

Mobility-on-Demand (MOD) Overview

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Presentation Overview

- Trends driving MOD
- What is Mobility on Demand?
- How does MOD differ from MaaS?
- FTA MOD Sandbox
- MOD resources

Trends: What's Driving MOD?

Societal Trends



- Over the next 30 years, the U.S. population is expected to grow by 70 million
- By 2045, the number of Americans over the age of 65 will increase by 77%
- 20% of population with disabilities
- Urbanization

Technological Trends



- Transportation is increasingly relying on data
- Prevalence of mobile devices
- Automated transportation offers new possibilities
- Integration of services

Mobility Trends



- On average, Americans spend over 40 hours stuck in traffic each year, costing \$160 billion
- There is growing popularity of shared mobility services
- Focus on TDM
- Dynamic management

Shifting Transportation Landscape

Innovative partnerships and new technologies are changing how we travel

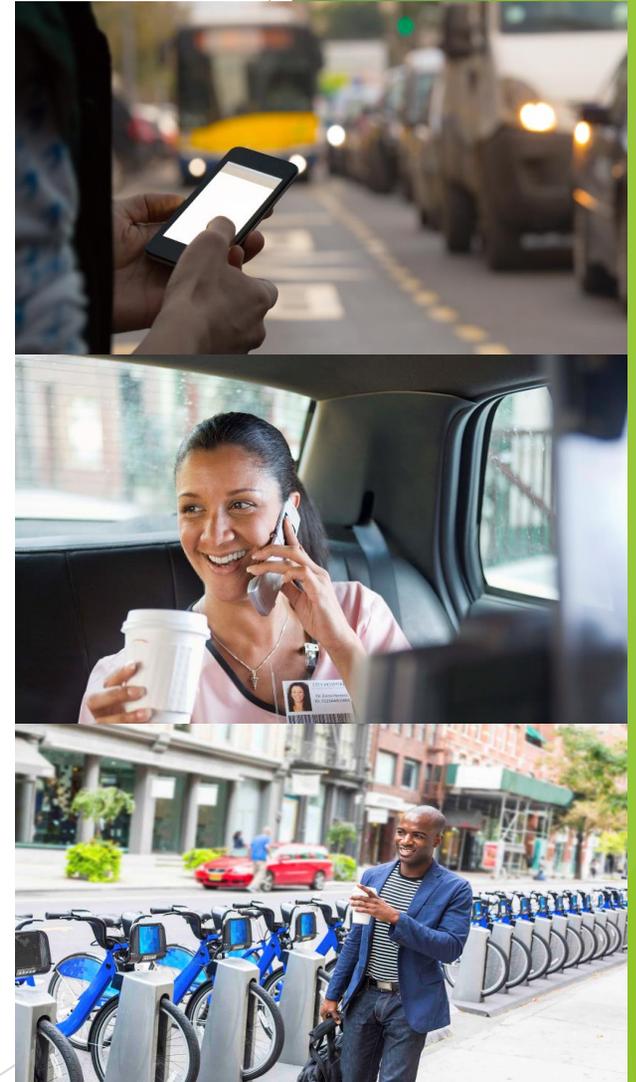
- State and local DOTs are looking at shared mobility and volunteer drivers to address service gaps
- Integrated multimodal traveler information apps
- Carpooling and ridesharing start-ups enabling high-occupancy commuting
- Auto manufacturers rebranding as mobility companies, acquiring start-ups, and pursuing self-driving vehicles
- Mobility as a Service (MaaS) piloting in Europe (e.g., Finland, Sweden, Netherlands)
- Recognizing importance of mobility management not just traffic management



What is Mobility on Demand (MOD)?

