MISSOURI

HIGHWAY SAFETY IMPROVEMENT PROGRAM

2018 ANNUAL REPORT

U.S. Department of Transportation
Federal Highway Administration

Photo source: Federal Highway Administration

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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

The Missouri Coalition for Roadway Safety and the Missouri Department of Transportation (MoDOT) are dedicated to improving safety of the motoring public through education, engineering, enforcement and emergency medical services initiatives. Safety is one of the Department's core values: "Be Safe." This message is also reinforced in the Department's Practical Design Guide that states, "Safety will not be compromised. Every project we do will make the facility safer after its completion." Additionally, "keeping our customers and ourselves safe" is a MoDOT Tangible Result.

Missouri's Highway Safety Improvement Program (HSIP) is driven by the state's Strategic Highway Safety Plan (SHSP). In October 2016, Missouri introduced its fourth edition of the SHSP and established a highway safety goal of 700 or fewer fatalities by 2020. Missouri's Blueprint: A Partnership to Zero Deaths guides the State's safety initiatives and addresses safety from a comprehensive standpoint including engineering, enforcement, education, emergency medical services, technology and public policy solutions. The Blueprint focuses on implementing strategies that will reduce both fatal and serious injuries on Missouri roadways. The Blueprint and the statewide fatality goal are considered in the development and implementation of each of the Department's highway safety plans.

Evidenced-based decision-making is paramount to a sound safety program. Data analysis is a critical part of identifying overrepresented crash types, locations, driver age, driver gender, and driver behaviors. These findings guide the deployment of effective and appropriate strategies to improve safety on the entire system. Efforts are made to analyze fatal and serious injury crashes to help discern where limited safety funding should be applied so that maximum safety improvements and benefits are attained.

From 2005-2014, Missouri experienced a steady decline in both fatalities and serious injuries. During that time, fatalities decreased by 40 percent (1,257 in 2005 to 766 in 2014) and serious injuries decreased by 46 percent (8,621 in 2005 to 4,567 in 2014). Over the last three years, the fatalities and serious injuries have been trending upward. In 2017, preliminary data indicates 932 fatalities and 4,874 serious injuries occurred on Missouri's roadways. While fatalities decreased from the previous year (949 fatalities in 2016), Missouri is still experiencing a 22% increase in fatalities compared to 2014. Serious injuries have also been rising, up 300 from a low of 4574 in 2015. Despite this rise, the 5-year average for serious injuries decreased (4,756.4) for the 12th year in a row. Additionally, the 5-year average for fatalities increased in 2017 to 854.4.

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 overall HSIP is administered by MoDOT's Highway Safety and Traffic Division. However, the division does not typically identify individual projects as part of this process. Instead, HSIP funds are distributed to each of MoDOT's seven districts based on the number of crashes and other factors within each region. From there, each district identifies how their share of HSIP funds will be programmed in accordance with Missouri's SHSP and MoDOT guidance. The districts carry out the projects to completion, and all HSIP projects are reported by the Highway Safety and Traffic Division. Occasionally, statewide safety projects may be carried out by the Highway Safety and Traffic Division. Missouri's HSIP is primarily developed by MoDOT. However, since the state's SHSP involves input from external stakeholders throughout the state, the HSIP is influenced by external partners as well.

Where is HSIP staff located within the State DOT?

Operations

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

The Highway Safety and Traffic Division lead the HSIP reporting effort. The District Traffic Offices facilitate the selection of HSIP projects and implement the HSIP program.

How are HSIP funds allocated in a State?

Formula via Districts/Regions

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

The Highway Safety and Traffic Division also have some HSIP funds distributed to them.

In January of 2018, the Missouri Highways and Transportation Commission approved the use of a new formula for distributing safety funds to MoDOT's Districts. This new formula places more focus on areas experiencing fatal and disabling injury crashes. This new distribution will take effect in 2021.

