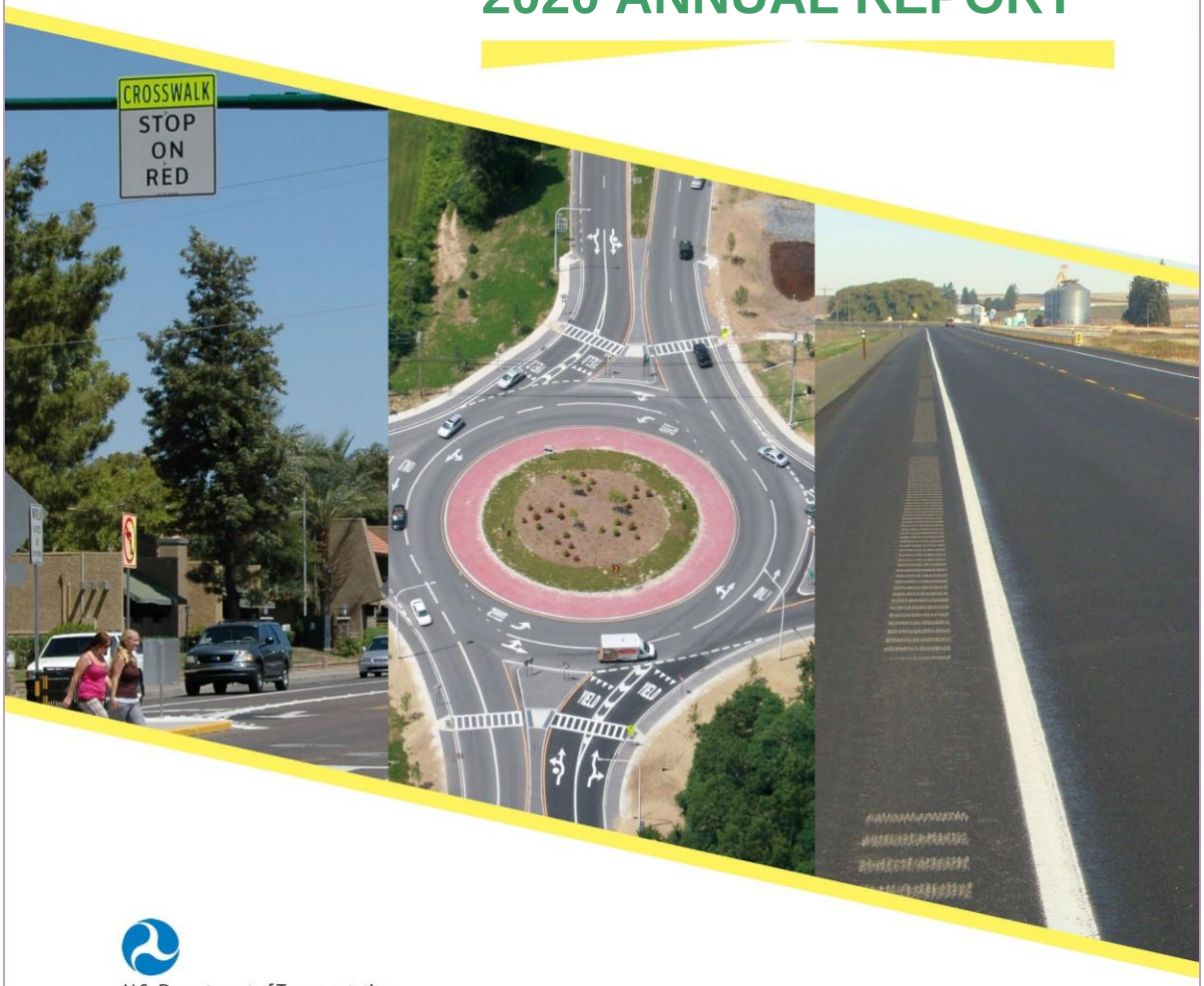
ARKANSAS

HIGHWAY SAFETY IMPROVEMENT PROGRAM

2020 ANNUAL REPORT



U.S. Department of Transportation
Federal Highway Administration

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Table of Contents

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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 2020 (July 1, 2019 through June 30, 2020). 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.

• Another statewide 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 has 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 under construction with completion expected in early 2021.

• 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 participation in the FHWA Roadway Safety Management System technical assistance program which is scheduled to conclude by the end of the year.

• Online data query tools and dashboards have been developed for public use, one specific tool that has already been developed is the Arkansas Crash Analytics Tool (ACAT) which is a GIS online dashboard available to the public.

• 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 planning on moving forward with this FHWA technical assistance program. This will assess ARDOT's roadway data and make recommendations for improvements.

• ARDOT has a pilot program with Abley to examine the possibilities of using this product for analyzing horizontal curves.

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, median types, and presence of signal Backplates. 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 pared 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 solely in the planning 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 continues to address safety concerns on local roads, to provide 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 locating on the federal aid system that was previously being done. A ll public roads are now reflected on the LRS. Queries are able to 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 carriage ways 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 has been 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, two classes offered by the Center for Training Transportation Professionals (CTTP) 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. If there are significant amount of changes (currently Administration recommends changes that are more than 2 million dollars require 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), that usually requires the Chief Engineer's 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), the Highway Safety Office (HSO) and the eight Metropolitan Organizations (MPOs) across the State, occurs on different levels. MPOs, 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, 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 now has four engineers working on different safety projects/programs. Prior to May 2011, TSS did not have an engineer.
In 2017 Arkansas updated the Strategic Highway Safety Plan for the State. This process was done in coordination with a steering committee which 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. Research was conducted by University of Arkansas - Fayetteville to calibrate several HSM Safety Performance Functions for the state of Arkansas. However, the lack of quality data yielded unreliable results. Due to the lack of quality data, TSS is continuing other efforts to improve data analysis processes and tools. ARDOT continues to be a member State in the Evaluation of Low-Cost Safety Improvements Pooled Fund Study. An HSIP Evaluation Peer Review meeting was held during the 2018 Federal Fiscal Year. 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 Division 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 as 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.

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

- All crashes
- Fatal and serious injury crashes only

Exposure

- Traffic

Roadway

- Horizontal curvature
- Functional classification

- Other-Based on the suggested treatments (roadway departure crashes, wet pavement crashes, severe crashes, wrong-way crashes)

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

- All crashes
- Fatal and serious injury crashes only

Exposure

- Traffic

Roadway

- Median width
- Functional classification

- Other-Cross-medain crashes

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

Exposure

- Traffic

Roadway

- Horizontal curvature
- Other-Minimum of 1 foot shoulder

- Other-Roadway departure crashes

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	Exposure	Roadway

- All crashes
- Fatal and serious injury crashes only

- Lane miles

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

What project identification methodology was used for this program?

- Crash rate

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

No

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

How are projects under this program advanced for implementation?

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

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

Rank of Priority Consideration

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

Program: Shoulder Improvement

Date of Program Methodology:1/1/2019

What is the justification for this program?

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

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes **Exposure** **Roadway**

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

What project identification methodology was used for this program?

- Crash frequency
- Crash rate
- Other-Systemic approach

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

No

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

How are projects under this program advanced for implementation?

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

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

Rank of Priority Consideration

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

Program: Skid Hazard

Date of Program Methodology:1/1/2019

What is the justification for this program?

- Other-treating spots for wet pavement crashes

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway

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

10

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

- Cable Median Barriers
- High friction surface treatment
- Install/Improve Signing
- Rumble Strips
- Upgrade Guard Rails

Most systemic projects for SFY20 were tied to either shoulder widening, raised pavement markers, or enhanced striping.

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.

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. 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 comments have been addressed, currently reviewing justification for changing from using the crash rate method to the critical crash rate method. Final review currently underway.

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)	$36,200,000	$76,550,494	211.47%
HRRR Special Rule (23 U.S.C. 148(g)(1))	$0	$0	0%
Penalty Funds (23 U.S.C. 154)	$0	$0	0%
Penalty Funds (23 U.S.C. 164)	$0	$132,627	0%
RHCP (for HSIP purposes) (23 U.S.C. 130(e)(2))	$0	$0	0%
Other Federal-aid Funds (i.e. STBG, NHPP)	$0	$0	0%
State and Local Funds	$3,800,000	$7,750,157	203.95%
Totals	$40,000,000	$84,433,278	211.08%

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 development 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?

$630,220

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

$63,169,275

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

$0

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

- 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 through FHWA technical assistance.
- Streamlining the process of "Change Order" approval.

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.

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.
- Next round of statewide friction improvement projects 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.
- ARDOT has completed a Safety and Mobility Data business plan.
- Funding provided to ASP HSO to allow local agencies to update/purchase equipment to implement eCrash, the electronic crash reporting system used by ASP.
- Two statewide low-cost intersection improvement programs are close to implementation.
- A statewide rumble strip database is in the final stages of development for use in future statewide rumble strip projects.

