



# Benchmarking Social Equity in Transit Performance: Economic Justice in Practice

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Transit agencies often focus on ridership as a primary measure of performance: If enough people are riding transit, then the system is a success. But who are those riders, and why is volume the benchmark?

This viewpoint can skip over an important aspect of a transit agency's function; that is, providing opportunity to those with little or no access to other modes of transportation. Transit service is supported by local governments, with aid from larger bodies, to provide a more diverse transportation network that serves as many needs of the public as possible. Yet in many places, the people most in need of access—for example, people experiencing poverty and unemployment—are underserved by transit systems.

NITC dissertation fellow Torrey Lyons explores this challenge in his doctoral research project, *Social Equity In Transit: Toward Social And Environmental Justice In Transportation* (PDF) in three ways:

- Applied structural equation modeling to measure the accuracy of the “spatial mismatch” theory
- Developed a new performance measure, Transit Economic Equity Index (TEEI), to benchmark equity in transit systems
- Analyzed the current state of equity planning in transit through interviews with transit providers and a review of academic literature

## TESTING THE “SPATIAL MISMATCH” THEORY

“Spatial mismatch” refers to a longstanding public transit theory that was first developed in 1968 by John Kain: the distance between jobs and housing is moderated by quality transit service.

To test this assumption, Lyons took a cross section of the largest urban areas in the United States and applied structural equation modeling to identify relationships between exogenous and endogenous factors. He found that higher quality transit service and compactness are, in fact, associated with lower levels of unemployment, poverty, and income inequality.

These findings give credence to the assumption that transit moderates the effect of spatial mismatch on poverty and unemployment. Furthermore, this concrete finding serves to arm local and regional policy makers with tools to promote economic opportunity for disadvantaged populations. Investment in transit service, particularly in service that provides job accessibility for disadvantaged neighborhoods, can have a measurable effect on regional economic measures.

## A NEW PERFORMANCE MEASURE FOR TRANSIT EQUITY

Lyons' dissertation also provided a novel index for objectively measuring social equity in transit service. This methodology improves upon previous efforts to quantify equity in transit by using emerging techniques in geographic information systems (GIS) software and by incorporating a comprehensive set of index components.

The second chapter of Lyons' dissertation describes the development of the Transit Economic Equity Index, or TEEI, which utilizes three components of transit equity:

- Transit Service Convenience
- Non-Peak Hour Service
- System Access

Scores from the three components are averaged to produce an overall TEEI score, which indicates the degree to which a transit system is prioritizing economic opportunity for disadvantaged neighborhoods as compared to their advantaged counterparts. The TEEI can be used by transit agencies in tandem with ridership forecasting, to facilitate the creation of transit systems that are both efficient in terms of their returns on ridership and equitable in terms of their ability to provide economic opportunity for disadvantaged populations.

## HOW DO AGENCIES PLAN FOR EQUITY?

The paper also explores how transit agencies currently provide equitable transit service. Lyons interviewed 16 transit planners at transit agencies of various sizes to understand the way that agencies consider equity, and how these equity considerations are shaped by agency and federal policy. He compared these considerations to themes in the academic literature, and found that while academic efforts have focused primarily on accessibility as the most important facet of equity in transit service, in practice most transit practitioners tend to think about equity in a broader way. Lyons found from the interviews that transit planners conceptualize equity in terms of how the agency conducts business within their community, how they operate internally, and how they provide transit service to disadvantaged residents.

Lyons attributes this broad, more wholistic construction of the notion of equity to Title VI of the Equal Rights Act of 1964. This legal framework for planning for equity is ubiquitously criticized in the academic literature for

being inadequate at measuring the accessibility effects of changes to transit service. Although these claims have merit, Lyons asserts, the framework considers equity in a way that goes beyond just measuring accessibility.

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## ABOUT THE AUTHORS

This research was conducted by Torrey Lyons of the University of Utah.


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## THE FULL REPORT and ONLINE RESOURCES

For more details about the study, download the full report at <https://nitc.trec.pdx.edu/research/project/1188>

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