



# ARKANSAS

## HIGHWAY SAFETY IMPROVEMENT PROGRAM 2017 ANNUAL REPORT



U.S. Department of Transportation  
Federal Highway Administration

Photo source: Federal Highway Administration

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## Disclaimer

### **Protection of Data from Discovery Admission into Evidence**

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

23 U.S.C. 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 2017 (July 1, 2016 through June 30, 2017). 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:

Local road safety program is being developed for the Highway Commission's approval. It will help the local agencies to improve safety on local roads.

HFST first round complete and next statewide project of HFST is under development.

UTBWC is also implemented at several locations based on the wet-pavement study.

Wrong-way crash low-cost countermeasures are being implemented statewide.

Statewide guardrail project is being developed to upgrade substandard guardrails to meet the MASH standards on NHS routes.

Three rural intersections are going to be converted into roundabouts under HSIP and they are currently under the design phase.

The installation of cable median barriers is continued to reduce or eliminate KA crashes on interstates and other high speed routes.

Statewide shoulder rumble strip/stripes are installed or being installed on 5,000 plus miles of the State Highway System by the end of calendar year 2017.

Statewide 6" wide enhanced pavement markings are being installed on over 4200 miles of the State Highway System by the end of calendar year 2017.

## 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.

## 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 will be enhanced after the completion of ARNOLD LRS to include intersections on all public roads.

Following the list created from network screening, the analysis of the higher risk 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

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### ***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, reconstruction, 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 the previous analysis and proposed countermeasures based on ;
- 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.

## **Where is HSIP staff located within the State DOT?**

Planning

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**Enter additional comments here to clarify your response for this question or add supporting information.**

ARDOT is centralized and the central office is divided into several divisions. The HSIP staff who are mainly in the section of Traffic Safety is located in the Transportation Planning and Policy Division.

### **How are HSIP funds allocated in a State?**

Central Office via Statewide Competitive Application Process  
SHSP Emphasis Area Data

**Enter additional comments here to clarify your response for this question or add supporting information.**

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.**

To address safety concerns on local roads, the ARDOT continues 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 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 been working on the All Public Roads Linear Referencing System (LRS) to meet the federal requirement since 2014. Once completed, the LRS 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 is being done currently. Approximately 90% of all public roads are now reflected on the LRS. Queries will be able to be performed on all public roads so that analysis can be done on any road in the LRS.

ARDOT currently utilizes the federal aid system LRS to generate a point every 100 ft. along the road centerlines that 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 a point every 100 ft. on all public roads so that all crashes can be located on the LRS.

ARDOT is also in the process of developing a local road safety program policy that will allow the department to annually allocate a portion of HSIP funds for safety projects on local roads. The amount of allocated HSIP funds will be presented

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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.

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

Design

Planning

Maintenance

Operations

Districts/Regions

Governors Highway Safety Office

**Enter additional comments here to clarify your response for this question or add supporting information.**

### **Describe coordination with internal partners.**

Coordination with internal partners, along with the Highway Safety Office (HSO) and the eight Metropolitan Organizations (MPOs) across the State, occurs on different levels. Design, planning, maintenance, operations, MPOs, and the HSO 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 crashes. Traffic Safety performs the preliminary scope of safety improvements on segment jobs according to the HSM guidelines to help with the design process. This scope also incorporate comments from site visit that includes representatives from the other Divisions.

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 can be implemented. Based on the Maintenance Division's recommended improvements the Districts are then involved in implementation of the low cost safety measures.

For major safety projects, 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.

**Identify which external partners are involved with HSIP planning.**

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

**Enter additional comments here to clarify your response for this question or add supporting information.**

**Describe coordination with external partners.**

Coordination with internal partners, along with the external partners such as Highway Safety Office (HSO) and the eight Metropolitan Organizations (MPOs) across the State, occurs on different levels. Design, planning, maintenance, operations, MPOs, and the HSO 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.

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 that has recently begun to provide the necessary equipment and training to local law enforcement agencies for eCrash.

**Have any program administration practices used to implement the HSIP changed since the last reporting period?**

Yes

**Describe HSIP program administration practices that have changed since the last reporting period.**

New countermeasures are recommended and will be installed to address fatal and serious injury crashes. Such countermeasures include wider 6" pavement markings; centerline rumble stripes; centerline and shoulder mumble strips/stripes; and wrong-way crash treatments. Performance measure and target setting coordination with the Arkansas State Police, Highway Safety Office, MPOs, Health Department, NHTSA, and other stakeholders was accomplished in multiple steering committee meetings.

An HSIP Peer Exchange was held in October of 2016. From this peer exchange ARDOT learned many useful tools regarding the prioritization of safety projects. The Traffic Safety Section has initiated a screening process that has been embraced throughout the Department. Projects are now selected based on need, and which projects will give us the best results for the costs. ARDOT has also begun looking at more systemic projects for this reason.

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ARDOT is currently studying whether we need to adjust our Benefit Cost Ratio that is currently being used as well as whether or not our current Comprehensive Societal Crash Costs need to be revamped.

### **Are there any other aspects of HSIP Administration on which the State would like to elaborate?**

Yes

### **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 continued to use the Highway Safety Manual (HSM) on case by case basis. TSS now has 4 Engineers working on the different safety programs. Prior to May 2011, TSS did not have an Engineer. TSS has marketed the SHSP (approved by FHWA in March 2013) with a focus on TZD through the Arkansas Highways Magazine, [idrivearkansas.com](http://idrivearkansas.com) and [tzdarkansas.org](http://tzdarkansas.org). The research for calibration of the HSM Safety Performance Functions for the state of Arkansas is under progress along with continued improvements to data analysis processes and tools used by the TSS. ARDOT continued to be a member State in the Evaluation of Low-Cost Safety Improvements Pooled Fund Study. A HSIP Peer Review meeting was held during the 2017 Federal Fiscal Year. ARDOT is in the process of updating the HSIP Process document based on the Information learned from this effort and the new HSIP guidelines. 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 many 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.

### ***Program Methodology***

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

Yes

### **To upload a copy of the State processes, attach files below.**

File Name:

[AHTD HSIP-Process-2011-07.pdf](#)

### **Select the programs that are administered under the HSIP.**

Median Barrier  
Horizontal Curve  
Rural State Highways  
Skid Hazard  
Roadway Departure  
Low-Cost Spot Improvements  
Shoulder Improvement  
Segments  
Wrong Way Driving  
Other-Pavement Marking Improvements  
Other-Crash Data

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Other-Roundabouts  
Other-Guardrail

**Enter additional comments here to clarify your response for this question or add supporting information.**

ARDOT is studying the development of a low cost spot on-call program for HRRR list and/or fatal location studies.

**Program:** Horizontal Curve

**Date of Program Methodology:** 1/1/2016

**What is the justification for this program? [Check all that apply]**

Addresses SHSP priority or emphasis area

**What is the funding approach for this program? [Check one]**

Competes with all projects

**What data types were used in the program methodology? [Check all that apply]**

<b>Crashes</b>	<b>Exposure</b>	<b>Roadway</b>
All crashes	Traffic	Horizontal curvature
Fatal and serious injury crashes only	Volume	Functional classification
		Roadside features

**What project identification methodology was used for this program? [Check all that apply]**

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?**

**Describe the methodology used to identify local road projects as part of this program.**

**How are projects under this program advanced for implementation?**

Other-Systemic approach with prioritization.

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  
Cost Effectiveness : 3

Other-Analyzed multiple locations statewide that were identified through various sources. : 1

Enter additional comments here to clarify your response for this question or add supporting information.

**Program:** Low-Cost Spot Improvements

**Date of Program Methodology:** 1/25/2017

**What is the justification for this program? [Check all that apply]**

Addresses SHSP priority or emphasis area  
Other-Systemic safety improvements

**What is the funding approach for this program? [Check one]**

Competes with all projects

**What data types were used in the program methodology? [Check all that apply]**

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

**What project identification methodology was used for this program? [Check all that apply]**

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?**

**Describe the methodology used to identify local road projects as part of this program.**

**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

**Enter additional comments here to clarify your response for this question or add supporting information.**  
ArDOT is studying the possible development of a low cost spot on-call program for HRRR and Fatal study locations.

**Program:** Median Barrier

**Date of Program Methodology:** 7/7/2011

**What is the justification for this program? [Check all that apply]**

Addresses SHSP priority or emphasis area

**What is the funding approach for this program? [Check one]**

Funding set-aside

**What data types were used in the program methodology? [Check all that apply]**

<b>Crashes</b>	<b>Exposure</b>	<b>Roadway</b>
All crashes		Median width
Fatal and serious injury crashes only	Traffic	Functional classification

**What project identification methodology was used for this program? [Check all that apply]**

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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?**

**Describe the methodology used to identify local road projects as part of this program.**

**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 approach based on median width, ADT, etc. : 1

**Enter additional comments here to clarify your response for this question or add supporting information.**

The locations were prioritized based on the ARDOT's cable median barrier policy which classifies the risk of such locations based on the median width and crash analysis.

**Program:** Roadway Departure

**Date of Program Methodology:** 1/1/2014

**What is the justification for this program? [Check all that apply]**

Addresses SHSP priority or emphasis area

**What is the funding approach for this program? [Check one]**

Competes with all projects

**What data types were used in the program methodology? [Check all that apply]**

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<b>Crashes</b>	<b>Exposure</b>	<b>Roadway</b>
All crashes		Horizontal curvature
Fatal and serious injury crashes only	Traffic	Other-Minimum of 1 foot shoulder

**What project identification methodology was used for this program? [Check all that apply]**

- 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?**

**Describe the methodology used to identify local road projects as part of this program.**

**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

**Enter additional comments here to clarify your response for this question or add supporting information.**

**Program:** Rural State Highways

**Date of Program Methodology:** 6/6/2016

**What is the justification for this program? [Check all that apply]**

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

**What is the funding approach for this program? [Check one]**

Competes with all projects

**What data types were used in the program methodology? [Check all that apply]**

<b>Crashes</b>	<b>Exposure</b>	<b>Roadway</b>
All crashes	Traffic	Functional classification
Fatal and serious injury crashes only	Volume	

**What project identification methodology was used for this program? [Check all that apply]**

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?**

**Describe the methodology used to identify local road projects as part of this program.**

**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

**Enter additional comments here to clarify your response for this question or add supporting information.**

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**Program:** Segments

**Date of Program Methodology:** 1/1/2013

**What is the justification for this program? [Check all that apply]**

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

**What is the funding approach for this program? [Check one]**

Competes with all projects

**What data types were used in the program methodology? [Check all that apply]**

<b>Crashes</b>	<b>Exposure</b>	<b>Roadway</b>
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? [Check all that apply]**

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?**

**Describe the methodology used to identify local road projects as part of this program.**

**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

**Enter additional comments here to clarify your response for this question or add supporting information.**

HSIP fund on segments is mainly used to address the systemic improvements of cable median barriers, rumble strip/stripe, and install/improve pavement marking/delineations. Systemic approaches to addressing roadway departure crashes are a continuous process. ARDOT continues implementing cable median barrier projects, rumble strip/stripe projects, and enhanced pavement marking projects through a systemic process. With guidance from the Roadway Departure Safety Implementation Plan, a systemic approach to install high friction surface treatment and shoulder widening/improvement is also underway. For segmental projects, ARDOT continues to use B/C analysis to target low and medium cost improvements to hot spots while also applying the other low cost improvements for the entire length of the project. Segments are sometimes originally identified using Roadway Departure Crashes.

**Program:** Shoulder Improvement

**Date of Program Methodology:** 1/1/2016

**What is the justification for this program? [Check all that apply]**

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? [Check one]**

Competes with all projects

**What data types were used in the program methodology? [Check all that apply]**

<b>Crashes</b>	<b>Exposure</b>	<b>Roadway</b>
All crashes	Traffic	
Fatal and serious injury crashes only	Volume	Horizontal curvature
Other-Roadway departure crashes.	Lane miles	Functional classification
	Other-Preventative maintenance	

**What project identification methodology was used for this program? [Check all that apply]**

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?**

**Describe the methodology used to identify local road projects as part of this program.**

**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).**

Available funding : 1

Cost Effectiveness : 3

Other-Sites were selected in conjunction with the pavement preservation Program : 1

**Enter additional comments here to clarify your response for this question or add supporting information.** Shoulder widening is done as part of corridor projects or as part of Preventive Maintenance projects if systemic criteria is met.

**Program:** Skid Hazard

**Date of Program Methodology:** 1/1/2013

**What is the justification for this program? [Check all that apply]**

Other-treating spots for wet pavement crashes

**What is the funding approach for this program? [Check one]**

Competes with all projects

**What data types were used in the program methodology? [Check all that apply]**

**Crashes**

**Exposure**

**Roadway**

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All crashes  
Fatal and serious injury crashes only

Traffic  
Other-Wet pavement crashes

Horizontal curvature  
Other-Skid resistance consideration

**What project identification methodology was used for this program? [Check all that apply]**

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?**

**Describe the methodology used to identify local road projects as part of this program.**

**How are projects under this program advanced for implementation?**

selection committee  
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

**Enter additional comments here to clarify your response for this question or add supporting information.**

**Program:** Wrong Way Driving

**Date of Program Methodology:** 12/9/2015

**What is the justification for this program? [Check all that apply]**

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

**What is the funding approach for this program? [Check one]**

Funding set-aside

**What data types were used in the program methodology? [Check all that apply]**

**Crashes**

**Exposure**

**Roadway**

Other-All wrong-way crashes

Traffic

Functional classification

**What project identification methodology was used for this program? [Check all that apply]**

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?**

**Describe the methodology used to identify local road projects as part of this program.**

**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

**Enter additional comments here to clarify your response for this question or add supporting information.**

This study identified low cost safety improvements aimed to reduce wrong-way crashes on Arkansas' interstates and freeways. A statewide project has been implemented to install low cost treatments to prevent wrong way crashes.

