The Urban Commons

LEARNING WITH AND FROM THE CITY OF BOSTON'S 311 SYSTEM

2011 City Service Requests to Mayor's 24 Hour Service

ELECTRIC POLE SLANTING Due to hurricane IRENE. This may cause major power outage in area if not attended too!

tree branch blocking avondale street

tree fallen on car blocking side walk, two handicap persons could not pass!

Neighbors moved a fallen tree to sidewalk it needs to be picked up.

The Urban Commons

- Urban informatics
  - What makes a city "smart"?
- The Boston Area Research Initiative
  - Data, research and policy
- Custodianship
  - The collaborative maintenance of Boston

Overview

- Custodianship in the Urban Commons
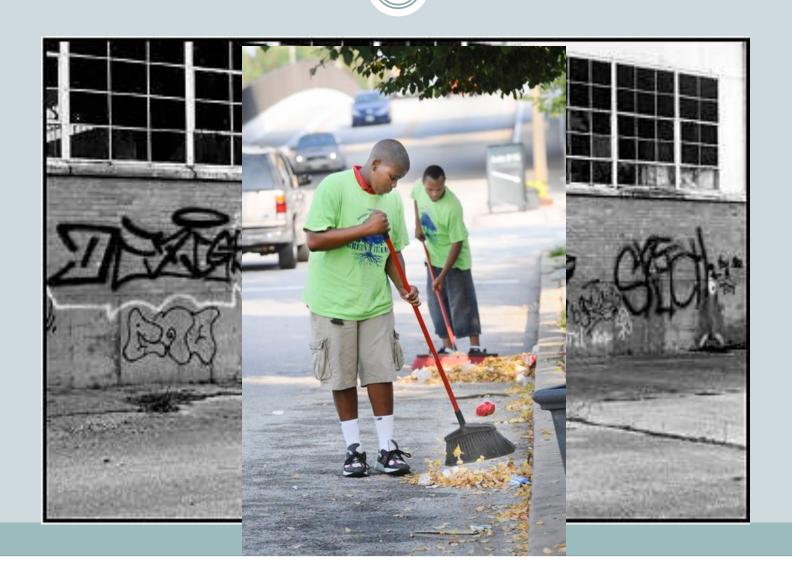
- Pathways from Research to Policy

- Conclusions

Custodianship in the Urban Commons

Maintaining the Urban Commons
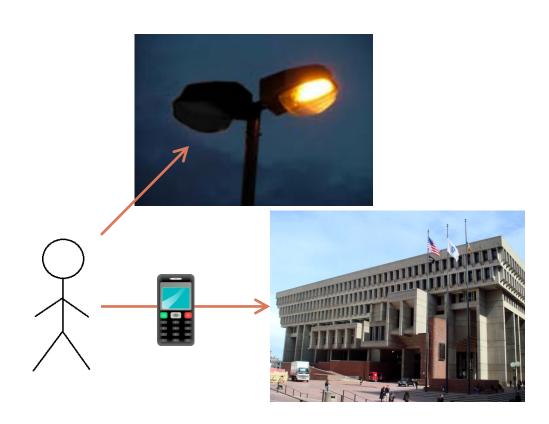
Collaboratively Managing the Urban Commons

Infrastructural Maintenance

Constituents

How Does Coproduction Work?

- The direct involvement of constituents in the design and delivery of services (Whitaker, 1980).

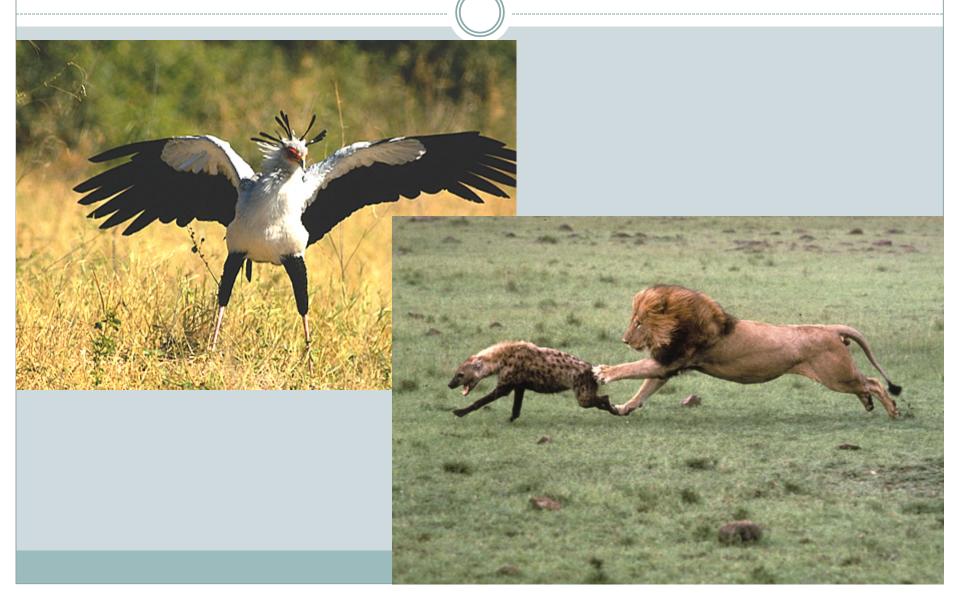- "Coproduction is one way that synergy between what a government ~~can~~ ~~provide~~ ~~and~~ ~~what~~ ~~citizens~~ ~~do~~ can
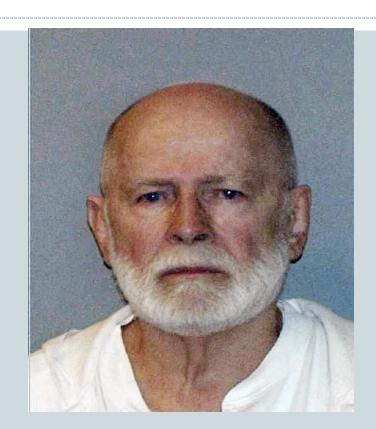
Why Act as a Custodian?