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
Independence Co. Line - Black Rock (Safety Impvts.) (S)	Shoulder treatments	Widen shoulder - paved or other	25	Miles	$9405000	$10450000	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	1,800	55	State Highway Agency	Spot	Roadway Departure	Prevent Roadway Departures
Hwy. 158/Hwy. 163 Inters. Safety Impvts.	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	$1642591	$1825102	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	3,400	55	State Highway Agency	Spot	Intersections	Mitigate consequences of intersection crashes
Hwy. 12/Hwy. 43 Inters. Safety Impvts. (S)	Intersection traffic control	Modify control - all-way stop to roundabout	1	Intersections	$1727296	$1758217	HSIP (23 U.S.C. 148)	Rural	Major Collector	3,000	55	State Highway Agency	Spot	Intersections	Mitigate consequences of intersection crashes
Districts 3 & 4 Raised Pavement Markers (2020) (S)	Roadway delineation	Raised pavement markers	1237	Miles	$792000	$880000	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systematic	Roadway Departure	Prevent roadway departures
District 5 & 8 APHN Raised Pavement Markers (2020) (S)	Roadway delineation	Raised pavement markers	1375	Miles	$990000	$1100000	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systematic	Roadway Departure	Prevent roadway departure
District 9 APHN Raised Pavement Markers (2020) (S)	Roadway delineation	Raised pavement markers	700	Miles	$891000	$990000	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systematic	Roadway Departure	Prevent roadway departure
47th St. - Remount Rd. Safety Impvts. (NLR) (S)	Roadway	Pavement surface - high friction surface	1	Miles	$841673	$854692	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	13,000	35	State Highway Agency	Spot	Roadway Departure	Prevent roadway departure
Statewide Federal-Aid Striping Program (2017)	Roadway delineation	Longitudinal pavement markings - remarking	9398	Miles	$2265070	$2516744	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systematic	Roadway Departure	Prevent roadway departure
Statewide Federal-Aid Striping Program (2017)	Roadway delineation	Longitudinal pavement markings - remarking	9398	Miles	$54718	$54718	Penalty Funds (23 U.S.C. 164)	Multiple/Varies	Multiple/Varies	0	0	State Highway Agency	Systematic	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
Joy - Searcy (S)	Shoulder treatments	Widen shoulder - paved or other	9	Miles	$556037	$556037	Penalty Funds (23 U.S.C. 164)	Rural	Major Collector	4,500	55	State Highway Agency	Spot	Roadway Departure	Prevent roadway departure
Joy - Searcy (S)	Shoulder treatments	Widen shoulder - paved or other	9	Miles	$6237000	$7170608	HSIP (23 U.S.C. 148)	Rural	Major Collector	4,500	55	State Highway Agency	Spot	Roadway Departure	Prevent Roadway Departure
Hwy. 118/W. Service Rd./I-40 EB Ramps Signal & Inters. Impvts. (West Memphis)	Intersection traffic control	Intersection traffic control - other	1	Intersections	$331200	$368000	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	7,900	45	State Highway Agency	Spot	Intersections	Mitigate consequences of intersection crashes
Hwy. 10 - Hwy. 7 (Safety Impvts.) (S)	Roadway	Pavement surface - miscellaneous	18	Miles	$7100522	$7889469	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	4,900	55	State Highway Agency	Spot	Roadway Departure	Prevent roadway departures
Hwy. 10 - Hwy. 7 (Safety Impvts.) (Sel. Secs.) (S)	Roadway	Rumble strips - edge or shoulder	18	Miles	$330415	$330415	Penalty Funds (23 U.S.C. 164)	Rural	Minor Arterial	4,900	55	State Highway Agency	Spot	Roadway Departure	Prevent roadway departures
Hunstville - Eureka Springs (Safety Impvts.) (Sel. Secs.) (S)	Shoulder treatments	Widen shoulder - paved or other	26	Miles	$7154832	$7949814	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	6,500	55	State Highway Agency	Spot	Roadway Departure	Prevent roadway departures
Izard Co. Line - Hwy. 62 (Safety Impvts.) (Sel. Secs.) (S)	Shoulder treatments	Widen shoulder - paved or other	18	Miles	$10080000	$11200000	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	7,200	55	State Highway Agency	Spot	Roadway Departure	Prevent Roadway Departures
Huntsville - Eureka Springs (Safety Impvts.) (Sel. Secs.) (S)	Shoulder treatments	Widen shoulder - paved or other	26	Miles	$79836	$79836	Penalty Funds (23 U.S.C. 164)	Rural	Minor Arterial	6,500	55	State Highway Agency	Spot	Roadway Departure	Prevent roadway depature
Pangburn - Fourmile Hill (Safety Impvts.) (Sel. Secs.) (S)	Intersection geometry	Auxiliary lanes - add two-way left-turn lane	6.48	Miles	$6003000	$6670000	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	5,800	55	State Highway Agency	Spot	Intersections	Mitigate consequences of intersection 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
Bryant Rd. - Hwy. 298 West (Safety Impvts.) (Sel. Secs.) (S)	Intersection geometry	Auxiliary lanes - add two-way left-turn lane	8	Miles	$6988530	$7765034	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	9,900	55	State Highway Agency	Spot	Intersections	Mitigate consequences of intersection crashes
Hwy. 412 - Berryville (Safety Impvts.) (S)	Shoulder treatments	Widen shoulder - paved or other	18	Miles	$4061002	$4512224	HSIP (23 U.S.C. 148)	Rural	Major Collector	2,900	55	State Highway Agency	Spot	Roadway Departure	Prevent roadway departures
Missouri State Line - Hwy. 251 (Sel. Secs.) (S)	Shoulder treatments	Widen shoulder - paved or other	12	Miles	$628677	$698530	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	2,100	55	State Highway Agency	Systemic	Roadway Departure	Prevent roadway departures
I-30 - Nevada Co. Line (Sel. Secs.) (S)	Shoulder treatments	Widen shoulder - paved or other	13	Miles	$708	$787.67	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	2,000	55	State Highway Agency	Systemic	Roadway Departure	Prevent roadway departure
Hwy. 112 - I-49	Non-infrastructure	Non-infrastructure - other	1	Queue Protection	$8508	$9453	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	0	65	State Highway Agency	Queue Protection	Work Zones	Reduce end of queue crashes
Louisiana State Line - Hwy. 82 (Widening) (S)	Non-infrastructure	Non-infrastructure - other	1	Queue Protection	$60808	$67565	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	5,300	55	State Highway Agency	Queue Protection	Work Zones	Reduce end of queue crashes
Oak Bluff Rd. - Hwy. 122 (S)	Shoulder treatments	Widen shoulder - paved or other	9	Miles	$636497	$707219	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	1,500	55	State Highway Agency	Systemic	Roadway Departure	Prevent roadway departure
Lonoke Co. Line - Hwy. 67B (Sel. Secs.) (S)	Shoulder treatments	Widen shoulder - paved or other	11	Miles	$263406	$292674	HSIP (23 U.S.C. 148)	Rural	Major Collector	1,100	55	State Highway Agency	Systemic	Roadway Departure	Prevent roadway departure
Craighead Co. Line - Payneway (S)	Shoulder treatments	Widen shoulder - paved or other	12	Miles	$430240	$478044	HSIP (23 U.S.C. 148)	Rural	Major Collector	770	55	State Highway Agency	Systemic	Roadway Departure	Prevent roadway departure
Hwy. 70 - Sevier St. (Widening) (F)	Non-infrastructure	Non-infrastructure - other	1	Queue Protection	$90000	$90000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	76,000	70	State Highway Agency	Queue Protection	Work Zones	Reduce end of queue crashes
Hwy. 18 - Hwy. 77 (Leachville) (S)	Shoulder treatments	Widen shoulder - paved or other	3	Miles	$56928	$63254	HSIP (23 U.S.C. 148)	Rural	Major Collector	3,100	55	State Highway Agency	Systemic	Roadway Departure	Prevent roadway departure
Hwy. 65B - Hwy. 65	Non-infrastructure	Non-infrastructure - other	1	Queue Protection	$9000	$10000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	27,000	65	State Highway Agency	Queue Protection	Work Zones	Reduce end of queue 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
Sheareville - West (Pvmt. Impvts.)	Non-infrastructure	Non-infrastructure - other	1	Queue Protection	$31979	$35532	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Interstate	36,000	70	State Highway Agency	Queue Protection	Work Zones	Reduce end of queue crashes
Baptist Hospital - University Ave. (Widening) (F)	Non-infrastructure	Non-infrastructure - other	1	Queue Protection	$50017	$55574	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	104,000	60	State Highway Agency	Queue protection	Work Zones	Reduce end of queue crashes
Baptist Hospital - University Ave. (Widening) (F)	Non-infrastructure	Non-infrastructure - other	1	Queue Protection	$244265	$271406	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	104,000	60	State Highway Agency	Queue protection	Work Zones	Reduce end of queue crashes
Mississippi Ave. - Perryville Rd. (Hwy. 10) (L.R.)	Roadway signs and traffic control	Roadway signs and traffic control - other	446	Square feet of signs	$7711	$8568	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	3,200	40	State Highway Agency	Signs	Signs	Improve signage
Jackson Co. Line - Hwy. 122	Shoulder treatments	Widen shoulder - paved or other	5	Miles	$3933	$4369.24	HSIP (23 U.S.C. 148)	Rural	Major Collector	1,700	55	State Highway Agency	Systemic	Roadway Departure	Prevent roadway departures
Hwys. 149 & 308B (Sel. Secs.) (S)	Shoulder treatments	Widen shoulder - paved or other	7	Miles	$341869	$379854	HSIP (23 U.S.C. 148)	Rural	Major Collector	1,400	55	State Highway Agency	Systemic	Roadway Departure	Prevent Roadway Departures
De Roche Creek Strs. & Apprs. (S)	Non-infrastructure	Non-infrastructure - other	1	Queue Protection	$39647	$44052	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Interstate	34,000	70	State Highway Agency	Queue Protection	Work Zones	Reduce end of queue crashes
Hwy. 14 - South (S)	Shoulder treatments	Widen shoulder - paved or other	4	Miles	$263555	$292839	HSIP (23 U.S.C. 148)	Rural	Major Collector	1,500	55	State Highway Agency	Systemic	Roadway Departure	Prevent roadway departures
Madison Co. Line - South (S)	Shoulder treatments	Widen shoulder - paved or other	14	Miles	$55446	$59370	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	940	55	State Highway Agency	Systemic	Roadway Departure	Prevent roadway departure
Hwy. 63B - Hwy. 18 (S)	Non-infrastructure	Non-infrastructure - other	1	Queue Protection	$135643	$150715	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	37,000	65	State Highway Agency	Queue Protection	Work Zones	Reduce end of queue crashes
CR 13 RR Signals (S. of Hatton) (S)	Railroad grade crossings	Railroad grade crossing gates	1	Intersections	$217305	$217305	HSIP (23 U.S.C. 148)	Rural	Local Road or Street	0	0	County Highway Agency	Systemic	Railroad Crossings	Prevent Railroad Crossing crashes
Tallequah St. RR Signal Upgrade	Railroad grade crossings	Railroad grade crossing gates	1	Intersections	$371670	$371670	HSIP (23 U.S.C. 148)	Urban	Major Collector	0	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
(Siloam Springs) (S)															
4th St. RR Signal Upgrade (DeQueen) (S)	Railroad grade crossings	Railroad grade crossing gates	1	Intersections	$375266	$275266	HSIP (23 U.S.C. 148)	Urban	Local Road or Street	0	0	City or Municipal Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
S. Church St. RR Signals Upgrade (Atkins)	Railroad grade crossings	Railroad grade crossing gates	1	Intersections	$217100	$217100	HSIP (23 U.S.C. 148)	Rural	Local Road or Street	0	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	Railroad grade crossing gates	1	Intersections	$451500	$451500	HSIP (23 U.S.C. 148)	Rural	Local Road or Street	0	0	County Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
Railroad Safety Program	Non-infrastructure	Transportation safety planning	1	Planning	$180000	$200000	HSIP (23 U.S.C. 148)	N/A	N/A	0	0	N/A	N/A	Railroad Crossing	Prevent railroad crossing crashes
Division St. RR Signals (Altheimer) (S)	Railroad grade crossings	Railroad grade crossing gates	1	Intersections	$284000	$284000	HSIP (23 U.S.C. 148)	Rural	Local Road or Street	0	0	City or Municipal Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
E. Barnes St. RR Signal Upgrade (Dermott) (S)	Railroad grade crossings	Railroad grade crossing gates	1	Intersections	$428800	$428800	HSIP (23 U.S.C. 148)	Rural	Local Road or Street	0	0	City or Municipal Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
Tennessee Rd. RR Signal Upgrade (Texarkana) (S)	Railroad grade crossings	Railroad grade crossing gates	1	Intersections	$371300	$371300	HSIP (23 U.S.C. 148)	Urban	Major Collector	0	0	City or Municipal Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
Tims Rd. RR Signal Upgrade (Tuckerman) (S)	Railroad grade crossings	Railroad grade crossing gates	1	Intersections	$343700	$343700	HSIP (23 U.S.C. 148)	Rural	Major Collector	0	0	County Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
Hammons St. RR Signals (Judsonia) (S)	Railroad grade crossings	Railroad grade crossing gates	1	Intersections	$309600	$309600	HSIP (23 U.S.C. 148)	Rural	Local Road or Street	0	0	City or Municipal Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
W. South St. RR Signals &	Railroad grade crossings	Railroad grade crossing gates	1	Intersections	$348224	$348224	HSIP (23 U.S.C. 148)	Rural	Local Road or Street	0	0	City or Municipal	Systemic	Railroad Crossing	Prevent railroad

