Ensuring Equity in Transit-Oriented Development

Mile High Connects

July 12, 2012

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Transit, Transit Oriented Development and Equity
We need to clarify what we mean when we talk about

- Equity
- Transportation (and/or Transit) Equity
- Equitable Transit-Oriented Development (TOD)
A working definition of equity

Equity refers to an ideal state in which everyone has full and equal access to opportunities and amenities, regardless of their race or ethnicity, gender, age or wealth.
Why should we care about equity?

- Of course we should care about equity for reasons of social equity
- In addition, failure to address equity undermines the effectiveness of transit investment and transit-oriented development
- Equity affects
  - Transit ridership
  - Neighborhood development patterns and neighborhood change
  - TOD success
  - Location efficiency
Transit and location efficiency: Travel time matters


<table>
<thead>
<tr>
<th>Place of Residence</th>
<th>Place of Work</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
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<tbody>
<tr>
<td></td>
<td>Boston</td>
<td>24.7</td>
<td>18.1</td>
<td>185,478</td>
</tr>
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<td></td>
<td>Inner Suburb</td>
<td>35.3</td>
<td>17.8</td>
<td>177,302</td>
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<tr>
<td></td>
<td>Outer Suburb</td>
<td>56.0</td>
<td>24.4</td>
<td>108,823</td>
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<tr>
<td></td>
<td>All Places of Work</td>
<td>35.9</td>
<td>23.0</td>
<td>471,603</td>
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</tbody>
</table>

|                    | Outer Suburb        | 20.1 | 17.8| 763,162|
|                    | All Places of Work  | 21.8 | 18.4| 878,046|

|                    | New Hampshire       | 55.2 | 37.5| 508|
|                    | Outer Suburb        | 32.6 | 21.1| 19,198|
|                    | All Places of Work  | 32.0 | 22.3| 22,548|

|                    | Rhode Island        | 35.9 | 22.3| 30,058|
|                    | Outer Suburb        | 55.7 | 54.4| 7,171|
|                    | All Places of Work  | 50.7 | 52.5| 13,937|

|                    | Other               | 35.8 | 43.7| 2,229|
|                    | Outer Suburb        | 27.7 | 23.1| 1,123,198|
|                    | All Places of Work  | 27.3 | 21.7| 2,040,077|

Travel time matters.
My research

- Study on neighborhood change impacts of new transit investment
- Development of metrics for sustainable transportation for greater Boston
  - Including equity metrics
- Development, working with the Center for Transit-Oriented Development, of a “rating system” for equitable TOD
- Community-driven survey/focus group research on transportation needs of low-income, particularly Latino, families in Massachusetts
TOD that endangers equity: Gentrification and displacement

- Gentrification: a pattern of neighborhood change characterized by increasing property values and incomes
- Displacement: a pattern of neighborhood change in which current residents are involuntarily forced to move out because they cannot afford the gentrified neighborhood

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TOD that endangers equity: Inequitable patterns of neighborhood change

- Adverse consequences of gentrification
- Higher housing cost burdens for renters who stayed in the transit-rich neighborhood
- A rising number of automobile-owning households less likely to use transit for commuting
Breaking the cycle of unintended consequences
A Toolkit for Equitable Neighborhood Change in Transit-Rich Neighborhoods

http://www.dukakiscenter.org/TRNEquity

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Metrics: A sustainable transportation system

- Allows everyone to have **equitable access** to a region’s important goods, services and destinations;
- Provides users with real transportation choices that are **affordable, safe and convenient**; and
- Ensures long-term **environmental sustainability**, minimizing greenhouse gas emissions and other undesirable environmental impacts.
Measuring transportation (in)equity

● How can we measure “equity” in commute times?
● Indicator should capture both
  ● Differences in modes used to commute
  ● Residential segregation patterns and “spatial mismatch”
Constructing an “indicator” of transportation (in)equity

![Graph showing Travel Time Penalty](image)