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

Our local roads are included in the crash data system analysis. We evaluate all roadways in the state and place emphasis on severe crashes. This analysis is performed for both intersections and non-intersection locations. To date we have used an analysis method, which places weight on the severe crashes and locations that have experienced a higher frequency of severe crashes and are often those that will find their way on our top priority lists. While most of the locations to date have been on the state system roadways, we have recently seen a few of the local roads locations make these high priority lists. While we continue to believe that the majority of the problem locations will be state system locations, we have evaluated non-state system severe crash locations and have determined that 61% of our non-state system fatalities are in seven counties (Jackson, Jefferson, Greene, Boone, St. Charles, St. Louis City, and St. Louis County). Local strategic highway safety plans (SHSP) have been developed for the top counties experiencing severe crashes. The local SHSPs identify systemic countermeasures and high priority projects. To date we have communicated the problem locations to the planning entities like our Metropolitan Planning Organizations and Regional Planning Commissions. We also work with our LTAP center to continue to move safety forward in our state. Additionally, we have used the RSA process to better address local road issues on occasion, we have a Transportation Engineering Assistance Program (TEAP) to assist locals, and we also have a subcommittee from our SHSP that focuses on infrastructure improvement opportunities for local roads.

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

Traffic Engineering/Safety
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.

There is some overlap in these selections with the way MoDOT is structured. Traffic engineering/safety could be included under operations, however operations is more inclusive in other traffic areas that both were selected.

Describe coordination with internal partners.

MoDOT has focused for some time on system-wide safety solutions. We have worked with our Design Division to address our Engineering Policy, our Operations and Maintenance staff to improve the roadsides, and our Planning staff to better evaluate and select safety needs for improvements. We have also worked with the previously mentioned internal partners on the training and use of the Highway Safety Manual (HSM). Additionally, we work daily with the Highway Safety office to evaluate and monitor the crash types. It is vital that all areas in our department work together and focus on safety improvements. We have begun efforts to improve our safety situation on the local roads and have developed local SHSPs for our top counties. We are also working with our Planning and Design Divisions to consider how we might best administer safety projects on local roads.

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
Academia/University
FHWA
Other-National Highway Traffic Safety Administration
Other-Federal Motor Carrier Safety Administration
Other-Emergency Services, Department of Revenue, etc

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

Describe coordination with external partners.

Missouri's Strategic Highway Safety Plan (SHSP) is the umbrella document that identifies emphasis areas and prioritizes strategies for reducing fatalities and serious injuries on all Missouri roadways. The development of the SHSP utilized significant involvement from external stakeholders throughout the state, including metropolitan planning organizations and local government agencies.

MoDOT has also identified the top counties where non-state system fatalities have occurred and worked with them to develop localized strategic safety plans. These plans identify systemic countermeasures and high priority projects.

Additionally, when setting the new safety performance targets, MoDOT had an inclusive process which thoroughly involved collaboration with our MPOs and other planning partners to come to a consensus on the 2019 targets.

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.

In January of 2018, the Missouri Highways and Transportation Commission approved the use of a new formula for distributing safety funds to MoDOT's Districts. This new formula places more focus on areas experiencing fatal and disabling injury crashes. This new distribution will take effect in 2021.

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.

Safety initiatives continue to be driven by the State SHSP. The State SHSP includes numerous safety initiatives that are data driven. Each district develops a regional district safety plan for their available HSIP funds. These district plans must support the overarching goals of the statewide SHSP at the district level.

Program Methodology

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

No

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

File Name:

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

MoDOT has an EPG article that outlines the safety program guidelines.

http://epg.modot.org/index.php?title=907.1_Safety_Program_Guidelines

Select the programs that are administered under the HSIP.

Median Barrier
Intersection
Horizontal Curve
Skid Hazard
Roadway Departure
Wrong Way Driving

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

While no HSIP funds have been spent on local roadways, MoDOT's District staff shares this program information with our local agency partners to help prioritize projects and assist with the development of their localized safety plans.