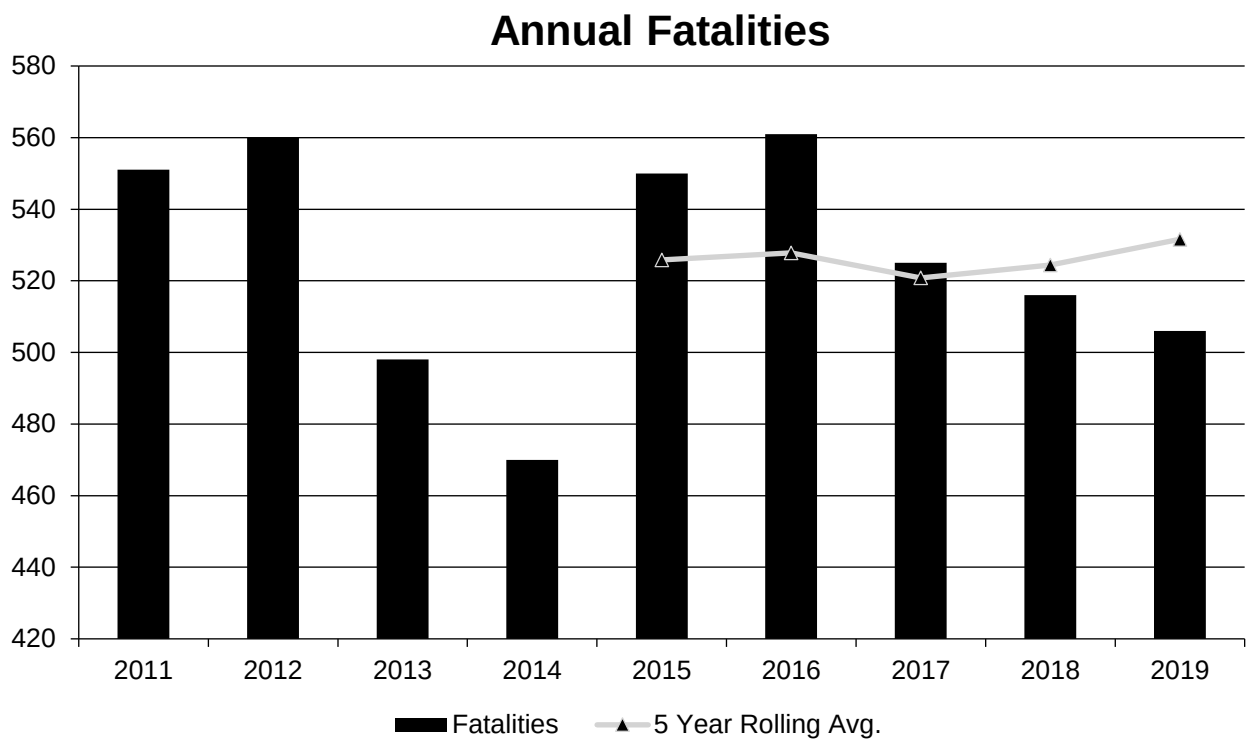
PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
Surf. (Gurdon) (S)												Highway Agency			crossing crashes
CR 124 RR Signals (Waldo) (S)	Railroad grade crossings	Railroad grade crossing gates	1	Intersections	$390370	$390370	HSIP (23 U.S.C. 148)	Rural	Local Road or Street	0	0	County Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
Crossover One Rd. RR Signals (North of Mayflower) (S)	Railroad grade crossings	Railroad grade crossing gates	1	Intersections	$318000	$318000	HSIP (23 U.S.C. 148)	Rural	Local Road or Street	0	0	County Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
Roosevelt Rd. RR Signals (East of Morrilton) (S)	Railroad grade crossings	Railroad grade crossing gates	1	Intersections	$361500	$361500	HSIP (23 U.S.C. 148)	Urban	Major Collector	0	0	County Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
S. Morrill St. RR Signals Upgrade (Morrilton) (S)	Railroad grade crossings	Railroad grade crossing gates	1	Intersections	$22500	$25000	HSIP (23 U.S.C. 148)	Urban	Local Road or Street	0	0	City or Municipal Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
McClure Ave. RR Signals (Lowell) (S)	Railroad grade crossings	Railroad grade crossing gates	1	Intersections	$258000	$258000	HSIP (23 U.S.C. 148)	Urban	Major Collector	0	0	City or Municipal Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
Co. Rd. 398 RR Signals (NW of Bono) (S)	Railroad grade crossings	Railroad grade crossing gates	1	Intersections	$15533	$15533	HSIP (23 U.S.C. 148)	Rural	Local Road or Street	0	0	County Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
W. Cherry St. RR Signals (Blytheville) (S)	Railroad grade crossings	Railroad grade crossing gates	1	Intersections	$262100	$262100	HSIP (23 U.S.C. 148)	Urban	Major Collector	0	0	City or Municipal Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes
W. Laurel St. RR Signal Upgrade (Hickory Ridge) (S)	Railroad grade crossings	Railroad grade crossing gates	1	Intersections	$150722	$150722	HSIP (23 U.S.C. 148)	Rural	Local Road or Street	0	0	City or Municipal Highway Agency	Systemic	Railroad Crossing	Prevent railroad crossing crashes

