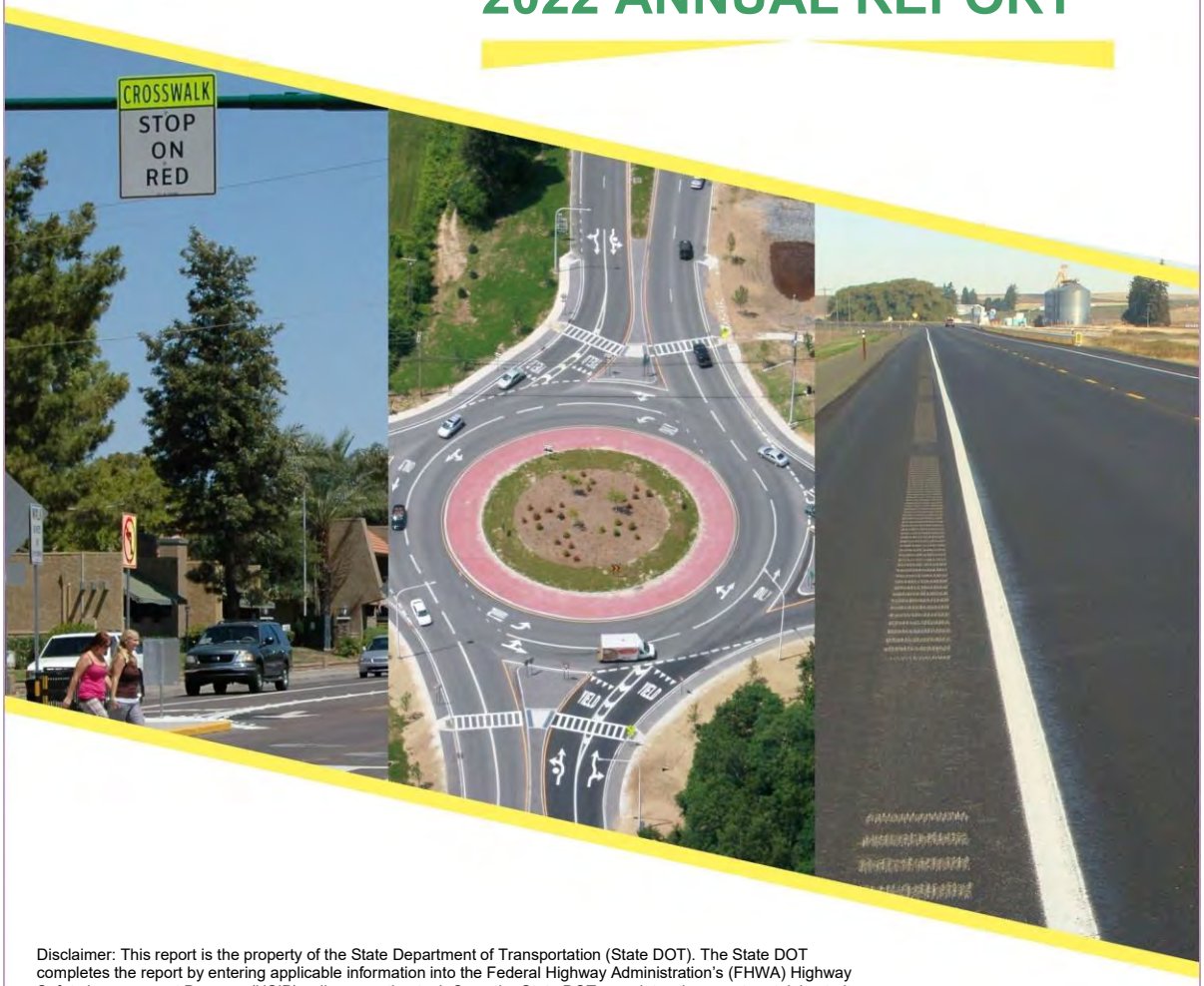
ARKANSAS

HIGHWAY SAFETY IMPROVEMENT PROGRAM

2022 ANNUAL REPORT



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Disclaimer

Protection of Data from Discovery Admission into Evidence

23 U.S.C. 148(h)(4) states “Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for any purpose relating to this section[HSIP], shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location identified or addressed in the reports, surveys, schedules, lists, or other data.”

23 U.S.C. 407 states “Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential accident sites, hazardous roadway conditions, or railway-highway crossings, pursuant to sections 130, 144, and 148 of this title or for the purpose of developing any highway safety construction improvement project which may be implemented utilizing Federal-aid highway funds shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.”

Executive Summary

In accordance with 23 USC 148 and pursuant to 23 CFR 924, the Arkansas Department of Transportation (ARDOT) has prepared a Highway Safety Improvement Program (HSIP) Annual Report for State Fiscal Year 2022 (July 1, 2021, through June 30, 2022). The format of this report is consistent with the reporting guidelines issued by the Federal Highway Administration in 2016. Some notable accomplishments are as follows:

HSIP Programs and Planning

- A new HSIP Process has been developed and is under administration review.
- A Local road safety program is in development for the Highway Commission's approval. It will help the local agencies to improve safety on local roads using HSIP funds.
- The AR SHSP was updated in 2022. Included was a SHSP Marketing and Communications Plan.
- ARDOT is now included in a pooled fund study for continuous pavement friction data led by Virginia Tech Transportation Institute.
- On-Call consultants are planned to be utilized in the coming year for safety studies and project development. Master agreements for four on-call consultants were executed. The first safety project that we plan to utilize consultants on is an unsignalized intersection study program. This unsignalized intersection study program was developed in an effort to improve many intersections on the rural Arkansas Primary Highway Network with low-cost safety countermeasures.
- ARDOT is working with a consultant to examine the possibilities of using their data for analyzing horizontal curves roadway elements. The purpose of collecting this data is to develop a low-cost Horizontal Curve Study and incorporate the collected data.
- Several safety analysis tools are being examined for possible use at ARDOT. This spurred participation in the FHWA Roadway Safety Management System technical assistance program. A request for proposal was created and we are currently in the process of selecting a vendor.
- ARDOT has approved and created a job number for future educational and media campaigns to help bring awareness to the public of safety related topics. For an example ARDOT recently released two safety campaigns regarding work zone safety and centerline rumble strips.
- ARDOT is planning on moving forward with the Roadway Data Improvement Program, a FHWA technical assistance program. This will assess ARDOT's roadway data and make recommendations for improvements. Online data query tools and dashboards have been developed for public use; one specific tool that has already been developed is the Arkansas Crash Analytics Tool (ACAT) which is a GIS online dashboard available to the public.

Safety Projects

- Another statewide wet pavement and pavement friction improvement study is under development that will utilize Continuous Pavement Friction Measurement.
- A Statewide guardrail project is in development to upgrade substandard guardrails to meet the MASH standards on NHS routes.
- New rounds of Cable Median Barrier installation have been approved to continue to reduce and eliminate KA crashes on Interstates.
- A pedestrian and bike study has begun to address non-motorist safety, this resulted in a need for research, and it has been funded.
- A wrong way study is ongoing and has migrated to a statewide systemic study.
- A systemic low-cost, Y-type intersection project is under development.
- ARDOT uses the pavement preservation program to accomplish shoulder widening and rumble strip installation along various routes where crash history showed such improvements would be effective.
- A statewide rural 2-lane centerline rumble strip first project is under construction and the remaining jobs are being let to contract.

Introduction

The Highway Safety Improvement Program (HSIP) is a core Federal-aid program with the purpose of achieving a significant reduction in fatalities and serious injuries on all public roads. As per 23 U.S.C. 148(h) and 23 CFR 924.15, States are required to report annually on the progress being made to advance HSIP implementation and evaluation efforts. The format of this report is consistent with the HSIP Reporting Guidance dated December 29, 2016 and consists of five sections: program structure, progress in implementing highway safety improvement projects, progress in achieving safety outcomes and performance targets, effectiveness of the improvements and compliance assessment.

Program Structure

Program Administration

Describe the general structure of the HSIP in the State.

The ARDOT HSIP process is structured to be consistent with the following requirements specified in 23 CFR 924 and the procedures outlined in the HSIP Manual i.e. Planning (23 CFR 924.9), Implementation (23 CFR 924.11), and Evaluation & Reporting (23 CFR 924.13 and 23 CFR 924.15). It should be noted that the state SHSP influences decisions made during each step of the HSIP process. The HSIP process is developed with the consideration of the relationships and interactions between the SHSP and HSIP according to the 1st edition of HSIP Manual published in January, 2010. The Process is currently under review by ARDOT Administration.

COUNTERMEASURE IDENTIFICATION

Identifying high-risk corridors, roadway segments, locations, etc., is a critical part of the road safety improvement analysis process. However, the analysis task is not complete until contributing factors are identified and appropriated, and effective countermeasures are selected and prioritized.

Analyze Data

High risk locations identified through the problem identification process as well as requests from ARDOT officials, ARDOT Divisions and District Offices, public officials, and other interested parties provide a basis for conducting engineering studies and crash analyses. A network screening tool has also been developed that is used to rank corridors and intersections based on total and KA crash rates. The ranking is used to prioritize the list of facilities according to their safety conditions. These facilities are then further grouped based on functional and area classifications. This list will be updated as new crash data becomes available or on yearly basis, whichever is more relevant. This network screening tool is being enhanced since the completion of ARNOLD LRS and will eventually include intersections on all public roads.

Following the list created from network screening, the analysis of the higher risked locations will be conducted by closely examining the crash data. A crash map is created for the study location which shows the types and severities of crashes occurred in the area. The following factors are then considered for the analysis of crash data and diagnosing the safety problems

- Crash type
- Contributing crash factors
    - Roadway factors
    - Human factors
    - Vehicle factors

    - Environmental factors
- Crash pattern analysis
- Collision diagram for intersection analysis

Identify Potential Countermeasures

Once the crash data has been reviewed and assessed, some of the results will be forwarded to other safety partners who are involved in the SHSP for consideration of behavioral countermeasures. Others are considered for infrastructural improvements. Some of the countermeasures may include low-cost safety improvements such as signing, striping or rumble strips. In other cases, major improvements in a corridor or at a hotspot may be recommended for roadway realignment, or widening based on the specific needs.

Countermeasures are recommended specifically for a location based on a corridor or intersection safety study. This type of study analyzes crash statistics, types, severities, etc. and identifies appropriate safety treatments for the study area. Additionally, systemic studies are conducted which are based on specific types of crashes and/or facilities. In contrast to the spot studies which manage risk at certain locations, systemic studies take a broader view and evaluate safety condition across the entire system of highways. Examples of risk factors in a systemic study could be the skew angle of intersections, and median types. A systemic study can also target a specific type of crash across the roadway system; for example, system-wide improvements such as installation of rumble strips, median cable barriers, curve delineators, etc., may be recommended to address roadway departure crashes.

Assess Site Conditions

After potential countermeasures have been identified, the Maintenance Division is contacted if necessary to conduct an on-site review of the identified treatments resulting from the crash analysis. After their recommendations are received, a more thorough site visit is performed by a multidisciplinary team. The team consists of participants from Design, Planning, Maintenance, Research, Highway Police, and Construction. Environmental and Right-Of-Way are also invited if their input is necessary in the project development.

The on-site assessment is typically conducted during the time of day that can reflect the safety problem. Information such as the roadway geometry, lane/shoulder width, access, sight distance, operations, traffic, the existing traffic control devices, etc., is collected. The purpose of the on-site review is to:

- Confirm any previous analysis and proposed countermeasures based on preliminary review;
- Identify additional conditions which may have contributed to the crash; and
- Identify any other countermeasures that would address the existing safety risks.

Assess Countermeasure Effectiveness (Economic Appraisal)

Once a set of countermeasures or potential solutions are identified, the list must be prioritized based on the results of an economic appraisal (benefit-cost analysis) and paired to meet existing resources. To accomplish the prioritization of improvements, effectiveness of the countermeasures should be evaluated.

Cost of the proposed countermeasures are estimated using the available Department's cost-per-mile sheet, and unit-price sheets, which are developed based on the past projects and contracts. Roadway Design division is contacted to provide a more accurate cost estimate for each countermeasure. Through coordination with Roadway Design, the costs of the recommended treatments are finalized and used in the economic appraisal process.

This process includes the estimation of a monetary value for the potential benefits of implementing the countermeasures. The benefits of each countermeasure is estimated by using the CMFs reported in various

sources including but not limited to the CMF-Clearinghouse website, HSM, research studies, and in-house past projects evaluations. The change in the expected crash number associated with each countermeasure is then converted into monetary values according to the comprehensive crash costs for each severity level reported in the HSM. These costs are further adjusted based on socio-economic factors such as the consumer price index (CPI) and Employee Cost Index (ECI) to count for the inflation and changes in economic fluctuations. The “KABCO” injury scale developed by the National Safety Council (NSC) has been frequently used by law enforcement for classifying injuries. The crash costs based on the KABCO scale can also be found from NSC or FHWA. ARDOT is also working with the Arkansas Department of Health on a project to further validate our injury severities with hospital ICD codes.

Where is HSIP staff located within the State DOT?

Planning

HSIP staff are located in the Transportation Planning and Policy Division that also deals with Multimodal, Project Planning, GIS/Mapping, and Public Transportation.

How are HSIP funds allocated in a State?

