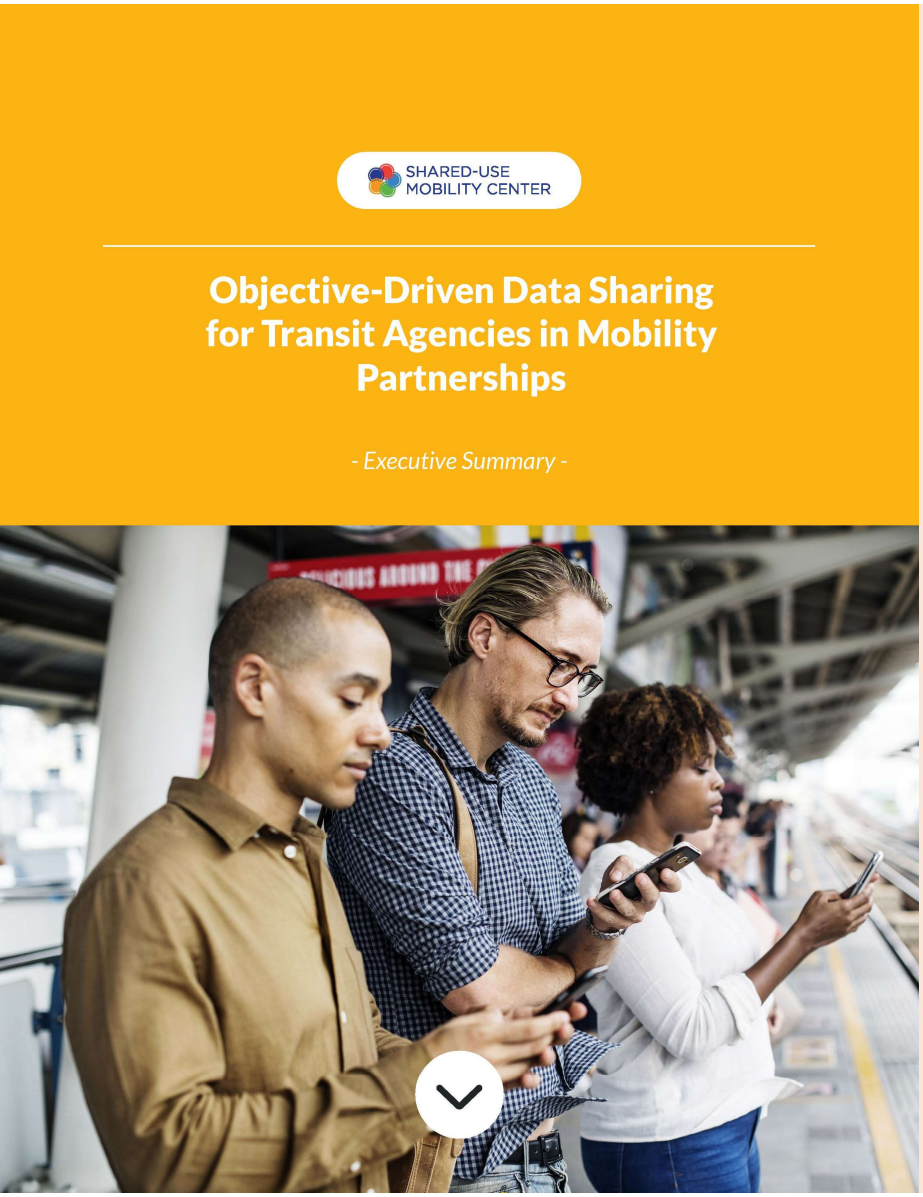


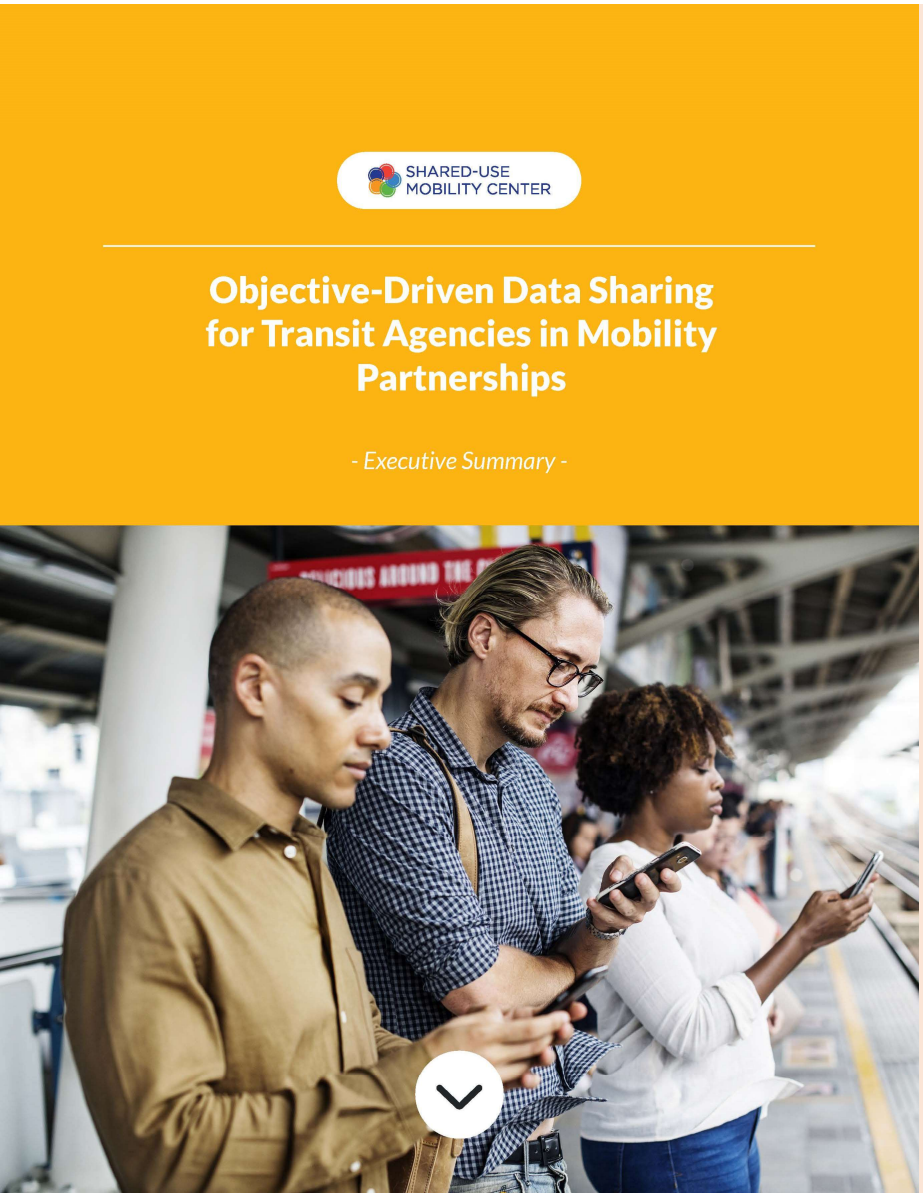
Objective-Driven Data Sharing for Transit Agencies in Mobility Partnerships

