Estimating the Economic Impact of the Health Benefits associated with Bicycle Commuting

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THANK YOU:

- Co-Investigator: Mark Pereira
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THE LARGER PROJECT

- Assessing the economic impact and health effects of bicycling in Minnesota
WHY SHOULD WE CARE?

- **Bicycle commuting:**
  - Sustainable
  - Physical activity
  - 100 minutes of bicycling per week → 10% lower death rate
WHAT DO WE WANT TO KNOW?

- What is the economic impact of the public health benefits from bicycle commuting in Minnesota?
WHAT IS HEAT?

- Health Economic Assessment Tool (HEAT):
  - World Health Organization
  - Estimating the economic value of reduced death rate (mortality) due to bicycling or walking (Rutter et al. 2007)

- HEAT’s applicability:
  - NOT for illness rate (morbidity)
  - Habitual behavior at population level
  - 20-64 year olds
  - NOT for physically active population
INPUT DATA NEEDED TO USE HEAT

- Number of people who bike commute
- Average time spent bike commuting
- Population death rate (i.e., mortality rate)
- Value of a statistical life (VSL)
- Period of time for benefits to be calculated
- A discount rate
WHERE WE COLLECTED INPUT DATA

- Twin Cities Metro Area
HOW WE COLLECTED INPUT DATA

- 2014 Minnesota State Survey

- Responses weighed by:
  - County
  - Age group
  - Gender
  - Employment
FINDINGS (1)

- Number of people who bike commute: 244,000 working age metro residents (95% CI: 171,000-318,000)
- Average distance of bike commuting: 366 miles per year (95% CI: 218-613)
- Population death rate (i.e., mortality rate): 234.1 per 100,000 per year (DOH)
- Value of a statistical life (VSL): $9.4 million (MNDOT)
- Period of time for benefits to be calculated: annually
- A discount rate: 1.7% (MNDOT)
FINDINGS (2)

- Results of HEAT under low, average, and high estimate of bicycling prevalence and distance

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Number of cyclists</th>
<th>Miles per cyclist-year</th>
<th>Annual deaths prevented</th>
<th>Current annual value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>171,000</td>
<td>218</td>
<td>12</td>
<td>$108,805,000</td>
</tr>
<tr>
<td>Average</td>
<td>244,000</td>
<td>366</td>
<td>28</td>
<td>$260,657,000</td>
</tr>
<tr>
<td>High</td>
<td>318,000</td>
<td>613</td>
<td>61</td>
<td>$568,965,000</td>
</tr>
</tbody>
</table>
WHAT DO THE FINDINGS MEAN?

- Among the first in the U.S.
- Finding consistent with earlier European & Asian research
- Comparison across time & location
- Demonstrate economic & public health value of bicycle commuting
POLICY IMPLICATIONS

- Promote active commuting via bicycling
- Safety education
- What about our youth
Thank you!

Questions & Comments?

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