- Central Office via Statewide Competitive Application Process
- SHSP Emphasis Area Data

According to the emphasis areas in the state SHSP, spot and systemic safety improvement projects are identified through network screening in the central office. These projects are ranked and programmed based on the availability of funds. Systemic projects are usually prioritized over spot projects.

An analysis may also be initiated based on the requests received from the public or local agencies.

ARDOT is in the process of developing a local road safety program which will require local agencies to compete for HSIP funds based on the type of projects submitted to the central office. These projects will be screened and ranked for prioritization.

Describe how local and tribal roads are addressed as part of HSIP.

ARDOT addresses safety concerns on local roads and provides technical assistance and training programs on safety issues to local governments through its efforts by System Information and Research Division staff and the Arkansas Local Technology Assistance Program (ARLTAP). The ARDOT continues to coordinate with the Arkansas State Police through the Traffic Records Coordinating Committee (TRCC) and has implemented eCrash and the Advance program that allows law enforcement agencies and other State and local agencies to have better access to crash data on all public roads, and run analytics and produce reports on numerous aspects of the crash data.

ARDOT has completed the All Public Roads Linear Referencing System (ARNOLD) to meet the federal requirement. ARNOLD will allow for crash locations to be recorded on all public roads within the state of Arkansas vs only located on the federal aid system that was previously being done. All public roads are now reflected on the LRS. Queries can be performed on all public roads so that analysis can be done on any road in the LRS.

ARDOT currently utilizes ARNOLD to generate a point every 100 ft. along the road centerlines and dual carriageways and will carry the roadway attributes as well as the log mile and lat/long for the point location.

These points are used within eCrash so that law enforcement can more easily identify a crash location and have the road attribute data needed for the crash report. ARDOT will be enhancing this system by providing Roadway Inventory Data for each of these points in the future.

ARDOT is still in the process of developing a local road safety program policy that will allow the department to annually allocate a portion of HSIP funds for safety projects on local roads. The amount of allocated HSIP funds will be presented in the annual project solicitation. Half of the funds will be awarded to systemic/systematic projects while the other half will be awarded to hot spot projects. Local public agencies (LPAs) may apply to the LRSP for systemic or hot spot safety projects on the roads and streets within their jurisdiction. Additionally, universities may apply for projects on institutional routes maintained by the Department. If an LPA is awarded LRSP funds, they are required to provide a match at 10 percent of the project's construction cost. The Department and its partners will provide training opportunities for LPAs to assist them in developing good safety projects. Currently, the Center for Training Transportation Professionals (CTTP) classes will assist LPAs in project development: Safety Countermeasures for Local Roadways and Guide for Traffic Signs, Marking, and Signals. Currently, ARDOT is developing the program administration structure to submit to ARDOT Administration for review and approval.

Identify which internal partners (e.g., State departments of transportation (DOTs) Bureaus, Divisions) are involved with HSIP planning.

- Design
- Districts/Regions
- Maintenance
- Operations
- Planning
- Traffic Engineering/Safety

The core HSIP planning takes place by Traffic Safety staff in planning; however, extensive coordination with the other groups identified occurs during the study process

Describe coordination with internal partners.

Coordination with internal partners, occurs on different levels. ARDOT Design, Planning, Maintenance, and Construction Divisions, are all on the SHSP Steering committee. Coordination has also taken place when addressing other safety improvement programs such as work zone safety, roadway departure safety, and in the identification of infrastructure and non-infrastructure projects. Traffic Safety and Maintenance work together to address the spot treatments due to fatal and serious injury crashes.

ARDOT is not required to have a High-Risk Rural Road Program but chooses to do so anyway. This process is done in coordination with the Traffic Safety Section, Maintenance Division and with the 10 ARDOT Districts. Traffic Safety finds possible trouble areas through use of data analysis. The areas are then turned over to the Maintenance Division for a field review to determine if any low-cost safety measures could be implemented. Based on the Maintenance Division's recommended improvements the Districts are then involved in implementation of the low cost safety measures.

Traffic Safety performs the preliminary scope of safety improvements on corridor jobs according to the HSM guidelines to help with the design process. This scope also incorporates comments from site visits that includes representatives from the other Divisions such as the Roadway Design Division, the Maintenance Division, the System Information and Research Division and the Environmental Division, and the Districts. When the study and job is approved by the Chief Engineer and the Highway Commission, respectively, Roadway Design further looks into it. If there is any need of change in the scope, Traffic Safety is informed

about it. This results in review of the change based on the benefit-cost analysis and Traffic Safety responds back accordingly. Currently Administration recommends changes that are more than 2 million dollars require the Chief Engineer's approval. Based on the draft updated HSIP Process the change amount will be based on a percentage of the total project cost, with different percentages requiring different levels of approval. Traffic Safety also works on the development of specification for the new countermeasures to make sure their installation is correct. This requires input from the other Divisions including the Construction Division as necessary.

For major safety projects such as statewide sub-programs, the Roadway Design Division, the Maintenance Division, the Districts, the System Information and Research Division and the Environmental Division are involved to help finalize the scope of these projects in coordination with the Traffic Safety Section. Most of the project and specification development is done by the Traffic Safety section for these kinds of jobs.

Identify which external partners are involved with HSIP planning.

- FHWA
- Governors Highway Safety Office
- Law Enforcement Agency
- Local Government Agency
- Regional Planning Organizations (e.g. MPOs, RPOs, COGs)

Describe coordination with external partners.

Coordination with external partners, such as Federal Highway Administration (FHWA), Arkansas State Police (ASP) the Highway Safety Office (HSO) and the eight Metropolitan Organizations (MPOs) across the State, occurs on different levels. MPOs, ASP, and the HSO are also on the SHSP Steering committee. Coordination has also taken place when addressing other safety improvement programs such as work zone safety, roadway departure safety, target setting, and in the identification of infrastructure and non-infrastructure projects.

The Maintenance Division and the Traffic Safety Section will often meet with local agencies and officials when conducting a field review in a local jurisdiction to gather their input.

Traffic Safety partners with the Highway Safety Office on numerous projects resulting from the Traffic Records Coordinating Committee. An example of this is a project currently in progress to provide the necessary equipment and training to local law enforcement agencies for eCrash.

Preliminary and final corridor and sub-program job scopes are developed in collaboration with FHWA.

Describe other aspects of HSIP Administration on which the State would like to elaborate.

The Traffic Safety Section (TSS) at ARDOT manages the HSIP. TSS continues to use the Highway Safety Manual (HSM) on a routine basis. TSS has two engineers working on different safety projects/programs. Arkansas recently updated the 2022 Strategic Highway Safety Plan for the State. This was the first time ARDOT hired a consultant to update the SHSP. Another consultant will coordinate with TSS staff to effectively complete large scale studies. SHSP updates were done in coordination with a steering committee that encompassed many stakeholders from the four E's with representatives from various government agencies as well as private industries. Action plans were developed by sub-committees for each emphasis area. These action plans will be tracked in an ongoing fashion throughout the life of the plan. Additionally, TSS has marketed the SHSP (approved by FHWA in July 2022) with a focus on the safe system approach and TZD through the Arkansas Highways Magazine, idrivearkansas.com and tzdarkansas.org. ARDOT continues to be a member State in the Evaluation of Low-Cost Safety Improvements Pooled Fund Study. A vendor selection of

a Road Safety Management System is completed and waiting for commission approval. ARDOT is also updating the HSIP Process document based on the information learned from this effort and the latest HSIP guidelines.

Program Methodology

Does the State have an HSIP manual or similar that clearly describes HSIP planning, implementation and evaluation processes?

Yes

Last year the HSIP Process was undergoing an update that was being reviewed at the Chief Engineer level when submitting the report. It was anticipated that the new Process would go into effect by early this year. However, it is still undergoing the final stages of review. No proposed changes are currently in effect; however, templates and framework have already been developed to allow for a seamless transition once approval is received. Additionally, once a vendor has been selected for the roadway safety management software and the product has been implemented the HSIP will need to be updated again.

An evaluation database has also been developed that allows for a simple before/after analysis for all HSIP projects dating back to 2008. Steps are being taken to further this database by looking at targeted crash performance based on countermeasures in various projects.

Select the programs that are administered under the HSIP.

- Intersection
- Low-Cost Spot Improvements
- Median Barrier
- Roadway Departure
- Rural State Highways
- Segments
- Shoulder Improvement
- Skid Hazard
- Wrong Way Driving
- Other-Crash Data
- Other-Guardrail

The Crash Data program allows the Department to make HSIP funds available for local law enforcement to enhance their crash reporting to make more data readily available for analysis.

The Guardrail program utilizes HSIP funds to upgrade guardrail on the National Highway System (NHS) that pre-dates NCHRP 350 standards.

While we do not have an official HRRR program under HSIP, Traffic Safety staff still facilitate similar work through coordination with our Maintenance Division.

We do not currently have a pedestrian and horizontal curve program, however, Traffic Safety is in the process of developing these programs to address pedestrian and roadway departure crashes occurring in Arkansas.

Program: Intersection

Date of Program Methodology:1/1/2019

What is the justification for this program?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway
• Fatal and serious injury crashes only • Other-Intersection related crashes	• Volume	• Functional classification • Other-Rural/Urban

What project identification methodology was used for this program?

- Crash frequency

Are local roads (non-state owned and operated) included or addressed in this program?

No

Are local road projects identified using the same methodology as state roads?

How are projects under this program advanced for implementation?

- Other-Based on study and approval by Adminstration

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Rank of Priority Consideration

Ranking based on B/C:1
Cost Effectiveness:2

Program: Low-Cost Spot Improvements

Date of Program Methodology:1/25/2017

What is the justification for this program?

- Addresses SHSP priority or emphasis area

- Other-Systemic safety improvements

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway
• All crashes • Fatal and serious injury crashes only • Other-Based on the suggested treatments (roadway departure, wet pavement, and wrong-way crashes)	• Traffic	• Horizontal curvature • Functional classification

What project identification methodology was used for this program?

- Crash frequency

Are local roads (non-state owned and operated) included or addressed in this program?

No

Are local road projects identified using the same methodology as state roads?

How are projects under this program advanced for implementation?

- Other-Based on the study and analysis memo from TS in Planning Division

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Rank of Priority Consideration

Available funding:2
Cost Effectiveness:1

Program: Median Barrier

Date of Program Methodology:6/1/2019

What is the justification for this program?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Funding set-aside

What data types were used in the program methodology?

Crashes	Exposure	Roadway
• All crashes • Fatal and serious injury crashes only • Other-Cross-Median Crashes	• Traffic	• Median width • Functional classification

What project identification methodology was used for this program?

- Other-Systemic approach

Are local roads (non-state owned and operated) included or addressed in this program?

No

Are local road projects identified using the same methodology as state roads?

How are projects under this program advanced for implementation?

- Other-The process is consistent with the AHTD HSIP process adopted in 2011.

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Rank of Priority Consideration

Ranking based on B/C:2
Available funding:4
Cost Effectiveness:2
Other-Systemic-risk based:1

Program: Roadway Departure

Date of Program Methodology:1/1/2014

What is the justification for this program?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes

- All crashes
- Fatal and serious injury crashes only
- Other-Roadway departure crashes

Exposure

- Traffic

Roadway

- Horizontal curvature
- Other-Minimum of 1 foot shoulder

What project identification methodology was used for this program?

- Crash frequency
- Crash rate
- Other-Systemic approach

Are local roads (non-state owned and operated) included or addressed in this program?

No

Are local road projects identified using the same methodology as state roads?

How are projects under this program advanced for implementation?

- Other-The process is consistent with the ARDOT HSIP process adopted in 2011

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Rank of Priority Consideration

Cost Effectiveness:2
Other-The process is mainly systemic based approach but due to available funding the spot treatment approach is also considered:1

Program: Rural State Highways

Date of Program Methodology:6/6/2016

What is the justification for this program?

- Addresses SHSP priority or emphasis area
- Other-Based on HRRR safety program.
- Other-Roadway departure crashes.

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes

- All crashes
- Fatal and serious injury crashes only

Exposure

- Traffic
- Volume

Roadway

- Functional classification

What project identification methodology was used for this program?

- Crash frequency
- Crash rate

Are local roads (non-state owned and operated) included or addressed in this program?

No

Are local road projects identified using the same methodology as state roads?

How are projects under this program advanced for implementation?

- Other-Includes only signing improvements on high risk rural highways using state maintenance funds

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Rank of Priority Consideration

Available funding:1
Cost Effectiveness:2

Program: Segments

Date of Program Methodology:1/1/2013

What is the justification for this program?

- Addresses SHSP priority or emphasis area
- Other-Addressing roadway departure crashes

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes

- All crashes
- Fatal and serious injury crashes only

Exposure

- Lane miles

Roadway

- Horizontal curvature
- Roadside features
- Other-Clearzone and shoulder widths

What project identification methodology was used for this program?

- Crash rate

Are local roads (non-state owned and operated) included or addressed in this program?

No

Are local road projects identified using the same methodology as state roads?

How are projects under this program advanced for implementation?

- Other-Each segment is analyzed for low cost countermeasures and improvements as well as realignment or turn lanes at select locations

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Rank of Priority Consideration

Ranking based on B/C:1
Cost Effectiveness:2

Program: Shoulder Improvement

Date of Program Methodology:1/1/2019

What is the justification for this program?

- Addresses SHSP priority or emphasis area
- Other-to be able to apply rumble strip/stripe on wider shoulders for addressing roadway departure crashes
- Other-Roadway departure crashes.