- Black vs. white auto commuter
- Black vs. white bus rider
- Black bus rider vs. white auto commuter

Annual Hours of “Excess” Commute Time
Travel time penalty as a measure of transportation equity

By way of comparison, Boston commuters experience an average “travel time penalty” of 48 additional hours of delay annually due to traffic congestion (making the region the 10th most congested metro in the US).
Creating a Rating System for Equitable TOD

Inclusiveness

Density

Block size

Lower VMT/
Higher Ridership

Equitable Transit-Oriented Development

Greater Equity Outcomes

Affordability

Inclusiveness

Places

People
Why station areas (and walkability) matter

The First Commandment: Know Thy Riders

● On-board surveys of transit riders
● Travel (diary) surveys
● American Community Survey (Census) data
● At-home (or at-work) surveys

Source: Chu, Xuehao. March 2012. An Assessment of Public Transportation Markets Using NHTS Data (National Center for Transit Research at University of South Florida)
Freeing captive riders: Focusing on core transit users
On-board surveys: National data

- Largest ever on-board survey study about public transportation
- Compiled data from 150 on-board vehicle passenger surveys conducted by public transportation agencies from 2000 through 2005
- Summarized the results of questionnaires completed by over 496,000 public transit riders sampled by transit systems that carry 60 percent of all transit trips in the United States.
Who uses transit? National data from on-board surveys

Source: American Public Transportation Association, A Profile of Public Transportation Passenger Demographics and Travel Characteristics Reported in On-Board Surveys (May 2007)
## On-board surveys: Boston data

<table>
<thead>
<tr>
<th>Mode</th>
<th>Surveys Distributed</th>
<th>Surveys Returned</th>
<th>Response Rate</th>
<th>Ridership</th>
<th>Sample Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapid Transit</td>
<td>122,000</td>
<td>22,767</td>
<td>18.7%</td>
<td>296,200</td>
<td>7.7%</td>
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<tr>
<td>Bus</td>
<td>72,000</td>
<td>12,313</td>
<td>17.1%</td>
<td>208,700</td>
<td>5.9%</td>
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<tr>
<td>Commuter Rail</td>
<td>42,000</td>
<td>12,440</td>
<td>29.6%</td>
<td>55,550</td>
<td>22.4%</td>
</tr>
<tr>
<td>Greenbush CRR</td>
<td>1,475</td>
<td>526</td>
<td>35.7%</td>
<td>2,075</td>
<td>25.3%</td>
</tr>
<tr>
<td>Commuter Boat</td>
<td>1,500</td>
<td>693</td>
<td>46.2%</td>
<td>2,035</td>
<td>34.1%</td>
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<tr>
<td>Inner Harbor Ferry</td>
<td>300</td>
<td>178</td>
<td>59.3%</td>
<td>525</td>
<td>33.9%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>239,275</strong></td>
<td><strong>48,917</strong></td>
<td><strong>20.4%</strong></td>
<td><strong>566,085</strong></td>
<td><strong>8.6%</strong></td>
</tr>
</tbody>
</table>
What do we know about the income of MBTA riders?
What do we know about the race of MBTA riders?

[Bar chart showing the percentage of riders by race for different modes of transportation (Subway, Commuter Rail, Bus (Key Routes), Bus (All Routes)).]
What do we know about how transit is used?

- **Commuter Rail**: 91% Work-related, 3% Social, 3% Shopping, 10% School
- **Subway**: 76.2% Work-related, 7.3% Shopping, 4.5% Social, 7.5% Other
- **Bus**: 64% Work-related, 11% School, 13% Social, 2% Personal, 4% Shopping
Travel diary surveys: National data

- 2009 National Household Travel survey of 150,000+ households
  - Filled out travel survey/“diary” on all travel made during a 24 hour period
  - Data collected April 2008 - April 2009
- Analysis designed to better understand
  - Size of transit “markets”
  - Market share
  - Mode share
Analysis of NHTS Data: Transit “Market Segments”

