Transit Market Index
Validating Local Potential for Transit Ridership
Transit Market Areas
Characteristics — 2010 TPP

Characterized by different levels of transit service.

- **Core Areas, 1 & 2:** A variety of high-capacity, high-frequency, express and local routes.
- **Area 3:** Less frequent (hourly) or peak-period service.
- **Area 4:** Potential for siting of park-and-rides and peak-period express.
Market Area | Typical Services
---|---
Area 1 | Express, Urban Radial, Urban Crosstown, Downtown Circulator
Area 2 | Express, Urban Radial, Urban Crosstown, Suburban Local
Area 3 | Express, Urban Radial, Suburban Local, Circulators, General Public Dial-a-Ride*
Area 4 | Peak Period Express, General Public Dial-a-Ride
Area 5 | General Public Dial-a-Ride

*Market Area 3 Dial-a-Ride is appropriate in some circumstances

- ADA paratransit service follows federal and state regulations in the regular route service area
- Additional details on market areas and service standards are available in Appendix G
- Market area geography was calculated at the census block group level.
Transit Market Areas
Definition Factors-- TPP 2010

- Local potential for transit ridership.
- Transit ridership factors:
  - Population concentration – where people live
  - Employment concentration – where people work, shop, or travel for other activities
  - Automobile deficit – working age adults less private vehicles available
2010 Transit Market Index
Calculation for Local Areas – 2010 TPP

Population divided by Developed Acres (times 3) + Employment divided by Developed Area + Automobile Deficit divided by Developed Area
Time for a fresh look  
*Transit Market Index -- 2013*

Questions for review:

- Are population, employment, and automobile deficit the best available measures of transit readiness; and best predictors of ridership?
- Are the specific metrics equal in importance – or should they be weighted, when considered together?
- Should additional factors be considered?
Time for a fresh look

Ridership Factors considered -- 2013

- Employment density
- Population density -or- Net housing density
- Automobile deficit -or- No vehicle households per developed acre
- Commercial buildings floor area ratio
- Intersection density
- Land use diversity index
- Centrality – how many jobs are within 5 miles?
- Transit frequency – number of daily trips per block group
Land use diversity index

On a scale ranging
0 (homogenous) to
1 (highly mixed with
no dominant use)
Commercial-industrial floor area ratio

Built space divided by commercial-industrial land use area
Net housing density

Housing units *divided* by residential land use area
Transit-dependent households density
Intersections density

4-, 5-, 6-way intersections given greater weight than 3-way
Centrality: Jobs within 5 miles
MetroTransit vehicle trips per day

Count of distinct transit vehicles through area. MetroTransit only.
Time for a fresh look
Research approach

• Regression analysis is a technique for representing real-world dynamics as mathematical relationships.

• The best regression model minimizes differences between predictions vs. real-world observations.
Time for a fresh look

Results: *Predictive Factors -- 2013*

- Population density
- Employment density
- Vehicle deficit per acre
- Intersection density
- Transit frequency included as a "control" factor
Time for a fresh look

Results: The **best** Ridership Factors -- 2013

Every 1% increase in...

- Population Density
- Intersection Density
- Employment Density
- Vehicle deficit per acre
- Transit frequency
- At MSP Airport

Results in a rideship increase of...

- + 0.64%
- + 0.23%
- + 0.20%
- + 0.11%
- + 1.17%
- + 1.65%
Time for a fresh look

**Proposed**: Transit Market Index -- 2013

0.64*LN (Population density)

0.23*LN (Intersection density)

0.20*LN (Employment density)

0.11*LN (Vehicle deficit/acre)

*Holding constant transit frequency, connectivity, other aspects of service*
Transit Market Index: Transit potential

• Predicted demand based on population and employment concentration and urban form

• Controlling for existing levels of transit service
Updated Index: Smoothed Values

Raw values averaged with distance-weighted neighbor area values

Updated Index: Smoothed Values
Updated Index: Smoothed values
Compared to 2010 Transit Market Index Areas 1-2

Previous Area 1 missed:
• Activity centers in Eagan, Apple Valley, Burnsville
• North St Paul
• Eden Prairie
Compared to 2010 Transit Market Index Areas 1-3
Conclusions

• Regression analysis validates the factors used in 2010 Transit Market Index

• Staff recommend improving the Transit Market Index to consider urban form: Adding *Intersections density* better represents underlying transit ridership potential.

• The revised Transit Market Index yields better predictive performance

• Finally, areas with greatest ridership potential are, by and large, already served by MetroTransit.
Proposed Transit Market Areas

Transit Market Areas

- Area I: Highest transit potential
- Area II: 1/2 Area I potential
- Area III: 1/2 Area II potential
- Area IV: 1/2 Area III potential
- Area V: 1/2 Area IV potential
- Emerging Market Area
- Freestanding Town Center
Special Cases

**Emerging Market Areas**
- Areas with higher transit potential than surrounding area
- Smaller in size and non-contiguous
- Appropriate level of service is lower than market index suggests

**Freestanding Town Centers**
- Grew independently of Minneapolis-St. Paul and are still outside the contiguous developed area
- Peak-period express and/or community circulator may be appropriate
Next steps

• Review the types and level of service appropriate to these Transit Market Areas.
• Update Transit Service Guidelines
• Incorporate Transit Market Areas and Service Guidelines into the Transportation Policy Plan
Transit Market Index

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