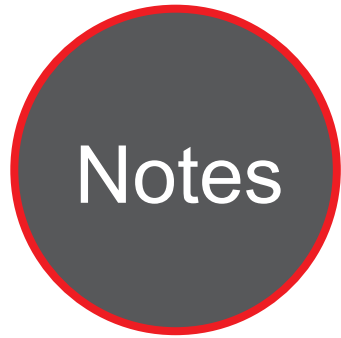




Caltrans Division of Research,
Innovation and System Information

Research



Notes



Planning, Policy &
Programming

MAY 2020

Project Title:
National Center for Sustainable
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Task Number: 3397

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Task Manager:
Kayo Lao
Associate Transportation Planner
kayo.lao@dot.ca.gov

Fighting For Curb Space: Parking, Bike Sharing, Urban Freight Deliveries, Ride-Hailing, And Other Users

This research fills a gap by conducting empirical analyses to quantify total curb demand.

WHAT IS THE NEED?

In many urban areas, curb space management is a key determinant towards a sustainable transportation system. This is because new trends in passenger and freight transportation demand require access to this limited asset. On the passenger side, in addition to efforts to increase pedestrian and bicycle traffic, and transit ridership, the advent of ride-hailing services has created a surge in curb demand. As a reference, a few years ago, taxis represented around 1% of the vehicle trips in San Francisco, ride-hailing trips are 15% of the total today. Similarly, electronic commerce growth (double-digits yearly) and residential deliveries require more curb access for freight loading/unloading activities. Aggravating the issue, ride-hailing companies are offering goods delivery services pressuring an already contested and congested system.

WHAT ARE WE DOING?

The work is conducted in three main fronts. First, the team reviewed the literature on parking and curbside management policies, strategies, and guidelines. Moreover, the team reviewed the general literature about curb and parking demand. Second, the team used the results of the Metropolitan Transportation Council Activity Based Model (MTC-ABM) to identify the trip demand to and from a number of case study areas in the city (e.g., residential, commercial, and mixed). Moreover, the team used aggregate models for demand of commercial deliveries, through the relationship between aggregate demand and socio-economic variables of the study area. Finally, the team



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California's transportation system

designed a number of scenarios to evaluate the impacts of different parking assumptions and curb management strategies. The team evaluated these scenarios by combining the results from the MTC-ABM and a microsimulation model using SUMO.

WHAT IS OUR GOAL?

This project leverages ongoing research on the development of a bike-sharing system, transit access programs through ride-sharing, and freight trip generation to develop an integrated spatial simulation framework to quantify curb demand.

WHAT IS THE BENEFIT?

There is evidence of the impacts of curbside and parking management for the design and planning of urban areas. While this problem may affect dense urban areas access to the final destination (either for goods or people) will impact other transportation decisions that span over the boundaries of the urban core. Whether the impacts of ride hailing for the sustainability of the transportation system are not completely understood, these services offer a mobility option for a proportion of the population, offer accessibility to others, could replace single-occupancy vehicles, and could increase transit ridership. Some of these benefits would not be realized in the long run if the quality of service degrades, or if access to it gets difficult. Access to the curb for passenger loading and unloading is an important contributor to the efficiency of these services. Some of these aspects have implications in the planning geographic scope of urban, regional, and state level agencies such as Caltrans. Similarly, access to the curb for commercial goods delivery affect the efficiency of the operations with cascading impacts on decisions such as type of vehicle used, vehicle technology, distribution routes, and facility location, among others. These decisions, again, have implications beyond the urban level.

WHAT IS THE PROGRESS TO DATE?

As of February 2020, the research team finalized the simulation process, the analyses of results, and synthesized the findings. The team is currently drafting the final report.

IMAGES

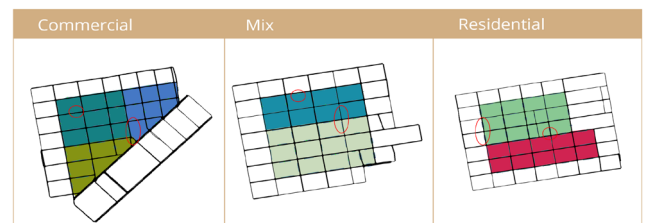
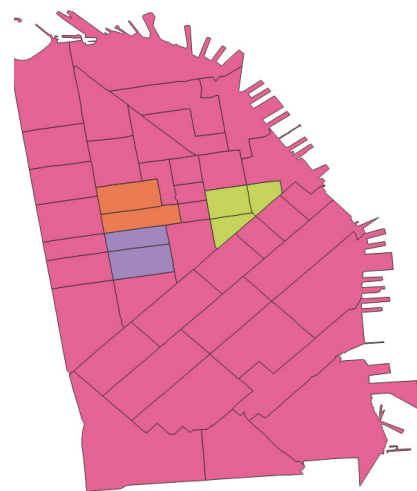


Image 1: Selected Areas in San Francisco

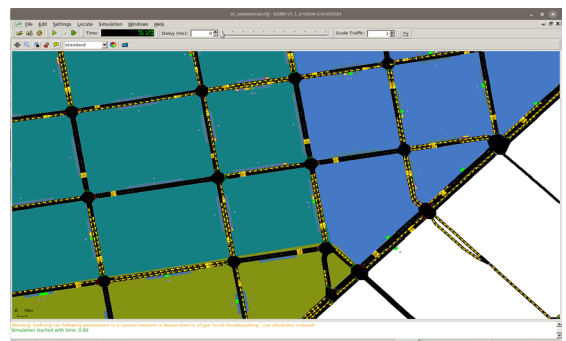


Image 2: Micro-simulation Example

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