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway
• All crashes • Fatal and serious injury crashes only • Other-Roadway departure crashes.	• Traffic • Volume	• Other-State System • Other-Shoulder width

What project identification methodology was used for this program?

- Crash frequency
- Crash rate
- Other-Systemic approach

Are local roads (non-state owned and operated) included or addressed in this program?

No

Are local road projects identified using the same methodology as state roads?

How are projects under this program advanced for implementation?

- Other-The process is consistent with the AHTD HSIP process adopted in 2011

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Rank of Priority Consideration

Available funding:1
Cost Effectiveness:2
Other-Sites were selected in conjunction with the pavement preservation Program:1

Program: Skid Hazard

Date of Program Methodology:1/1/2019

What is the justification for this program?

- Other-treating spots for wet pavement crashes

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes

- All crashes
- Fatal and serious injury crashes only
- Other-Wet pavement crashes

Exposure

- Traffic

Roadway

- Horizontal curvature
- Other-Skid resistance consideration
- Other-Intersection

What project identification methodology was used for this program?

- Crash frequency
- Crash rate
- Other-Systemic approach

Are local roads (non-state owned and operated) included or addressed in this program?

No

Are local road projects identified using the same methodology as state roads?

How are projects under this program advanced for implementation?

- Other-Safety analysis by TS in Planning
- Other-The process is consistent with the AHTD HSIP process adopted in 2011

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Rank of Priority Consideration

Available funding:4
Incremental B/C:2
Cost Effectiveness:2
Other-Wet pavement crashes were considered statewide and further analyzed to select the locations based on a certain threshold:1

Program: Wrong Way Driving

Date of Program Methodology:12/9/2015

What is the justification for this program?

- Other-Treating wrong-way crashes and the Act 641 of the 87th Arkansas General Assembly

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway
• Other-All wrong-way crashes	• Traffic	• Functional classification

What project identification methodology was used for this program?

- Crash frequency

Are local roads (non-state owned and operated) included or addressed in this program?

No

Are local road projects identified using the same methodology as state roads?

How are projects under this program advanced for implementation?

- Other-Based on the study and analysis memo from TS in Planning Division

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Rank of Priority Consideration

Available funding:1
Cost Effectiveness:2

Program: Other-Crash Data

Date of Program Methodology:1/1/2012

What is the justification for this program?

- Addresses SHSP priority or emphasis area
- Other-Meeting federal regulations and better data quality

What is the funding approach for this program?

Funding set-aside

What data types were used in the program methodology?

Crashes	Exposure	Roadway

- All crashes
- Other-All types of data exposure considered for improvements
- Other-MIRE roadway data elements are the priority for improvements

What project identification methodology was used for this program?

- Other-Provided funding for local agencies to purchase computer equipment to implement eCrash.

Are local roads (non-state owned and operated) included or addressed in this program?

Yes

Are local road projects identified using the same methodology as state roads?

Yes

How are projects under this program advanced for implementation?

- Other-The ARDOT continues to coordinate with the Arkansas State Police through the TRCC to implement eCrash and the Advance program that will allow law enforcement agencies and other State and local agencies to have timely access to the crash data.
- Other-The MIRE is connected with the eCrash which will improve the data quality for analysis

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Rank of Priority Consideration

Other-Various state agencies are prioritizing and funding needed improvements through the TRCC :1

Program: Other-Guardrail

Date of Program Methodology:1/1/2020

What is the justification for this program?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway

- Other-Roadway departure crashes
- Traffic
- Functional classification
- Other-NHS Routes

What project identification methodology was used for this program?

- Other-Systemic Approach

Are local roads (non-state owned and operated) included or addressed in this program?

No

Are local road projects identified using the same methodology as state roads?

How are projects under this program advanced for implementation?

- Other-Will be implemented as part of HSIP Process

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Rank of Priority Consideration

Other-Standard of guardrail:2
Other-On NHS:1

What percentage of HSIP funds address systemic improvements?

97

HSIP funds are used to address which of the following systemic improvements?

- Cable Median Barriers
- Install/Improve Pavement Marking and/or Delineation
- Rumble Strips

What process is used to identify potential countermeasures?

- Crash data analysis
- Data-driven safety analysis tools (HSM, CMF Clearinghouse, SafetyAnalyst, usRAP)
- Engineering Study
- SHSP/Local road safety plan
- Stakeholder input

The HSM and CMF Clearinghouse are the primary data-driven safety analysis tools utilized by ARDOT. We also use FHWA resources and proven countermeasures listed on FHWA website.

Multidisciplinary Roadway Safety Design Reviews that consist of ARDOT staff are being performed as part of the project development process in lieu of road safety assessments.

Does the State HSIP consider connected vehicles and ITS technologies?

Yes

Describe how the State HSIP considers connected vehicles and ITS technologies.

ARDOT is looking into the modern ITS techs as AV/CV technology. Our State HSIP does not include any CV technologies as of now; although, the more well-known ITS techs such as variable message signs, speed display monitors, etc. are still being utilized. Also, the 2022 update of the SHSP includes connected vehicles as an emphasis area. Automated Work Zone Information (AWIS) is being used for queue detection but not using HSIP funds. ARDOT is further looking into changing the scope of advanced wrong way detection that is part of an in-house research project and include strategic exits between Little Rock and West Memphis under the ITS project (Job 012410).

Does the State use the Highway Safety Manual to support HSIP efforts?

Yes

Please describe how the State uses the HSM to support HSIP efforts.

As part of the HSIP process in Arkansas, the six steps of the safety management process described in HSM are followed. These steps, including the details from the initial network screening to the evaluation of safety treatments, are considered in our HSIP process. Also, the CMFs presented in the HSM are used in our analysis for the economic appraisal. When a project is completed, it is evaluated for its safety effectiveness.

Describe other aspects of the HSIP methodology on which the State would like to elaborate.

Updates to the State's HSIP process document is under final review. That includes justification of why there should be changes from using the crash rate method to the Critical Index crash rate method.

Project Implementation

Funds Programmed

Reporting period for HSIP funding.

State Fiscal Year

The State Fiscal Years begins July 1st and ends June 30th.

Enter the programmed and obligated funding for each applicable funding category.

FUNDING CATEGORY	PROGRAMMED	OBLIGATED	% OBLIGATED/PROGRAMMED
HSIP (23 U.S.C. 148)	$32,630,000	$28,147,228	86.26%
HRRR Special Rule (23 U.S.C. 148(g)(1))	$0	$0	0%
Penalty Funds (23 U.S.C. 154)	$0	$0	0%
Penalty Funds (23 U.S.C. 164)	$0	$0	0%
RHCP (for HSIP purposes) (23 U.S.C. 130(e)(2))	$0	$0	0%
Other Federal-aid Funds (i.e. STBG, NHPP)	$0	$0	0%
State and Local Funds	$3,070,000	$1,068,462	34.8%
Totals	$35,700,000	$29,215,690	81.84%

How much funding is programmed to local (non-state owned and operated) or tribal safety projects?

0%

How much funding is obligated to local or tribal safety projects?

0%

A Local Road Safety Program is currently under review to make HSIP funds available to local public agencies for local safety projects.

How much funding is programmed to non-infrastructure safety projects?

$0

How much funding is obligated to non-infrastructure safety projects?

$900,000

How much funding was transferred in to the HSIP from other core program areas during the reporting period under 23 U.S.C. 126?

$0

How much funding was transferred out of the HSIP to other core program areas during the reporting period under 23 U.S.C. 126?

$19,445,163

Discuss impediments to obligating HSIP funds and plans to overcome this challenge in the future.

Some of the impediments to obligating HSIP funds at ARDOT include:

- Lack of resources and employees needed to accomplish the safety tasks and studies. We lost 2 data analysts and 1 engineer.
- Due to short staffing, it takes longer to get studies and jobs completed, which also takes time away from other tasks.
- Issues with the crash data being reported and collected.

We have been working with a consultant to collect safety roadway data elements to help with systemic and systematic countermeasure deployment. Due to quality and timeliness issues with the crash data we have implemented an in-house system to produce the crash database. The HSIP process is currently under review by the administration that should address the issues indicated above. Other plans to overcome the above challenges are listed below.

- Developing policies to systemically and systematically deploy the use of HSIP funds for the implementation of horizontal curves, intersections, signing/striping, rumble strips, etc.
- Better streamlining of the HSIP project development process (into the normal project development process) for all safety projects.
- Implementing numerous low-cost countermeasures.
- Develop/Obtain Safety Management System tool through RFP selection.
- Streamlining the process of "Change Order" approval.
- Hired some on-call consultants and are in the process of implementing studies more efficiently.

Describe any other aspects of the State's progress in implementing HSIP projects on which the State would like to elaborate.

- Local road safety program implementation is being developed for the Highway Commission's approval. It will help the local agencies to improve safety on local roads.
- Wrong-way crash low-cost countermeasures have been completed statewide. More advanced countermeasures are currently being researched.
- Statewide guardrail project is under Administration review to upgrade guardrail to meet the MASH standards on NHS routes.
- The installation of cable median barriers is continued to reduce or eliminate KA crashes on interstates.
- Funding provided to ASP HSO to allow local agencies to update/purchase equipment to implement eCrash, the electronic crash reporting system used by ASP.
- Statewide low-cost Y intersection improvement program is close to implementation.
- A bike/pedestrian problem statement was created and ranked as the top planning and fourth overall problem statement for research with the ARDOT Transportation Research Committee.
- A statewide rumble strip database is in the final stages of development for use in future statewide rumble strip projects.

- All statewide centerline rumble stripes projects that were implemented are under construction or ready for construction.
- On-call consultants assisting with a rural unsignalized intersection project.

General Listing of Projects

List the projects obligated using HSIP funds for the reporting period.

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
Statewide CLRS Impvts. (S)	Roadway	Rumble strips – center	703	Miles	$5013169	$5013169	HSIP (23 U.S.C. 148)	Rural	Multiple/Varies	0		State Highway Agency	Systemic	Lane Departure	Prevent roadway departure crashes
Statewide CMB Impvts.(Sel. Secs.) (2022) (S)	Roadside	Barrier – cable	19.3	Miles	$4911097	$5456775	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0		State Highway Agency	Systemic	Roadway Departure	Prevent roadway departure crashes
Districts 1, 5 & 10 Centerline Rumble Stripe Impvts. (S)	Roadway	Rumble strips – center	513	Miles	$4370000	$4370000	HSIP (23 U.S.C. 148)	Rural	Multiple/Varies	0		State Highway Agency	Systemic	Lane Departure	Prevent roadway departure crashes
Districts 3 & 7 Centerline Rumble Stripe Impvts. (S)	Roadway	Rumble strips – center	555	Miles	$3406171	$3406171	HSIP (23 U.S.C. 148)	Rural	Multiple/Varies	0		State Highway Agency	Systemic	Lane Departure	Prevent roadway departure crashes
Districts 2 & 6 Centerline Rumble Stripe Impvts. (S)	Roadway	Rumble strips – center	446	Miles	$3241046	$3241046	HSIP (23 U.S.C. 148)	Rural	Multiple/Varies	0		State Highway Agency	Systemic	Lane Departure	Prevent roadway departure crashes
Districts 4, 8 & 9 Centerline Rumble Stripe Impvts. (S)	Roadway	Rumble strips – center	312	Miles	$2645000	$2645000	HSIP (23 U.S.C. 148)	Rural	Multiple/Varies	0		State Highway Agency	Systemic	Lane Departure	Prevent roadway departure crashes
Statewide CMB Impvts.(Sel. Secs.) (2022) (S)	Roadside	Barrier – cable	19.3	Miles	$2188009	$2431121	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0		State Highway Agency	Systemic	Roadway Departure	Prevent roadway departure crashes
Guy - Heber Springs (Safety Impvts.) (Sel. Secs.) (S)	Roadway	Pavement surface – high friction surface	8.12	Miles	$2137822	$2137822	Penalty Funds (23 U.S.C. 154)	Rural	Minor Arterial	4,700	55	State Highway Agency	Spot	Lane Departure	Prevent roadway departure crashes

