

2019 UDOT RESEARCH PROBLEM STATEMENT

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

Title: Analysis of Motorcycle Crashes on Utah's Highways

No. (Office Use): 19.03.03

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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:

A recent study conducted by a Brigham Young University (BYU) research team on highway curve segments with worst crash histories found that many motorcycle crashes have occurred on or near curve segments in comparison to crashes of other vehicles on curve segments of Utah's highways (1). The 2016 Utah Crash Facts on motorcycles by the Highway Safety Office of the Utah Department of Public Safety (2) reported, "there were 1,168 motorcycle crashes in Utah, resulting in 1,014 injured motorcyclists and 41 motorcyclist deaths. The total number of deaths of motorcyclists accounted for 1% of persons in crashes and 15% of deaths. Motorcycle crashes were 9.9 times more likely to result in a death than other crashes." In 2018, the number of motorcycle deaths increased. According to Zero Fatalities Utah, in 2018 there were 264 lives were lost on Utah's roads. Of these 175 were motorists, 47 were motorcyclists, 39 were pedestrians and 3 were bicyclists (3). The number of fatalities of motorcyclists is disproportionately high compared to other motorists. Judging from these statistics, there is a need to identify characteristics of motorcycle crashes and severities on Utah's highways and to develop readily implementable countermeasures for the reduction of motorcycle crashes. The purpose of this research project is to evaluate the characteristics of motorcycle crashes on Utah's highway in an effort to develop countermeasures (e.g., behavioral changes, attenuators, barriers, helmet laws, etc.) to reduce crashes involving motorcyclists. This will contribute to UDOT's effort to reduce the total number of fatalities to less than 200 by 2020, and ultimately to achieve the goal of ZERO Fatalities across the state.

References:

1. Saito, M., J. Browning, and G. G. Schultz. *Developing a Method to Identify Horizontal Curve Segments with Worst Crash Occurrences Using the HAF Algorithm*. Report UT-18.02, Utah Department of Transportation Research Division, 2018.
2. Utah Department of Highway Safety. *2016 Utah Crash Facts: Motorcycles*. Highway Safety Office, 2017.
3. Zero Fatalities Utah. *2018 Fatality Statistics*. <zerofatalitiesut.com/2018-fatality-statistics/> (Accessed Jan. 26, 2019).

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

Evaluate the characteristics of motorcycle crashes on Utah's highways and develop countermeasures to reduce crashes involving motorcyclists.

3. Explain why this research is important:

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

This is a targeted safety study and provides specific countermeasures to help UDOT reduce motorcycle crashes, especially severe and fatal crashes. The findings from the study will contribute to Carlos' Top 10 and UDOT's Zero Fatalities efforts.

4. List the major tasks:

1. Kickoff meeting to develop a project scope of work and cost estimates.
2. Conduct a literature review.
3. Extract data of motorcycle crashes that have taken place on Utah's highways.
4. Evaluate types and contributing causes of motorcycle crashes including common roadway characteristics at crash locations.
5. Conduct spatial and temporal analyses of motorcycle crashes and fatalities.
6. Develop engineering and educational countermeasures to reduce motorcycle crashes and severities, including fatalities.

7. Report the results to UDOT in the form of a written report.

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

1. Engineering report documenting the literature review and research results and technical publications in peer-reviewed journals.
2. Listing of locations (including the common roadway characteristics at these locations) with high numbers of motorcycle crashes and severities.
3. Countermeasures (behavioral, engineering based, and educational) to help reduce motorcycle crashes and severities.

**6. Describe how the research results will be implemented:
(In response, consider addressing UDOT leader support, process or standard improvement, etc.)**

This is a research targeted to reduce motorcycle crashes and fatalities with the goal of developing readily implementable engineering and educational countermeasures that will help reduce motorcycle-related crashes and fatalities.

**7. Requested from UDOT: \$50,000
(or UTA for Public Transportation)**

Other/Matching Funds: \$

Total Cost: \$50,000

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

It is recommended that this project begin in late summer or early Fall 2019 with the initial tasks of the project scope of work and detailed estimate, followed with the literature review. It is anticipated that the project would take 14-16 months, including 2-month final report review period.