Shared-Use Mobility Center

Federal Transit Administration

Webinar & White Paper

July 10, 2019



Webinar will be approximately 45 minutes, with the last 10 minutes for Q&A.

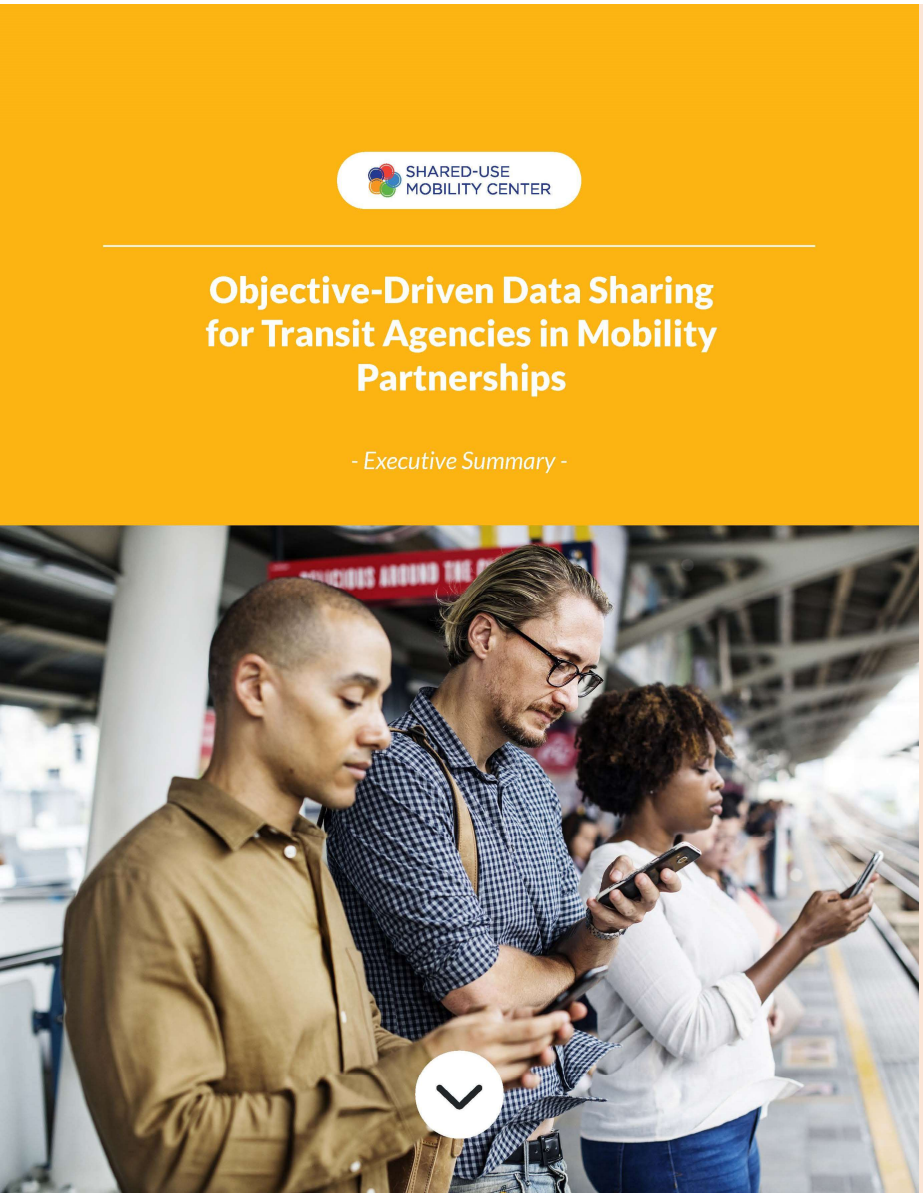
Enter questions through the chat box.

Webinar will be recorded, and slides will be posted onto SUMC's website.

For real-time captions, go to:
tinyurl.com/p3-data

Webinar & White Paper

July 10, 2019



Speakers

Sharon Feigon,
Shared-Use Mobility Center (SUMC)

Murat Omay,
Federal Transit Administration

Prashanth Gururaja, SUMC

Rudy Faust, SUMC

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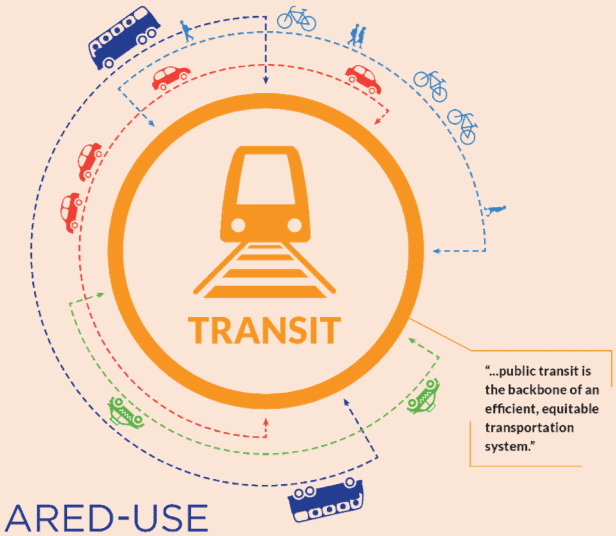
SUMC is a public-interest non-profit organization that aims to make it possible for people to **live well without owning a car** through a **multimodal transportation system that works for all.**