Program: Horizontal Curve

Date of Program Methodology: 2/8/2013

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
All crashes Fatal and serious injury crashes only	Volume	Horizontal curvature

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

Crash frequency
Relative severity index
Excess proportions of specific crash types

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-Systemic evaluation

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical

rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Rank of Priority Consideration

Other-Systemic safety initiative : 2
Other-Severity Index : 1

Program: Intersection

Date of Program Methodology: 1/21/2009

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
All crashes Fatal and serious injury crashes only	Volume	Functional classification

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

Crash frequency
Relative severity index
Excess proportions of specific crash types

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?

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

Rank of Priority Consideration

Other-Systemic safety initiative : 2
Other-Severity Index : 1

Program: Median Barrier

Date of Program Methodology: 9/27/2002

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
All crashes Fatal and serious injury crashes only	Volume	Median width Horizontal curvature Functional classification Roadside features

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

Crash frequency
Relative severity index
Excess proportions of specific crash types

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-Systemic evaluation

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

Rank of Priority Consideration

Other-Systemic safety initiative : 1

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

MoDOT has developed specific criteria to evaluate the location for median barriers, such as AADT, median width, and crash types/severities.

Program: Roadway Departure

Date of Program Methodology: 10/1/2004

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
All crashes Fatal and serious injury crashes only	Volume	Functional classification

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

Crash frequency
Relative severity index
Excess proportions of specific crash types

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-Systemic evaluation

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

Rank of Priority Consideration

Other-Systemic safety initiative : 2
Other-Severity Index : 1

Program: Skid Hazard

Date of Program Methodology: 2/8/2013

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

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

Crash frequency
Relative severity index
Excess proportions of specific crash types
Other-Wet/Dry Crash Ratio

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-Systemic evaluation

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

Rank of Priority Consideration

Other-Systemic safety initiative : 0
Other-Wet/Dry Crash Ratio : 1

Program: Wrong Way Driving

Date of Program Methodology: 6/1/2017

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**

All crashes
Fatal and serious injury crashes only

Volume

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?

Yes

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

How are projects under this program advanced for implementation?

Competitive application process

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

Rank of Priority Consideration

Other-Systemic Safety Initiative : 1

What percentage of HSIP funds address systemic improvements?

80

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 Signing
Install/Improve Pavement Marking and/or Delineation
Upgrade Guard Rails
Safety Edge
Horizontal curve signs
High friction surface treatment
Wrong way driving treatments

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

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

Engineering Study
Road Safety Assessment
Crash data analysis
SHSP/Local road safety plan
Data-driven safety analysis tools (HSM, CMF Clearinghouse, SafetyAnalyst, usRAP)
Stakeholder input
Other-Enforcement and other stakeholders input.
Other-Peer Exchange - lessons learned

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

All of the countermeasure identification processes listed here are applicable to MoDOT's countermeasure selection, although they vary depending on how the safety need was identified (Systemic, Spot, RSA).

Does the State HSIP consider connected vehicles and ITS technologies?

Yes

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

Emphasis Area 1 of Missouri's Strategic Highway Safety Plan targets Serious Crash Types. In this emphasis area, six focus areas were identified.

Lane Departure

- Run-Off-Road - Not in a Curve
- Run-Off-Road - In a Curve
- Collision with Tree and/or Utility Pole
- Head-On

Intersections

- Non-signalized
- Signalized

Each of these focus areas have key strategies identified, including supporting vehicle-to-infrastructure communications. MoDOT is exploring the use of 3rd party partnerships to provide motorist in vehicle

information related to traffic signals. This information could be provided to the motorist through the dashboard of their vehicle or through a mobile application.

MoDOT is also actively pursuing the use of autonomous Truck Mounted Attenuators (TMAs) for mobile work zones. Two autonomous TMAs are anticipated to be ready for testing in a pilot project beginning in January 2019.

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.

The HSM is encouraged to be used when performing alternative analysis of safety countermeasures for particular projects. This often involves using crash modification factors from the CMF clearing house.

The HSM is also used to develop anticipated safety benefits for a project, which is used to both justify using safety funds and prioritizing the project.

