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TECHNICAL SUMMARY

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PROJECT COST:

\$112,066



The new Green Line already moves over a half million travelers a month, and by 2020 will extend to Eden Prairie, Minnesota.

Travel Time Plus Station-Area Sidewalks, Affordable Housing and Commercial Activity Keys to Transit Use

What Was the Need?

Public transit in Minnesota is growing. In September and October of 2014, the Twin Cities' Metro Green Line, only three months after opening, provided over 1 million rides. Transit demand outside the Twin Cities is also rising. By 2030, MnDOT expects that Twin Cities transit service will operate 2 million hours of service, almost double its current level.

Driving will grow increasingly difficult. Highway congestion already strains many Twin Cities areas with little space to expand roadways. Transportation stakeholders look to multimodal transit—bus rapid transit (BRT), light rail and commuter rail as well as regular bus service—to relieve the growth in traffic stress and congestion.

MnDOT expects to see up to six transit corridor sections built in the next 10 years in the metro area alone. But simply building transit lines and stations does not ensure that people will shift from automobile use to these facilities. As transit service in the Twin Cities expands into the suburbs and investment in the transit infrastructure grows, Minnesota decision-makers hope to see residents take advantage of this reliable, lower out-of-pocket cost travel option by reducing automobile use.

What Was Our Goal?

This research was undertaken through the [Transitway Impacts Research Program](#), funded by MnDOT and others, to identify strategies for the Twin Cities that would influence drivers' choice to switch to transit modes like BRT and light rail. By evaluating literature on modal shifts to transit and the experiences of public transit around the country, and by analyzing data from Twin Cities and peer regions, researchers aimed to identify ways to use infrastructure and policy to promote transit use.

What Did We Do?

Part one of the study focused on learning what factors influence transit mode shifts. Researchers reviewed the literature on transit use and transit modes. They evaluated and recommended transit-modeling methods to use in identifying strategies for encouraging modal shifts and then developed pertinent case studies.

In the second part, investigators drew on the Metropolitan Council's 2010 Travel Behavior Inventory, other transit data and land use data to analyze the impacts of travel time, travel cost and population density on transit mode choices in the Twin Cities.

The final part of the study followed recommendations from the first two phases. Researchers gathered transit data from the Twin Cities and from 15 peer regions, and studied the influences of land use and public policy on transit ridership of stations.

Research showed that transit travel time remains key to encouraging the public to switch from cars to transit. Public policy that encourages affordable housing, sidewalk systems and commercial activity near transit stations also greatly enhances transit uptake.

“Many county regional rail authorities wanted the analysis because just building a transitway isn’t going to make transit effective. The communities have to think in ways that facilitate success, and there are a number of variables to consider.”

—Lynne Bly,
Multimodal Planning
Director, MnDOT Metro
District

“An explicitly pro-affordable housing policy for the station area has a strongly positive impact on ridership. Having a pro-sidewalk policy written into city code or city plans has a strong positive impact as well, but only if these policies occur in areas with a high level of activity.”

—Andrew Guthrie,
Research Fellow,
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The light rail station in Beaverton, Oregon, a Portland suburb, has very high light rail ridership but doesn’t have a terminal or park and ride, and doesn’t stand in a central business district.

What Did We Learn?

Literature Review. Researchers summarized 11 documented strategies for promoting transit use, ranging from service scheduling to bike facilities to park and rides.

Following the review of modeling techniques, the research team recommended a direct ridership modeling approach that can be adapted for public policy development and assessment that can be tailored to station areas.

Case studies of Chicago and Ottawa, Ontario, showed that successful transit systems employ multiple modes around strong downtown centers and regional hubs, continuously adapt to new infrastructure and integrate new transit modes fluidly into fare systems.

Mode Choice in the Twin Cities. The population density of destinations proved more important to transit choices than the population density of origins; more important still was travel time. Reducing transfers and cutting transit travel time will be critical to promoting modal shifts to transit. Reducing access time with park-and-ride facilities and pedestrian-friendly land use will be necessary, as will providing amenities like newspapers that reduce perception of wait times.

Station-Level Ridership Modeling. In areas in which a high level of commercial activity can be found within 100 meters of the transit station based on downloaded Google Maps source data, transit-friendly policy was found to have a discernible impact. An activity-heavy transit station area will experience 1,006 boardings on a typical weekday. If pro-sidewalk policies affect the area, boardings will jump to 1,287. If the station area neighborhood features affordable housing, boardings climb to 1,471. In station areas with both pro-sidewalk and pro-affordable housing policies, boardings reach 1,881.

Pro-affordable housing and pedestrian-friendly public policy are necessary, but not sufficient, for high transit use. A high level of commercial activity must be in place to ensure high transit use. As the metro system expands to suburbs, support for affordable housing, sidewalks and commercial activity must be encouraged.

What’s Next?

The Metropolitan Council, Counties Transit Improvement Board and MnDOT will need to work together to improve transit travel time and encourage public policy friendly to pedestrians and affordable housing in transitway areas, and zoning and land use regulations that encourage commercial activity. Further research may look more closely at the interaction of active use areas with affordable housing to identify why this combination builds transit use.

This Technical Summary pertains to Report 2015-49, “Exploring Strategies for Promoting Modal Shifts to Transitways,” published December 2015. The full report can be accessed at <http://mndot.gov/research/TS/2015/201549.pdf>.