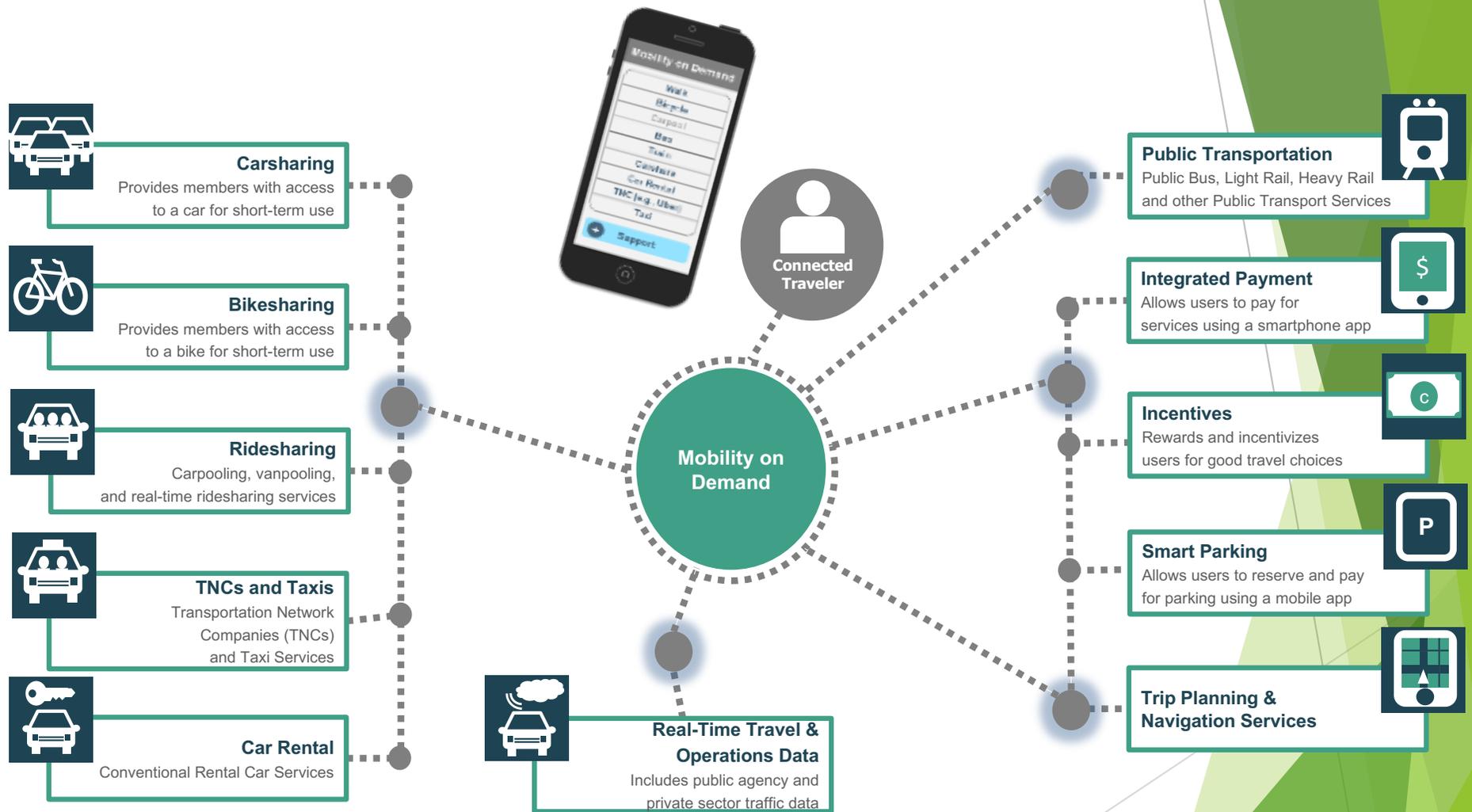
Vision for an integrated and connected multi-modal network of safe, carefree, affordable, and reliable transportation options that are available to all

- User-focused options to improve personal mobility and access to more destinations
- Promotes choice in personal mobility & optimizes transportation system through electronic and wireless communications
- Advances connected vehicles & automation applications
- Uses emerging technologies & data exchange to enable personal mobility
- Encourages multimodal connectivity & system interoperability



(Sheehan, 2018)

User-Centric Mobility



MOD Enablers



Business Models & Partnerships

Strategic Partnerships
Financing
Incentives
Shared Use



Infrastructure

Land Use
Built Environment
Transportation Infrastructure
Dynamic transit service



Policies & Regulations

Equity Considerations
Safety Considerations
Mobility Issues
Standardization



Emerging Technologies

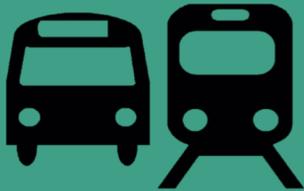
Wireless Networks
GPS/Sensors
Big Data and Predictive Analytics
Mobile Devices

Who Benefits from MOD?



