

Examining the use and safety of e-scooters

March 3 2022



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In recent years, shared electric scooters (e-scooters) have taken cities around the world by storm. But how are people using this new mode of transportation? Seeking to understand the potential impacts of e-scooters on land use, infrastructure and sustainability goals, researchers have some new interesting data to share on e-scooter users, exploring the

interplay between demographics, behaviors and trip purposes.

Led by Kristina Currans and Nicole Iroz-Elardo of the University of Arizona and Reid Ewing of the University of Utah, the study combines a user survey with on-the-[ground observations](#) to characterize the use and safety of e-scooters. The research team also included students Dong-ah Choi, Brandon Siracuse, and Torrey Lyons of the University of Utah and Quinton Fitzpatrick and Julian Griffiee of the University of Arizona. The final report offers insights into what drives the behaviors of people using e-scooters, as well as those walking, biking and driving when e-scooters are present.

Gathering data on e-scooter users

Along with a literature review and a review of existing agency regulations, the researchers analyzed results from an online survey, administered through the City of Tucson in the winter of 2019-2020 (prior to COVID-19 lockdowns later that spring). The [online survey](#) gathered information on stated preferences (e.g. whether people reported riding on the sidewalk, or at night) and whether e-scooters were substituted for other modes of transportation. Additionally, they looked for information on how crash experiences corresponded with demographics and riding behaviors.

Next came on-the-ground data collection. Researchers and students observed people riding e-scooters in Tucson in January of 2020; this data collection effort was soon curtailed by COVID-19 related lockdowns. In Salt Lake City, the team conducted observations in Fall 2020 and Spring 2021, once e-scooter trips began rebounding. They examined how [transportation infrastructure](#)—specifically [bike lanes](#), the presence of light rail, and the size of the facility—relates to observations of non-optimal behaviors for different mode users (e-scooters, bicyclists, pedestrians, and drivers), and those behaviors for [e-scooter users](#)

included:

- riding on sidewalks,
- riding in vehicle travel lanes,
- violating traffic signals,
- distracted riding,
- riding without a helmet,
- having two or more passengers on one scooter, or
- leaving a scooter parked improperly (for example blocking the sidewalk).

Researchers also recorded the behavior of cyclists, pedestrians and drivers. For more details on the observation protocols and the study sites, see [chapter four of the final report](#).

How does infrastructure influence travel behavior?

For both e-scooters and bicycles, the type of infrastructure can affect how people ride. Based on observations, a few patterns emerged:

- When bike lanes were available, e-scooter riders generally used the sidewalks less.
- When light rail tracks were present, sidewalk riding happened at similar rates with and without bike lanes.
- On wider roads, e-scooter and bicycle users both significantly gravitated towards sidewalks.

Researchers chose their study sites in order to understand how infrastructure related to behavior for different mode users. They collected data at five different types of intersections in Salt Lake City.

The researchers presented a poster on this at TRB 2022: Effects of Intersection Design on Non-Optimal Behaviors of E-Scooter and Other

Users. While the presence of multimodal infrastructure does matter, inadequate separation from larger automobile facilities may outweigh the use of "appropriate" facilities in the decision making process. This suggests that more optimal behaviors are likely to occur not where permitted, but where infrastructure provided is perceived to be safe.

Demographics also play a role: In terms of crash experiences, older respondents (40-60 years old) were much less likely to have experienced a crash compared with younger riders (

Citation: Examining the use and safety of e-scooters (2022, March 3) retrieved 19 May 2024 from <https://techxplore.com/news/2022-03-safety-e-scooters.html>

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