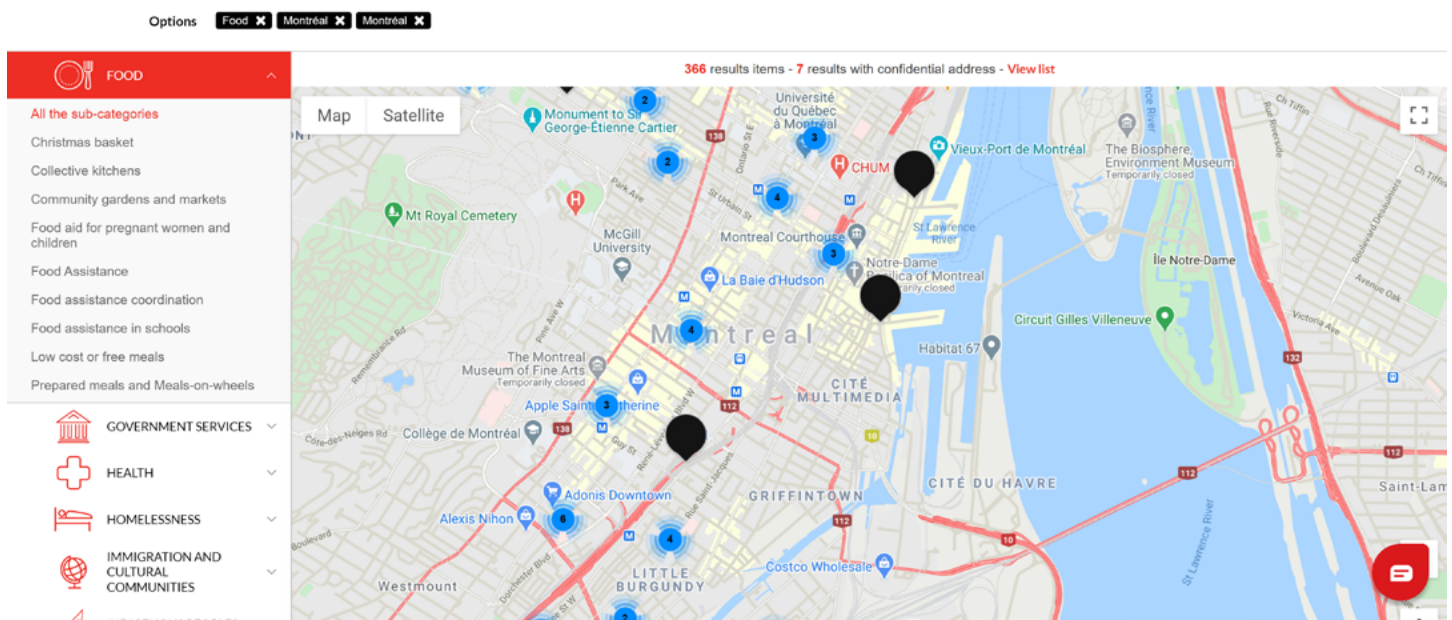
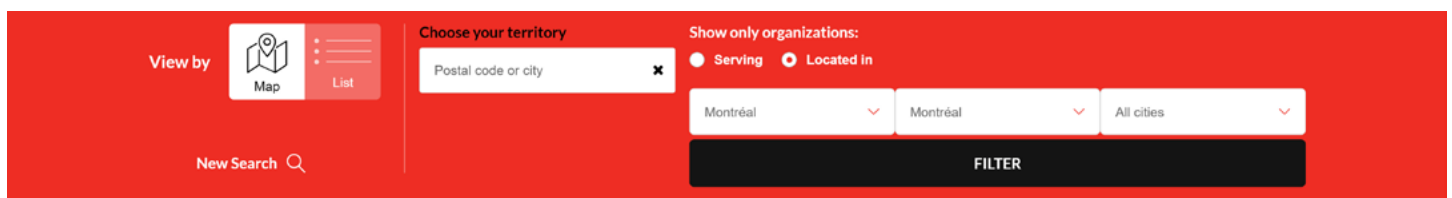
In the context of the CSAM's first strategic planning process, the Public health board analyzed data from the census and the Canadian Community Health Survey, and then made it available to the CSAM network. The analysis was done in two ways: a map of Montreal showing neighbourhoods and their levels of food insecurity based on the indicator of material deprivation, and a break-down of individual characteristics which were overrepresented among people who experienced food insecurity. The presentation and discussion of these facts contributed to the emergence of a common understanding about the issue of food insecurity among partners in Montreal, namely that the primary cause of food insecurity is financial precarity (Tarasuk & Mitchell, 2020).