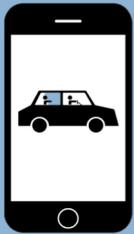
Travelers

- Access to more transportation options
- Builds a more efficient, effective, and customer-centered transportation network



Public Transit Providers

- Connects ALL regional transportation services and assets into a seamless public transit network
- Extends service quality and coverage



Shared Transportation Providers

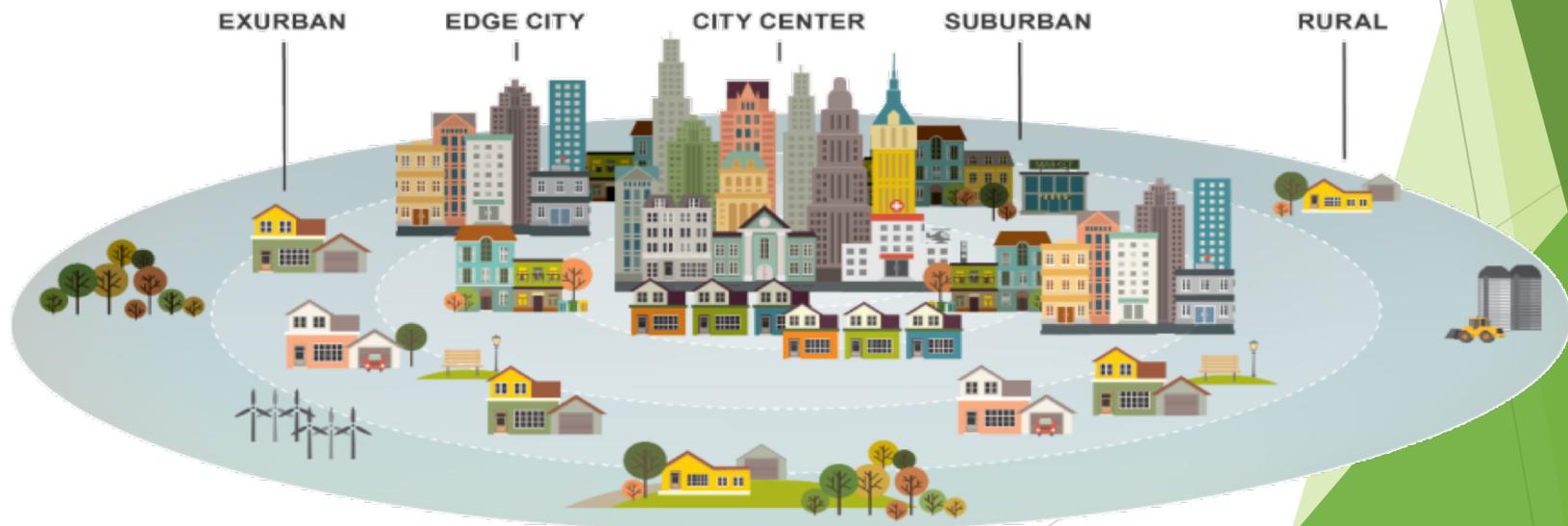
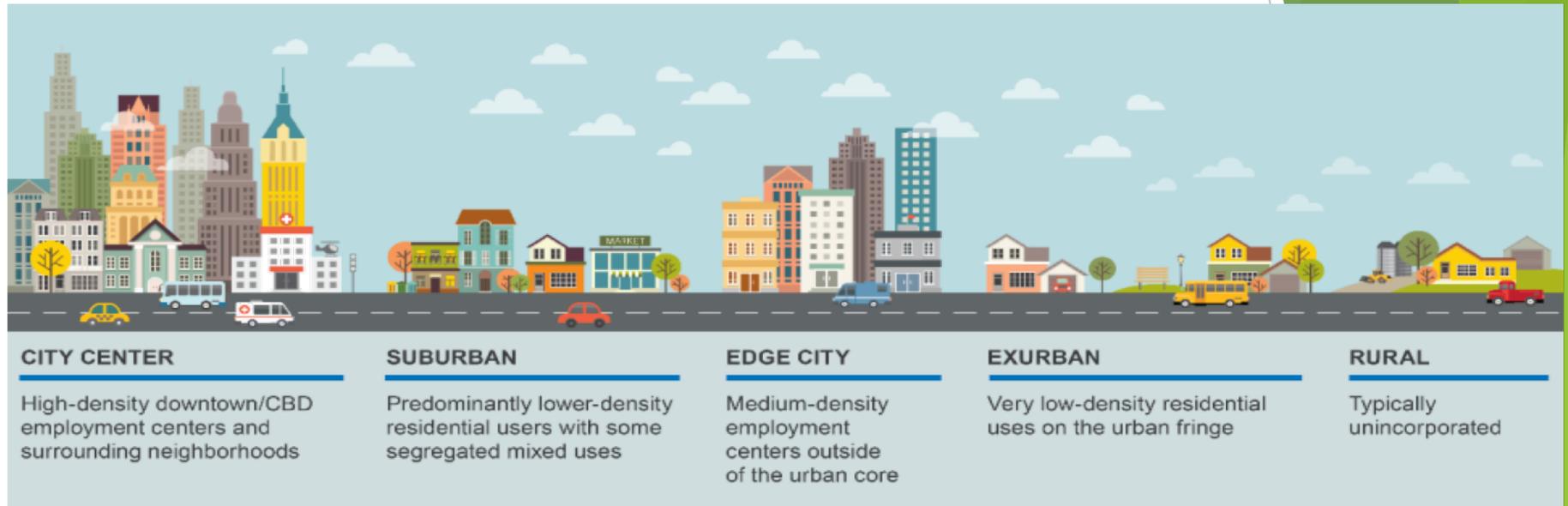
- Connects travelers to provider services
- Provides an easy to use, common technology platform for mobility options



