Public Health and Transit: Walking Associated with Public Transit Use

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www.cdc.gov/healthyplaces

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Rail~Volution, October 2012
Healthy Community Design Initiative (HCDI):

- **Mission:** To understand and improve the relationship between community design and public health through:
  - Surveillance
  - Health impact assessment and other mechanisms to improve policies
  - Research, evaluation and best practice dissemination
Case Patient – “Pete”

- 40 year old male sees his physician for a physical
Problem List

- Difficulty concentrating at work
- Overweight – BMI 29
- BP 137/89 (pre-hypertensive)
- Impaired fasting glucose (pre-diabetic)
- No exercise
- Symptoms of depression, but not meeting criteria
- Near daily intake of 20oz cola
Treatment Plan

- Join a gym
- Meet with nutritionist
Three Month Follow-Up

- No major improvements
- Gym requires 40 minutes more driving per day. Lack of time leads to fast food consumption
15 Years Later

- On multiple medications for hypertension, diabetes, cholesterol
- Recently was hospitalized for angina
Turning Back Time:  
Transportation and Public Health Intervention

- A light rail station was constructed a mile from his home
- Pete decides to walk to the station for his commute to work
15 Years Later – Alternative Scenario

- Pete walks 5 days per week to transit and rides to work
- Longer total daily commute time is 20 minutes longer, but Pete does not have to go to the gym
- BMI 26
- Regular check-ups indicate no need for medications

Percent of U.S. GDP spent on Health Care

The 10 Essential Public Health Services

- System Management
- Evaluate
- Monitor Health
- Diagnose & Investigate
- Research
- Inform, Educate, Empower
- Mobilize Community Partnerships
- Develop Policies
- Enforce Laws
- Link to / Provide Care
- Assure Competent Workforce

Assurance

Policy Development

Assessment
Concordant Health Strategies

- **CDC’s Winnable Battles**
  - Motor vehicle injuries
  - Nutrition, physical activity, and obesity

- **National Prevention Strategy**
  - Creating safe and healthy community environments
  - Active living
  - Healthy eating
  - Injury- and violence-free living

www.cdc.gov/winnablebattles
CDC’s Transportation Policy Recommendations

- Make cars safer and less polluting
- Support robust public transportation
- Create infrastructure and programs to increase active transportation
- Design communities for health – e.g. Complete Streets
- Protect healthy choices
- Require research and surveillance
- Support professional development and job creation

www.cdc.gov/transportation
Background

- Many health benefits related to physical activity (PA)
- About 40% of Americans do not meet 2008 PA Guidelines for aerobic PA
- Inadequate physical activity leads to 200,000 annual deaths in the United States*
- Average medical expenditures are 32% lower among adults who get regular exercise**
- Impact of community environment***


2008 Physical Activity Guidelines

- **Duration**: 150 minutes of aerobic PA per week
- **Intensity**: moderate intensity
- **10-minute episodes**

www.health.gov/paguidelines
Transit and Health Connections

- Transit-walking is walking to/from transit

- Previous research has linked transit with improved
  - Walking*
  - Safety**
  - Body mass index (BMI)***


Increase in Transit Ridership Over Time

FTA’s National Transit Database, 2009
Study Design

- Department of Transportation’s National Household Travel Survey (NHTS)—2001 and 2009

- People ≥5 years
  - Our study: adults (≥18 years)

- Cross-sectional, nationally representative

- Sample size:
  - 2001: 70K households
  - 2009: 150K households
National Household Travel Survey (NHTS)

- Information about travel
- Phone interview, travel diary
- Details about trips taken
Definitions

- Transit-walker: person who travels to/from public transit by walking

- Walk segment: segment between a place and transit entry/exit

- Daily transit walk time: total daily walking time to/from transit
Analysis

- Demographic characteristics in 2009
- Comparisons between 2001 and 2009
Differences in Transit-walker Characteristics Compared to Total Survey Population

<table>
<thead>
<tr>
<th></th>
<th>Transit Walker</th>
<th>NHTS Population</th>
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</thead>
<tbody>
<tr>
<td>Median Income</td>
<td>$25K</td>
<td>$46K</td>
</tr>
<tr>
<td>Non-White</td>
<td>55%</td>
<td>26%</td>
</tr>
<tr>
<td>Resided in city with rail and population &gt;1M</td>
<td>65%</td>
<td>22%</td>
</tr>
<tr>
<td>No Household Vehicle</td>
<td>42%</td>
<td>6%</td>
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</tbody>
</table>

Transit-walkers were of a similar age, gender, and employment status to the general population.
## Transit-walking Time by Mode

<table>
<thead>
<tr>
<th>Mode</th>
<th>Median Walk Time (minutes)</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus Only</td>
<td>18.2</td>
<td>14.2, 22.1</td>
</tr>
<tr>
<td>Train Only</td>
<td>19.3</td>
<td>18.6, 20.2</td>
</tr>
<tr>
<td>Mixed Mode</td>
<td>31.7</td>
<td>26.4, 36.9</td>
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# Predictors of Walking 30 Minutes or More per Day by Walking To or From Transit

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<tr>
<td>African American</td>
<td>0.31 (0.18)</td>
<td>1.37 (0.95, 1.97)</td>
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<td>Hispanic</td>
<td>0.12 (0.21)</td>
<td>1.13 (0.74, 1.73)</td>
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Transit-walking changes between 2009 and 2001

- **28% increase in transit-walkers**
  - 2001: estimated 7.5 million people
  - 2009: estimated 9.6 million people

- **830,000 more people walk ≥30 minutes per day due to transit-walking**
  - 2001: estimated 2.6 million transit-walkers
  - 2009: estimated 3.4 million transit-walkers
Conclusion

- Transit-walking contributes to health

- Transit-walkers have similar demographic characteristics to populations with health disparities

- Rail availability is associated with increased transit-walking
Limitations

- Data from only one day of travel

- Other changes during the time period
  - Improvements in transit service
  - Increased unemployment rates
  - Increased travel costs
  - Improved public health messaging
Recommendations

- Public health officials should recognize role of transportation in healthy choices
- Departments of transportation and public health should work together to align goals
- Public health officials should continue to promote physical activity incorporated into daily activity
- Researchers should examine barriers of transit-walking
Health Impact Pyramid

1. Socio-Economic Factors
   - Increasing Population Impact

2. Changing the Context to make Individuals’ Default Decisions Healthy
   - Increasing Individual Effort Needed

3. Long-lasting Protective Interventions

4. Clinical Interventions

5. Education

Frieden, AJPH, 2010
Thank You

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E-mail: cdcinfo@cdc.gov  Web: www.cdc.gov

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.