Big Data Maturity Models for Urban Governance Innovation

Workshop Report

November 9, 2016

I. Proceedings

This workshop was held at IDB headquarters on November 9, 2016 from 10am to 2pm, convened by Patricio Zambrano-Barragán of the IDB and Anthony Townsend, consultant from Bits and Atoms.

The purpose of the workshop was to build on the recent research effort on Big Data and Urban Governance sponsored by IDB's Housing and Urban Development Division. This work, conducted during the summer of 2016, resulted in the creation of a *big data maturity model for urban governance*. The workshop provided an opportunity for external review of this work by peer researchers, identified in the course of our literature review, who are developing and using urban data maturity models in other geographic and institutional contexts. The workshop also provided an opportunity to tap this group for advice and insight on IDB's future efforts in this area, including the design of a data innovation lab in Santo Domingo, Dominican Republic, as well as further guidance on how to refine and improve the IDB data maturity model.

The workshop started with an overview of the Emerging and Sustainable Cities Initiative at the InterAmerican Development Bank. This effort has grown from five cities in 2011, to 26 cities in 2016. A critical part of this program and the pilots it supports is helping cities to integrate data

into their decision-making process. While many of the projects focus on the development of urban infrastructure, there appears to be a trend that this is the jumping off point to foster a culture of data management in departments and that this thinking can spread to administrative data such as social and health services.

The LAC Region: IDB's Big Data Maturity Model

Surrounding this question of how to get cities to make decisions using data is how to assess and understand what a city government's digital capabilities are. This is one of the reasons why big data maturity models were chosen for further investigation. Dr. Anthony Townsend explained the model he and Patricio Zambrano-Barragán developed during summer and fall 2016 as an analytical tool for IDB to understand case studies from four LAC cities. One of the values expressed in using this approach is its flexibility to be applied to multiple levels of government and across different agencies. Though it is important to consider each agency's data-collection context and recognize that some sectors are more prepared than others to shift decision-making processes, for example some departments might have more qualitative or sensitive data where others, such as transit, are better instrumented for data collection and analysis.

An important question that was posed during this presentation: ***Is it possible to have a strong buy-in of data driven decision making without having a strong mayor backing the cause or someone in power trying to link these outcomes to their success?***

The UK: Nesta's Data Maturity Model for Local Councils

The next maturity model was presented by Nevena Dragicevic of Nesta. This model is a part of an effort to understand the critical success factors, big challenges, and trends shaping how local authorities in the UK are using big data. A defining factor of this model is its attempt to help local governments bridge the gap between their aspirations for the use of

data in decision-making and their current and realistic future capabilities. This model is being used with a number of local councils in the UK to carry out readiness assessments that determine current data maturity levels and potential roles and actions for different stakeholders.

Ensuing discussion centered on one of the most difficult aspects of creating a data-driven culture, getting departments in local government to share data with one another. A proposed strategy to minimize risk aversion is to highlight risks of not sharing. There are also legal issues around data sharing all around the world, so it is also necessary to have legal specialists that can reassure departments that they are within legal bounds.

Despite the challenges of getting departments to share data with each other, this presentation lead to one of the most salient points of agreements in the workshop: *Internal data sharing between departments, rather than open data shared with the public, can have the largest impact on local government innovation and effectiveness.*

The UK experience also raised two of the outstanding questions from the workshop. First, participants discussed alternative approaches to creating long-term engagement or buy-in on data strategies — project-specific and generalized. It was noted that project-specific efforts can fizzle out or disappear once the project is completed or the champion leaves office whereas general projects can easily fall apart without a specific and organizing outcome. Second, the question was raised whether more influential, aspirational goals or practical ones should be emphasized. There is a real tension between intimidating or scaring departments and getting them excited or motivated.

The U.S.: Harvard Ash Center's Data Maturity Self-Assessment Tool

Jane Wiseman, a fellow at Harvard University's Data Smart Solutions program shared an alternative approach to data maturity model design, employing a simple and straightforward style aimed at a mayor or mayor's chief of staff. Unlike the more complex and detailed models presented by IDB and Nesta, this model features just a single dimension of data-driven

decision – open data. The model's advantage is that by creating the target of publishing data, an incentive to clean-up data with a clear deadline is established. There is also an incentive for mayors or political actors, as she noted "open data portals are a press conference waiting to happen."

