Opening Up: Emerging Perspectives on Data Sharing

Ryan Burns
Gyanendra Gurung

Contents

Executive Summary

This report does a lot of things.

Introduction

Cities across North America are reaching a turning point in their data sharing practices. Many jurisdictions have for decades required that datasets collected using public funds be released to the public for free – the state of California being a notable example. These cases usually follow in the longstanding interest of "open government" and "open science" that prioritize the values of transparency, accountability, replicability, and democratic participation. Indeed, in 2014 then-President Barack Obama signed the Digital Accountability and Transparency Act, which required more federal-level datasets be made available to the public via data warehouses and data sharing platforms. In Canada, the Social Sciences and Humanities Research Council, a national research funding agency, requires funded projects to make their data available to the public where possible. What is different now is that the recent rapid growth in interest in "open data" is forcing government agencies – especially at the municipal scale – to reconsider their data sharing strategies, and to ask themselves why they make datasets available under certain terms and conditions. Why do they make some datasets available in a centralized, open platform, while other datasets are released only for a fee, or under restrictive licensing agreements?

The "open by default" movement is a core instigator of these questions. Open by default, as defined by the International Open Data Charter, is the "presumption of publication for all" – in other words, establishing formal policies and informal workflows that normalize and often automate the release of datasets to the public. Open by default puts the onus of justifying data withhold on the data producers, so that they must provide a reasonable explanation why a dataset should be kept from the public. Across the world, cities like Glasgow (UK); Tempe, AZ (US); Palo Alto, CA (US); and Victoria, BC (CA) intentionally release datasets automatically to the public. In Canada, Edmonton, Alberta was the first city to adopt an open by default policy in accordance with the International Open Data Charter, and remains, on the global scale, a

lauded example of that policy approach. As before, this movement's inertia raises many questions about why cities hold closed datasets, and what purposes opening those datasets might serve. In the future, it is likely to become more difficult for cities to justify conducting data dissemination in ways reminiscent of pre-open data days.

Given the importance of this context and the global shifts it implies, the City of Calgary has set out to explore the question of data sharing practices. What decision-making practices have led to datasets being available under different terms and conditions, some for a fee and other for a fee, some shared internally only, or not available to the public at all? The ultimate goal is to revisit their own policies and consolidate under a cohesive set of directives, but to ground these directives in the experiences of other cities across North America. Data sharing practices are shifting across the globe; however, Calgary lacks a "pulse" of its own data sharing practices across departments and staff.

This report addresses these questions that bore out over a 4-month research project in collaboration with Engaging Open Data Research, a University of Calgary Department of Geography research institute. Over the course of 4 months, the authors of this report interviewed staff in the City of Calgary, cities across Canada, and cities across the United States. In all, the researchers conducted 18 interviews, attended data sharing-related community meetings in Calgary, and closely read official policy documents related to data sharing across North America. This project uses standard qualitative methodologies for both data collection and analysis, drawing out the most salient and important narratives for the purposes of this report.

Below, the report proceeds by first discussing the perspectives of those without clear understanding of their department's policies. These typically fell into one of two categories: the first is those who provided little explanation other than telling us some form of "I don't know" – they don't know why the policies are in place, from where they come, or whether the policies should persist. The second is when department managers deferred us to others who they see as responsible for data

sharing policies. After these themes, we then focus on those managers with clear visions of their department's policies, either resisting more open data dissemination policies because they disallow recuperating dissemination costs, or advocating more openness in the interest of not double-taxing taxpayers. We then point out some of the reasons why managers – even those self-described "open data advocates" – are hesitant to release their data. These tended to focus on some form of fear around (a lack of) data quality and its implications. Finally, we conclude by offering a number of preliminary speculations regarding concrete steps City of Calgary staff can undertake to foster the adoption and buy-in of open data policies.

Theme 1: "I don't know"

Key takeaways:

- Department managers often follow existing protocols simply because policies are unclear or easy to continue.

- There is a great opportunity to set strong and clear guidelines, and there will likely be little pushback.

- With some time for adjustment, it is likely that department managers will adapt to new policies, even if at first they are disruptive.

By far, the most common thread connecting interviews was a lack of knowledge or understanding of how and why an interviewee's department conducts its practices the way it does. This took a number of forms, including an explicit confession of ignorance, and a deferral to other departments or policymakers.