More recently, MoDOT developed a crash prediction tool for rural two-lane highways that uses the HSM methodologies. This tool has a feature to assist in the network screening of these routes and identify locations that may have a high potential for safety improvement.

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

Yes

Describe program methodology practices that have changed since the last reporting period.

MoDOT has developed a crash prediction tool that will utilize roadway and crash data to develop expected crash rates for rural two lane highways. This information can be used to identify which areas are performing worse than predicted based on the roadway characteristics. This information can then be used as another resource when identifying and prioritizing locations that my benefit from a safety improvement.

In January of 2018, the Missouri Highways and Transportation Commission approved the use of a new formula for distributing safety funds to MoDOT's Districts. This new formula places more focus on areas experiencing fatal and disabling injury crashes. This new distribution will take effect in 2021.

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.

MoDOT uses data driven safety analysis to identify the top crash types occurring in Missouri and developed a list of strategies focused on addressing these crash types. Additionally, MoDOT develops various safety priority lists that identify the locations of safety concerns based on various criteria, such as:

- High Severity Locations (Intersections/Range)
- Run Off Road Crash Locations (Curves and No Shoulders)
- Wet Crash Locations
- Crossed Centerline Crash Locations

Details regarding MoDOT's Safety Program can be found in MoDOT's Engineering Policy Guide 907.1.

Project Implementation

Funds Programmed

Reporting period for HSIP funding.

State 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
HRRR Special Rule (23 U.S.C. 148(g)(1))	$0	$0	0%
Penalty Funds (23 U.S.C. 164)	$0	$0	0%
Other Federal-aid Funds (i.e. STBG, NHPP)	$0	$0	0%
Totals	$71,592,481	$118,207,527	165.11%

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

One of the reasons for the difference between the total programmed funds and obligated funds is due to MoDOT's retroreflectivity striping and guardrail upgrades programs. Estimates for these programs were not included in the programmed numbers above. However, they are included in the obligated number above, which were 20M for striping and 18M for guardrail upgrades.

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.

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

1%

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

1%

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

The only non-infrastructure safety projects using HSIP funds are for work zone enforcement.

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.

Asset management is a relatively new practice being implemented by MoDOT. By performing asset management MoDOT will ensure they are able to maintain the existing transportation network. Implementing new safety improvements that will add to the transportation system can be a challenge to fund in Districts that are unable to meet their asset management goals. It has been proposed to include HSIP projects into MoDOT's asset management process to ensure the safety improvements constructed will be able to be maintained into the future.

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

No

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**
Pavement and shoulder improvements from Iowa State line to US 136, near Rock Port. $679,000 from Ope	Shoulder treatments	Widen shoulder - paved or other	15.6	Miles	$1279000	$3000000	Penalty Funds (23 U.S.C. 154)	Rural Major Collector	530	60	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes
Reconstruct the horizontal curve in the westbound lane 0.2 mile east of Rte. 33 near Osborn.	Roadway	Roadway widening - curve	1	Curves	$1953000	$1953000	HSIP (23 U.S.C. 148)	Rural Principal Arterial (RPA) - Other Freeways and Expressways	5,550	65	State Highway Agency	Spot	Roadway Departure	Minimize run-off the road crashes
Pavement resurfacing and shoulder improvements from Rte. 54 south junction to 0.2 mile north of Rte.	Shoulder treatments	Pave existing shoulders	15.9	Miles	$3029000	$5869000	Penalty Funds (23 U.S.C. 154)	Rural Minor Arterial	1,263	60	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes
Install milled rumble stripes on northbound lanes from 0.9 mile north of Rte. B south junction to 0.	Shoulder treatments	Shoulder treatments - other	10.3	Miles	$69000	$69000	HSIP (23 U.S.C. 148)	Rural Principal Arterial (RPA) - Other Freeways and Expressways	3,890	65	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes
Install median guard cable from Rte. C at Moscow Mills to St. Charles County line. Project includes	Roadside	Barrier - cable	4.1	Miles	$1228000	$1228000	HSIP (23 U.S.C. 148)	Rural Principal Arterial (RPA) - Other Freeways and Expressways	19,151	60	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes
Replace bridge over I-70 near Mineola. Project involves bridge A0227. Project includes resurfacing a	Roadway	Roadway widening - curve	2	Curves	$201000	$2518000	HSIP (23 U.S.C. 148)	Rural Minor Arterial	361	45	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes
Pavement and shoulder improvements from Rte. 168 at Shelbyville to just north of Rte. 36 at Shelbina	Shoulder treatments	Shoulder treatments - other	7.2	Miles	$1245000	$2923000	HSIP (23 U.S.C. 148)	Rural Minor Arterial	933	55	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes
Pavement improvements, shoulder additions and edge line rumbles from Rte.	Roadway	Rumble strips - edge or shoulder	6.7	Miles	$1674000	$1674000	Penalty Funds (23 U.S.C. 154)	Rural Major Collector	1,206	55	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes

