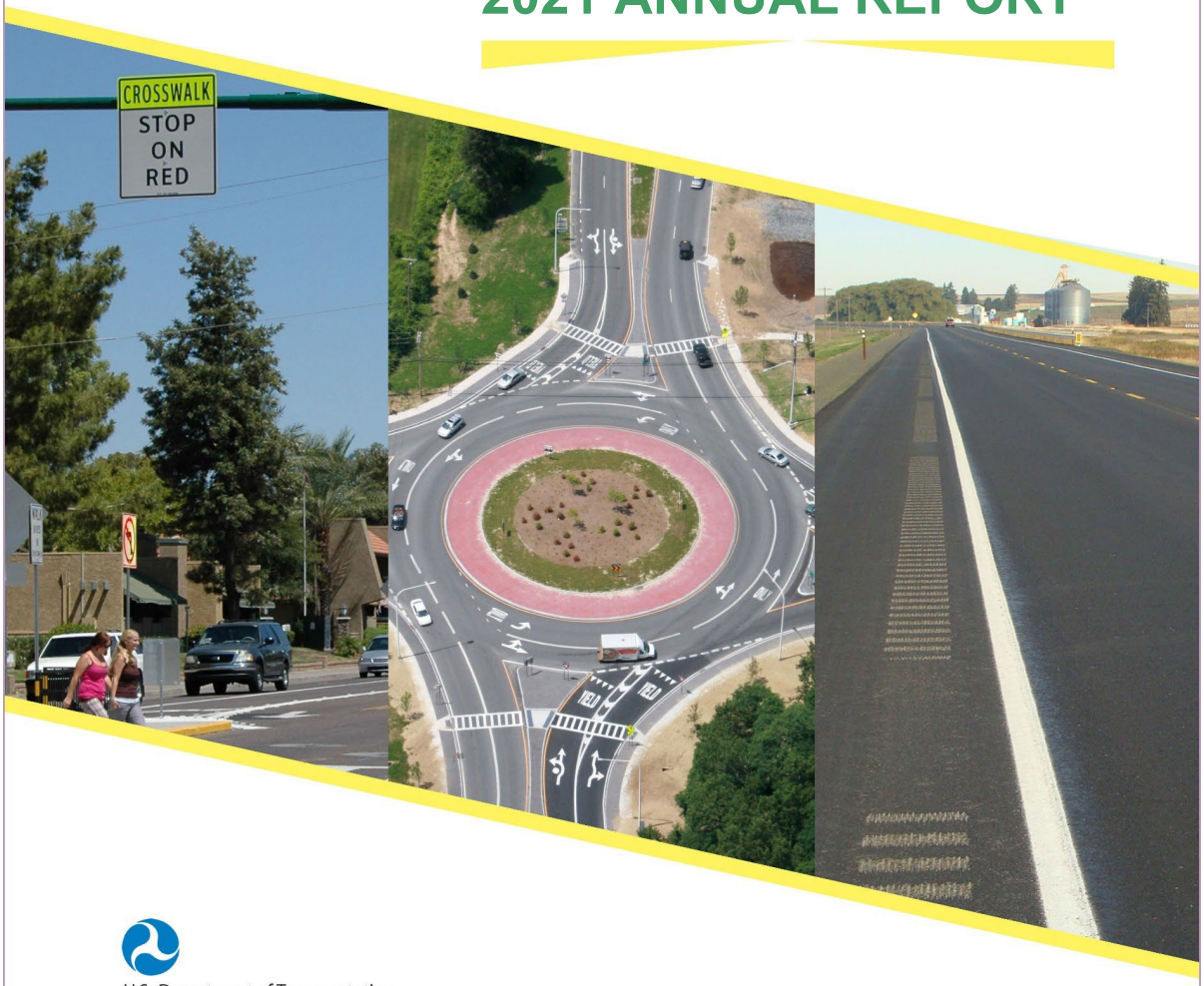
ARKANSAS

HIGHWAY SAFETY IMPROVEMENT PROGRAM

2021 ANNUAL REPORT



U.S. Department of Transportation
Federal Highway Administration

Photo source: Federal Highway Administration

Table of Contents

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. 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. 409 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 2021 (July 1, 2020 through June 30, 2021). The format of this report is consistent with the reporting guidelines issued by the Federal Highway Administration on February 13, 2013. Some notable accomplishments are as follows:

• 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.

• A statewide pavement friction improvement study is under construction with completion expected at the end of 2021.

• 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 and other high speed highways.

• While not directly related to the HSIP program, ARDOT has now made retroreflective signal backplates a standard item on all ARDOT projects involving signal work.

• A systemic, low-cost unsignalized intersection project is under development.

• A systemic low-cost, Y-type intersection (selected realignment locations) project is under development.

• The pavement preservation program was used to accomplish shoulder widening and rumble strip installation along various routes where crash history showed such improvements would be effective.

• A new HSIP Process has been developed and is under administration review.

• FHWA Safety Data and Analysis Technical Assistance Program (SDATAP) technical assistance concluded this FY. The assistance provided planning documents for a Roadway Safety Management System (RSMS) software tool. These will be used to hire a consultant to develop the software.

• Online data query tools and dashboards have been maintained for public use. https://ardot.maps.arcgis.com/apps/MapSeries/index.html?appid=7976060331fb4930933bf560f8a9c91b

• A SHSP tracking tool is being developed for use in tracking emphasis area action plans and projects.

• ARDOT has had an initial meeting regarding a Roadway Data Improvement Plan and is planning on moving forward with this FHWA technical assistance program. This will assess ARDOT's roadway data and make recommendations for improvements.

• A statewide centerline rumble stripe project is under development.

• A statewide shoulder rumble stripes and strip study is under development.

• SHSP is being updated for 2022.

• ARDOT is taking efforts to develop a horizontal curve and intersection program.

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 to ensure compliance with the latest HSIP requirements.

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 Technology Transfer Program. 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 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 operations 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 aforementioned 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 kind 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 three engineers working on different safety projects/programs. In 2017 Arkansas updated the Strategic Highway Safety Plan for the State. This process was 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 2017) with a focus on TZD through the Arkansas Highways Magazine, idrivearkansas.com and tzdarkansas.org. Currently, ARDOT is in the process of updating the SHSP for 2022. This is the first time ARDOT hired a

consultant to update the SHSP. This allowed the ARDOT Traffic Safety Section to focus on other priority tasks. ARDOT continues to be a member State in the Evaluation of Low-Cost Safety Improvements Pooled Fund Study. 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
The HSIP Process is undergoing an update that is being reviewed at the Chief Engineer level at the time of submitting this report. It is anticipated that the new Process will go into effect by the early part of next year. 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.

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 as to make more crash 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 program to address pedestrian and roadway departure crashes occurring in curves.

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	Exposure	Roadway
• All crashes • Fatal and serious injury crashes only	• Traffic • Volume	• 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

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

Exposure

- Traffic
- Volume

Roadway

- 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?

6.5

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

- Cable Median Barriers
- Pavement/Shoulder Widening
- 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 will include connected vehicles as an emphasis area. Automated Work Zone Information (AWIS) is being used for queue detection but not using HSIP funds. ARDOT is also looking into implementing advanced wrong way detection as part of an in-house research project.

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 still under final review. That includes justification of why there should be changes from using the crash rate method to the critical crash rate method.

Project Implementation

Funds Programmed

Reporting period for HSIP funding.

State Fiscal Year

The State Fiscal Years begins July 1 and ends June 30

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

FUNDING CATEGORY	PROGRAMMED	OBLIGATED	% OBLIGATED/PROGRAMMED
HSIP (23 U.S.C. 148)	$32,160,000	$51,184,909	159.16%
HRRR Special Rule (23 U.S.C. 148(g)(1))	$0	$0	0%
Penalty Funds (23 U.S.C. 154)	$0	$1,106,932	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	$10,164,000	0%
State and Local Funds	$3,240,000	$6,862,132	211.79%
Totals	$35,400,000	$69,317,973	195.81%

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?