The exercise of sharing data also laid bare partners' gaps in knowledge, in particular as it pertains to the relationship between the food aid services provided and the people who make use of them. Unlike the major homeless shelters in Montreal, organizations offering food aid do not have a system for identifying and tracking those whom they serve. As a result, in a given neighbourhood with three food banks, each

servicing 50 people, it is impossible to know on the basis of the data collected by the organizations whether there are 50 or 150 people in that neighbourhood who receive food aid. This, combined with the fact that only 21% of people living with food insecurity ask for some form of food aid, makes it difficult to measure to what extent the resources deployed for food aid succeed in mitigating food insecurity (Tarasuk et al., 2020).

It is important to note that sharing data was done through events and formal presentations in the strategic planning process, but that no digital infrastructure was developed to make the data available to local organizations who did not have the opportunity to participate in the events or familiarize themselves with the formal presentations. While the CSAM successfully marshaled data to build a common understanding of the problem, its overall structure and organization emphasized the central role that the council plays in coordinating partners. In this scenario, local organizations communicated with the CSAM and the CSAM orchestrated collaborative events using data and disseminated information broadly. As a result, there was no horizontal network to support data sharing across neighbourhoods or between organizations locally.

211 represents the only public-facing interface to provide citizens with organized information about available services, including food aid, by location and service area. It is coordinated by staff working for 211 who manage the platform and are responsible for keeping data and information relevant for service provision. Once the infrastructure was built, the United Way put out a call to local food security organizations (and other organizations who deal indirectly with food security) to opt into the platform by voluntarily filling out a form to be listed as a resource and sending it to 211 staff. Thus, while there is a collective platform of information, the interaction and services rely on individual organizations to opt in and then update their information if their services change. Following this, individual organizations can access an online portal and make changes to the information on their contact information and the services available pages. Employees also follow up with organizations that have opted in once per year. As a central resource, 211 relies on either outreach by 211 staff or the vigilance of each organization for updates. 211, as a dissemination tool, makes data on needs available, wherein food aid is just one of many services catalogued and broken down by borough.



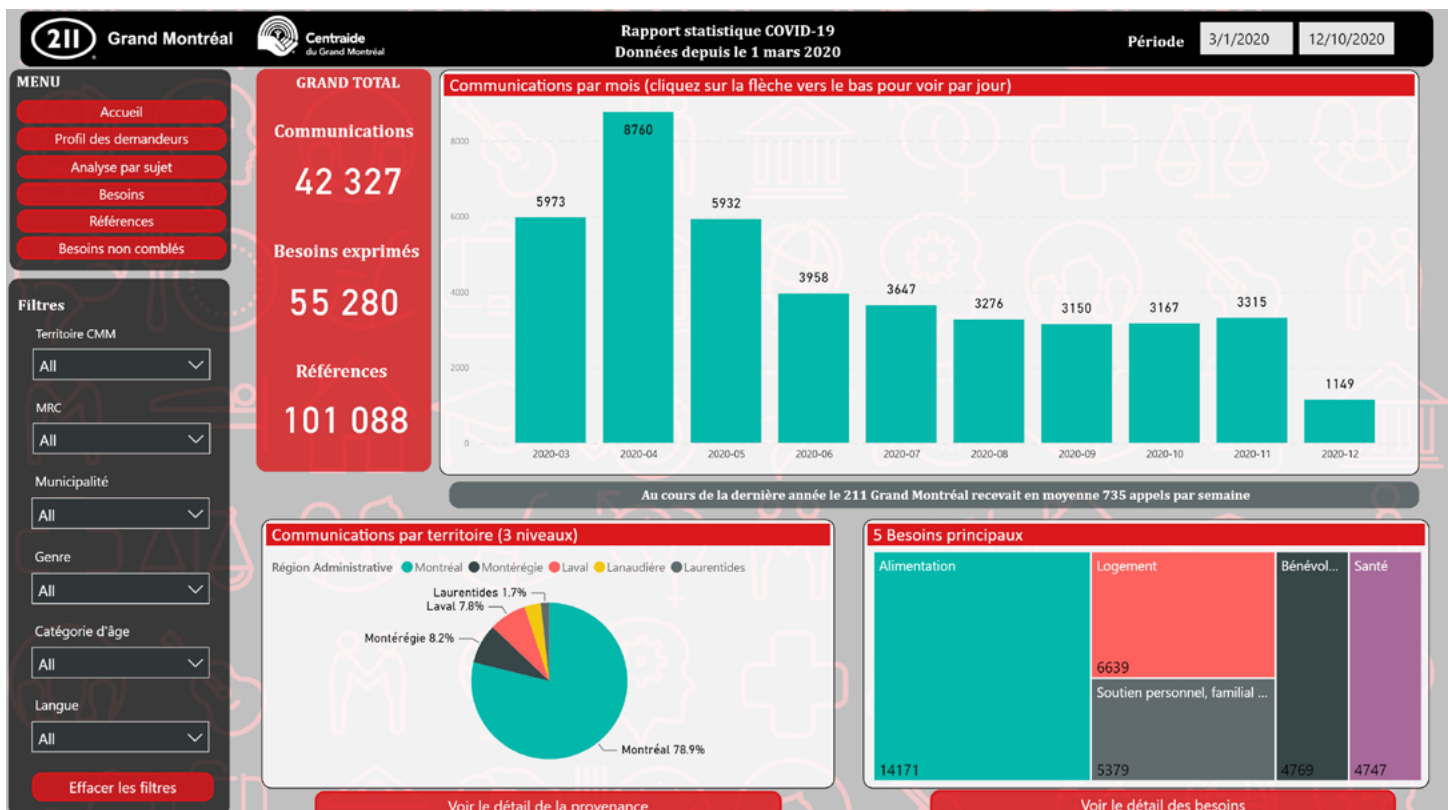
COVID-19 and Emergency Response: Lessons for Data Collaboration