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**Program:** Other-Pavement Marking Improvements

**Date of Program Methodology:** 1/1/2016

**What is the justification for this program? [Check all that apply]**

Other-systemic approach toward enhancement of pavement markings

**What is the funding approach for this program? [Check one]**

Competes with all projects

**What data types were used in the program methodology? [Check all that apply]**

<b>Crashes</b>	<b>Exposure</b>	<b>Roadway</b>
All crashes	Traffic	Functional classification
Fatal and serious injury crashes only	Volume	Other-APHN Routes excluding Interstates, Freeways, and Expressways
	Population	

**What project identification methodology was used for this program? [Check all that apply]**

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?**

**Describe the methodology used to identify local road projects as part of this program.**

**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).**

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Available funding : 2

Other-Systematic approach was used to select rural APHN routes other than Interstates, Freeways and Expressways : 1

**Enter additional comments here to clarify your response for this question or add supporting information.**

The state policy has been changed to install 6" stripes on all state system routes. A project to upgrade striping to 6" markings is underway.

**Program:** Other-Crash Data

**Date of Program Methodology:** 1/1/2012

**What is the justification for this program? [Check all that apply]**

Other-Meeting federal regulations and better data quality

**What is the funding approach for this program? [Check one]**

Funding set-aside

**What data types were used in the program methodology? [Check all that apply]**

<b>Crashes</b>	<b>Exposure</b>	<b>Roadway</b>
All crashes		
Other-Converting from TRACS to E-Crash with the add-on software of ADVANCE for querying data	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? [Check all that apply]**

**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

**Describe the methodology used to identify local road projects as part of this program.**

**How are projects under this program advanced for implementation?**

Other-The MIRE is connected with the eCrash which will improve the data quality for analysis

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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.

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).

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

Enter additional comments here to clarify your response for this question or add supporting information. eCrash was rolled out in July of 2015. At the current date we have one quarter of all law enforcement agencies on board using eCrash. A project is underway to assist the remaining agencies with purchasing equipment and receiving training in eCrash. ARDOT is in the process of finalizing an agreement with a consultant regarding the collection of MIRE FDE.

Program: Other-Roundabouts

Date of Program Methodology: 1/1/2017

What is the justification for this program? [Check all that apply]

Addresses SHSP priority or emphasis area

What is the funding approach for this program? [Check one]

Competes with all projects

What data types were used in the program methodology? [Check all that apply]

Crashes	Exposure	Roadway
Fatal and serious injury crashes only	Traffic Volume Population	Functional classification

What project identification methodology was used for this program? [Check all that apply]

Crash frequency

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

**Describe the methodology used to identify local road projects as part of this program.**

**How are projects under this program advanced for implementation?**

Other-Cost effectiveness and availability of 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).**

Ranking based on B/C : 1  
Available funding : 3  
Cost Effectiveness : 2

**Enter additional comments here to clarify your response for this question or add supporting information.**

**Program:** Other-Guardrail

**Date of Program Methodology:** 1/1/2017

**What is the justification for this program? [Check all that apply]**

Addresses SHSP priority or emphasis area

**What is the funding approach for this program? [Check one]**

Competes with all projects

**What data types were used in the program methodology? [Check all that apply]**

<b>Crashes</b>	<b>Exposure</b>	<b>Roadway</b>
Other-Roadway departure crashes	Traffic	Functional classification Other-NHS Routes

**What project identification methodology was used for this program? [Check all that apply]**

Crash rate

Critical 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?**

Yes

**Describe the methodology used to identify local road projects as part of this program.**

**How are projects under this program advanced for implementation?**

Other-Certain funds will be set aside for guardrail upgrades.

**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).**

**Enter additional comments here to clarify your response for this question or add supporting information.**

ARDOT is in the process of changing standard details/specs. of guardrails to meet the MASH standards. Jobs will be programmed immediately upon completion of standards modification.

**What percentage of HSIP funds address systemic improvements?**

37

**HSIP funds are used to address which of the following systemic improvements? Please check all that apply.**

Cable Median Barriers

Rumble Strips

Pavement/Shoulder Widening

Install/Improve Pavement Marking and/or Delineation

Upgrade Guard Rails

High friction surface treatment

Wrong way driving treatments

**Enter additional comments here to clarify your response for this question or add supporting information.**

ARDOT is in the process of changing standard details/specs. of guardrails to meet the MASH standards. Jobs will be programmed immediately upon completion of standards modification.

**What process is used to identify potential countermeasures? [Check all that apply]**

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Engineering Study

Crash data analysis

SHSP/Local road safety plan

Data-driven safety analysis tools (HSM, CMF Clearinghouse, SafetyAnalyst, usRAP)

Stakeholder input

**Enter additional comments here to clarify your response for this question or add supporting information.**

The common theme is to conduct engineering studies according to the HSM's safety management process. In these studies tools such as spreadsheets, HSM, Clearinghouse, and sometimes, software such as IHSDM are used to analyze the crash and road inventory data to diagnose the problems, recommend countermeasures, conduct economic appraisal and develop project scopes.

These projects are always aligned with the strategies defined in the SHSP. Developing the State SHSP is through a process of screening crash data and coordination with the safety stakeholders that provide input on the various aspects of safety problems throughout the state.

**Does the State HSIP consider connected vehicles and ITS technologies?**

No

**Enter additional comments here to clarify your response for this question or add supporting information.**

Arkansas is looking into the modern ITS techs as AV/CV technology is advancing forward. 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.

**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 steps in safety management process described in HSM is 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 and as part of an ongoing research effort, the SPF's are being calibrated for the state of Arkansas.

**Have any program methodology practices used to implement the HSIP changed since the last reporting period?**

No

**Are there any other aspects of the HSIP methodology on which the State would like to elaborate?**

Yes

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

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HSIP methodology is to be revised in the HSIP Process Document update that is currently underway.

## Project Implementation

### Funds Programmed

#### Reporting period for HSIP funding.

Federal Fiscal Year

Enter additional comments here to clarify your response for this question or add supporting information.

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

FUNDING CATEGORY	PROGRAMMED	OBLIGATED	% OBLIGATED/PROGRAMMED
HSIP (23 U.S.C. 148)	\$29,315,000	\$29,877,746	101.92%
HRRR Special Rule (23 U.S.C. 148(g)(1))	\$0	\$0	0%
Penalty Funds (23 U.S.C. 154)	\$10,055,000	\$11,636,338	115.73%
Penalty Funds (23 U.S.C. 164)	\$0	\$0	0%
RHCP (for HSIP purposes) (23 U.S.C. 130(e)(2))	\$0	\$0	0%
Other Federal-aid Funds (i.e. STBG, NHPP)	\$34,310,000	\$47,931,236	139.7%
State and Local Funds	\$15,095,000	\$7,189,685	47.63%
<b>Totals</b>	<b>\$88,775,000</b>	<b>\$96,635,005</b>	<b>108.85%</b>

Enter additional comments here to clarify your response for this question or add supporting information.

Some of the values presented in this table are programmed in ARDOT STIP for FFY 2017. The reason obligated funds are more than the programmed funds is that some older safety jobs were programmed in the past an obligated in this year's fiscal year. Also, several jobs have been awarded for more than they were programmed.

#### 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%

Enter additional comments here to clarify your response for this question or add supporting information.

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

\$1,500,000

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

\$1,350,000

**Enter additional comments here to clarify your response for this question or add supporting information.**

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

0%

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

0%

**Enter additional comments here to clarify your response for this question or add supporting information.**

**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, signs, pavement markers, etc.;
- Better streamlining of the HSIP project development process (into the normal project development process) for corridor safety projects;
- Implementing numerous low cost countermeasures.

**Does the State want to elaborate on any other aspects of it's progress in implementing HSIP projects?**

- Yes

**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 is being developed for the Highway Commission's approval. It will help the local agencies to improve safety on local roads.
- HFST first round complete and next statewide project of HFST is under development.
- UTBWC is also implemented at several locations based on the wet-pavement study.
- Wrong-way crash low-cost countermeasures are being implemented statewide.
- Statewide guardrail project is being developed to upgrade them to meet the MASH standards on NHS routes.
- Three rural intersections are going to be converted into roundabouts under HSIP and they are currently under the design phase.

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- The installation of cable median barriers is continued to reduce or eliminate KA crashes on interstates and other high speed routes.
- Statewide shoulder rumble strip/stripes are installed or being installed on 5,000 plus miles of the State Highway System by the end of calendar year 2017.
- Statewide 6" wide enhanced pavement markings are being installed on over 4200 miles of the State Highway System by the end of calendar year 2017.
- ARDOT is currently in the process of developing a Safety and Mobility Data business plan with the services of a consultant.
- Statewide guardrail project is being developed to upgrade substandard guardrails to meet the MASH standards on NHS routes.

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**General Listing of Projects**

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

													RELATIONSHIP TO SHSP	
PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST(\$)	TOTAL PROJECT COST(\$)	FUNDING CATEGORY	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	EMPHASIS AREA	STRATEGY
012268 SAFETY & MOBILITY DATA BUSINESS PLAN DEVELOPMENT	Non-infrastructure	Transportation safety planning			\$162000	\$180000	Penalty Funds (23 U.S.C. 154)	Planning activities	0	0	State Highway Agency	Planning Activities	Data	Data improvement
012281 PAVEMENT FRICTION DATA COLLECTION	Non-infrastructure	Data/traffic records			\$81000	\$90000	HSIP (23 U.S.C. 148)	All	0	0	State Highway Agency	Systemic	Data	Data collection
020595 HWY. 65/HWY. 35 INTERS. REALIGNMENT (SAFETY IMPVTS.)	Intersection geometry	Intersection geometrics - realignment to align offset cross streets	1	Intersections	\$92340	\$102600	HSIP (23 U.S.C. 148)	Rural Principal Arterial - Other	6,200	65	State Highway Agency	Spot	Intersections	Intersection improvement
020610 HWY 167/ HWY 167B INTERS. SAFETY IMPVTS. (S)	Intersection geometry	Auxiliary lanes - modify two-way left-turn lane	0.2	Miles	\$675915	\$751017	HSIP (23 U.S.C. 148)	Rural Principal Arterial - Other	8,000	60	State Highway Agency	Spot	Intersections	Install right turn lane
090445 HWY 12/ HWY 43 INTERS SAFETY IMPVTS.	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	\$31310	\$34789	HSIP (23 U.S.C. 148)	Rural Major Collector	2,500	20	State Highway Agency	Spot	Intersections	Install a roundabout
100950 HWY 158/ HWY 163 INTERS SAFETY IMPVTS	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	\$23510	\$26123	HSIP (23 U.S.C. 148)	Rural Minor Arterial	1,700	20	State Highway Agency	Spot	Intersections	Install a roundabout
110653 HWY 118 /W. SERVICE RD./I-40 EB RAMP SIGNAL & INTERS. IMPVTS. (WEST MEMPHIS)	Intersection geometry	Auxiliary lanes - modify two-way left-turn lane	0.1	Miles	\$4050	\$4500	HSIP (23 U.S.C. 148)	Urban Principal Arterial - Interstate	11,500	45	State Highway Agency	Spot	Intersections	Install a traffic signal and turn lane
110672 HWY 49/ HWY 79 INTERS SAFETY IMPVTS (S)	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	\$4050	\$4500	HSIP (23 U.S.C. 148)	Rural Principal Arterial - Other	1,800	20	State Highway Agency	Spot	Intersections	Install a roundabout
012208 TRAFFIC SAFETY PLANNING ACTIVITIES (HSIP)	Non-infrastructure	Transportation safety planning			\$810000	\$900000	HSIP (23 U.S.C. 148)	Planning activities	0	0	State Highway Agency	Planning Activities	Engineering Studies	Safety planning
012260 STATEWIDE WRONG-WAY CRASH FREEWAY IMPVTS	Access management	Access management - other	600	Ramps	\$3309948	\$3337848	HSIP (23 U.S.C. 148)	All	0	0	State Highway Agency	Systemic	Intersections	Enhanced signage and pavement markings.
012273 RAILROAD SAFETY PROGRAM	Non-infrastructure	Transportation safety planning			\$162000	\$180000	HSIP (23 U.S.C. 148)	All	0	0	State Highway Agency	Planning Activities	Railroad Crossing Crashes	Railroad crossing improvements
050369 IZARD CO LINE - HWY 62	Shoulder treatments	Widen shoulder - paved or other	9.9	Miles	\$510300	\$567000	HSIP (23 U.S.C. 148)	Rural Minor Arterial	1,200	55	State Highway Agency	Spot	Roadway Departure	Mitigate consequences of,

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													RELATIONSHIP TO SHSP	
PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST(\$)	TOTAL PROJECT COST(\$)	FUNDING CATEGORY	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	EMPHASIS AREA	STRATEGY
														or prevent roadway departures through infrastructure improvements.
061194 MISSISSIPPI AVE.-PERRYVILLE RD. (HWY. 10) (L.R.)	Roadway	Roadway widening - add lane(s) along segment	0.7	Miles	\$612644	\$680715	HSIP (23 U.S.C. 148)	Urban Principal Arterial - Other	32,500	40	State Highway Agency	Spot	Intersections	Install turn lanes as appropriate.
061309 SO. OF HOT SPRING/GARALND CO. LN.-HWY. 290	Roadway	Roadway widening - add lane(s) along segment	3.8	Miles	\$259259	\$259259	Penalty Funds (23 U.S.C. 154)	Rural Minor Arterial	7,700	55	State Highway Agency	Spot	Intersections	Install Turn Lanes as appropriate.
061333 I-430/HWY. 10 INGERCHANGE IMPVT. (L.R.)	Interchange design	Interchange design - other	1.3	Miles	\$99171	\$99171	Penalty Funds (23 U.S.C. 154)	Urban Principal Arterial - Interstate	0	0	State Highway Agency	Spot	Work Zones	Use of law enforcement in work zones.
061439 HWY. 7-SALINE COUNTY LINE (WIDEN. & REALIGN.) (SEL. SECS.) (S)	Roadway	Roadway widening - add lane(s) along segment	3.77	Miles	\$100000	\$100000	Penalty Funds (23 U.S.C. 154)	Rural Minor Arterial	6,400	55	State Highway Agency	Spot	Intersections	Install Turn lanes where appropriate.
061474 BRYANT PKWY INTERCHANGE (BRYANT)	Interchange design	Interchange design - other	1.4	Miles	\$7256	\$7256	Penalty Funds (23 U.S.C. 154)	Urban Principal Arterial - Interstate	92,000	70	State Highway Agency	Spot	Work Zones	Use of law enforcement in work zones.
080555 FRANKLIN CO LINE - COAL HILL (SEL. SEC.)	Shoulder treatments	Widen shoulder - paved or other	1.26	Miles	\$85050	\$94500	HSIP (23 U.S.C. 148)	Rural Major Collector	2,400	55	State Highway Agency	Systemic	Roadway Departure	Minor shoulder widening.
090406 HWY. 43 KCS RAILROAD OVERPASS (SILOAM SPRINGS)	Railroad grade crossings	Grade separation	0.47	Miles	\$9209816	\$10233129	HSIP (23 U.S.C. 148)	Urban Minor Arterial	11,000	40	State Highway Agency	Spot	Railroad Crossing Crashes	Railroad grade separation
BB0102 BAYOU DEVIEW - BRINKLEY	Roadside	Barrier - cable	6.49	Miles	\$74427	\$74427	Penalty Funds (23 U.S.C. 154)	Rural Principal Arterial - Interstate	31,000	70	State Highway Agency	Spot	Roadway Departure	Mitigate consequences of, or prevent roadway departures through infrastructure improvements.
BB0116 SHEARERVILLE - WEST (PVMT. IMPVTS.)	Roadside	Barrier - cable	14.75	Miles	\$440000	\$440000	Penalty Funds (23 U.S.C. 154)	Rural Principal Arterial - Interstate	31,000	70	State Highway Agency	Spot	Roadway Departure	Mitigate consequences of, or prevent roadway departures through infrastructure improvements.
BB0414 PORTER RD.-HWY. 112/71B WIDENING &	Roadway	Roadway - other	2.9	Miles	\$30400	\$30400	Penalty Funds (23 U.S.C. 154)	Urban Principal Arterial - Interstate	78,000	60	State Highway Agency	Spot	Work Zones	Use of law enforcement in work zones.