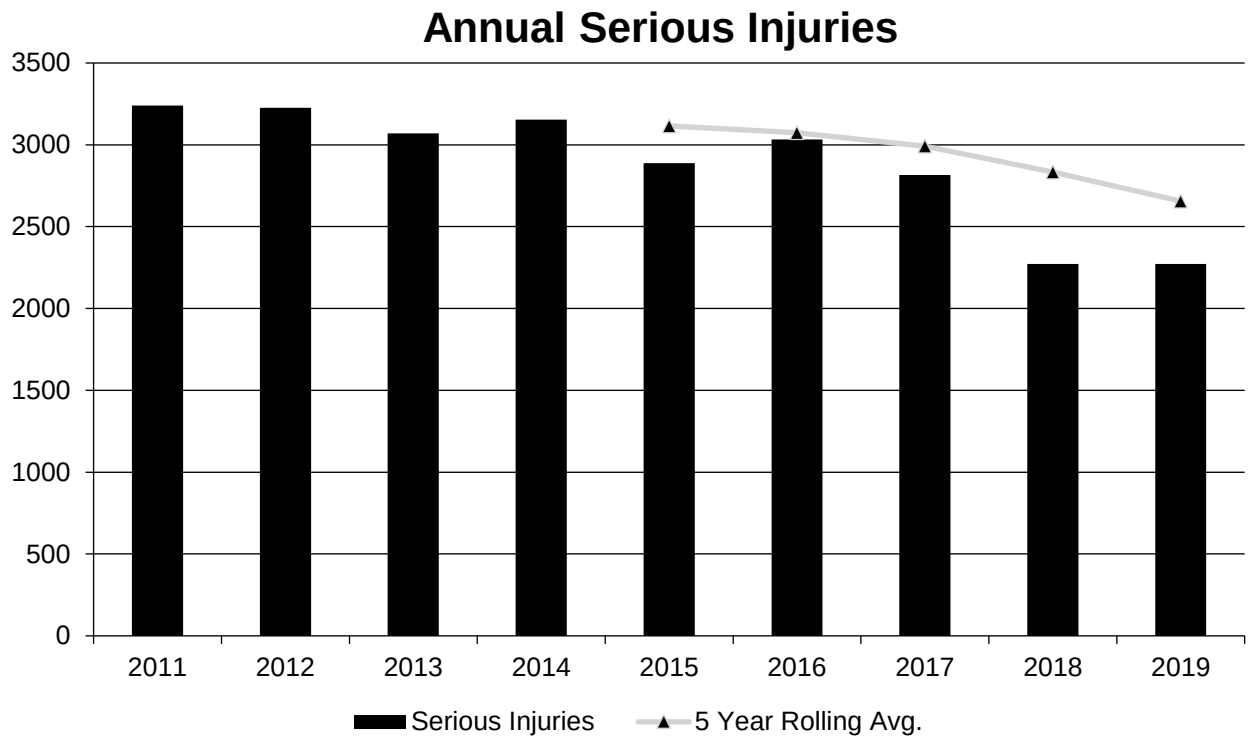
Safety Performance

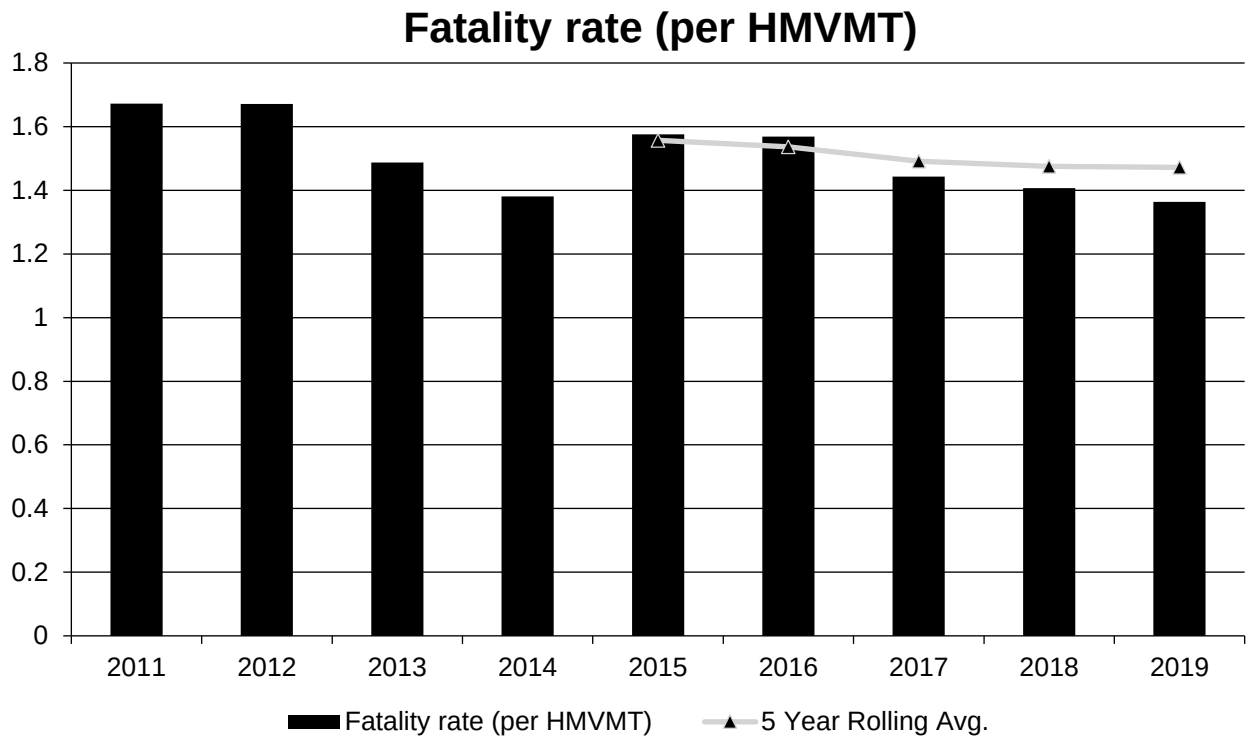
General Highway Safety Trends

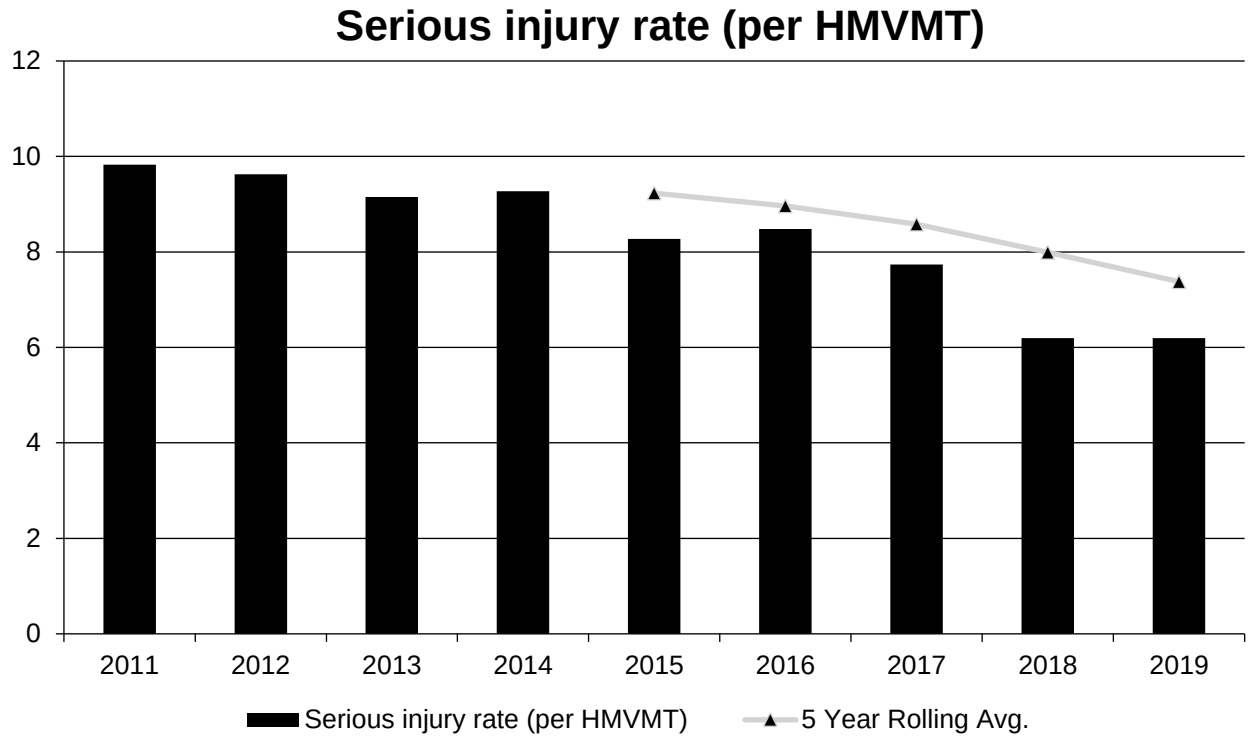
Present data showing the general highway safety trends in the State for the past five years.

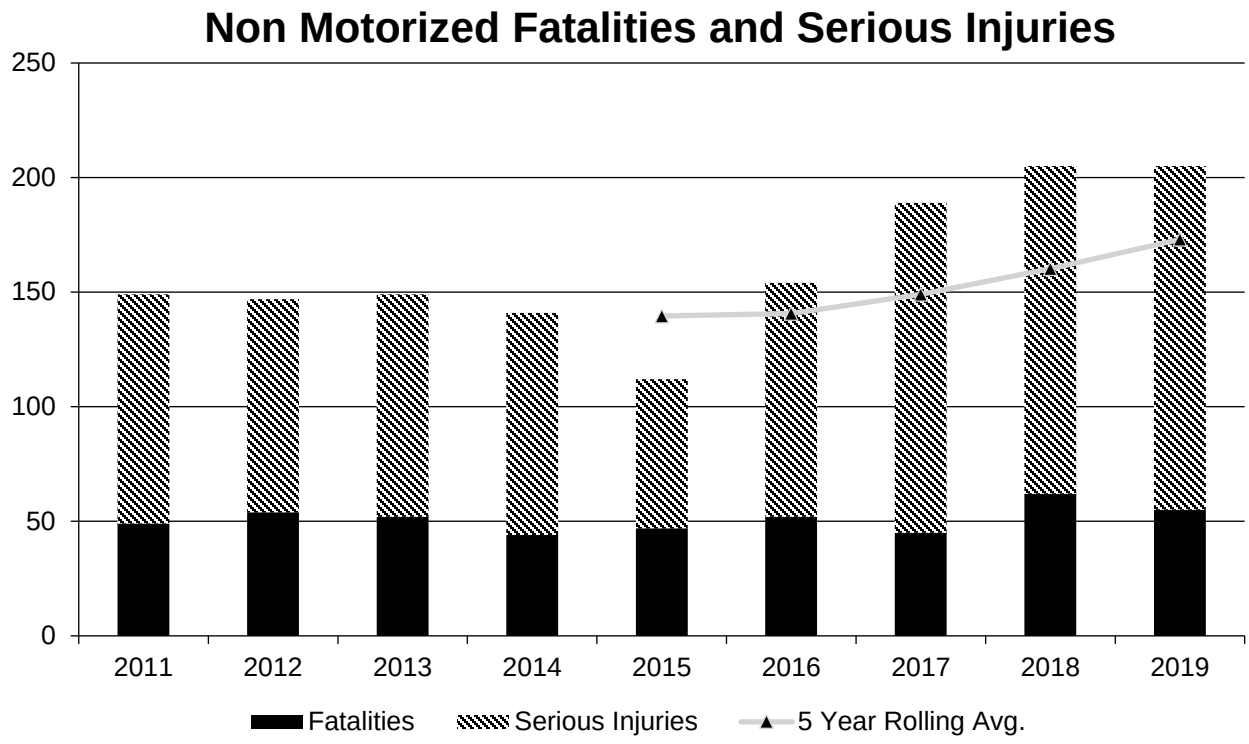
PERFORMANCE MEASURES	2011	2012	2013	2014	2015	2016	2017	2018	2019
Fatalities	551	560	498	470	550	561	525	516	506
Serious Injuries	3,239	3,226	3,070	3,154	2,888	3,032	2,816	2,272	2,272