In March 2020, a regional crisis group on emergency food aid was put in place by the City of Montreal, which was composed primarily of a subset of the CSAM's partners most directly involved in the issue of food insecurity. There were also local crisis groups on emergency food aid that sprung up across the city. These groups were heterogeneous, but were generally coordinated by the borough, the public health unit, or the Table de quartier (local community groups network). City officials and other actors looked for data to guide their decision-making and the deployment of emergency food aid resources. Based on previous collaborations with the CSAM and 211, two enabling factors emerged.

The shared understanding about the nature of food insecurity as first and foremost a problem of financial precarity made it obvious that the shutdown of virtually all economic activity and the resulting financial hardship for many individuals would

spark an increase in food insecurity. As before, information on the population at risk of food insecurity was readily available. In addition to the pre-existing data on material deprivation, in a matter of weeks, statistics were available down to the neighbourhood level to show risk factors such as age—significant because people over 65 had been asked to stay at home, thus making it extremely challenging for them to go grocery shopping or buy take-out meals.

At the same time, city officials immediately recognized that 211 was an important resource for residents newly thrown into uncertain circumstances to find information for social services and support. The city portal quickly listed 211 as a resource and the platform saw an immediate and exponential increase in online visits and telephone calls for services. The United Way also developed a portal to document and provide data publicly on community needs by publishing a public resource on the 211 website with a dashboard displaying referrals for various services.



However, the limitations of the data-sharing processes of the CSAM and 211 were limiting factors to efficiently deploying resources for food aid.

The types of data available—populational statistics and individual organizations' data on people who benefited from food aid services—did not allow for tracking the extent to which the resources deployed were meeting the needs across neighbourhoods and specific groups of the population. Even the number of people served by each organization was information only shared when organizations reported back to funders, months later. In real time, the information available was anecdotal in nature. Subsequently, it was up to each funder to compile and share the data that would make it possible to glean some insight into the real numbers of people making use of food aid services.

In the early days of the pandemic, local organizations were thrown into disarray and many ceased providing or drastically altered their services, temporarily or permanently. In this emergency situation, they did not prioritize logging into 211's portal and updating the information on services (no longer) being provided. As a response, the regional crisis group dedicated a resource person to work with the Dawson College Food Justice Research Hub to scan the status of organizations, aggregate the information, and share it with 211. This new form of collaboration allowed for the maintenance of the primary resources available to the population for finding food aid. This process demonstrated to 211 that organizations other than front-line organizations could be relied upon to provide accurate and timely information. As a result, starting in December 2020, the CSAM is taking on the role of setting up an easily accessible shared spreadsheet and data library for organizations to access. In addition, it is providing an easier tool for local organizations to change data for 211.