Political Participation	Territoriality
• People are motivated by a *civic disposition*. • Those who vote, volunteer, etc., are those who call 311.	• People are motivated by their concern for a given space. • Those who care about their neighborhood are those who call 311.

Custodianship:
A Form of Territoriality?

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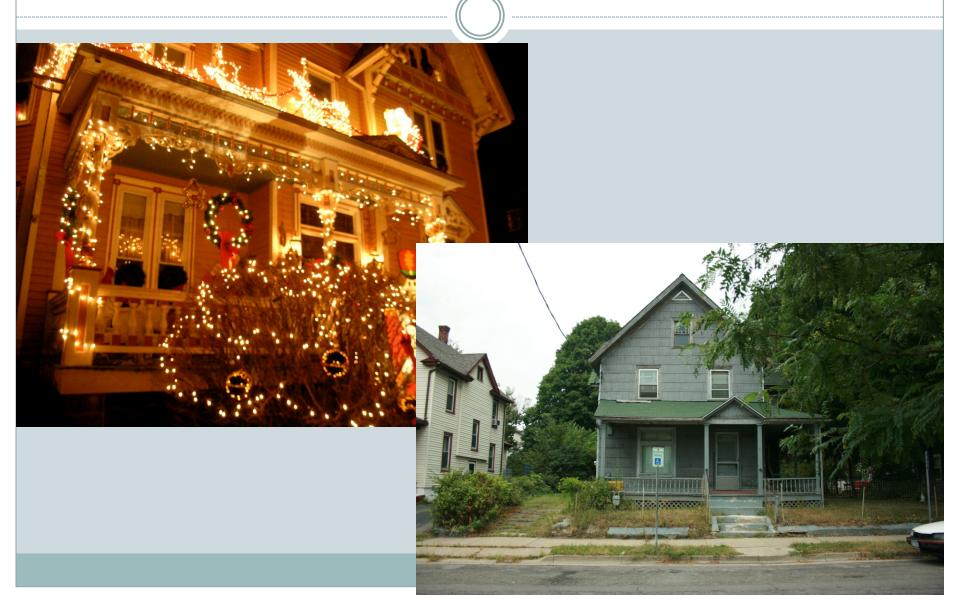
- A suite of cognitions, attitudes, and behaviors that arise from a sense of ownership.
  - Manage social roles regarding objects and spaces.

Custodianship:
A Form of Territoriality?

The Territoriality Thesis

- If 311 reports are a manifestation of territoriality, then custodianship will be anchored by care for one's home and the surrounding neighborhood.
  - Reports will be made predominantly for issues nearby the home.
  - Those who express greater concern for their neighborhood will be more likely to act as custodians.
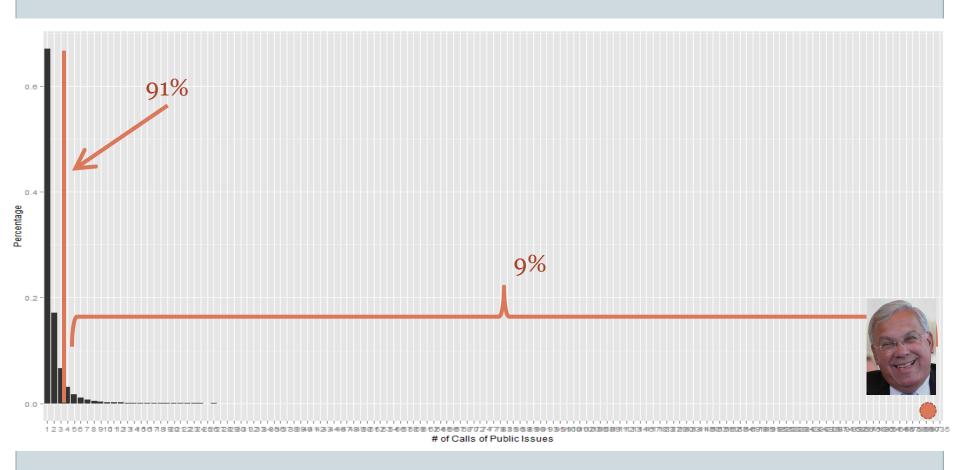
Using the 311 Database

- Database from March 1, 2010-Dec 31, 2015.
  - 652,591 cases with geographical reference received by hotline and internet self-service.

- Each case includes:
  - Date and time.
  - Address or intersection.
  - Standardized case type (e.g., pothole, graffiti removal).
  - Anonymous caller identifier.