Fatality rate (per HMVMT)	1.672	1.671	1.487	1.381	1.576	1.569	1.443	1.407	1.364
Serious injury rate (per HMVMT)	9.829	9.624	9.154	9.270	8.276	8.480	7.739	6.195	6.195
Number non-motorized fatalities	49	54	52	44	47	52	45	62	55
Number of non-motorized serious injuries	100	93	97	97	65	102	144	143	150
Number of non-motorized fatalities and serious inj	149	147	148	141	112	154	189	205	205

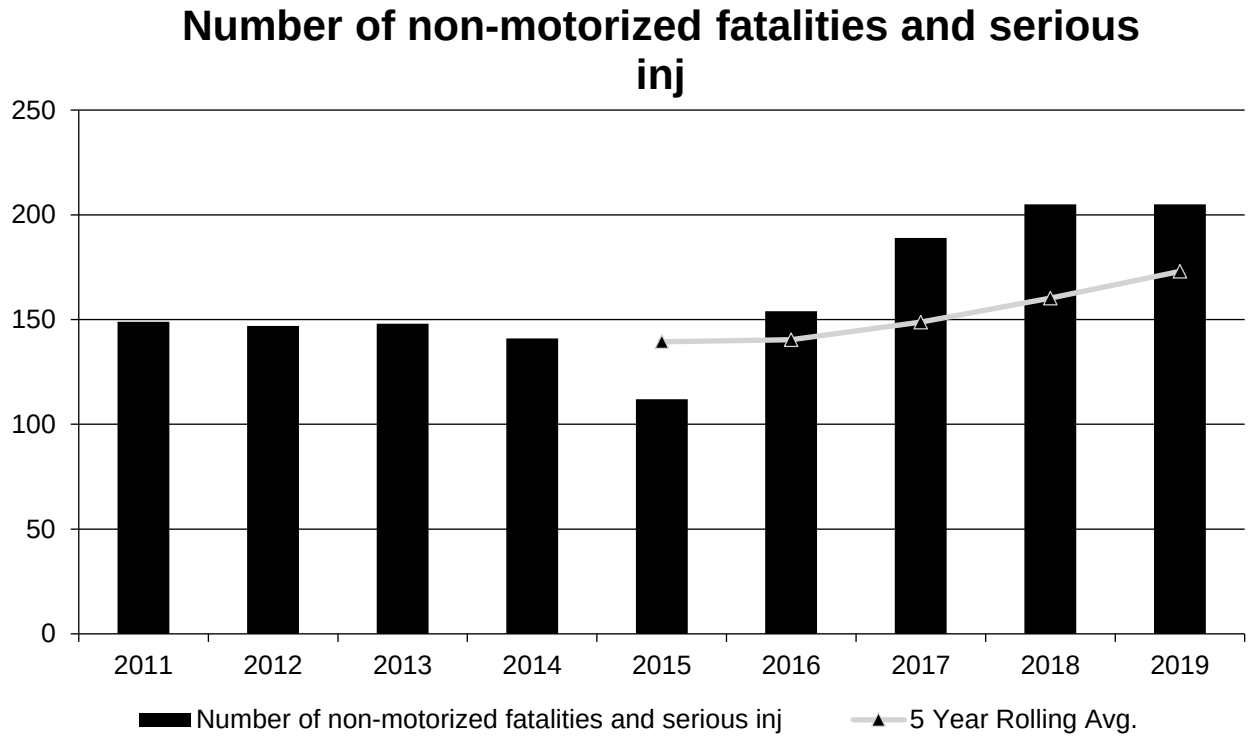

Annual Fatalities
580
560
540
520
500
480
460
440
420
2011
2012
2013
2014
2015
2016
2017
2018
2019
Fatalities
5 Year Rolling Avg.


