

Vulnerable Road User Transit Optimization with healthcare Privatization (VRUTOP)

Abstract

This research focuses on improving the transit service of vulnerable road users while addressing recent trends in Medicaid transformation. One of the most notorious issues in this transit optimization problem is the difficulty of knowing how much added time cushion should be considered for picking-up each user and transit time. This temporal time uncertainty will be uniquely formulated by taking advantage of the real-world data collected before and after the Medicaid transformation, which will make this research a pioneer in demand response transportation systems. The time-uncertainty model will be designed to improve both fixed and flexible transit operation. The VRUTOP project aims to improve the access to health care in underserved areas using public transportation and Mobility as a Service (MaaS), while considering Medicaid shifts towards privatization with two main objectives: 1) model the interactions between the key contributing trip characteristics influencing the uncertainty of time window, and 2) using these unique patterns, provide a new service tool for paratransit. Alternative operating strategies will be simulated in the optimal policy developed and change the objective function to various performance measures including wait times, transit system volumes, and costs. This initial model will be extended to accommodate real-time operational improvement scenarios (e.g., deviated fixed routes from demand response patterns), create zone-based service structures, and design performance measures, targeted for Medicaid and non-Medicaid populations of trips or individuals to be used in simulation. Supported by actual data in collaboration with concurrent projects from local state agencies, VRUTOP is expected to generate numerous scholarly activities and provide an easy-to-implement tool for state agencies, practitioners, and other researchers.

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