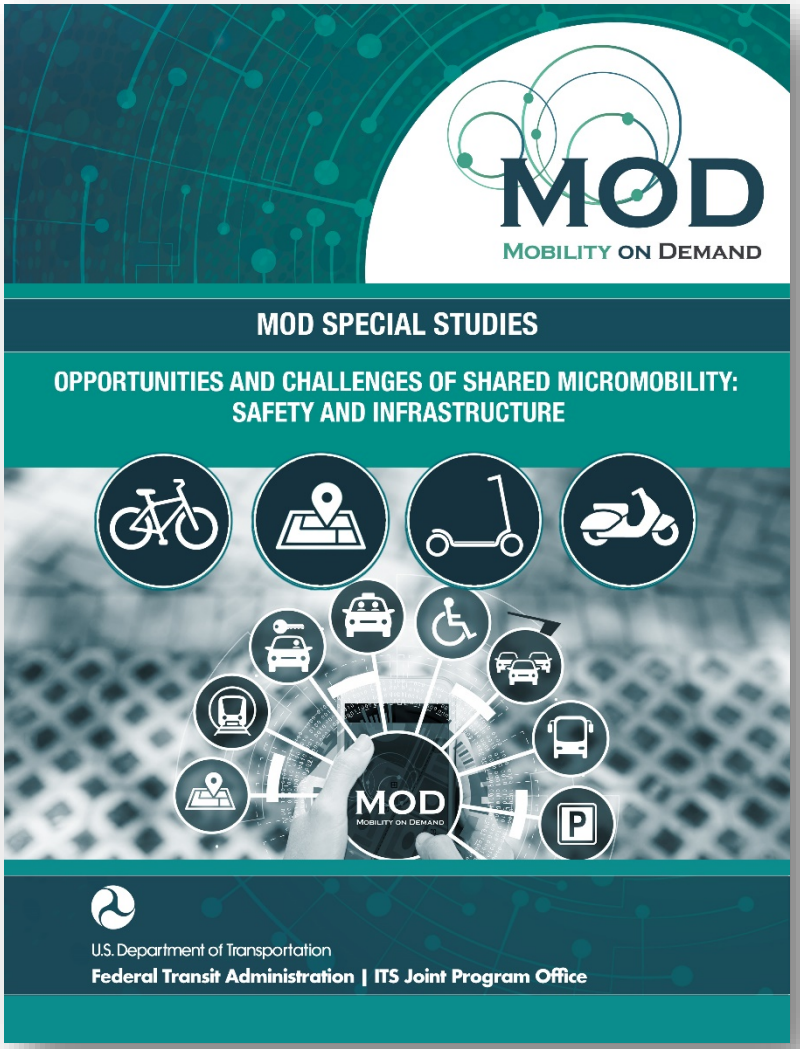
Mobility on Demand (MOD)
Special Studies

OPPORTUNITIES AND CHALLENGES OF SHARED MICROMOBILITY: SAFETY AND INFRASTRUCTURE

March 25, 2020

Introduction

- Study Objectives:
  - Understand the impact of shared micromobility on safety and infrastructure
  - Explore strategies to reduce risk and increase the service potential of these modes.



The study was prepared and carried out by Booz Allen Hamilton Inc. and University of California, Berkeley's Transportation Sustainability Research Center.

Image Source: USDOT FTA, ITS JPO

Research Methodology

The research team conducted a three-phased, multi-method qualitative approach:

Step 1: Literature review to gain an understanding of the shared micromobility landscape

Step 2: Expert interviews to gain a broad perspective about the impact of shared micromobility on safety and infrastructure

Step 3: Focus groups to gain insight on safety concerns from micromobility users and non-users