Annual Serious Injuries
3500
3000
2500
2000
1500
1000
500
0
2011
2012
2013
2014
2015
2016
2017
2018
2019
Serious Injuries
5 Year Rolling Avg.


Fatality rate (per HMVMT)
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
2011
2012
2013
2014
2015
2016
2017
2018
2019
Fatality rate (per HMVMT)
5 Year Rolling Avg.


Serious injury rate (per HMVMT)
12
10
8
6
4
2
0
2011
2012
2013
2014
2015
2016
2017
2018
2019
Serious injury rate (per HMVMT)
5 Year Rolling Avg.





Value for fatalities and fatality rate is based on the actual FARS fatality numbers for 2015, 2016, and 2017, preliminary FARS numbers for 2018 and NSC number for 2019.
Value for suspected serious injuries, suspected serious injury rate, and non-motorized fatalities and suspected serious injuries for 2015-2018 is the actual number, and an assumed number for 2019 (assumed to be the same as 2018). 2019 data was unavailable due to COVID-19 limiting resources as well as issues with crash

database that are still being worked out.
2019 VMT was not available.

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 2015, 2016, and 2017, preliminary FARS numbers for 2018 and NSC number for 2019.
Value for suspected serious injuries, suspected serious injury rate, and non-motorized fatalities and suspected serious injuries for 2015-2018 is the actual number, and an assumed number for 2019.

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

Year 2018

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	26	103.8	0.66	2.66
Rural Principal Arterial (RPA) - Other Freeways and Expressways	2.6	9.2	0.78	2.88
Rural Principal Arterial (RPA) - Other	64.8	214.2	1.78	7.52
Rural Minor Arterial	60.2	287.8	2.19	10.54
Rural Minor Collector	10.6	53.8	3.58	13.51
Rural Major Collector	81	404.6	2.61	13.17
Rural Local Road or Street	27.4	157.2	2.84	9.42
Urban Principal Arterial (UPA) - Interstate	32.6	161.6	0.6	3.02
Urban Principal Arterial (UPA) - Other Freeways and Expressways	6.2	39	0.6	3.66
Urban Principal Arterial (UPA) - Other	59.6	282.2	1.6	7.59
Urban Minor Arterial	46.8	289.8	1.35	8.71

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 Minor Collector	1	4.8	1.56	9.66
Urban Major Collector	23	127.2	1.9	11.68
Urban Local Road or Street	14.4	97.2	1.56	10.04

Year 2018

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	431.6	2,303.6	1.65	8.83
County Highway Agency	45.2	192.6	1.31	5.57
Town or Township Highway Agency				
City or Municipal Highway Agency	39.4	366	0.66	6.2
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				

2018 is the latest crash data available at the time of submitting.

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 255 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.
- ARDOT has a pilot program with Abley to examine the possibilities of using this product to develop the horizontal curve program.
- 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. Though there has been a noted and significant increase in fatal crashes in 2020. ARDOT is trying to determine what has caused this spike.

Safety Performance Targets

Safety Performance Targets

Calendar Year 2021 Targets *

Number of Fatalities:536.3

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

In 2017 when SHSP was completed, eCrash was not as widely implemented as it is today so we are capturing more crash records leading to constantly adjusted targets. See attached PDF for additional details.

Number of Serious Injuries:3103.8

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

In 2017 when SHSP was completed, eCrash was not as widely implemented as it is today so we are capturing more crash records leading to constantly adjusted targets. See attached PDF for additional details.

Fatality Rate:1.560

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

In 2017 when SHSP was completed, eCrash was not as widely implemented as it is today so we are capturing more crash records leading to constantly adjusted targets. See attached PDF for additional details.

Serious Injury Rate:9.043

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

In 2017 when SHSP was completed, eCrash was not as widely implemented as it is today so we are capturing more crash records leading to constantly adjusted targets. See attached PDF for additional details.

Total Number of Non-Motorized Fatalities and Serious Injuries:220.3

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

In 2017 when SHSP was completed, eCrash was not as widely implemented as it is today so we are capturing more crash records leading to constantly adjusted targets. See attached PDF for additional details.

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

Several meetings were held involving ARDOT, FHWA and the Arkansas Highway Safety Office to establish a methodology and preliminary targets. The method and preliminary targets were then presented to the SHSP Steering Committee which included all MPOs, other stakeholder agencies and private industry and organizations. Comments were taken from the committee and considered. Some of the topics that created the most discussion evolved around adjustments to targets for internal and external factors as shown 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
• Update to the definition of Suspected Serious Injury.
• Continued increase in vehicle miles traveled. 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 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.

• Several safety analysis tools are being examined for possible use at ARDOT along with possible use by local agencies. To assist in this effort ARDOT is currently undergoing Roadway Safety Management System Technical Assistance through FHWA.

Online data query tools and dashboards are being developed for other agencies and possible public use. One such tool, called the Arkansas Crash Analytics Tool, has already been developed through ArcGIS Online and is available to the public.

• A SHSP tracking tool has been developed for use in tracking emphasis area action plans and projects by safety stakeholders.

• 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.

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 2019 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	543.0	531.6
Number of Serious Injuries	3637.0	2656.0
Fatality Rate	1.615	1.472
Serious Injury Rate	10.824	7.377
Non-Motorized Fatalities and Serious Injuries	170.0	173.0

2019 Crash data is not yet available, this was due to COVID-19 limiting resources as well as issues with crash database; therefore a table (pg. 9 Table 5) which shows estimated performance assessment utilizing preliminary data is attached, the ARDOT Target Setting- Safety 2021 document.

Based on a performance assessment conducted in June 2020, ARDOT has met or made significant progress on 4 out of 5 targets (pg. 9 Table 5). The lone exception being Number of non-motorized fatalities and serious injuries, this likely due the increase in agencies on eCrash as more of these crashes are being reported/recorded.

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	2012	2013	2014	2015	2016	2017	2018
Number of Older Driver and Pedestrian Fatalities	73	65	63	72	83	80	74
Number of Older Driver and Pedestrian Serious Injuries	238	270	244	233	257	263	212

Data is not finalized currently for 2019.

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 under ARDOT administration review. 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. With a third round of pavement friction improvements under development. 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 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. The new HSIP Process being developed will develop a method to evaluate the overall effectiveness of programs and sub-programs. The process has been reviewed by FHWA and is now 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 and the number of projects programmed waiting in a queue to be funded for the coming years indicates that we are planning well for improving the safety conditions throughout the State by following the HSIP guidelines.

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

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

Describe significant program changes that have occurred since the last reporting period.

ARDOT has inclined toward focusing on and addressing safety concerns at locations with more KA crashes. In addition to a focus on locations with higher historical KA crashes, a more proactive approach is also being taken toward systemic programs which address the crash risks rather than reactive approach. A more data driven process is utilized to program and scope safety projects, especially where KA crash statistics are of concern.
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.
ARDOT is moving towards economic analysis that mostly requires individual countermeasures to stand on their own merit. We have improved efficiency by developing tools to facilitate the ease of conducting safety analysis Department wide. These tools have allowed other Divisions to do their analysis for non-HSIP projects without having to wait on the Traffic Safety Section to conduct queries and analysis for them. Additionally, ARDOT is looking into developing/acquiring a Roadway Safety Management System (RSMS) tool through the FHWA Safety Data and Analysis Technical Assistance Program (SDATAP) to further enhance safety analyses. We are also in the beginning stages of examining Roadway Data Improvement Program supported by FHWA. Additionally, due to unforeseen problems which created a huge backlog at Arkansas State Police, we have started entering crash reports into our copy of the crash database in order to expedite the availability of yearly crash data. We have also encountered other data issues with the crash database. COVID-19 also affected staff resources further slowing down the availability of 2019 data. Thus far, 2019 crash data is still unavailable at this time.

