

**ARKANSAS DEPARTMENT OF TRANSPORTATION
SYSTEM INFORMATION AND RESEARCH DIVISION
FISCAL YEAR 2023
REQUEST FOR PROPOSAL
RESEARCH PROJECT NO. TRC2302**

TITLE: Development of Pedestrian and Bicyclist Flow Volumes and Risk Factors

ARDOT POLICY

All proposals shall be submitted electronically per the Proposal section of this Request for Proposal. All research project contracts will be managed utilizing Infotech's Doc Express paperless contracting platform. All information on the utilization of this platform for research projects can be found at <https://www.ardot.gov/divisions/system-information-research/research/forms-and-resources/> or from the Research Section.

PROBLEM STATEMENT

Pedestrian and bicyclist safety are growing concerns for transportation planners and safety engineers, both within Arkansas and across the country. Pedestrians and bicyclists are extremely vulnerable users of the transportation system and can be particularly subject to suspected serious injuries and fatalities in the event of a crash. A proactive approach to address this issue is needed to improve non-motorized safety. The approach should be two-fold:

First, due to the low number of pedestrian and bicyclist crashes, the crash location, when analyzed, is very random. Research on collecting pedestrian and bicyclist volume flow data is important because it will give us more data to analyze, helping us find trends and patterns in crash data.

Second, since the number of crashes is very low and the locations are very random, research on risk factors for pedestrian and bicyclist crashes will be very helpful to improving our ability to use a systemic approach with pedestrian crash data instead of a hot-spot approach.

**ARKANSAS DEPARTMENT OF TRANSPORTATION
SYSTEM INFORMATION AND RESEARCH DIVISION
FISCAL YEAR 2023
REQUEST FOR PROPOSAL
RESEARCH PROJECT NO. TRC2302**

AREA OF STUDY

The objective of this study is to collect data on travel patterns of non-motorized transportation users. Travel data will be overlaid with historical and current crash data and roadway inventory data to determine crash risks. Based on crash risks, countermeasures can be implemented to address the increasing number of suspected serious injuries and fatalities among this vulnerable user group. This will lead to better informed future project coordination and infrastructure prioritization.

METHOD OF STUDY

Task I: Data Collection

The first task of this study is to collect data of average daily traffic volume, trip frequency, distance, and route choice. This information will be used to create a database (Task II). Crowdsourced data may be used to analyze people's movements to create pedestrian and bicycle flow volume data. Emphasis should be placed on urban areas and other areas that can be identified as having higher volumes of pedestrians and bicyclists, such as university campuses or low-income neighborhoods. Special consideration should also be given to recreation areas that have a high volume of bicyclists and/or pedestrians and known routes heavily trafficked by bicyclists.

Task II: Database Creation

The second task will create an Access database that includes the flow data obtained in Task I. Other needed information for the database includes vehicular speed data. This type of data can be obtained for free from sources like FHWA. The database should allow you to overlay travel data with crash data to determine high crash risk locations.

Task III: Identify Countermeasures

**ARKANSAS DEPARTMENT OF TRANSPORTATION
SYSTEM INFORMATION AND RESEARCH DIVISION
FISCAL YEAR 2023
REQUEST FOR PROPOSAL
RESEARCH PROJECT NO. TRC2302**

The third task will identify countermeasures and preventions to use at those high-risk locations identified in Task II.

BENEFITS

A detailed cost-benefit analysis shall be included in the Proposal, if applicable. This analysis should incorporate guidance from the latest edition of the Highway Safety Manual.

TIME AND FUNDING OF STUDY

Work will begin no earlier than January 1, 2023, contingent upon acceptance of the Proposal and availability of research funds. The length of the project shall be up to 24 months. A final report is to be drafted and presented to the Research Project Subcommittee on or before the completion date of the project. Up to 25% of the estimated project costs will be withheld pending final acceptance of the final report. Failure to deliver the required Final Report at the end of the project will result in the cancellation of the project, and the Department will retain 25% of the total project cost.