$3,851,460

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?

$31,798,442

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.
- 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.
- Working from home for a full year during the pandemic was another challenge that ARDOT faced.

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 FHWA technical assistance.
- Streamlining the process of "Change Order" approval.
- In the process of hiring on-call consultants to help get future studies implemented 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.
- A round of statewide friction improvement projects (UTBWC) under construction is nearly complete.
- 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 and other high speed routes.
- 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 statewide rumble strip database is in the final stages of development for use in future statewide rumble strip projects.

- A statewide centerline rumble stripes project was implemented and the first round of projects will go under construction early next year.

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
Hwy. 70 - Oakgrove Rd. (Safety Impvts.) (S)	Roadway	Pavement surface – high friction surface	2.90	Miles	$1656000	$2177500	HSIP (23 U.S.C. 148)	Rural	Major Collector	4,200	55	State Highway Agency	Spot	Roadway Departure	Prevent roadway departure crashes
Hwy. 230 - Hwy. 167 (Safety Impvts.) (S)	Shoulder treatments	Widen shoulder – paved or other (includes add shoulder)	6.130	Miles	$1811828	$2013143	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	5,900	55	State Highway Agency	Systemic	Roadway Departure	Prevent roadway departure crashes
Hwy. 64 - Hwy. 5 (Safety Impvts.) (Sel. Secs.) (S)	Shoulder treatments	Widen shoulder – paved or other (includes add shoulder)	22.55	Miles	$9171000	$10245000	HSIP (23 U.S.C. 148)	Rural	Multiple/Varies	2,000	55	State Highway Agency	Systemic	Roadway Departure	Prevent roadway departure crashes
Plumerville - East (S)	Miscellaneous	Work zone enforcement	5.9	Miles	$65547	$72830	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Interstate	39,000	70	State Highway Agency	Spot	Work Zones	Work zones queue protection
I-55 - Hwy . 149 (S)	Roadway	Pavement surface – high friction surface	12.98	Miles	$46517	$51686	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Interstate	12,000	70	State Highway Agency	Spot	Lane Departure	Prevent roadway departure crashes
Izard Co. Line - Hwy. 62 (Safety Impvts.) (Sel. Secs.) (S)	Shoulder treatments	Widen shoulder – paved or other (includes add shoulder)	18	Miles	$9051709	$10057454	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	7,200	55	State Highway Agency	Systemic	Lane Departure	Prevent roadway departure crashes
District 9 APHN Raised Pavement Markers (2020) (S)	Roadway delineation	Raised pavement markers	81000	RPMs	$346872	$385414	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0		State Highway Agency	Spot	Roadway Departure	Prevent roadway departure
District 5 & 8 APHN Raised Pavement Markers (2020) (S)	Roadway delineation	Raised pavement markers	155219	RPMs	$556640	$618489	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0		State Highway Agency	Spot	Roadway Departure	Prevent roadway departure
Pavement Condition Data &	Miscellaneous	Data collection		Data	$425520	$472800	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0		State Highway Agency	Data Collection	Data	Collect data

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
Imagery Collection (2020-2022)															
Hwy. 10 - Hwy. 7 (Safety Impvts.) (Sel. Secs.) (S)	Roadway	Pavement surface – high friction surface	15.120	Miles	$92921.40	$103246	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	5,000	50	State Highway Agency	Spot	Roadway Departure	Prevent roadway departures
Pulaski Co. Line - Pine Bluff (Sel. Secs.) (S)	Shoulder treatments	Widen shoulder – paved or other (includes add shoulder)	19.270	Miles	$11830	$13144	HSIP (23 U.S.C. 148)	Rural	Major Collector	670	50	State Highway Agency	Systemic	Roadway Departure	Prevent roadway departure crashes
Hwy. 105 - Hwy. 213 (S)	Roadway	Rumble strips – edge or shoulder	10.105	Miles	$3177	$3530	HSIP (23 U.S.C. 148)	Rural	Major Collector	1,200	50	State Highway Agency	Spot	Roadway Departure	Prevent roadway departure crashes
Hwys. 82 & 167 (El Dorado) (Sel. Secs.) (Cable Median Barrier) (Hwy. 82)	Roadside	Barrier – cable	5.173	Miles	$219	$243.07	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other Freeways & Expressways	8,900	65	State Highway Agency	Systemic	Roadway Departure	Prevent roadway departure crashes
Districts 1 & 10 Bridge Preservation (2020) (S)	Miscellaneous	Work zone enforcement	3.90	Miles	$60724	$67471	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0		State Highway Agency	Spot	Work Zones	Work Zones Queue Protection
Local Agency eCrash Equipment Upgrade (S)	Miscellaneous	Data collection		Data	$2160000	$2400000	HSIP (23 U.S.C. 148)	N/A	N/A	0		Other State Agency	Spot	Data	Collect data
Pavement Friction Data Collection	Miscellaneous	Data collection		Data	$103500	$115000	HSIP (23 U.S.C. 148)	N/A	N/A	0		State Highway Agency	Spot	Data	Collect data
Pangburn - Fourmile Hill (Safety Impvts.) (Sel.Secs.) (S)	Intersection geometry	Add/modify auxiliary lanes	2.949	Miles	$56867	$63185.56	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	5,300	55	State Highway Agency	Spot	Intersections	Mitigate consequences of intersection crashes
North of Lawrence	Shoulder treatments	Widen shoulder – paved or other	8.12	Miles	$2130.08	$2366.2	HSIP (23 U.S.C. 148)	Urban	Major Collector	1,200	50	State Highway Agency	Systemic	Roadway Departure	Prevent roadway departure