Source: Chu, Xuehao. March 2012. An Assessment of Public Transportation Markets Using NHTS Data (National Center for Transit Research at University of South Florida)
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Source: Chu, Xuehao. March 2012. An Assessment of Public Transportation Markets Using NHTS Data (National Center for Transit Research at University of South Florida)
American Community Survey S0802 data: Just remember, not not everyone works

Source: American Public Transportation Association, A Profile of Public Transportation Passenger Demographics and Travel Characteristics Reported in On-Board Surveys (May 2007)
Race

**United States**

**Total Population by Race**
- White: 78%
- Black: 11%
- Asian: 6%
- Other: 5%

**Denver**

**Denver Population by Race**
- White: 85%
- Black: 6%
- Asian: 4%
- Other: 5%

**Public Transportation Population by Race**
- White: 52%
- Black: 25%
- Asian: 12%
- Other: 11%

**Denver Public Transportation Population by Race**
- White: 74%
- Black: 12%
- Asian: 4%
- Other: 10%

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Citizenship Status

United States

Total Population by Citizenship Status
- Native: 84%
- Naturalized U.S. citizen: 9%
- Not a U.S. citizen: 7%

Public Transportation Population by Citizenship Status
- Native: 66%
- Naturalized U.S. citizen: 21%
- Not a U.S. citizen: 13%

Denver

Denver Population by Citizenship Status
- Native: 86%
- Naturalized U.S. citizen: 9%
- Not a U.S. citizen: 5%

Denver Public Transportation Population by Citizenship Status
- Native: 80%
- Naturalized U.S. citizen: 16%
- Not a U.S. citizen: 4%

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Poverty Level

United States

Total Population by Relationship to Poverty Line

- Below 100 percent of the poverty level: 6%
- 100 to 149 percent of the poverty level: 6%
- At or above 150 percent of the poverty level: 88%

Denver

Denver Population by Relationship to Poverty Level

- Below 100 percent of the poverty level: 6%
- 100 to 149 percent of the poverty level: 5%
- At or above 150 percent of the poverty level: 89%

Public Transportation Population by Relationship to Poverty Level

- Below 100 percent of the poverty level: 13%
- 100 to 149 percent of the poverty level: 11%
- At or above 150 percent of the poverty level: 76%

Denver Public Transportation Population by Relationship to Poverty Level

- Below 100 percent of the poverty level: 13%
- 100 to 149 percent of the poverty level: 11%
- At or above 150 percent of the poverty level: 76%

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Housing Status

**United States**

- **Total Population by Housing Status**
  - 30% Owner-occupied
  - 70% Renter-occupied

- **Public Transportation Population by Housing Status**
  - 59% Owner-occupied
  - 41% Renter-occupied

**Denver**

- **Denver Population by Housing Status**
  - 30% Owner-occupied
  - 70% Renter-occupied

- **Denver Public Transportation Population by Housing Status**
  - 52% Owner-occupied
  - 48% Renter-occupied

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Vehicle Ownership

United States

Total Population by Vehicle Ownership

- No vehicle available: 4%
- 1 vehicle available: 32%
- 2 vehicles available: 43%
- 3+ vehicles available: 21%

Denver

Denver Population by Vehicle Ownership

- No vehicle available: 3%
- 1 vehicle available: 31%
- 2 vehicles available: 44%
- 3+ vehicles available: 22%

Public Transportation Population by Vehicle Ownership

- No vehicle available: 11%
- 1 vehicle available: 36%
- 2 vehicles available: 31%
- 3+ vehicles available: 22%

Denver Public Transportation Population by Vehicle Ownership

- No vehicle available: 17%
- 1 vehicle available: 31%
- 2 vehicles available: 30%
- 3+ vehicles available: 22%

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The relationship between equity and TOD performance
Explaining VMT: Combined Transit Score

- R-squared = 78.4%
- VMT has a direct linear relationship with quality of transit
- As transit quality goes up, VMT goes down
Explaining VMT: Population Density

