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CALTRANS DIVISION OF RESEARCH, INNOVATION AND SYSTEM INFORMATION
TRANSFORMING IDEAS INTO SOLUTIONS

Research Results

Equity in Payments for Transit and Congestion Charging

Develop a framework for improving users' equitable access to, and experience of, payment across all modes of transportation.

Modal

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Project Title: Equity in Payments for Transit and Congestion Charging

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WHAT WAS THE NEED?

Every American must "pay for" transportation and mobility services– whether it's loading up a contactless payment card such a Clipper and TAP, grabbing $2.25 for bus fare, downloading a new app to try out a Transportation Networking Companies, putting a transponder in their vehicle to cover bridge/road tolls, or paying a gas tax when at the pump. More and more Americans are relying on credit or debit cards for transportation transactions (Federal Reserve, 2020), yet 25% of Americans remain underbanked or unbanked, lacking access to Europay, Mastercard, and Visa (EMV) payment methods (CNBC, 2019). This behavior change substantially increases the need for convoluted payments systems to anticipate various forms of payment.

Simultaneously to this trend, many state Departments of Transportations (DOTs) are implementing, or beginning to consider Road Charge programs, to alleviate the projected gas tax revenue decline as vehicles transition from gas-powered to zero-emission vehicles (ZEV) or electric vehicles. This transition results in the need to have a deeper, first-party relationship with the payee/driver, meaning that there will be a significant possible increase in transaction volume handled by state DOTs that are not currently tolling operators.

Currently, there is no framework to indicate what elements and standards payment systems provide to achieve the most effective approach for an equitable and interoperable system across a variety of transit providers. As a result, there is a need for complete and intersectional research to guide decision-makers in planning and designing payment systems that address the equity impacts and equity opportunities to increase mobility access for all users across all transportation forms, regardless of access to technology, economic status, or banking status.

Caltrans

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

WHAT WAS OUR GOAL?

The proposed research was to develop a data-driven and stakeholder-reviewed framework for improving users' equitable access to, and experience of, payment across all modes of transportation. This framework should incorporate proposed shared standards to make it easier for all users to pay for and use the transportation system, increase the efficiency of transactions, and enable cross-modal payments and incentives to encourage mode shift to increase transit ridership.

WHAT DID WE DO?

The University of California, Los Angeles Institute of Transportation Studies (UCLA ITS) undertook a request to study equity in transportation payments under the direction and with the financial support of the California Department of Transportation (Caltrans). The purpose of this study was to a) identify existing transportation payment processes and the equity implications of these existing systems, b) outline emerging trends and the equity implications of technological solutions for future and cross-modal payment solutions, c) make recommendations concerning the implementation of a framework that will allow California's transportation providers to choose payment solutions that meet local goals of operational efficiency as well as state goals for interoperability while at the same time ensuring equitable access, especially for persons with no smartphone and/or bank access.

To understand how the quickly evolving needs of the transportation industry, expectations of users, and developments in payment technologies fit together, UCLA ITS researchers undertook a multi-part investigation that included literature reviews, an inventory of existing transit payment systems around the world and parking systems, expert interviews, advisory committee stakeholder meetings, a look at six case studies, and an evaluation of existing payment solutions and outside of the transportation sector.

WHAT WAS THE OUTCOME?

The UCLA ITS' recommendations flow from the results and findings of their study of transportation payment systems, which included an inventory of 49 systems worldwide, an in-depth look at seven integrated systems, expert interviews, and consultation with our advisory committee.

Their recommendations assume that cashless will be the predominant payment method for travel in California in the near future. As discussed, cashless payments offer has many operational benefits for transportation providers, and significant benefits for users as well, especially when paired with account-based discounts, rewards, incentives, and fare capping or ticket-based seamless travel.

A coordinated move to cashless payments, facilitated by a statewide adoption of the California Integrated Travel Project (Cal-ITP)-style options for the industry, will likely expand and enhance equity outcomes for low-income Californians, particularly transit users, by offering more payment options.

Drawing from our findings, we recommend a pathway to cashless using specific payment types and methods that: a) make use of existing payment infrastructure, b) improve operational efficiency and flexibility, c) have the potential for cross-system integration for seamless travel, d) improve access for people with disabilities, e) provide easier and more equitable outcomes for travelers eligible for low-income transportation payments, f) offer payment options for people without a US bank account and/or smartphone, and g) retain as little personally identifiable information as possible to protect user privacy.

Our recommendations center on the following payment types (or means of purchasing):

- Visa (credit or debit)
- Mastercard (credit or debit)
- Discover (mostly credit, limited debit)
- American Express (mostly credit, limited debit)

- California Mobility Card (for both payment and as stored value)

And following payment methods (or means of transaction):

- Physical card (via Europay, Mastercard, Visa [EMV] payment network)
- On-device NFC wallet (Apple Pay, Google Pay, Samsung Pay, etc. via EMV payment network)
- Payment via smartwatch or other device via the EMV payment network)
- QR Code or Barcode ticket (that can be purchased with the above payment types), possibly standardized as the "California Mobility Ticket," purchased with the above payment types.

The cornerstone of this recommendation is a new California Mobility Card (CMC), which will function on the payment validators and networks required to accept contactless bank card payments and can be used either to purchase tickets (e.g., at a ticket vending machine [TVM]) or be used as a fare/ticket itself (e.g., tap to pay).

WHAT IS THE BENEFIT?

The Cal-ITP should continue its work (Cal-ITP Benefits) to improve interagency coordination and customer experiences for discount eligibility verification (California Integrated Travel Project, 2022). The organization may consider whether it will need to modify its future work plan to accommodate other recommendations in this report, particularly for a potential integration between the implementation of the California Digital ID Framework and Strategy and master contracts for payment processors (State of California, n.d.).

Local agencies offering parking, public transit services, and tolled transportation facilities should also continue work to streamline eligibility verification for discount programs.

The combination of bank card tap-to-pay and the California Mobility Card offers flexibility to operators and familiarity to users. In addition, the use of a standard ticket system for transportation, compatible with nearly all forms of payment, would provide for California cities, tolling authorities, and transit agencies an equitable payment system that:

- Makes use of existing payment infrastructure.
- Improves operational efficiency and flexibility.
- Has the potential for cross-system integration for seamless travel.
- Improves access for people with disabilities.
- Provides easier and more equitable outcomes for travelers eligible for low-income transportation payments.
- Offers payment options for people without a US bank account and/or smartphone.
- Retains as little personally identifiable information as possible to protect user privacy.

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