- Many calls reference issues in the public domain.
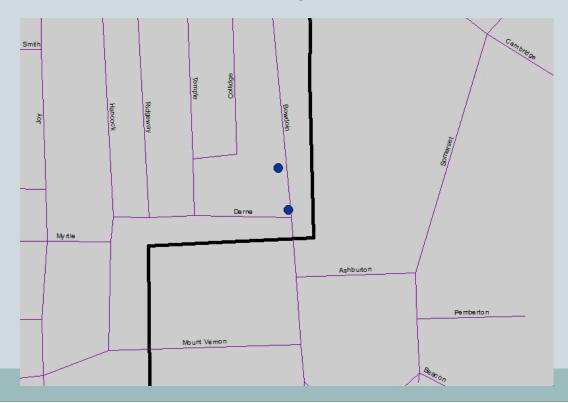 - 77 case types (e.g., street light outage).

Using the 311 Database

- Cases have an anonymous key code identifying caller, enabling a study of individual differences
  - *N* = 170,886 constituents (excluding employees)
  - Some have home address and/or e-mail contact on file.
  - ~50,000 users/yr. (~8% of population)
  - ~25,000 custodians/yr. (~4% of population)
- Can use this to measure individuals' custodianship patterns:
  - How often
  - Where
  - Types of calls

Individual Patterns of Custodianship: Frequency

91%

9%

Percentage

# of Calls of Public Issues

Individual Patterns of Custodianship: Geographic Range

- Median distance from home was 7.3 m.
- 82% of individuals did not call beyond two blocks of their home (estimated as 150 m).
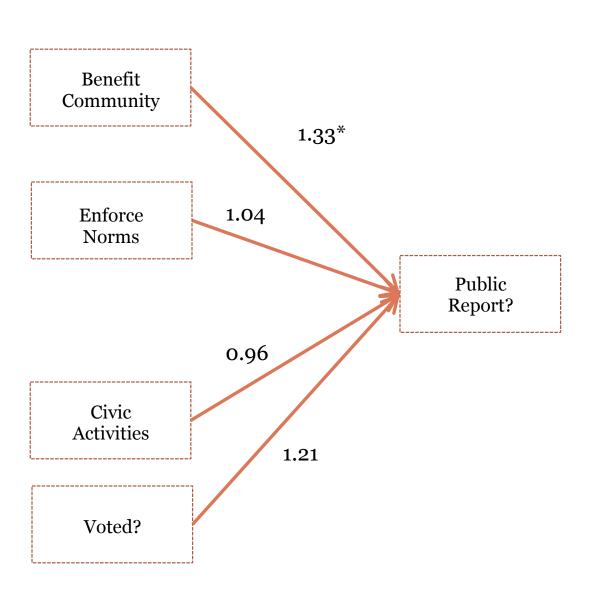
Evaluating Motivations

- Geographical ranges of reporting suggest a salient role for territoriality.

- *Have not* precluded the possibility that political participation also drives reporting.

A Survey of 311 Users

- Survey of 682 individuals who made at least one 311 report in 2012 (N = 489 hotline, 193 CC).
  - Assessed territoriality and civic engagement.
    - Two forms of territoriality: benefit the community, enforce norms.
    - Nine civic activities (e.g., volunteering)
  - Responses were linked to calling patterns.
  - Also linked to voter records by names, addresses.
  - Possible to compare custodians to non-custodians.
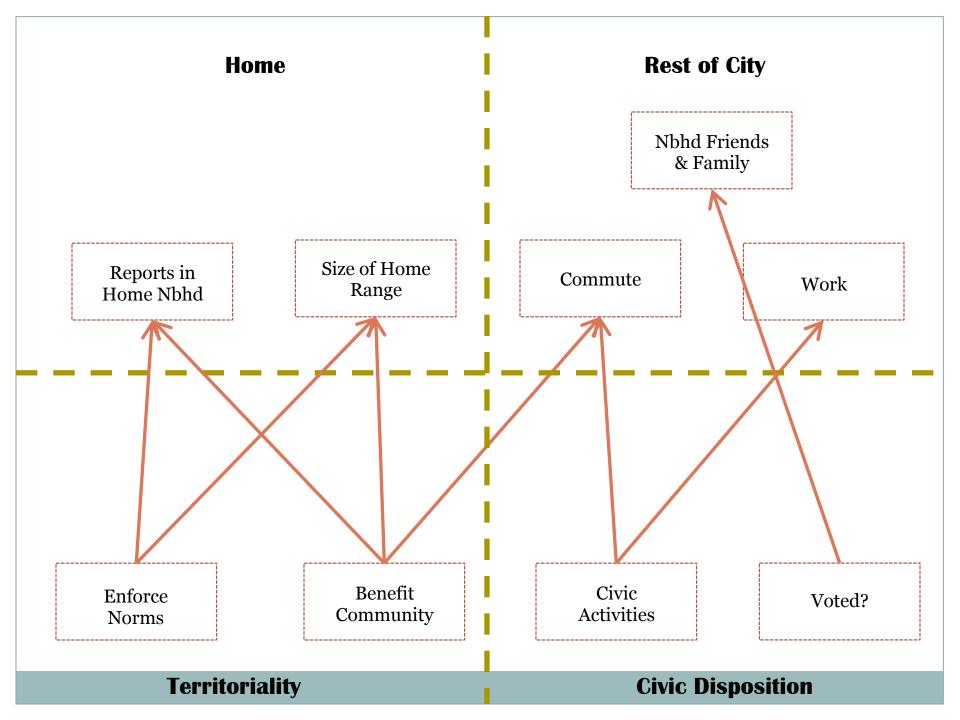 - Conducted w/ Emerson College's Engagement Lab.