SUMC-FTA Mobility On Demand (MOD) Sandbox Innovation & Knowledge Accelerator

Goals

- Identify Sandbox project-specific challenges
- Provide technical assistance
- Accelerate learning on MOD
- Develop resources for the MOD community

Methods

- Workshops
- Webinars
- MOD Learning Center
- White Papers

FTA RESEARCH
FEDERAL TRANSIT ADMINISTRATION

Mobility Performance Metrics (MPM) as a Perspective on Objective-Driven Data Sharing for Transit Agencies in Mobility Partnerships

July, 10 2019

Murat Omay
FTA Office of Research, Demonstration, and Innovation (TRI-10)

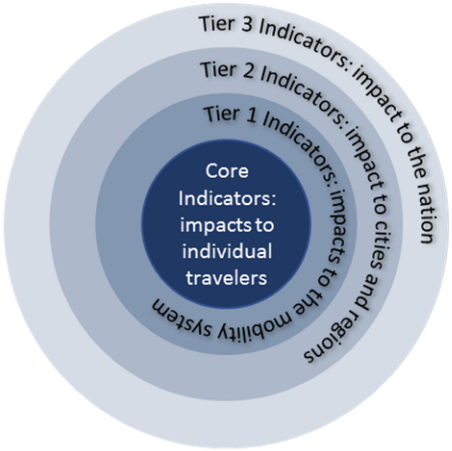
Key Challenges in Mobility Management

- Data-driven challenges:
  - Data availability (lack of data and abundance of data)
  - Data sharing and integration
  - Data security
- Organizational challenges:
  - Integration and coordination of multiple systems
  - Harmony between multiple agencies/providers
  - Mismatch of objectives of providers in the regional mobility system
  - Capability maturity of agencies/providers (e.g., technical, resource, culture)
- Objective-driven challenges:
  - Clear objectives for performance measurement (agencies)
  - Clear objectives for regional mobility performance measurement

Current State of Mobility Performance Measurement

- Current performance indicators tend to focus on:
  - measuring operational adequacy of travel modes in isolation
  - measuring system efficiency from operator perspective
  - evaluating system performance based on unlinked trip data
- Limited feedback from travelers (experience, expectancy, alignment with travelers' objectives)
- Indicators to measure the performance of the integrativeness do not exist
- Indicators to measure the value of options within a mobility system do not exist
- Systemwide performance is not captured, thus supplemental performance indicators to complement existing ones are needed

Objectives of Mobility Performance Metrics



Traveler

Measure how well the integrated mobility system meets the needs of its individual travelers (closeness of qualitative and quantitative supply/demand)

System

Measure how effectively and efficiently the system performs while meeting its travelers' demands

Regional

Impact of the mobility system regionally from multiple perspectives (e.g., regional mobility, sustainability, reliability, accessibility, social, programmatic, environmental, employment/healthcare/educational opportunities, economic development)

National

Impact of the mobility system nationally from multiple perspectives (e.g., meeting USDOT/National goals, sustainability, economic benefits, financial benefits, accessibility, effectiveness of social programs, efficiency of USDOT investments, environmental and workforce impacts)

What are we trying to measure?

Traveler

- Traveler-centric: Impact to individual traveler
- Complement existing metrics such as ridership by introducing additional data/granularity such as linked trip data
- Explore new measures such as spontaneity, availability, value-based affordability, mobility and transfer options, impact of reliability, etc.
- Futureproof through dynamic target-setting strategies and monitoring the dynamicity of supply/demand equilibrium

System

- System-centric: Impact to the multimodal transportation or mobility system (not transit)
- Measure a system's ability to meet travelers' needs and preferences
- Measure performance from user experience perspective
- Measure the system performance from multiple perspectives:
  - Effectiveness of the system: to implement demand-specific indicators based on traveler and user expectancies
  - Efficiency of the system: to create opportunities for right-sizing of fleet and operations/capture/service, effective service planning and delivery, targeted service, converging of services such as specialized transportation/paratransit
  - Safety of the system: to engage strategic planning activities to reduce exposure to unsafe conditions
  - Effectiveness (e.g., price points, incentive strategies, fare policies, value-based affordability, behavioral changes)
  - Sustainability of operations and collaborations/partnerships

Region

- Region-centric: Impact to cities and regions
- Multi-perspective impact:
  - Regional mobility, safety, and congestion
  - Economy and economic development opportunities
  - Workforce, employment, education, and healthcare opportunities
  - Financial impacts and benefits/disbenefits
  - Environmental impacts and air quality implications
  - Social equity and effectiveness of social programs

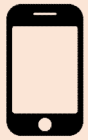
Nation

- National: Impact (or contribution) to the Nation's indicators and resources
- Long-term impacts of collaboration and integration to the overall economy
- Multi-perspective impact: Economy, Workforce, Financial, Environmental, Social Equity, Safety, Security

Purpose

Issue:

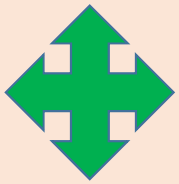
Transit agencies are looking to partner with new mobility companies.



Reaching data agreements has been a persistent challenge.