Furthermore, while considerable resources had been invested in a digital platform, infrastructure, and resource line, the lack of integration and communication with local organizations—that is, the disconnect between the data and the community networks—limited its impact in visibility and accuracy as a resource to residents. It became clear, regardless of the city portal's listing and general announcement of

211 as a resource, that the extent to which the population was aware of it as a resource was limited. This is best exemplified in one instance when the Montreal school board sent an email to parents containing a message about 211. 211 received so many calls that their system crashed. We can guess that a large number of those parents had been hitherto unaware of the existence of 211.

Finally, there was no infrastructure that allowed for sharing across neighbourhoods. Although the challenges imposed by the pandemic and the sanitary measures were the same or similar across the city, each organization or local crisis group had to develop its own strategies and solutions. This resulted in considerable inefficiency in the use of resources invested by the city and other partners; similar tools were created from scratch multiple times over, and solutions developed for common problems in one area remained unknown to groups facing those same problems in another. The absence of a sole repository for essential information such as new sanitary measures and new opportunities for funding or other resources resulted in the hours of essential workers being spent sifting through a barrage of emails in search of a particular element or simply to ensure that nothing essential had slipped through the cracks.

One successful example of data-sharing that occurred during the pandemic was in the context of school closures. Montreal elementary and high schools were physically closed from March 2020 to the end of the academic year in June 2020. To ensure that vulnerable students and their families would continue to receive food aid, one school board struck an agreement with a local community organization. The names and contact information of the families who were in need of food aid were shared with the organization, who then contacted the families with an invitation to pick up prepared meals once a week at a location off school property. A confidentiality clause was written into the contract, but the key to overcoming formal barriers to sharing sensitive data was the understood alignment of the school board's and the community organization's objectives, namely providing food relief to families in that neighbourhood. This case provides some key insights on the significance and role of data collaboration for cities. We turn to these below.

Key Considerations From a Policy Perspective

Lessons on Data Collaboration in Food Policy

In both the launch of a formal food policy council as well as a platform to address food insecurity in Montreal, the promise of data and information as key aspects of meeting citizens' needs is apparent. While the CSAM network successfully drew upon census and other data to form a common policy framework and understanding, the policy council itself was structured as a governance structure for organizational participation. As such, the goals of the CSAM did not include multiple points of engagement across the network, but engagement instead from local organizations into the processes of the CSAM policy initiatives. While the governance structure successfully organizes formal engagement and thus accountability in the network, its newness and formal structure limited neighbourhoods' ability to engage with and respond effectively in the context of the crisis to build and share innovative solutions across the city. And while 211 held out the promise of resources and information to support citizens' needs, it was limited by its inability to respond effectively to keep the information current as well as connect to communities and find relevance in precisely the kind of circumstance that it was developed to address.

In mobilizing in the context of a pandemic, city officials reflected on this to plan for a potential second wave of COVID-19 infections. Insights for data collaboration included:

1. There was a need to orchestrate opportunities such as this on a broader scale and flatten the vertical structure of city-neighbourhood relationships: Local and municipal organizations reached out to the resources they knew to find information, understand restrictions, and adapt to the needs of their communities. At the same time, 211 was offered up as a resource to local communities and needed to update their information. In each situation, the CSAM network and local organizations looked to the city for resources, but did not think about the CSAM as an immediate resource to connect them and/or 211 as a resource they should update. In both scenarios, both the CSAM and 211 had traditionally reached out, often infrequently, to invite them to submit information or participate in an

event. Other partners such as Dawson College initially reached out to these neighbourhoods, who overwhelmingly responded when Zoom meetings to share information and data between organizations were organized. Additionally, local neighbourhood food security tables stepped in to meet and coordinate responses. This was highly unequal, however, across neighbourhoods and nominally involved the city emergency cell.

2. A central data repository to find resources and information for community organizations and connecting the data platform and communities can improve the capacity for the city to mobilize information quickly and disseminate innovations broadly: In several cases, neighbourhoods developed innovative digital tools to coordinate with one another to deliver food aid that was integrated into social media and shared sites. However, because of the limitations addressed above, their impact was often limited to the local community. Sharing basic tools to update data and information could have benefited greatly from expanded reach through stronger networked relationships. Additionally, simplified forms to update 211 along with more intensive ties between 211 and neighbourhood organizational nodes can support a more robust data mobilization that more reliably provides the tools and information residents need¹.

Collaborating on this update and the need to have good information in the pandemic provides us with several useful lessons for smart cities. These are addressed below.