Attitudes/Behaviors

Calling Patterns

Benefit Community		

Enforce Norms		

Civic Activities		

Voted?		

Public Report?		

1.33*

1.04

0.96

1.21

Reporting and the Urban Landscape

- How do these motivations interact with the varied geography of the city?
- Home
  - Reports in neighborhood
  - Size of home range
- Survey items: Do you report from…
  - Work?
  - Your commute?
  - Neighborhoods of friends and family?

Home	Rest of City

Nbhd Friends & Family

Reports in Home Nbhd   **Size of Home Range**   **Commute**   **Work**

Enforce Norms   **Benefit Community**   **Civic Activities**   **Voted?**

Territoriality   **Civic Disposition**

Conclusions

- Custodianship is rooted more in territoriality than a civic disposition.

- The maintenance of the commons does not appear to be driven by "altruism."

- Institutions that manage the commons should not operate on that assumption.
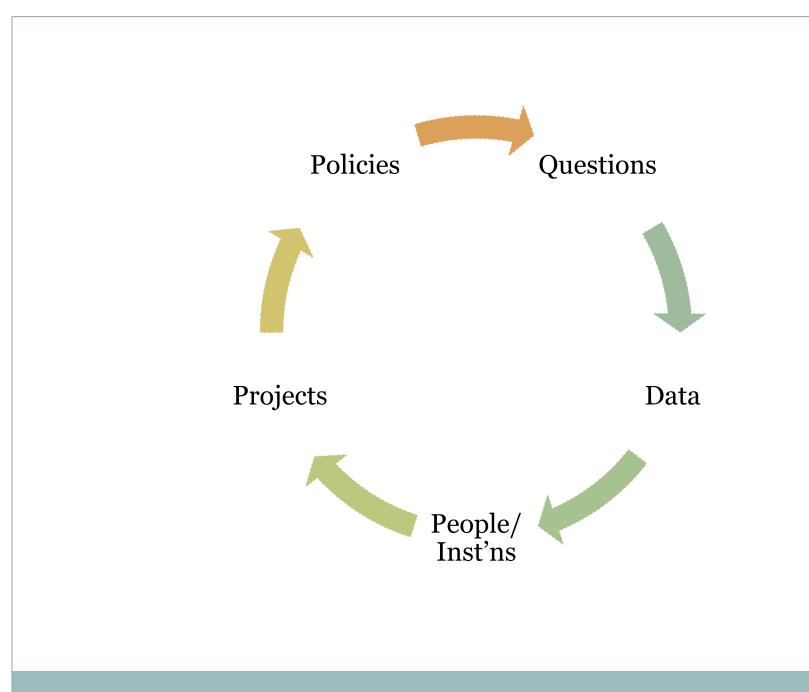
Pathways from Research to Policy

Civic Technology & Coproduction

"Seeing" Neighborhoods through Big Data

Digital Divides in Urban Informatics

Workshop Your Own Projects

Applying Urban Informatics to a Project

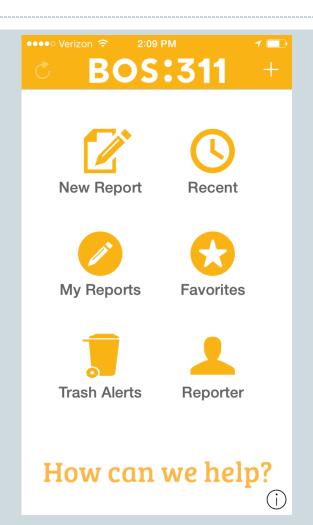Policies → Questions → Data → People/ Inst'ns → Projects → Policies

Civic Technology & Coproduction

What is Coproduction?

- Classic metaphor of "bridge to citizenship."
- No existing evidence…
- …but could digital technology make it a reality?

Smart Phone App as Bridge to Citizenship?

- Could a smartphone expand reporting?

- A natural quasi-experiment to test
  - Citizens Connect / BOS: 311, a smart phone application for reporting.

Bridge to Citizenship?
Reporting by Traditional and App Users

Traditional	App Users
• One-time users: 67%	• One-time users: 54%
• <=3 calls: 91%	• <=3 calls: 75%
• Estimated calls*: 1.95	• Estimated calls*: 5.74
• Estimated range**: ~0 m	• Estimated range**: 295 m

*-Based on HLM

**-Based on HLM; Only those with 2+ reports

Bridge to Citizenship?
Traditional vs. App Users

Legend

Reports

● Traditional User

○ CC User

Bridge to Citizenship?
Attitudes of Traditional and App Users

- **Territoriality**
  - App users expressed higher levels of concern for the community.
  - But lower desire to enforce social norms.
  - Diminished the overall differences in expected reporting and range to ~1 report and ~200 m.

- **Connection to community**
  - App users expressed greater connection to Boston…
  - …but *less* connection to their local neighborhood.

Bridge to Citizenship?
Closure Messages

- Boston sent messages of public works completing work to app users when requests were fulfilled.