Traffic and Mobility Managers

- Streamlines information for transportation options
- Growing employment and transportation partnerships

MOD - Not Just A City Center



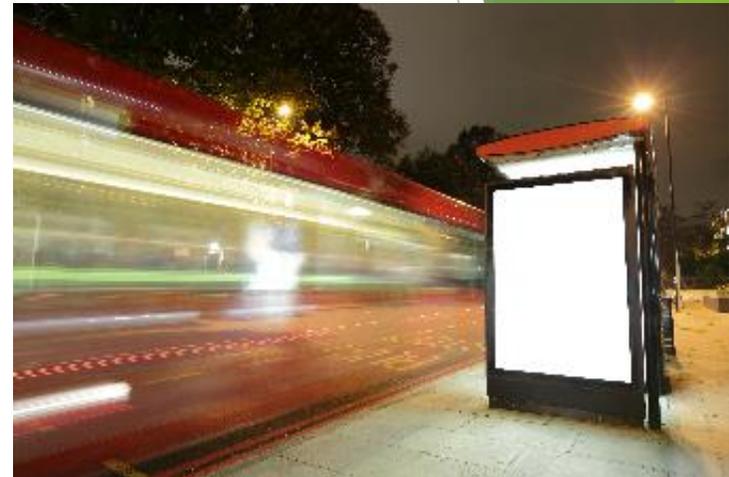
How Does MOD Differ From MaaS?

- ▶ **MaaS** emphasizes a digital platform integrating curb-to-curb trip planning, booking, electronic ticketing, and payment services across all modes of transportation (public and private)
- ▶ **MOD** focuses on commodification of transportation services.
 - ▶ A distinct concept based on principle that transportation is a commodity where modes have economic values that are distinguishable in terms of cost, journey time, wait time, number of connections, convenience, and other attributes
 - ▶ Includes passenger travel and goods delivery
 - ▶ A recognition that goods delivery and digital delivery could serve as a substitute for passenger travel

