

# OURFOODFuture

GUELPH-WELLINGTON – Canada's  
first food smart community

*A Smart Cities Challenge initiative*



## Envisioning a Circular Food Economy Building Confidence in Smart City Policy

Authors:

Bianca Wylie



Sean McDonald



[foodfuture.ca](http://foodfuture.ca)



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## Introduction

There is a persistent theme and line of thought that runs through our soon-to-be submitted smart city proposal - how to thrive and grow in a time of tremendous policy and legislative uncertainty. We are in a time where there is no consensus yet, within civil society, between professions, and beyond, about how to think about and act on an ever-growing amount and range of data, and how to develop the capacity to participate in those decisions.

Some see data as an asset, others see it as a liability - some talk about privacy and security, others talk about minimization and inevitable breach. Any smart city proposal raises a significant range of intellectual property, human rights, data protection, privacy issues - and those are just the ones we know about. The only thing that is certain right now is that the topic is unwieldy, and the best way forward is to move cautiously in some areas, and more confidently in others, while maintaining the inclusive engagement to understand impact and check our assumptions. This is the crux of our proposal. And as part of our commitment to promoting debate and engagement, this discussion paper explores one of the major challenges related to the uncertain terrain of the data governance world - the data-driven policy confidence interval problem.

## Policy in Context

Policymakers often talk about data and evidence-based policy, implying that data and evidence selection is apolitical and results in objective outputs. The problem is, we're too early in digitization to have good models for the totality of the problem space. For years, the dialogue has been dominated by privacy - both as an established right and a protective framework. But as we invest an increasing amount of public resources into making public spaces legible to both public and private data systems, we're realizing that there are significantly larger range of legal and policy issues involved. In addition to being a standalone object, we find that data is increasingly a layer, often a contested layer, in almost every type of important relationship we have.

These issues are particularly complex in relationships where we have strong, legally enforceable expectations - for example, in the relationships between governments and citizens, doctor and patient, or school and student. As we procure and build digital tools as intermediaries in these relationships, we're predictably encountering an enormous array of fundamental policy issues. There are public vs. private inurement issues embedded in how we classify ownership rights around data - and, more importantly, an undefined class of speculative data usage rights. There are deeply political international power struggles, playing out in domestic digital market and corporation regulation. Collective action and advocacy organizations are also experimenting with ways to use their digital footprints to advance their causes. At the moment, we're caught between the market-driven narrative of the competitive impact of slowing unprecedented change, yet without any of the institutional infrastructure or tools that we use to protect ourselves during uncertainty, experimentation, and change.

## Problem Modeling + Confidence Intervals

One of the places where that infrastructure is needed most is in problem modeling. There is very little consensus - or even mechanisms to build consensus - about which information can, or should, inform the way we make decisions. Technology platforms use a dizzying array of abstractions, from metadata to aggregation to anonymization to de-identification to proxy indication, to obfuscate their data modeling as both legal and proprietary. The problem with all that opacity, of course, is that the significance we encode in data literally defines how systems perceive us - often, the public systems that we rely on for basic protections. And, as is well documented, very few of us have any idea how, or how equitably, they work.

In data science, there's a term for the way that incomplete problem modeling or data availability reduces the validity of the result - it's called the confidence interval. Essentially, when you model a problem, you have to understand all of the information inputs, variables, and structural characteristics necessary to solve it. If you have a complete map of all the variables, you can build a decision-making model that is likely to produce high-fidelity results. Board games are a great example of this - and one of the reasons that artificial intelligence is tested on them: they are a fixed universe of knowable choices and variables. Public policy and services, however, are almost completely the opposite - there's very little standardization, limitless variables, and wildly

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uneven information. In other words, the data models and resources available for public policy create a huge confidence interval problem.

### **Privacy's Example**

One excellent example of this problem is the ongoing debate about the privacy preferences of young people. On the one hand, digital tool adoption has occurred at such an incredible rate, that policymakers are skeptical of the weight of any countervailing or mitigating policy consideration. In addition, it would be extraordinarily convenient for data market incumbents if upcoming generations were not only resigned to, but enthusiastic about, models that trade individual transactions for open-ended data usage rights. As a result, there are a significant number of compelling incentives to ask the question, but as Georgetown's Lindsay Barrett wrote, the empirical research available is incomplete at best, and often designed to dismiss debate about public privacy policies.

Independent research, however, paints a more nuanced picture: children care even more about data and privacy than previous generations, but they overestimate their ability to influence outcomes. Pew Charitable Trusts has conducted independent empirical research on attitudes to privacy, which supports the idea that attitudes on privacy are a lot more complicated than binary, single-factor use decisions. As researchers like danah boyd and ethnographer Tricia Wang have illustrated, young people often federate their digital selves, expressing components of their identity in some channels, while developing new handles or using alternative platforms to experiment with others. In other words, they underestimate just how large the asymmetries are, and how few practical approaches there are to fixing them. The size, sophistication, and legal ambiguities surrounding data brokerage markets set the bar to engagement impossibly high, for expert policymakers as well as technology users.

Regardless of your opinions of privacy, it's clear that it's a complex issue – and one that we don't have good enough data, or a granular enough understanding of the competing variables, to confidently model the problem. In that way, the field of privacy scholarship continues to be a bellwether for some of the structural of policy problems, and the way they affect decisions about public sector digitization. And just as our models for privacy perceptions are incomplete, privacy itself is an incomplete encapsulation of the range of issues implicated in developing public policies around data.

### **From Policy to Infrastructure**

One of the largest questions facing policymakers is: "How big is the problem you're trying to solve?" A policymaker's answer to that question will frame the size and shape of the response. Europe has decided that digitization presents a large enough set of issues to create a new framework of fundamental rights, in the General Data Protection Regulation. The UN and G20 are framing internationalized data governance as core issues. But at the local level, and in any given use case, the honest answer to that question for most policy makers is that we simply do not know.

Regardless of how large the change is, it's clear that we're in a period of rapid transition - characterized as most initially are, by chaos, competition, and fragmentation. And while the impacts of this transition are in our headlines, daily - there is an inadequate amount of institutional infrastructure built to maximize progress while minimizing risks.

There are models for how to do this work in high-risk innovation-driven markets like healthcare and engineering - both of which use mainstream experimentation, validation, and due process frameworks as widely acknowledged best practice. Not only do we lack similar sandboxes in digital policy, we fundamentally lack the kind of defined validation and escalation trajectory that we use to evaluate whether a new approach is ready for human experimentation in other fields. Technological experimentation, as noted by ethicist scholars Jacob Metcalf and Kate Crawford, is similar in impact to healthcare experimentation, but lacks the review processes, professional architecture, or liability frameworks that accompany innovation in adjacent fields. The gap has led the US Government to expand the role of the Common Rule – its experimentation ethics requirements and – and revisit the Health Insurance and Patient Portability Act (HIPPA) standard. These efforts go beyond principled statements and policy, to embedding ethical experimentation mechanisms in existing institutional infrastructure.

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## One challenge at a time

Our smart city challenge proposal starts with public engagement, toward building capacity, governance, and innovation. Smart cities place data, and the potential value it unlocks, at the center of public investments. It also imports the potential risks of data modeling into public spaces. Innovation ethics requires us to build systems to measure, test, and validate new technologies before deploying them at scale. To do this, we're starting with a sandbox approach, creating a safe space for experimentation and testing. We're starting slow to be inclusive and thoughtful, so we can go fast once we hit our stride. Our smart city proposal uses purpose-built organizational, legal, and governance frameworks to engage the public in ensuring that, step-by-step, Guelph's smart city is also a just city.

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