



CALTRANS DIVISION OF RESEARCH,
INNOVATION AND SYSTEM INFORMATION

Research Results

Developing Metrics to Measure Equity in Transit or Rail Projects

Developing measurable equity metrics in transit and rail projects allowing Caltrans to better expand mobility and job opportunities to disadvantaged communities.

Modal

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Project Title:

Developing Metrics to Measure Equity in Transit or Rail Projects

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WHAT WAS THE NEED?

Transportation policy is tied to social policy, with transit investment decisions playing an important role in determining equity outcomes. Projects that benefit high-income, single-occupancy automobile drivers may harm lower-income transit riders as well as pedestrians and bicyclists. Transit planning, policy, and operational decisions can also affect an array of equity outcomes, each of which may be useful to measure.

WHAT WAS OUR GOAL?

The research team was to recommend changes to policy, such as how capital and operating funds are allocated. Also recommend process changes, such as how decision makers at transit agencies, metropolitan planning organizations, cities and counties, and the State of California should consider equity in management and operations decisions, or how to ensure full public input is part of the decision process for funding capital and operations.

WHAT DID WE DO?

The research team conducted a case study that measured how well the Santa Cruz County Metropolitan Transit District (METRO) serves its county's most transit-dependent and underserved populations. Spatial analysis was performed by overlaying socio-demographic data from the American Community Survey (ACS) on METRO General Transit Feed Specification (GTFS) data to determine whether METRO service adequately meets the needs of the region's most disadvantaged groups. Results indicate that while there are meaningful and statistically significant correlations between the standard Title VI metrics (race and income) and the other metrics evaluated, these correlations are, for the most part, weak. This case study demonstrates that current Title VI guideline metrics may miss significant measures of transit equity for transportation-disadvantaged populations. These findings



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from both the literature review and the case study reveal that there is a compelling need for new metrics on both theoretical and empirical grounds.

Additionally, at the request of the project's client (the California Department of Transportation), the research team qualitatively evaluated methods and metrics for evaluating the effects of new transportation infrastructure investments on neighborhood secondary housing displacement using literature review and interviews with planning professionals.

WHAT WAS THE OUTCOME?

Review of the literature and transit practices found that FTA Title VI requirements have significant shortcomings for measuring transit equity. These are:

- They only look at race and income.
- They only address planned service change inequities and not existing inequities.
- They do not set standards for defining and measuring equity.

The literature contains numerous examples of proposed equity measures, but many are not suited for practice because of their data collection and analysis requirements. One concern is with displacement due to the construction of new transit facilities or with secondary displacement due to gentrification from new transit facilities. However, this is of limited applicability because displacement due to gentrification has been found very difficult to predict.

Identifying and diagnosing transit service inequities are difficult since public hearings are typically least accessible to groups with low incomes who often have the greatest equity concerns. To address this, San Francisco MTA has done extensive door-to-door survey work in historically disadvantaged neighborhoods to identify transit needs.

Equity is also a matter of process (i.e., how well equity concerns are integrated into transit agencies' day-to-day processes). For example, Los

Angeles Metro has adopted the goal of making equity a prime consideration in every agency action. While analysis found statistically significant correlations between the standard Title VI metrics (race and income) and alternative metrics, these correlations were weak. This demonstrates that current Title VI metrics may miss significant aspects of transit equity for transportation disadvantaged populations.

WHAT IS THE BENEFIT?

The literature and practice review includes findings on evaluating neighborhood displacement risk and the potential for individual anti-displacement strategies to mitigate that risk. Based on these findings, the research team concludes that the available methods for forecasting secondary displacement effects of transit infrastructure improvements are not mature enough to be used in practical applications. However, there are benefits to using descriptive and comparative methods of displacement that will identify potential risks.

The evaluation of new transit equity metrics found that the current standard practice metrics (race and income) likely miss critical aspects of equity, and therefore, it is recommended that practitioners employ new metrics that will capture these overlooked populations who may not have the access to the transit services they require. Practitioners should consider additional metrics such as households without personal vehicles, female-headed households with children, and households without internet—which all show potential to help to identify these overlooked populations.

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<https://transweb.sjsu.edu/research/2100-Public-Transit-Equity-Metrics-Measurement>
<https://dot.ca.gov/-/media/dot-media/programs/research-innovation-system-information/documents/final-reports/ca23-3519-a11y.pdf>