GREENHOUSE GASES, TRANSPORTATION AND URBAN DEVELOPMENT

Linkages between climate justice and social justice in the locality of Philadelphia, PA

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Justification for a place-based approach

- National-scale solutions are politically burdensome
- Gasoline taxes are regressive and would require complete restructuring of the tax code
- Price controls and command-and-control approaches improve efficiency, but vehicle miles traveled (VMT) continue to increase (over the long term)
- Transportation emissions are the result of local decisions made in response to local circumstances
- The regional transportation networks and land-use patterns vary greatly across the nation and the world
Justification from an Environmental Justice Perspective

- Gasoline taxes are regressive and would require complete restructuring of the tax code
- Justice is a highly contested concept, and must be understood within local and regional contexts
- Urban processes as a microcosm of North-South struggles
- Local-scale studies are required to understand mitigation efforts outside of purely economic criteria
Outline

- Research Approach
- Study Area/Transportation Modeling
  - Results
- Implications for GHG Mitigation and Social Equity in Philadelphia
Research Approach

- Mixed Methods Approach
  - Traffic Modeling
  - Demographic analysis
  - Archival research
  - Field work

- The goal: To not only describe the pattern of emissions, but to understand the impact of past decisions on that pattern, and to inform speculation about potential mitigation options
Study Area

Chester County
Burlington County
Bucks County
Montgomery County
Gloucester County
Mercer County
Camden County
Delaware County
Philadelphia County

State Boundaries
Transportation Analysis Zones
Study Counties
Results

- Identification of “hotspots” (i.e. Destinations associated with higher than average emissions)
- Emissions for each destination are mapped, showing the emission-shed of each hotspot
<table>
<thead>
<tr>
<th>Workplace</th>
<th>Total Distance Driven (1000’s Km Per Day)</th>
<th>MTCE</th>
<th>% Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center City</td>
<td>13,410</td>
<td>95.39</td>
<td>68.08</td>
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<tr>
<td>North Philadelphia</td>
<td>891</td>
<td>6.34</td>
<td>4.52</td>
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<tr>
<td>University City</td>
<td>690</td>
<td>4.91</td>
<td>3.50</td>
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<tr>
<td>Fairmount</td>
<td>610</td>
<td>4.34</td>
<td>3.09</td>
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<tr>
<td>West Chester</td>
<td>450</td>
<td>3.20</td>
<td>2.29</td>
</tr>
<tr>
<td>South Philadelphia</td>
<td>436</td>
<td>3.10</td>
<td>2.21</td>
</tr>
<tr>
<td>King of Prussia</td>
<td>336</td>
<td>2.39</td>
<td>1.70</td>
</tr>
<tr>
<td>Bryn Mawr</td>
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<td>2.10</td>
<td>1.50</td>
</tr>
<tr>
<td>Lansdale</td>
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<td>1.21</td>
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<tr>
<td>Juniata Park</td>
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<td>1.19</td>
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<tr>
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<td>1.24</td>
<td>0.88</td>
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<tr>
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<td>Abington</td>
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<td>0.77</td>
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</table>
Summary

- Emissions come disproportionately from suburb-to-city commuting, despite typical commuting patterns.
- Public transit riders are either close to their workplace or poor.
- Significant enhancements to public transportation are difficult due to sprawl and edge city conditions.
- Public transit is unlikely to be used by the most significant emitters.
- Public transit improvements aimed at the most significant emitters would be terribly unfair.
- A more credible solution would be to alter the development patterns of the city.
Justification from an Environmental Justice Perspective

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- Urban processes as a microcosm of North-South struggles.
- Local-scale studies are required to understand mitigation efforts outside of purely economic criteria.