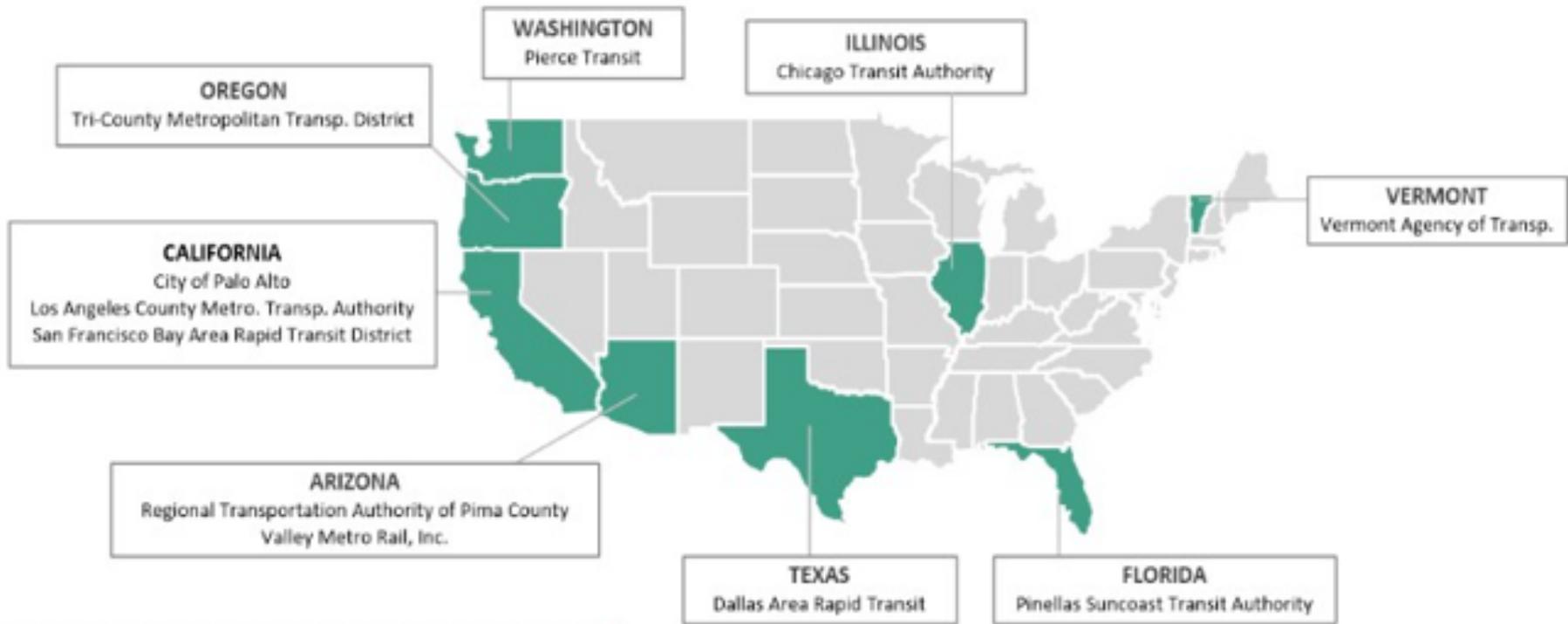
FTA MOD Sandbox Program Overview

Demonstration Program to Explore MOD Models

- ▶ Explores innovative approaches
- ▶ Empowers project teams to implement innovative business models
- ▶ Informs the MOD program on how to support future deployments



