How does transportation in the Twin Cities shape the spatial mismatch?

- Bus routes and ridership
- Job accessibility by bus
- Transportation correlations with demographic and socio-economic characteristics
- Case studies: work location and transit access
- Case studies: race, work location, transit access, and commute time
Routes with the highest number of total trips per week are concentrated in Minneapolis and St. Paul, while routes with the lowest number of total trips serve the outer-ring suburbs.
Routes with the highest number of bus riders are concentrated in Minneapolis and St. Paul, while routes with the lowest number of bus riders serve the inner- and outer-ring suburbs.
The highest percentages of public transportation commuters are concentrated in Minneapolis, with very low percentages of public transportation commuters in the suburbs.
Bus stops with the highest number of weekly stops are concentrated in Minneapolis and St. Paul, while bus stops with the lowest number of weekly stops occur in the inner- and outer-ring suburbs.
# Job Accessibility by Bus

<table>
<thead>
<tr>
<th>Weekly Bus Stops</th>
<th>% Low Income**</th>
<th>% Middle Income**</th>
<th>% High Income**</th>
<th>% Total Jobs**</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 49</td>
<td>31.3</td>
<td>34.5</td>
<td>36.7</td>
<td>34.6</td>
</tr>
<tr>
<td>50 - 212</td>
<td>30.3</td>
<td>28.2</td>
<td>27.4</td>
<td>28.6</td>
</tr>
<tr>
<td>212 - 450</td>
<td>17.4</td>
<td>13.8</td>
<td>10.0</td>
<td>13.2</td>
</tr>
<tr>
<td>451 - 846</td>
<td>9.4</td>
<td>8.2</td>
<td>6.9</td>
<td>8.0</td>
</tr>
<tr>
<td>846 - 1,972</td>
<td>14.9</td>
<td>18.1</td>
<td>22.6</td>
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</tr>
</tbody>
</table>

**Jobs within Public Transit/Walking Buffer**

<table>
<thead>
<tr>
<th>Category</th>
<th>Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Jobs</td>
<td>1,435,583</td>
</tr>
<tr>
<td>Low Earning Jobs</td>
<td>350,920</td>
</tr>
<tr>
<td>Middle Earning Jobs</td>
<td>504,422</td>
</tr>
<tr>
<td>High Earning Jobs</td>
<td>580,241</td>
</tr>
</tbody>
</table>

**Jobs within Public Transit/Walking Buffer**

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Park and Rides are generally underused; driving commuters are heavily concentrated in the seven-county area other than the downtown areas.
Transportation Correlations

Positive (0.54 to 0.63)
- Public transportation commuters & HHs earning < $40K/yr
- Commuters driving alone & HHs earning $60K - $100K/yr
- White population & driving alone
- African-American population & public transportation use
- People of 2-or-more races & public transportation use

Negative (-0.66 to -0.50)
- Public transportation commuters & HHs earning $60K - $100K/yr
- Commuters driving alone & HHs earning < $40K/yr
- White population & public transportation use
- African-American population & driving alone
- People of 2-or-more races & commuters driving alone

*All are significant at the .01 level*
Case studies:
Work location and transit access
Could Workers Switch to Public Transit?

<table>
<thead>
<tr>
<th>Transportation to Work</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driving</td>
<td>50.5</td>
</tr>
<tr>
<td>Public Transit</td>
<td>36.8</td>
</tr>
<tr>
<td>Workers who work close to bus stops</td>
<td>97</td>
</tr>
<tr>
<td>Workers who work far from bus stops</td>
<td>3</td>
</tr>
</tbody>
</table>

Lowry Hill East

- Home
- .5 Mile from Bus Stop
- City Boundaries

Number of Workers:
- 1
- 2 - 9
- 10 - 23

Data Source: Census SF-3 Data Metropolitan Council
MNDEED April 2008
Could Workers Switch to Public Transit?