The first occurred when an interviewee directly said that they are unaware of how and why their department disseminates data in the ways they do. This perspective was fairly commonly conveyed, both within Calgary and in other cities. As we outline below, the perspective ranged in severity from feelings of policies' complete obscurity to interviewees' hesitance to misinform us. The City of Calgary's Corporate Analytics and Innovation (CAI) office establishes many best-practices and formal policies with regard to data sharing, and many of our Calgary interviewees mentioned them when asked about their workflows. One interviewee was already providing data for free when another party requested it. When asked about why data that are made available by request without a fee, Daniel, a high-level manager working with parks-related data, replied,

> "If [CAI] is collecting a fee, I don't know about it, cause I, it's not anything that comes into my [everyday workflow] or budget. If

there's a fee being collected, then it's something I am not aware of."

Another interviewee Brian – a high-level manager of a transportation department - could not inform us whether his department's data gets online for a fee or for free, but he told us that there is an "intellectual property access management group" who are responsible for setting their the data license agreements. Although he left the group nameless, he was clearly referring to CAI.

The quote and paragraph above represent the many staff-members who seem to envision their role as primarily technical in nature, where decisions regarding fees, licensing, and dissemination are left to others. Commonly, as this quote demonstrates, the interviewee does not see their lack of knowledge as a weakness in their operations; those decisions simply fall outside their purview.

On several occasions, the lack of any firm knowledge regarding data-sharing practices stemmed from the fact that such decisions — either to distribute for free or for a fee — were made prior to the interviewee's entrance into their current position. Kevin, whose work is in the area of transit, says that he does not know why the managers decided to make their datasets available for free:

> "Since I have been working here, it's always been like that. If we collected, we would actually share it and would tell them what the limitations were"

Together, this discussion implies a great deal of flexibility in setting new, or publicizing existing, policies. We confirmed this suspicion by asking interviewees how an overnight shift to an "open by default" policy would affect their daily work, and answers were, without exception, positive: when such a shift would be disruptive, interviewees explained that they would simply need additional human resources, but we heard few reasons why such a policy would not work effectively. Interviewees' lack of knowledge of existing policies leads them to be open to alternative arrangements.

Theme 2: Deferral, or "It's Not My Job"

Key takeaways:

- Sometimes department managers know the established policies but not the reasons they are in place, and feel it's beyond their purview to set or alter them.

- In such cases changes in policy will likely be adopted smoothly, as managers see their role as merely following direction.

Often the "I don't know" theme emerged in a sort of deferral, where the interviewee would refer us to another office for further information, or claim that another office sets the precedent that the interviewee follows. In both cases, the key idea is that the policies are set by others, and the interviewee – despite uniformity in their relatively senior positions – does not hold the knowledge they feel is necessary to explain the current policies. For example, Fred, whose work orients around planning, mentioned that the charge for his department's datasets is part of a cost-recovery program established and sustained by CAI. While he understands that the program is in place, he does not understand how it works or why it has led to particular practices in his department. Brian deferred to CAI when posed with the question of pricing, fees, accessibility, and data-sharing agreement. Early in the interview, he said,

> "We create the data and it's up to [CAI] to kind of sell it and showcase it."

This notion was expressed as well by Calvin – who leads a team related to business development – when he insisted that his responsibility lies only in *creating* data rather than circulating it; he believes that CAI controls the latter:

"My role is actually in data creation ... but ... as to how this data gets out there, it's a longer story. Anyway, I think [a CAI representative] can explain that to you."

Both these quotes point to the very common position that the interviewee is simply doing, in a manner of speaking, what they've been told. When these ideas came up, the interviewee would provide the contact information of the person to whom they deferred, to demonstrate their willingness to help despite their unclear understanding of their policies. In this way, they see themselves as implementing workflows within the policy frameworks and guidelines, rather than envisioning and operationalizing the policies themselves.

Interviewees based in Calgary were more likely to defer us to other departments and policymakers, however, the interpretation of this is complex. On the one hand, it could simply reflect the fact that the interviewees know we as researchers are well-connected with city staff-members, and know that we can access many of the formal policy-makers. Interviewees could be invoking our shared social networks. Related to this, a second interpretation could be that we often contacted the wrong people in Calgary. We do not think this is a compelling interpretation, as we were connected with these individuals by policymakers within the city, and we strongly relied on past interactions with many interviewees. Thus, on the other hand, it could suggest that staff of the City of Calgary are either largely following the institutional memory – or lack thereof – of their department, proceeding as they have since commencing their position without consideration for justifying current practices, or that they are commonly uninformed of formal and informal guidelines for their work. **In either of these cases, there is a strong impetus for policymakers to establish strong, clear, and comprehensive guidelines – and a large degree of freedom for those policies to take diverse forms.**