- These messages *did* lead to increases in reporting.
  - For as much as 14 months following the message!

- It did not, however, expand geographical range.

Bridge to Citizenship?
Mixed Reviews

- Apps and messaging can increase use of the system, but do not expand geographical ranges of reporting.

- The app may increase connection to Boston, but not to neighborhoods.

Bridge to Citizenship?
Mixed Reviews
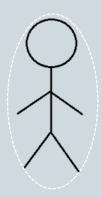
- Has the app actually altered the basis of engagement, or just made it easier to participate within one's existing motivations?

- Do the messages highlight a collaboration or a consumer service?

Civic Tech & Coproduction

- A high-tech bridge to citizenship?…
- …or a more powerful lever to civic impacts?

"Seeing" Neighborhoods through Big Data

The Problem of Naturally-Occurring Data: What's Missing?

1. *Content*: What is it we're trying to measure?
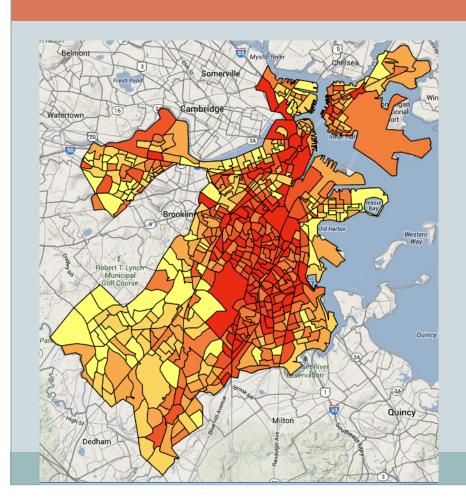
2. *Validity*: Do the cases measure "real" conditions?
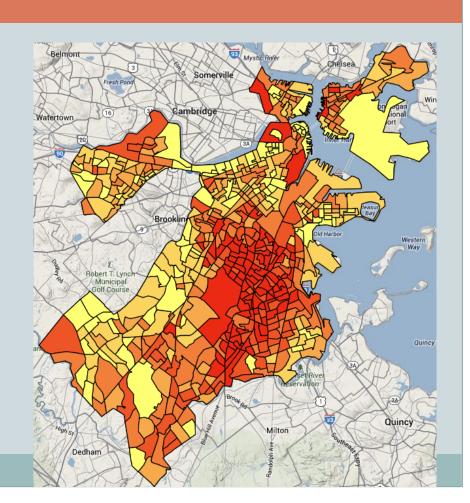
3. *Reliability*: How often and for what geographic scale can they be measured?

Additional Ecometrics:
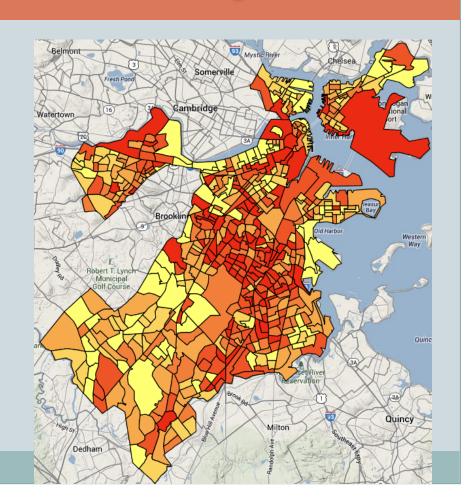# 911 Calls for Disorder and Crime

Public Violence

Private Conflict
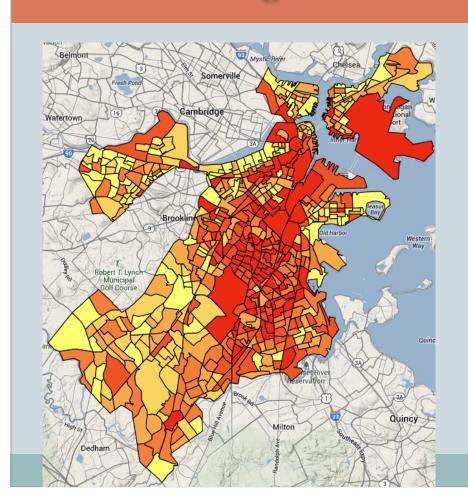
Additional Ecometrics:
911 Calls for Medical Emergencies

Late-Life Emergencies

Youth and Reproductive

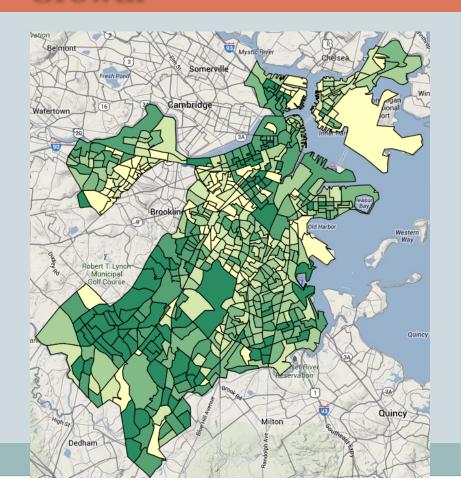# Additional Ecometrics: Building Permits

