Siting Bike Rental Stations to Address Environmental Justice Concerns
Somerville, Mass.

Project Goal: Groundwork Somerville hopes to address environmental justice concerns in Somerville, Massachusetts by expanding Boston’s bike share program to the community. GIS analysis will be used to site four rental stations based on income level, minority population and commute times. An optimal location will serve the transportation needs of the target population – those most vulnerable to environmental justice risks.

Methodology:
1. Use 2000 Census data at the block group level to create three criteria maps that depict income, minority population, and commute time. Based on the three criteria maps, an overall ranking was given to each Census Block Group. Block groups could be assigned up to 5 points for each criteria, with those with the highest number of low income, high minority and long commute times receiving higher scores. This isolates the 11 Block Groups in Somerville that are most vulnerable according to the criteria set forth by Groundwork Somerville for this project.

2. Create environmental justice rankings based on how each block group scores in each criteria. Highest scores will be assigned to block groups with the lowest income, the highest minority population, and the longest commute time. 3. Use 2010 Census data at the block level to create a residential population density map of Somerville.

4. Select four sites where block groups with high environmental justice rankings overlap with blocks with high population density. Bike rental locations should be on major roads whenever possible.

5. Compare possible sites based on 1/4 mile walkable network.

Results: Rental Stations
1. Bow Street & Summer Street
2. Highland Avenue & Cedar Street
3. Pearl Street & Cross Street
4. Jacques Street & Temple Street

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Network Analysis

<table>
<thead>
<tr>
<th>Station Number</th>
<th>Population within 1/4 Mile Walkable Network</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3,140</td>
</tr>
<tr>
<td>2</td>
<td>3,913</td>
</tr>
<tr>
<td>3</td>
<td>4,060</td>
</tr>
<tr>
<td>4</td>
<td>4,532</td>
</tr>
</tbody>
</table>

Sources: ArcMap Aerial Base Map

Groundwork Somerville is interested in analyzing the population that is within 1/4 mile walkable distance of each of the bike rental stations. To do this, a network analysis along walkable streets was conducted to determine how far a 1/4 mile network reach. The Census block polygons within this network were selected and total population figures were calculated based on the 2010 Census data. Eventually, this methodology can be used to assess the demographics of this population based on race, income, education levels, and other Census information.