Discussion-piece #5
Ridership and User Benefits from Variable Trip Ends
(Land Use and Economic Development)
Federal Transit Administration
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1. Motivations. A frequently cited goal for major transit projects is that they serve as tools to help shape patterns of growth in metropolitan areas. FTA's evaluation of New Starts projects has for a decade required that forecasts of ridership and mobility benefits be prepared with "fixed trip tables," effectively precluding any recognition of changes in land use that the projects might help to produce. FTA's evaluation criteria have included the transit-friendliness of the land-use and development setting for the proposed project, but with very little reference to the development benefits of the project. Over the past several years, FTA has been working to include "economic development" among the benefits credited to projects. That work has included sponsored research on the nature and size of transit-related development benefits and an invitation to project sponsors to attempt to quantify the (mobility) benefits generated by refocused development.

2. Double counting. A challenge in all of these efforts is the avoidance of double counting – that it, sufficiently careful accounting of benefits that counts underlying benefits only once and avoids counting again different manifestations of those same benefits. This issue is particularly difficult for the economic development benefits of transit because, the research concludes, economic benefits are caused by accessibility improvements. Accessibility improvements are already well recognized in FTA's methods for rating projects in the various mobility measures – user benefits in total, per project trip, and for transit dependents, as well as in the cost/hour measure of cost-effectiveness. The addition of economic development benefits risks the recounting of those same benefits – in the form of land prices, occupancy rates, development densities, jobs and households relocated to station areas, or similar measures.

3. Mobility benefits from refocused development. A largely separate class of benefits, however, is the reduction in expenditures on travel made possible by the relocation of households, jobs, and activities. For example, a household may locate near a new transit station in a relatively dense area – rather than in a less dense area with less transit accessibility – so that one of its workers can take transit to work. Because of that decision, the household accrues the direct benefits from better transit accessibility to its worker's workplace. However, it also accrues benefits for its other trip-making if the denser area provides higher accessibility in general to jobs and other activities – and requires, on average, shorter trips to those activities. Further, the entire metropolitan area benefits from the lower generation of auto vehicle-miles of travel by the household (reducing congestion and air pollution) because of a higher transit share of its trips, possibly a higher non-motorized share, and a lower average distance per trip. Similar benefits accrue from the more efficient locations chosen by employers, retail, and other activities that are trip attractors. (The opposite impacts might be the consequence of other kinds of relocations. Households that locate near new commuter rail stations in pursuit of suburban amenities may experience increases on their total expenditures on travel and impose higher travel impacts on others.)

4. Capturing these benefits. The relocations of trip productions and trip attractions in response to a major transit project mean that (1) more trips would enjoy the direct mobility benefits of the project itself, (2) better-located households, jobs, and other activities may require lower expenditures on all travel compared to a less focused development pattern and (3) fewer indirect impacts may be imposed on others in the metropolitan area. So, the question is whether current analytical methods can capture these benefits reliably.

5. Location choices of households and businesses. Two alternative methods are commonly used in metropolitan planning to predict future development patterns: land-use models that predict changes in population and employment at the small-area level, and cooperative forecasting that relies on negotiations among local jurisdictions to reconcile local growth projections with regional control totals. Either method might be used to prepare a revised growth forecast associated with a major transit project. The revised forecasts would appear – on the surface – to offer a way to compute the change in overall expenditures (time and cost) on travel using generalized prices of travel from various locations. The generalized price of travel to all possible destinations might be derived from (the denominator of) a trip distribution or destination choice model. Residents of some locations face relatively low prices because they are proximate to dense employment and activity locations and/or have good access to high-quality transportation facilities. Residents of other areas face high prices because they live in outlying areas and/or face severe highway congestion with few or no transit options. Any shift of households from a higher-priced to a lower-priced location would reduce total expenditures on travel – and potentially represent the locational benefits of a transit project. This approach encounters three difficulties, however:

    - First, it provides no analytical way to differentiate among projects. Policy changes to encourage particular growth patterns can be implemented with – or without – major transit projects. It is therefore unclear how this approach might reliably predict the likely outcomes of similar policies applied to arterial BRT, streetcars, light rail, and other transit modes (including existing local bus services) – and alternative alignments.

    - Second, the approach may suggest benefits of such magnitude that they overwhelm the direct transportation benefits of projects. A negotiated forecast might be that 10,000 additional households would locate in the station areas of a proposed project where the average trip distance if 5.0 miles, and that these households would otherwise have located across far-flung areas where the average distance is 15.0 miles. That population relocation would generate large reductions in expenditures on travel – much larger than the mode-choice benefits from shifts of travelers from the stations areas from auto to transit. Assuming that it is accurate, such a forecast would confirm the importance of frequently cited the goals for transit. But the forecast would say much more about the importance of land use planning and smart growth than about the transit project itself.

    - Third, the approach is easily manipulated to contrive benefits for proposed projects. Manipulations are straightforward for both the number of relocated households and jobs, and the locations from which they are relocated.

Consequently, for the purpose of evaluating proposed major transit projects, the quantification of benefits arising from redistribution of population and employment growth does not appear promising. Substantial barriers to its implementation exist in the absence of analytical tools, risks of easy manipulation, difficulties in application to alternative investments, and problems differentiating the individual contributions of land use policies and proposed transit projects.

6. Conclusion. Given the absence of a promising approach to the valuation of the potential relocation impacts associated with major transit projects, FTA has suspended further work on this facet of "economic development" impacts.