FTA MOD Sandbox Awardees



**11 Selected Projects:
\$7,931,080**

FTA MOD Demonstrations Overview

PROJECT SPONSOR	DESCRIPTION
Chicago Transit Authority (CTA)	Incorporate the local bike sharing company, Divvy, a 580-station bike share service, into CTA's existing transit trip planning app (\$400,000).
Dallas Area Rapid Transit (DART)	Integrate ride-sharing services into its GoPass ticketing app to solve FMLM issues (\$1,200,000).
Los Angeles County Metropolitan Transportation Authority	Two-region mobility on demand partnership with the ridesourcing company, Via, in Los Angeles and Seattle to provide FMLM mile solutions (\$1,350,000).
City of Palo Alto	Proposed solutions seek to reduce Bay Area single occupancy vehicle (SOV) commute share from 75% to 50% through a Fair Value Commuting (FVC) solution (\$1,080,000).
Pierce County Public Transportation Benefit Area Corporation	Utilize Limited Access Connections project, an initiative connecting Pierce Transit local service and Sound Transit/Sounder regional service with local ride-share companies to increase regional transit use (\$206,000).
Regional Transportation Authority (RTA) of Pima County	Adaptive Mobility with Reliability and Efficiency (AMORE) project, integrating fixed route, subscription based ride-sharing and social carpooling services into an existing data platform to provide affordable, convenient and flexible service (\$670,000).
Pinellas Suncoast Transit Authority (PSTA)	A set of partnerships with Lyft, United Taxi, CareRide, the Center for Urban Transportation Research (CUTR), and Goin' Software to develop a model to provide more cost-effective on-demand door-to-door paratransit service (\$500,000).
San Francisco Bay Area Rapid Transit	Partnership between Scoop Technologies, Inc. (Scoop), the San Francisco Bay Area Rapid Transit (BART) District, and the Metropolitan Transportation Commission (MTC) to better integrate carpool access to public transit by matching passengers according to their destination, and by providing a way to reserve and pay for parking spaces at BART stations (\$358,000).
Tri-County Metropolitan Transportation District	In corporate shared use mobility (SUM) options into the Open Trip Planner (OTP) project, that will create a platform integrating transit and shared-use mobility options (\$678,000).
Valley Metro Rail, Inc.	Smart phone mobility platform that integrates mobile ticketing and multimodal trip planning (\$1,000,000).
Vermont Agency of Transportation	Statewide transit trip planner that will enable flex-route, hail-a-ride, and other non-fixed route services to be incorporated in mobility apps (\$480,000).

MOD Program Contacts

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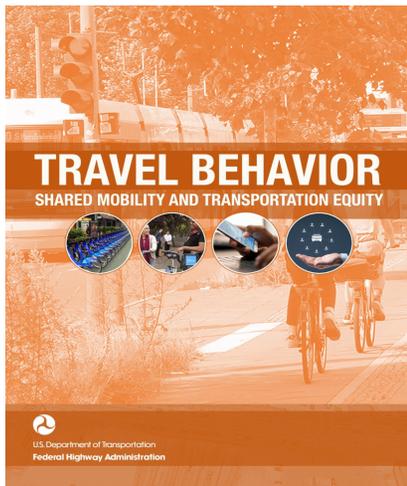
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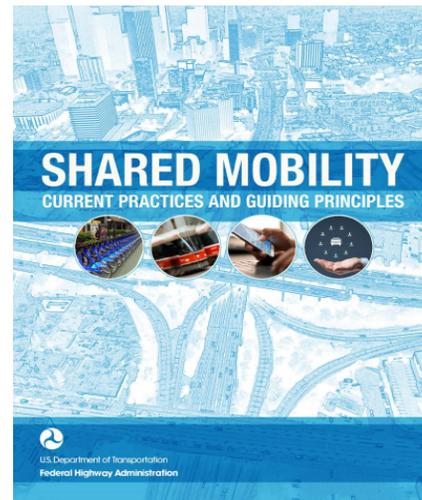
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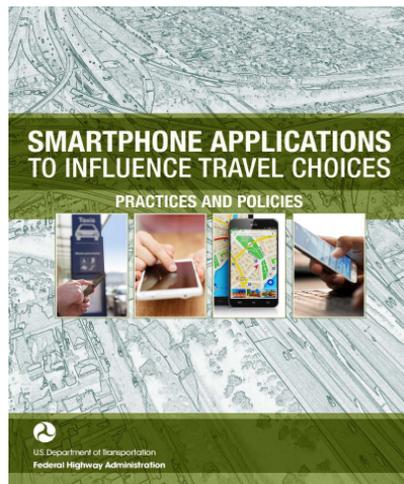
USDOT MOD Resources



https://www.fhwa.dot.gov/policy/otps/shared_use_mobility_equity_final.pdf



<https://ops.fhwa.dot.gov/publications/fhwahop16022/fhwahop16022.pdf>



<https://ops.fhwa.dot.gov/publications/fhwahop16023/fhwahop16023.pdf>

Mobility on Demand

Operational Concept Report

www.its.dot.gov/index.htm

Final Report – September 2017
FHWA-JPO-18-611



<https://rosap.ntl.bts.gov/view/dot/34258>

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TECHNOLOGY
NVIDIA and VW collaborate to apply artificial intelligence technology to broader transportation challenges. The organizations had previously partnered to develop driverless vehicles and will continue to use machine learning applications for urban traffic flow optimization.