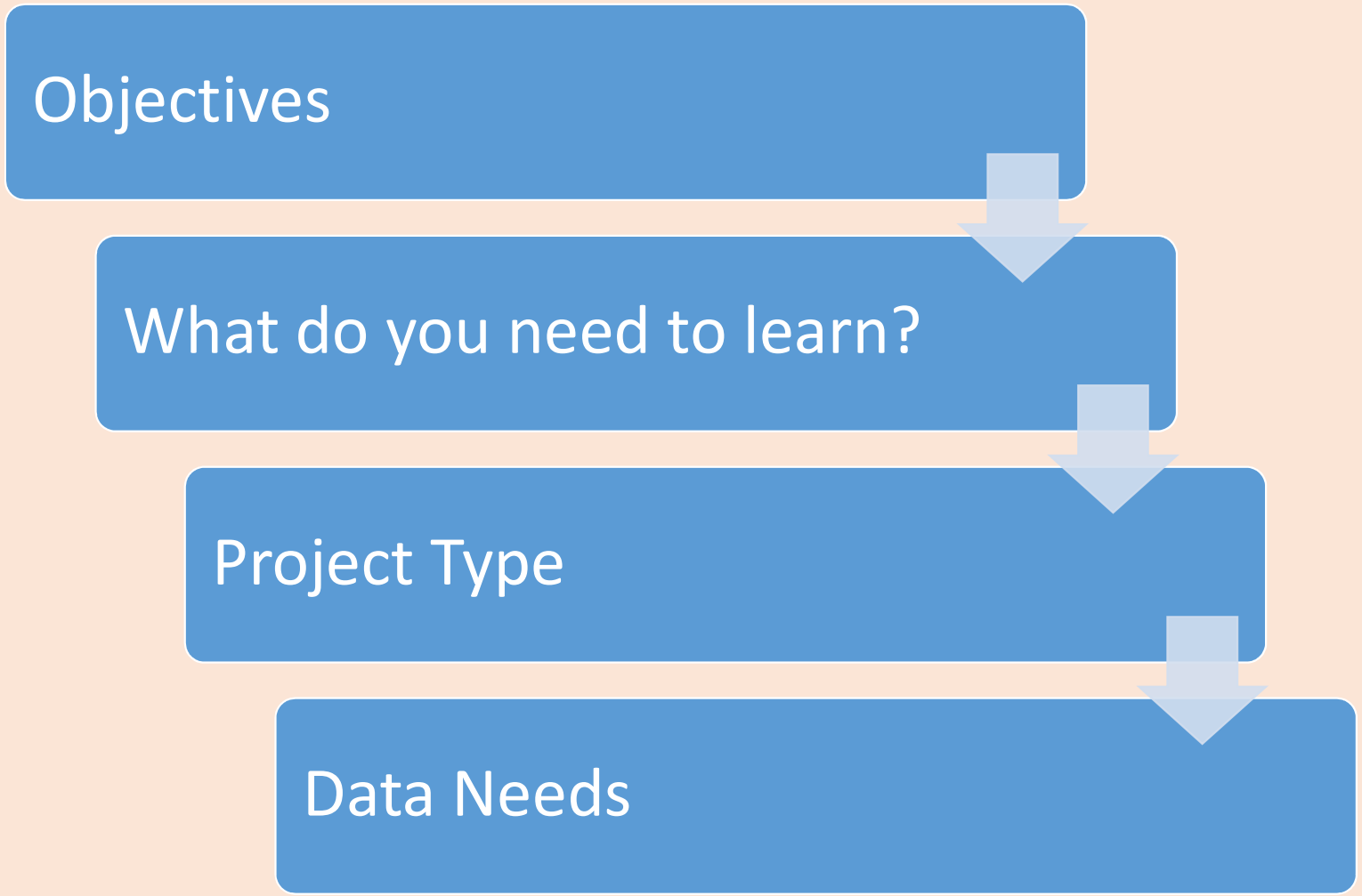
Our paper:

…provides a strategic approach to help agencies form a data-sharing agreement with their project partner



…is NOT a strategy for regulating or requiring data about the general direct-to-consumer operations of private mobility service providers

Objective-Driven Data Sharing



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Common MOD Service Data Needs

Planning – Where should service be provided?

Historical/Aggregated:
Travel Patterns
Pickup/Drop-offs
…

Auditing – Is the partner providing what was agreed to?

Trip-level/Aggregated:
Origins/Destinations
Pickup/Dropoff times
Wheelchair requests/rides
…

Operations – How is the service being used?

Trip-level/Aggregated:
Origins/Destinations
Pickup/Dropoff times
Wait times
Travel times
Vehicle occupancy
…

Accounting – What does the service cost the traveler and the agency?

Trip-level:
Pricing
Fares
Total Cost
…

Aggregated:
Surge Pricing Trends
Average Fares
Pooled vs. non-pooled rides
…

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Common Multimodal Trip-Planning Data Needs

Trip Discovery

Where and how can I get a ride?

Vehicle availability
Wait time (est.)
Travel time (est.)
…

Booking

How do I reserve my multimodal trip?

Account information
Provider API
…

Payment

How do I pay for my trip?

Fare structures
Discount eligibility
Payment API
…

Real-time information, APIs

Challenges

Challenges Areas

- Privacy
- Competitiveness
- Public Records Laws
- Data Security
- Aggregation
- National Transit Database and Performance-Based Funding
- Capability Constraints

Challenges

Competing interests can lead to divergent data-sharing preferences

Agency Needs

- Planning
- Operations
- Accounting
- Auditing
- Trip-Planning

More / Finer Data Sharing

Less / Coarser Data Sharing

Provider Concerns

- Trade Secrets
- Competitiveness
- Privacy
- Public Records Disclosures

Solutions

Mutually Agreeable Data Aggregation

Select examples from transit-ride hailing service partnerships

Agency / Project	On-Demand Project Type	Reporting Frequency	O/D Spatial Resolution	O/D Temporal Resolution
MBTA – The RIDE On-Demand (Boston area)	Service for ADA paratransit users	**Monthly**	**Individual trip – ZIP Code**	**Aggregated begin and end times for trips**
Arlington, Texas – Rideshare	Microtransit	**Periodic**	**Individual trip – requested locations**	**Individual trip times**
Pierce Transit – Limited Access Connections (Pierce County, WA)	First/last-mile (free fare)	**Monthly**	**Individual trip – census tract**	**Individual trip – time of day (AM peak, midday, PM peak)**
PSTA – Direct Connect (Pinellas County, FL)	First/last-mile (subsidized fare)	**Monthly**	**Total trips – No spatial information**	**Total trips - No temporal information**

Public Records Laws

- Created to increase transparency in government
- Usually predate large-scale data collection
- Government records presumed public unless exempted
- Exemptions often include personally identifiable information (PII) and business secrets, but provisions vary in language and interpretation by jurisdiction

Public Records Laws

- Public Records Exemptions
  - Sound Transit, King County Metro ("Via to Transit"):
    Use information pertaining to Fare Payment Media (PII)
  - LA Metro MOD agreement with Via:
    Travel Pattern Data from Electronic Transit Fare Collection (PII), Trade Secrets
- Modernization with help from agencies
  - TriMet → Oregon Revised Statutes 192.345
  - DART → Texas Transportation Code Section 451.061
  - Should be politically uncontroversial
  - Need considerations for protecting origin-destination data

Third Party Repositories

- Disaggregated data resides with third-party
- Academic, government, non-profit, or private-sector entities
- Warehousing, management, and/or analysis
- BUT, not a preferred solution for most MOD partnerships
- Instead, a growing solution for understanding general travel patterns
- Planning phase for MOD projects?