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
Co. Line - Hwy. 62 (S)		(includes add shoulder)													
Hwy. 65B-Hwy. 65	Miscellaneous	Work zone enforcement	10.350	Miles	$20807.21	$23119.12	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	24,000	60	State Highway Agency	Spot	Work Zones	Work Zones Queue Protection
Atkins - Plumerville (S)	Miscellaneous	Work zone enforcement	19.338	Miles	$62568	$69520	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	31,000	70	State Highway Agency	Spot	Work Zones	Work Zones Queue Protection
Traffic Safety Planning Activities (HSIP) (S)	Miscellaneous	Transportation safety planning		Planning	$900000	$1000000	HSIP (23 U.S.C. 148)	N/A	N/A	0		State Highway Agency	Planning	Data	All SHSP strategies
47th St. - Remount Rd. Safety Impvts. (NLR) (S)	Roadway	Pavement surface – high friction surface	1.050	Miles	$95108.96	$105676.84	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	15,000	35	State Highway Agency	Spot	Lane Departure	Prevent intersection related crashes
Baptist Hospital - Univeristy Ave. (Widening) (F)	Miscellaneous	Work zone enforcement	2.160	Miles	$3095.63	$3439.15	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	116,000	60	State Highway Agency	Spot	Work Zones	Work Zones Queue Protection
Garland Co. Line - Benton (Safety Impvts)	Alignment	Horizontal curve realignment	3.199	Miles	$8132013.07	$9035570.08	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	4,000	55	State Highway Agency	Spot	Roadway Departure	Prevent roadway departure crashes
Strategic Highway Safety Plan Update (2022) (S)	Miscellaneous	SHSP Development		Planning	$262440	$291600	HSIP (23 U.S.C. 148)	N/A	N/A	0		State Highway Agency	SHSP Plan	All	Prevent all crash types
Bryant Rd. - Hwy. 298 West (Safety Impvts.) (Sel. Secs.) (S)	Intersection geometry	Add/modify auxiliary lanes	3.456	Miles	$1086518.10	$1107240.60	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	7,900	50	State Highway Agency	Spot	Intersections	Mitigate consequences of intersection crashes
Joy-Searcy (S)	Shoulder treatments	Widen shoulder – paved or other (includes add shoulder)	8.67	Miles	$545000	$464947.11	HSIP (23 U.S.C. 148)	Rural	Major Collector	6,600	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
Alma - Hwy. 164 (S)	Miscellaneous	Work zone enforcement	29.51	Miles	$66122.10	$73469	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Interstate	34,000	70	State Highway Agency	Spot	Work Zones	Work Zones Queue Protection
Hwy. 70 - Sevier St. (Widening) (F)	Miscellaneous	Work zone enforcement	5.402	Miles	$540000	$600000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	81,000	70	State Highway Agency	Spot	Work Zones	Work Zones Queue Protection
E. Clarkedale Rd. RR Signals Upgrade (Clarkedale)	Railroad grade crossings	Active grade crossing equipment installation/upgrade	1	Intersections	$1368.34	$1368.34	HSIP (23 U.S.C. 148)	Rural	Local Road or Street	0		City or Municipal Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
Lake Francis Dr. RR Signal Upgrade (Siloam Springs)	Railroad grade crossings	Active grade crossing equipment installation/upgrade	1	Intersections	$14663.71	$14663.71	HSIP (23 U.S.C. 148)	Urban	Local Road or Street	0		City or Municipal Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
N. H St. RR Signals (Forth Smith)	Railroad grade crossings	Active grade crossing equipment installation/upgrade	1	Intersections	$74467	$74467	HSIP (23 U.S.C. 148)	Urban	Local Road or Street	0		City or Municipal Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
Old Post Rd. RR Signals (NE of Texarkana) (S)	Railroad grade crossings	Active grade crossing equipment installation/upgrade	1	Intersections	$200000	$200000	HSIP (23 U.S.C. 148)	Urban	Local Road or Street	0		County Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
W. 10th St. RR Signals (Stuttgart)	Railroad grade crossings	Active grade crossing equipment installation/upgrade	1	Intersections	$75000	$75000	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	0		City or Municipal Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
Old Post Rd. RR Signals (NE of Texarkana) (S)	Railroad grade crossings	Active grade crossing equipment installation/upgrade	1	Intersections	$65000	$65000	HSIP (23 U.S.C. 148)	Urban	Local Road or Street	0		County Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
N. 3rd St. RR Signals (Van Buren) (S)	Railroad grade crossings	Active grade crossing equipment installation/upgrade	1	Intersections	$60778.98	$60778.98	HSIP (23 U.S.C. 148)	Urban	Local Road or Street	0		City or Municipal Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
E. Ash St. RR Signals Upgrade & Surf. (Brinkley) (S)	Railroad grade crossings	Active grade crossing equipment installation/upgrade	1	Intersections	$40000	$40000	HSIP (23 U.S.C. 148)	Urban	Local Road or Street	0		City or Municipal Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes

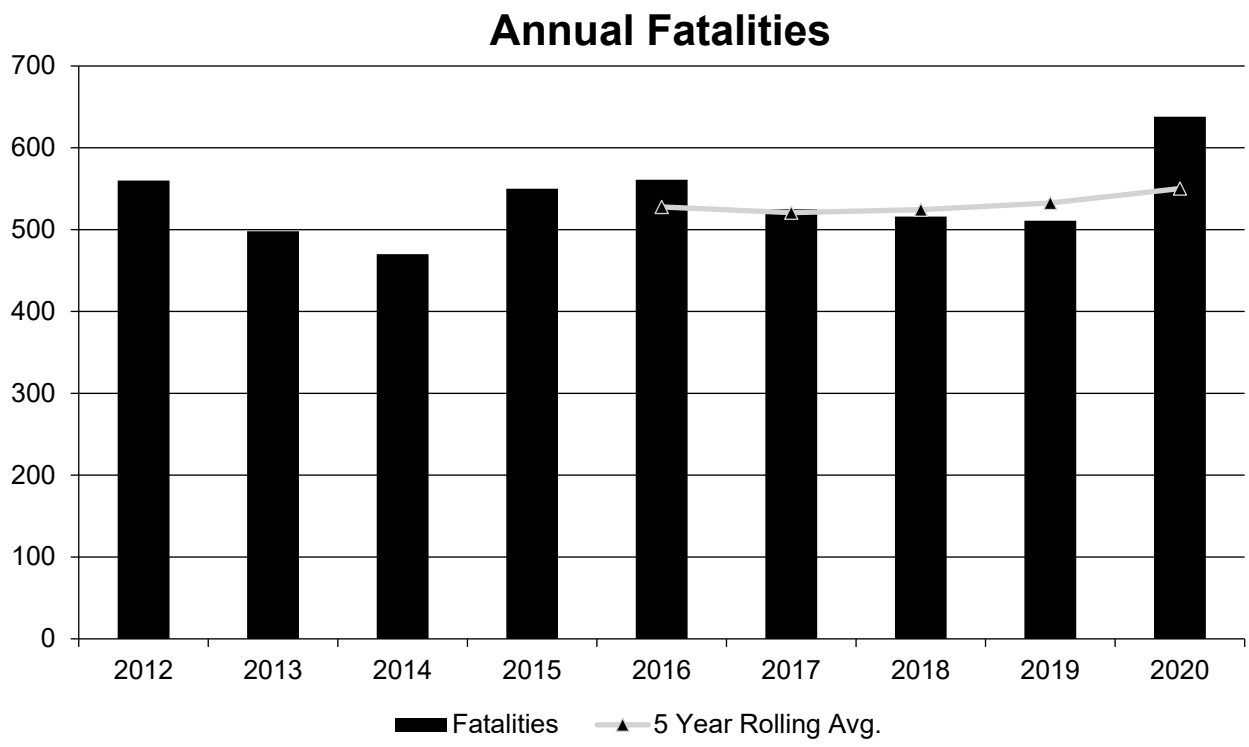
PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
CR 124 RR Signals (Waldo) (S)	Railroad grade crossings	Railroad grade crossings - other	1	Intersections	$137251.35	$137251.35	HSIP (23 U.S.C. 148)	Rural	Local Road or Street	0		County Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
W. South St. RR Signals & Surf. (Gurdon) (S)	Railroad grade crossings	Active grade crossing equipment installation/upgrade	1	Intersections	$260000	$260000	HSIP (23 U.S.C. 148)	Rural	Local Road or Street	0		City or Municipal Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
Mitzi Pkwy. - Hwy. 290 (Safety Impvts.) (Sel. Secs.) (S)	Intersection geometry	Add/modify auxiliary lanes	3.907	Miles	$11286000	$12540000	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	6,300	45	State Highway Agency	Spot	Intersections	Mitigate consequences of intersection crashes
Mitzi Pkwy. - Hwy. 290 (Safety Impvts.) (Sel. Secs.) (S)	Intersection geometry	Add/modify auxiliary lanes	3.907	Miles	$1633705.15	$1505227.94	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	6,300	45	State Highway Agency	Spot	Intersections	Mitigate consequences of intersection crashes