Major Developments

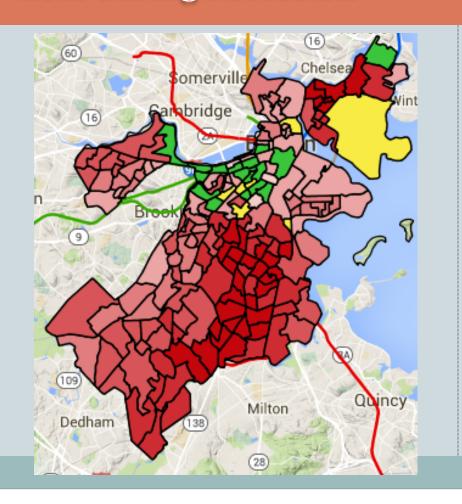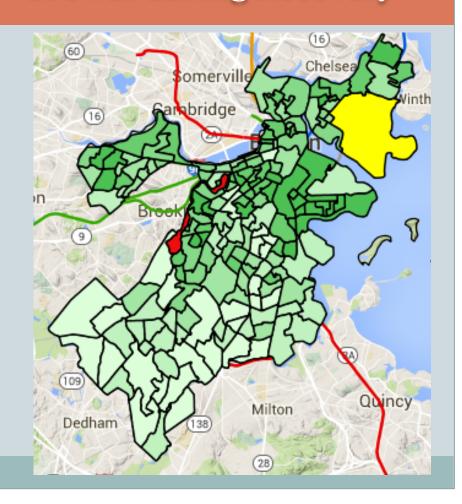## Local Investment & Growth

Additional Ecometrics:
Property Value Trends

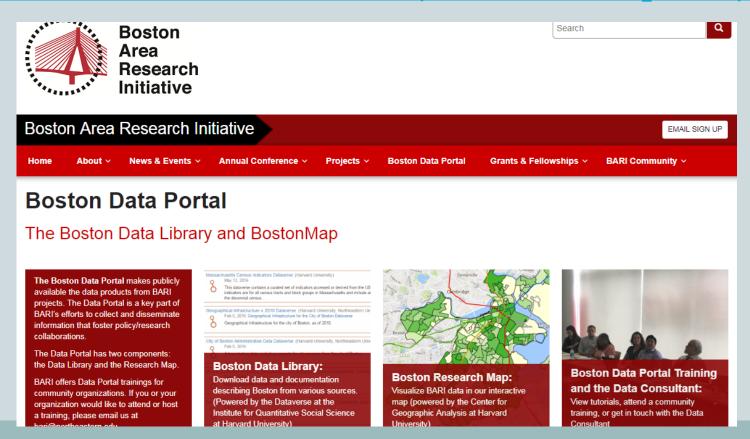**Loss during Recession**

Growth during Recovery

A Generalized Approach to Naturally-Occurring Data

- City of Boston administrative data
  - 311 requests
  - 911 calls
  - Business licenses
  - Tax assessments
  - Building permits

- Social media and internet posts
  - Twitter
  - CraigsList
  - OpenStreetMap

- Sensor readings
  - Atmosphere
  - Environment
  - Activity

Boston Data Portal

- https://www.northeastern.edu/csshresearch/bostonarearesearchinitiative/boston-data-portal/

Digital Divides in Urban Informatics

Smart Cities

The Age of Big Data

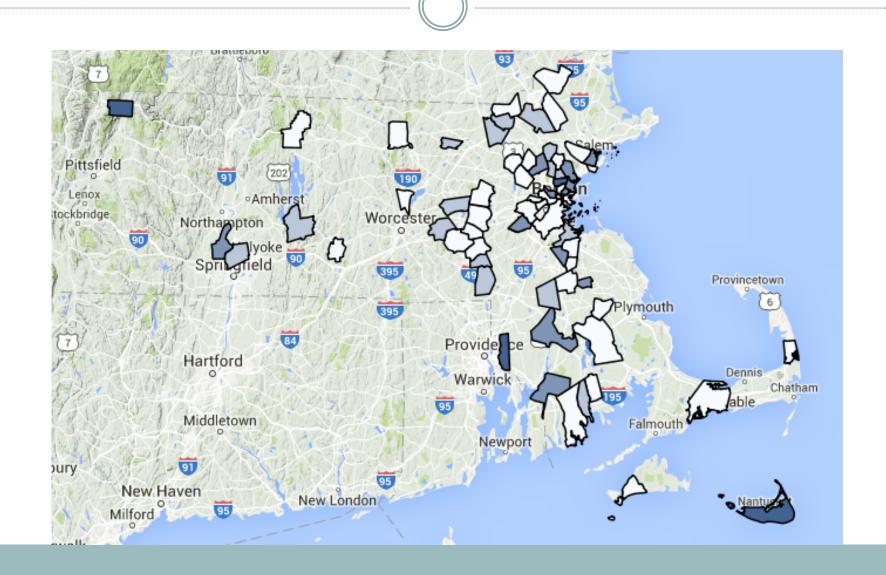# Discontents of the "Smart City": Emerging Digital Divides