REPORTS

All reports must be in accordance with the most current Research Manual (available at <https://www.ardot.gov/divisions/system-information-research/research/> or from the Research Section). All reports are required to be submitted through Doc Express. An Implementation Report which details the recommended means/techniques for using the project results shall be submitted to the Department within two (2) weeks of the research project's Final Report. All Reports are required to be reviewed by a technical editor before submission to the Department.

Final reports must also be Section 508 compliant. Federally funded research with public-facing PDFs must be accessible as of March 23, 2018, according to the final federal rule for the Information and Communication Technology (ICT) refresh under Section 508. This

**ARKANSAS DEPARTMENT OF TRANSPORTATION
SYSTEM INFORMATION AND RESEARCH DIVISION
FISCAL YEAR 2023
REQUEST FOR PROPOSAL
RESEARCH PROJECT NO. TRC2302**

ensures that federal employees with disabilities have comparable access to and use of information and data just like federal workers without disabilities. The law also ensures that members of the public with disabilities receive comparable access to publicly available information and services. All researchers should use the accessibility tracker in Microsoft Word before submitting final reports.

An oral report to the Transportation Research Committee may be required. In addition to reports and publications, the Department shall be furnished one (1) copy of any master's thesis or doctoral dissertation which is a result of any investigation or study on this project. The submitting of any report to be published by an outside publication or presentation on this project before its completion; shall be submitted for the Department's approval before submission.

PROJECT DELIVERABLES

The proposed research will provide ARDOT with tools to better identify high-risk areas for pedestrian and bicyclist traffic, allowing countermeasures to be taken. The project deliverables will include, but are not limited to:

- Pedestrian and bicycle flow volume data using crowdsourced and other available data sources.
- An Access Database of the flow volume data overlaid with other pertinent data to produce a product that ARDOT can continue to utilize to analyze high-risk areas.
- A user guide to the database so that it is a product that can continue to be used by ARDOT personnel.
- Implementation plan with countermeasure recommendations.

**ARKANSAS DEPARTMENT OF TRANSPORTATION
SYSTEM INFORMATION AND RESEARCH DIVISION
FISCAL YEAR 2023
REQUEST FOR PROPOSAL
RESEARCH PROJECT NO. TRC2302**

AUTHORIZATION TO BEGIN WORK

A letter separate from the contracting documents authorizing the beginning of work will be transmitted through Doc Express initiating the project. Any cost incurred before the authorization letter is received will not be eligible for reimbursement. The project will begin work no earlier than January 1, 2023.

EQUIPMENT

A complete physical verification of all software and equipment purchased or built for use on this project and the actual location of the equipment will be made each year. An Equipment Capitalization Notice is available from the Research Section for the reporting of software or equipment purchased during the project. All software developed on the project will be completed in an open-source format, and ARDOT shall be provided a copy of the source code. If non-expendable or special equipment is purchased with project funds, the equipment is owned by ARDOT and disposition of the equipment will be determined by ARDOT at the project's closeout session.

All rental rates shall be approved by ARDOT before the approval of the proposals. Should a subcontract be part of the Proposal, ARDOT will not approve the purchase of any equipment in the subcontract. Any equipment purchased through ARDOT's Transportation-Related Research & Workforce Development Grant Program is not eligible for rental rate charges.

All equipment shall be purchased in accordance with the State of Arkansas purchasing laws.

**ARKANSAS DEPARTMENT OF TRANSPORTATION
SYSTEM INFORMATION AND RESEARCH DIVISION
FISCAL YEAR 2023
REQUEST FOR PROPOSAL
RESEARCH PROJECT NO. TRC2302**

PROPOSALS

Proposals shall be submitted in a word document utilizing the provided template to research@ardot.gov no later than the end of business on June 3, 2022. No proposals will be accepted after this date. All procedures shall be in accordance with the most current Research Manual and Federal-Aid Policy Guide (FAPG). In the event of policy contradiction, the FAPG shall govern.

Upon approval of the Proposal by the Project Subcommittee, the Project Manager will initiate the process within Doc Express to acquire the appropriate electronic signatures from all parties.