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
Statewide CMB Impvts.(Sel. Secs.) (2022) (S)	Roadside	Barrier – cable	19.3	Miles	$1266900	$1407666	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0		State Highway Agency	Systemic	Roadway Departure	Prevent roadway departure crashes
Hwy. 7 - Deerpark Rd. (Safety Impvts.) (S)	Shoulder treatments	Widen shoulder – paved or other (includes add shoulder)	6.53	Miles	$1019698	$1132997	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	1,600	55	State Highway Agency	Spot	Roadway Departure	Prevent roadway departure crashes
Traffic Safety Planning Activities (HSIP) (S)	Miscellaneous	Transportation safety planning		Planning	$900000	$100000	HSIP (23 U.S.C. 148)	N/A	N/A	0		State Highway Agency	Planning	Data	All SHSP strategies
I-40 - Solgohachia (Widen. & Realign.) (S)	Roadway	Rumble strips – center	5.29	Miles	$752290	$835879	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	4,600	55	State Highway Agency	Systemic	Lane Departure	Prevent roadway departure crashes
Guy - Heber Springs (Safety Impvts.) (Sel. Secs.) (S)	Roadway	Pavement surface – high friction surface	8.12	Miles	$738685	$820761	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	4,700	55	State Highway Agency	Spot	Lane Departure	Prevent roadway departure crashes
Guy - Heber Springs (Safety Impvts.) (Sel. Secs.) (S)	Roadway	Pavement surface – high friction surface	8.12	Miles	$717308	$797009	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	4,700	55	State Highway Agency	Spot	Lane Departure	Prevent roadway departure crashes
Hwy. 70 - Oakgrove Rd. (Safety Impvts.) (S)	Roadway	Pavement surface – high friction surface	2.9	Miles	$350136	$389040	HSIP (23 U.S.C. 148)	Multiple/Varies	Major Collector	4,000	55	State Highway Agency	Spot	Lane Departure	Prevent roadway departure crashes
Districts 3 & 7 Centerline Rumble Stripe Impvts. (S)	Roadway	Rumble strips – center	555	Miles	$196115	$196115	HSIP (23 U.S.C. 148)	Rural	Multiple/Varies	0		State Highway Agency	Systemic	Lane Departure	Prevent roadway departure crashes
I-40 Cable Median Barrier Impvts. (S)	Roadside	Barrier – cable	20.06	Miles	$193307	$214786	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0		State Highway Agency	Systemic	Roadway Departure	Prevent roadway departure crashes
Hwy. 7 - Deerpark Rd. (Safety Impvts.) (S)	Shoulder treatments	Widen shoulder – paved or other (includes add shoulder)	6.53	Miles	$180430	$200478	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	1,600	55	State Highway Agency	Spot	Roadway Departure	Prevent roadway departure crashes

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
Hwy. 49 - Hwy. 91 (Jonesboro) (S)	Speed management	Speed management - other	4.87	Miles	$178748	$198609	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	17,000	65	State Highway Agency	Spot	Work Zones	Work Zones Queue Protection
Alma - Hwy. 164 (S)	Speed management	Speed management - other	29.61	Miles	$66122	$73469	HSIP (23 U.S.C. 148)	Multiple/Varies	Principal Arterial-Interstate	0	75	State Highway Agency	Spot	Work Zones	Work Zones Queue Protection
W. Cherry St. RR Signals (Blytheville) (S)	Railroad grade crossings	Active grade crossing equipment installation/upgrade	1	Intersections	$65557	$65557	HSIP (23 U.S.C. 148)	Urban	Local Road or Street	0		City or Municipal Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
Hwy. 10 - Hwy. 100 (System Preservation & ITS Impvts.) (S)	Speed management	Speed management - other	2.36	Miles	$64778	$71976	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	77,000	65	State Highway Agency	Spot	Work Zones	Work Zones Queue Protection
Lonoke Co. Line - Hwy. 67B (Sel. Secs.) (S)	Roadway	Rumble strips – edge or shoulder	11.07	Miles	$63650	$70722	HSIP (23 U.S.C. 148)	Rural	Major Collector	1,200	55	State Highway Agency	Spot	Roadway Departure	Prevent roadway departure crashes
E. Ash St. RR Signals Upgrade & Surf. (Brinkley) (S)	Railroad grade crossings	Active grade crossing equipment installation/upgrade	1	Intersections	$50276	$50276	HSIP (23 U.S.C. 148)	Urban	Local Road or Street	0		City or Municipal Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
Hwy. 148 - So. of Hwy. 61 (S)	Speed management	Speed management - other	4.28	Miles	$33458	$37176	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Interstate	24,000	75	State Highway Agency	Spot	Work Zones	Work Zones Queue Protection
Guy - Heber Springs (Safety Impvts.) (Sel. Secs.) (S)	Roadway	Pavement surface – high friction surface	8.12	Miles	$24734	$27483	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	4,700	55	State Highway Agency	Spot	Lane Departure	Prevent roadway departure crashes
Hwy. 112 - I-49 (Hwy. 412)	Roadside	Barrier – cable	4.57	Miles	$21585	$23984	HSIP (23 U.S.C. 148)	Urban	Multiple/Varies	0		State Highway Agency	Systemic	Roadway Departure	Prevent roadway departure crashes
Hwy. 7 - Deerpark Rd. (Safety Impvts.) (S)	Shoulder treatments	Widen shoulder – paved or other (includes add shoulder)	6.53	Miles	$18628	$18628	Penalty Funds (23 U.S.C. 154)	Rural	Minor Arterial	1,600	55	State Highway Agency	Spot	Roadway Departure	Prevent roadway departure crashes
W. Fulton St. RR Signals	Railroad grade crossings	Active grade crossing equipment installation/upgrade	1	Intersections	$17934	$17935	HSIP (23 U.S.C. 148)	Urban	Local Road or Street	0		City or Municipal	Systemic	Railroad Crossing	Prevent railroad

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
(Ashdown) (S)												Highway Agency			crossing crashes
Oak Bluff Rd. - Hwy. 122 (S)	Shoulder treatments	Widen shoulder – paved or other (includes add shoulder)	8.7	Miles	$16299	$18110	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	1,500	55	State Highway Agency	Systemic	Roadway Departure	Prevent roadway departure crashes
Guy - Heber Springs (Safety Impvts.) (Sel. Secs.) (S)	Roadway	Pavement surface – high friction surface	8.12	Miles	$11925	$11925	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	4,700	55	State Highway Agency	Spot	Lane Departure	Prevent roadway departure crashes
Mississippi Ave. - Perryville Rd. (Hwy. 10)(L.R.)	Intersection geometry	Add/modify auxiliary lanes	0.7	Miles	$9067	$176205	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	32,000	35	State Highway Agency	Spot	Intersections	Mitigate consequences of intersection crashes
E. Ash St. RR Signals Upgrade & Surf. (Brinkley) (S)	Railroad grade crossings	Active grade crossing equipment installation/upgrade	1	Intersections	$8000	$8000	HSIP (23 U.S.C. 148)	Urban	Local Road or Street	0		City or Municipal Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
Hinton Rd. RR Signals (Wilton) (S)	Railroad grade crossings	Active grade crossing equipment installation/upgrade	1	Intersections	$6952	$6952	HSIP (23 U.S.C. 148)	Urban	Local Road or Street	0		City or Municipal Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
Riverview Dr. RR Sig. Upgrade & Surf. (S. of Mammoth Spring) (S)	Railroad grade crossings	Active grade crossing equipment installation/upgrade	1	Intersections	$5986	$5986	HSIP (23 U.S.C. 148)	Urban	Local Road or Street	0		City or Municipal Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
S. Church St. RR Signals Upgrade (Atkins)	Railroad grade crossings	Active grade crossing equipment installation/upgrade	1	Intersections	$4443	$4443	HSIP (23 U.S.C. 148)	Urban	Local Road or Street	0		City or Municipal Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
Hwy. 79 - Hwy. 130 (Stuttgart) (S)	Shoulder treatments	Widen shoulder – paved or other (includes add shoulder)	2.1	Miles	$1975	$2194	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	3,100	55	State Highway Agency	Spot	Roadway Departure	Prevent roadway departure crashes
Hwy. 16 - Boone Co. Line (Sel. Secs.) (S)	Roadway	Pavement surface – high friction surface	25.33	Miles	$1621	$1801	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	2,600	55	State Highway Agency	Spot	Lane Departure	Prevent roadway departure crashes

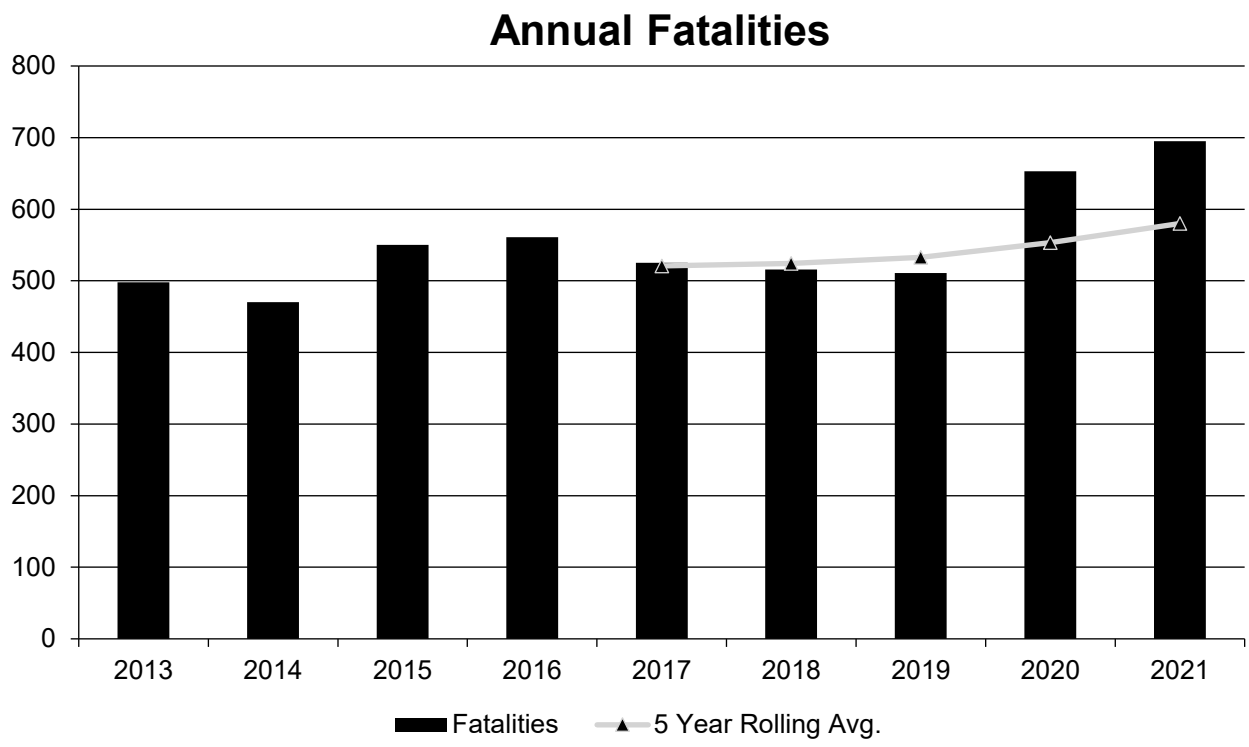
PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
Hwy. 5 - Perry Co. Line (Safety Impvts.) (Sel. Secs.) (S)	Shoulder treatments	Widen shoulder – paved or other (includes add shoulder)	17.47	Miles	$1525	$1694	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	1,000	55	State Highway Agency	Spot	Roadway Departure	Prevent roadway departure crashes
Izard Co. Line - Hwy. 62	Shoulder treatments	Widen shoulder – paved or other (includes add shoulder)	18	Miles	$833	$926	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	7,200	55	State Highway Agency	Systemic	Roadway Departure	Prevent roadway departure crashes
Hwy. 227 - Hwy. 7 (S)	Shoulder treatments	Widen shoulder – paved or other (includes add shoulder)	5.91	Miles	$250	$277	HSIP (23 U.S.C. 148)	Rural	Major Collector	2,000	55	State Highway Agency	Systemic	Roadway Departure	Prevent roadway departure crashes

