Leveraging Sophisticated Datasets for Solutions to Complex Municipal Questions

Mayors Innovation Project: Realizing the Promise of Cities
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- Data-Driven Solutions to Diverse Land Use Issues
  - Urban
  - Urban-Fringe
  - Rural
  - Wilderness

- Economics & Policy
  - Econometric Modeling
    - Space, Time, Market & Land Use Dynamics
  - Analysis of Regional Industry Competitiveness
  - Predictive Analytics/Strategic Planning

- Clients
  - Local, Regional, State, Federal Government
  - Land Banks, Philanthropy, Non-Profits, Academia
Governance: Reactive to Proactive

- Sophisticated datasets allow analyses which offer objective decision making opportunities where previously not possible.

- Taking the politics out of decision making.

- Priorities and spending decisions based on scientific evidence - not gut feelings or political clout.

- Region-wide municipal and academic partnerships are critical in reaching a consistent and “full” dataset of social, financial, and economic data.

- What are your regional goals/issues/obstacles?
Capturing the correct data across space and time matters.
- Get proactive and strategic in digitizing and gathering data.
- Known vs. unknown – Examples: Cuyahoga County/Cook County

Objective and effective analysis of available data matters.
- High quality analysis of good data yields valuable information capable of empowering key decision making processes.

Statistical modeling is all about controlling for the dynamics of reality to isolate the relationships of interest.

Better Data = Better Statistical Models
- Land Use Dynamics = Parcel Level Data is Optimal
Application: Land Banks

- Land banks interrupt the cycle of blight and decline by adopting liability parcels and managing them for best future use.
  - Revitalization mandate.

- Distressed Properties:
  - Tax Foreclosures, Tax Delinquencies, Mortgage Foreclosures, Postal-Vacancies, Vacant Lots.

- What is optimum path for revitalizing distressed properties?
  - Vacant Lots?
    - Side lot, community gardens, urban farming, green space.
  - Each has a different cost/benefit until conveyance.
Research Application: Demolition

Why does distressed property research often focus on demolition?

- Demolition is the most tangible change in land use dynamics.
  - Distressed structure becomes a vacant lot.

- Demolition is well documented.

- Therefore, we have good data concerning time, space and land use dynamics surrounding demo locations.

- Good Data = Good Statistical Models
  - Good Predictive Analytics
Application: Flint, Michigan

Genesee County Land Bank: 2003-2005

- Unique Dataset
  - Tax-foreclosures
  - Demolition
  - Vacant Lots

- Counterfactual: Valuing an Urban Demolition Program
  - 435 Demos = $3.5 million
  - $112 million equity hedge

- Value of Investment-Based Programs?
  - Data Issues
### Application: Flint, Michigan

<table>
<thead>
<tr>
<th>Additional abandoned structure</th>
<th>-2.26% per additional structure</th>
<th>0.76% equity hedge for each house within 500 feet of demolition</th>
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</thead>
<tbody>
<tr>
<td>Additional vacant lot 0-500 feet</td>
<td>-1.50% per additional vacant lot</td>
<td></td>
</tr>
<tr>
<td>Additional abandoned structure 501-1000 feet</td>
<td>-1.92% per additional structure</td>
<td>2.27% equity hedge for each house within 501-1000 feet of demolition</td>
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<tr>
<td>Additional vacant lot 501-1000 feet</td>
<td>0.35% per additional vacant lot</td>
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</tr>
<tr>
<td>Additional abandoned structure 1001-1500 feet</td>
<td>-1.11% per additional structure</td>
<td>1.61% equity hedge for each house within 1001-1500 feet of demolition</td>
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<tr>
<td>Additional vacant lot 1000-1500 feet</td>
<td>0.50% per additional vacant lot</td>
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Application: Cleveland, Ohio

Visionary Leadership
- Jim Rokakis, Director, Thriving Communities Institute at Western Reserve Land Conservancy

Partners
- Cuyahoga Land Bank
- Case Western Reserve University

Data
- Northeast Ohio Community and Neighborhood Data for Organizing (NEO CANDO)
- Established 1992
- Every parcel in Cuyahoga since 2005
Application: Cleveland, Ohio

Demolitions, 2006-2013
Application: Cleveland, Ohio

Study Area Sub-Markets
Application: Cleveland, Ohio

Demolitions, 2006-2013 with Sub-Markets
Application: Cleveland, Ohio
Application: Cleveland, Ohio

- Large-scale dynamics to be controlled:
  - Markets
    - Demolition impacts may vary across sub-markets.
  - Time
    - Must control for macro-economic changes over time, such as mortgage foreclosure crisis.
  - Space
    - Things closer together are more alike than things far apart.

- Land-use dynamics to be controlled across space/time/markets:
  - Location of sales
  - Location of distressed structures and vacant lots
  - Location of demolitions
Application: Cleveland, Ohio

Preliminary Outcomes:
- Magnitude of equity hedge from demolition varies across sub-markets.
- Implications for Proactive Decision Making:
  - If equity hedge from demolition is large in a sub-market, then demolition may be most strategic.
  - If hedge = 0, then rehabbing or mothballing may be the strategy.
  - If hedge is negligible because property values are bottomed out, other indicators, such as crime may be the correct trend variable to measure demolition impact.

Possible estimations for every home given predictive models:
- Market Value.
- Value impact from nearby distressed properties.
- Value impact from demolition activity on nearby homes.
Continued Research

- Land Use Dynamics Not Accounted for:
  - Rehabs (Invest/Maintain)
  - Mothball (Invest/Maintain)
  - Vacant Lot Activity (Maintain/Improve Post-Demolition)

- What is the value impact of all land bank investment activities?
  - Must identify and track good data proxies.

- Tracking Performance via “Neighborhood Health” Trends
  - Crime Rates
  - Education Rates
  - Vacancy Rates
  - Market Values
  - Income Levels
  - Employment Rates
  - Population Change
What is the Point?

- Data is ubiquitous but of little value if not properly organized, integrated, analyzed and turned into objective, accessible and useful information.
  - Is there a data intermediary that is thinking big picture?

- Robust analysis of quality data can objectively influence and empower complex decision making processes resulting in better policy solutions.
  - Statisticians
  - Social Scientists
  - Public Policy Professionals

- This will take hard work and long-term commitment. Start today or be left behind.
  - Optimally leverage funding opportunities.
  - Move toward social, financial and economic goals.
  - Overcome complex issues and obstacles.