API Requirements for Trip-Planning Apps

- Data about vehicle availability, booking, etc; NOT trip data
- Arlington, VA
  - Open API requirements for all micromobility operators
- Finland Transport Codes
  - Open data requirements for all transport operators (public and private)
- Without requirements, need one-off agreements with every provider

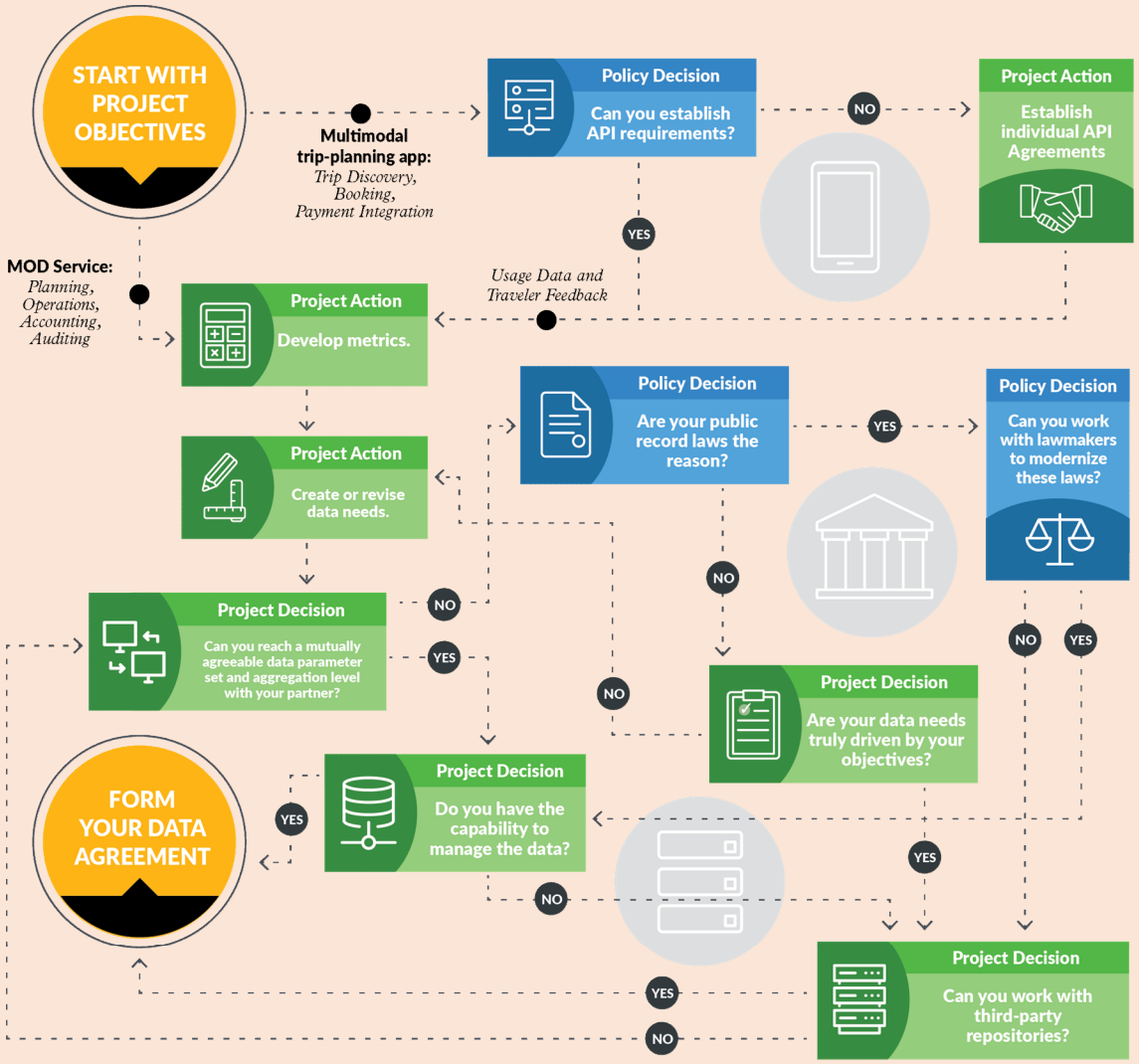
Decision Tree

Decision Tree

A thought process for forming data agreements for your MOD projects

Considers **project-level** decisions and **policy-level** decisions

Tradeoffs for each decision



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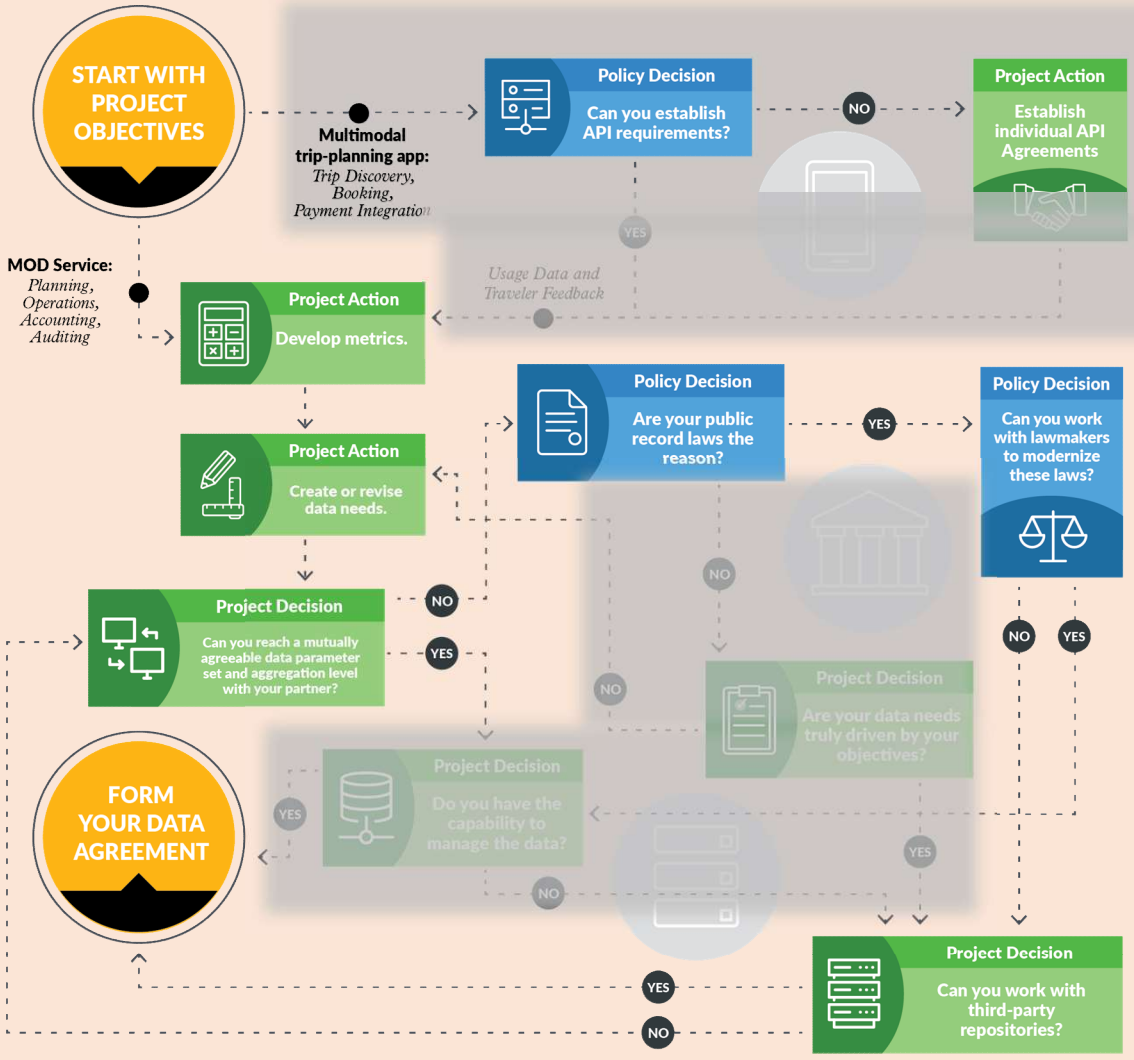
Decision Tree

Example:

MOD Service Project

→ Trouble with agreeing on data aggregation due to public records laws
→ If laws can't be changed, consider repository