<table>
<thead>
<tr>
<th>Transportation to Work</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Jobs Outside</td>
<td>6.7%</td>
</tr>
<tr>
<td>Bus Buffer</td>
<td>93.3%</td>
</tr>
<tr>
<td>Jobs Inside Bus</td>
<td></td>
</tr>
<tr>
<td>Buffer</td>
<td>48.3%</td>
</tr>
<tr>
<td>Driving</td>
<td></td>
</tr>
<tr>
<td>Public Transportation</td>
<td>9.4%</td>
</tr>
<tr>
<td>Walking</td>
<td>38.7%</td>
</tr>
</tbody>
</table>

Cedar-Riverside
- Target Block Group
- Bus Stop 1/2 mi. Buffer
- City Boundaries

Number of Jobs:
- 1 - 2
- 3 - 6
- 7 - 11
- 12 - 17

Laura Cullenward, Victoria Harris, Eli Popuch, AnnaVaugh
Data Source: Metropolitan Council, MN DEED,
US Census SF-3, April 2008
For each of the four areas, the answer is: “Geographically, yes. Logistically, perhaps in the future.” Jobs are located near enough bus stops to make transit an option.
Case studies:
Race, work location, transit access, and commute time
The red highlighted area represents residential block groups with greater than 50 percent African American population in South Minneapolis. The proportional symbols show where workers who live in the red area are working by block.
South Minneapolis
70% Black or African-American

Distance to Work:
- Within 2 miles: 16%
- Within 5 miles: 57%
- Within 10 miles: 86%

Commute Time:
- Extremely High (90 minutes and up): 2%
- More than Twice the Average (45 - 89 minutes): 15%
- Average or Slightly Above Average (20 - 44 minutes): 43%
- Below Average (0 - 19 minutes): 40%
**Workplaces of North Saint Paul Residents**

The red highlighted area represents residential block groups with greater than 50 percent Asian population in Saint Paul. The proportional symbols show where workers who live in the red area are working by block.

**Workers Per Block**
- 1
- 5
- 19

North Saint Paul

61% Asian

Distance to Work:
Within 2 miles: 28%
Within 5 miles: 48%
Within 10 miles: 75%
Importance of the Proposed Central Light Rail Corridor to African American Populations Living in Frogtown

The red highlighted area represents residential block groups with greater than 50 percent African American population in Saint Paul. The proportional symbols show where workers who live in the red area are working by block. The proposed central corridor light rail project would run along University Avenue to downtown Saint Paul and Minneapolis, greatly improving the transit options for this minority area.
Conclusions

- Mismatch exists in terms of basic spatial proximity/commuting distance measures
  - Workers to jobs
  - Jobs to housing
- Transportation mismatch exists both spatially and demographically
  - Inner-city vs. suburban transit options and use
  - Heavier reliance of minority populations on public transportation
  - Longer commute times for minority population areas
Conclusions (cont.)

- Job accessibility measures
  - Frequency and direction of service more of an issue than presence/absence of public transportation
  - Most jobs within the Twin Cities metro area are within 0.5 mile of a bus stop
  - Difficult to reach low-income jobs outside of Minneapolis and St. Paul (e.g. I-494 corridor, suburbs such as Plymouth, Maple Grove, Roseville, Eagan)
Policy Reflections

- Historic difficulties in moving low-income or rental housing toward areas of low-income jobs and vice versa

- Focus on transportation?
  - Improvement of service on existing network
  - Extensions targeted to low-income employment areas
  - Employer-based transit programs or support
Research Reflections

- **Data limitations**
  - Scale of analysis vs. level of detail
  - Difficult to measure transportation “access”

- **Minnesota’s data sources**
  - Detailed origin-destination data and jobs/workers characteristics
  - O-D data not specifically linked to transportation information, nor to RAC and WAC information
  - Possible to overlay and correlate with other sources (e.g. Census)
Report will be available at:

http://www.macalester.edu/geography/projects/courses/geog365/index.htm