Factors influencing choice of commuting mode

Lin Yang
J. Aaron Hipp, Deepti Adlakha, Christine Marx, Rachel Tabak, and Ross Brownson

Active Living Research
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Active commuting
Background

2009 American Community Survey (McKenzie and Rapino, 2011)

- Adults 16 years and older who travelled to work.
- 86.1 percent commuted in a car, truck, or van.
- About 5 percent commuted by public transportation.
- About 3 percent walked to work.
- All other transportation modes were used by less than 1 percent.
Background

Adapted from Dahlgren and Whitehead, 1991
Aim

• To examine employees’ choices of commuting mode
  
  *in relation to*

• home neighborhood environment

• worksite neighborhood environment, and

• worksite policies and supports
Methods: Study Design

- Supports at **Home** and **Work** for **Maintaining** Energy-balance
- Telephone-based survey (2012-2013)
- 2,015 employed adults aged 21-65 years living in counties of 4 Missouri metro areas
- >20 hours outside of home; >5 co-workers
Methods: Main outcome

- Self-reported usual mode of travel to work
  - Driving alone or carpool
  - Public transit
  - Multi-modal or active commuting (walking* & cycling)

*walk accumulated at least 10 minutes of activity
Methods: Main exposure, cont.

• Home neighborhood built environment features
• Worksite neighborhood built environment features
  - Each were self-reported using 10 Qs from the Physical Activity Neighborhood Environment Survey (PANES)
Methods: Main exposure, cont.

• Worksite physical activity support and policy
  -Self-reported 18 questions asking whether specific policies or features supporting PA were available at the worksite and if the participants ever used them.
Methods: Covariates

• Sociodemographic and individual characteristics
  - self-reported age, gender, race, weight and height for BMI
  marital status, education, household income, number of vehicles in the household, number of children younger than
  18 years old in the household, and chronic conditions including
  heart disease, diabetes, and cancer.

• Commuting distance
  - Self reported home and work addresses to calculate their shortest
distance using ArcGIS v10.1 (1-3 miles, 3.1 – 6 miles, 6.1 – 10 miles,
  and more than 10 miles).
Methods: Data Analysis

• Descriptive by commuting mode
• Two multivariate logistic regressions using car driving as reference commuting mode
  - (1) the correlates associated with using public transit
  - (2) the correlates associated with using AC mode
Results: Socio-demographic

- There were more women (69.3%) than men.
- The majority of participants were white (67.0%).
- The majority were overweight or obese (64.3%).
- A large portion (n=1184, 88.9%) commuted by car, while 4.9% (n=65) used public transit and 6.2% (n=83) used multi-modal or active commuting.
# Results: Public transit vs. Driving

<table>
<thead>
<tr>
<th>Reference: Driving (n=1184)</th>
<th>Public Transit (n=65)</th>
<th>Unadjusted logistic regressions</th>
<th>Adjusted multiple logistic regressionsb</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR</td>
<td>95% CI</td>
<td>p</td>
</tr>
<tr>
<td>Home neighborhood environment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transit stop within a 10-15 mins walk from home (ref: Disagree)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agree</td>
<td>4.09</td>
<td>1.63 - 10.29</td>
<td>0.003</td>
</tr>
<tr>
<td>Worksite policy and support</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worksite Incentive to use public transit (ref: No)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes but not used the incentive</td>
<td>0.76</td>
<td>0.27 - 2.16</td>
<td>0.60</td>
</tr>
<tr>
<td>Yes and used the incentive</td>
<td>18.2</td>
<td>9.81 - 33.7</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

aAdjusted for age, sex, race, BMI, education level, and household car ownership
bPseudo $r^2 = 0.462$
Results: Public transit vs. Driving
<table>
<thead>
<tr>
<th>Reference: Driving (n=1184)</th>
<th>Multi-modal or AC (n=83)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unadjusted logistic regressions</td>
</tr>
<tr>
<td></td>
<td>OR</td>
</tr>
<tr>
<td>Commuting distance (ref: 1-3 miles)</td>
<td></td>
</tr>
<tr>
<td>3.1-6 miles</td>
<td>0.30</td>
</tr>
<tr>
<td>6.1-10 miles</td>
<td>0.11</td>
</tr>
<tr>
<td>&gt;10 miles</td>
<td>0.09</td>
</tr>
<tr>
<td>Worksite neighborhood environment</td>
<td></td>
</tr>
<tr>
<td>Several free or low cost recreation facilities around worksite (ref: Disagree)</td>
<td></td>
</tr>
<tr>
<td>Agree</td>
<td>4.63</td>
</tr>
<tr>
<td>Worksite provides place to lock your bike (ref: No)</td>
<td></td>
</tr>
<tr>
<td>Yes but not used the bike facility</td>
<td></td>
</tr>
<tr>
<td>Yes and used the bike facility</td>
<td>15.7</td>
</tr>
</tbody>
</table>

<sup>a</sup>Adjusted for age, sex, BMI, and household car ownership

<sup>b</sup>Pseudo $r^2 = 0.328$
Results: AC vs. Driving

Stay active at work.

It's easier than you think. Here are some ideas:
- Take the stairs.
- Take frequent stretch and walk breaks.
- Get out and move during lunch.
Conclusions

• Home and worksite neighborhood environment, worksite supports and policies all matter.
• Changing the physical environmental feature?
• Worksite intervention?
• Longitudinal study with robust design is required.
Thank you

Lin Yang, Ph.D @ TREC WUSTL
yangl@wudosis.wustl.edu