→ If repository feasible, then form your agreement
→ If not, then reconsider aggregation levels with partner



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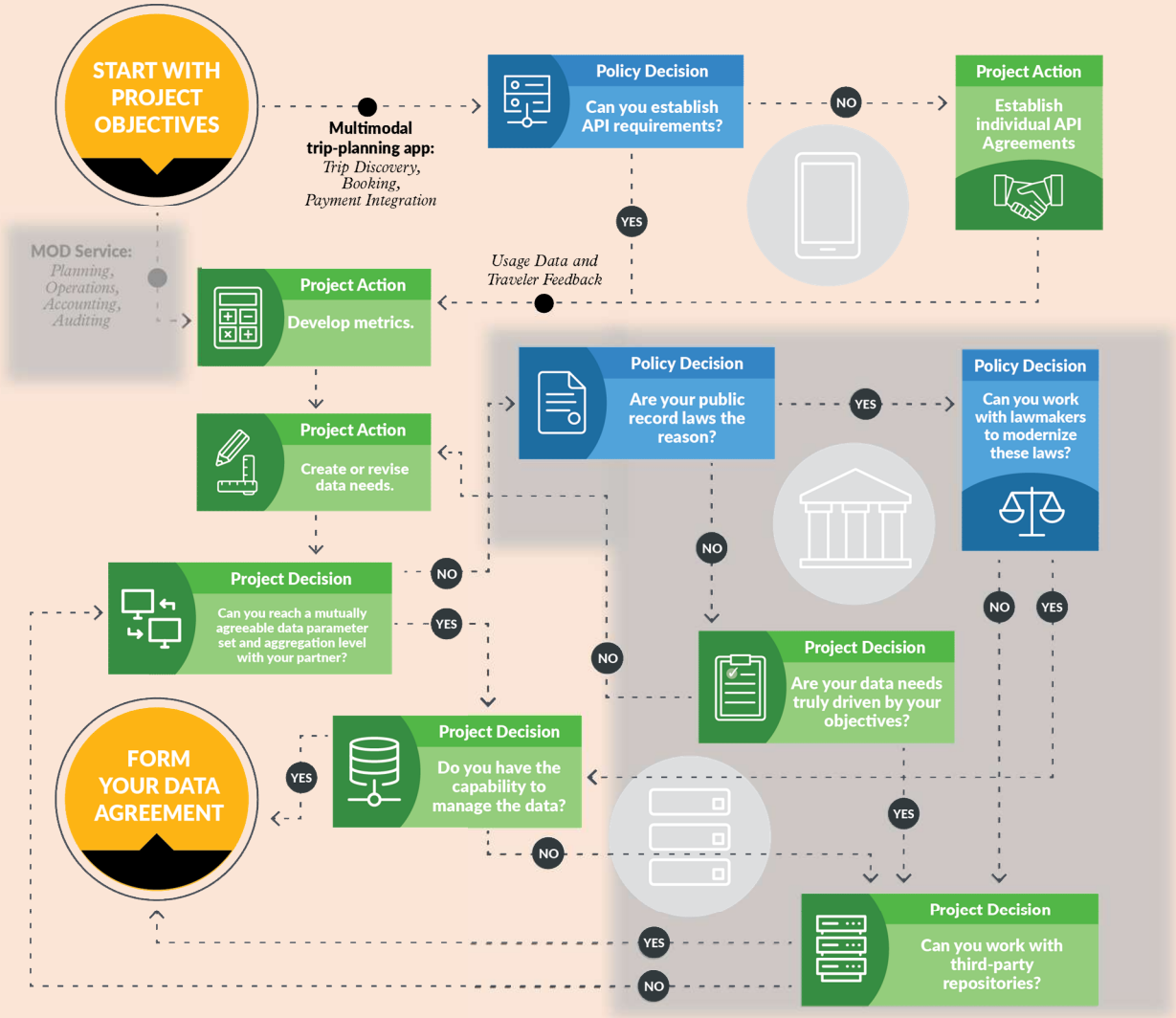
Decision Tree

Example:

Multimodal Trip-Planning App

- → Try establishing API requirements
- → If this is not feasible, develop API agreements with individual providers
- → Develop metrics and data needs that serve objectives
- → Reach mutually agreeable aggregation and manage data in-house
- → Form your data agreement



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Key Questions to Ask Yourself

Project-level decisions

- What data resolution is sufficient to understand if my project is achieving the intended outcomes?
- Do I have the capability and infrastructure to manage and analyze data?

