Transportation and Health: CDC and the Healthy Community Design Initiative

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POLIS
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CDC and Transportation Partnerships

- CDC provides assistance to state and local partners in matters of public health

- Office of Noncommunicable Diseases, Injury, and Environmental Health
- National Center for Environmental Health
- Division of Emergency and Environmental Health Services
- Healthy Community Design Initiative
CDC and Transportation Partnerships

- The Healthy Community Design Initiative
  - Focus on built environment and health
  - The design of communities impacts the health of residents, including chronic diseases, injuries, infectious diseases, and poisonings

- Community design elements include:
  - Transportation systems
  - Public spaces and zoning
  - Housing
  - Food systems
Ineffective Community Design
Community Design and Public Health

- Community Design - Historical Perspective
  - Indoor plumbing
  - Underground sewage
  - Water treatment
  - John Snow’s handle

Sanitary Community Design + Antibiotics = Increased Lifespan
Inactivity in Tennessee

- 2011: 61% fail to meet aerobic physical activity guidelines
  - National rank: 50th

- Nashville area slightly better: 57%
- Tennessee tied for 10th highest prevalence of obesity (31.1%)

Physical inactivity: 2011 BRFSS; obesity: 2012 BRFSS
The Nashville Metropolitan Planning Organization (MPO) recognized these problems.

All can be influenced by transportation planning, which is the MPO’s mission.

Nashville MPO among the first to incorporate multiple health issues in planning.
  - First step: transportation and health study.
Middle Tennessee Transportation and Health Study

- 6,000+ Households, 7 counties

- Traditional transportation study
  - Transportation habits questionnaire
  - 1-day travel diary

- Health Components
  - 6 general health questions (all respondents)
  - Expanded health questionnaire (10% health sub-sample)
  - Accelerometer + GPS monitor (10% health sub-sample)
## Six General Health Questions

<table>
<thead>
<tr>
<th>#</th>
<th>Question Text</th>
<th>Response Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>During the last 7 days, how much time did you usually spend sitting on a weekday?</td>
<td>Number of hours</td>
</tr>
<tr>
<td>2</td>
<td>Which of the following statements best describes how physically active you are in a typical week.</td>
<td>1. I rarely or never do any physical activity&lt;br&gt;2. I do some light or moderate physical activities&lt;br&gt;3. I do some vigorous physical activities</td>
</tr>
<tr>
<td>3</td>
<td>In general, how healthy is your diet?</td>
<td>1. excellent&lt;br&gt;2. very good&lt;br&gt;3. good&lt;br&gt;4. fair&lt;br&gt;5. poor</td>
</tr>
<tr>
<td>4</td>
<td>Would you say that, in general, your health is:</td>
<td>1. I rarely or never do any physical activity&lt;br&gt;2. I do some light or moderate physical activities&lt;br&gt;3. I do some vigorous physical activities</td>
</tr>
<tr>
<td>5</td>
<td>About how much do you weigh?</td>
<td>Inches</td>
</tr>
<tr>
<td>6</td>
<td>About how tall are you?</td>
<td>Pounds</td>
</tr>
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## Preliminary Results – General Health

<table>
<thead>
<tr>
<th>General Health Status</th>
<th>Weighted n</th>
<th>Weighted %</th>
<th>BRFSS MMSA %</th>
<th>BRFSS TN %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>108,276</td>
<td>16%</td>
<td>18%</td>
<td>18%</td>
</tr>
<tr>
<td>Very Good</td>
<td>232,981</td>
<td>34%</td>
<td>32%</td>
<td>31%</td>
</tr>
<tr>
<td>Good</td>
<td>237,119</td>
<td>35%</td>
<td>33%</td>
<td>30%</td>
</tr>
<tr>
<td>Fair</td>
<td>76,869</td>
<td>11%</td>
<td>12%</td>
<td>13%</td>
</tr>
<tr>
<td>Poor</td>
<td>21,888</td>
<td>3%</td>
<td>5%</td>
<td>8%</td>
</tr>
</tbody>
</table>
Transportation Walking

Days per week with non-exercise walking:

- none
- 1-2
- 3-4
- 5+

Percent Responding "Yes"
% Responding “Yes”

Days per week with non-exercise bicycling
Accelerometer and GPS

Adapted from GeoStats, Inc. report, Nashville Pilot Study
Using Health Data in Transportation Planning

- What might the MPO do with these data?

- Scenarios:
  - A neighborhood has high childhood obesity, no safe routes to parks or schools
  - A neighborhood has predominantly older population, no transit options to local medical center
  - A main road linking residences to commercial center has high bike and pedestrian traffic, but no sidewalks or bike lanes

- Health impact modeling
ITHIM Model Schematic

Environment
- Bicycle Lanes
- Parking $↑
- New Ped Bridge
- New Bikeway
- Bicycle Racks

Behavior
- ↓ Vehicular Trips
- ↑ Active Transport Trips

Exposure
- ↓ Air Pollution
- ↑ Physical Activity
- ↑ Vulnerable Time in Traffic

Health Outcome
- ↓ Respiratory Disease
- ↓ Chronic Diseases (Many)
- ↑ Injury and Death
Example Model Results

- Increased activity = 623 DALYs averted per 100,000 people
- Increased injuries = 257 DALYs incurred per 100,000 people

Sourced from Neil Maizlish, California Department of Public Health, ITHIM Developer
Data presented do not represent Nashville health impacts
Conclusion

- Healthy community design should incorporate health-conscious transportation infrastructure

- Partnerships between public health and transportation are important
  - Broad reach
  - Durability
  - Targeted planning

- Health information helps inform “healthy transportation” decisions
Visit HCDI:
www.cdc.gov/healthyplaces

For more information please contact Centers for Disease Control and Prevention

1600 Clifton Road NE, Atlanta, GA 30333
Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
Visit: www.cdc.gov | Contact CDC at: 1-800-CDC-INFO or www.cdc.gov/info

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.
Next Steps for the MPO

Use ITHIM outputs to:

- Educate decision makers about health/transportation relationship
- Focus on monetizing disease burdens
- Inform the policy and funding of the 2040 Regional Transportation Plan
- Talk with Federal agencies and other MPOs about value of having health integrated into transportation planning

Finish analyzing results of the Regional Transportation and Health Survey

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