- Higher population density is correlated with lower VMT
Explaining VMT: Median Household Income

- In general, as median household income in a station area increases, VMT also increases
- This relationship is not as strong as combined transit score or population density
Explaining VMT: Income Less than $25,000

- The relationship is stronger when considering the proportion of the population with household income less than $25,000
- As the proportion of poor people rises, VMT declines

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Explaining VMT: Renters

- As the proportion of renters in a station area increases, VMT decreases
Explaining VMT: Race and Ethnicity

Percent Non-White  Percent Hispanic

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Explaining VMT: Vehicle Ownership

- As the number of available cars increases, VMT also, unsurprisingly, increases

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Explaining VMT: Vehicle Ownership (few cars)

- The relationship between owning fewer vehicles and lower VMT is even stronger than the relationship between number of cars and VMT
Explaining VMT: Vehicle Ownership (no cars)

- The relationship between percent households with 0 cars and VMT explains most of the previous relationship

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## Explanatory Power (R-squared)

<table>
<thead>
<tr>
<th></th>
<th>VMT</th>
<th>ABC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle Ownership</td>
<td>80.5%</td>
<td>80.5%</td>
</tr>
<tr>
<td>Population Density</td>
<td>54.0%</td>
<td>76.5%</td>
</tr>
<tr>
<td>Combined Transit Score</td>
<td>68.5%</td>
<td>72.7%</td>
</tr>
<tr>
<td>Percent Renters</td>
<td>65.0%</td>
<td>53.1%</td>
</tr>
<tr>
<td>Median Household Income</td>
<td>28.1%</td>
<td>12.7%</td>
</tr>
</tbody>
</table>

*Source: Dukakis Center for Urban & Regional Policy, Northeastern University*
Transit Oriented Development (TOD) that enhances equity: Serving core riders

- Core riders include
  - People of color
  - Low and Lower Middle Income Households
  - Immigrants
  - Renters
  - Zero Vehicle Households
    - And those with “inadequate vehicles”

- Transit stations need “transit-oriented neighbors” who will regularly use the system
Concluding Thoughts

● Getting TOD “right” ensures that transit investments pay off by ensuring transit-oriented neighbors who will be regular riders.

● Gentrification concerns should be addressed by shaping the TOD to achieve equity objectives – which will also serve to maximize ridership and reduce driving.
Developing a best practices toolkit for equitable TOD
A framework for addressing regional equity

“Opening up” higher opportunity communities

Connecting “lower opportunity communities” to opportunity elsewhere in the region through better transportation connections

Improving lower opportunity communities (“development without displacement”)

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How do equity concerns vary for each piece of this framework?

- TOD in areas of lower opportunity/concentrated poverty
  - How can we ensure that TOD respects the vibrancy of existing communities and adds value to what is already in place?
  - Can we measure risk factors for gentrification/displacement and address those in TOD planning?
- TOD in areas of higher opportunity
  - How can we maximize benefits to everyone in the region, rather than just those living nearby?
  - How can we maximize region-wide access to new amenities and opportunities in such TOD projects?
- Transportation connections
  - How can we prioritize transportation investments that create access to opportunity?
  - How can we keep transit affordable for all?
We need a bigger toolkit

- Planning tools
- Housing market tools
- Financing tools
  - Infrastructure funding
  - Funding for mixed-use, mixed-income development
- Transportation management tools
- Jobs/economic development tools
- Data tools
Planning tools

Equity Objective:

Everyone with a stake in a community’s future has the opportunity to participate in planning and the ability to hold government officials and developers accountable for ensuring equitable development.
Planning tools: Examples of best practices

- BeltLine Community Engagement Framework (Atlanta GA)
- Corridor Development Initiative (Twin Cities MN)
- Longfellow Station Community Benefits Agreement (Minneapolis MN)
Planning tools: Fairmount Line CDC Collaborative

- 4 (now 5) CDCs in low-income commuter rail corridor
- Started with “vision” document
- Now have a pipeline of over 1500 new and preserved housing units and 780,000 sf of commercial space
- Planning underway for a 9 mile greenway
Housing market tools

Equity Objective:

Lower income households have access to homes in neighborhoods that allow them to keep their combined housing and transportation costs affordable.