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													RELATIONSHIP TO SHSP	
PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST(\$)	TOTAL PROJECT COST(\$)	FUNDING CATEGORY	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	EMPHASIS AREA	STRATEGY
INTCHNG. IMPVTS. (I-540)														
BB0610 WHITE RIVER STR. & APPRS (I-40)	Roadway	Roadway - other	1.21	Miles	\$50000	\$50000	Penalty Funds (23 U.S.C. 154)	Rural Principal Arterial - Interstate	36,000	70	State Highway Agency	Spot	Work Zones	Use of law enforcement in work zones.
BB0611 BANKHEAD DR. - ARK. RIVER BRIDGE (I-440)	Roadway	Roadway - other	2.82	Miles	\$28365	\$31517	Penalty Funds (23 U.S.C. 154)	Urban Principal Arterial - Interstate	52,000	65	State Highway Agency	Spot	Work Zones	Use of law enforcement in work zones.
BB0612 ARK RIVER BRIDGE I-40	Roadway	Roadway - other	3.19	Miles	\$57559	\$63999	HSIP (23 U.S.C. 148)	Urban Principal Arterial - Interstate	48,000	65	State Highway Agency	Spot	Work Zones	Use of law enforcement in work zones.
CA0605 VANDENBERG BLVD - HWY 5 (WIDENING)	Roadway	Roadway - other	4.6	Miles	\$71110	\$71110	Penalty Funds (23 U.S.C. 154)	Urban Principal Arterial - Other Freeways and Expressways	69,000	65	State Highway Agency	Spot	Work Zones	Use of law enforcement in work zones.
012227 HWY. 65-HEBER SPRINGS (WIDEN. & REALIGN.) (SEL. SECS.) (S)	Shoulder treatments	Widen shoulder - paved or other	15.9	Miles	\$89562	\$91172	HSIP (23 U.S.C. 148)	Rural Major Collector	5,400	55	State Highway Agency	Systemic	Roadway Departure	Provide minor shoulder widening where possible.
012231 CALICO ROCK-MOUNTAIN HOME (SAFETY IMPVTS.) (SEL. SECS.) (HWY. 5)	Shoulder treatments	Widen shoulder - paved or other	24.71	Miles	\$45000	\$45000	Penalty Funds (23 U.S.C. 154)	Rural Minor Arterial	3,300	55	State Highway Agency	Systemic	Roadway Departure	Provide minor shoulder widening where possible.
012254 HWY 5 - HWY 10 (SAFETY IMPVTS) (S)	Shoulder treatments	Widen shoulder - paved or other	20.67	Miles	\$8100	\$9000	HSIP (23 U.S.C. 148)	Rural Major Collector	1,000	55	State Highway Agency	Systemic	Roadway Departure	Provide minor shoulder widening where possible.
012256 ENHANCED STRIPING (DISTRICTS 2, 3, & 7)	Roadway delineation	Improve retroreflectivity	1375	Miles	\$6542856	\$7269841	HSIP (23 U.S.C. 148)	All	0	0	State Highway Agency	Systemic	Roadway Departure	Enhanced delineation
012287 HWY 367 - CRITTENDEN CO LINE	Roadside	Barrier- metal	61.19	Miles	\$700000	\$700000	Penalty Funds (23 U.S.C. 154)	Various	7,200	55	State Highway Agency	Spot	Roadway Departure	Upgrade Guardrail
012288 LOW-COST SAFETY IMPVTS. (DISTS 5, 6, 8 & 9)	Roadside	Roadside - other			\$5000	\$5000	Penalty Funds (23 U.S.C. 154)	Various	0	0	State Highway Agency	Systemic	Roadway Departure	Implement low cost safety measures
012292 STATEWIDE FEDERAL AID STRIPING PROGRAM (2017)	Roadway delineation	Improve retroreflectivity			\$8226455	\$8226455	Penalty Funds (23 U.S.C. 154)	All	0	0	State Highway Agency	Systemic	Roadway Departure	Enhanced delineation
020638 PROVIDENCE - I-530	Shoulder treatments	Widen shoulder - paved or other	6.89	Miles	\$340200	\$378000	HSIP (23 U.S.C. 148)	Rural Major Collector	800	55	State Highway Agency	Systemic	Roadway Departure	Provide minor shoulder widening where possible.

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													RELATIONSHIP TO SHSP	
PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST(\$)	TOTAL PROJECT COST(\$)	FUNDING CATEGORY	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	EMPHASIS AREA	STRATEGY
050279 PANGBURN-FOURMILE HILL (WIDEN. & REALIGN.) (S)	Shoulder treatments	Widen shoulder - paved or other	7.51	Miles	\$87994	\$89994	HSIP (23 U.S.C. 148)	Rural Minor Arterial	5,400	55	State Highway Agency	Spot	Roadway Departure	Provide minor shoulder widening where possible.
050280 JOY-SEARCY (WIDEN. & REALIGN.) (S)	Roadway	Roadway widening - add lane(s) along segment	8.75	Miles	\$778071	\$785968	HSIP (23 U.S.C. 148)	Rural Major Collector	6,000	55	State Highway Agency	Spot	Intersections	Install turn lanes as appropriate
050313 HWY. 230-HWY. 167 (WIDEN. & REALIGN.) (S)	Shoulder treatments	Widen shoulder - paved or other	6.51	Miles	\$59361	\$61735	HSIP (23 U.S.C. 148)	Rural Minor Arterial	5,100	55	State Highway Agency	Spot	Roadway Departure	Provide minor shoulder widening where possible.
050345 VAN BUREN CO LINE - GREERS FERRY	Shoulder treatments	Widen shoulder - paved or other	7.63	Miles	\$170100	\$189000	HSIP (23 U.S.C. 148)	Rural Major Collector	4,400	55	State Highway Agency	Systemic	Roadway Departure	Provide minor shoulder widening where possible.
050361 JACKSON CO LINE - HWY 122	Shoulder treatments	Widen shoulder - paved or other	4.49	Miles	\$255150	\$283500	HSIP (23 U.S.C. 148)	Rural Major Collector	1,400	55	State Highway Agency	Systemic	Roadway Departure	Provide minor shoulder widening where possible.
050382 HWY 367 - HWY 18	Roadway	Rumble strips - edge or shoulder	8.75	Miles	\$340200	\$378000	HSIP (23 U.S.C. 148)	Rural Major Collector	1,300	55	State Highway Agency	Systemic	Roadway Departure	Install shoulder rumble stripes
061438 BRYANT RD.-HWY. 298 WEST (WIDEN. & REALIGN.) (SEL. SECS.) (S)	Intersection geometry	Auxiliary lanes - add two-way left-turn lane	6.3	Miles	\$128781	\$133979	HSIP (23 U.S.C. 148)	Rural Principal Arterial - Other	7,900	55	State Highway Agency	Spot	Intersections	Install turn lanes as appropriate.
061441 HWY. 128-BENTON (SAFETY IMPVTS.) (S)	Shoulder treatments	Widen shoulder - paved or other	20.93	Miles	\$644471	\$64471	Penalty Funds (23 U.S.C. 154)	Rural Minor Arterial	4,000	55	State Highway Agency	Spot	Roadway Departure	Provide minor shoulder widening where possible.
061442 GARLAND CO. LINE - BENTON (SAFETY IMPVTS)	Alignment	Horizontal curve realignment	9	Curves	\$100000	\$100000	Penalty Funds (23 U.S.C. 154)	Rural Minor Arterial	4,000	55	State Highway Agency	Spot	Roadway Departure	Realign horizontal/vertical curves
070364 HWY. 26-HWY. 8 (REHAB.) (HWY. 51)	Roadway	Roadway widening - travel lanes	4.78	Miles	\$7005953	\$7784392	HSIP (23 U.S.C. 148)	Rural Minor Arterial	2,000	55	State Highway Agency	Spot	Roadway Departure	Realign horizontal/vertical curves
070368 HWY. 82-HWY. 7 (REHAB.)	Alignment	Horizontal curve realignment	5	Curves	\$8777181	\$9752423	HSIP (23 U.S.C. 148)	Rural Major Collector	1,500	45	State Highway Agency	Spot	Roadway Departure	Realign horizontal/vertical curves
080494 I-40-SOLGOHACHIA (WIDEN. & REALIGN.) (S)	Alignment	Horizontal curve realignment	9	Curves	\$198090	\$198090	Penalty Funds (23 U.S.C. 154)	Rural Minor Arterial	4,800	55	State Highway Agency	Spot	Roadway Departure	Realign horizontal/vertical curves
080559 DALE BEND RD. - REDBUD LN. (OLA) (SEL. SECS.)	Shoulder treatments	Widen shoulder - paved or other	3.22	Miles	\$170100	\$189000	HSIP (23 U.S.C. 148)	Rural Minor Arterial	2,100	45	State Highway Agency	Spot	Roadway Departure	Provide minor shoulder widening where possible.
090422 FLIPPIN-NORTH (WIDEN. & REALIGN.) (S)	Shoulder treatments	Widen shoulder - paved or other	2.35	Miles	\$19150	\$19150	Penalty Funds (23 U.S.C. 154)	Rural Major Collector	5,000	45	State Highway Agency	Spot	Roadway Departure	Provide minor shoulder widening where possible.

2017 Arkansas Highway Safety Improvement Program

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST(\$)	TOTAL PROJECT COST(\$)	FUNDING CATEGORY	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	RELATIONSHIP TO SHSP	
													EMPHASIS AREA	STRATEGY
090423 HWY. 412 - HWY. 12 (SAFETY IMPVTS.) (S)	Shoulder treatments	Widen shoulder - paved or other	13.74	Miles	\$77044	\$78290	Penalty Funds (23 U.S.C. 154)	Rural Minor Arterial	2,000	55	State Highway Agency	Spot	Roadway Departure	Provide minor shoulder widening where possible.
090424 HWY. 12 - HWY. 62 (SAFETY IMPVTS.) (S)	Alignment	Horizontal curve realignment	3	Curves	\$33613	\$37348	HSIP (23 U.S.C. 148)	Rural Minor Arterial	2,000	55	State Highway Agency	Spot	Roadway Departure	Realign horizontal/vertical curves
090498 PINDALL - MARSHALL (SAFETY IMPVTS) (SEL SECS)	Alignment	Horizontal curve realignment	2	Curves	\$5000	\$5000	Penalty Funds (23 U.S.C. 154)	Rural Principal Arterial - Other	5,000	55	State Highway Agency	Spot	Roadway Departure	Realign horizontal/vertical curves
100900 HWYS 69 & 358 (PARAGOULD) (SEL SECS)	Shoulder treatments	Widen shoulder - paved or other	8.36	Miles	\$450360	\$500400	HSIP (23 U.S.C. 148)	Rural Minor Arterial	2,700	55	State Highway Agency	Systemic	Roadway Departure	Provide minor shoulder widening where possible.
100929 HWY 158 - HWY 119	Shoulder treatments	Widen shoulder - paved or other	3.5	Miles	\$255150	\$283500	HSIP (23 U.S.C. 148)	Rural Major Collector	1,300	55	State Highway Agency	Systemic	Roadway Departure	Provide minor shoulder widening where possible.
100940 HWY 62 - MISSOURI STATE LINE (HWY 139)	Shoulder treatments	Widen shoulder - paved or other	4.53	Miles	\$209790	\$233100	HSIP (23 U.S.C. 148)	Rural Major Collector	1,000	55	State Highway Agency	Systemic	Roadway Departure	Provide minor shoulder widening where possible.
100948 HWY 312 (MISSISSIPPI CO) (SEL SECS)	Shoulder treatments	Widen shoulder - paved or other	5.56	Miles	\$255150	\$283500	HSIP (23 U.S.C. 148)	Rural Major Collector	1,400	55	State Highway Agency	Systemic	Roadway Departure	Provide minor shoulder widening where possible.
110630 SHEARERVILLE - WEST (CABLE MEDIAN BARRIER)	Roadside	Barrier - cable	15.38	Miles	\$6137	\$6137	Penalty Funds (23 U.S.C. 154)	Rural Principal Arterial - Interstate	31,000	70	State Highway Agency	Systemic	Roadway Departure	Cable median barriers
BB0202 HWY 104- HWY 65B (I-530)	Roadside	Barrier - cable	5.09	Miles	\$551034	\$612260	HSIP (23 U.S.C. 148)	Urban Principal Arterial - Interstate	23,500	70	State Highway Agency	Systemic	Roadway Departure	Cable median barriers
BB0302 HWY 67 WEST OF RED RIVER (I-30)	Roadside	Barrier - cable	4.63	Miles	\$834753	\$927503	HSIP (23 U.S.C. 148)	Rural Principal Arterial - Interstate	30,000	70	State Highway Agency	Systemic	Roadway Departure	Cable median barriers
BB0403 DYER- CRAVENS CREEK (I-40)	Roadside	Barrier - cable	13.75	Miles	\$179	\$199	HSIP (23 U.S.C. 148)	Rural Principal Arterial - Interstate	30,000	70	State Highway Agency	Systemic	Roadway Departure	Cable median barriers
BB0409 I-49 PAVEMENT REHABILITATION (SEL. SECS.)	Roadway	Roadway - other	28.39	Miles	\$41158	\$45731	HSIP (23 U.S.C. 148)	Rural Principal Arterial - Interstate	18,000	70	State Highway Agency	Spot	Work Zones	Use of law enforcement in work zones.
BB0614 BINGHAM RD.-GRANT CO. LINE (I-530)	Roadside	Barrier - cable	7.49	Miles	\$325	\$361	HSIP (23 U.S.C. 148)	Urban Principal Arterial - Interstate	20,000	70	State Highway Agency	Systemic	Roadway Departure	Cable median barriers
BB0621 65TH ST. - SOUTH TERMINAL (PVMT. IMPVTS.)	Roadway	Pavement surface - high friction surface	2.18	Miles	\$21516	\$23907	HSIP (23 U.S.C. 148)	Urban Principal Arterial - Interstate	84,000	65	State Highway Agency	Spot	Roadway Departure	UTBWC

Enter additional comments here to clarify your response for this question or add supporting information.