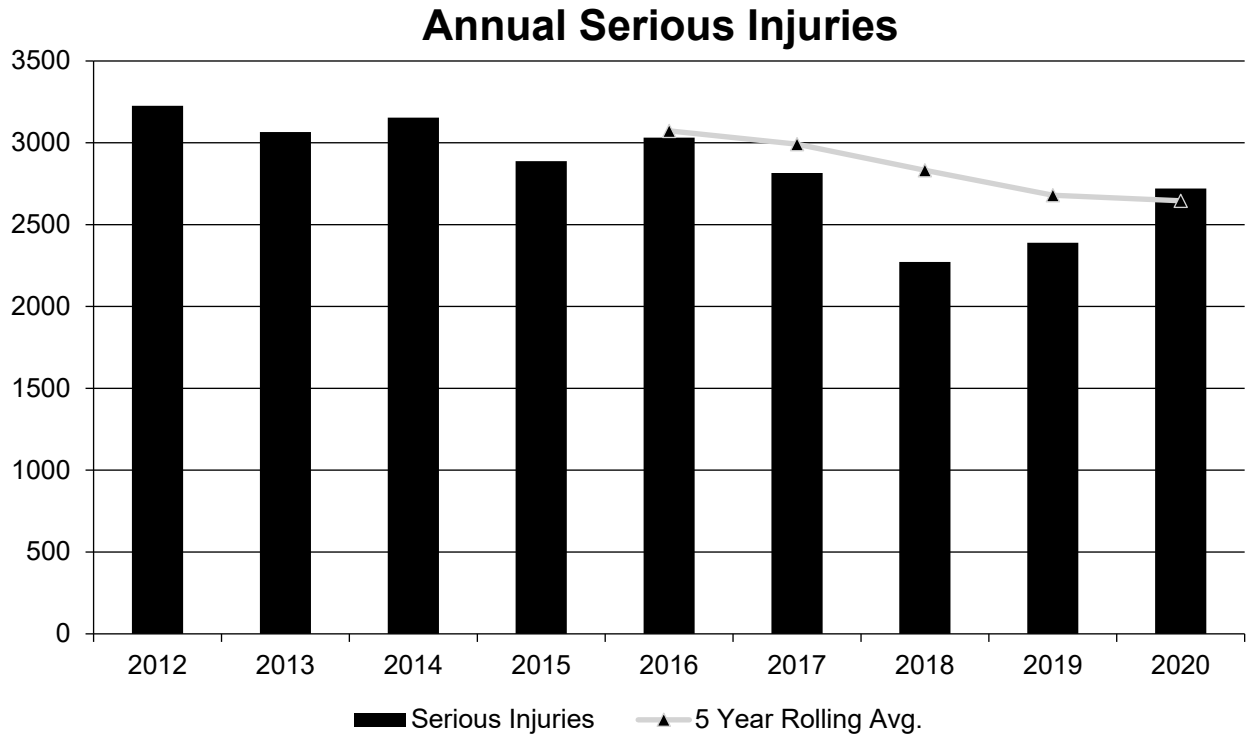
Safety Performance

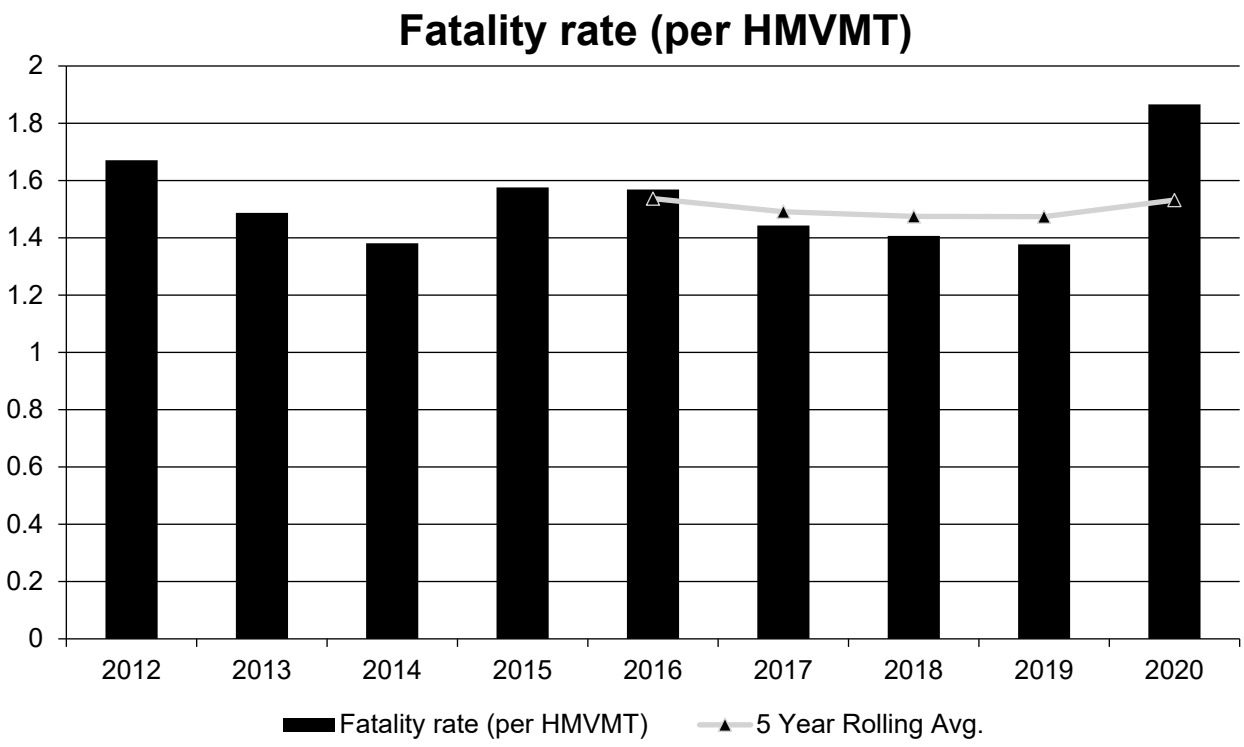
General Highway Safety Trends

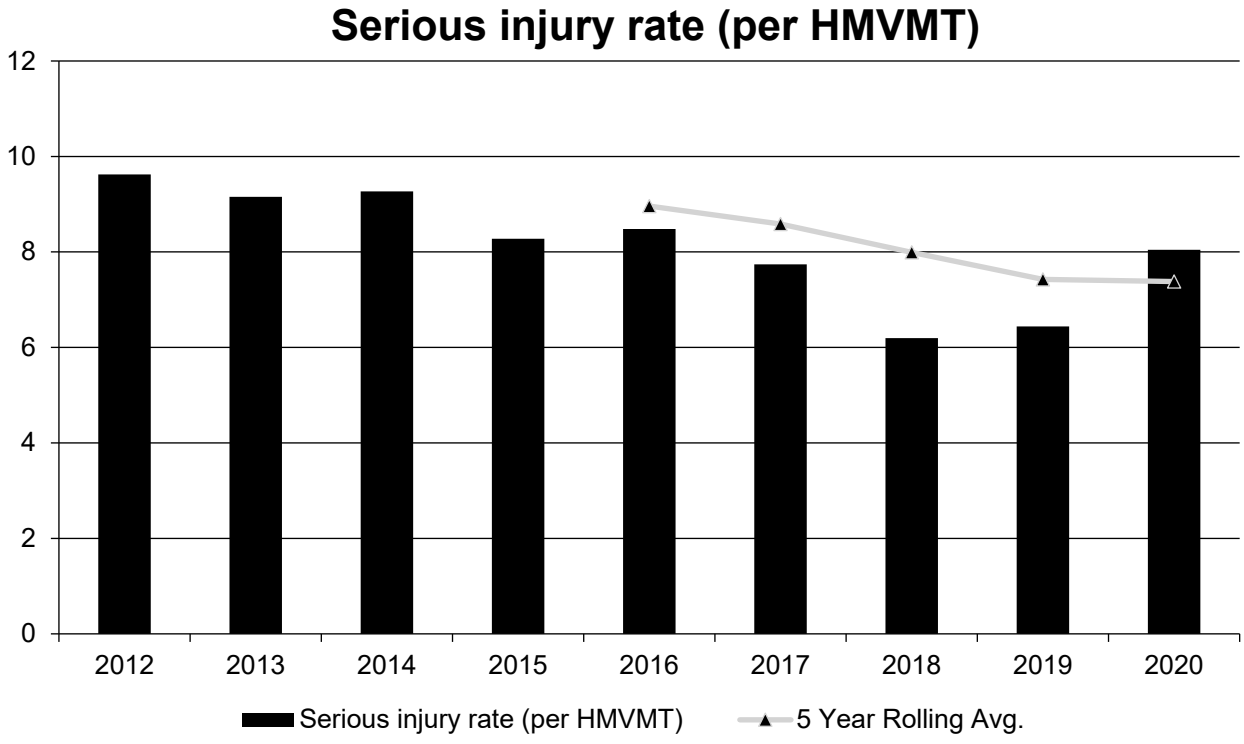
Present data showing the general highway safety trends in the State for the past five years.