- Between can- and can't-afford cities

- Between data savvy sectors and community-based organizations

Digital Divide #1:
Extending 311 across Massachusetts

- What happens if the state subsidizes the adoption of a 311 app?
- Massachusetts paid for contracts with SeeClickFix under the guise of "Commonwealth Connect."
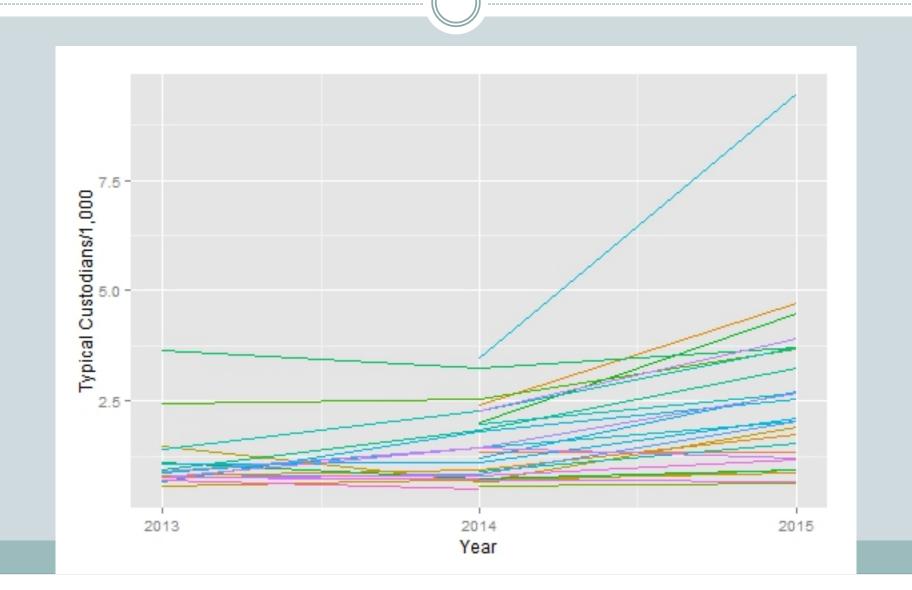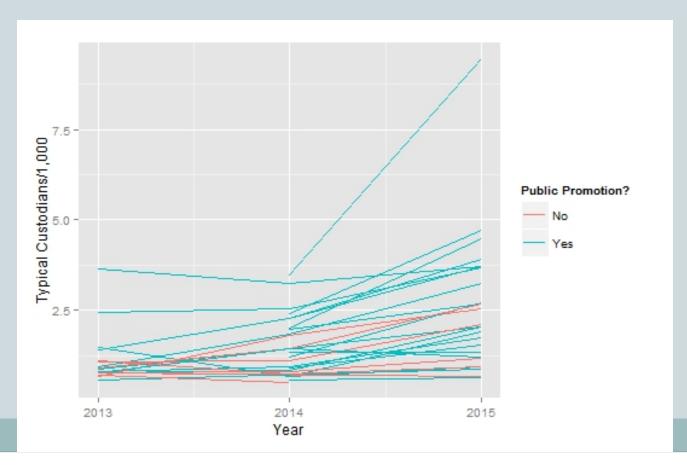
Commonwealth Connect

Explaining Differences in Uptake

- Tested the relationship between custodians per capita and:
  - Demographics
    - Homeownership
    - Median income
    - Ethnic composition
    - Median age
  - Government adoption
    - City employee usage
    - City promotion of CC (Yes/No)

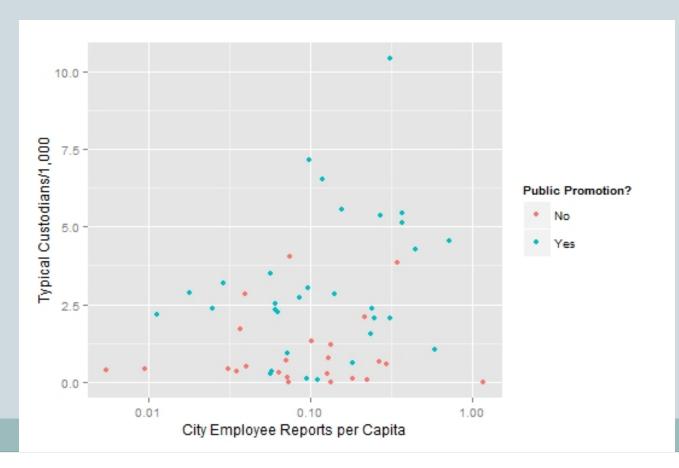# Custodianship by Municipality:
Adoption of Commonwealth Connect

Explaining Differences in Uptake

- Custodians per capita were predicted by public promotion of Commonwealth Connect.

Explaining Differences in Uptake

- Custodians per capita were also predicted by greater usage of CC by city employees.

Why Adopt Commonwealth Connect?

- Communities were more likely to adopt if…
  - They had a larger population
  - Neighboring municipalities had adopted

- No statistical explanations for using it effectively.

- Conducted interviews with representatives for 17 municipalities.

The Full Adopters:
Buy-In and Success

It "tells the story" of the city and its services.

Using it to target impassable roads in a snowstorm was a big "win."

Leadership made sure all departments participated

Partial Embrace:
Lack of Follow-Through

Citizens did not pick it up.

When something is mandated there can be resistance.

I would like to see municipal staff take it more seriously.

No True Adoption: No Benefits

There was support at the top but not the implementation level.

Public Works did not come to the table.

Digital Divide #1: Conclusions

- Municipalities above a certain size all serve to gain from 311.

- Whether it is successful or not requires all parts of the bureaucracy to come together.

- Took time to realize benefits other than as a work-order system.