Some of the jobs had dual funding categories between the HSIP and Penalty funds, for which, the funding category with highest percentage was chosen to document on this table.

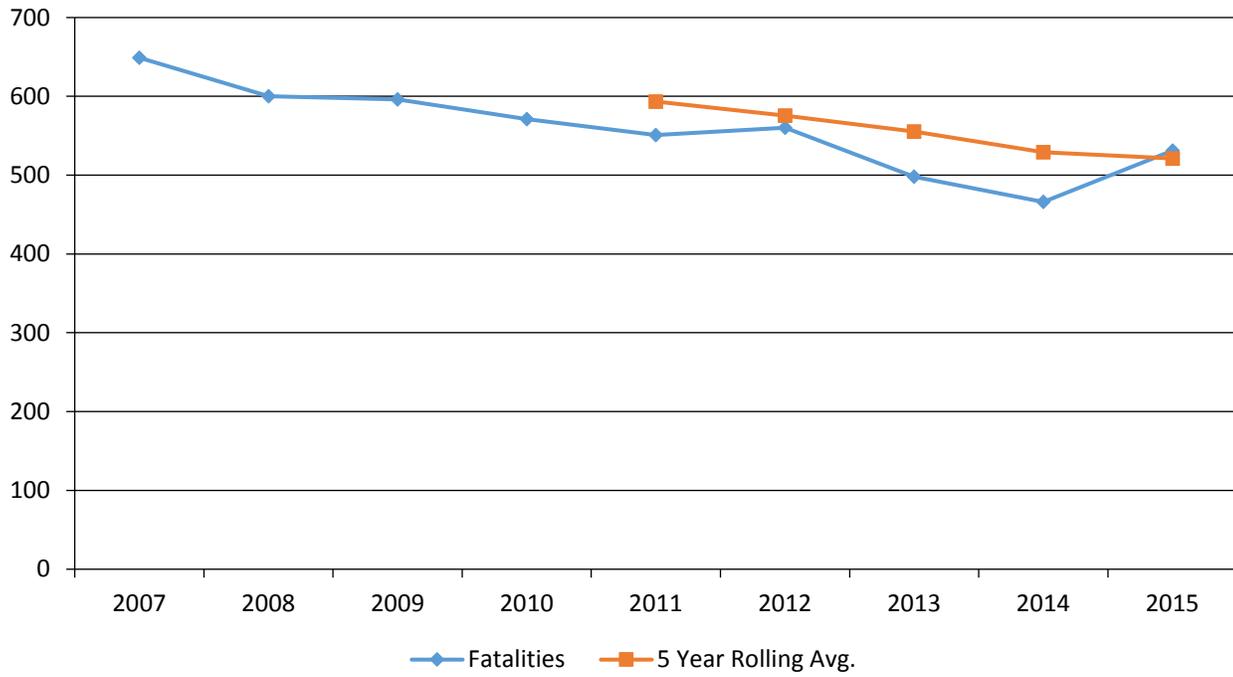
## Safety Performance

### General Highway Safety Trends

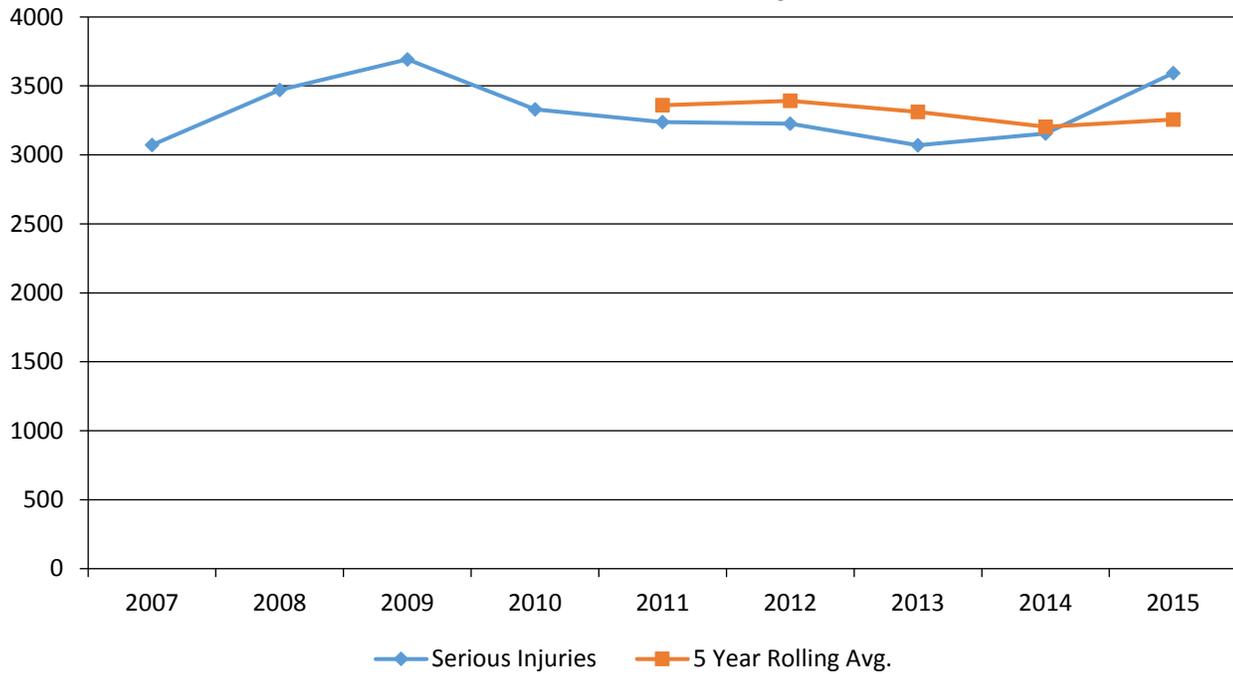
Present data showing the general highway safety trends in the State for the past five years.

PERFORMANCE MEASURES	2007	2008	2009	2010	2011	2012	2013	2014	2015
Fatalities	649	600	596	571	551	560	498	466	531
Serious Injuries	3,072	3,471	3,693	3,331	3,239	3,226	3,070	3,154	3,594
Fatality rate (per HMVMT)	1.960	1.810	1.800	1.704	1.672	1.671	1.487	1.370	1.520
Serious injury rate (per HMVMT)	9.480	10.700	11.140	9.900	9.830	9.670	9.153	9.289	10.310
Number non-motorized fatalities	49	51	44	40	49	54	52	44	46
Number of non-motorized serious injuries	88	112	79	98	100	93	97	97	66
Number of non-motorized fatalities and serious inj	137	163	123	138	149	147	149	141	112