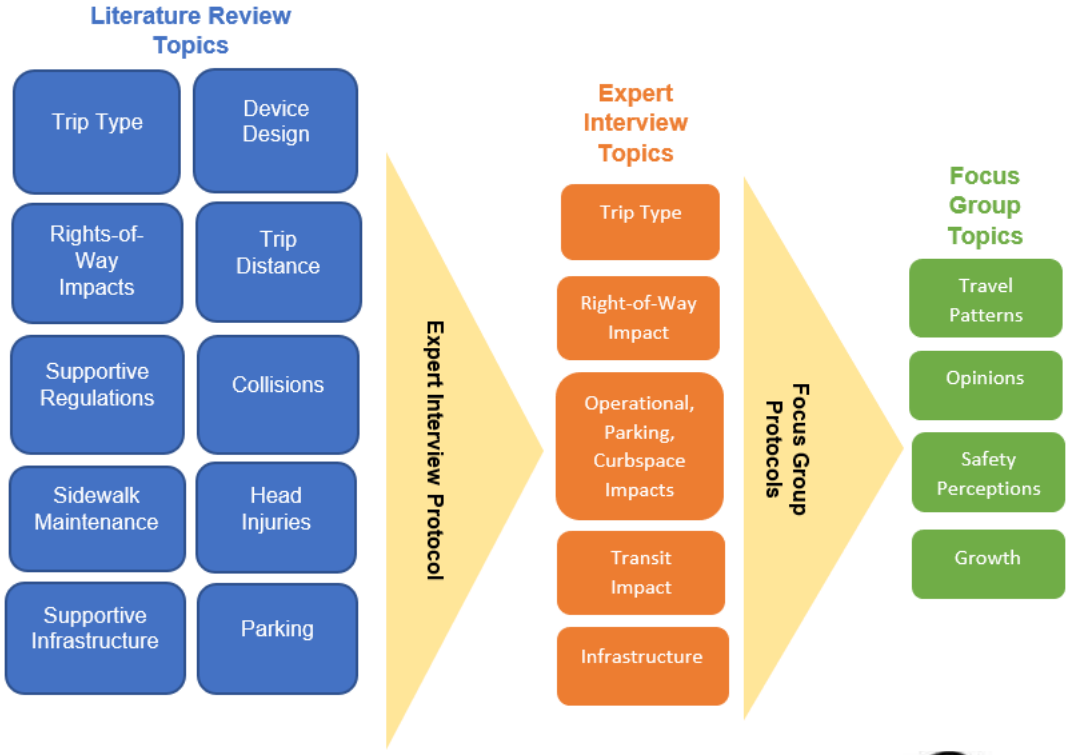


Image Source: USDOT

Literature Review

Literature Focus Area	Key Findings (illustrative)
1. Impact of micromobility on right-of-way and curb space management	Shared micromobility increases traffic congestion and competition for space and also blocks access for road users. (Chang et al., 2019)
2. Micromobility safety and collisions affecting bystanders	Examining the number of collisions between pedestrians, bicyclists, and motorists, Jacobsen (2003) found that increases in pedestrians and bicyclists decreased injuries by a -0.6 power.
3. Micromobility safety and collisions affecting users	Examining bicycle collision data, the highest ratio of injuries occurs in the age groups of 16-25 and 25-34 years old, (City of Boston, 2013).
4. Role of infrastructure in micromobility safety	20% of fatal collisions occurred on roads with posted speeds of 25 miles per hour (mph) to 30 mph and between the hours of 3:00 PM and 6:00 PM (LaPlante et al., 2012).