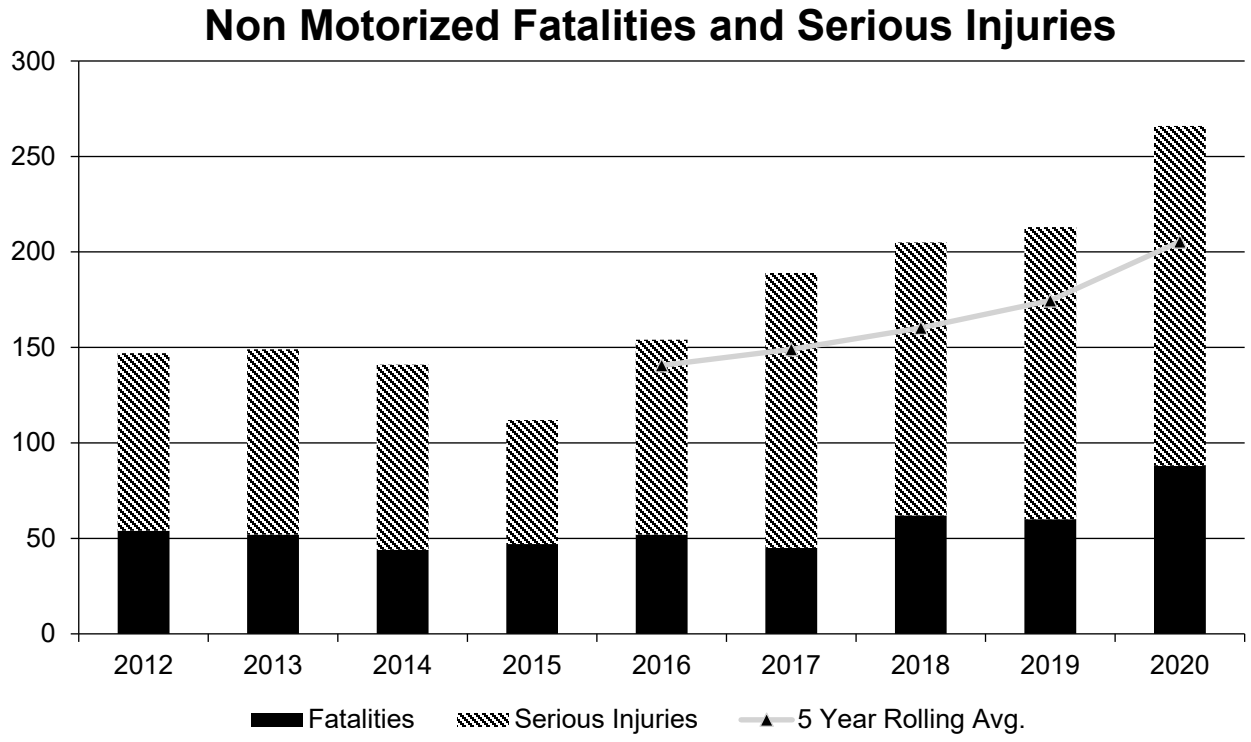
PERFORMANCE MEASURES	2012	2013	2014	2015	2016	2017	2018	2019	2020
Fatalities	560	498	470	550	561	525	516	511	638
Serious Injuries	3,226	3,066	3,154	2,888	3,032	2,816	2,272	2,389	2,721
Fatality rate (per HMVMT)	1.671	1.487	1.381	1.576	1.569	1.443	1.407	1.377	1.866
Serious injury rate (per HMVMT)	9.624	9.154	9.270	8.276	8.480	7.739	6.195	6.440	8.044
Number non-motorized fatalities	54	52	44	47	52	45	62	60	88
Number of non-motorized serious injuries	93	97	97	65	102	144	143	153	178
Number of non-motorized fatalities and serious inj	147	149	141	112	154	189	205	213	236

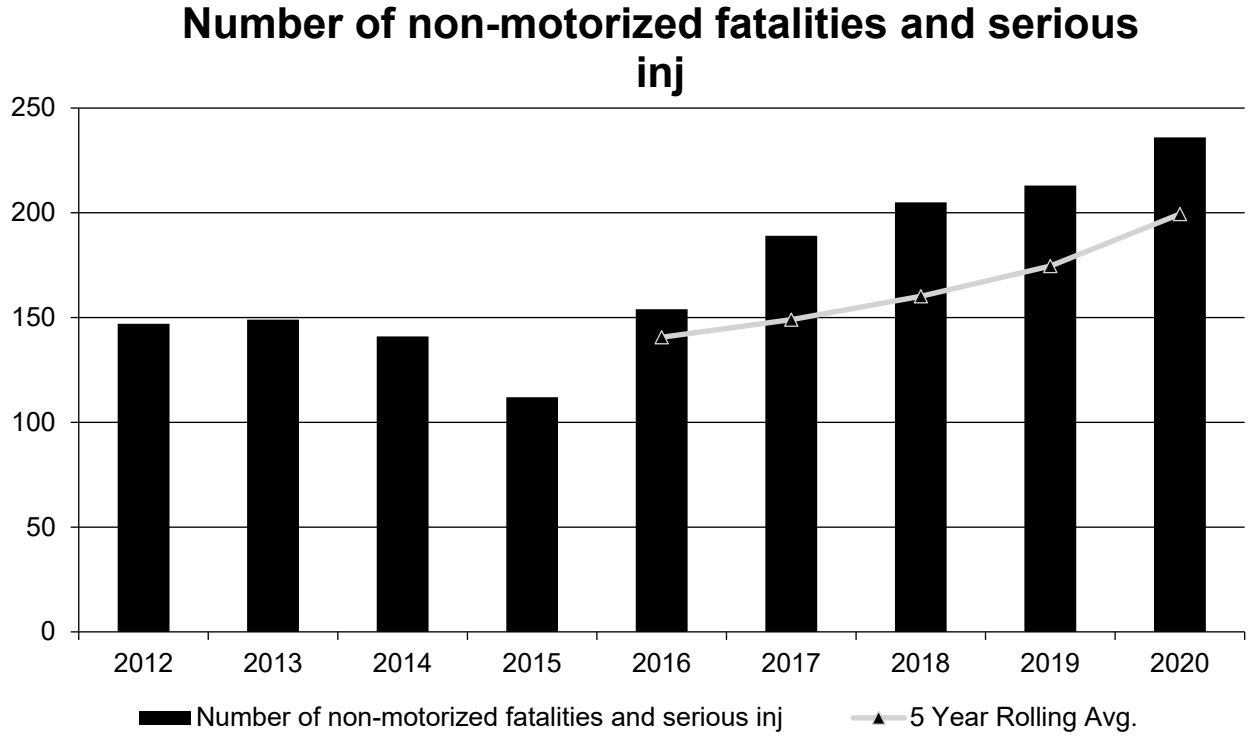

Annual Fatalities
700
600
500
400
300
200
100
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
Fatalities
5 Year Rolling Avg.


Annual Serious Injuries
3500
3000
2500
2000
1500
1000
500
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
Serious Injuries
5 Year Rolling Avg.


Fatality rate (per HMVMT)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
Fatality rate (per HMVMT)
5 Year Rolling Avg.


Serious injury rate (per HMVMT)
12
10
8
6
4
2
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
Serious injury rate (per HMVMT)
5 Year Rolling Avg.





Value for fatalities and fatality rate is based on the actual FARS fatality numbers for 2016, 2017, 2018, FARS ARF number for 2019 and NSC number for 2020.
Value for suspected serious injuries, suspected serious injury rate, and non-motorized suspected serious injuries for 2016-2020 is the actual number using the ARDOT crash data. The number of non-motorized fatalities for 2020 is derived from the ARDOT crash data and may be different when FARS is completed for

2020. The AVMT for 2016-2019 comes from the FHWA VM-2 table. The 2020 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 2016, 2017, 2018, FARS ARF number for 2019 and NSC number for 2020.
Value for suspected serious injuries, suspected serious injury rate, and non-motorized suspected serious injuries for 2016-2020 is the actual number using the ARDOT crash data. The number of non-motorized fatalities for 2020 is derived from the ARDOT crash data and may be different when FARS is completed for 2020. The AVMT for 2016-2019 comes from the FHWA VM-2 table. The 2020 AVMT comes from the ARDOT HPMS submittal.

