



Caltrans Division of Research,  
Innovation and System Information

# Research



# Results



Transportation  
Safety and  
Mobility

JUNE 2018

**Project Title:**

UTC - Mobile Apps and  
Transportation: Exploring Data  
Metric Potential and User Response  
to Multi-modal Traveler Information  
(UCCONNECT)

**Task Number:** 2867

**Completion Date:** April 1, 2016

**Task Manager:**

Stan Chow,  
Transportation Engineer  
stan.chow@dot.ca.gov

## UTC - Mobile Apps and Transportation: Exploring Data Metric Potential and User Response to Multi-modal Traveler Information (UCCONNECT)

This project proposes a two-pronged approach focused on a broader suite of mobility apps and Ridescout.

### WHAT WAS THE NEED?

The proliferation of innovative mobility options within American cities in recent years has greatly enhanced transportation alternatives for public, but it has simultaneously presented a challenge for transportation planners. Mobility resulting from increased multi-modalism is best measured through person miles traveled (PMT) as opposed to vehicle miles traveled (VMT). However, PMT is measured through comprehensive but infrequent surveys. As travel becomes more multi-modal, there are challenges associated with tracking that behavior. However, mobility "apps", such as multi-modal trip aggregators, can play a role in better understanding this behavior. First, many of these apps have a customer base engaging in multi-modal behavior. Second, these apps collect real-time information about travel/ trip options as part of their operation. Together, these two features provide an opportunity to study users to better understand multi-modal decision making as well as to discover how data collected by mobility apps could be used to inform better PMT measures for transportation planners.

After conducting a literature review, the research team will develop a matrix of leading & emerging smart phone apps to provide an understanding of the range and potential of these tools to support transportation demand management and planning. Further, researchers will conduct expert interviews with mobility app designers to develop designs for data protocols that could be used to generate PMT measurements. Through a partnership with RideScout, a leading mobility app, this study will develop a deeper understanding of multi-modal decision-making and impacts through a user survey. This study will synthesize these results into a report that advances understanding of multi-modal travel facilitated through apps, as well as to discuss potential



DRISI provides solutions and  
knowledge that improves  
California's transportation system

pathways for using app data to more dynamically measure PMT.

## WHAT WAS OUR GOAL?

This research would encapsulate information from the mobile app census, expert interviews with mobile app developers, and the online RideScout user survey would be employed to produce a primer on mobile apps and their potential to impact travel behavior and to provide a new data resource. The results would advance our understanding of how multi-modal trip aggregators can enhance transportation mobility, influence user decisions making, and provide valuable mobility data to support future transportation planning.

## WHAT DID WE DO?

The researchers from University of Berkeley conducted the following tasks:

Task 1: Literature Review

Task 2: Research Tools and Obtain Institutional Review Board Approval

Task 3: Review of Mobility Apps

Task 4: Data Design Based on New Transportation measures

Task 5 Impact Analysis through RideScout Online User Survey

Task 6: Data Analysis

Task 7: Final Report

## WHAT WAS THE OUTCOME?

The results of the survey show that multimodal information apps can improve the public transit experience of those using them and enable

people to use public transit more. The results do not indicate that the impact is incredibly large, and naturally there is some self-selection in the sample. It is important to note that the survey is of people who downloaded the app, with an interest in using it. They sought the utility of acquiring information through the app. But self-selection is part of the process of using any transportation technology in that people seek to acquire the technology/service that works for them. The responses show among respondents that information has value and to some extent it is enabling increased public transit use and decreased driving. Furthermore, the responses show that the mobile payment capabilities of public transit have value that should improve the overall public transit experience. These results suggest that there is a utility for multimodal transportation information in certain environments and situations, and this utility generally advances the use less energy-intensive travel modes.

## WHAT IS THE BENEFIT?

Smartphone apps have become a mainstay of the mobile experience. With increasing choices and in capabilities, the utility of apps has enhanced the experience and capacity of people to achieve important daily objectives standing almost anywhere in the country. These benefits have broadly extended to transportation in a very real way, with a number of different multimodal apps that have expanded access to operational information about mobility options, with urban transportation, as well as freight, sharing, insurance, gamification, among other arenas. We found among mobile app users that these enhancements have a benefit to the user experience, as well as to the broader transportation system. The apps were found to reduce driving and increase public transit use, even if only among a minority of users. The broad conclusion is that information, as provided on these platforms, can make a difference in a positive way. The magnitude of this difference is a function of the quality of the app, the quality of the public transit system, and the utility of the information provided. It is clear



that information can play a role in advancing public policy objectives related to reducing the energy intensity of mobility. Expanding commuter benefits to incentivize multimodal trips could encourage the use of a broader variety of modes and services. This could be enabled by allowing smartphone apps access to pre-tax commuter accounts (e.g., journeys could be paid for by using pre-tax payroll deductions), employer provided use (e.g., mechanisms that allow employers to pay for commute expenses directly to an app service provider), and providing app-based commuter incentives linked to a user's modal choice (e.g., incentives for carpooling or riding public transit, calculated and awarded based on a person's app account). These policies and other technical enhancements may work together to improve public transit operations and provide greater mobility at a reduced personal and environmental cost.