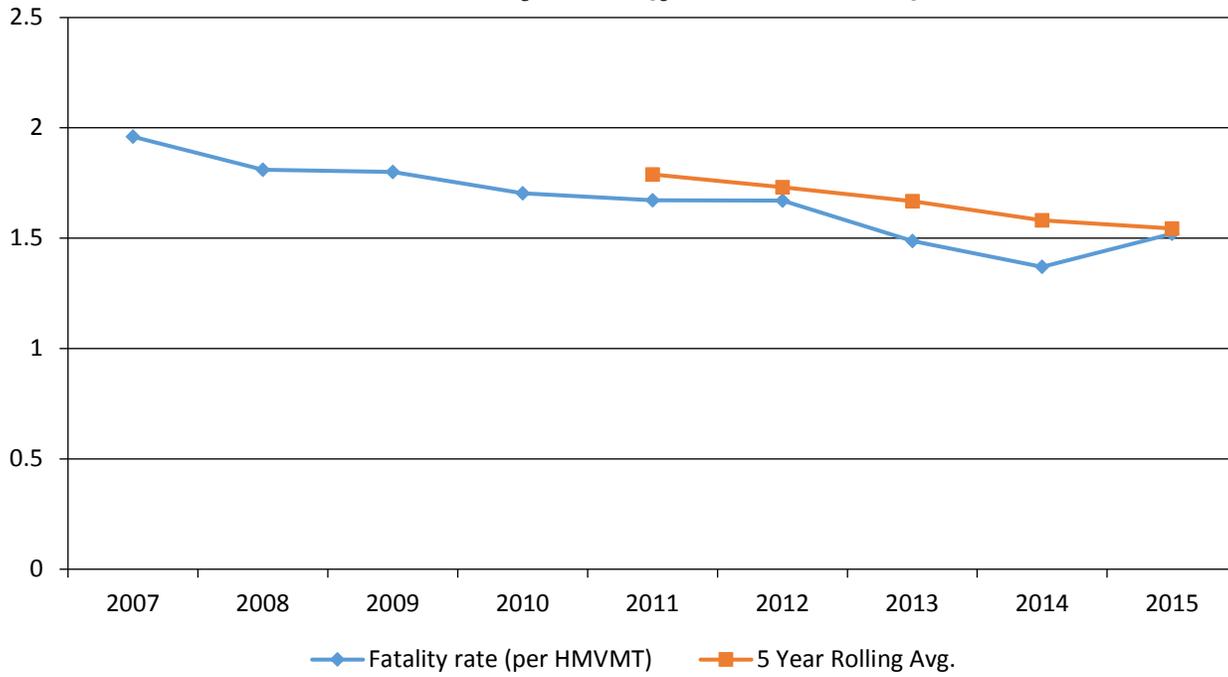
### Annual Fatalities



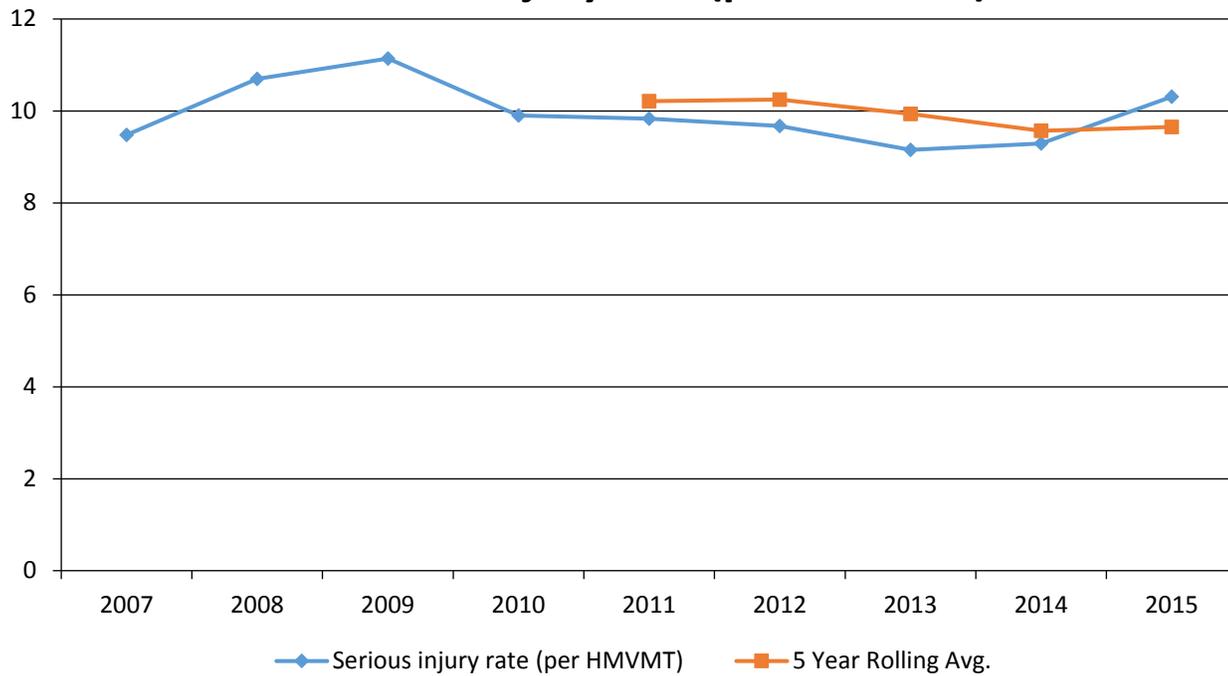
### Annual Serious Injuries



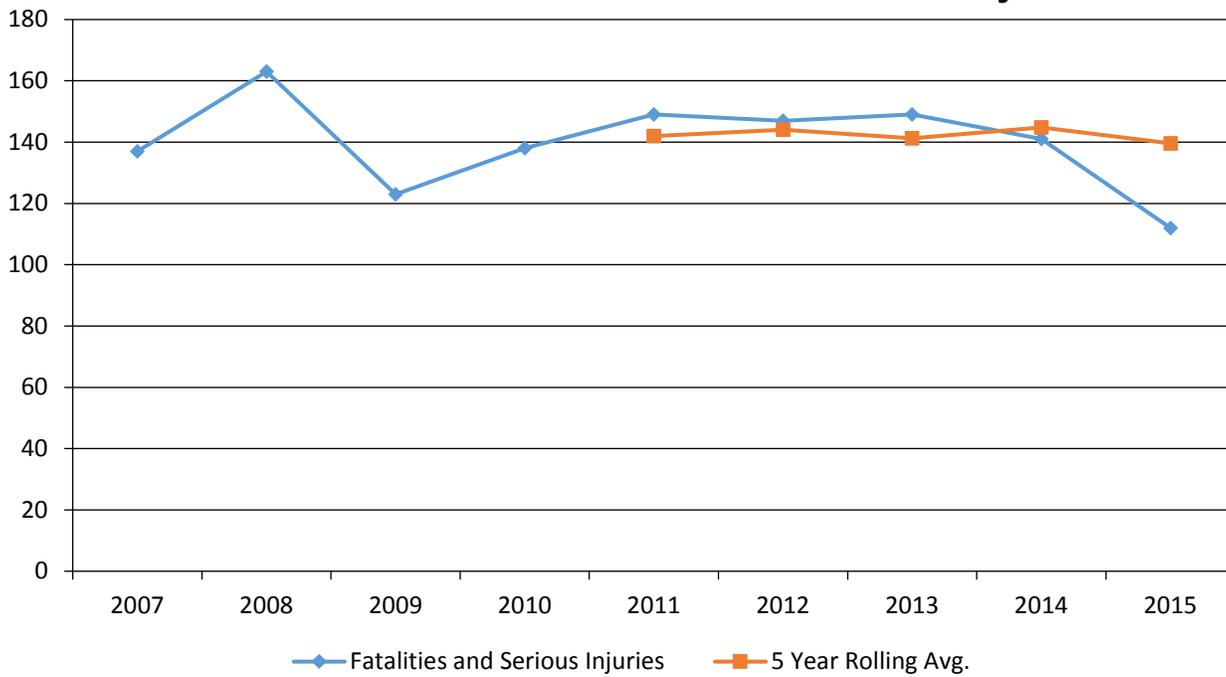
### Fatality rate (per HMVMT)



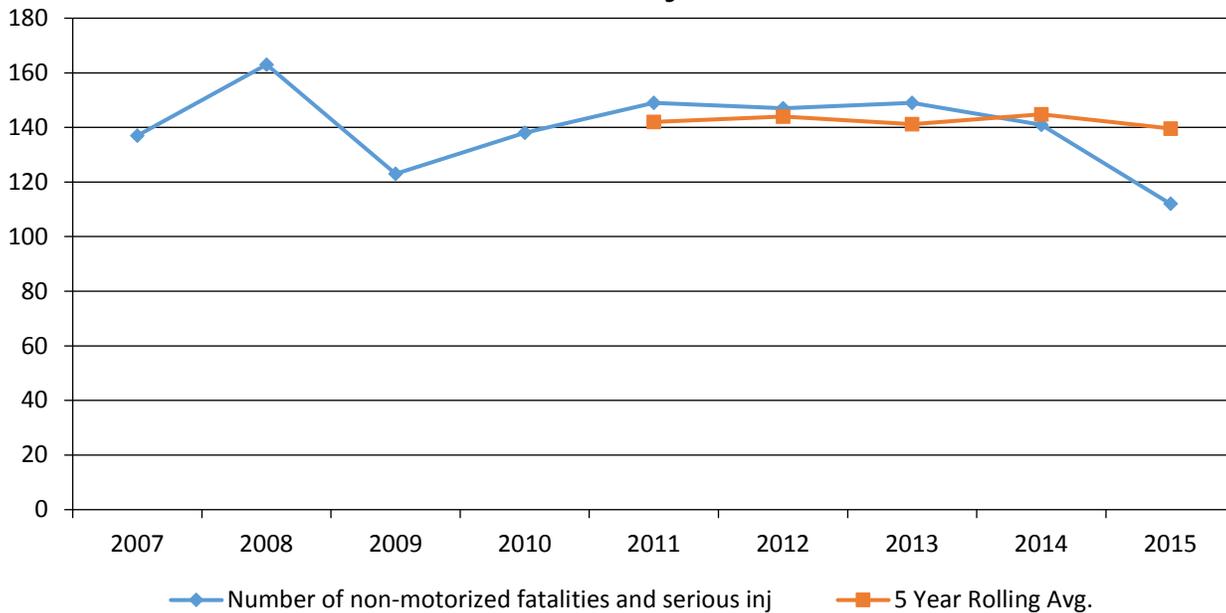
### Serious injury rate (per HMVMT)



### Non Motorized Fatalities and Serious Injuries



### Number of non-motorized fatalities and serious inj



**Enter additional comments here to clarify your response for this question or add supporting information.**

2015 crash data was used because FARS has not released 2016 fatality data yet. With the introduction of eCrash we have greatly increased accuracy and timeliness of crash data. This process will continue to improve as more agencies start using eCrash.

2017 Arkansas Highway Safety Improvement Program

**Describe fatality data source.**

FARS

**Enter additional comments here to clarify your response for this question or add supporting information.**

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

**Year 2015**

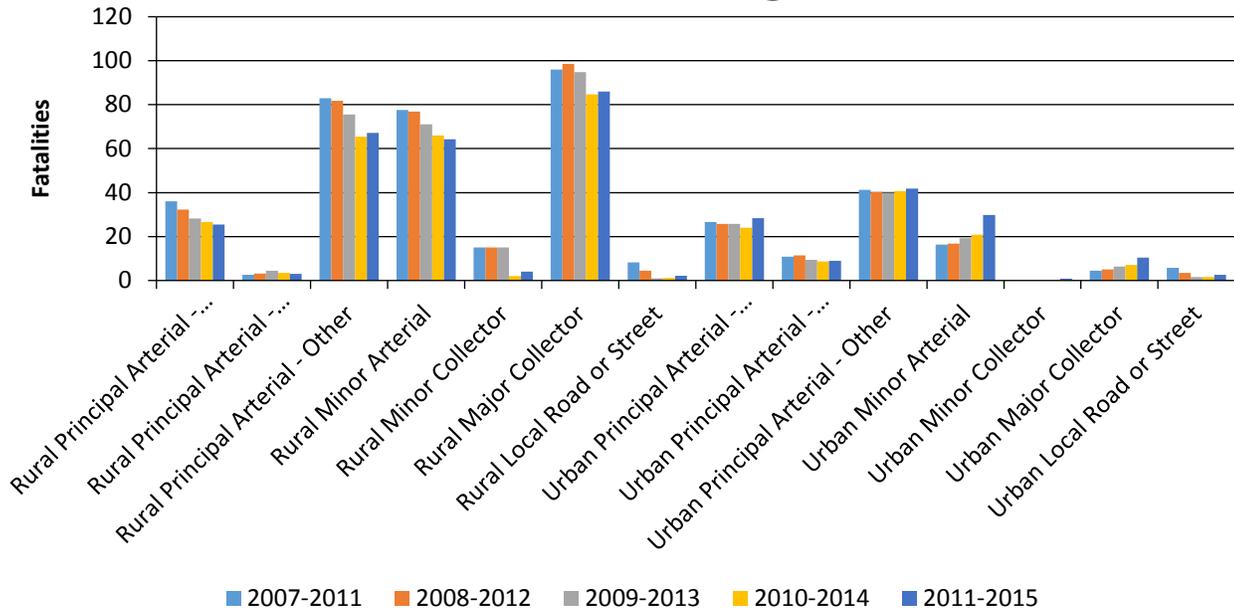
Functional Classification	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
Rural Principal Arterial - Interstate	25.4	122	0.65	3.1
Rural Principal Arterial - Other Freeways and Expressways	3	14.6	0.68	3.48
Rural Principal Arterial - Other	67.2	232	1.83	8.49
Rural Minor Arterial	64.2	324.2	2.39	12.12
Rural Minor Collector	4	12.6	9.24	28.52
Rural Major Collector	86	452.8	2.84	15.1
Rural Local Road or Street	2.2	4.8	3.27	7.79
Urban Principal Arterial - Interstate	28.4	194.6	0.58	4
Urban Principal Arterial - Other Freeways and Expressways	9	43	16.87	3.9
Urban Principal Arterial - Other	41.8	294	1.18	8.29
Urban Minor Arterial	29.8	209.2	1.67	10.59
Urban Minor Collector	0.8	1.2	39.76	111.28
Urban Major Collector	10.4	61	2.82	15.43
Urban Local Road or Street	2.6	14.8	2.08	13.61

2017 Arkansas Highway Safety Improvement Program

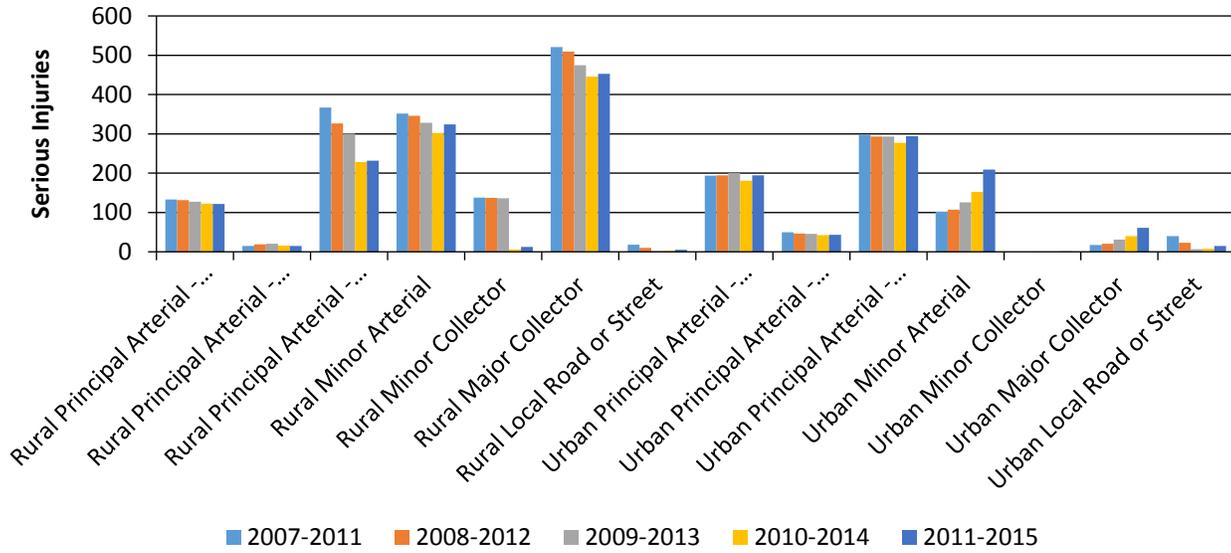
**Year 2013**

<b>Roadways</b>	<b>Number of Fatalities (5-yr avg)</b>	<b>Number of Serious Injuries (5-yr avg)</b>	<b>Fatality Rate (per HMVMT) (5-yr avg)</b>	<b>Serious Injury Rate (per HMVMT) (5-yr avg)</b>
State Highway Agency	415	2,576	1.64	10.18
County Highway Agency	63.5	227	2.03	7.26
Town or Township Highway Agency				
City of Municipal Highway Agency	51	343	0.96	6.47
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				

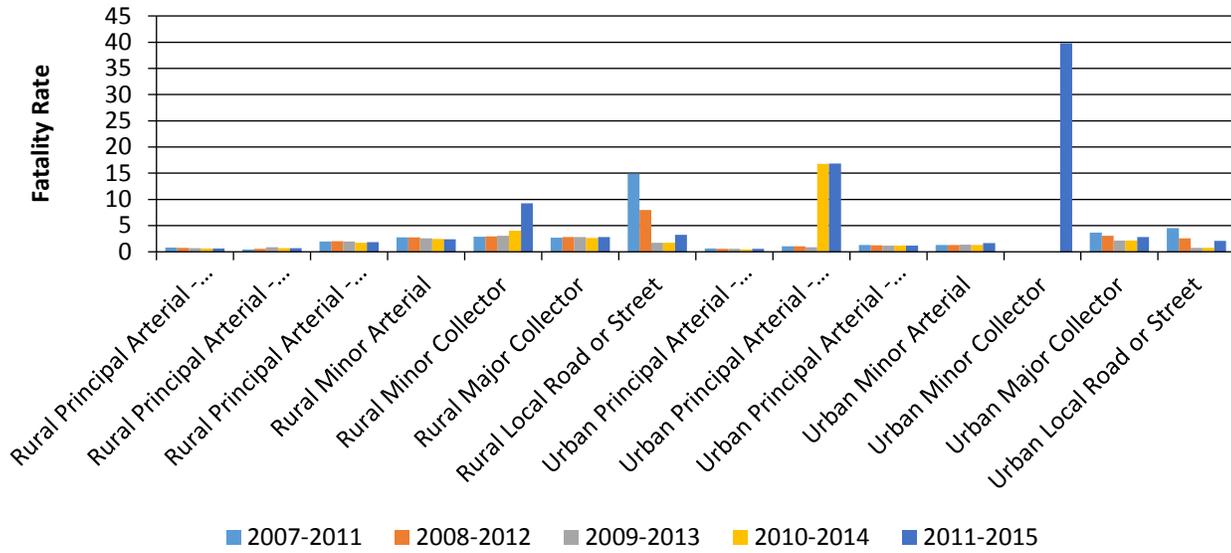
## Number of Fatalities by Functional Classification 5 Year Average



