EVALUATION OF ROADWAY REALLOCATION PROJECTS

This NITC study offers a new methodology for evaluating the before-and-after effects of roadway space reallocation projects.

The Issue

In the last decade there has been a national trend toward projects that involve roadway space reallocation across modes. Many of these projects may include road diets and are typically very controversial when automobile travel lanes and/or curbside parking are proposed for removal. The traditional process of identifying corridors for road diet improvements involves selecting potential corridors (mostly based on identifying four-lane roads) and conducting a traffic impact analysis of proposed changes on a selected roadway before implementing changes.

The evaluation of roadway reallocation projects should include the analysis of traffic volumes, level of service, speeds, queue lengths, and bus operations. There are tools and equipment to evaluate traffic volumes and level of service changes in before-and-after studies. However, the detailed evaluation of speed and queue length distributions along a segment are significantly more cumbersome. Led by Miguel Figliozzi and Travis Glick of Portland State University, this research presents a general methodology for the detailed evaluation of transit operations, including speed and queue length distributions along roadway reallocation projects, using high-resolution transit data.

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THE ISSUE

Roadway reallocation projects, including road diets, often meet with opposition because of the fear that they will inhibit automobile travel.

THE RESEARCH

Developed a method of evaluating roadway reallocation using high-resolution transit data that:

- Is widely available in most larger cities;
- Is applicable across a range of roadway types;
- Quantifies changes in transit and travel times.

IMPLICATIONS

The methodology developed and implemented in this project can measure the efficacy of road diets with solid before-and-after evidence.

Photo: Some roadway space on this street has been reallocated for a bike lane

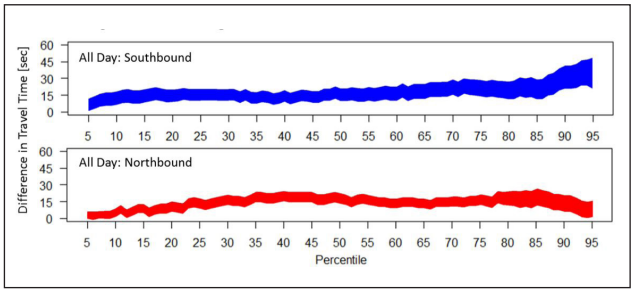
The Research

The focus of this research is on the development of a practical, general, and theoretically sound methodology that can be applied to future roadway reallocation projects and is applicable in a wide range of traffic conditions. The methodology developed here uses high-resolution transit datasets, which are becoming commonly available from transit agencies in most large cities.

This research provides a strategy and formulas to quantify changes in transit speeds and travel times to determine if roadway reallocation projects resulted in significant change. The integration of transit high-resolution transit data, which includes information on how long buses had to wait at stops, provides more information than any one data set can provide. Finally, the methodology is applicable across a range of locations, traffic volumes, roadway types, and roadway modification projects; as such, it can be applied broadly to any segment or network. Using data from TriMet, the Portland, Oregon regional transit provider, the methodology proposed in this research was applied successfully to two separate road diets in Portland: Northeast Lombard Street and Northeast 16th Avenue.

Implications

Both of the two case study locations underwent a notable roadway change during the course of this study. The effects of those changes were measured using data collected before and after the implementation of each change. In the Lombard study area, travel times did not see a statistically significant change following the implementation of the road diet for the majority of trips. Some of the slower trips saw a decrease in travel times of less than 30 seconds over the segment. On Northeast 16th Avenue, a statistically significant increase in travel times was observed for both directions of travel; but, for all percentiles, the increase was less than one minute. These results, however, are not intended to be used as a motivation or deterrent for future road diets or transit route changes, since each change must be considered on a case-by- case basis. Instead, the results provide evidence for when and where this methodology can be applied and what types of information it can provide.



Difference in travel time by percentile for NE 16th Street

In the before-and-after case study of NE 16th Street in Portland, Oregon, a statistically significant increase in travel times was observed for both directions of travel. Assuming that all travel increases were attributed to the road diet, the travel time increase would remain below five minutes per miles in the worst case and less than one minute per mile on average.

PROJECT INFORMATION

TITLE: Evaluation of Roadway Reallocation Projects

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