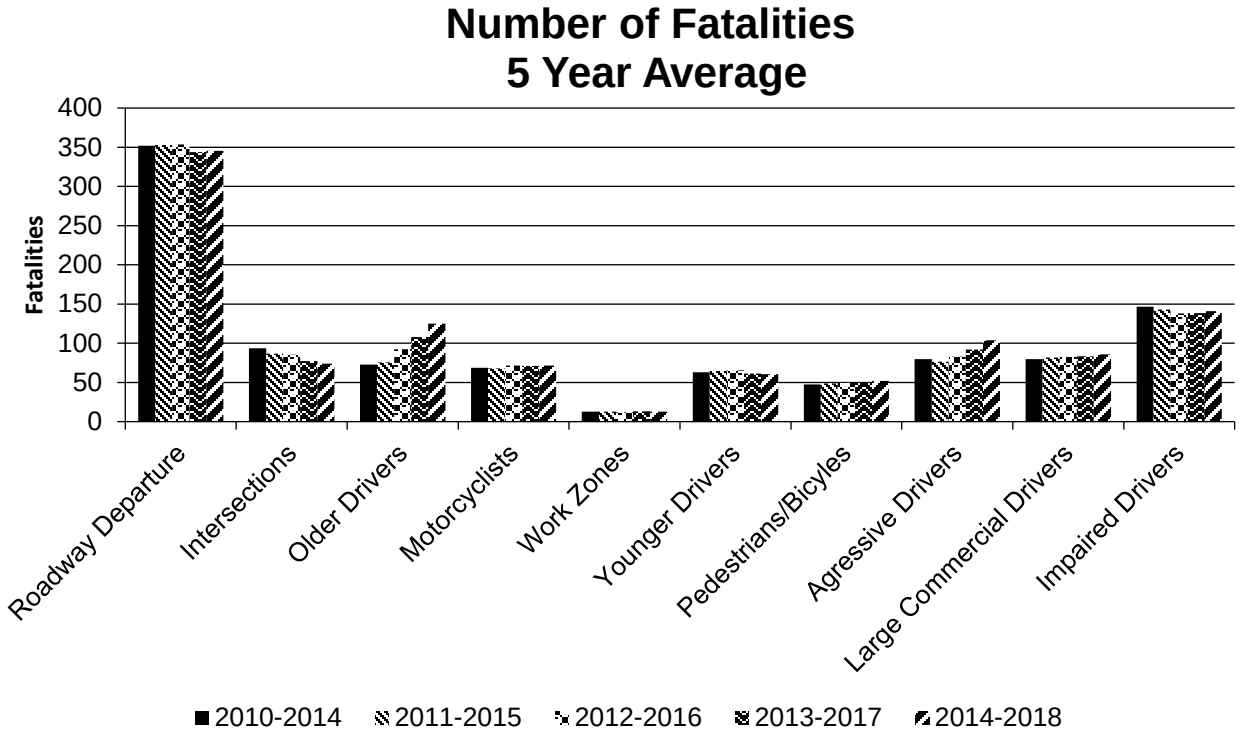
Effectiveness of Groupings or Similar Types of Improvements

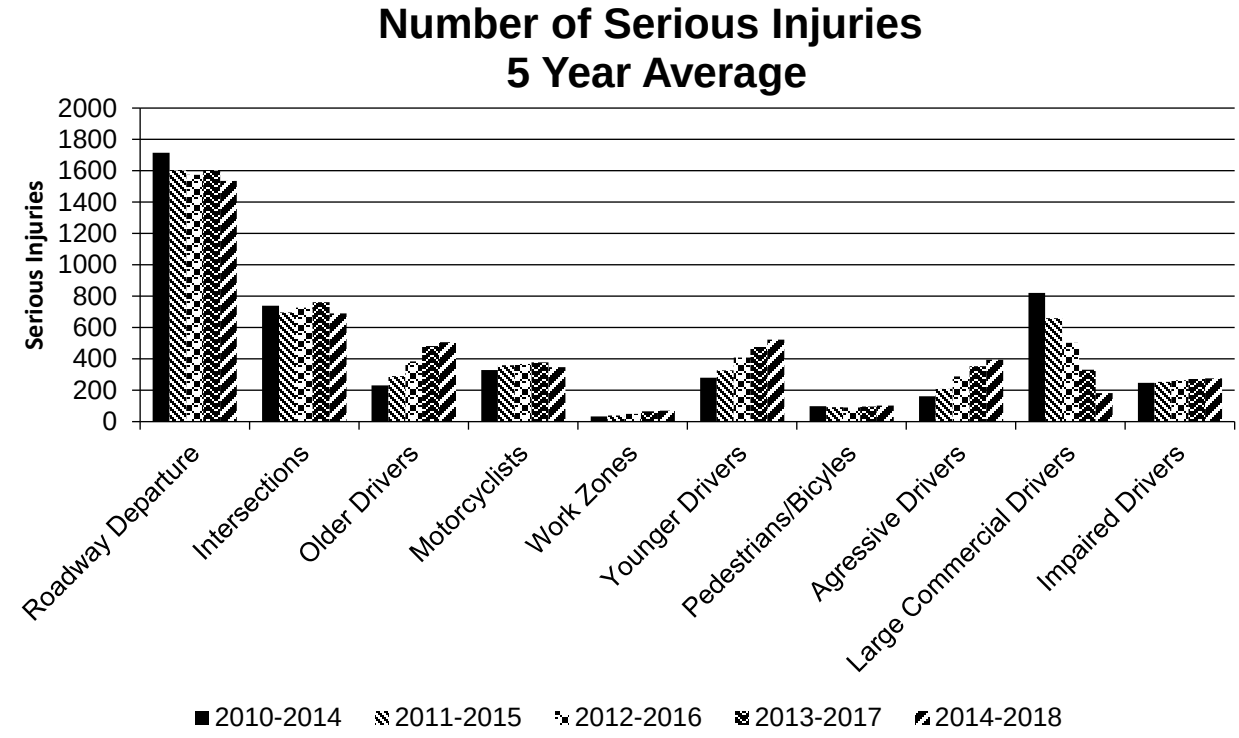
Present and describe trends in SHSP emphasis area performance measures.