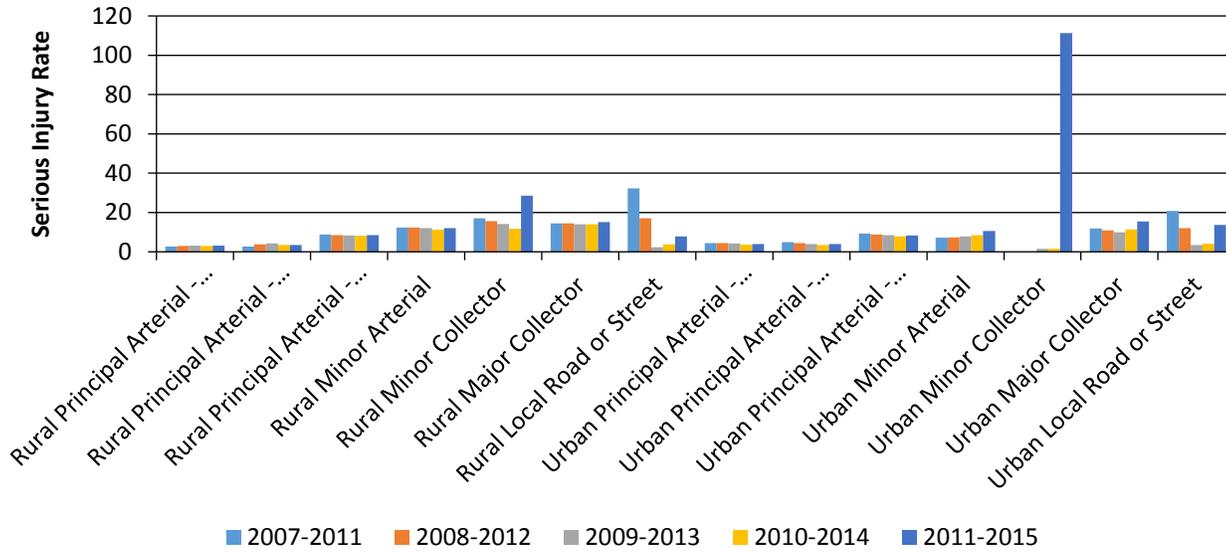
## Number of Serious Injuries by Functional Classification 5 Year Average



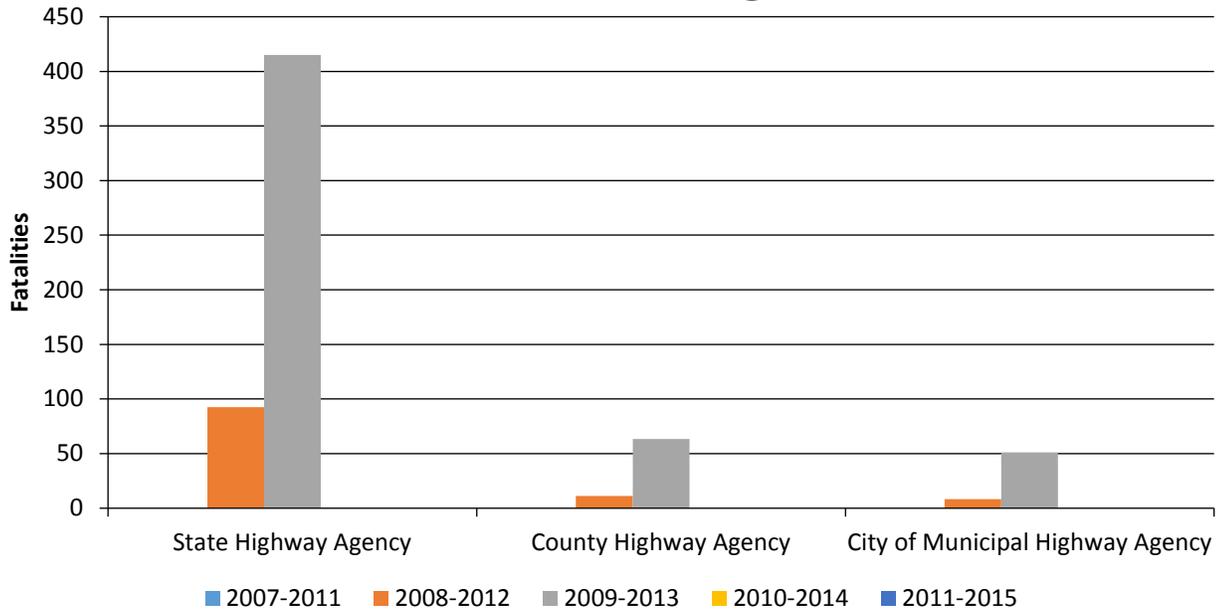
## Fatality Rate (per HMVMT) by Functional Classification 5 Year Average



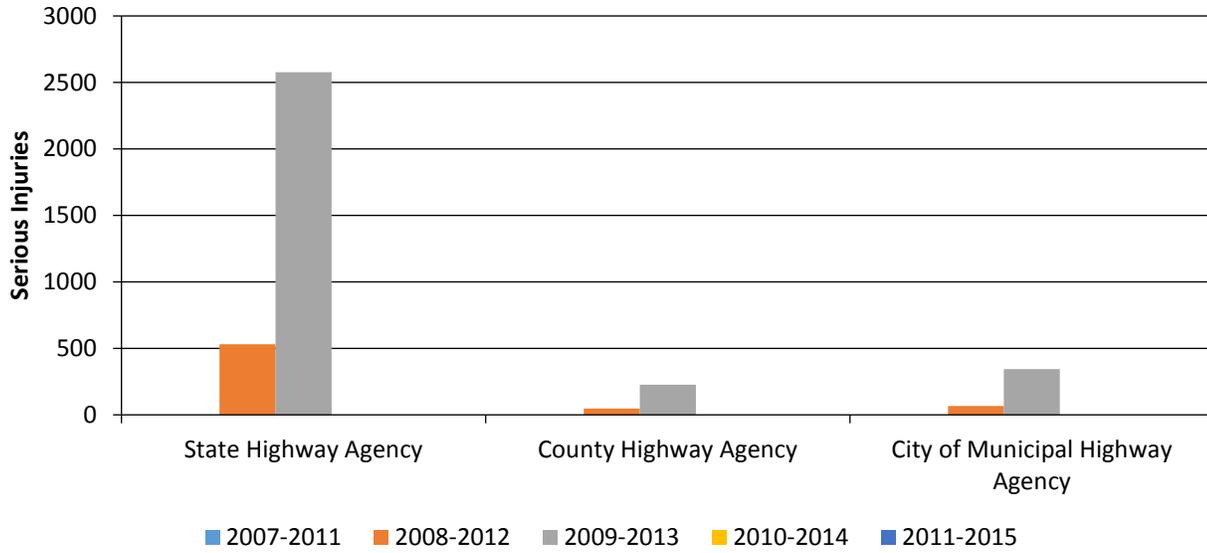
## Serious Injury Rate (per HMVMT) by Functional Classification 5 Year Average



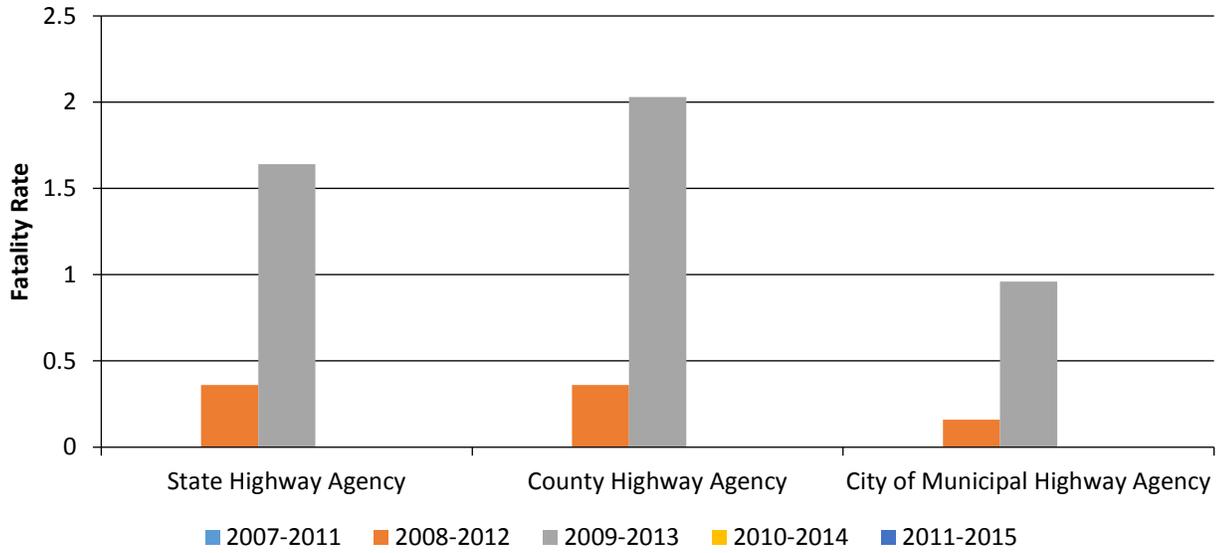
## Number of Fatalities by Roadway Ownership 5 Year Average



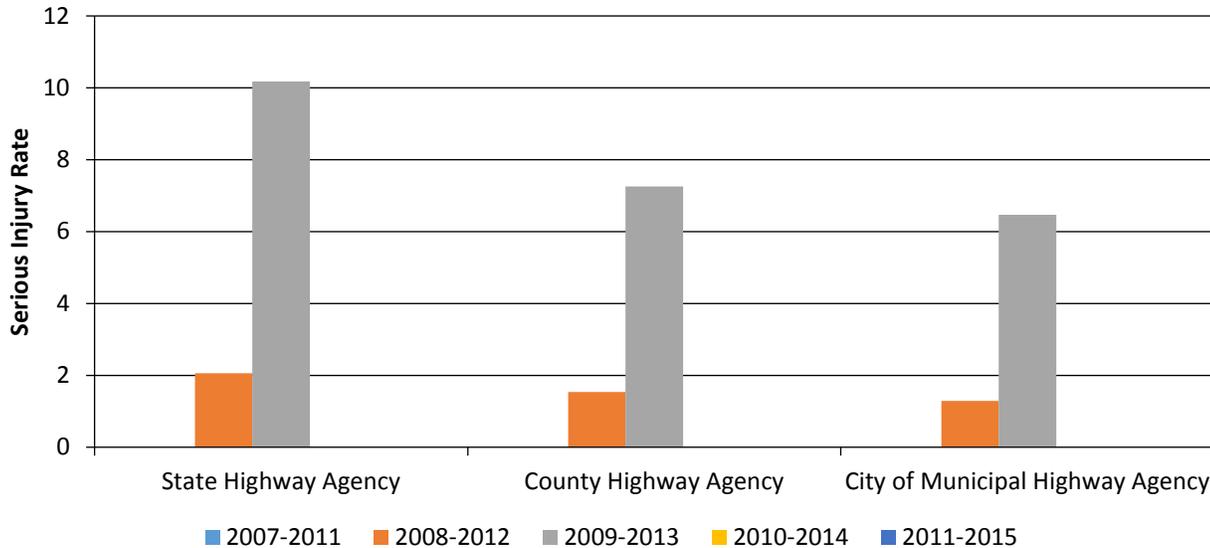
## Number of Serious Injuries by Roadway Ownership 5 Year Average



## Fatality Rate (per HMVMT) by Roadway Ownership 5 Year Average



## Serious Injury Rate (per HMVMT) by Roadway Ownership 5 Year Average



**Enter additional comments here to clarify your response for this question or add supporting information.**

**Are there any other aspects of the general highway safety trends on which the State would like to elaborate?**

Yes

**Provide additional discussion related to general highway safety trends.**

The definition for reporting incapacitating injuries (which we use for reporting serious injuries) was updated in 2007 by Arkansas State Police. The trend for incapacitating injuries has followed fatalities except for the jump in 2008 and 2009. We think this can be partly explained by the updated definition used by law enforcement officers from 2007. The fatality data from the ASP shows an increase in 2015 and the upward trend appears to be continuing in 2016.

- 2009 - 596
- 2010 - 571
- 2011 - 551
- 2012 - 560
- 2013 - 498
- 2014 - 466
- 2015 - 531

**Safety Performance Targets**

**Safety Performance Targets**

**Calendar Year 2018 Targets \***

**Number of Fatalities** 555.0

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

The target for number of fatalities is same as the goal of SHSP: 555 for 2018. This target has been set using the methodology adopted by the safety stakeholders which is the average of five values for 5-year moving averages of 2011 to 2015. See the section of "additional comments" for supporting information.

**Number of Serious Injuries** 3470.0

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

The target for number of serious injuries is higher than the goal of SHSP (3,245 for 2018). This target has been set using the methodology adopted by the safety stakeholders which is the average of five values for 5-year moving averages of 2011 to 2015. Due to recent spike in 2015 serious injury crashes and the factors described in the "additional comments", the statistical output has been increased by 5 percent.

**Fatality Rate** 1.660

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

The target for fatality rate is same as the goal of SHSP (1.66 for 2018). This target has been set using the methodology adopted by the safety stakeholders which is the average of five values for 5-year moving averages of 2011 to 2015. See the section of "additional comments" for supporting information.

**Serious Injury Rate** 10.419

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

The target for serious injury rate is higher than the goal of SHSP (9.92 for 2018). This target has been set using the methodology adopted by the safety stakeholders which is the average of five values for 5-year moving averages of 2011 to 2015. Due to recent spike in 2015 serious injury crashes and the factors described in the "additional comments", the statistical output has been increased by 5 percent.

**Total Number of Non-Motorized Fatalities and Serious Injuries** 149.0

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

The target for non-motorized fatalities and serious injuries is higher than the goal of SHSP (139 for 2018). This target has been set using the methodology adopted by the safety stakeholders which is the average of five values for 5-year moving averages of

## 2017 Arkansas Highway Safety Improvement Program

2011 to 2015. Due to recent spike in 2015 serious injury crashes and the factors described in the "additional comments", the statistical output has been increased by 5 percent.

### **Enter additional comments here to clarify your response for this question or add supporting information.**

To set targets for 2018 safety performance measures, the most recent crash data available is used based on the 5-year rolling average. The most significant internal and external factors considered were those that included the following: the recent upward trend in fatalities and serious injuries, increase in VMT in conjunction with decreasing gas prices, increase in vehicle registration, impact of accurate data for serious injuries due to the transition to eCrash in 2015, change to serious injury definitions, passage of new legislations - legalizing medical marijuana and a study to increase the speed limit, trucks speed limit increase in 2015, and increase in number of work zones due to Interstate Rehabilitation Program and Connecting Arkansas Program.