Where knowledge and understanding was certain, interviewees commonly advocated for more liberal data dissemination. Interviewees that held clear direction and felt confident in their grasp of their

department's rationale tended to represent the departments that released their data holdings to the public for free, with non-restrictive licenses, and often on centralized open data platforms. Of all our interviews, the city of Victoria best represented this trend. In speaking with a high-level information technology manager there, Larissa explained in very common sense terms that her department automates data release in order to minimize human resource expenditure. The result is that the city's open data platform is updated immediately and automatically with the department's latest datasets. The data upload software allows her to withhold data that are sensitive, messy, or otherwise problematic. This has been a policy in place since very early, prior to Larissa's arrival – what contrasts with earlier situations, however, is that she has deliberately continued with this policy because, to her mind, it is commonsense. We were astonished at the degree of reasonableness in all her explanations, and I pointed this out to her; she confirmed that this policy is driven, partly, by principles of openness and data access, but moreso because it is a simple approach that streamlines data dissemination. In other words, it seamlessly integrated into her existing workflow.

Theme 3: Cost recovery

Key takeaways:

- Departments often feel the need to alleviate the fiscal burden associated with preparing and disseminating data.

- There may be space to clarify whether a department's responsibilities include data dissemination, and if a department's core responsibilities were expanded to include data sharing and dissemination, the "cost-recovery" approach would be less justifiable.

- A different approach could be to establish a corporation-wide platform for allowing citizens to retrieve their own data, thus reducing departments' data-related costs. Open Calgary satisfies this approach in some ways, but would benefit from more automation.

Many interviewees invoked the long tradition of departments seeking to recover the cost of producing and maintaining their data holdings.

This took two prominent forms. The **first** emerged in the context of a department releasing datasets that they already hold. Here, for many interviewees the cost they levy intends to simply supplement their resources, or recuperate the cost of labour and materials associated with copying datasets onto a hardcopy medium (e.g., print-out, CD, or USB drive). Adam, a manager for a transportation-related department, told us that they currently release some of their datasets for a fee, which is to

> "...essentially to recoup our cost from some technician pulling that data out and mailing it to you".

Fred, who works in the area of planning and development, revealed to us a parallel idea:

> "So I wound up purchasing that information for probably a few hundred dollars from the city and I was told—at the time—well

the cost was really to cover the time and labour and the physical cost of the disk for someone to copy it and put it on a disk and hand it to me."

These two quotes most succinctly capture the ideas of the first form of cost recovery. In the context of our conversation, it was clear that Adam sees his staff's day-to-day workflow as *not* including data query, export, preparation, and delivery. Thus, when a member of the public requests some data from Adam's department, to satisfy that request requires expending human resources that could otherwise be tasked with more routine work. The "recovery", then, means to cover the costs of a staff-member diverting their time to the "different" task of data dissemination.

Fred very similarly sees data dissemination costs as outside his department's baseline service requirements. He adds the cost of creating a data hard copy to the cost of purchasing data from another department in the city, when deciding on a fee to levy the public. Regardless of other department's decision-making practices in deciding to charge Fred for his data, he tries to pass some of that fiscal burden back to the public when they request the data. Notably, one may infer from the broader conversation with Fred that the public's request in this hypothetical situation comes *after* his department possesses the dataset. In other words, the scenario does *not* involve his staff procuring the dataset for themselves following the public's request.

We also encountered an interesting – if not unique – use of these ideas in speaking with transportation departments. According to two interviewees, their policy of charging a nominal fee ($5-20 over the last couple decades) reflects their desire to decrease the number of requests – mostly from "college students", as one playfully put it, self-consciously tongue-in-cheek. According to this interviewee, their department has no misgivings about releasing their data holdings for free; however, preparing data for release entails human resources significant enough to warrant limiting measures. Until they implemented a fee structure, the number of requests was too high for the human resources at their disposal, but the small fee resulted in far fewer requests.

The **second** form this theme took is when a department charges a fee to collect an original dataset – a dataset that the department has not already collected and thus does not already possess. This involves calculating the cost of human resources, instrument usage, data processing, and dissemination. These expenditures presumably are not covered by the departments' existing budgets. Importantly, many interviewees who expressed these ideas were in departments related to transportation. Adam, for example, told us that they calculate the full costs associated with the data production/collection, and pass the full charge to the requesting party.