Policy-level decisions

- Will the time frame for policy change align with my project schedule?
- Do relationships need to be built with other agencies or legislators?

Conclusions

- Agencies should select a partner with whom they can find a **mutually agreeable data parameter set and aggregation**.

- If constraints related to public records disclosures or agency capability are impediments, agencies should **explore using a third-party repository**.

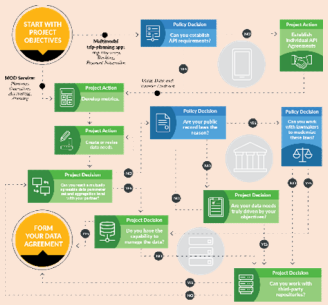
- Transit agencies and supporting organizations can proactively **influence the modernization of public records laws**.

Conclusions

- Transit agencies, together with states or cities, can **establish API requirements** to open up basic data parameters needed for trip-planning apps.

- **Federal involvement** can encourage data management strategies

- Follow a structured approach → **Decision Tree**



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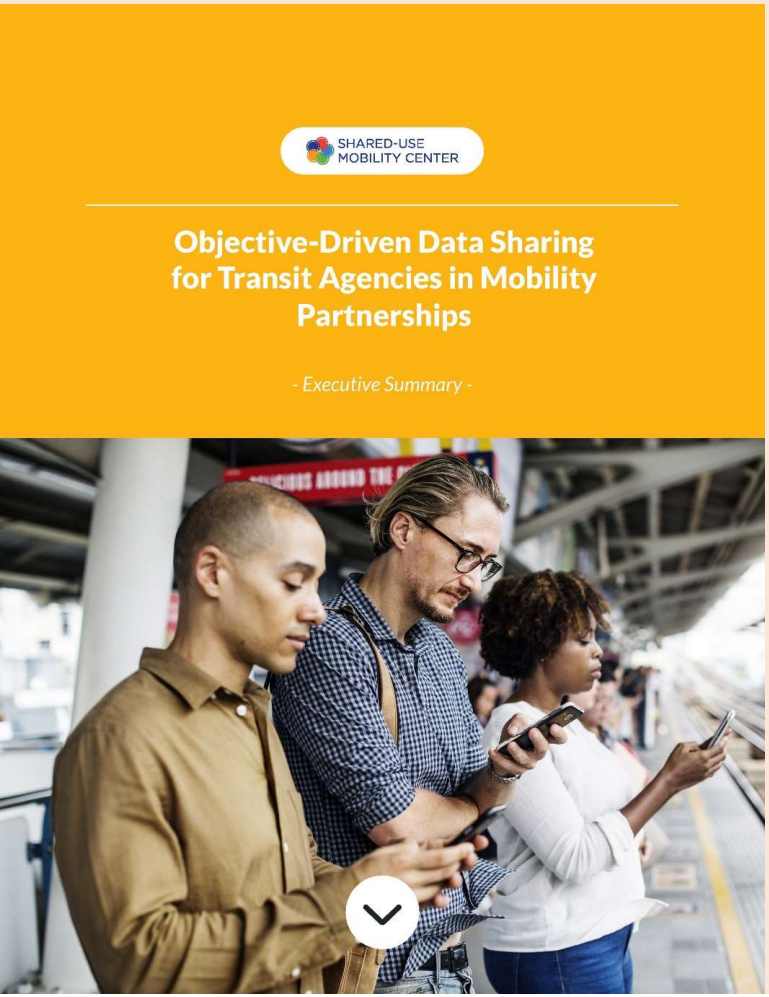
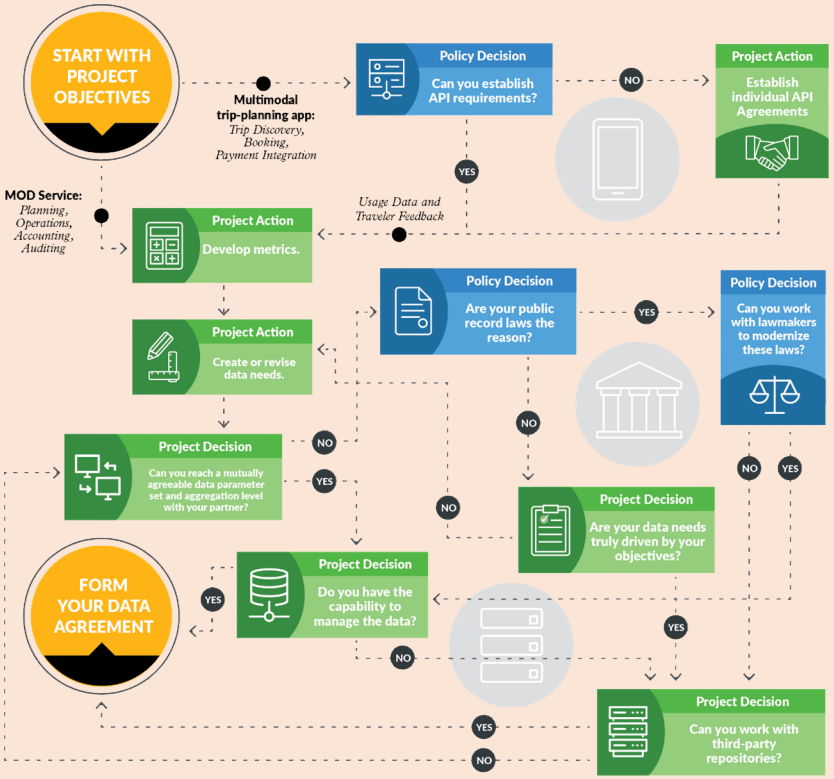
Check Out the Paper!