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

The Arkansas Highway Safety Steering Committee not only updated the State SHSP but also set the 2018 safety performance targets through extensive coordination with the Arkansas Highway Safety Office, FHWA, NHTSA, all MPOs, and other safety stakeholders. The committee had an opportunity to attend the workshop for establishing safety performance targets arranged by FHWA Division office. The Steering Committee formed a sub-committee comprising of key stakeholders to establish targets and multiple meetings were held to achieve it. Different stakeholders' specialized in different areas provided their input in the process and considered the SHSP goals when establishing the safety targets. Finally the recommendations were approved by the Steering Committee.

### **Does the State want to report additional optional targets?**

No

### **Enter additional comments here to clarify your response for this question or add supporting information.**

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

### ***Applicability of Special Rules***

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

No

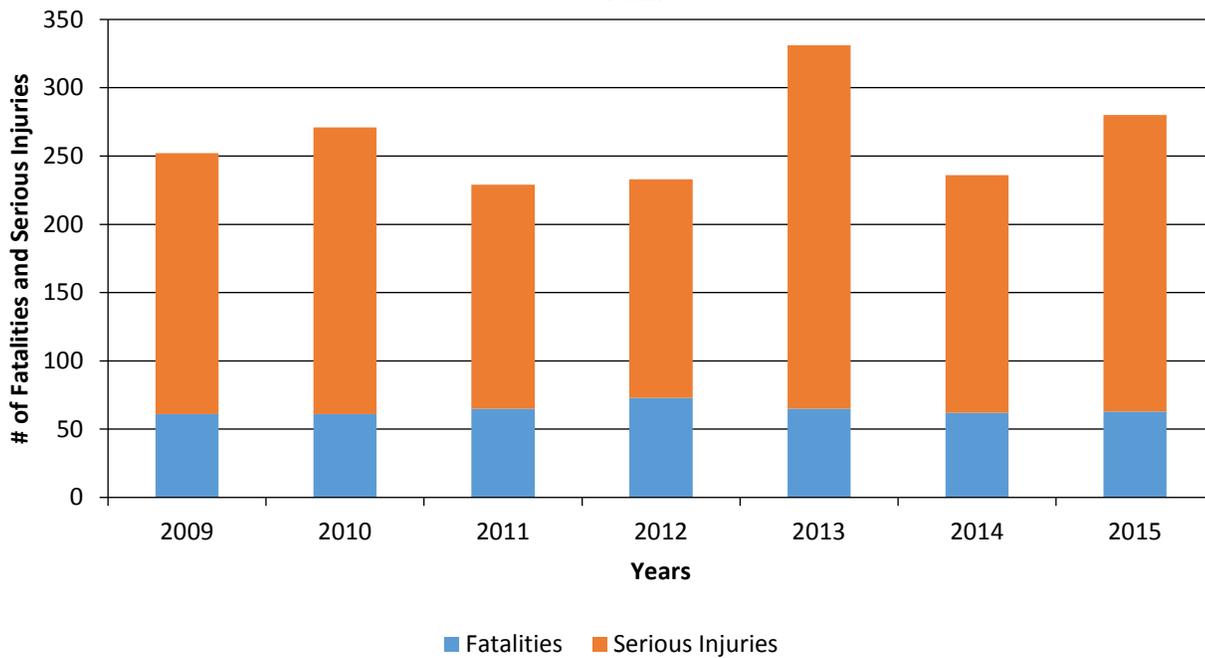
### **Enter additional comments here to clarify your response for this question or add supporting information.**

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

PERFORMANCE MEASURES	2009	2010	2011	2012	2013	2014	2015
Number of Older Driver and Pedestrian Fatalities	61	61	65	73	65	62	63
Number of Older Driver and Pedestrian Serious Injuries	191	210	164	160	266	174	217

**Number of Older Driver and Pedestrian Fatalities and Serious Injuries by Year.**



Enter additional comments here to clarify your response for this question or add supporting information.

## Evaluation

### *Program Effectiveness*

#### **How does the State measure effectiveness of the HSIP?**

Change in fatalities and serious injuries

#### **Enter additional comments here to clarify your response for this question or add supporting information.**

A few years after an HSIP project is substantially completed, usually a before/after analysis of the crash statistics is conducted to evaluate the effectiveness of the treatments implemented by tracking KA crashes.

Also, Arkansas is moving toward a proactive approach toward safety improvement by considering systemic approaches for programming safety project.

The new HSIP Process being developed will develop a method to evaluate the overall effectiveness of the HSIP

#### **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. Some of them have been constructed but the crash data is not available for the evaluation. However, we had evaluated several projects implemented in the past that helped us expand those 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 very effective on preventing wet-pavement crashes. We have been receiving very positive feedback from the public and the second round of installation of these countermeasures is underway. Shoulder Rumble Stripe/Stripes have been installed on hundreds of miles statewide and have proved to be effective in preventing roadway departure crashes especially on curves located in rural areas. ARDOT is in the process of programming another round of installation of these countermeasures on rural roads where roadway departure crashes are the prevailing type of safety problem.

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

More systemic programs

Policy change

Organizational change

Increased awareness of safety and data-driven process

Increased focus on local road safety

HSIP Obligations

2017 Arkansas Highway Safety Improvement Program

**Enter additional comments here to clarify your response for this question or add supporting information.**

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.

**Are there any significant programmatic changes that have occurred since the last reporting period?**

Yes

**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 B/C analysis that mostly requires individual countermeasures to stand on their own merit.

***Effectiveness of Groupings or Similar Types of Improvements***

**Present and describe trends in SHSP emphasis area performance measures.**

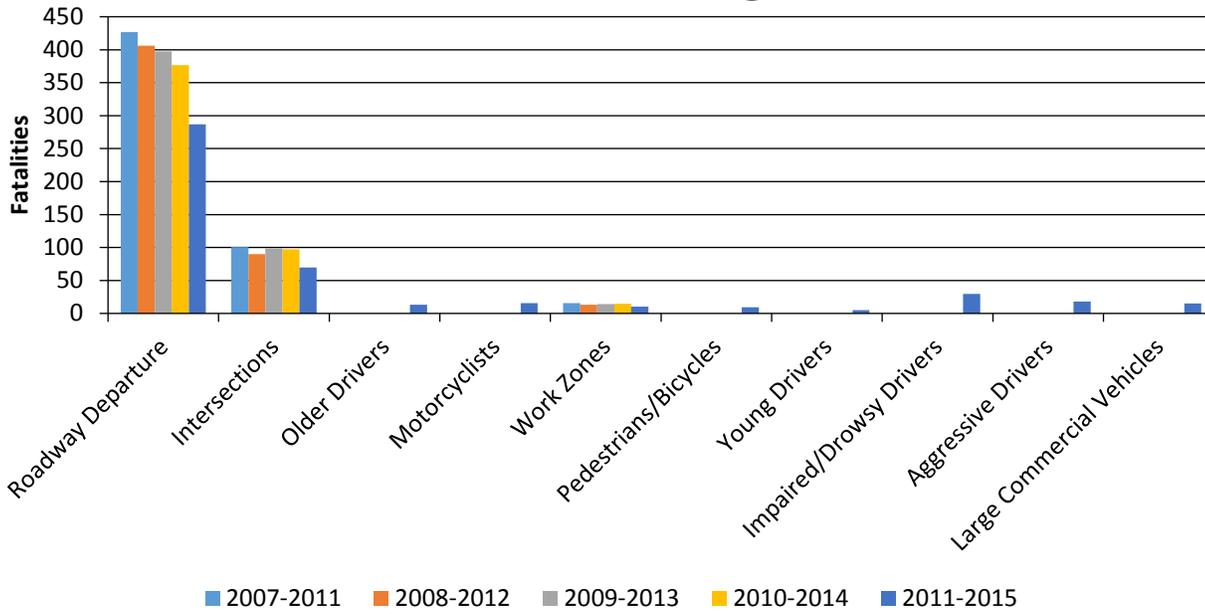
**Year 2015**

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)	Other 1	Other 2	Other 3
Roadway Departure	Head-on, Single Vehicle, SideSwipe Opposite	287	1,516	0.85	4.85			
Intersections	Intersections	69.8	588.4	0.21	1.93			
Older Drivers	All	13.4	43.2	0.04	0.12			

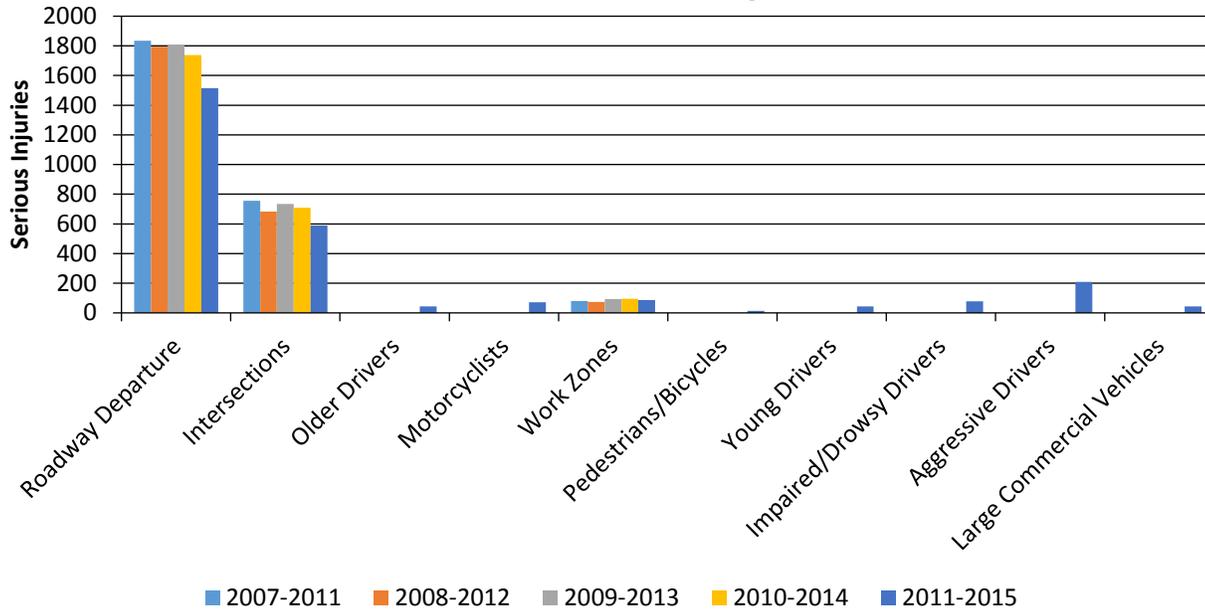
2017 Arkansas Highway Safety Improvement Program

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)	Other 1	Other 2	Other 3
Motorcyclists	All	15.8	72.6	0.05	0.21			
Work Zones	All	10.2	87.4	0.03	0.28			
Pedestrians/Bicycles	All	9.2	14.4	0.03	0.04			
Young Drivers	All	4.8	44.2	0.01	0.13			
Impaired/Drowsy Drivers	All	29.8	78.2	0.09	0.22			
Aggressive Drivers	All	18	209.2	0.05	0.6			
Large Commercial Vehicles	All	15	43.2	0.04	0.12			

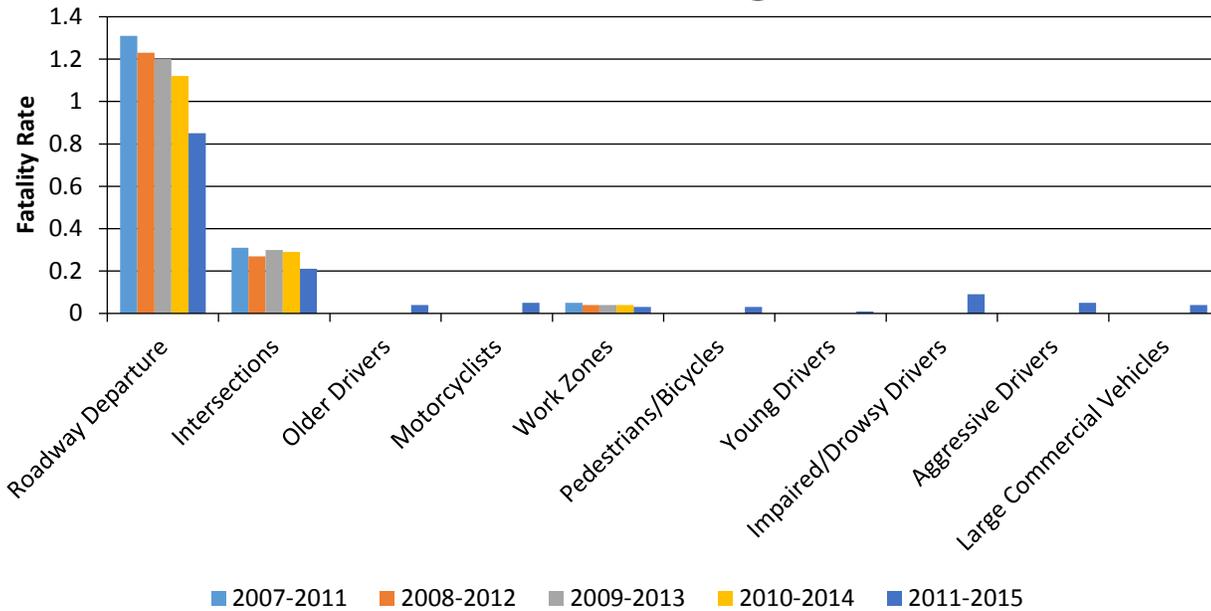
## Number of Fatalities 5 Year Average



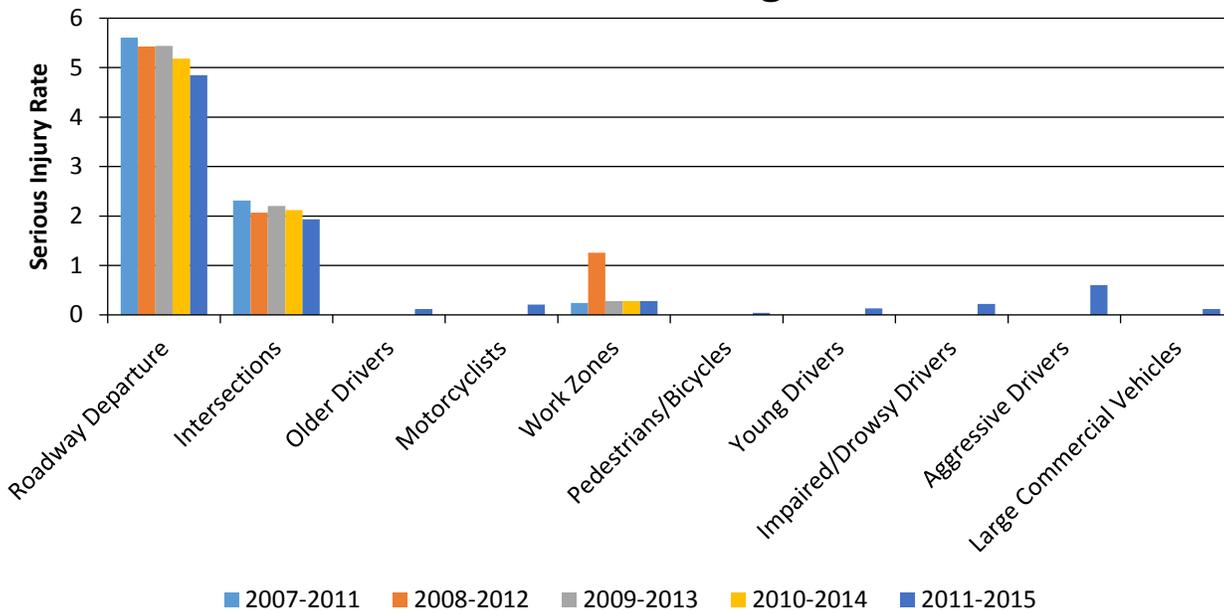
## Number of Serious Injuries 5 Year Average



