Active Transportation: Study on Utilitarian Walking and Health from Time-Use Survey

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ABSTRACT
Walking and bicycling are not purely recreational—they are viable, beneficial, economical and environment-friendly modes of transportation. This research poster summarizes initial findings using the 2006-2008 American Time-Use Survey and Health and Well Being Modules for time spend walking to/from transportation purposes and subject Body Mass Index (BMI) as a proxies for active transportation and personal well-being. Data showed correlation between BMI and 15-min events of walking for transportation as well as the likelihood for healthier users to engage in walking.

INTRODUCTION
“Active transport” can be defined as the use of physical activity for transportation, being utilitarian walking and biking its biggest subsets. The benefits of daily physical activity have been long recognized to improve health, along with the potential for users to meet recommended physical activity guidelines just by walking to and from transit, commute, etc.

The preliminary objectives of this ongoing research are (a) to determined active transportation levels from a national survey, and (b) explore correlations between health and active transportation users, employing various guidelines for physical activity.

Current health guidelines for adults include, Center for Disease Control and Prevention
- 150 minutes of moderate-intensity aerobic activity (i.e. brisk walking) every week and two days of muscle-strengthening activities.
- At least 10 minutes at a time of moderate-intensity aerobic.
US Surgeon General
- 30 minutes of moderate physical activities on most days of the week.

METHODOLOGY
The national American Time-Use Survey (ATUS) sample includes civilian noninstitutional population 15 years of age or older. A one-day (4 am to 4 am) time-use survey between 2006 and 2008 along with body-composition data is known for all users. Due to weekend oversampling, separate weekend/weekday models focusing on walking are employing.

Active transportation was defined as any activity classified under Tier code ‘18: “Travel related to...” and with location (WHERE variable) identified as “Walk.” Reported daily time is the aggregation of all active transport minutes.

Though general individual descriptors are similar for weekend/weekdays, current patterns for walking for transportation show more activity during weekdays, as shown in Table 1. Other descriptors have been omitted for sake of brevity.

CONCLUSIONS
• The use of self-reported utilitarian walking time on a national time-use survey can provide a framework to explore active transportation health.
• An increase in BMI shows a statistically significant decrease in active transportation and likewise healthier people are more likely to walk more often than those with lower BMI.
• Active transportation, as defined here by the number of continuous 10 minute or more events of walking for transportation, showed better correlations with CDC than Surgeon General’s recommendations.
• Weekend and weekday models show similar trends on lower incomes, age progression, certain regions, and with BMI.

FUTURE WORK
• Consider more complex model structures to find relationships for walking and biking for transportation.
• Compile weather data for survey results.
• Explore use of travel surveys with land use data.

OUTCOMES

<table>
<thead>
<tr>
<th>BMI (min)</th>
<th>Weekday</th>
<th>Weekend</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.8</td>
<td>15.6</td>
<td>26.4</td>
</tr>
</tbody>
</table>

Table 2: Binary Logit Regression for Walking and BMI

<table>
<thead>
<tr>
<th>BMI (min)</th>
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Table 2 and 3 below summarize the best models attained for weekday and weekend samples, that relate walking rates to health and vice-versa. Lower BMI’s, minorities, adult households without children and those who live in the Northwestern region of the country are more likely to walk regardless of day of week.

Weekday values reflect more work-related walking mode, while weekends reflect higher participation possibly through leisure activities.

Table 1: Weekend and Weekday Sample

<table>
<thead>
<tr>
<th>Descriptive</th>
<th>Weekday</th>
<th>Weekend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample</td>
<td>17,627</td>
<td>18,010</td>
</tr>
<tr>
<td>Age</td>
<td>45</td>
<td>44</td>
</tr>
<tr>
<td>Gender (male)</td>
<td>45.2%</td>
<td>44.6%</td>
</tr>
<tr>
<td>Walked for Transp.</td>
<td>45%</td>
<td>31.2%</td>
</tr>
<tr>
<td>Minutes walked</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>BMI</td>
<td>25.6</td>
<td>26.4</td>
</tr>
</tbody>
</table>

A combination of simple regression models tested the following levels of active transportation and their relationship with participant’s health:
• Binary walked/Not walked
• Daily minutes spent on utilitarian walking
• Maximum trip time on utilitarian walking
• Number of 10-min walk (CDC recommendation)
• Number of 30-min walk (Surgeon General)