ACTION INSIGHTS | RESEARCH FINDINGS FOR CITY LEADERS

Using Data to Solve Urban Problems

Summarizing peer-reviewed original research published in the academic journal

INFORMATION POLITY

RESEARCHERS
Jorrit de Jong, Fernando Fernandez-Monge,
Quinton Mayne, and Nick Vachon

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Most city leaders use data to make decisions, but few are getting the most out of the data available to them. A **study** published in *Information Polity* and supported by the Bloomberg Harvard City Leadership Initiative offers a framework for optimizing data use to solve urban problems.

When Joe Curtatone became mayor of Somerville, Massachusetts, in 2004, he believed data could transform city government. Early initiatives like a 311 call center and SomerStat, a performance management system, gave officials real-time insights into resident concerns and departmental performance. Over time, these tools helped Somerville improve services, manage resources more strategically, and communicate more effectively with residents. By the time COVID-19 hit, the city had the data infrastructure to coordinate departments, act quickly, and keep infection rates below state and national averages—even though it was the most densely populated city in New England.
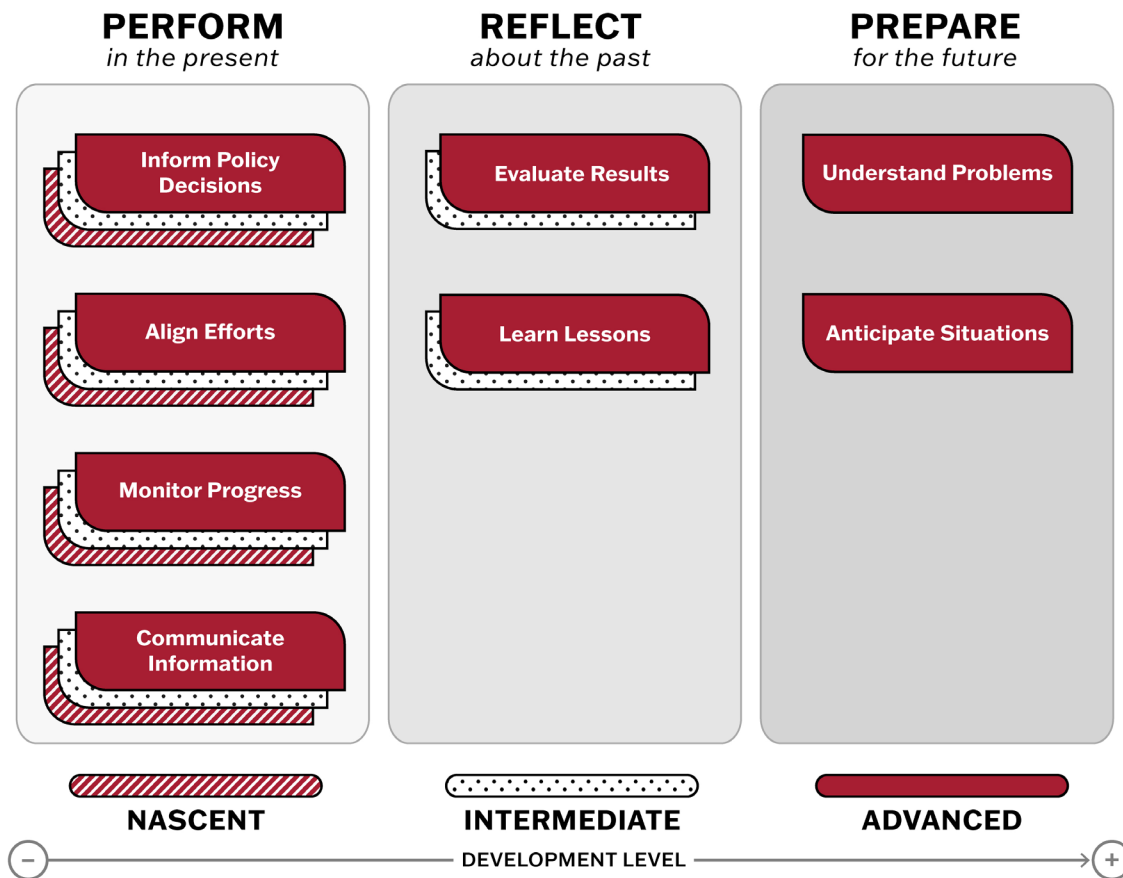
Somerville's experience illustrates the power of data, but it also highlights a broader challenge: despite a surge in available data, **studies** have revealed that many local officials lack a clear understanding of how to use data in their cities and for what purposes. To address this, we synthesized our empirical research and insights from our **work in more than 275 cities**, reviewed 132 academic articles, and examined existing data maturity models. The result is a **framework**, published in the journal *Information Polity*, that clarifies the multiple ways governments can use data—and how doing so creates public value.