## Fatality Rate (per HMVMT) 5 Year Average



## Serious Injury Rate (per HMVMT) 5 Year Average



**Enter additional comments here to clarify your response for this question or add supporting information.**

Some of the emphasis areas were identified in the new SHSP. The 2015 data for these emphasis areas are entered in the annual data table. Also some of these emphasis areas do not show any data for the previous years in the table. The reporting system automatically calculates the 5-yr averages for all these emphasis areas but

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there is only one year of data (for 2015) reported for these emphasis areas. Therefore, the 5-yr average values that are calculated and represented in the other table are not valid for the following areas:

Older Drivers

Motorcyclist

Pedestrian/Bicyclist

Younger Drivers

Impaired/Drowsy Drivers

In years following this report these areas will be valid as more annual data for these emphasis areas will be collected.

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

Yes

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

<b>CounterMeasures:</b>	Roundabout
<b>Description:</b>	Three roundabouts installation in place of previous intersections evaluated: Intersections of Highways 65 and 266 in Faulkner County, Highways 365 and 100 in Pulaski County, and Highway 65 and Steel Ave. in Faulkner County
<b>Target Crash Type:</b>	All
<b>Number of Installations:</b>	3
<b>Number of Installations:</b>	3
<b>Miles Treated:</b>	
<b>Years Before:</b>	2008 to 2011
<b>Years After:</b>	2011 to 2014
<b>Methodology:</b>	Simple before/after
<b>Results:</b>	A four-year simple before-after analysis of the crash statistics for three intersections converted into roundabouts was conducted. The following were the general observation of this evaluation analysis:

- Decrease in KA crashes (elimination of KA crashes on two sites)
- Decrease in BCO crashes

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- Decrease in head-on, sideswipe opposite direction, rear-end and angle crashes
- Increase in single vehicle and sideswipe opposite direction crashes

Further details of the analysis for these roundabouts are provided in the attached file

**File Name:** [All three combined.pdf](#)

**Project Effectiveness**

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

LOCATION	FUNCTIONAL CLASS	IMPROVEMENT CATEGORY	IMPROVEMENT TYPE	PDO BEFORE	PDO AFTER	FATALITY BEFORE	FATALITY AFTER	SERIOUS INJURY BEFORE	SERIOUS INJURY AFTER	ALL INJURY BEFORE	ALL INJURY AFTER	TOTAL BEFORE	TOTAL AFTER	EVALUATION RESULTS (BENEFIT/COST RATIO)
Hwy 365 Section 11/Hwy 100 Section 1	Intersection into Roundabout	Intersection geometry	Intersection geometrics - miscellaneous/other/unspecified	50.00	18.00	1.00		2.00		17.00	5.00	70.00	23.00	0.34
Hwy 65 Section 9B/Winfield Street/Steel Avenue	Intersection into Roundabout	Intersection geometry	Intersection geometrics - miscellaneous/other/unspecified	27.00	28.00			1.00		9.00	4.00	37.00	32.00	0.86
Hwy 65 Section 9B/Hwy 266 Section 1	Intersection converted to Roundabout	Intersection geometry	Intersection geometrics - miscellaneous/other/unspecified	46.00	46.00				1.00	16.00	9.00	62.00	56.00	0.89
Hwy 63, Section 1, LM 0.00 - 14.71	Rural Principal Arterial - Other	Roadway	Roadway - other	54.00	27.00	10.00	5.00	25.00	20.00	49.00	53.00	138.00	105.00	

**Enter additional comments here to clarify your response for this question or add supporting information.**

The last project is an old project from the year 2000-2003 so due to the lack of costs for adding passing lanes, we were not able to provide a BCR.

**Are there any other aspects of the overall HSIP effectiveness on which the State would like to elaborate?**

No

## 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

**Enter additional comments here to clarify your response for this question or add supporting information.**

2013 SHSP Plan was approved March 8, 2013. The 2013 SHSP covered the years 2013-2017 and the updated 2017 SHSP covers the years 2017-2022. The 2017 SHSP was approved in July of 2017. We plan to start the process of updating the 2022 SHSP in the spring of 2020 and finalize it by July 2022.

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

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
<b>ROADWAY SEGMENT</b>										
Segment Identifier (12)	100	100					100	100	100	100
Route Number (8)	100	100								
Route/Street Name (9)	100	100								
Federal Aid/Route Type (21)	100	100								
Rural/Urban Designation (20)	100	100					100	100		
Surface Type (23)	100	100					100	100		
Begin Point Segment Descriptor (10)	100	100					100	100	100	100
End Point Segment Descriptor (11)	100	100					100	100	100	100
Segment Length (13)	100	100								
Direction of Inventory (18)	0	0								
Functional Class (19)	100	100					100	100	100	100

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MIRE NAME (MIRE NO.)	NON LOCAL PAVED ROADS - SEGMENT		NON LOCAL PAVED ROADS - INTERSECTION		NON LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE
Median Type (54)	100	100								
Access Control (22)	100	100								
One/Two Way Operations (91)	100	100								
Number of Through Lanes (31)	100	100					100	100		
Average Annual Daily Traffic (79)	100	62					40	2		
AADT Year (80)	100	62								
Type of Governmental Ownership (4)	100	100					100	100	100	100
<b>INTERSECTION</b>										
Unique Junction Identifier (120)			0	0						
Location Identifier for Road 1 Crossing Point (122)			0	0						
Location Identifier for Road 2 Crossing Point (123)			0	0						
Intersection/Junction Geometry (126)			0	0						
Intersection/Junction Traffic Control (131)			0	0						
AADT for Each Intersecting Road (79)			100	10						
AADT Year (80)			100	10						
Unique Approach Identifier (139)			0	0						
<b>INTERCHANGE/RAMP</b>										
Unique Interchange Identifier (178)					0	0				
Location Identifier for Roadway at Beginning of Ramp Terminal (197)					100	0				
Location Identifier for Roadway at Ending Ramp Terminal (201)					100	0				
Ramp Length (187)					100	0				

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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 Type at Beginning of Ramp Terminal (195)					100	0				
Roadway Type at End Ramp Terminal (199)					100	0				
Interchange Type (182)					0	0				
Ramp AADT (191)					100	0				
Year of Ramp AADT (192)					100	0				
Functional Class (19)					100	0				
Type of Governmental Ownership (4)					100	0				
<b>Totals (Average Percent Complete):</b>	<b>94.44</b>	<b>90.22</b>	<b>25.00</b>	<b>2.50</b>	<b>81.82</b>	<b>0.00</b>	<b>93.33</b>	<b>89.11</b>	<b>100.00</b>	<b>100.00</b>

Enter additional comments here to clarify your response for this question or add supporting information.

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.

See attachment from TRSP.

Provide the suspected serious injury identifier, definition and attributes used by the State for both the crash report form and the crash database using the table below. Please also indicate whether or not these elements are compliant with the MMUCC 4th edition criteria for data element P5. Injury Status, suspected serious injury.

CRITERIA	SUSPECTED SERIOUS INJURY IDENTIFIER(NAME)	MMUCC 4TH EDITION COMPLIANT *	SUSPECTED SERIOUS INJURY DEFINITION	MMUCC 4TH EDITION COMPLIANT *	SUSPECTED SERIOUS INJURY ATTRIBUTES(DESCRIPTORS)	MMUCC 4TH EDITION COMPLIANT *
Crash Report Form	2 - Incapacitating Injury	No	N/A	No	N/A	No
Crash Report Form Instruction Manual	2 - Incapacitating Injury	No	Any injury, other than a fatal injury, which prevents the injured person from walking, driving or normally continuing the activities the person was capable of performing before the injury occurred.	No	Inclusions: Severe lacerations, broken or distorted limbs, skull or chest injuries, abdominal injuries, unconsciousness at or when taken from the scene, unable to leave the scene without assistance, and others. Exclusions: Momentary unconsciousness, and others.	No
Crash Database	2	No	N/A	No	N/A	No
Crash Database Data Dictionary	2 - Incapacitating Injury	No	Any injury, other than a fatal injury, which prevents the injured person from walking, driving or normally continuing the activities the person was capable of performing before the injury occurred.	No	Inclusions: Severe lacerations, broken or distorted limbs, skull or chest injuries, abdominal injuries, unconsciousness at or when taken from the scene, unable to leave the scene without assistance, and	No

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CRITERIA	SUSPECTED SERIOUS INJURY IDENTIFIER(NAME)	MMUCC 4TH EDITION COMPLIANT *	SUSPECTED SERIOUS INJURY DEFINITION	MMUCC 4TH EDITION COMPLIANT *	SUSPECTED SERIOUS INJURY ATTRIBUTES(DESCRIPTORS)	MMUCC 4TH EDITION COMPLIANT *
					others. Exclusions: Momentary unconsciousness, and others.	

**Please describe the actions the State is taking to become compliant by April 15, 2019.**

ARDOT and Arkansas State Police are coordinating with the eCrash vendor at the University of Alabama to become compliant with the MMUCC 4th edition definition of a Suspected Serious Injury by January 1, 2018.

**Enter additional comments here to clarify your response for this question or add supporting information.**

**Did the State conduct an HSIP program assessment during the reporting period?**

Yes

**Describe the purpose and outcomes of the State’s HSIP program assessment.**

ARDOT hosted a Peer Exchange to share information and experiences for improving its Highway Safety Improvement Program (HSIP). This results of the peer exchange, was supported by the FHWA Office of Safety’s Roadway Safety Professional Capacity Building Program and the FHWA Arkansas Division Office. The FHWA Office of Safety and the FHWA Arkansas Division Office worked with ARDOT to convene representatives from four peer States, Georgia, Kentucky, Utah, and Washington, to assist Arkansas in its effort to refine its HSIP project development process. Topics at the peer exchange included: HSIP management, organizational structure and work flow, project screening, engineering studies, project prioritization, design issues/processes, funding, and evaluation processes.

A number of elements were identified contributing to a successful HSIP including leadership support and clear documentation of work flow, project prioritization, implementation, and evaluation processes. Peers shared information and experiences on each of these areas and helped ARDOT generate a robust list of action items to move on forward. ARDOT will start updating the HSIP process for future implementation according to the following action items.

- Establish HSIP funding goals (e.g. by sub-programs, initiatives, focus areas, districts, regions, data, emphasis areas, etc.).
- Document the current HSIP process and share with leadership to help them understand the basis of the program including Federal requirements.
- Consider a review of historical HSIP projects.
- Review how HSIP projects are scoped; consider using “tiered” countermeasure selection to limit use of high cost countermeasures and the need to obtain right-of-way.
- Refine and develop sub-program initiatives (guardrail end treatments, shoulder widening, curve signing, etc.). Look at current processes, available data, and determine priorities for Arkansas.
- Review the possible use of on-call consultants and/or university resources. Review activities that could be shifted; consider current staffing and identify gaps.
- Develop or adopt a network screening tool. Consider use of [safety performance functions](#) or another data driven process for project selection.
- Document the scoping process including planning, design, maintenance, ROW, utilities, and environmental impacts. Consider possible use of a standard form or procedure set for site visits and road safety audits.
- Explore the use of force accounts or on-call contracts for construction (particularly for small local and low cost projects).
- Continue development of intersection database.

## **Optional Attachments**

Program Structure:

[AHTD HSIP-Process-2011-07.pdf](#)

Project Implementation:

Safety Performance:

[Evaluation of Progress for Performance Measures.docx](#)

Evaluation:

[All three combined.pdf](#)

[All three combined.pdf](#)

Compliance Assessment:

[Mire FDE Collection form the TRSP Appendix B.docx](#)

## Glossary

<b>5 year rolling average</b>	means the average of five individuals, consecutive annual points of data (e.g. annual fatality rate).
<b>Emphasis area</b>	means a highway safety priority in a State’s SHSP, identified through a data-driven, collaborative process.
<b>Highway safety improvement project</b>	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.
<b>HMVMT</b>	means hundred million vehicle miles traveled.
<b>Non-infrastructure projects</b>	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.
<b>Older driver special rule</b>	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.
<b>Performance measure</b>	means indicators that enable decision-makers and other stakeholders to monitor changes in system condition and performance against established visions, goals, and objectives.
<b>Programmed funds</b>	mean those funds that have been programmed in the Statewide Transportation Improvement Program (STIP) to be expended on highway safety improvement projects.
<b>Roadway Functional Classification</b>	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.
<b>Strategic Highway Safety Plan (SHSP)</b>	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.
<b>Systematic</b>	refers to an approach where an agency deploys countermeasures at all locations across a system.
<b>Systemic safety improvement</b>	means an improvement that is widely implemented based on high risk roadway features that are correlated with specific severe crash types.
<b>Transfer</b>	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.