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

Year 2020

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	32.4	99.8	0.79	2.44
Rural Principal Arterial (RPA) - Other Freeways and Expressways	3	10	1.01	3.31
Rural Principal Arterial (RPA) - Other	83.8	271.2	2.31	7.44
Rural Minor Arterial	73.4	291.4	2.65	10.46
Rural Minor Collector	17.4	89	2.18	14.7
Rural Major Collector	91.8	407.8	2.73	12.13
Rural Local Road or Street	40.4	219.6	1.86	10.23
Urban Principal Arterial (UPA) - Interstate	39.8	153.4	0.73	2.8
Urban Principal Arterial (UPA) - Other Freeways and Expressways	10.8	38.8	1.12	4

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	65	318.4	1.79	8.84
Urban Minor Arterial	60.6	362.4	1.38	8.2
Urban Minor Collector	1.8	7	2.64	11.29
Urban Major Collector	31	180.2	1.83	10.52
Urban Local Road or Street	24.2	192.2	1.66	12.65

Year 2020

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	448.6	2,005.4	1.69	7.54
County Highway Agency	54.8	232.8	1.48	6.29
Town or Township Highway Agency				
City or Municipal Highway Agency	50	401	0.81	6.52
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. We are continuing to monitor this trend.
Traffic Safety is working hard to improve safety statewide. Some notable accomplishments are as follows:

- 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.
- The second set of statewide HFST projects are nearing completion, and a third pavement friction improvement study is under development.
- 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 and other high speed highways.
- While not directly related to the HSIP program, ARDOT has now made retroreflective signal backplates a standard item on all ARDOT projects involving signal work.
- Two rural roundabout projects are currently under construction.
- A systemic, low-cost unsignalized intersection project is under development.
- A systemic low-cost, Y-type intersection project is under development.
- The pavement preservation program was used to accomplish shoulder widening and rumble strip installation along various routes where crash history showed such improvements would be effective.
- A new HSIP Process has been developed and is under administration review.
- Several safety analysis tools are being examined for possible use at ARDOT, this spurred the Roadway Safety Management System technical assistance through FHWA which is currently underway.
- Online data query tools and dashboards are/have been developed for other agencies and possible public use. One such tool that has already been developed is the Arkansas Crash Analytics Tool (ACAT) which is a dashboard available to the public via ArcGIS Online.
- A SHSP tracking tool has been developed for use in tracking emphasis area action plans and projects.
- ARDOT has had an initial meeting regarding a Roadway Data Improvement Plan and is in the initial stages of determining appropriate personnel to schedule and oversee project.
- During the time of initial shutdown from COVID-19, ARDOT saw significant decreases in total crashes compared to the same timeframe a year ago, this trend stayed consistent for several months. As things gradually reopened, crashes began to return to similar levels as previous years. There has been a noted and significant increase in fatal crashes in 2020 and 2021. ARDOT is trying to determine what has caused this spike. Based on the preliminary crash data for 2020 that was reviewed in January of 2021, the main cause for the increase in crashes was due to aggressive, distracted, speed-related driving.

Safety Performance Targets

Safety Performance Targets

Calendar Year 2022 Targets *

Number of Fatalities:631.5

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

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 finalize d in 2OI7 .

Description of Methodology

The target-setting method, similar to 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 (2OL1.-2OI5,20'J.2-20'J.6,2Ot3-20L7 ,2O14-2OL8, and 2015-2019).

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 fact that 2020 crash data is incomplete, 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.

Number of Serious Injuries:2996.9

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

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 finalize d in 2OI7 .

Description of Methodology

The target-setting method, similar to 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 (2OL1.-2OI5,20'J.2-20'J.6,2Ot3-20L7 ,2O14-2OL8, and 2015-2019).

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 fact that 2020 crash data is incomplete, 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.

Fatality Rate:1.808

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

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 finalize d in 2OI7 .

Description of Methodology

The target-setting method, similar to 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 (2OL1.-2OI5,20'J.2-20'J.6,2Ot3-20L7 ,2O14-2OL8, and 2015-2019).

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 fact that 2020 crash data is incomplete, 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.

.

Serious Injury Rate:8.608

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

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 finalize d in 2OI7 .

Description of Methodology

The target-setting method, similar to 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 (2OL1.-2OI5,20'J.2-20'J.6,2Ot3-20L7 ,2O14-2OL8, and 2015-2019).

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 fact that 2020 crash data is incomplete, 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.

Total Number of Non-Motorized Fatalities and Serious Injuries:229.2

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

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 finalize d in 2OI7 .

Description of Methodology

The target-setting method, similar to 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 (2OL1.-2OI5,20'J.2-20'J.6,2Ot3-20L7 ,2O14-2OL8, and 2015-2019).

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 fact that 2020 crash data is incomplete, 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.

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 below:

• The recent state legalization of medical marijuana.
• The increase in speed limit on freeways/expressways.
• The effects COVID-19 has had on crashes in Arkansas.
• A drop in vehicle miles traveled due to COVID-19. In addition to the above external factors, crash reporting is another major consideration. The number of crashes being captured in the database has been increasing due to eCrash implementation, which impacts fatal and serious injury crash data. Traffic Safety is working hard to improve safety with other safety stakeholders. Some notable accomplishments are as follows:
• 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.
• While not directly related to the HSIP program, ARDOT has now made retroreflective signal backplates a standard item on all ARDOT projects involving signal work owned by local agencies.
• Two rural roundabout projects are under construction which will be partially maintained by local agencies.
• FHWA Safety Data and Analysis Technical Assistance Program (SDATAP) technical assistance concluded this FY. The assistance provided planning documents for a Roadway Safety Management System (RSMS) software tool. These will be used to hire a consultant to develop the software.
• Increase in pedestrian related KA crashes.
• Increase in extreme speeding citations over 100PMH.
• Online data query tools and dashboards have been developed for other agencies and public use. One such

tool, called the Arkansas Crash Analytics Tool, was developed through ArcGIS Online and is available to the public.
• A project with the Arkansas Department of Health is underway to link the crash data with hospital injury data to enhance EMS and Crash Data.
• An effort to mitigate CMV crashes in work zones is being coordinated with other safety stakeholders.

Also, for more information regarding target setting, please refer to the attached Target Setting document.

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 2020 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	541.2	550.2
Number of Serious Injuries	3201.4	2646.0
Fatality Rate	1.595	1.532
Serious Injury Rate	9.441	7.380
Non-Motorized Fatalities and Serious Injuries	300.3	205.4

Based on the latest 2020 fatality and SI data. During the pandemic in 2020 we had an increase in fatalities due to less traffic and higher speeds.

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	2013	2014	2015	2016	2017	2018	2019
Number of Older Driver and Pedestrian Fatalities	65	63	72	83	80	74	86
Number of Older Driver and Pedestrian Serious Injuries	270	244	233	257	263	212	221

FARS data is not finalized currently for 2020.

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 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 under construction. 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 have been installed in passing lane segments and a statewide study has been completed. 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 an improved method to evaluate the overall effectiveness of programs and sub-programs. The process has been reviewed by FHWA and is under ARDOT Administration review.

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. However, a good amount of resources was utilized to analyze the increases of fatalities during the COVID-19 pandemic in this fiscal year.

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.

