The Integrated City Sustainability Database:
A Project Overview

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Presentation Outline

• Project Rationale
• The ICSD Project
• ICSD Source Data
• Data Management and Processing
• Expected Outcomes and Dissemination Plan
• Broader Impacts
Project Rationale

• Local governance provides a valuable setting for the study of political decision-making, policy innovation, and organizational functioning.

• The lack of comprehensive public data on local sustainability has led scholars to
  – focus on small number of case studies
  – conduct research with qualitative orientation
  – rely on surveys with low response rates and limited scope of information
The ICSD Project

• The Integrated City Sustainability Database (ICSD)

• A nationwide database that
  – will describe municipal sustainability programs and policies
  – will be publicly available in the future for use by researchers and practitioners
The ICSD Project

• To build a comprehensive data set of U.S. municipal government sustainability programs and policies
• To provide a valuable resource for scholars in multiple disciplines investigating local environment and energy sustainability
• To add missing elements to the research infrastructure for the study of local government policy
ICSD Source Data

- The ICSD will constitute seven surveys of city sustainability programs conducted in 2010-2011.
- Sample frames include U.S. cities with populations greater than 50,000.
- Four of the surveys cover smaller population cities.
- Five of the surveys were designed and implemented by the Principal Investigators.
<table>
<thead>
<tr>
<th>Survey</th>
<th>Dates Administered</th>
<th>Sample</th>
<th>Responses</th>
<th>Response Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICMA</td>
<td>2010</td>
<td>8,569 LGs =/&gt; 10,000</td>
<td>2,176</td>
<td>25.4%</td>
</tr>
<tr>
<td>NLC</td>
<td>Summer/Fall 2010</td>
<td>1,708 mayors</td>
<td>442</td>
<td>26.6%</td>
</tr>
<tr>
<td>EECBG Grantee Implementation Survey</td>
<td>Winter 2010 &amp; spring 2011</td>
<td>970 LGs receiving EECBG awards</td>
<td>747</td>
<td>77.0%</td>
</tr>
<tr>
<td>Implementation of Energy Efficiency &amp; Sust. Programs</td>
<td>Fall 2010 &amp; Spring 2011</td>
<td>1,180 LGs =/&gt; 50,000 and random sample of 500 LGs 20,000 - 50,000</td>
<td>679</td>
<td>57.5%</td>
</tr>
<tr>
<td>Survey of Sust. Management in U.S. Cities</td>
<td>September and November 2010</td>
<td>601 LGs =/&gt; 50,000</td>
<td>263</td>
<td>44%</td>
</tr>
<tr>
<td>Municipal Climate Protection Survey</td>
<td>April &amp; May 2010</td>
<td>664 LGs =/&gt; 50,000</td>
<td>329</td>
<td>49.5%</td>
</tr>
<tr>
<td>Municipal Government Questionnaire</td>
<td>September &amp; October 2011</td>
<td>425 LGs =/&gt; 50,000 with explicit involvement in climate protection</td>
<td>255</td>
<td>60.0%</td>
</tr>
</tbody>
</table>
Data Management and Processing

• Data Cleaning
  – Ensure that non-responses are appropriately identified
  – Add standardized identifiers

• Cross-walking
  – Identify questions that exactly match
  – Identify questions that measure the same action or concept but use different wording
  – Identify multiple questions that measuring the same concept

• Recode, Aggregate, and Validate
Three Tiers of Data Aggregation

• Tier One: Questions for which there is a direct match.
  – Compare multiple survey responses for individual respondents for agreement across instruments
  – Develop common coding
    • Collapse to binary but retain ordinal measure
  – Examine agreement across instruments for individual respondents
  – Attempt to reconcile any deviations
    • Follow-ups
    • Aggregation rules
Data Aggregation – Tier Two

• Questions measuring the same concept or activity but with different wording.

• Recoding
  – Align to common coding
  – Apply Multiple Imputation Techniques
    • MI is a Monte Carlo technique in which the missing values are replaced by \( m > 1 \) simulated versions
Data Aggregation – Tier Three

• Questions measuring different components of a broader concept.

• Apply Multiple Imputation Techniques

• Reduce with Factor Analysis
  – Item Response Theory (IRT) Procedures
Example: Funding, Staffing, and Resource Commitment

- Matching questions measuring dedicated funding for sustainability
  - Tier 1: 4 surveys
  - Tier 2: 3 surveys

- Matching questions measuring staffing for sustainability
  - Tier 1: 3 surveys
  - Tier 2: 4 surveys
## “Dedicated Budget” – Tier 1