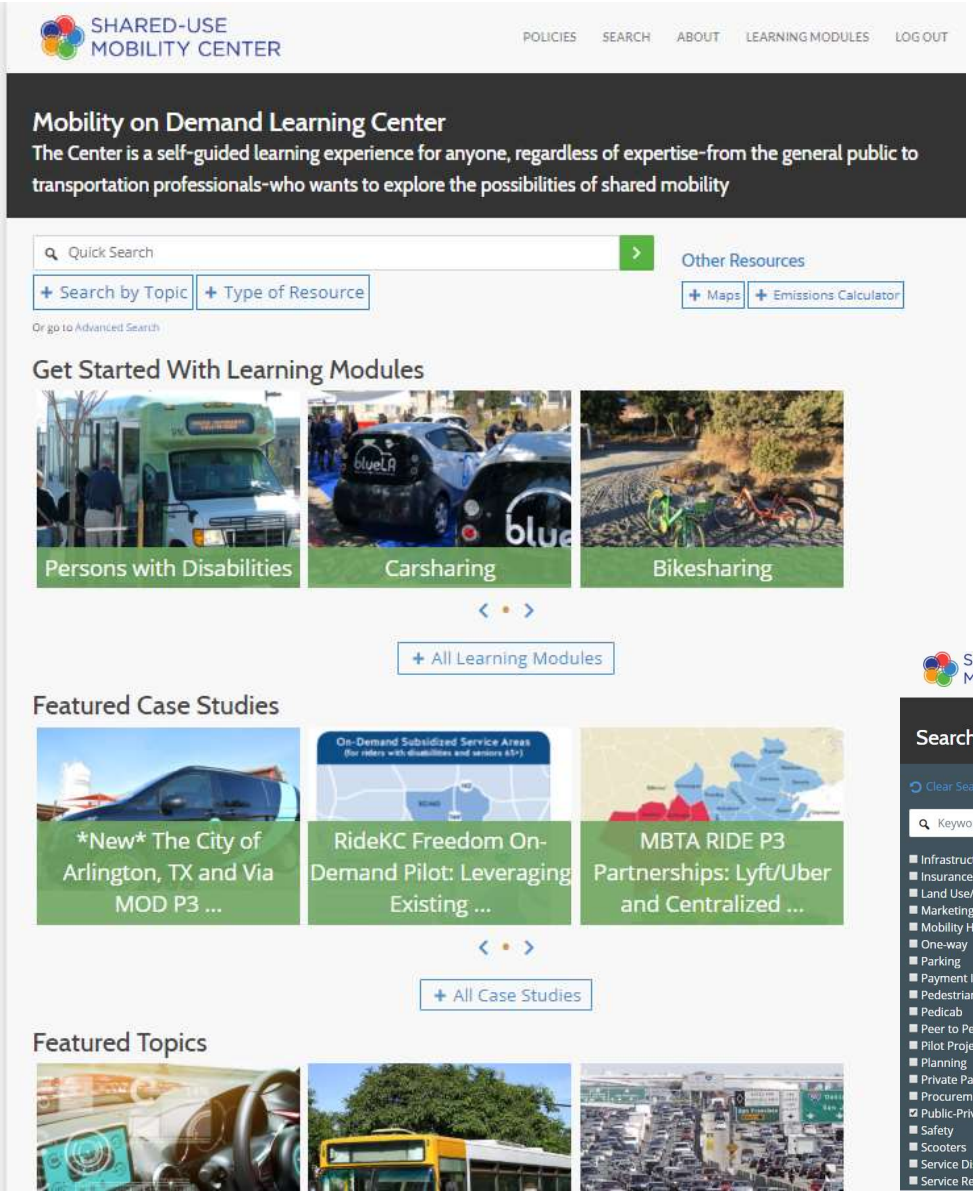


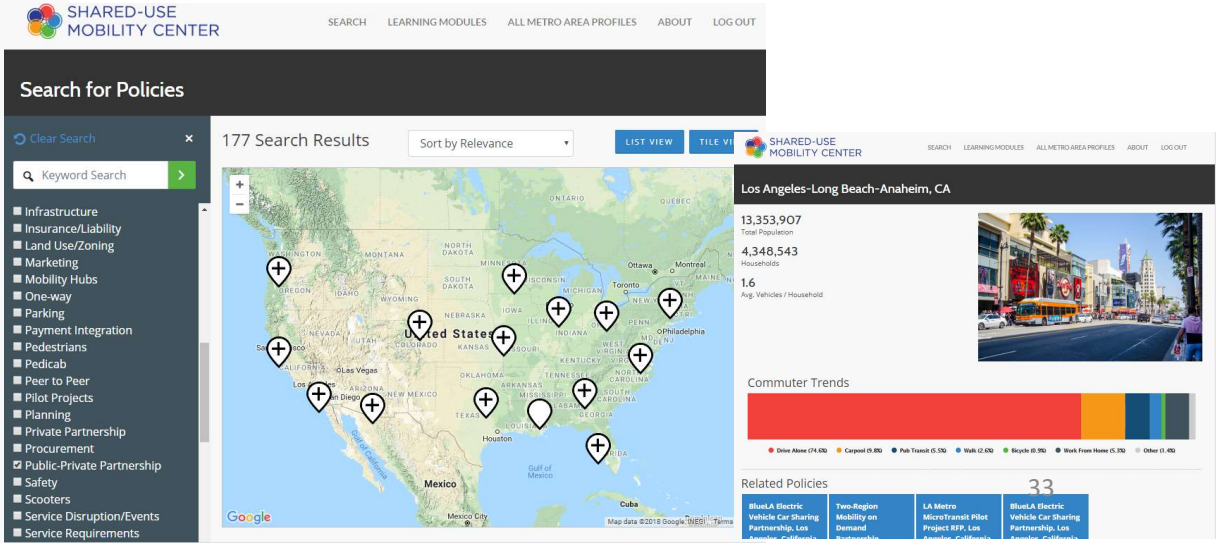
Executive Summary available.
Full Paper to be released shortly!
www.sharedusemobilitycenter.org/publications

MOD Learning Center

learn.sharedusemobilitycenter.org

- Online Repository of all things MOD
- Graduated Educational Experience
- Supported by FTA





Acknowledgments

Federal Transit Administration
LA Metro
King County Metro
Sound Transit
Pierce Transit
Dallas Area Rapid Transit
TriMet
University of Washington
City of Arlington, TX
Massachusetts Bay Transportation Authority
Pinellas Suncoast Transit Authority
Vermont Agency of Transportation

Additional references in full white paper.

Thank you!

Questions?

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For questions about the FTA Integrated Mobility Innovation funding opportunity, see **www.transit.dot.gov/imi**

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