Inter-modal Trip Planning using Open Trip Planner
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ABSTRACT TEXT: Santa Clara Valley Transportation Authority (VTA) created an inter-modal open trip planner (OTP) implementation for Santa Clara County, CA. By injecting large amounts of real-time transit data into the trip planner, VTA has fundamentally changed how transit trip planning operates. Focusing on inter-modal trip planning capabilities and real-time transit information, VTA has provided an innovative experience for existing and potential transit riders. VTA is able to use 100% of the data collected by the OTP to improve transportation in Santa Clara County. Providing multi-modal opportunities to the community will improve transport opportunities for all. The project is based on open-source software and is currently available on the VTA website; tripplanner.vta.org

Stop-Level Planning Analysis in a Deviated Fixed Route Flag-Stop System
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ABSTRACT TEXT: Impossibly large amounts of data collected onboard buses every day. This information is becoming vital to the day-to-day operation of transit services. Yet, it can be unwieldy, particularly when looking to comprehensively evaluate an entire system under so-called normal conditions. For the Mountain Line Transit Authority (MLTA) in Morgantown, West Virginia, as part of the Route Efficiency and Vehicle Maximization Study, we developed a method to cull out of a year's worth of data a ridership profile for a normal weekday, Saturday, and Sunday. In order to evaluate route and stop-level efficiency, we also needed to generate stop-level ridership characteristics.

However, MLTA operates a primarily flag-stop system on deviated fixed routes, so the locations of boardings and alightings span the entire service area and are not tied to specific bus stop locations, only to route, which also covers a wide swath. To that end, we developed a method for aggregating flag-stop data into discrete stop locations along each route/route zone using a cluster analysis in GIS. We then attributed normal ridership conditions to each stop and used the information to evaluate the efficiency of routes and route segments and later to estimate the level of impact on ridership from routing recommendations and to identify key locations where a designated bus stop may be more efficient than flag stops.

The methods developed for this study are applicable as examples of how average conditions can be estimated from continuously collected data for system-wide planning purposes and how stop-level ridership can be estimated in a flag-stop system of deviated fixed routes. As non-traditional, more flexible service modes, including route deviation, become increasingly popular, methods for aggregating data on these less standardized modes for performance evaluation, planning, and even comparison to traditional fixed route service become more widely applicable.