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A Framework for Using Data to Create Public Value

Our research identified eight uses of data in government: to (1) understand problems, (2) inform policy decisions, (3) communicate information, (4) align efforts, (5) monitor progress, (6) evaluate results, (7) learn lessons, and (8) anticipate situations. Some concrete examples from our previous research can bring these data uses to life. For instance, cities used data to better understand the issues affecting veterans experiencing homelessness; they combined data from satellite imagery and police reports to design policies that better allocate resources in code enforcement; they used data during meetings with residents to keep them up to date on the status of ongoing projects; they pulled information from different departments to create a cross-agency task force to address distressed properties; they leveraged data to run a quasi-experiment to evaluate whether a city program reduced crime; and they used data from past inspections to predict which properties were most likely to be at-risk and should be prioritized.

Framework of Data Uses

PERFORM
in the present

REFLECT
about the past

PREPARE
for the future

Inform Policy Decisions

Align Efforts

Monitor Progress

Communicate Information

Evaluate Results

Learn Lessons

Understand Problems

Anticipate Situations

NASCENT

INTERMEDIATE

ADVANCED

− DEVELOPMENT LEVEL → +

Source: de Jong, Fernandez-Monge, Mayne, and Vachon, "The Data-Informed City: A Conceptual Framework for Advancing Research and Practice."

We then mapped these uses on to the stages of government action at which data is employed, showing how governments use data to perform in the present, reflect about the past, and prepare for the future (see figure above). We also examined the level of organizational development required to use data in particular ways, identifying three levels of development for each of the eight data uses based on the kinds of resources and the sophistication of the skills, tools, and techniques required. Finally, our framework considered how using data can help create public value. We found that data can make government more effective by helping officials meet policy goals and benchmarks, improve efficiency by helping city hall prioritize the allocation of scarce resources, foster equity by helping government better align resources with the people who need them most, and hold governments accountable by empowering residents.

Data can help create public value by making city hall more effective, improving efficiency, fostering equity, and holding governments accountable while empowering residents.

Takeaways for City Leaders

Somerville didn't become data-informed overnight. As Mayor Curtatone put it, the process was like **"turning around an aircraft carrier"** —long, deliberate, and strategic. City leaders everywhere now face the same challenge: how to turn abundant data into real public value. Based on our research, here are three key lessons:

1 Start with a problem, not just capabilities.

Building skills, acquiring technology, and developing systems are important, but insufficient. Focus first on a concrete challenge—budgeting, crime, climate resilience—and ask how data can help.

2 Use the framework as a compass.

Once you've defined a problem, map how you currently use data and where you could go further. What do you need to know? Which of the eight data uses apply? What is possible given your current capacity—and what investments would expand your options?

> *One you've identified a problem, use the framework as a compass to map how you currently use data and where you could go further.*

3 Be data-informed, not data-driven.

Using data to make decisions can improve effectiveness, efficiency, equity, and accountability, but it can also reinforce bias or lead to privacy violations. Treat data as one input into decision making, alongside context, judgment, and community engagement.

Further Reading and Listening

"The Data-Informed City: A Conceptual Framework for Advancing Research and Practice"
Information Polity

"Mayor Curtatone's Culture of Curiosity: Building Data Capabilities at Somerville City Hall"
Bloomberg Harvard City Leadership Initiative

"The Essential Capabilities for Problem-Oriented Governance with Jorrit de Jong" (podcast)
The Data-Smart City Pod

"Saving Lives, Time, and Money: Using Data to Find Unsafe and Unhealthy Buildings Faster"
Bloomberg Harvard City Leadership Initiative

"City Leader Guide on Organizational Culture Change"
Bloomberg Harvard City Leadership Initiative

Action Insights summarize findings from academic research. They offer management and leadership guidance you can put to use in your work, and they link to the underlying studies.

The Bloomberg Harvard City Leadership Initiative, located at the Bloomberg Center for Cities at Harvard University, is a collaboration between Harvard Kennedy School, Harvard Business School, and Bloomberg Philanthropies to equip mayors and senior city officials to tackle complex challenges in their cities and improve the quality of life of their residents.

The Initiative advances research and develops new curriculum and teaching tools to help city leaders solve real-world problems. By engaging Harvard graduate students in research and field work, the Initiative supports current city leaders while investing in future generations. The Initiative also advances the field of city leadership through teaching, research, and new curricular materials that help city leaders drive government performance and address pressing social problems.

This Action Insight summary was authored by Jorrit de Jong, Fernando Fernandez-Monge, Quinton Mayne, Nick Vachon, and Yamile Nesrala.

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