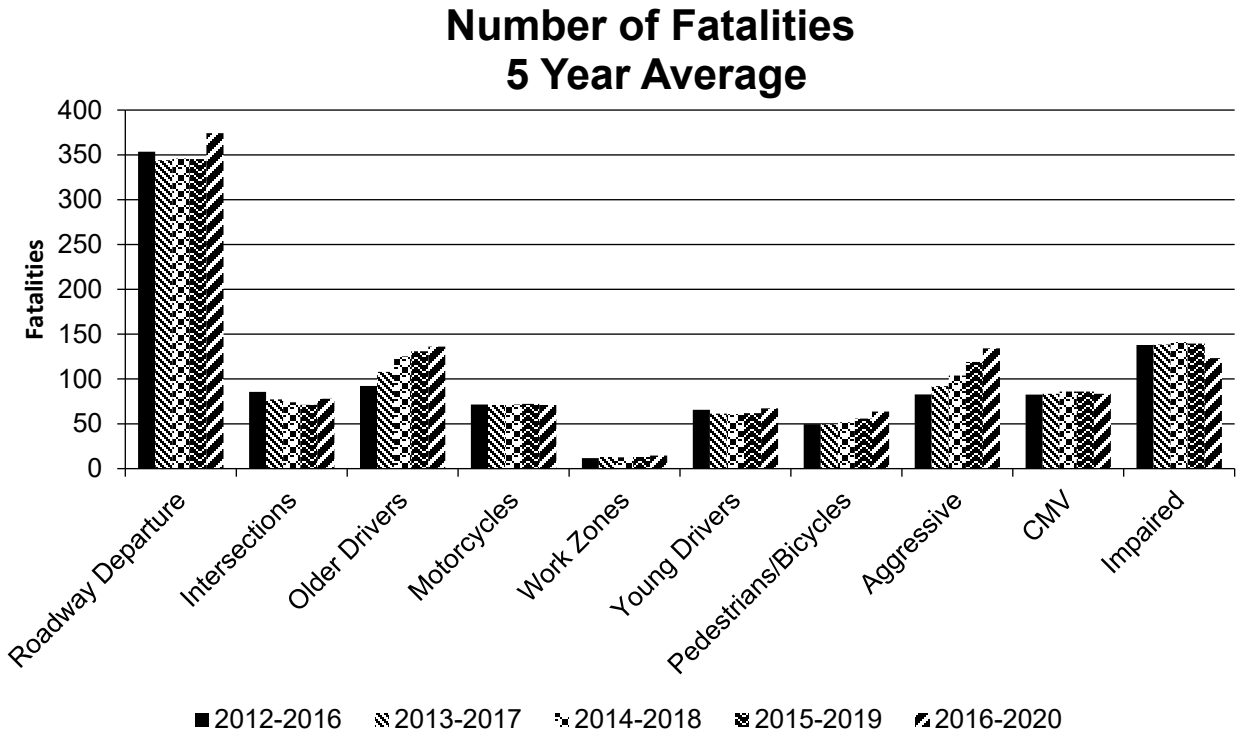
ARDOT is also in the process of developing a policy for local road safety assistance using HSIP funds in which local agencies can apply for the funds to be used on local safety improvement projects on a competitive basis.

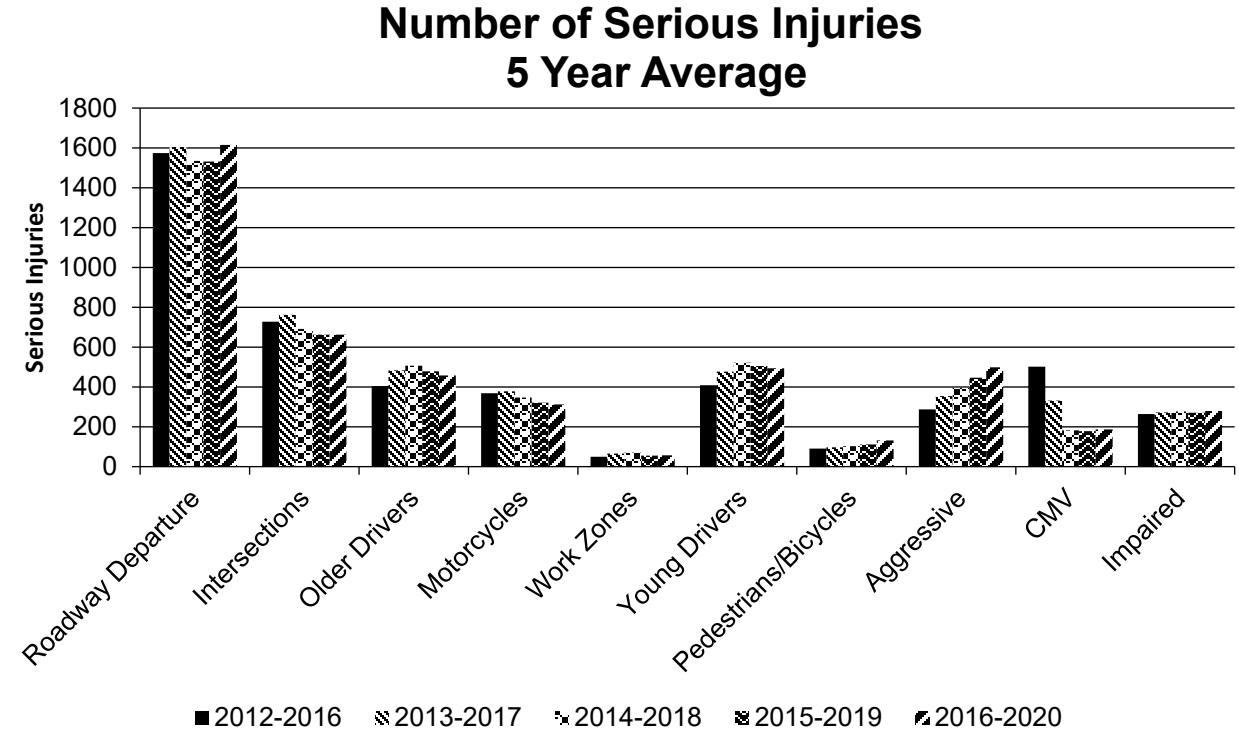
Effectiveness of Groupings or Similar Types of Improvements

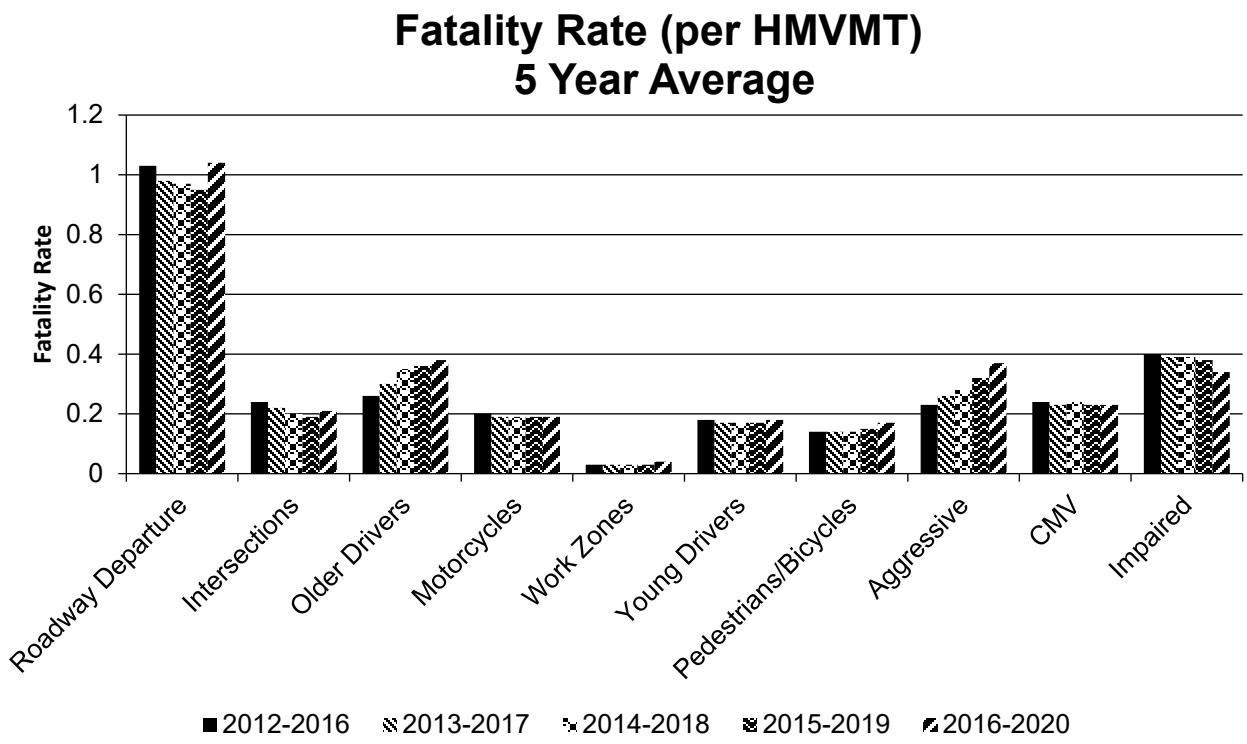
Present and describe trends in SHSP emphasis area performance measures.