Literature Review

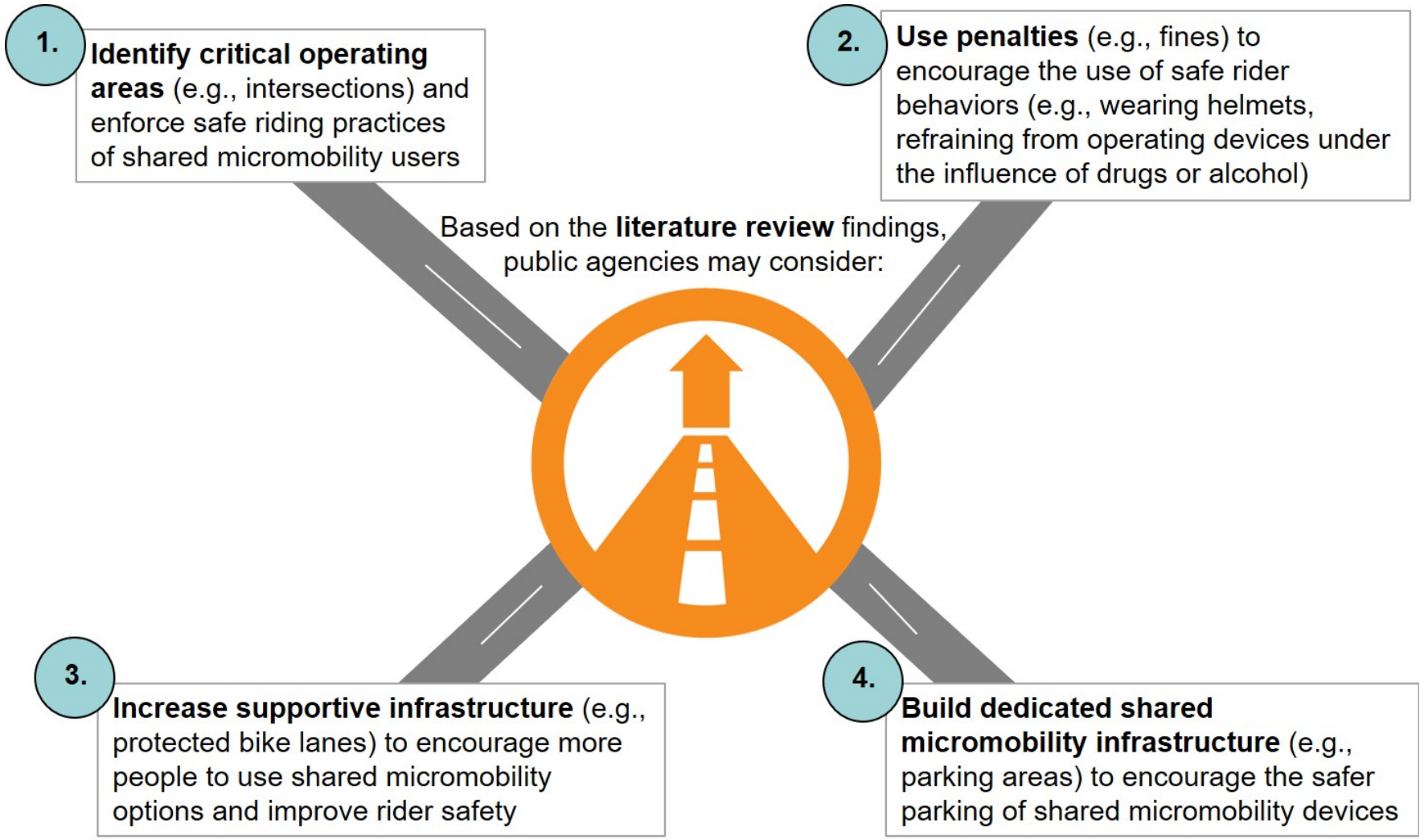


Image Source: USDOT

Expert Interview Findings

In relation to trip type/length:

"Micromobility offers the opportunity for people to **travel outside their walking distance comfort zone**."

In relation to transit impacts:

"Shared micromobility will **reduce ridership on poor performing**, **local transit services** but will **complement on-time, frequently-run heavy and light rail lines** due to improved first- and last-mile connections."

In relation to safety and infrastructure:

"There is still micromobility ridership in cities, such as Chicago, **during the winter** but **at lower than usual rates**. Having a plan in place to support the safety of the devices and riders can **encourage ridership during the winter months**."

In relation to the public right-of-way:

"Micromobility can create conflicts with other modes because **service providers want to place devices in dense, urban environments** that are already facing challenges with competition."

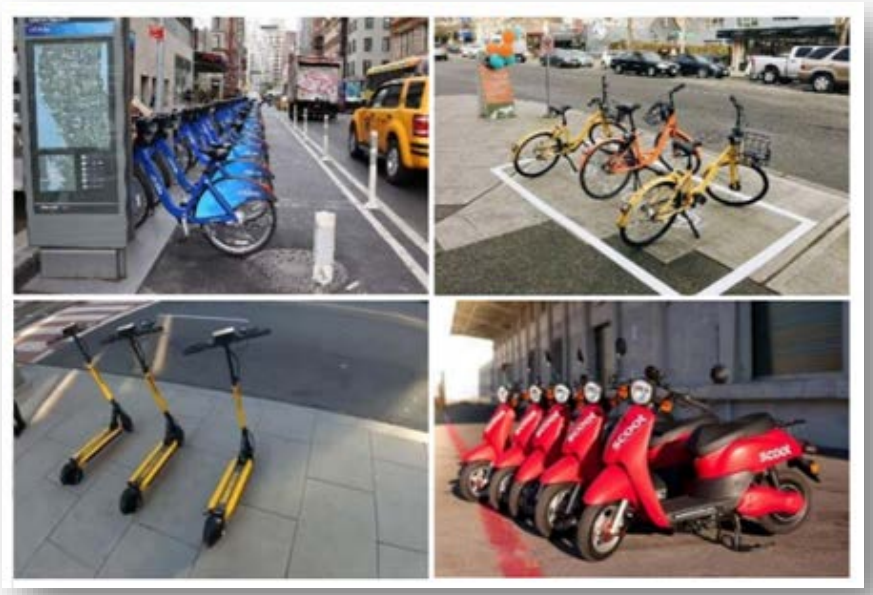


Image Source: Shaheen and Cohen, 2019

Focus Group Findings

- **Demographics**
  - Collected data on income, education, age, ethnicity, gender, and travel preferences
- **Current Travel Patterns**
  - Users employ a combination of walking, biking, public transit, and other shared modes.

Perceptions of Safety

Users tend to be more concerned with operational elements (e.g., what they can be ticketed for). Non-users appear to be more concerned with rider behavior (e.g., riding after drinking alcohol or using drugs).

Shared Micromobility Opinions

Both groups had concerns over cost, access by people with disabilities, access by people without smartphones or data plans, personal data sharing, and rider liability.

Growth of Shared Micromobility

Both groups identified benefits and disadvantages to the growth of shared micromobility – e.g., filling transit connection gaps – but had apprehensions regarding the longevity of affordable pricing structures.

Image Source: USDOT

Focus Group Findings

Potential Benefits and Disadvantages of Shared Micromobility:

	Benefits	Disadvantages
Focus Group Users	• Widespread distribution of dockless devices is convenient • Environmentally-friendly way to travel • Affordable mode of transportation • Connection to transit or increased use of transit • Easy-to-use devices	• Lack of availability of devices in certain areas • Inaccurate location services • Concerns of liability for theft or damage
Focus Group Non-Users	• Increased transportation availability for younger people • Increased transportation availability for those without a license or vehicle	• Difficulty using devices (e.g., unstable) • Inability to use navigation devices (e.g., smartphones with Google Maps) while riding • Sharing of personal data

Overarching Group Recommendations to Improve Safety:

1) Clearly demarcate dockless micromobility device parking zones;
2) Improve infrastructure maintenance in operating areas such as bike lanes and streets;
3) Clearly define the public's right-of-way and areas in which micromobility devices can operate.