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Housing market tools: Examples of best practices

- Inclusionary zoning (e.g., Carlsbad CA and Bridge Housing’s Poinsettia Station TOD)
- Community land trusts (Sawmill Community Land Trust, Albuquerque NM)
- Incentive programs for housing production (Massachusetts Chapter 40R, San Francisco Housing Incentive Program)
Housing market tools: Tri-Met Joint Development

- Joint development policy specifically addresses affordable housing
- Able to “write down” land acquisition cost of properties acquired for transit construction by accounting for future transit fare revenues
- Examples
  - Collins Circle
  - West Gresham apartments
Financing tools

Equity Objective:

Investment is provided for infrastructure and/or transit-oriented development without exacerbating inequitable patterns of neighborhood change.
Financing tools: Examples of best practices

- Affordable housing set-asides in Tax Increment Financing districts (BeltLine Affordable Housing Trust Fund in Atlanta GA)
- Capital grant programs (Metro TOD Program in Portland, MassWorks in MA)
- TOD acquisition funds (Denver, Bay Area)

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Financing tools: Dallas TOD Tax Increment Financing District

- TIF district along a corridor instead of for individual stations
- Allows for revenue sharing from higher value to lower value station areas
- For example, for Mockingbird station
  - 40% stays in station area
  - 40% goes to lower value area
  - 20% goes to affordable housing anywhere in the corridor
Transportation management tools

Equity Objective:

Combined housing and transportation costs are reduced, and car ownership is discouraged, for residents of transit-rich neighborhoods

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Transportation management tools: Examples of best practices

- Car sharing (SF City Car Share, Hoboken Corner Cars)
- Elimination of parking minimums (Seattle)
- “Unbundling” cost of parking (San Francisco)
Transportation management tools: Residential ECO Pass Program

- Santa Clara Valley Transportation Authority offers the program to developer/owner of a residential community.
- Community buys passes for all residents at a deeply discounted price.
- Affordable housing developers have used the program to reduce required parking.

“An urban structured parking space can cost from $22,000 to $40,000 per space. Saving the cost of construction of two parking spaces pays for our entire Eco Pass program.”

Jeff Oberdorfer
Executive Director
First Community Housing
Jobs/economic development tools

Equity Objective:

Workers of all incomes and educational levels can find jobs located near public transportation

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Jobs/economic development tools: Examples of best practices

- Geographically-targeted economic development incentives (Illinois Business Location Efficiency Act)
- Employer “Live Near Your Work” programs (Maryland Smart Keys 4 Employees)
- Community Benefit Agreements
Jobs/economic development tools:
NJ Urban Hub Tax Credit

- Rewards businesses that create specific numbers of jobs within one-half mile of a transit hub
- Initial investment of $352 million for 9 projects is credited with attracting $910 million in private capital and creating more than 1,400 new jobs

Teachers Village TOD in Newark

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Data tools

Equity Objective:

Data that can help individuals and communities shape equitable development is widely available in user-friendly formats that are free and available to all.
Data tools: Examples of best practices

- MetroPulse (Chicago Metropolitan Agency for Planning)
- Housing + Transportation Affordability Index
- Center for Transit Oriented Development’s TOD Data Base

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Welcome to the MetroBoston DataCommon

A Data Visualization Tool

The MetroBoston DataCommon provides a wealth of information about the region’s people and communities through a variety of topics -- from arts and education to the environment and transportation. A resource for all those seeking to understand how the region is changing, it helps residents, stakeholders, planners, city and town officials, educators and journalists explore data and make informed decisions. We invite you to explore its data, community snapshots and create your own visualizations and reports.

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