



OKLAHOMA Transportation

Office of Research and Implementation FFY2027 Request for Proposals

Reference SPR Item # 2507

Research Problem Statement Title:

Data Driven Framework for Pedestrians Safety Analysis and Project Prioritization

Problem Statement:

Oklahoma continues to experience a high number of pedestrian crashes. Many of these collisions result in serious injuries and fatalities (KA crashes). ODOT currently lacks a consistent, data-driven framework to fully understand pedestrian crash patterns, identify their underlying causes, and select hotspots. Without data-driven methods, crash analysis varies across districts, project selection is inconsistent, and important safety needs may be overlooked.

Proposed Research:

Oklahoma has triggered the Vulnerable Road User (VRU) special rule in the HSIP annual report for the past several years. As a result, there is a need to improve pedestrian project selection to better identify high-priority locations and appropriate countermeasures. Selecting pedestrian safety projects is challenging because no statewide, data-driven analysis currently exists to identify crash hotspots, determine primary causes and contributing factors, or inform project prioritization. In addition,

these gaps limit the ability to collect targeted data and make informed decisions. As a result, staff lack a data-driven framework to compare expected safety benefits against costs or confidently allocate limited HSIP and local funds to projects that will achieve the greatest reductions in pedestrian fatalities and serious injuries (KA crashes). This research provides knowledge and tools that address these problems.

Suggested Tasks (to include but not limited to):

This research aims to address these gaps by:

- analyzing spatial and temporal patterns of pedestrian crashes
- identifying contributing causes
- proposing data-driven project selection methods
- identifying data gaps and recommending improvements to crash and roadway inventory data
- proposing procedures for evaluating the effectiveness of existing pedestrian countermeasures to support better decision making

Implementation:

Solving this problem will enable ODOT to implement a standardized, data-driven approach for understanding pedestrian crashes and prioritizing safety projects, which will result in multiple measurable benefits. (1) Saving lives: by identifying crash hotspots, analyzing contributing factors, and targeting effective countermeasures, ODOT can reduce pedestrian fatalities and serious injuries across the state. (2) Saving money: a data-driven prioritization process ensures that limited HSIP and local Solving this problem will enable ODOT to implement a standardized, data-driven approach for understanding pedestrian crashes and prioritizing safety projects, which will result in multiple measurable benefits. (1) Saving lives: by identifying crash hotspots, analyzing contributing factors, and targeting effective countermeasures, ODOT can reduce pedestrian fatalities and serious injuries across the state. (2) Saving money: a data-driven

prioritization process ensures that limited HSIP and local safety funds are invested in projects with the highest expected safety benefits, reducing waste and increasing the return on investment. (3) Saving time: standardized procedures for crash analysis, project selection, and countermeasure evaluation will streamline planning and decision-making, reducing duplicated efforts across districts.

Benefits:

Several existing ODOT specifications, procedures, and workflows would be impacted—and would benefit—from this research. For example, the safety program and HSIP project selection procedures could leverage the results of this research. Current project selection methods may need to be revised to incorporate data-driven prioritization, risk analysis, and cost–benefit comparisons for pedestrian projects. Additionally, the evaluation of installed countermeasures would benefit from this work. Standardized procedures could be established to measure the effectiveness of pedestrian safety treatments statewide. These updates would promote more consistent, objective, and data-driven decision-making for pedestrian safety investments.

Deliverables:

All projects require the submission of the following reports:

- Monthly Progress Reports
- Multi-Year Projects require a Year-end Annual Report
- Copies of the project Draft Final Report in Microsoft Word and ADA accessible Adobe Acrobat .pdf electronic formats
- Copies of the project Final Report in Microsoft Word and ADA accessible Adobe Acrobat .pdf electronic formats

The Year-end Annual Report, Draft Final Report, Final Report and Color Article should be submitted to satisfy all federal and state requirements pertaining to the accessibility of documents including but not limited to:

- Oklahoma State Statute 62 § 41.5e and the Americans with Disabilities Act (ADA) of 1990, 42 USC 12.01 et seq.

The PI must also participate in the following project meetings:

- New project initiation meeting
- Semi-annual project meeting
- Close-out project meeting
- Continuing project meeting

Estimated completion time twenty-four (24) months.