Introduction

- Environmental stewardship is a critical component of environmental governance in urban systems.
- Information on civic stewardship organizations is often sparse; few spatial analyses have been conducted on stewardship organizations.

Research Questions

- What are the spatial patterns of civic stewards in 4 cities?
- Can we identify hot and cold spots of stewardship?
- Do socioeconomic and vegetation data predict the number of stewardship organizations?

Methods

- A stewardship turf is the spatial extent of a stewardship group’s activities.
- Using data from the Stewardship Mapping and Analysis Project (STEW-MAP), we examined spatial patterns of self-described stewardship turfs across 4 cities, by census block group.
  - New York City – surveyed in 2007; Chicago – surveyed in 2010; Baltimore – surveyed in 2011; Seattle – surveyed in 2011
- Hot spots and cold spots are significant spatial clusters of high or low stewardship activity.
- Variables included in analysis:
  - Number of stewardship groups (excluding city-wide groups)
  - % vegetation (derived from 2011 NLCD)
  - Census block group level 5-year American Community Survey estimates (2007 – 2011) on:
    - Median household income
    - Home ownership (% homeowners)
    - Race (% white)
    - Educational attainment (% with Bachelor’s degree or higher)
- We used negative binomial regression models.

Examining Stewardship “Turfs”

<table>
<thead>
<tr>
<th>Statistic</th>
<th>New York City</th>
<th>Chicago</th>
<th>Baltimore</th>
<th>Seattle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median</td>
<td>10.39</td>
<td>37.15</td>
<td>93.13</td>
<td>3.244</td>
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<tr>
<td>Mean</td>
<td>13,420</td>
<td>29,500</td>
<td>3,283</td>
<td>23,910</td>
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<tr>
<td>Minimum</td>
<td>0.001</td>
<td>0.001</td>
<td>0.04</td>
<td>0.22</td>
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<tr>
<td>Maximum</td>
<td>192,200</td>
<td>119,400</td>
<td>38,250</td>
<td>53,700</td>
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<tr>
<td>% operating city-wide</td>
<td>26%</td>
<td>14%</td>
<td>1%</td>
<td>47%</td>
</tr>
</tbody>
</table>

Total Number of Civic Stewardship Groups

- Cities vary by % of stewardship groups operating city-wide
- Baltimore has the most localized turfs; Seattle has the broadest turfs (relative to city size)

Figure 1. Total number of stewardship turfs, aggregated to census block groups

Figure 2. Hot spots and cold spots of stewardship turfs

- Statistics for New York City, Chicago, Baltimore, and Seattle

Regression Results

<table>
<thead>
<tr>
<th>Variable Description</th>
<th>New York City</th>
<th>Chicago</th>
<th>Baltimore</th>
<th>Seattle</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Homeowner</td>
<td>0.015</td>
<td>-0.162</td>
<td>-0.044</td>
<td>0.076</td>
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<tr>
<td>% Bachelor or more</td>
<td>0.309</td>
<td>0.029</td>
<td>0.012</td>
<td>-0.015</td>
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<tr>
<td>median household income</td>
<td>0.002</td>
<td>0.000</td>
<td>0.330</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Conclusions and Next Steps

- Relationships between the number of stewardship groups in an area and explanatory variables varied by city.
- This suggests exploring motivations for and organization of stewardship across cities.
- While many relationships were significant, models only explained a small portion of the variance.
- Spatial count models and other model forms will be investigated.