Ensuring discussions highlighted a few points of consensus among the group. *First, more documentation about data-sharing projects is needed so that patterns can be identified around successful strategies, tension points, and factors of failure. Second, data governance is an essential part of any data-driven plan*

The Social Sector: Data Science for Social Good Maturity Model

The final big data maturity model focused on social sector organizations and was presented by Matt Gee of Data Science for Social Good. This model was created through a collaborative effort with DataKind, a similar national organization that provides big data technical assistance to NGOs. The model is designed to identify obstacles to data-driven decision making in organizations. The resulting maturity model is viewed as a self-assessment tool for organizations to understand some of the pain points in their adoption of data-driven decision making; from staff buy in, to people resources, to funder buy in organizations can assess themselves in relation to leaders in this space.

This presentation provoked extensive discussion, with several points of agreement. *Data maturity should be understood across partners in order to move forward (project specific) - data science efforts are team projects. Data science is not magic, and this is very important to make clear to cities. Departments don't necessarily need a data scientist but rather they need someone who is entrepreneurial and will get things done.*

Context: The Urban Political Economy and Inter-Governmental Factors

The next part of the workshop shifted the focus to the broader context of data innovation in cities. Benjamin Edwards of the Urban Institute shared their Political Economy Model for Urban Data that was developed after working on various global efforts working towards data maturity. This work highlighted some of the sensitivities around data-driven decision making such as the negative impacts that incentives to implement evidence-based service delivery can have on marginalized populations who may not be politically valuable to serve.

The final presentation was from Carter Hewgley from John Hopkins University's Center for Government Excellence, provoding perspective on federal and state governments' data maturity was shared. While some mandates from the federal government have been successful at encouraging data ecosystems, these come with risks of "under-leveraging performance management" where departments are more likely to report up rather than try to reach across other departments. This behavior limits the possibility of sharing insights and decreases the likelihood duplicative work will be reduced. At the state level, wide disparities were noted between the efforts of different states at encouraging data use and sharing.

Several points of agreement came up in the discussion of these two perspectives. *First, we should question the need and superiority of 'big' data approaches.* Simpler solutions shouldn't be undervalued with governments. *Second, it was noted that crises and emergencies are important events that show what is possible when barriers to data sharing are removed.*

Concluding Remarks

The workshop concluded with participants sharing insights regarding valuable elements of a successful innovation lab based upon their experiences and understanding of what it takes to establish data maturity in a city. The responses ranged from practical investments in an engaged entrepreneur to lead an effort focused on tangible successes rather than flashy packaging of existing solutions to a 'Harlem globe-trotters' of big data project success that can share their learnings and excitement with other departments embarking on similar journeys.

II. Key Findings

The workshop produced several shared insights around the development, use, and impact of urban big data maturity models for cities:

-- Maturity models are a valuable tool for engaging city leaders in discussions about data innovation, and producing self-assessments that support planning specific strategies and actions.

-- Data science is not magic, and it is very important that maturity models make this clear to city officials to calibrate their fears and expectations.

-- Substantial impact can be achieved even at low levels of data maturity. Many pressing problems are solvable using existing tools and techniques and do not require big data approaches. Problem-focused and simple solution approaches shouldn't be undervalued with governments.

-- Data maturity progress depends less on data scientists in government and more on public sector entrepreneurs to get things done.

-- Data maturity needs to be assessed across all units of urban government, and partners. Data innovation efforts are team projects. This is implied but not explicit in some maturity models.

-- Data shared between departments (not necessarily open data) can have the largest impact. The importance of sharing internally/across departments shouldn't be overshadowed by an open-data mandate.

-- More documentation about data-sharing projects is needed so that patterns can be identified around successful strategies, tension points, and factors of failure.

A handful of open questions on data maturity models remained:

-- Is strong mayoral leadership required to make a maturity model useful as a planning tool?

-- Are generalized maturity models as effective for building long-term engagement with partners as problem-specific approaches?

-- How can maturity models reflect ability to create incentives, permissions, institutionalization, and other political economy

III. Implications for Santo Domingo's Innovation Lab

We concluded the workshop by highlighting an upcoming (December 1, 2016) workshop convened by IDB in Santo Domingo, Dominican Republic, to develop a vision and mission for a data innovation lab for the city. Participants proposed several key recommendations based on their experience and the day's discussion.