This particular form of cost-recovery sometimes leads to exclusionary policies, where the department rejects data requests in the purported interest of the parties requesting the data. For example, because Kevin's department passes along these costs to the requesting party, they often feel the need to reject requests that would generate unreasonable cost for those parties:

> "If they want us to like go track [something], and it would cost us like 20 hours or something like that, then basically we usually say to any project like that, we would actually say 'No' ".

Again, this stems from the fact that Kevin sees these practices of data collection and dissemination as outside his normal day-to-day responsibilities. The extension of this observation is that his department's policy frames his perception, and if the scope of his work were clearly enlarged to include resource-expensive data collection practices, he would have fewer *necessary* reasons to decline requests for data. Put simply: **if the scope of the department's work were explicitly expanded to include data collection, those departments would have no reason to reject data requests, and the "cost-recovery" approach would be less justifiable**.

Our interviewee Brian gave us an interesting twist to the cost-recovery discussion above. He believes that giving away original data for free would diminish its resale value, making it more difficult to sustain data sharing agreements with third parties:

> "The challenge here is that we use some of that money from the sales to recover the [cost of the] operations. So, if we gave it away for free, then some of the agreements we got in place would have less value. So, we wouldn't be able to use that money to help recover [the costs of the] operation itself…"

Levying a fee here intends less to recoup the costs to produce, collect, process, or disseminate data, and more to recoup the costs of procuring the data collected by a third party – and, importantly, sustaining the data sharing agreements that helped the department gain access to the data to begin with. Brian is talking about the cost of data licenses between data-sharing partners, which helps sustain, for instance, base mapping operations, the Information Technologies services, and so on. He does not want his department to give away these datasets for free to non-partners. Later in the same conversation, Brian suggested that city administrators need to look into how to make such datasets free to the public while also supporting the operations that allowed the department to procure the data.

Synthesizing from the discussion above, one can assume that if datasets are released for free in an open online platform, this would negate most perceived needs for cost recovery policies. Those holding the cost recovery perspective state that their need to do so stems from the cost of human resources and the medium for sharing the data. By extension, if the public can access, process, filter, and export data themselves, to their own digital copy, then data dissemination costs would dramatically decrease. There would still be costs associated with procuring and maintaining data servers, cleaning, processing, and uploading data, and so on, but the departments presumably already conduct these activities for their own everyday purposes. Thus, we might infer that **automated data dissemination platforms such as ArcGIS Online, Socrata, or CKAN would provide a solution for those seeking cost recovery policies**.

Theme 4: Double-taxing

Key takeaways:

- Many department managers equate data dissemination fees as double-taxing the city's denizens.

- Those with this view tended to feel very strongly about the position, and see the argument as unextraordinary.

- This suggests that these managers might be key advocates for more open data dissemination policies. Their advocacy could secure greater buy-in.

In cases where the interviewee's department unequivocally made all datasets available by default on open data platforms, we encountered a surprising conformity around the idea that charging for datasets equates to double-taxing citizens. By this, they meant that staff salaries, data management software, and data production technologies have already been provided from city budgets – revenue from taxes – and that to ask denizens to pay for datasets is asking them to pay for something for which they've already paid.

Our interviewee Calvin, whose work is in business development, shared the most succinct and poignant example of this perspective, couched, in fact, as a common sense rhetorical question:

> "Why charge people twice?"

For Calvin, taxpayers have contributed portions of their incomes so that the city can offer its essential services to all residents as a public good. Data collection and dissemination fall within this umbrella of essential services. The rhetorical question format of the quote above is important: it suggests that Calvin sees no other reasonable alternative, that it seems insensible to consider data dissemination costs as outside a city department's "normal" responsibilities.

Interestingly, as we learned from elsewhere in the conversation, Calvin's department had charged for data dissemination in the past, but transitioned to a "free" model within the last 10-20 years. During this transition period, they had also temporarily instituted a small fee structure to recuperate labour costs of preparing data and the medium format (e.g., the cost of the disc or USB drive). He was adamant to explain in direct terms that this was *not* a cost-recovery program; it was meant only to alleviate some of the financial burden of his department. One might argue that this is, in its own way, a cost-recovery program, but Calvin thought of the policy in very different – explicitly contrasting – terms. However, Calvin's long-term vision places completely open, completely free data at the centre of his ethic and practices; his closing remarks to us focused, without our guidance, on the question of how to design an application and mechanism that would streamline the automated release of data for free to the public.

