

RIDERSHIP BIASES AND ALLOCATION OF TRANSIT FORMULA GRANTS

PROBLEM STATEMENT

Ridership is a factor in allocating transit formula grants at the federal level and in Florida and several other states. For the federal and Florida programs, data on ridership come from the National Transit Database (NTD). Transit agencies are allowed to use either their 100-percent count or a statistical estimate of their ridership through sampling. Both the formula and data inputs affect allocations. Preliminary data suggest that errors in the NTD ridership are significant. The transportation literature has focused on the role of the formula in allocations but ignored the role of errors in data inputs, especially ridership that is estimated through sampling.

OBJECTIVES

The project has three objectives: (1) to examine the extent of errors in ridership reported to the National Transit Database; (2) to determine the effects of errors in NTD ridership on the allocation of transit formula grants; and (3) to recommend strategies to increase the fair allocation of transit formula grants by reducing errors in NTD ridership.

FINDINGS AND CONCLUSIONS

When estimated, NTD ridership is significantly greater than direct counts reported to APTA at the individual agency level, and these positive deviations are widespread and consistently present over time. Undercounting in direct counts is likely to have contributed to these deviations. However, most of these deviations appear to be attributable to non-sampling errors that have resulted from unintentional biases in procedures, and perhaps from intentional manipulation.

A unilateral 10 percent upward bias in ridership would mean a funding increase, in combined state and Federal incentive formula grants, ranging from 9.5 percent for the Miami-Dade Transit Authority to 14.2 percent for the Sarasota County Transportation Authority. Such unfair increases in grant allocations can represent a strong financial incentive for transit agencies to report biased ridership.

An effective long-term strategy for reducing the observed ridership biases would be to require the use of the 100-percent count of unlinked passenger trips for all reporting purposes. Exclusive of any impact on grant allocations, there is little cost to introduce this policy change. Most agencies already report a direct count to other entities, including their governing boards and the American Public Transportation Association. More and more transit agencies are switching to or are considering switching to electronic registering fareboxes.

One concern for requiring transit agencies to report their 100-percent count is that allocations may change within a state. In terms of Florida's Program, the five agencies using FTA-approved sampling plans for estimating unlinked passenger trips and reporting positively biased ridership would lose \$357,000 in FY2004—which would represent a loss of about 7.9 percent (based on what

they would receive with no change). In contrast, all other Florida agencies would collectively gain the same amount, representing an average gain of 2.5 percent.

A far more significant concern of adopting this strategy is its potential negative impact on a state. In terms of the Federal program, for example, Florida would lose \$307,352 for FY2004 if it adopts this strategy alone. This loss of federal funding would represent about 3.8 percent of what Florida would receive without adopting the strategy. Over time, this loss is likely to be smaller as more and more agencies across the country are switching or considering switching to using a direct count to report as NTD ridership. Furthermore, any such loss is likely to be offset to some degree by savings in sampling costs from using more efficient sampling techniques based on passenger trip length. For this long term strategy to be truly effective, however, the Federal Transit Administration must adopt it nationwide and simultaneously reduce the reporting burden on transit agencies. In the interim, states that use ridership in their transit formula grants should investigate other strategies to reduce the negative impacts of ridership biases on the fair allocation of their formula grants.

BENEFITS

The strategy recommended by this research would increase fairness in the allocation of transit formula grants. The allocation of transit formula grants to individual agencies is a zero-sum game in most cases. One agency's unfair gain is another agency's (or agencies') unfair loss. Among the many benefits of employing this strategy are the following:

- It would result in consistent numbers of unlinked passenger trips being reported to formula grant programs and to other entities, and it would improve consistency in reported unlinked passenger trips and passenger miles and the implicit passenger trip length.
- It would provide incentive to transit agencies to improve the accuracy of their direct count. Improving the estimation of an agency's ridership that has been consistently biased upward leads to lower allocations to that agency. Improving the accuracy of direct counts, in contrast, leads to higher reported ridership and higher allocations as a result.
- It would enable transit agencies to adopt more efficient (i.e., smaller sample size) sampling techniques for estimating passenger miles as the product of their 100-percent count of unlinked passenger trips and their average passenger trip length.
- It would bring back the incentive role of ridership as an allocation factor. If upward ridership biases are much greater than achievable ridership growth through improved services by transit agencies, much of the incentive role of ridership in a formula is lost.
- It would make peer performance comparisons using ridership more reliable. Peer performance comparisons are important considerations in local decisions for transit funding. These local decisions would be seriously questioned if NTD ridership for some of the agencies involved in such performance comparisons is significantly biased upward.

This research was conducted by Xuehao Chu, Ph.D., of the Center for Urban Transportation Research at the University of South Florida. For more information on the project, contact Tara Barte, Project Manager, at (850) 414-4520, tara.bartee@dot.state.fl.us.