To Drive or Not to Drive: What influences walking and cycling to work?

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Physical Activity and Population Health

- Physical activity (PA) is associated with a reduced risk of numerous chronic diseases
- Recommendation: 30 minutes of moderate-intensity activity on most days of the week
- Moderate-intensity PA sufficient to achieve health benefits and maintain weight
- Minimum 10-minute bouts
- Active commuting (AC) offers a promising means to integrate PA into daily routines
Benefits of Active Commuting

- Environmental
- Safety
- Economic
- Social
- Psychological
- Physical
Health Benefits of Active Commuting

- Lower odds of obesity
  (Lindstrom, 2008)

- Decreased risk of all-cause mortality
  (Andersen et al., 2000)

- Protective cardio-vascular effect
  (Gordon-Larsen et al., 2009; Hamer & Chida, 2008)

- Lower HDL cholesterol
  (Vuori et al., 1994)

- Improved VO$_2$ max
  (Vuori et al., 1994)
Prevalence of Active Commuting

• According to the 2001 National Household Transportation Survey, usual modes to work were:
  – 90.8% private automobile
  – 5.1% public transit
  – 2.8% walking
  – 1.3% other (including biking)
Previous Research on Active Commuting

• Large body of research on children’s active commuting to school

• Among adults, some identified factors that influence AC include:
  – Distance (Sisson & Tudor-Locke, 2008)
  – Environmental barriers (Craig et al., 2002)
  – Perceptions of potential benefits of AC (Merom et al., 2008)

• However, little consistent research exists on what influences AC among adults (Ogilvie et al., 2004)
Investigating Active Commuting at K-State and in Manhattan

- Two online surveys
  - K-State – April-May 2008
  - Manhattan – Sept-Nov 2008

- Assessed demographics, physical activity participation, AC behavior, AC influences (personal, institutional, community), etc.

<table>
<thead>
<tr>
<th>Sample</th>
<th>N</th>
<th>% Female</th>
<th>Mean Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>KSU Students</td>
<td>457</td>
<td>57.5</td>
<td>22.0</td>
</tr>
<tr>
<td>Faculty/staff</td>
<td>441</td>
<td>54.0</td>
<td>44.5</td>
</tr>
<tr>
<td>Manhattan</td>
<td>431</td>
<td>60.5</td>
<td>39.6</td>
</tr>
</tbody>
</table>
Prevalence of Active Commuting at K-State and in Manhattan

<table>
<thead>
<tr>
<th>Sample</th>
<th>Walk %</th>
<th>Bike %</th>
<th>Total AC %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>None</td>
<td>Daily</td>
<td>None</td>
</tr>
<tr>
<td>KSU</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students¹</td>
<td>26%</td>
<td>54%</td>
<td>79%</td>
</tr>
<tr>
<td>Faculty/staff¹</td>
<td>79%</td>
<td>13%</td>
<td>86%</td>
</tr>
<tr>
<td>Manhattan²</td>
<td>85%</td>
<td>11%</td>
<td>81%</td>
</tr>
</tbody>
</table>

1. Daily in KSU study = at least 4+ trips to campus per week
2. Daily in Manhattan study = at least 4+ days per week

- Students more likely to actively commute than faculty/staff or general ‘Little Apple’ residents
- Large percentage of avid bikers responded to the Manhattan survey
Factors Differentiating Active vs. Non-Active Commuters to Campus

- Are certain people more likely to walk or bike to work (campus)?

<table>
<thead>
<tr>
<th>Factor</th>
<th>Likelihood of Walking</th>
<th>Likelihood of Biking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Older than 25 years</td>
<td>↓</td>
<td>↓</td>
</tr>
<tr>
<td>Faculty (vs. student)</td>
<td>↓</td>
<td>↓</td>
</tr>
<tr>
<td>&gt; 20 min distance</td>
<td>↓</td>
<td>↓</td>
</tr>
<tr>
<td>Meets PA reccs</td>
<td>↑</td>
<td>↑</td>
</tr>
</tbody>
</table>
Ecological Attitudes and Active Commuting

- Are stronger ecologically-friendly attitudes related to AC behaviors and influences?

- Higher rates of AC with higher EFA (see graph)

- People with higher EFA also had greater self-efficacy for AC and perceived stronger motivations and fewer barriers for AC
Perceived Barriers to Active Commuting

- Safety from traffic, traveling to other points, appearance at work, lack of sidewalks = modifiable!
Motivators for Active Commuting

- Health, economic, and environmental concerns all important
- Traffic and lack of/cost of parking not pushing people to AC
Workplace Supports and Active Commuting

• Does having **cultural** and **physical** workplace supports affect the likelihood of AC?
  – cultural – co-workers AC, employer encourages AC
  – physical – bike parking, bike storage, showers

• Presence of both cultural & physical supports related to walking/biking to work at least once/week, *but more so amongst women*
Recommendations to Promote AC

• Individual-level strategies
  – driver and cyclist education about AC
  – promotional media campaigns

• Social strategies
  – ‘bikepooling’
  – active commuting challenges
  – involve community opinion/behavior leaders

• Environmental strategies
  – improved community infrastructure for walking and biking (sidewalks, bike lanes, trails, etc.)
  – mixed use destinations
  – workplace renovations and policies
  – economic (dis)incentives
AC Research and Practice Needs

- Better surveillance of AC rates before and after changes
- Understanding of Complete Streets policy-making
- More collaboration between disciplines and between researchers and professionals
- Study and communicate the ‘cross-fertilization’ of AC benefits to individuals and communities
For more information:

- www.bikebelong.org
- www.onelesscar.org
- www.resourceconservation.mb.ca/gci/walknroll/what

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www.k-state.edu/kines/labs/paph.html