Along very similar lines, our interviewee Fred (planning and development) equated data fees with "double-dipping". He said:

> "Taxpayers already paid for us to collect this information to support the business in the city, it seems—and this is me speaking more personally than reflecting the policy of the place—but ... it almost did wind up being my decision. Since taxpayers paid for it, it sounds like double-dipping."

To inspect this metaphor for its literal meaning, the *thing* being double-dipped *into* is presumably the taxpayer's income, and the *dipper* is the city government. Thus, whether or not Fred meant to imply it, the double-dipping metaphor connotes greed and unnecessary burden. In the quote above, Fred seems to be aware that his interpretation might be provocative ("it seems" and "it sounds like"), but that he still offers this argument suggests he feels that it is unassailable and the most compelling characterization.

It is important to reflect for a moment on the fact that those with this perspective were confident in their responses, offering them in direct and immediate terms, and see their perspectives as unextraordinary.

These two tendencies were present in all those who invoked the "double-taxing" idea, albeit to varying degrees and with different shades of nuance. **Such advocates for free data might be key backers of a transition to more open data dissemination policies in the future.** These interviewees seem to have well-considered, well-reasoned thoughts that may resonate with managers of other departments.

Theme 5: Challenges and hesitance

Key takeaways:

- Key hesitance emerges from department managers' apprehensions around how data quality – or the lack thereof – can lead to misuse of data, including compromising public safety and security.

- These challenges are in tension with the common perception that government is an "authoritative" source of data. This tension raises a number of pressing questions for city staff to address.

In our conversations with department managers, we also sought to understand impediments to adopting more liberal data dissemination policies. What are some of the challenges, either real or perceived, that cause managers to hesitate in advancing more open data sharing?

Two departments — each with only small amounts of data in Open Calgary — gave us important insights into these challenges. Both Brian – who works in city assets – and Nathan – a manager of a department working on issues related to buildings – brought up *data quality concerns* to explain their conscious reluctance to releasing data to Open Calgary. Importantly, Nathan is a self-described "open data advocate", yet still voiced this concern. For the most part, by this, interviewees meant that they had collected or produced their data for particular specialized purposes, and that the limited user base – i.e., their department, or city officials – grants the data curators a comfortable level of control over the data use. There could be a number of underlying assumptions to this perspective: (1) dataset errors are known to the curators, (2) those errors are accounted for in their data uses, (3) impacts of errors are minimized if data users are limited and are "expert" users, (4) dataset interpretation and analysis requires a sophisticated level of knowledge and familiarity with the datasets' collection and production

practices. This perspective is reflected in broad contexts beyond our interviews: in a large September 2018 community meeting related to institutional data sharing in Alberta, the researchers noted that *data quality concerns* emerged as a focal point in the conversations, to which some attendees responded with their confusion regarding the fact that the datasets are of sufficient quality for city decision-making, but not of sufficient quality for more mundane, everyday uses or business analysis.

One nuance to Nathan's and Brian's comments further complicate the matter. Nathan explained that due to data quality concerns, most of his department's data are released for a fee. When asked how pricing decisions are made for these non-free datasets – in other words, how they settle on a price for a dataset – Nathan has no answer beyond that the responsibility for pricing decisions lies upon CAI. This, of course, touches back on Theme #2 as described above. For Brian, on the other hand, data quality concerns are couched within broader worries about security. Brian's caution stems from his apprehension that poor data quality can lead to laypeople making inefficient and harmful decisions, or in a worst-case scenario, be used for destructive purposes such as crime. These worries – all related to data quality – are the primary reasons that Brian's department does not release all his department's data to Open Calgary. However, even if such quality and security issues were addressed, Brian says that his department would still not make the data available publicly for free, adding that:

> "It's not even my call, about the security, right?"

As with Nathan, Brian is here pointing back to Theme #2, deferring to others in the City, usually CAI, with the responsibility to make security-related and quality-related decisions. The legal foundations of this concern are dubious, as the City is unlikely to be held legally liable for public uses of their data[1]. The important takeaway, then, is that

---

[1] This statement is a logical one, rather than a legal one: for specific legal guidance, readers are encouraged to consult with law practitioners.

department managers need clarification on the liability associated with the data quality and security issues they perceive.

