Brenna Berman
Project Sponsor

Who is involved?

Brenna Berman, CIO (Project Sponsor)
Tom Schenk, Director of Data and Advanced Analytics (Project Manager)
Sean Thornton (Ash Center fellow)
University of Chicago (data infrastructure and analytics development partner)

About our Innovation

SmartData Platform (SDP) – creating open source predictive analytics tools to make city operations more efficient

Challenge

Chicago, like other US cities, has so much data but lacks the capacity to routinely mine the data to inform actionable policy solutions to important urban problems.

Idea

Chicago's SmartData Platform (SDP) project is building the first open-source, predictive analytics platform for municipal government – aggregating and analyzing information to help leaders make smarter, faster decisions and to solve important urban problems (for example making restaurants safer, preventing childhood lead poisoning, and deterring illegal cigarette sales).

Intended impact

- Enable city departments to engage in predictive problem-solving, starting with 6 predictive analytics 'use case' models (specific applications for a discrete policy problem).
- Allow policy makers to visualize and make sense of trends and patterns in the billions of lines of data stored in city systems.
- Share open source platform and tools with cities that cannot build the capacity themselves so that they can develop their own predictive analytics models or use those created by our team.

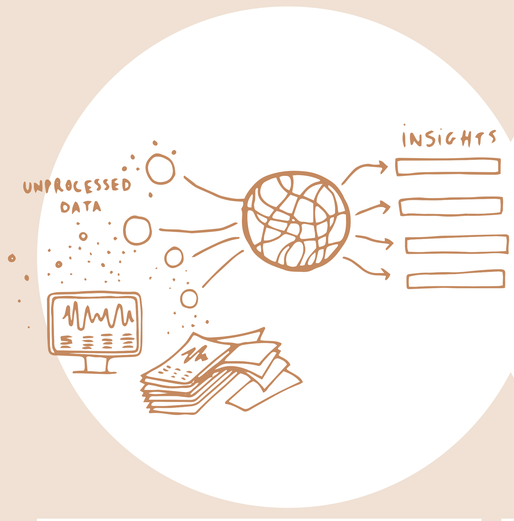
Our journey implementing our idea

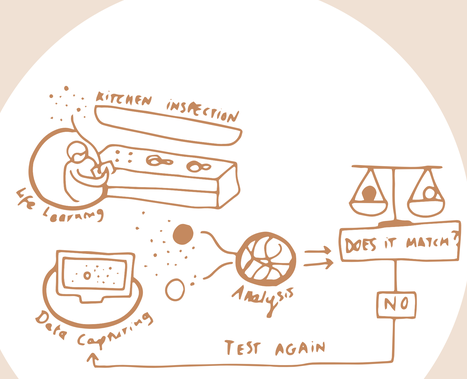
Working across the different cultures: bridging the gap between data scientists and city operations

Many departments must focus on day-to-day operations to the exclusion of data analysis. To develop a predictive analytics model for the department, our team must gain a deep understanding of their processes. A manager directing the work of inspectors has a very different mind-set to our data scientists. Communicating effectively across these cultures is essential to our success.

Generating exemplars to generate interest	Finding creative ways to supplement organisational resource	Exploring together to get the right questions	Managing expectations through iterative improvement

> "We plan to develop a new method of data-driven decision making that can change how cities operate" *Brenna Berman*





What we have done	Predictive analytics was completely unknown for city operations leaders when we started – they didn't understand how our tools could help them. The SDP team conducted outreach meetings across the city to generate interest and identify 6 priority areas to be addressed during the period of the grant from Bloomberg Philanthropies.	We don't have enough staff to meet demand for predictive analytics, so we partnered with several local corporations for pro bono assistance on data analytics as well as messaging and press outreach, leveraging private and nonprofit sector expertise and data skills.	Generating the right question to ask of the data requires the SDP team working closely with policy teams. This takes meetings, exploration of the data, and more meetings to clarify data or business process issues.	Every 'use case' model is tested to make sure it works. For example, for restaurant inspection, this was done in parallel with inspectors conducting their work unaware of whether they were in the experimental or control group. If the results are disappointing, the data model must be refined until it beats the standard process.
Key activity	Positive results achieved (20% improvement for rodent abatement and 7 day improvement for restaurant inspections) built credibility for our project. Now departments come to us for predictive analytics rather than us having to recruit them.	We have used a variety of models for engagement with pro bono partners – some are hands on for a short but intense work period, others are committed long term but for a limited number of hours per week.	During the rounds of discussion between the department and the SDP team, it can be easy to get sidetracked or bogged down. The SDP team proactively kept the discussions on track with persistent follow up and by keeping good progress notes.	Several iterations on a pilot may be necessary to get a good result. Data not initially included in the model (for example inspector ID) can be found to be predictive of outcomes. An updated model and second pilot can correct for data elements left out of the model initially.
Key learning	**Showcase positive results through a real example, both internally and externally to build credibility and demand.**	**Leveraging pro bono resources requires investing time to nurture and manage these relationships. Clearly defining roles is important.**	**Proactive project management by the team helps keep problem definition on track.**	**SDP team must manage the expectations of departments given the uncertainty of results and timing, while still keeping them interested.**

Achievements so far

Improved operations

Our rodent abatement model made city rat baiting teams 20% more efficient, leading to improved health and wellbeing for residents in affected areas. Our restaurant inspection algorithm helps inspectors find critical violations of health code 7 days faster, preventing foodborne illness and making restaurants safer.

Sharing our tools with other cities

The entire SmartData Platform will be available to other cities by the end of 2017. This fall we are making available the first version of our user interface, and by the end of 2015 we will publish a toolkit for using it as well as using our rodent and restaurant inspection use cases. In 2016 we will make available the infrastructure for developing use cases and in 2017 we will release tools to help automate the process of creating new predictive analytics use cases.