

2019 UDOT RESEARCH PROBLEM STATEMENT

*** Problem statement deadline is Feb. 6, 2019. Submit statements to UTRAC@utah.gov. ***

Title: Safety and Characteristics of Micro-mobility Users

No. (Office Use): 19.03.25

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Select **ONE** Subject Area Materials/Pavements Maintenance Traffic Mgmt/Safety Structures/Geotech
 Planning Perf Mgmt/Data Analytics Public Transportation Other

1. Describe the problem to be addressed:

As technology advances and the modern transportation paradigm morphs with the changes, new modes of transportation are beginning to emerge. An ongoing study by the University of Utah has shown that active transportation usage has increased at a protected intersection in downtown Salt Lake City. Interestingly, however, almost all this active transportation growth is attributable to a single new mode: micro-mobility. The proliferation of this mode has brought a great deal of discussion about safety concerns for the users of micro-mobility devices as well as users of other modes. The initial findings of the University of Utah study suggest that micro-mobility users demonstrate unsafe behavior at similar rates to cyclists, with the exception of being more likely to ride on the sidewalk. The sudden emergence of micro-mobility does not allow us to determine how these behaviors are changing with time as the new users become more familiar with the rules of the road. Additionally, the finding that micro-mobility is accounting for almost all the observed growth in active transportation begs the question of whether the trips made by this mode are trips that would be made using other modes, or if they are new users of the space that otherwise would not be there.

2. Write the project objective (25 words or less):

Our study examines micro-mobility safety in different types of active transportation infrastructure. It will also identify who uses this mode and for what purposes.

3. Explain why this research is important:

(In response, consider addressing specific UDOT goals, applicability in Utah or other states, etc.)

In Carlos's Top Ten, he states that UDOT will be the safest DOT in the country with less than 200 fatalities a year. A recent article from Fox 13 claims that injuries related to micro-mobility accidents have almost tripled this year over last. While these accidents typically happen at low speeds and are therefore less likely to be fatal, they constitute a significant issue and serious potential to add to UDOT's bottom line of less than 200 fatalities a year. In order to adequately address this growing safety concern, it is essential that we understand how micro-mobility users are using existing infrastructure. If certain traffic configurations such as physically separated lanes and intersections, painted lanes, or other configurations are performing better than others in terms of safe behavior, UDOT would benefit from this knowledge. Additionally, it is important to understand the nature of micro-mobility trips and the characteristics of their users. Namely, we need to understand if trips made on micro-mobility devices are taking the place of other modes, or if they are bringing new users into the active transportation space that otherwise would not be there. If the latter is the case, this means that we can expect growing demand for infrastructure for active transportation users of all kinds, and potentially, a new need for designs that better facilitate the safe interaction of micro-mobility devices and other modes of transportation. Finally, findings on safe behavior and perception of safety from users will help us to ask

one additional question: where do micro-mobility devices belong within the context of the active transportation space? If micro-mobility users are not behaving like cyclists, but rather more like pedestrians, does it make sense to force them into shared space with cyclists?

4. List the major tasks:

1. Video recording of matched-case intersections. Video of intersections will be recorded for a twelve-hour period on a day in late summer with clement weather.
2. Video Analysis: The video data will be analyzed based on the methodology developed for the previous University of Utah study. The previous study operationalized safety by identifying non-optimum behaviors that lead to unsafe conditions for active transportation users. These data will be compared between different intersection configurations to determine which configuration is best suited for micro-mobility. Additionally, the data will also be compared against the previous year's observation for the protected intersection at 200 W and 300 S. This will allow us to determine whether there have been changes in the way micro-mobility users interact with the infrastructure and if safer practices are becoming more common as users learn the rules of the road.
3. A user survey will be conducted at multiple intersections to determine the nature of trips made by micro-mobility users as well as the characteristics of the users. This will allow us to determine what attracts people to this mode, their perception of safety, and whether they are new users or are transitioning from other modes. These surveys will also be used to determine perception of safety among different modes. We wish to determine where micro-mobility users feel safest, as well as how other modes perceive their place in the active transportation space.
4. Report and article writing. Final report will contain findings of comparative safety analyses and results from user survey. Recommendations will be made for optimum intersection configurations and predictions for how increased adoption of micro-mobility devices will impact other active transportation modes shares and demand for infrastructure.

5. List the expected deliverables (reports, manual, specification, design method, training, etc.):

1. Final report
2. Peer reviewed papers
3. Policy recommendations

6. Describe how the research results will be implemented:

(In response, consider addressing UDOT leader support, process or standard improvement, etc.)

In knowing what configurations are safest for micro-mobility users, UDOT can promote these configurations in a successful effort to limit the dangers posed by integrating a new mode of active transportation into the existing transportation system. We will make recommendations for the optimum intersection configurations within the context of Existing infrastructure, as well as design suggestions for improving upon existing configurations. Additionally, we will Use findings from user surveys to recommend how to best integrate micro-mobility devices into the active transportation. The default has been to treat these users as cyclists, but if their behavior and needs are more like those of pedestrians, this might be the best way safely bring them into the active transportation space. New rules for micro-mobility users will be recommended based on our findings.

Another important component of this research is in understanding the nature of micro-mobility trips and users for the purpose of predicting future demand for this mode. If we find that micro-mobility users are of a certain demographic, predicted changes in that demographic would lead planners to assume that they can also expect changes in the share of this mode. Also, if we find that micro-mobility trips are replacing trips made by other modes, planners can reasonable assume that changes in this mode will affect mode share of other modes. Finally, if micro-mobility trips are replacing auto trips, this could potentially affect future congestion levels in urban areas.

7. Requested from UDOT: \$40,000	Other/Matching Funds: \$10,000	Total
Cost: \$50,000		
(or UTA for Public Transportation)		

8. Outline the proposed schedule, including start and major event dates:

- Project Start Date: May 1, 2019
- Literature Review: May 2019-July 2019
- Data Collection and Surveys: July 2019-October 2019
- Data Analysis: October 2019 – January 2020
- Draft Report Complete: January 31 2020
- Peer Review: February 2020
- Report Revision: March-April 2020
- Project End Date: April 31, 2020