Collaborative Sciences Center for ROAD SAFETY

RESEARCH BRIEF

Understanding Micromobility Safety Behavior and Standardizing Safety Metrics for Transportation System Integration

The purpose of this study was to accelerate shared learning around micromobility safety impacts and to fast-track improvements to injury surveillance of emerging modes such as e-scooters and related micromobility devices (e-bikes, electric skateboards, hoverboards, etc.) used on and around city streets and paths. The research focused on four specific tasks:

1. Establish available data sources to support safety evaluations across multiple geographies;
2. Engage stakeholders, examine current practices, and identify approaches to enhance injury surveillance systems;
3. Develop a behavior-oriented survey instrument; and
4. Formulate data structure(s) for continuous tracking and analysis of shared micromobility safety.

For Task 1, our research team obtained access to data from more than one million high-resolution shared e-scooter trips in the Nashville over the span of September 1, 2018, to August 31, 2019, to classify the trip types. We identified five main types of e-scooter trips in Nashville: 1) daytime short errand trips, 2) utilitarian trips, 3) evening social trips, 4) night-time entertainment district trips, and 5) morning commute trips. Findings such as these can inform better e-scooter policies.

For Task 2, our research team formed a collaboration with stakeholders across the nation, called the "E-scooter Injury Surveillance Workgroup." Our research team developed a poster titled, "New Modes, New Codes" to assist clinicians and medical coders in categorizing and assigning existing ICD-10-CM codes for the purposes of injury surveillance activities. Our work also contributed to the addition of new codes in the FY 2021 version of ICD-10-CM. We also worked on new codes for e-bikes for FY 2022

For Task 3, we created a survey library with standardized questions for e-scooters and related micromobility devices. This will substantially simplify survey generation for practitioners and allow the surveys to be consistently worded that will result in comparable outcomes. We partnered with the World Resource Institute New Urban Mobility Alliance (NUMO) to disseminate this work.

Lastly, for Task 4 we applied the Pedestrian and Bicycle Crash Analysis Tool (PBCAT) developed by the Highway Safety Research Center to examine a comprehensive set of police crash reports concerning micromobility modes over the past two years in Nashville, Tennessee. In total, 52 unique e-scooter and 79 bicycle crashes from April 2018 to 2020 were identified and analyzed from the Tennessee's Integrated Traffic Analysis Network (TITAN). Our findings are valuable as they can inform specific design and policy improvements for both e-scooters and bicycles, both of which are considered vulnerable in a crash scenario.

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