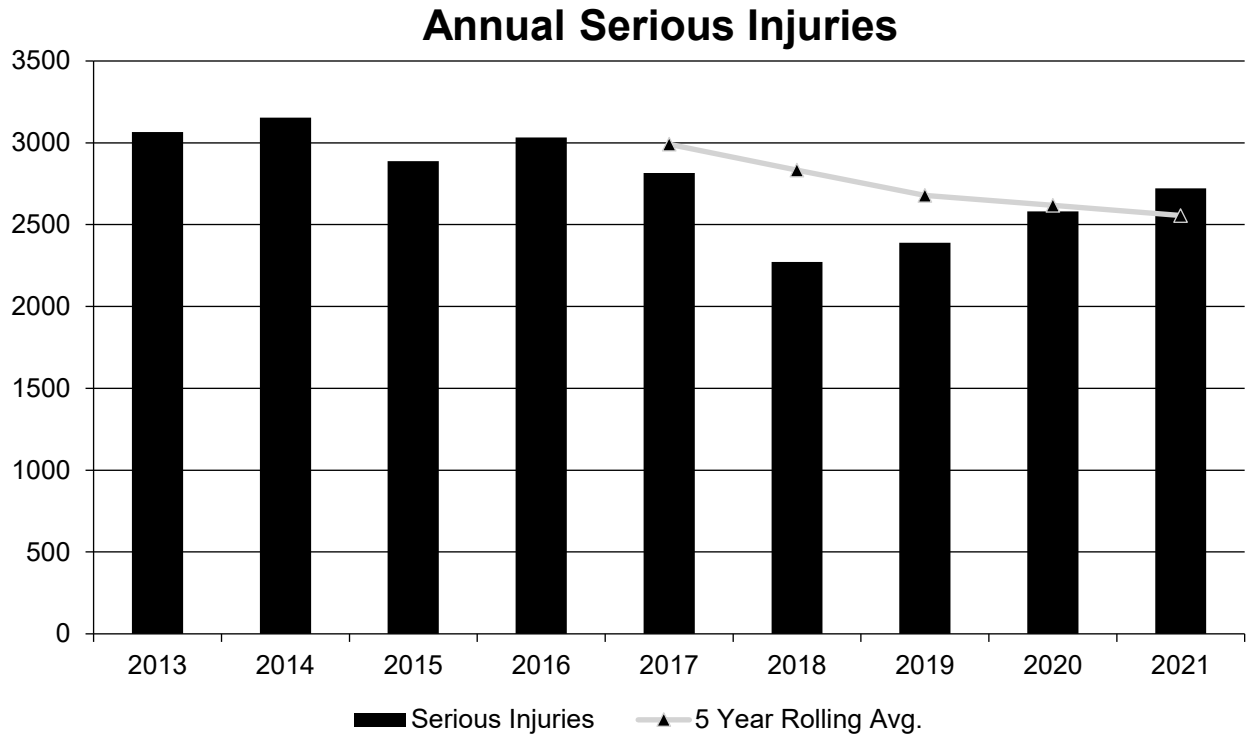
Safety Performance

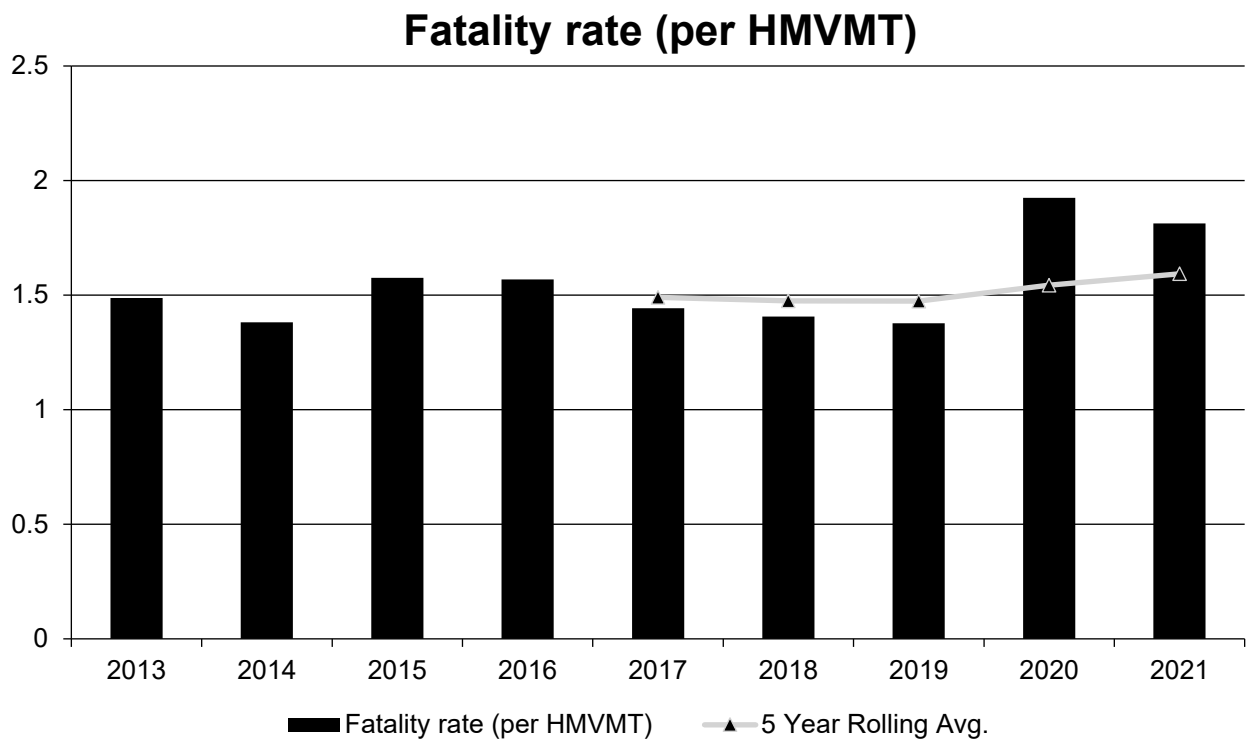
General Highway Safety Trends

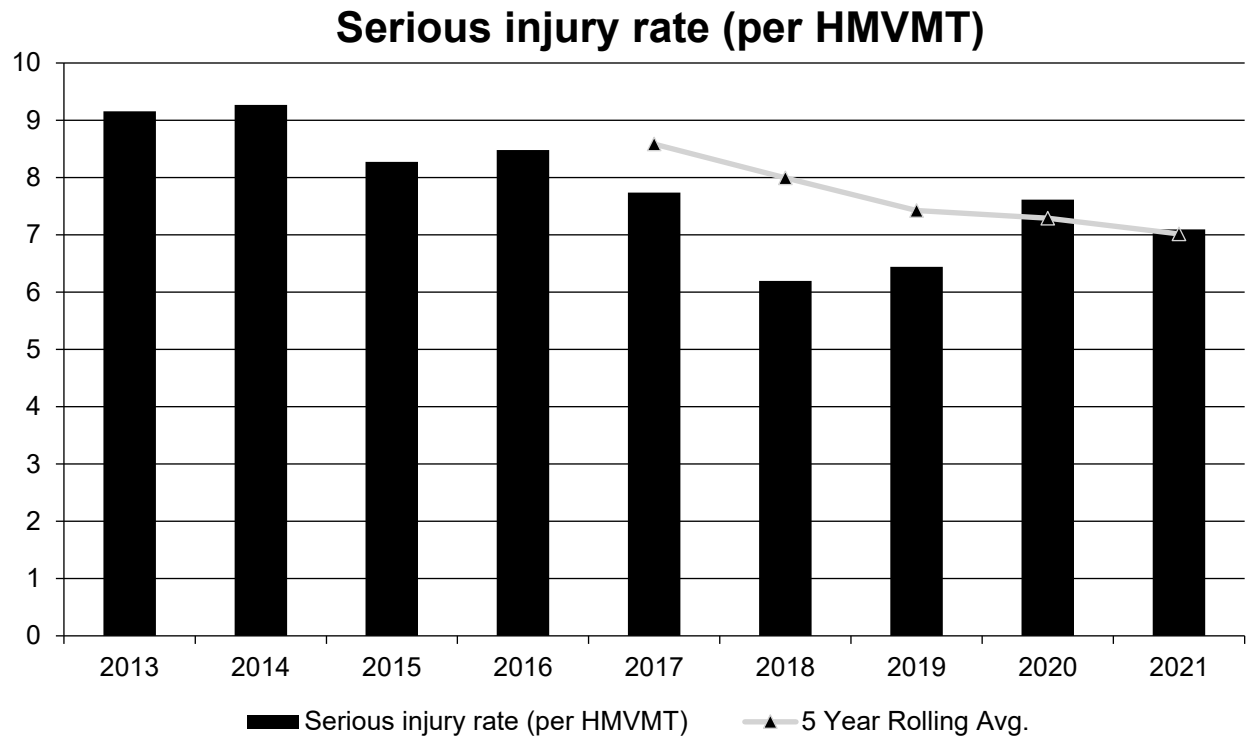
Present data showing the general highway safety trends in the State for the past five years.

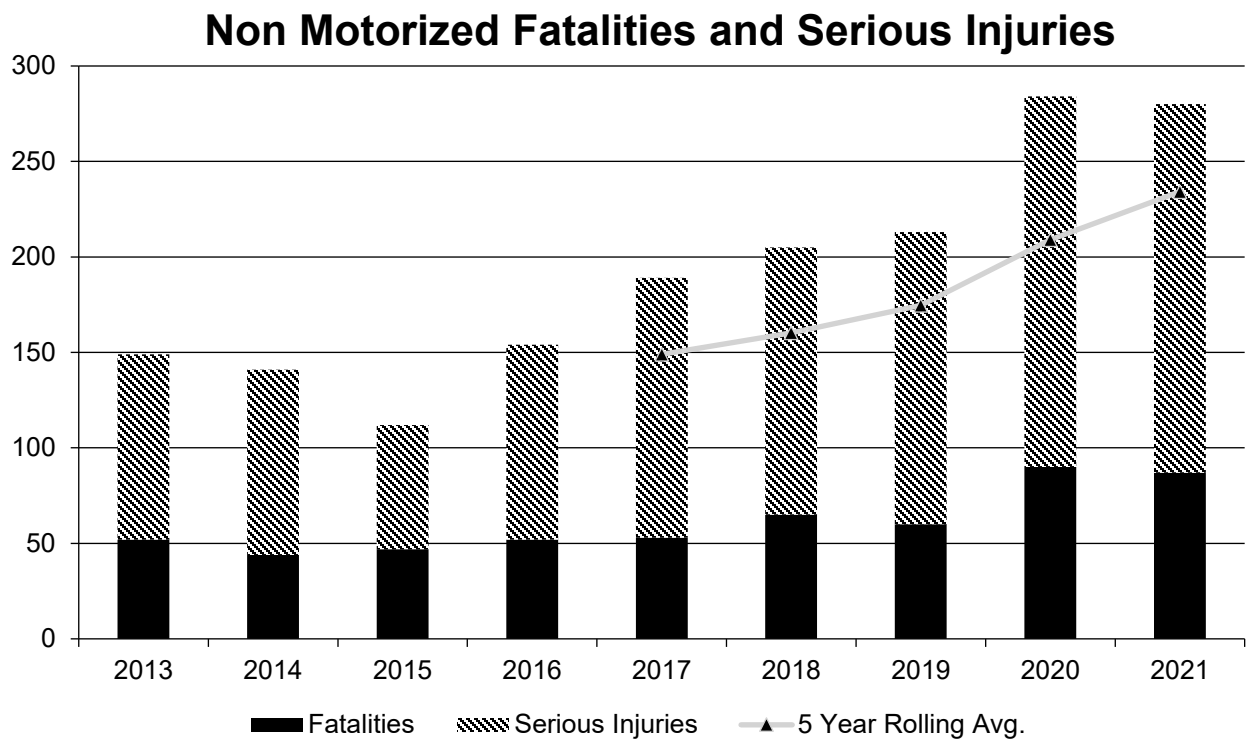
PERFORMANCE MEASURES	2013	2014	2015	2016	2017	2018	2019	2020	2021
Fatalities	498	470	550	561	525	516	511	653	695
Serious Injuries	3,066	3,154	2,888	3,032	2,816	2,272	2,389	2,582	2,721
Fatality rate (per HMVMT)	1.487	1.381	1.576	1.569	1.443	1.407	1.377	1.925	1.813
Serious injury rate (per HMVMT)	9.154	9.270	8.276	8.480	7.739	6.195	6.440	7.612	7.096
Number non-motorized fatalities	52	44	47	52	53	65	60	90	87
Number of non-motorized serious injuries	97	97	65	102	136	140	153	194	193
Number of non-motorized fatalities and serious inj	149	141	112	154	189	205	213	284	280

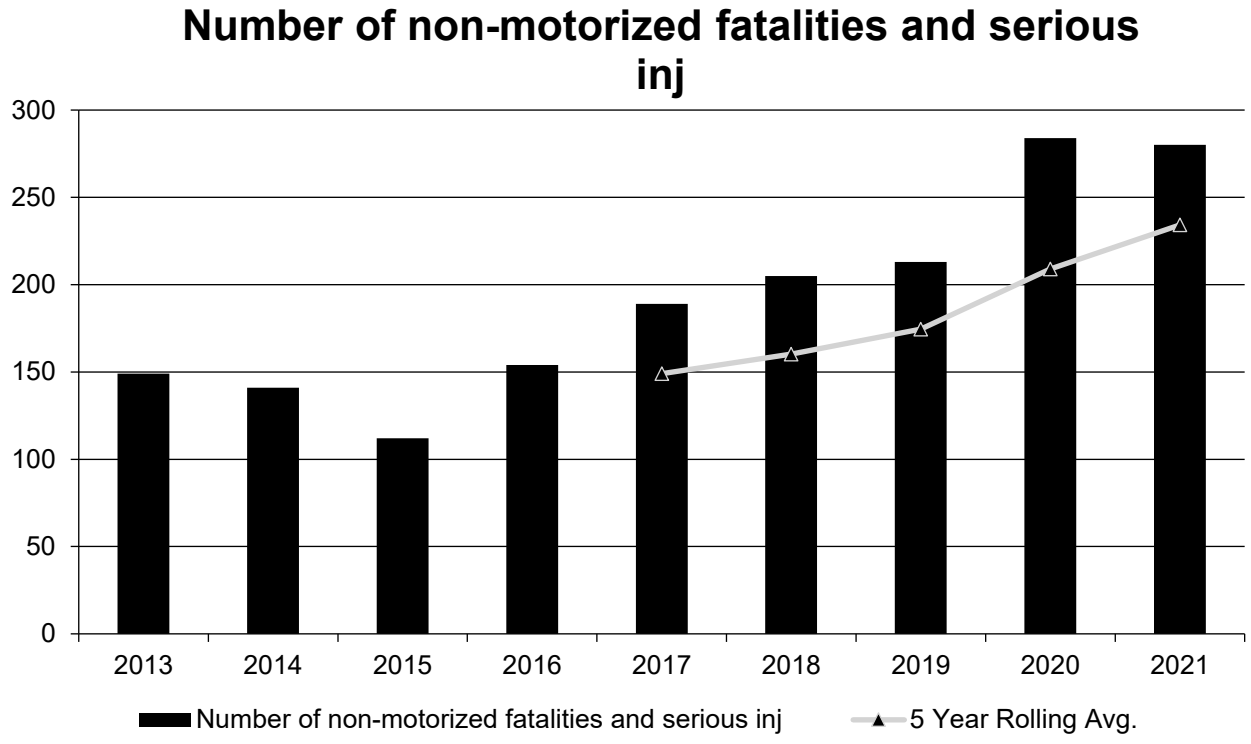

Annual Fatalities
800
700
600
500
400
300
200
100
0
2013
2014
2015
2016
2017
2018
2019
2020
2021
Fatalities
5 Year Rolling Avg.