Data quality, as an overarching theme, seems to apply equally to a department's reputation as it does to security issues. For Brian, in particular, the abstraction and data deletion necessary to publicly release his datasets would, in his view, reduce the quality of data so as to damage his department's reputation. He would need to scrub his datasets of sensitive information, and he worries that this would decrease the "quality" of the data – with the implication, as he said, of reducing the quality of the analyses the public might conduct. To be clear, the "data quality" in this context refers to the presence or absence of attribute data, rather than the precision of geometries or the fidelity of attributes.

This discussion comes into tension with the common conversations around the city being an "authoritative" data source. Among municipal leaders, academics, business owners, and laypeople, the common perception is that formal public sector entities – like the city or provincial government – are the best sources for reliable, accurate, "authoritative" data; by contrast, publicly-generated data (e.g., Wikipedia, OpenStreetMap, Volunteered Geographic Information) is, according to this view, generally unreliable and of low quality. Within academic scholarship in this context, the premise of clear distinctions between authoritative/volunteered, reliable/unreliable and thus accurate/inaccurate, have largely been discredited[2]. This is not to say that these distinctions don't *exist*, but that formal institutions should not be seen as the *only* source of credible information. Still, despite the

---

[2] See, for example, **Zook, M., M. Graham, T. Shelton, and S. Gorman**. 2010. Volunteered Geographic Information and Crowdsourcing Disaster Relief: A Case Study of the Haitian Earthquake. *World Medical & Health Policy* 2 (2):7–33; and **Goodchild, M., and L. Li.** 2012. Assuring the Quality of Volunteered Geographic Information. *Spatial Statistics* 1:110–120.

dubious foundations of the idea, it holds strong sway across multiple audiences. Most laypeople still perceive the city as a – if not *the* – source of credible information. This presents a number of challenges to data sharing advocates: how can City of Calgary departments maintain confidence in the quality of their data holdings while not releasing it for "data quality" concerns? Should department managers provide metadata statements regarding the level of quality/accuracy, and the purposes to which the datasets may (and may not) be put? Should city officials hold educational programs to help managers both improve the quality of their holdings and learn how to responsibly release their data of any given quality? How can the city facilitate managers' *learning* of the benefits, cautions, and drawbacks of open data?

We provide some preliminary speculations in the Conclusion below.

Conclusion

Our report has focused on three primary dimensions. First, those department managers without strong understanding of their department's policies tended to be either explicitly unclear (telling us, "I don't know") or defer us to others they believe are in charge of decision-making (telling us some form of, "It's not my job"). Second, those with clear understanding of their policies usually fell on one side of the "for a fee" or "for free" axis. Those charging a fee often did so to recuperate the costs they associate with data sharing, including human resources and physical medium (e.g., disc, USB). Many others see this, however, as double-taxing taxpayers, since the city staff's ability to collect the data in the first place derives from the city budget funded by taxes. Lastly, we have outlined a couple of the reasons department managers hesitate to release their data publicly for free. These reasons typically relate to data quality – part of which is related to security concerns.

Based on the results discussed above, we would like to offer some preliminary speculations about possible paths forward.

- There is a strong role for **education** in promoting more open data sharing policies. Managers need clarification on standard data preparation and release procedures, bounds of job responsibilities, legal liability, and benefits/drawbacks of open data. Our results suggest that fully open policies, perhaps through Open Calgary, would not face insurmountable resistance, if managers are properly informed and guided.
- Relatedly, any disruption caused by introducing new policies is likely to be overcome relatively quickly with little long-term push-back.
- An **automated** corporation-wide platform would reduce departments' fiscal burdens associated with processing, filtering, and exporting data to a physical medium. Open Calgary is a strong step in this direction, but would benefit from more automation and more central positioning in departments' everyday workflows.
- City officials could draw on the expertise and strongly-articulated opinions of data sharing advocates who espoused the "double-taxing" position. These staff tended to explain their positions in

such common sense terms as to resonate with more skeptical managers. The city's open data community of practice likely provides a useful launching pad for this approach.

Appendix: Interviewees and their roles

List of participants appearing in this report

Name	Area of work
Adam	Transit
Brian	Assets
Calvin	Business Development
Daniel	Parks
Edward	Transit
Fred	Planning, development
George	Assets
Henry	Building permits
Ian	GIS Coordinator
James	Information technology
Kevin	Transit
Larissa	Information technology
Matthew	Transit
Nathan	Building permits
Oscar	Information technology