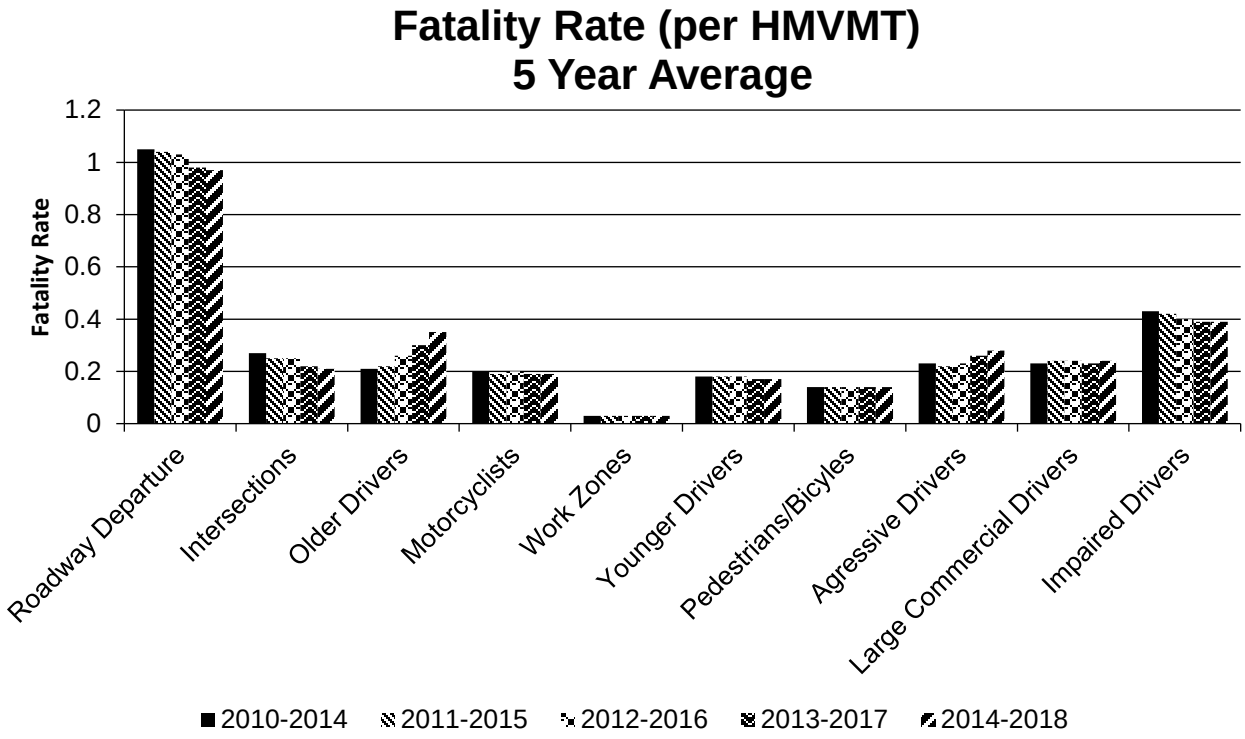
Year 2018

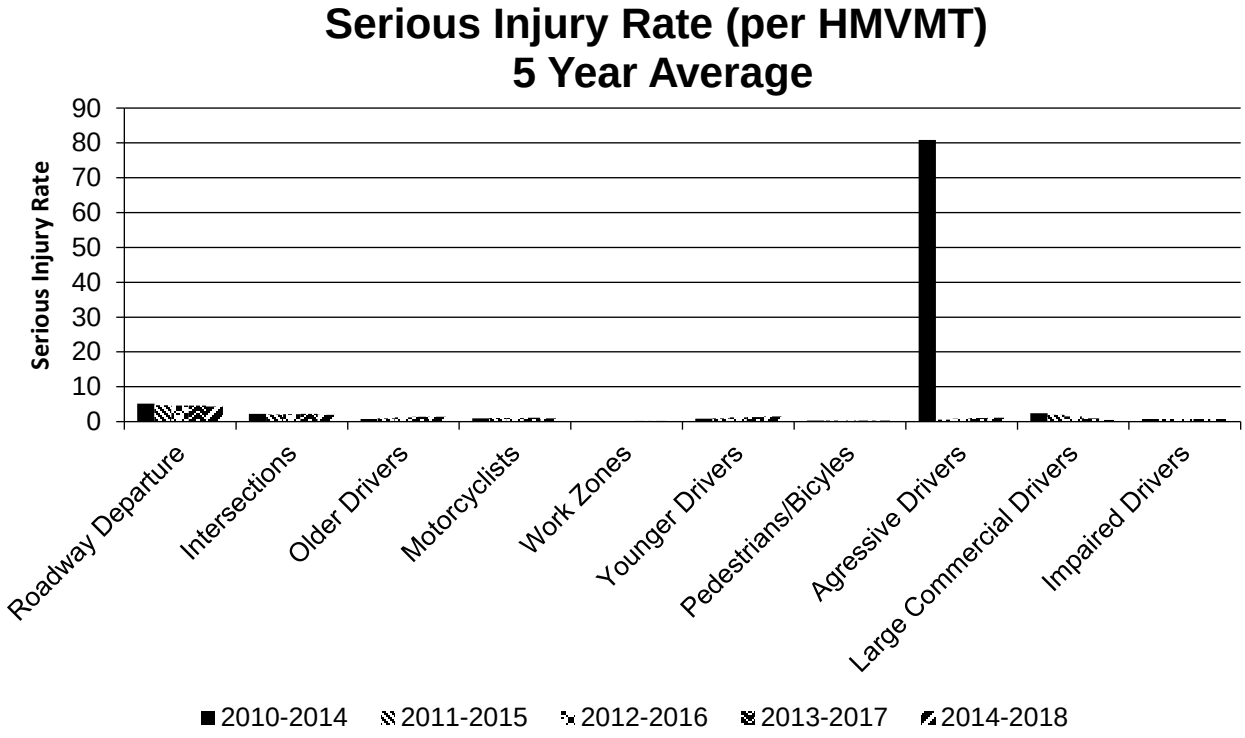
SHSP Emphasis Area	Targeted Crash Type	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
Roadway Departure	Roadway Deaprtures	345.4	1,534.6	0.97	4.31
Intersections	Intersections	74	691.2	0.21	1.94

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)
Older Drivers	All	125.2	506.2	0.35	1.42
Motorcyclists	All	71.6	347	0.19	0.97
Work Zones	All	12.6	70.2	0.03	0.19
Younger Drivers	All	60.6	522	0.17	1.47
Pedestrians/Bicyles	All	51.8	102.6	0.14	0.28
Agressive Drivers	All	103.6	394.6	0.28	1.1
Large Commercial Drivers	All	86	182	0.24	0.51
Impaired Drivers	All	141	276.6	0.39	0.78


Number of Fatalities
5 Year Average
Fatalities
400
350
300
250
200
150
100
50
0
Roadway Departure
Intersections
Older Drivers
Motorcyclists
Work Zones
Younger Drivers
Pedestrians/Bicyles
Agressive Drivers
Large Commercial Drivers
Impaired Drivers
2010-2014
2011-2015
2012-2016
2013-2017
2014-2018


Number of Serious Injuries
5 Year Average
Serious Injuries
2000
1800
1600
1400
1200
1000
800
600
400
200
0
Roadway Departure
Intersections
Older Drivers
Motorcyclists
Work Zones
Younger Drivers
Pedestrians/Bicyles
Agressive Drivers
Large Commercial Drivers
Impaired Drivers
2010-2014
2011-2015
2012-2016
2013-2017
2014-2018





2018 is the latest crash data at the time of submitting. Almost all of the emphasis areas have noticed a downward trend in crashes over recent years with the exception being the pedestrian/bicycle area. The increase in this area is likely due to improved crash recording/reporting as many of these crashes were likely missed in previous years.

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:	Ultra-Thin Bonded Wearing Course
Description:	Installed ultra-thin bonded wearing course (UTBWC) on two-lane highway to reduce wet pavement crashes.
Target Crash Type:	Wet road
Number of Installations:	
Number of Installations:	
Miles Treated:	17
Years Before:	3
Years After:	3
Methodology:	Simple before/after
Results:	In the three year before period there were 31 fatal or suspected serious injury crashes and during the after period there were only 16 fatal or suspected serious injury crashes. (Job 061440)

File Name: Job 061440 Eval for HSIP Report.xlsx

Project Effectiveness

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

Compliance Assessment

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

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 plan to start the process of updating the 2022 SHSP in late 2020 and 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]										

ROAD TYPE	*MIRE NAME (MIRE NO.)	NON LOCAL PAVED ROADS - SEGMENT		NON LOCAL PAVED ROADS - INTERSECTION		NON LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
		STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE
	Functional Class (19) [19]	100	100					100	100	100	100
	Median Type (54) [55]	100	100								
	Access Control (22) [23]	100	100								
	One/Two Way Operations (91) [93]	100	100								
	Number of Through Lanes (31) [32]	100	100					100	100		
	Average Annual Daily Traffic (79) [81]	100	100					100	30		
	AADT Year (80) [82]	100	100								
	Type of Governmental Ownership (4) [4]	100	100					100	100	100	100
INTERSECTION	Unique Junction Identifier (120) [110]			100	100						
	Location Identifier for Road 1 Crossing Point (122) [112]			100	100						
	Location Identifier for Road 2 Crossing Point (123) [113]			100	100						
	Intersection/Junction Geometry (126) [116]			100	47						
	Intersection/Junction Traffic Control (131) [131]			100	47						
	AADT for Each Intersecting Road (79) [81]			100	20						
	AADT Year (80) [82]			100	20						
	Unique Approach Identifier (139) [129]			100	100						
INTERCHANGE/RAMP	Unique Interchange Identifier (178) [168]					100	30				

ROAD TYPE	*MIRE NAME (MIRE NO.)	NON LOCAL PAVED ROADS - SEGMENT		NON LOCAL PAVED ROADS - INTERSECTION		NON LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
		STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE
	Location Identifier for Roadway at Beginning of Ramp Terminal (197) [187]					100	100				
	Location Identifier for Roadway at Ending Ramp Terminal (201) [191]					100	100				
	Ramp Length (187) [177]					100	100				
	Roadway Type at Beginning of Ramp Terminal (195) [185]					100	100				
	Roadway Type at End Ramp Terminal (199) [189]					100	100				
	Interchange Type (182) [172]					100	100				
	Ramp AADT (191) [181]					100	100				
	Year of Ramp AADT (192) [182]					100	100				
	Functional Class (19) [19]					100	100				
	Type of Governmental Ownership (4) [4]					100	100				
Totals (Average Percent Complete):		**94.44**	**94.44**	**100.00**	**66.75**	**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 Transcend Spatial Solutions 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.

The intersection points are being maintained in a SQL database and served out as a feature services via ArcGIS Online so that staff can populate the junction geometry, traffic control, and whether or not the intersections is lighted. As of August 17th, 2020 Staff have completed 109,526 intersections out of 201,869 in the state with all required attributes. We project to be completed and in full maintenance mode by spring 2021 with the intersection database.

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.

• As complex intersections are identified in the intersection database, staff is starting to create polygons around those areas. Major interchange polygons have already been produced.

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

•Video Log and FUGRO’s Surveyor software – viewing and locating elements on the system

• Transcend Spatial Solutions Intersection Manager

Google Earth/Street View

• ESRI – ArcMap/ArcGIS Online/ArcGIS Collector

Optional Attachments

Program Structure:

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

Safety Performance:

Target Setting-Safety 2021 Signed by Director Tudor.pdf
Evaluation:

Job 061440 Eval for HSIP Report.xlsx
Compliance Assessment:

Glossary

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

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

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

HMVMT: means hundred million vehicle miles traveled.

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

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

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

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

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

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

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

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

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