Annual Serious Injuries
3500
3000
2500
2000
1500
1000
500
0
2013
2014
2015
2016
2017
2018
2019
2020
2021
Serious Injuries
5 Year Rolling Avg.


Fatality rate (per HMVMT)
2.5
2
1.5
1
0.5
0
2013
2014
2015
2016
2017
2018
2019
2020
2021
Fatality rate (per HMVMT)
5 Year Rolling Avg.


Serious injury rate (per HMVMT)
10
9
8
7
6
5
4
3
2
1
0
2013
2014
2015
2016
2017
2018
2019
2020
2021
Serious injury rate (per HMVMT)
5 Year Rolling Avg.





Value for fatalities and fatality rate is based on the actual FARS fatality numbers for 2017, 2018, 2019, FARS ARF number for 2020 and NSC number for 2021.
Value for suspected serious injuries, suspected serious injury rate, and non-motorized suspected serious injuries for 2017-2021 is the actual number using the ARDOT crash data. The number of non-motorized fatalities for 2021 is derived from the ARDOT crash data and may be different when FARS is completed for

2021. The AVMT for 2017-2020 comes from the FHWA VM-2 table. The 2021 AVMT comes from the ARDOT HPMS submittal.

Describe fatality data source.

Other
If Other Please describe

National Safety Council, FARS, and FARSARF

Value for fatalities and fatality rate is based on the actual FARS fatality numbers for 2017, 2018, 2019, FARS ARF number for 2020 and NSC number for 2021.
Value for suspected serious injuries, suspected serious injury rate, and non-motorized suspected serious injuries for 2017-2021 is the actual number using the ARDOT crash data. The number of non-motorized fatalities for 2021 is derived from the ARDOT crash data and may be different when FARS is completed for 2021. The AVMT for 2017-2020 comes from the FHWA VM-2 table. The 2021 AVMT comes from the ARDOT HPMS submittal.

To the maximum extent possible, present this data by functional classification and ownership.

Year 2021

Functional Classification	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
Rural Principal Arterial (RPA) - Interstate	33.6	98	0.8	2.32
Rural Principal Arterial (RPA) - Other Freeways and Expressways	3	9.2	0.99	2.92
Rural Principal Arterial (RPA) - Other	85.4	249.2	2.32	6.79
Rural Minor Arterial	75.2	269	2.7	9.62
Rural Minor Collector	17.8	77.6	2.67	11.93
Rural Major Collector	91.2	379.8	2.62	10.92
Rural Local Road or Street	35.4	176	1.57	7.93
Urban Principal Arterial (UPA) - Interstate	43.8	139.2	0.78	2.48
Urban Principal Arterial (UPA) - Other Freeways and Expressways	11.2	34.6	1.16	3.53

Functional Classification	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
Urban Principal Arterial (UPA) - Other	61.2	322.8	1.7	8.99
Urban Minor Arterial	64.4	372	1.45	8.35
Urban Minor Collector	1.8	6.8	2.47	10.09
Urban Major Collector	32.4	181.2	1.8	10.03
Urban Local Road or Street	27.8	198.6	1.59	11.06

Year 2021

Roadways	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
State Highway Agency	442.6	1,794.6	1.64	6.67
County Highway Agency	63.2	246.4	1.67	6.52
Town or Township Highway Agency				
City or Municipal Highway Agency	58.2	437.4	0.93	7.02
State Park, Forest, or Reservation Agency				
Local Park, Forest or Reservation Agency				
Other State Agency				
Other Local Agency				
Private (Other than Railroad)				
Railroad				
State Toll Authority				
Local Toll Authority				
Other Public Instrumentality (e.g. Airport, School, University)				
Indian Tribe Nation				

Provide additional discussion related to general highway safety trends.

In July of 2015 Arkansas began converting over from a paper based reporting system to eCrash. This process has greatly increased the number of crashes being entered into the crash database. The Arkansas crash database showed 60,947 crashes in 2014 and it has increased to 79,233 crashes in 2018. During this process we discovered that 29 out of 75 County Sheriff Offices were not submitting any crash reports. Arkansas has recently granted 2.4 million dollars to 39 local agencies to get them on the eCrash system. There are now 274 law enforcement agencies out of approximately 340 total agencies utilizing the eCrash system. Due to our effort to get better and more accurate data, crash numbers are going up because they were previously not reported to the owner agency of crash database. Any sort of trend analysis at this point would be greatly skewed because of the factors previously mentioned.

Other factors include: The AVMT in Arkansas has been on a steady increase of around 3% per year since 2015. Arkansas has recently legalized medical marijuana. The speed limit on interstates was approved by the legislature and took effect in the summer of 2020. We have also seen an increase in Non-Motorist KA crashes. We are not sure if this increase is due to actual crashes increasing or if it is because of more data being collected on these type crashes. There has also been an increase driving behavior such as distracted driving and speeding. We are continuing to monitor this trend.

Traffic Safety is working hard to improve safety statewide. Some notable accomplishments and future plans are as follows:

- Safety Projects
  - Another statewide wet pavement and pavement friction improvement study is under development that will utilize Continuous Pavement Friction Measurement.
  - A Statewide guardrail project is in development to upgrade substandard guardrails to meet the MASH standards on NHS routes.
  - New rounds of Cable Median Barrier installation have been approved to continue to reduce and eliminate KA crashes on Interstates.
  - A pedestrian and bike study has begun to address non-motorist safety, this resulted in a need for research, and it has been funded.
  - A wrong way study is ongoing and has migrated to a statewide systemic study.
  - A systemic low-cost, Y-type intersection project is under development.
  - ARDOT uses the pavement preservation program to accomplish shoulder widening and rumble strip installation along various routes where crash history showed such improvements would be effective.
  - A statewide rural 2-lane centerline rumble strip first project is under construction and the remaining jobs are being let to contract.
- Future developments being planned
  - A new HSIP Process has been developed and is under administration review.
  - A Local road safety program is in development for the Highway Commission’s approval. It will help the local agencies to improve safety on local roads using HSIP funds.
  - The AR SHSP was updated in 2022. Included was a SHSP Marketing and Communications Plan.
  - ARDOT is now included in a pooled fund study for continuous pavement friction data led by Virginia Tech Transportation Institute.
  - On-Call consultants are planned to be utilized in the coming year for safety studies and project development. Master agreements for four on-call consultants were executed. The first safety project that we plan to utilize consultants on is an unsignalized intersection study.
  - ARDOT is working with a consultant to examine the possibilities of using their data for analyzing horizontal curves roadway elements. The purpose of collecting this data is to develop a low-cost Horizontal Curve Study and incorporate the collected data.
  - Several safety analysis tools are being examined for possible use at ARDOT. This spurred participation in the FHWA Roadway Safety Management System technical assistance program. A request for proposal was created and we are currently in the process of selecting a vendor.
  - ARDOT has approved and created a job number for future educational and media campaigns to help bring awareness to the public of safety related topics. For an example ARDOT recently released two safety campaigns regarding work zone safety and centerline rumble strips.
  - ARDOT is planning on moving forward with the Roadway Data Improvement Plan, a FHWA technical assistance program. This will assess ARDOT's roadway data and make recommendations for improvements. Online data query tools and dashboards have been developed for public use; one specific tool that has already been developed is the Arkansas Crash Analytics Tool (ACAT) which is a GIS online dashboard available to the public.

Safety Performance Targets

Safety Performance Targets

Calendar Year 2023 Targets *

Number of Fatalities:704.9

Describe the basis for established target, including how it supports SHSP goals.

Reason for established target include the external factors listed below:

Negative impacts

1. Speed limit increase
2. Increase in drug usage (Opioids and Medical Marijuana)
3. Distracted driving
4. Less enforcement due to officer shortages
5. Increase in average vehicle speed due to lower traffic volume
6. Increase in reporting and accuracy of accident reporting because some small local agencies are still doing paper reports.

Positive impacts:

1. Increase in highway safety improvements
2. Gas price increase could influence changes in VMT
3. There are safer vehicles on the road with enhanced safety features
4. Motorcycle training
5. Feds provide funds for MPOs to have resources to do their own targets.
6. Selective Traffic Enforcement Program (STEP) and mini-STEP programs targeted enforcement grants overtime

The positive impacts are directly related to the SHSP goals. By increasing highway safety improvements, Arkansas intends to lower the fatality rate. The established target reflects these impacts.

Number of Serious Injuries:2790.1

Describe the basis for established target, including how it supports SHSP goals.

Reason for established target include the external factors listed below:

Negative impacts

1. More training is needed for officers reporting on eCrash and eCite due to change in definitions for crash reporting.
2. Percent increase in VMT

Positive impacts

1. Bill signed into law to make street racing a felony

In 2020, one of the major increases in fatal and suspected serious injury crashes was speeding and aggressive driving. There was also a large increase in speeding citations from 2019 to 2020. This bill supports the SHSP goals by potentially reducing the amount of speeding vehicles on Arkansas roadways since there will be increased penalties. The established target reflects this impact.

Fatality Rate:1.895

Describe the basis for established target, including how it supports SHSP goals.

Reason for established target include the external factors listed below:

Negative impacts

1. Speed limit increase
2. Increase in drug usage (Opioids and Medical Marijuana)
3. Distracted driving
4. Less enforcement due to officer shortages
5. Increase in average vehicle speed due to lower traffic volume

Positive impacts:

1. Increase in highway safety improvements
2. Gas price increase could influence changes in VMT
3. There are safer vehicles on the road with enhanced safety features

The positive impacts are directly related to the SHSP goals. By increasing highway safety improvements, Arkansas intends to lower the fatality rate. The established target reflects these impacts.

Serious Injury Rate:7.815

Describe the basis for established target, including how it supports SHSP goals.

Reason for established target include the external factors listed below:

Negative impacts

1. More training is needed for officers reporting on eCrash and eCite due to change in definitions for crash reporting.
2. In 2020 there was decrease due to lower traffic volumes
3. Percent increase in VMT

Positive impacts

1. Bill signed into law to make street racing a felony

In 2020, one of the major increases in fatal and suspected serious injury crashes was speeding and aggressive driving. There was also a large increase in speeding citations from 2019 to 2020. This bill supports the SHSP goals by potentially reducing the amount of speeding vehicles on Arkansas roadways since there will be increased penalties. The established target reflects this impact.

Total Number of Non-Motorized Fatalities and Serious Injuries:274.4

Describe the basis for established target, including how it supports SHSP goals.

Reason for established target include the external factors listed below:

Negative impacts

1. Increase in reporting agencies and better reporting has increased contributed to the increase in non-motorized fatalities and serious injuries.

Positive impacts

1. Arkansas issued a new non-emergency number for Arkansas State Police *ASP to help with safety concerns that may arise on the road to quickly address issues before turning into something more serious.

With the addition of a new non-emergency number for ASP, anyone can call the ASP with concerns regarding the safety of all road users. These calls could include information about pedestrians that appear intoxicated, vehicles that are inoperable on the roadway where a pedestrian is attempting to fix the disabled vehicle, etc. This supports the SHSP by focusing on issues that put pedestrians at a higher risk of an accident. The established target reflects this impact.

Through extensive coordination with the Arkansas Highway Safety Office, FHWA, the National Highway Traffic Safety Administration (NHTSA), all MPOs, and other stakeholders, a methodology to determine the targets was finalized in 2017.

Description of Methodology

The target-setting method, like previous years, is generally described below:

1. Calculate moving averages for the last five years. A moving average “smooths” the variation from year to year. For this target setting, the moving average was calculated for the last five years that crash data is available (2013-2017, 2014-2018, 2015-2019, 2016-2020 and 2017-2021).

2. Calculate the average of these five data points.

3. Consider external factors to account for uncertainties. Past safety performance alone is not necessarily the best indicator of future performance given numerous external factors outside of ARDOT's control. For instance, to account for the 28.4% increase in the number of agencies turning in crash reports from 2015 to 2021, which contributed to an increase in total crash reports from 67,607 in 2015 to 82,301 in 2021, an adjustment factor may be considered to account for the uncertainty of what the final numbers will be, rather than attempting to predict exact numbers.

4. Apply any adjustment factors as needed based on Step 3 to the averages calculated in Step 2 to determine targets.

Please see attached Safety Performance Targets Document for more details.

Describe efforts to coordinate with other stakeholders (e.g. MPOs, SHSO) to establish safety performance targets.

Several meetings were held involving ARDOT, FHWA and the Arkansas Highway Safety Office to establish a methodology and preliminary targets. The method and preliminary targets were then presented to the SHSP Steering Committee which included all MPOs, other stakeholder agencies and private industry and organizations. Comments were taken from the committee and considered. Some of the topics that created the most discussion evolved around adjustments to targets for internal and external factors as shown in the performance targets section (#34) of this report.

Does the State want to report additional optional targets?

No

Arkansas does not have any additional targets other than the targets for the five HSIP performance measures.

Describe progress toward meeting the State's 2021 Safety Performance Targets (based on data available at the time of reporting). For each target, include a discussion of any reasons for differences in the actual outcomes and targets.