1. Invest in a connector. Considerable effort should be invested in developing leadership that can cross-link data-driven innovation efforts. A key consideration in recruitment should be connections to existing local networks of data expertise inside and outside government.

2. Round out the team. A successful innovation lab or innovation department demands more than a visionary executive. A variety of skills are needed: data science, data governance, and visualization among others. The team must be able to work together to establish and reinforce a culture around data-driven decision making.

3. Learn from others. Focus early on at extracting lessons from cities that have faced this challenge before. The team should prioritize savings and rapid re-purposing of innovations pioneered elsewhere, adapting them to local needs and constraints rather than wholly 'reinventing the wheel.'

4. Evangelize data-driven governance. The team should be aware of able to explain success stories - both local and in other cities -of effective urban data innovation. Increasing awareness and familiarity through demonstrations and case studies will make it easier to seed projects and develop trusted relationships with future partners.

IV. Participant Bios

Dr. Anthony Townsend is an internationally-recognized expert on urbanization and digital technology. He is the founder of Bits and Atoms, a smart cities strategy consultancy and planning studio that works with industry, government and philanthropy on economic development, digital placemaking, and strategic technology forecasting. From 2005 to 2014 he was Research Director in the Technology Horizons program at the Institute for the Future (IFTF), a Silicon Valley-based think tank established in 1968. His critically-acclaimed book, *Smart Cities: Big Data, Civic Hackers and the Quest for A New Utopia* was published by W.W. Norton & Co. in 2013. In 2001, Anthony co-founded NYCwireless, a pioneer in the community and municipal wireless movement. Anthony holds a Ph.D. in urban and regional planning from Massachusetts Institute of Technology, a master's degree in urban planning from New York University, and a B.A. in urban studies with a minor in physics from Rutgers University. He lives in Jersey City, New Jersey.

Benjamin Edwards, Urban Institute: Ben Edwards is a research associate with the Center on International Development and Governance at the Urban Institute, where he performs research and provides logistical and operational support for international programs in local governance, decentralization, and public service delivery. He co-authored the report A Political Economy Framework for the Urban Data Revolution which provides a framework for understanding the conditions for city leaders to analyze and access data to solve problems.

Jane Wiseman, Harvard University, Data-Smart City Solutions: Leads the Institute for Excellence in Government non-profit consulting firm that is dedicated for improving government performance. A leader a US effort to create a national network of urban Chief Data Officers to accelerate the use of analytics in local government. Provides insight into the conditions necessary to create a culture of data analytics, providing a framework for understanding in the recent paper, A Four-Stage Maturity Model for Data-driven Government.

Nevena Dragicevic, Nesta: Works on an initiative to empower local councils in the UK to foster local economic growth and deliver better services for local residents and communities through the establishment of an Office of Data Analytics in city regions as the key driver of the 2025 vision.

Alaina Harkness, Brookings Institution Metropolitan Policy Program: Currently working on the Project for 21st Century Governance and formerly at the John D. and Catherine T. MacArthur Foundation where she served as a senior program officer for Cities, directing grantmaking in the area of urban science and urban data innovation.

Matt Gee, Center for Data Science and Public Policy, University of Chicago: Co-founder of the Eric and Wendy Schmidt Data Science for Social Good Fellowship that has has helped connect fellows with national, state, and local governments to build data-driven solutions to social problems.

Carter Hewgley, Johns Hopkins University Center for Government Excellence: Established the Enterprise Analytics Division at the Federal Emergency Management Agency (FEMA) where 25 years of disaster data leveraged to create insightful and interconnected data visualizations for FEMA employees. His current role at Johns Hopkins is to help governments build capacity for decision makers that is rooted in evidence.

Benjamin de la Peña, Knight Foundation: Director of community and national strategy at the Knight Foundation, and the former associate director for urban development at The Rockefeller Foundation.

Alissa Chisholm is an urban researcher focused on technological change and social policy in cities of the Global South. She has worked in Kampala, Uganda as a GIS analyst, where she established data sharing partnerships between city officials and local NGOs. She served as Regional Coordinator for a 200 city survey on governance capacities at NYU's Urbanization Project, and has worked on housing policy research in New York City. Alissa holds a master's degree from New School University in International Affairs, Cities and Social Justice.