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Optimizing Multimodal Transportation Access to Support Commuting Among Low-Income Transit Riders with Social Distancing

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Introduction

The FRT bus ridership of LA Metro had been experiencing a steady decline in ridership during pre- COVID-19 pandemic in early 2020. However, LA Metro's FRT buses, popular among low-income riders, experienced an over 50% ridership decline with the pandemic's onset (compared to pre-pandemic years), but has been steadily rising since then, albeit at a slower pace. Transit authorities increased FRT services in the pandemic periods to ensure minimal crowding at the bus stops and inside the buses. With COVID-19 hard-hitting the livelihood of many Americans, but especially those in low-income households, the affordability to use private vehicles for commuting has been reduced. Thus, the dependency on A Line has only further increased during the pandemic and could remain the same or worsen post-pandemic. As travel activity picks up again, crowding in several public transit system components (buses, trains, stops, stations, etc.) may become a major challenge. Undoubtedly, social distancing measures could see an increased number of violations as the pandemic persists. The crowding and non-compliant passenger behaviors will only add to the woes of low-income riders who may have to continue to endure travel situations made unsafe because of the inability to safely social distance. However, better planning of FRT services as a feeder to access train stations can help mitigate safety concerns for transit authorities and low-income riders.

LA Metro has increased its FRT bus frequencies on some key routes to increase accessibility provided to passengers to reach specific transfer or terminal stations. These measures add to improved accessibility for FRT. However, the challenge remains to integrate such accessibility measures to passenger behavior and the crowding potential at such transfer stations, which often violate social distancing.

Study Methods

The unique contribution of this research is the integration of social distancing into the accessibility formulation for the first time in transit accessibility research. The accessibility is modeled and evaluated for the FRT routes 105, 108, 111, and 115 of the LA Metro's A Line, popular among low-income riders of the Los Angeles County.

Findings

This research shows that social distancing impacts the accessibility of FRT routes 105, 108, 111, and 115 to the LA Metro A Line stations, which are quite popular among low-income commuters of the Los Angeles County. The findings indicate that the maximum FRT accessibility is achieved only for a certain number of stops served. The FRT routes 105, 108, 111 and 115 have maximum accessibility for the 'with' social distancing case for the number of stops served equal to 65, 52, 52, and 50, respectively. The number of stops that are being served by one FRT bus is much higher than these optimal number of stops that should be served.

Policy/Practice Recommendations

The research findings suggest that the frequency of FRT should be set while keeping in mind FRT's impact on accessibility to LA Metro's A Line stations by low-income riders. Only an optimal number of FRT stops should be served to maximize accessibility, which might require further increasing the FRT service frequencies.

About the Authors

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Dr. Chandra is an associate professor in the Department of Civil Engineering and Construction Engineering Management at California State University, Long Beach (CSULB). He obtained his M.S. and Ph.D. in civil engineering from Texas A&M University in 2009 and 2012, respectively. Dr. Chandra has more than 15 years of experience in transportation research focused on transport connectivity, transportation economics, accessibility, urban freight, and sustainability. He has been a principal investigator for several projects funded by various transportation agencies including the California Department of Transportation (Caltrans) and the United States Department of Transportation (USDOT).

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To Learn More

For more details about the study, download the full report at **transweb.sjsu.edu/research/2140**

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