PERFORMANCE MEASURES	TARGETS	ACTUALS
Number of Fatalities	536.3	580.0
Number of Serious Injuries	3103.8	2556.0
Fatality Rate	1.560	1.593
Serious Injury Rate	9.043	7.016
Non-Motorized Fatalities and Serious Injuries	220.3	234.2

Data is based on the latest fatality and serious injury data. It does not appear that ARDOT will be able to meet its 2021 safety performance targets for Number of Fatalities, Fatality Rate and Non-Motorized Fatalities and Serious Injury. There was sudden increase in fatal crashes in 2020 and 2021 during the pandemic. This increase in fatalities is due mainly to higher speeds, less law enforcement, and increased reporting due to the increased use of eCrash.

Applicability of Special Rules

Does the HRRR special rule apply to the State for this reporting period?

No

Provide the number of older driver and pedestrian fatalities and serious injuries 65 years of age and older for the past seven years.

PERFORMANCE MEASURES	2014	2015	2016	2017	2018	2019	2020
Number of Older Driver and Pedestrian Fatalities	63	72	83	80	74	86	92

PERFORMANCE MEASURES	2014	2015	2016	2017	2018	2019	2020
Number of Older Driver and Pedestrian Serious Injuries	244	233	257	263	212	221	224

FARS data is not finalized currently for 2021.

Evaluation

Program Effectiveness

How does the State measure effectiveness of the HSIP?

- Change in fatalities and serious injuries

The new HSIP Process being developed will develop a method to evaluate the overall effectiveness of the HSIP as well as target crash performance for specific countermeasures in the subprograms established by the updated Process. This process has been reviewed by FHWA and is still under ARDOT administration review due to changes in staff and additional feedback. As part of this new process the economic effectiveness/BCR could also be used as a performance measurement.

Based on the measures of effectiveness selected previously, describe the results of the State's program level evaluations.

Most of our safety projects which were initiated in recent years are either under design or construction. Most projects that have been constructed do not yet have crash data available for evaluation. However, we have evaluated all HSIP projects implemented since 2008 using a simple before-after analysis that helped us expand certain countermeasures at the statewide level. Some of them are discussed below.

One of the sub-programs of High Risk Rural Road (HRRR) Program was evaluated on an annual basis and it was found effective. However, after the implementation of this project we found out that the crashes would migrate. In order to address this issue, logical termini points are considered instead of data driven termini points. Another major statewide safety improvement program has been the installation of cable median barrier to address roadway departure crashes, which has been very effective and still it is continued. HFST has also been installed on several ramps/curves/intersections across the state which has proved to be effective on preventing wet-pavement crashes. We have been receiving positive feedback from the public and additional rounds of installation of friction improvement countermeasures is complete and currently a third round of pavement friction improvements is about to complete. Shoulder Rumble Strips/Stripes have been installed on thousands of miles statewide and have proven effective in preventing roadway departure crashes especially on curves located in rural areas. Similarly, Centerline Rumble Stripes (CLRS) have been installed in passing lane segments and another round of CLRS on 2-lane rural routes is under construction. Currently, ARDOT is in the process of studying the mumble stripe design for low noise and its safety effectiveness compared to rumble stripes. If the evaluation is positive, it will be implemented statewide where noise will be an issue. ARDOT will continue to evaluate these projects as data and resources become available. The new HSIP Process being developed will develop a method to evaluate the overall effectiveness of sub-programs. However, an evaluation of the entire HSIP and sub-programs still needs to be developed. The process has been reviewed by FHWA and is under ARDOT Administration review. Additionally, ARDOT selected a vendor for a Roadway Safety Management System that should help with countermeasure selections and program level evaluations.

What other indicators of success does the State use to demonstrate effectiveness and success of the Highway Safety Improvement Program?

- HSIP Obligations
- Increased awareness of safety and data-driven process
- More systemic programs
- Organizational change
- Policy change

As we shift to more low-cost systemic projects, # of miles improved will be a good indicator. However, we are still getting many of these programs off the ground.

The amount of HSIP funds obligated each year indicates that we are planning well for improving the safety conditions throughout the State by following the HSIP guidelines.

Most of the projects' scopes defined and programmed are based on a data driven process where the benefit-cost calculations show cost effectiveness of the treatments recommended to problematic locations. In addition, a more proactive approach is being taken toward systemic programs which address the crash risks rather than historical crash occurrences. These are undertaken by making changes to the HSIP process organization and policies toward data-driven approaches, especially where the KA crashes are of main importance when examining for safety concerns. The HSIP process is currently being updated.

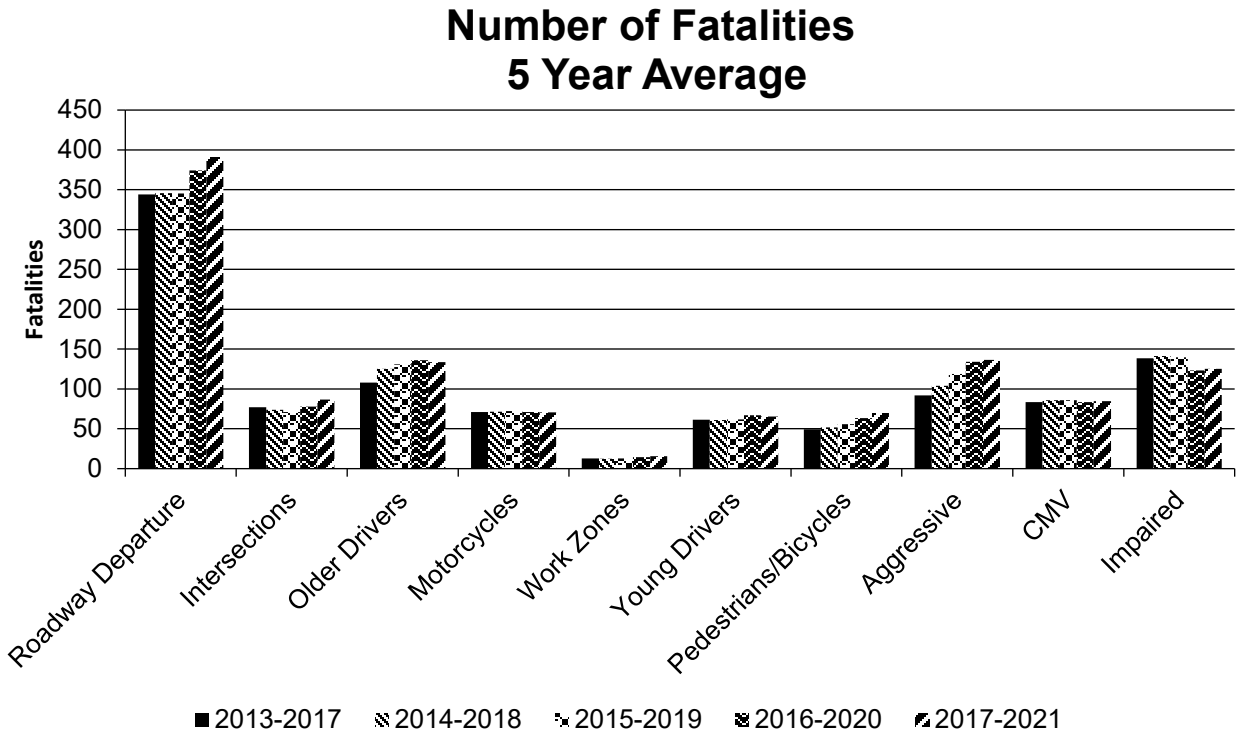
ARDOT is also in the process of developing a policy for local road safety assistance using HSIP funds in which local agencies can apply for the funds to be used on local safety improvement projects on a competitive basis.

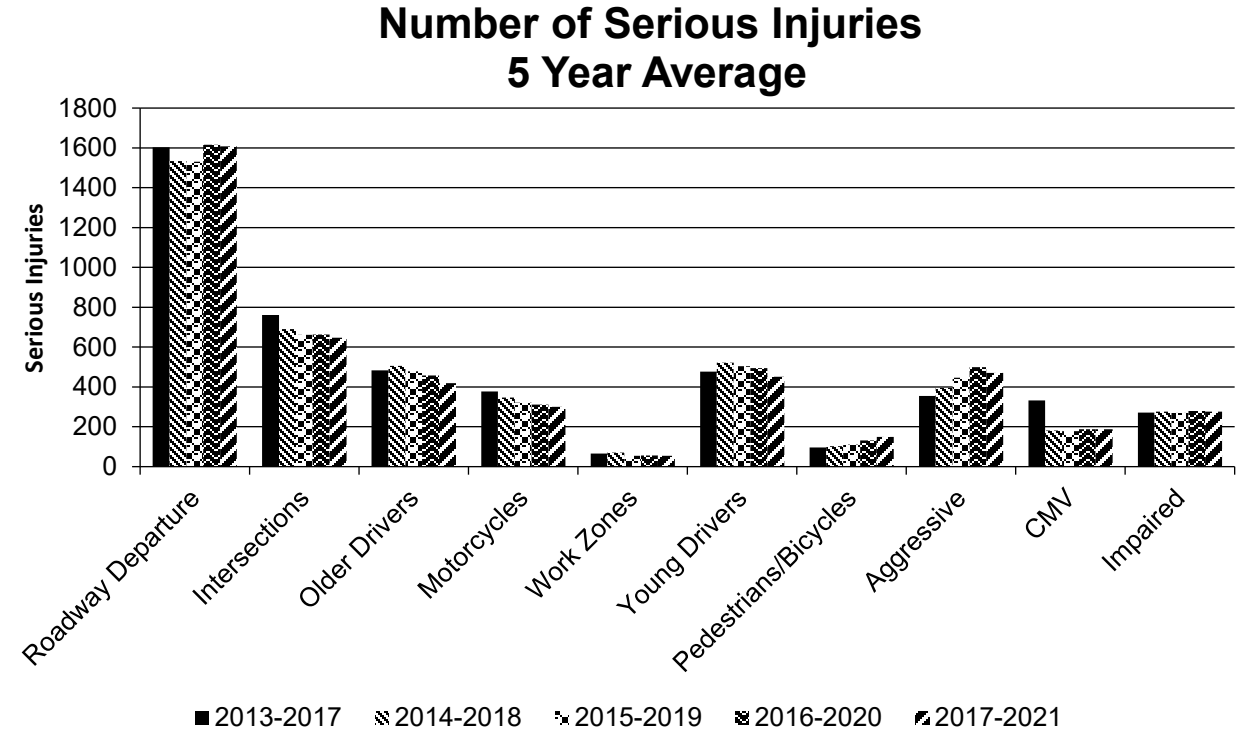
Effectiveness of Groupings or Similar Types of Improvements

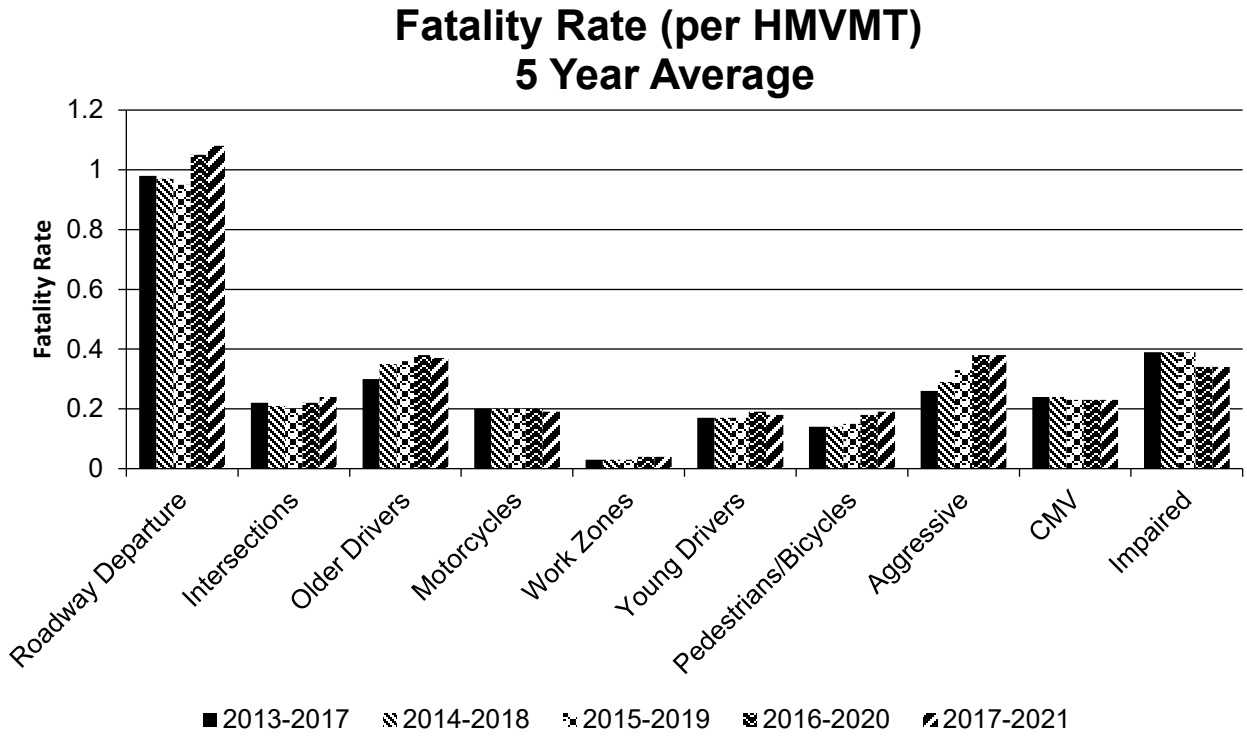
Present and describe trends in SHSP emphasis area performance measures.