Digital Divide #2:
Data-Based Community Outreach

- Most community-based organizations have limited if any capacity to utilize data.

- Yet they could probably benefit from it for advocacy, planning, and justification of their work.

- How do we help them?

Digital Divide #2:
Data-Based Community Outreach

- ## Community-based trainings in the Boston Data Portal

  - ~4 per year

  - 1 in a public campus that integrates community members and students
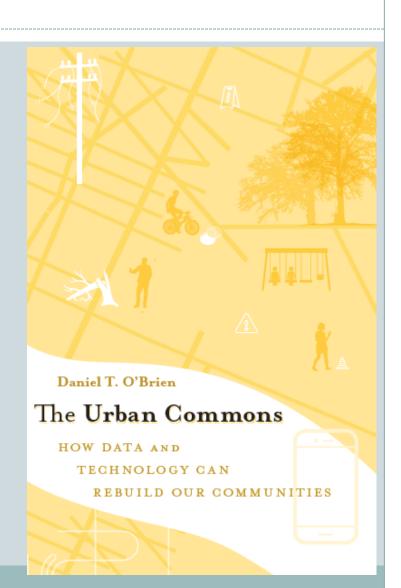
  - Newer efforts at local libraries and in conjunction with high school curricula

Digital Divide #2:
Data-Based Community Outreach

- Community-based trainings in the Boston Data Portal

- Data Consultant
  - PhD student versed in data science.
  - Meets with community groups and other local organizations to help them identify ways they might leverage data in their work.
  - ~20-25 consultations a year.

Conclusions

Conclusions

- The commons depend on territorial motivations
  - Understanding behavior helps us to offer more effective services

Daniel T. O'Brien

The Urban Commons

HOW DATA AND
TECHNOLOGY CAN
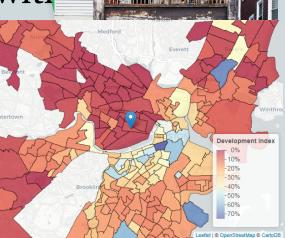REBUILD OUR COMMUNITIES

Conclusions

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  - Understanding behavior helps us to offer more effective services

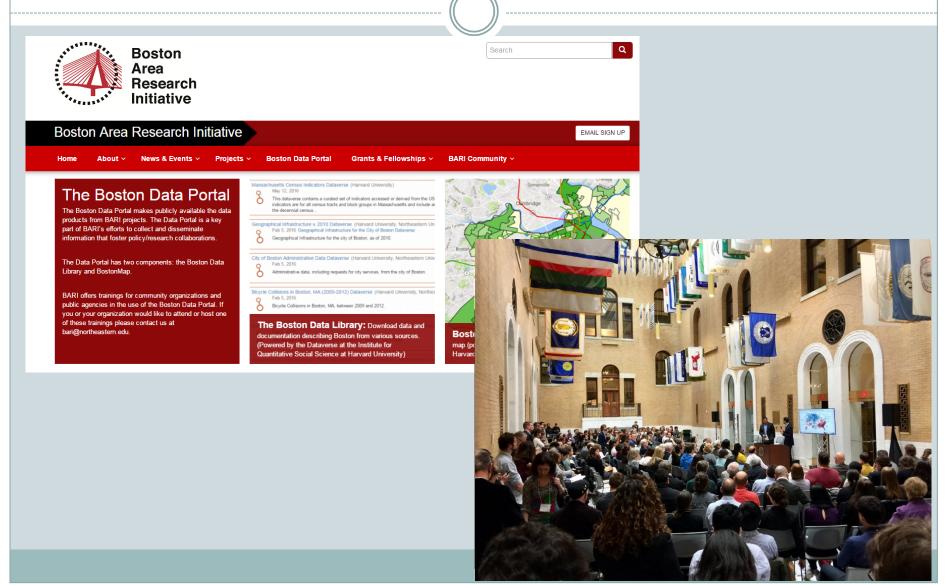- The power of research-policy partnerships

Example BARI Projects

- Equity in Boston Public Schools
- Mobility and segregation with MBTA
- Understanding problem properties with PP~~~ and BPD
- Development across municipalities with

The Boston Area Research Initiative: Supporting a Thriving Civic Data Ecosystem

Conclusions

- The commons depend on territorial motivations
  - Understanding behavior helps us to offer more effective services

- The power of research-policy partnerships

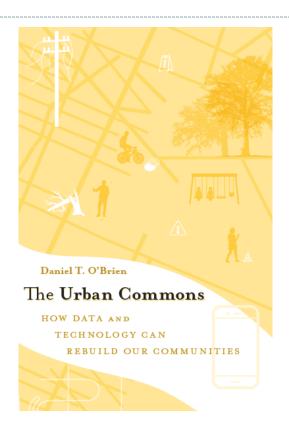- What it really means for a city to be "smart"

The Age of Big Data

Food for Thought

- What are the critical questions for sustainability today? How could data inform them?

- Do the necessary data exist? Where would they be sourced?

- What does it take to translate data-based insights into policy?

Thank You

B*RI

Daniel T. O'Brien

The **Urban Commons**

HOW DATA AND
TECHNOLOGY CAN
REBUILD OUR COMMUNITIES

Learn more at www.bostonarearesearchinitiative.net
Or contact me at d.obrien@neu.edu

Also, learn more about the book at Amazon or Harvard University Press