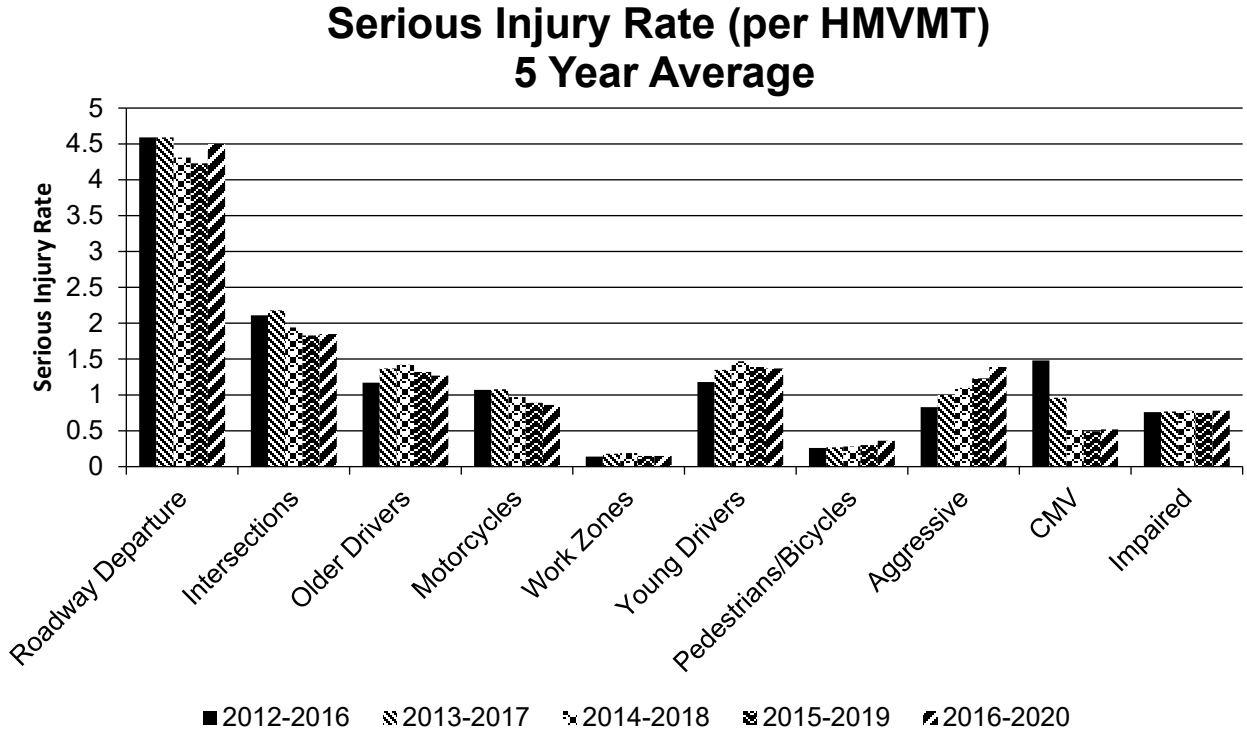
Year 2020

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	374.2	1,615	1.04	4.5
Intersections	Angle	78	662.8	0.21	1.85
Older Drivers	All	136.2	457.8	0.38	1.27
Motorcycles	Speed-related	71	312.2	0.19	0.86
Work Zones	Work Zone Crashes	14.6	56.6	0.04	0.15
Young Drivers	All	67.2	493.8	0.18	1.37
Pedestrians/Bicycles	Vehicle/pedestrian	63.6	131.4	0.17	0.36
Aggressive	Speed-related	134.2	498.6	0.37	1.39
CMV	All	83.4	187.2	0.23	0.52
Impaired	All	123.2	279	0.34	0.78


Number of Fatalities
5 Year Average
Fatalities
400
350
300
250
200
150
100
50
0
Roadway Departure
Intersections
Older Drivers
Motorcycles
Work Zones
Young Drivers
Pedestrians/Bicycles
Aggressive
CMV
Impaired
2012-2016
2013-2017
2014-2018
2015-2019
2016-2020


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
2012-2016
2013-2017
2014-2018
2015-2019
2016-2020





Trends for each SHSP emphasis area over the most recent years:

- Roadway Departure – Both the fatalities and suspected serious injury crashes have increased for roadway departure crashes in the most recent year. However, 2020 crash data they both were decreasing.

- Intersections – Both the fatalities and suspected serious injury crashes have increased at intersections in the most recent year.
- Older Drivers – The fatalities and rate for older drivers have been decreasing over the last few years. However, the serious and suspected injuries have been increasing.
- Motorcycles – Both the fatalities and suspected serious injury crashes for motorcyclist have been increasing over the last few years.
- Work Zones – Both the fatalities and suspected serious injury crashes have stayed consistent in recent years.
- Young Drivers – Both the fatalities and suspected serious injury crashes for young drivers have been increasing over the last few years.
- Pedestrians/Bicycles – The pedestrian and bicycle fatalities and rate have been decreasing over the last few years. However, the serious and suspected injuries have been increasing.
- Aggressive – Both the fatalities and suspected serious injury crashes for aggressive drivers have been increasing over the last few years.
- CMV – The CMV driving fatalities and rate have been decreasing over the last few years. However, the serious and suspected injuries have been increasing.
- Impaired – The impaired driving fatalities and rate have been decreasing over the last few years. However, the serious and suspected injuries have been increasing.

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:	High Friction Surface Treatment
Description:	HFST was applied at 12 locations in Northwest Arkansas to reduce wet pavement crashes.
Target Crash Type:	Wet road
Number of Installations:	12
Number of Installations:	12
Miles Treated:	
Years Before:	3
Years After:	3
Methodology:	Simple before/after
Results:	The 3 years prior to the project's start date (January 2013 to April 2016), showed a total of 62 crashes due to wet pavement. In the 3 years after the project's substantial completion date (September 2016 to December 2019), only 11 crashes occurred due to wet pavement conditions. This is a reduction of 82 percent. Fatal and suspected serious injury crashes had a reduction of 90 and 100 percent, respectively. (Job 090429)

File Name: Hyperlink

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?

07/26/2017

What are the years being covered by the current SHSP?

From: 2017 To: 2022

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

2022

The 2017 SHSP was approved in July of 2017. We are currently in the process of updating the 2022 SHSP utilizing a consultant and plan to finalize it by July 2022.

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]										
	Functional Class (19) [19]	100	100					100	100	100	100

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
	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	70						
	Intersection/Junction Traffic Control (131) [131]			100	70						
	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				
	Location Identifier for Roadway at					100	100				

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
	Beginning of Ramp Terminal (197) [187]										
	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**	**72.50**	**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 30% 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

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

Optional Attachments

Program Structure:

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

Safety Performance:

Signed_2022 Safety Performance Targets Document.pdf
Evaluation:

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.