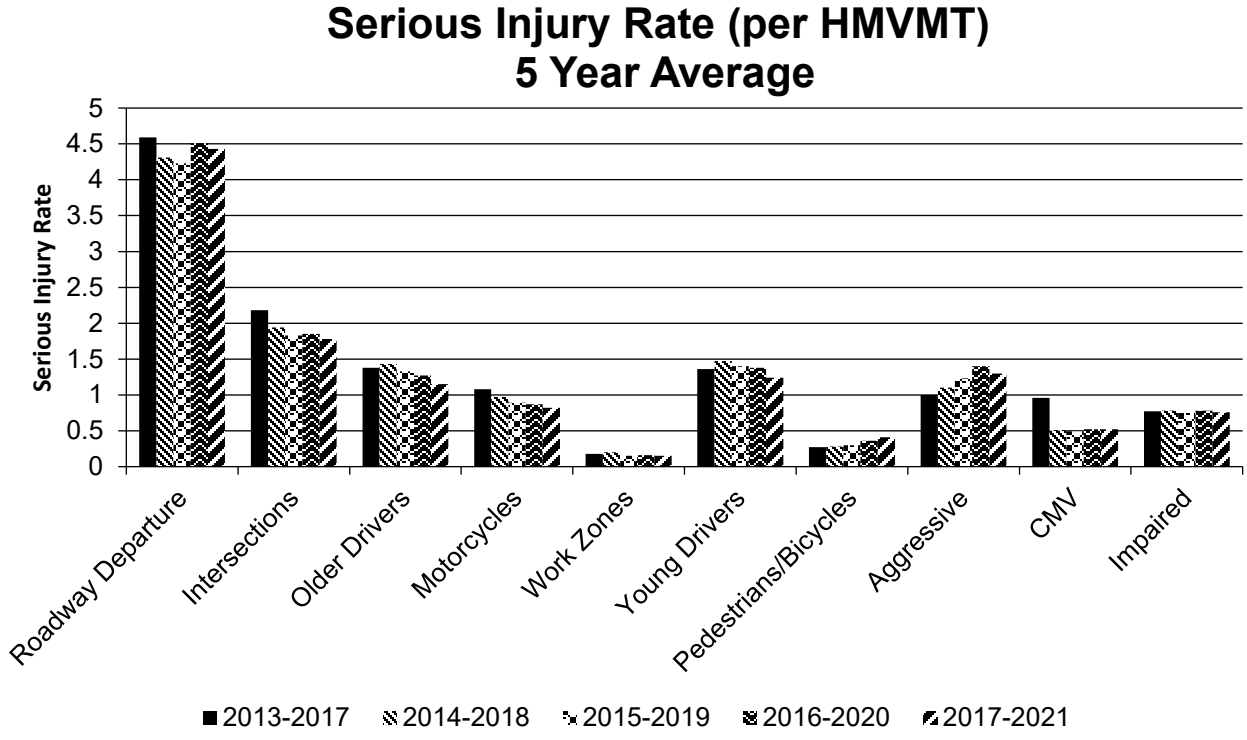
Year 2021

SHSP Emphasis Area	Targeted Crash Type	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
Roadway Departure	Head on	391.2	1,607	1.08	4.43
Intersections	Intersections	86.8	647.8	0.24	1.78
Older Drivers	All	133.6	419.2	0.37	1.15
Motorcycles	Speed-related	70.8	300.4	0.19	0.82
Work Zones	Other (define)	15.8	54.4	0.04	0.15
Young Drivers	All	65.4	450.8	0.18	1.24
Pedestrians/Bicycles	Vehicle/pedestrian	70	149.6	0.19	0.41
Aggressive	Speed-related	136.4	471.2	0.38	1.3
CMV	All	84.8	188.4	0.23	0.52
Impaired	All	125.2	276.4	0.34	0.76


Number of Fatalities
5 Year Average
Fatalities
450
400
350
300
250
200
150
100
50
0
Roadway Departure
Intersections
Older Drivers
Motorcycles
Work Zones
Young Drivers
Pedestrians/Bicycles
Aggressive
CMV
Impaired
2013-2017
2014-2018
2015-2019
2016-2020
2017-2021


Number of Serious Injuries
5 Year Average
Serious Injuries
1800
1600
1400
1200
1000
800
600
400
200
0
Roadway Departure
Intersections
Older Drivers
Motorcycles
Work Zones
Young Drivers
Pedestrians/Bicycles
Aggressive
CMV
Impaired
2013-2017
2014-2018
2015-2019
2016-2020
2017-2021





Work zones targeted crash type is other- work zone related crashes.

Has the State completed any countermeasure effectiveness evaluations during the reporting period?

Yes

Please provide the following summary information for each countermeasure effectiveness evaluation.

CounterMeasures:	Mumble Strips
Description:	Study Included Shoulder and Centerline Rumbles and Mumbles for a before/after comparison.
Target Crash Type:	All
Number of Installations:	32
Number of Installations:	32
Miles Treated:	
Years Before:	2
Years After:	2
Methodology:	Simple before/after
Results:	The 2 years prior to the project's various installation dates showed a total of 138 crashes, with 24 being KA crashes. In the 2 years after the substantial completion date for each location, 192 crashes have occurred, and 13 of these crashes were KA. Although there was an increase in total crashes, fatal and suspected serious injury crashes had a reduction of 46 percent. These mumble strips/stripes were implemented in multiple jobs across the state.

File Name: ANLYS- 2Year Rumble Mumble (with CLMS analysis).xlsx

Project Effectiveness

Provide the following information for previously implemented projects that the State evaluated this reporting period.

Compliance Assessment

What date was the State's current SHSP approved by the Governor or designated State representative?

06/14/2022

What are the years being covered by the current SHSP?

From: 2022 To: 2027

When does the State anticipate completing it's next SHSP update?

2027

The 2022 SHSP was approved on June 14th of 2022 by the Commission and Director.

Provide the current status (percent complete) of MIRE fundamental data elements collection efforts using the table below.

*Based on Functional Classification (MIRE 1.0 Element Number) [MIRE 2.0 Element Number]

ROAD TYPE	*MIRE NAME (MIRE NO.)	NON LOCAL PAVED ROADS - SEGMENT		NON LOCAL PAVED ROADS - INTERSECTION		NON LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
		STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE
ROADWAY SEGMENT	Segment Identifier (12) [12]	100	100					100	100	100	100
	Route Number (8) [8]	100	100								
	Route/Street Name (9) [9]	100	100								
	Federal Aid/Route Type (21) [21]	100	100								
	Rural/Urban Designation (20) [20]	100	100					100	100		
	Surface Type (23) [24]	100	100					100	100		
	Begin Point Segment Descriptor (10) [10]	100	100					100	100	100	100
	End Point Segment Descriptor (11) [11]	100	100					100	100	100	100
	Segment Length (13) [13]	100	100								
	Direction of Inventory (18) [18]										

ROAD TYPE	*MIRE NAME (MIRE NO.)	NON LOCAL PAVED ROADS - SEGMENT		NON LOCAL PAVED ROADS - INTERSECTION		NON LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
		STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE
	Functional Class (19) [19]	100	100					100	100	100	100
	Median Type (54) [55]	100	100								
	Access Control (22) [23]	100	100								
	One/Two Way Operations (91) [93]	100	100								
	Number of Through Lanes (31) [32]	100	100					100	100		
	Average Annual Daily Traffic (79) [81]	100	100					100	30		
	AADT Year (80) [82]	100	100								
	Type of Governmental Ownership (4) [4]	100	100					100	100	100	100
INTERSECTION	Unique Junction Identifier (120) [110]			100	100						
	Location Identifier for Road 1 Crossing Point (122) [112]			100	100						
	Location Identifier for Road 2 Crossing Point (123) [113]			100	100						
	Intersection/Junction Geometry (126) [116]			100	74						
	Intersection/Junction Traffic Control (131) [131]			100	74						
	AADT for Each Intersecting Road (79) [81]			100	20						
	AADT Year (80) [82]			100	20						
	Unique Approach Identifier (139) [129]			100	100						
INTERCHANGE/RAMP	Unique Interchange Identifier (178) [168]					100	30				

ROAD TYPE	*MIRE NAME (MIRE NO.)	NON LOCAL PAVED ROADS - SEGMENT		NON LOCAL PAVED ROADS - INTERSECTION		NON LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
		STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE
	Location Identifier for Roadway at Beginning of Ramp Terminal (197) [187]					100	100				
	Location Identifier for Roadway at Ending Ramp Terminal (201) [191]					100	100				
	Ramp Length (187) [177]					100	100				
	Roadway Type at Beginning of Ramp Terminal (195) [185]					100	100				
	Roadway Type at End Ramp Terminal (199) [189]					100	100				
	Interchange Type (182) [172]					100	100				
	Ramp AADT (191) [181]					100	100				
	Year of Ramp AADT (192) [182]					100	100				
	Functional Class (19) [19]					100	100				
	Type of Governmental Ownership (4) [4]					100	100				
Totals (Average Percent Complete):		**94.44**	**94.44**	**100.00**	**73.50**	**100.00**	**93.64**	**100.00**	**92.22**	**100.00**	**100.00**

*Based on Functional Classification (MIRE 1.0 Element Number) [MIRE 2.0 Element Number]

Describe actions the State will take moving forward to meet the requirement to have complete access to the MIRE fundamental data elements on all public roads by September 30, 2026.

SEGMENTS

- ARDOT is currently working on the methodology to determine compass direction to meet the direction of inventory MIRE requirement for state routes. We know that federal routes have to state the signed direction of travel. The current method would be to report compass direction by total route/section rather than each individual segment of the route.
- ARDOT will be utilizing aerial imagery and street view to determine number of through lanes and surface type on the local paved system. Additionally, some local governments have that information in their road inventory that could also be utilized.
- ARDOT has a current research project in place that is using address points/types to estimate local road traffic.
- ARDOT already has a robust road inventory database in place that already meets many of the MIRE FDE requirements

INTERSECTIONS

- ARDOT purchased RIZING Geospatial's Intersection Manager software Fall of 2017. This software utilizes the all public road LRS or ARNOLD to generate intersections. It provides the unique identifier, identifies the crossing routes, calculates the approach segments/angle, and allows for us to enter the junction geometry and traffic control present. We made the final initial run in May 2019 and started maintaining it as the system changes. Methodology to input junction geometry and traffic control are underway. We have 26% left to go to have all public road intersection data completed. After that, we will be in full data maintenance mode as routes are updated.

INTERCHANGES

- ARDOT is developing an Interchange/Complex Intersection dataset that will serve as a parent/child **relationship with intersections.**
- The geometry for these areas is a polygon that encompasses all intersections and approach segments.
- Identifying the policy/procedure to create complex intersections – currently have a draft ArcGIS Enterprise tool in place to draw polygons

Below are the tools that are being utilized to collect/report the needed MIRE FDEs currently:

- Video Log (FUGRO's iVision software): Can be used for collecting certain roadside elements.
- Transcend Spatial Solutions Intersection Manager
- ESRI - ArcMap/ArcGIS Online/ArcGIS Field Maps/ArcGIS Enterprise

Optional Attachments

Program Structure:

AHTD HSIP-Process-2011-07.pdf
Project Implementation:

Safety Performance:

Target Setting - Safety (2023) Signed.pdf
Evaluation:

ANLYS- 2Year Rumble Mumble (with CLMS analysis).xlsx
Compliance Assessment:

Glossary

5 year rolling average: means the average of five individuals, consecutive annual points of data (e.g. annual fatality rate).

Emphasis area: means a highway safety priority in a State's SHSP, identified through a data-driven, collaborative process.

Highway safety improvement project: means strategies, activities and projects on a public road that are consistent with a State strategic highway safety plan and corrects or improves a hazardous road location or feature or addresses a highway safety problem.

HMVMT: means hundred million vehicle miles traveled.

Non-infrastructure projects: are projects that do not result in construction. Examples of non-infrastructure projects include road safety audits, transportation safety planning activities, improvements in the collection and analysis of data, education and outreach, and enforcement activities.

Older driver special rule: applies if traffic fatalities and serious injuries per capita for drivers and pedestrians over the age of 65 in a State increases during the most recent 2-year period for which data are available, as defined in the Older Driver and Pedestrian Special Rule Interim Guidance dated February 13, 2013.

Performance measure: means indicators that enable decision-makers and other stakeholders to monitor changes in system condition and performance against established visions, goals, and objectives.

Programmed funds: mean those funds that have been programmed in the Statewide Transportation Improvement Program (STIP) to be expended on highway safety improvement projects.

Roadway Functional Classification: means the process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide.

Strategic Highway Safety Plan (SHSP): means a comprehensive, multi-disciplinary plan, based on safety data developed by a State Department of Transportation in accordance with 23 U.S.C. 148.

Systematic: refers to an approach where an agency deploys countermeasures at all locations across a system.

Systemic safety improvement: means an improvement that is widely implemented based on high risk roadway features that are correlated with specific severe crash types.

Transfer: means, in accordance with provisions of 23 U.S.C. 126, a State may transfer from an apportionment under section 104(b) not to exceed 50 percent of the amount apportioned for the fiscal year to any other apportionment of the State under that section.