Lessons for Municipal Policy for Smart City Solutions

One of immediate lessons of COVID-19 as governments and policymakers responded to the pandemic has been the challenge to local governments to interpret, implement, and respond locally to differences to transmission, testing, and stressors to health and social systems. For example, red zones are now defined at the provincial level, but mobilized, tracked, traced, and restrictions implemented in a highly localized

1 For more information on the data repository and the status of its development, contact info@mtlmetropolesante.ca.

manner. From a policy perspective, the pandemic highlights the increasingly central role local governments now play in responding to complex social problems and the pressures they face to rapidly innovate and deploy data and technology to support policy responses. The multi-faceted and diverse nature of organizational engagement in food policy and food systems—exemplifying both the range and depth of potential partners—provides useful insight to address policy lessons that require broad engagement in solutions.

Underlying the need for collaboration is a question of resources: cities lack the budgetary capacity and ability to meet these challenges and develop tools that use data in a holistic, integrated, and flexible manner. This is particularly the case for smaller local governments that face significant challenges with urbanization, a shrinking resource and tax base, and the need to respond with integrated planning that accounts for differences across greater distances. It is here that data collaboration and the underlying relationships that it enables across levels of government as well as sectors of activity is most useful.

Data collaboration builds capacity among partners to invest in working with municipal authorities. This can be as simple as sharing information about openings and closures but can also extend to accessing valuable data on vulnerability by census tract that supports local decision-making and planning. Both contribute to a robust information infrastructure that places local governments in a transparent and trusted role as facilitator and partner to local communities. In the context of policy, the benefits to officials in terms of their ability to rapidly and flexibly respond to challenges in real time relies on these connections. As was the case in food policy and crisis response to the pandemic, the city can play a crucial role in serving as a focal point of contact and resource for data and information-sharing.

Making this link transparent and meaningful, however, relies on integrating existing community resources into its actions and creating horizontal relationships with a broad array of local organizations and partners. It thus enables the community as a whole to better respond to system-level shocks and complex problems by mobilizing the inter-organizational networks and

partnerships that underlie collaboration. These networks are nodes of both information mobilization and dissemination in a changing context. They are also an important loci of trust and resource capacity to ensure that the right information and support reach vulnerable populations from groups and organizations that they trust.

Related to this, the process of data collaboration provides meaningful opportunities for engagement from a broad array of partners with different skill sets, vulnerabilities, and capacities. This is particularly relevant in the context of addressing technological and data-driven approaches in an organizational and individual landscape that is wildly unequal in access to digital tools, relative abilities to interpret and utilize data, and capacities in translating information into useful action. Neighbourhood organizations often have far greater knowledge and capacity to respond to local needs, but they lack the proficiency in smart city vocabulary and often conceive of data as an “extra” beyond their resource capabilities. Data-driven and smart initiatives have the capacity to improve their reach and impact in local communities but lack the vocabulary to translate technological and social innovation into goals that resonate with local organizations and communities. City governments that approach data collaboration using non-technical language and orchestrate opportunities for a range of partners to engage in the process also build capacity in their communities for data literacy and technological proficiency. These translate, in the long-term, into a greater chance of success in developing technological solutions and infrastructure that is meaningful in citizens’ everyday lives.

A Special Note on Vulnerability, Inequality, and Technology

Smart city governance and smart city approaches to social problems are an increasingly popular policy investment for local governments. This is, of course, with good reason; fostering and harnessing technology and data given their potential to multiply the length and half-life of new policies and programs is a compelling investment. In this, it is tempting to organize data collaboration solely around technological, app-driven, or data-wealthy goals. This begs the question, however, of who

participates, who benefits, and how these solutions impact different populations. Specifically, there is ample evidence that the use of data both exacerbates existing inequalities in access to technology and obfuscates data's impact on at-risk and vulnerable populations. Chokly and Lauriault (2020), for example, demonstrate how visualizations of data, such as the use of dashboards to organize COVID-19 data, overlook and/or elide the experiences of racialized and indigenous communities as well as the interlocking issue of intersectionality in the presentation of the data categories. Attention to issues of vulnerability and inequality—particularly the risks of oversimplification through standardization of data—are necessary at all steps of decision-making to be able to build solutions that meet the needs of all residents.

Data collaboration, with an emphasis on orchestration and access for local, community-based organizations' needs, reminds us that the translation of data and development of new technologies needs to be inclusive and accountable. Distributed networks of local organizations are particularly important partners in defining, translating, and disseminating information to vulnerable populations. In this vein, data collaboration and the “small data” of information gathering and updating represented by 211 along with the analysis disseminated by the department of public health provide meaningful opportunities for local governments to connect to citizens in need. This engagement, in turn, builds municipal capacity in innovation and impact in terms of data that benefit local communities in serving those most in need.