RIDESHARING
Uber and Yandex combine their Russian ridesourcing business. Both companies stated they would join forces in Russia, Armenia, Azerbaijan, Belarus, Georgia, and Kazakhstan to create a company that will operate in 127 cities. Russia's federal anti-monopoly regulatory body states the action would need approval as it potentially poses risks to competition.

APPS
TransLoc and Google announce partnership to ensure accurate public transportation data are integrated into Google Maps. This partnership will allow TransLoc to manage larger volumes of real-time transit information for agencies and vastly improve access to public transit information for riders.

PUBLIC TRANSIT
Paris launches autonomous EV shuttle service pilot program. Two companies, Navya and Keolis, are partnering with the Parisian government to offer the service free of charge. The shuttles carry up to 15 people each and will operate three different daily routes. The pilot will run until at least December of this year.

BIKESHARING
Seattle allows private bikesharing on city streets, with as many as 10 companies planning to launch under the new program. Interested companies must roll out a minimum of 500 bikes and pay an operations fee to the city. This may lead to hundreds of thousands of dollars in public revenue. Helmet laws will still be enforced for users of the systems, but companies are not required to provide such helmets.

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innovative mobility

INNOVATIVE MOBILITY: CARSHARING OUTLOOK

CARSHARING MARKET OVERVIEW, ANALYSIS, AND TRENDS • Winter 2018

TRANSPORTATION SUSTAINABILITY RESEARCH CENTER • UNIVERSITY OF CALIFORNIA, BERKELEY

By Susan Shikany, Ph.D., Adam Cohen, and Mark Saffell

DOI: 10.5072/TSCM2018010

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PEER-TO-PEER CARSHARING MARKET TRENDS IN NORTH AMERICA

Peer-to-peer (P2P) carsharing employs privately owned vehicles made temporarily available for shared use by an individual or members of a P2P carsharing network. Expediently, such as insurance, are generally covered by the P2P operator during the access period. In exchange for providing the service, operators keep a portion of the usage fees. Members can access vehicles through a direct key or combination transfer from the owner or through operator-installed technology that enables "unattended access." Although P2P carsharing is more commonplace in the United Kingdom, Netherlands, Germany, and other parts of Europe, the market continues to grow steadily in North America. For instance, the P2P carsharing operator, Turo, expanded into Canada in April 2017, becoming the first American P2P operator to enter an international market.

As of January 2017, six P2P operators were active in North America and one in South America. Two more are planned for launch in North America. However, some operators reported ongoing legislative and insurance challenges, which pose barriers to expansion. TSC researchers collected P2P carsharing data and fleet size / member estimates from the media, and primary sources from January 2014 through January 2017. As of January 1, 2017, a total of six P2P carsharing operators shared 131,336 vehicles with 2,904,180 members. Between January 2016 and January 2017, P2P carsharing membership increased 115%, and the number of P2P carsharing vehicles increased 80%. All P2P operators surveyed were for-profit operations. For more information on P2P service models, please refer to US Department of Transportation Primer (2016) <https://www.transportation.gov/sites/dotgov/files/2016-07-27-transportation-primer-2016.pdf>

P2P in North America (n=6)	Jan. 2016	Jul. 2016	Jan. 2017
Members	1,378,124	2,694,303	2,904,180
Vehicles	77,789	98,546	131,336

Note: previous site visits were used for one out of six P2P operators in North America

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Shared Mobility Resources: http://innovativemobility.org/?page_id=2762

Acknowledgements

- ▶ Shared mobility operators, experts, and industry associations
- ▶ Federal Highway Administration
- ▶ Federal Transit Administration
- ▶ Mineta Transportation Institute, San Jose State University
- ▶ California Department of Transportation
- ▶ Adam Cohen, Rachel Finson, Elliot Martin, Adam Stocker, Hannah Totte, Mark Jaffee, Marcel Moran, Mikela Hoffman-Stapleton, TSRC, UC Berkeley

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