<table>
<thead>
<tr>
<th>From which survey</th>
<th>Exact wording in survey</th>
<th>Matching</th>
</tr>
</thead>
<tbody>
<tr>
<td>EECGB</td>
<td>11. Provided a budget specifically for sustainability efforts Not adopted / adopted before 2009 / after 2009</td>
<td>Tier 1</td>
</tr>
<tr>
<td>NLC</td>
<td>8. Does your city have a dedicated budget for sustainability work? Yes / No / Don’t Know</td>
<td>Tier 1</td>
</tr>
<tr>
<td>Hawkins and Wang</td>
<td>5. To finance sustainability, our city has... [ ] Budgeted for the city government’s sustainability initiatives</td>
<td>Tier 1</td>
</tr>
<tr>
<td>ICMA</td>
<td>2. Please indicate which of the following actions your locality has taken.... Provided a budget specifically for the sustainability effort</td>
<td>Tier 1</td>
</tr>
<tr>
<td>Krause1</td>
<td>25. Do climate protection activities receive designated funding in the city’s budget? Yes / No</td>
<td>Tier 2</td>
</tr>
<tr>
<td>---------</td>
<td>-------------------------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Krause2</td>
<td>Designated money in the city budget to fund climate protection activities Yes / No / In progress</td>
<td>Tier 2</td>
</tr>
<tr>
<td>Feiock 2010</td>
<td>4. Do energy conservation or climate protection activities receive designated funding in the city’s budget? Yes / No</td>
<td>Tier 2</td>
</tr>
<tr>
<td>From which survey</td>
<td>Exact wording in survey</td>
<td>Matching</td>
</tr>
<tr>
<td>-------------------</td>
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</tr>
</tbody>
</table>
| ICMA              | Please indicate which of the following actions your locality has taken ..... Dedicated staff to the sustainability effort | Tier 1  
Coding: $1 = \text{Yes} / 0 = \text{No}$ |
| EECGB             | Dedicated staff to the sustainability effort | Tier 1  
Coding: $1 = \text{Yes} / 0 = \text{No}$ |
| Hawkins and Wang  | To develop and achieve goals for sustainability, our city has… a) Designated an office to coordinate city’s sustainability initiatives b) Designated individual(s) (but not an office) to coordinate city’s sustainability initiatives | Tier 1  
Coding: $1 = \text{Yes} / 0 = \text{No}$ |
| NLC               | Which scenario best describes your city’s staffing on sustainability? a) Dedicated staffing in the city manager’s office b) Dedicated staffing in the mayor’s or council office c) Dedicated staffing within a single department d) Dedicated staffing spread across multiple departments e) No dedicated staffing but a citywide task force/ committee f) No dedicated staffing but goals recognized throughout departments g) No staffing | Tier 1  
Coding: $1 = a - f$  
$0 = g$ |
# Staffing – Tier 2

| Krause1 | Has a single individual or office been tasked with coordinating the energy efficiency, sustainability, or "green" efforts across all city departments?  
a) Yes - this is the responsibility of a single individual  
b) Yes - this is the responsibility of a specific office or department  
c) This is under consideration or in progress  
d) No | Tier 2  
Coding:  
1 = Yes  
0 = in progress/no |
|---|---|
| Krause2 | Assigned a specific individual or group of individuals the responsibility to manage city climate protection activities  
Yes / No / In progress | Tier 2  
Coding:  
1 = Yes  
0 = in progress/no |
| Feiock 2010 | Has your government established an Energy or Sustainability Office?  
No / Yes | Tier 2  
Coding:  
1 = Yes  
0 = in progress/no |

(This question only allows us to add a yes and not a "no" because "no" might still mean that there is a staff.)
Resource Commitment to Sustainability – Tier 3

• Use imputed variables computed in Tier 2 and data reduction techniques to develop measures of broad concepts.

• Ex. Resource Commitment comprised of:
  – Funding
  – Personnel
Possible Additional Data to Add

• Political/Institutional
• Climate Policy
• Census (pop, business, finance)

• Add crosswalk identifiers rather than data?
Match to other Units of Analysis

• Other Levels of Government
  – State level
  – County level
    • Multilevel analysis
• Large City (Portney)
• Regions (Gerber)
  • Match surveys across policy domains (Cooperation in ED and Env.)
• Individual States
  – Florida
  – Indiana
  – California
Expected Outcomes and Dissemination Plan

• Enhance and improve individual and collective research efforts
• Train students as local government scholars
• Inform local government sustainability decisions
• Publicly release the ICSD for use by
  – Urban sustainability researchers
  – Scholars working to advance general knowledge in local policy, implementation, and governance
Expected Outcomes and Dissemination Plan

• Two components of dissemination plan
  – Conduct original research using the ICSD
    • Present papers at research conferences
    • Publish results of empirical studies in peer-reviewed journals
    • Develop and submit a book proposal to a university press
  – Workshop for researchers and policy experts on the ICSD
    • Release the ICSD to research community
    • Develop webpage to disseminate the ICSD
Broader Impacts

• Benefit future research by
  – Establishing a solid baseline for the included variables to facilitate the development of panel data
  – Standardizing a subset of key questions to encourage researchers to apply the format specified and update the database with new data as it becomes available

• Enrich research training and practice
• Serve as resource for training students
• Disseminate to local government managers and elected officials through summary reports