Potential Risks and Opportunities

Potential Risks Presented by Lack of Data Collaboration

It bears repeating that local governments are increasingly responsible for a host of complex social issues that require multifaceted and multi-sector policy solutions. In this, data collaboration paired with technological capacity and priorities is always a question of balancing potential innovations with investment in essential infrastructure. As the example from Montreal demonstrates, while there may be collaborative and innovative advancements in organizational and data-driven initiatives, there may be a mismatch between what is needed “on the ground” to address policy issues. It is worth noting here that while the pandemic shined a spotlight on the issues discussed above, they were not new or unique to the crisis. City agencies face several risks in building collaborative networks and data opportunities in this regard. They include:

Formalization vs. Engagement: There is often a trade-off between formalization of organizational relationships and governance structures. While formal agreements and structures are necessary to address issues of privacy and transparency for newcomers to partnerships, there is a risk of losing the benefits of informal, loose, and distributed networks that are central to encouraging engagement and buy-in to partnerships with local governments. Particularly when considering the resource limitations of community organizations, partners need to see the relevance and pay-off associated with their participation in data collaboration initiatives.

Lack of Data Relevance: Community organizations are well-versed in the risks of investing in data and collaborative efforts in terms of the relevance to their own goals and time commitment to the process. There is a risk for engagement to become too onerous without much continued benefit to partners. In this, addressing the relevance of the data collaboration from a diverse array of perspectives is key. Data that is relevant to only one partner or driven by a subset of needs and/or data collaboration which quickly becomes irrelevant to the participating organizations risks disengagement from the process which can, in turn, leave municipal agencies to progressively lose their relevance to the communities they seek to support and potential impact of tools for their needs.

Data Ossification: There is also a temptation, when collaborating on and building data that may be useful for a particular policy response, to continue to collect data in the same fashion and exhaust resources on maintaining databases long past their meaningful use. In this respect, data collaboration also bears the risk of becoming an albatross for city agencies to maintain and utilize effectively. While this is related to the question of relevance, the risk of investing resources in the same structure with the same inputs and outcomes while failing to innovate or update it is also significant in draining resources and engagement.

Limited or Unstable Resources: There is a risk for external partners in investing in data collaboration by the need for resources to run programs and carry out their primary goals. In this, there is a risk of losing commitment not for lack of engagement or relevance, but because organizations—particularly community-based organizations—need to invest in time and resources in service delivery. Particularly as many funding agencies do not specifically provide support for ongoing activities and collaborative engagement, there is a need to reinforce continued commitment on the part of agencies by providing needed resources as well as funders for investing in technological improvements that enable fluid cooperation and engagement.

Potential Opportunities of Taking Early Action on Data Collaboration

Among the host of opportunities related to smart city initiatives, the opportunities presented by data collaboration and early action are particular in that they build on small resource investments that have the potential to have long-term, larger and more meaningful impact. Specifically, data collaboration opportunities include:

Engagement: There is incredible opportunity for data collaboration to reinforce and strengthen engagement on the part of external partners and citizens. These partners are necessary to solve and resolve policy issues; ongoing data collaboration transforms the relationships with partners into mobilizing structures that reach well beyond any specific

database or technology development. As was clear in Montreal's case, this engagement has the capacity to enable cities to more rapidly scale-up and scale-out solutions they develop. This is key to more democratic and inclusive participation in local communities that, in the end, translate to healthier, more engaged, and less vulnerable citizens.

Sustainability: As discussed above, cities and, in particular, local governments with limited resources face trade-offs in their time and commitments to policy initiatives. There is an opportunity, in a consistently shifting landscape of policy priorities, to sustain initiatives and their impact over time by engaging partners and focusing on building success through data collaboration. As was demonstrated in the experience with 211, prioritizing a one-way mode of communication between organizations focused on updating data without a connection to their networks or engagement as full partners

leaves the entire digital infrastructure more fragile overall. Providing opportunities for multiple partners and orchestrating collaborative engagement distributes knowledge and information, expertise, and capacity over the entire network and thus ensures that policies and solutions are sustainable over time.

Collaborative Innovation: As research in smart city initiatives demonstrates, horizontal networks with inclusive participation on behalf of partners working together on data solutions has a far greater capacity to lead to innovations in both policy approaches and technology development. This is because municipal actors open themselves to different points of view, different voices, and different needs within their communities. In that process of exchange, they may innovate in providing more meaningful tools that have a deeper impact in addressing the everyday needs of citizens.



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