



RESEARCH SERVICES SECTION

TECHNICAL SUMMARY

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PROJECT COST:

\$50,000



Do bicycle facilities like this one being constructed in Minneapolis increase the percentage of people who commute by bicycle?

The Impact of Bicycling Facilities on Bicycle Commuting Levels

What Was the Need?

Since the 1990s, interest in multimodal travel has increased significantly. In 1991, Congress passed the Intermodal Surface Transportation Efficiency Act, and in 1994, the Federal Highway Administration made doubling the percentage of trips made by foot or bicycle a federal goal.

One approach to meeting this goal has been to provide alternative transportation facilities to urban commuters by building off-street bicycle trails and creating designated bicycle lanes on city streets. Because these infrastructure projects generally require considerable political and economic investments, evaluating their effectiveness has been an important priority for Mn/DOT.

In 2005, Mn/DOT published [a study examining how the addition of bicycling facilities during the 1990s influenced bicycle commuting rates in the Twin Cities](#). This study showed that new facilities were correlated with a small but statistically significant and consistent increase in bicycle commuting rates for areas immediately surrounding these facilities. More research was needed to determine if these results could be confirmed by studying other cities that experienced comparable new facility construction.

What Was Our Goal?

The purpose of this study was to determine whether the presence of new bicycle facilities could be correlated with an increase in bicycle commuting rates in various U.S. cities, replicating the results of the 2005 Twin Cities study. Investigators also sought to identify contextual factors that help explain why bicycling facilities are more effective in some locations than others.

What Did We Do?

Investigators used the same methodology as the 2005 Twin Cities study to evaluate six other cities that constructed new facilities in the 1990s: Austin, Texas; Chicago; Colorado Springs, Colorado; Salt Lake City; Madison, Wisconsin; and Orlando, Florida. These cities were chosen because they had new bicycle facilities, official bicycle planning agencies and up-to-date maps of facilities.

Researchers began by cooperating with local bicycle coordinators in these cities to map off- and on-street bicycle facilities that were constructed in the 1990s, were at least a mile in length and improved accessibility to employment destinations.

Investigators then determined the change in bicycle commute rates for locations within a certain distance of these facilities: They identified Bicycle Analysis Zones for each city consisting of U.S. Census block groups with geographic centers falling within 2.5 kilometers of a relevant facility. They then collected and compared 1990 and 2000 census data for block groups within each city's zones.

Finally, they conducted interviews with city bicycle coordinators to provide context for these results, focusing on how factors such as political culture, housing density, employment patterns and publicity efforts may have influenced the success of bicycle facilities.

What Did We Learn?

Despite the Twin Cities' success, results did not show that new facilities have a stand-alone effect on bicycle commuting rates. While Austin and Chicago experienced a

“The value of the first Twin Cities study was developing the methodology. The value of this study was learning if the findings hold true in other locations and developing additional sociological methodologies to explain why.”

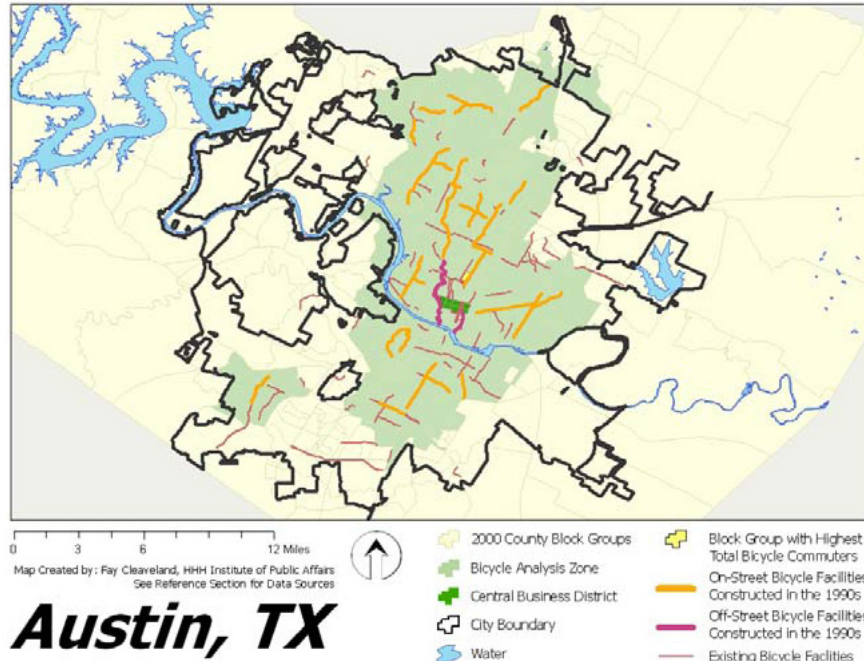
–Darryl Anderson,
State Bicycle and Pedestrian Coordinator,
Mn/DOT Office of Transit

“Communities considering adding bicycle facilities should be cognizant of how new facilities will fit into their existing networks and land use plans. It’s also important to plan for publicizing and supporting facilities once they are completed.”

–Frank Douma,
Assistant Director of the State and Local Policy Program, Hubert H. Humphrey Institute of Public Affairs, University of Minnesota

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For each city, researchers mapped bicycle facilities constructed in the 1990s, and they identified a Bicycle Analysis Zone. Austin and Chicago were the only cities of the six analyzed that experienced statistically significant increases in bicycle commuting within these zones.

statistically significant increase in bicycle commuting, other cities showed either statistically insignificant changes or declines. Contextual factors may play a significant role in determining why bicycle facilities are more effective in some locations than others. Three themes were identified in the interviews with bicycle coordinators in cities where bicycle commuting rates increased:

- Location of facilities along usable commuting routes between residential areas and city employment hubs
- Overall network connectivity, with trails and bicycle lanes covering a large part of the central city and numerous intersections that allow easy navigation from one part of the city to another
- Publicity and promotion, including efforts by city planners and advocates to advertise their presence and promote bicycle commuting among city residents

Demographic profiles of census block groups indicate that locations with the greatest number of bicycle commuters tend to be more densely populated, located in or near the central business district, contain high percentages of individuals who walk to work, have a population with a median age in the early 20s, and have household incomes that are considerably below median incomes for the city as a whole.

What’s Next?

The project was presented at the 2008 Annual Transportation Research Conference and raised several questions requiring further study. Research will be needed to determine how bicycle facilities constructed between 2000 and 2010 affect bicycle commuting rates. City policymakers also need quantitative and qualitative methodologies for making decisions about bicycle commuting in their cities. Research currently under way includes a study of bicycle users’ travel purposes in Minnesota, which will enhance understanding of off-street facilities and provide an important groundwork for future research into travel behavior, including noncommuter bicycling.

This Technical Summary pertains to Report 2008-33, “The Impact of Bicycling Facilities on Commute Mode Share,” published August 2008. The full report can be accessed at <http://www.lrrb.org/PDF/200833.pdf>.