													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**
92 to Rte. CC. $1,489,000														
Intersection improvements at Buckner-Tarsney Rd.	Access management	Median crossover - directional crossover	1	Intersections	$487000	$487000	HSIP (23 U.S.C. 148)	Rural Principal Arterial (RPA) - Other	13,510	65	State Highway Agency	Spot	Intersections	Minimize crossover crashes
Install chevron signs at various locations in the urban Kansas City District.	Roadway signs and traffic control	Curve-related warning signs and flashers	1	Various Curves TBD	$102000	$102000	HSIP (23 U.S.C. 148)	Various	10,000	55	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes
Pavement and ADA Transition Plan improvements from Rte. H to Rte. 54 at Fulton. Two disconnected sec	Shoulder treatments	Pave existing shoulders	0.73	Miles	$32000	$2835000	HSIP (23 U.S.C. 148)	Rural Principal Arterial (RPA) - Other	10,728	50	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes
Pavement and shoulder improvements from Rte. 54 to Rte. 52. Includes pavement and shoulder improveme	Shoulder treatments	Pave existing shoulders	13.84	Miles	$1418000	$2742000	HSIP (23 U.S.C. 148)	Rural Minor Arterial	1,266	50	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes
Chip Seals from Rte. 50 to Rte. 28. and Rte. 28 from Rte. 63 to I-44 and Rte. 100 from Rte. N to Rte	Shoulder treatments	Pave existing shoulders	8.03	Miles	$668000	$2370000	HSIP (23 U.S.C. 148)	Rural Minor Arterial	2,237	55	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes
Pavement and shoulder improvements from Rte. 5 to Rte. UU in Boone County.	Shoulder treatments	Pave existing shoulders	17.37	Miles	$1149000	$4403000	HSIP (23 U.S.C. 148)	Rural Minor Arterial	2,170	60	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes
Pavement and shoulder improvements from Rte. 32 to Rte. C.	Shoulder treatments	Pave existing shoulders	5.416	Miles	$537000	$1466000	HSIP (23 U.S.C. 148)	Rural Minor Arterial	6,395	55	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes
Asphalt resurfacing and some shouldering from Rte. 5 in Laclede County to Rte. 17 in Texas County an	Shoulder treatments	Pave existing shoulders	12.107	Miles	$1068000	$3296000	HSIP (23 U.S.C. 148)	Rural Minor Arterial	8,740	55	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes
Pavement and shoulder improvements from Iberia to Rte. 63.	Shoulder treatments	Pave existing shoulders	22.7	Miles	$2176000	$3973000	HSIP (23 U.S.C. 148)	Rural Minor Arterial	2,014	55	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes

													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**
Resurfacing, ADA and shoulder improvements from Forum Drive in Rolla to Meramec St. in St. James. In	Shoulder treatments	Shoulder treatments - other	12.279	Miles	$1035000	$3843000	HSIP (23 U.S.C. 148)	Rural Major Collector	4,425	55	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes
Intersection safety improvements at Rte. 110 north of De Soto.	Intersection geometry	Intersection geometrics - realignment to align offset cross streets	1	Intersections	$1919000	$1919000	HSIP (23 U.S.C. 148)	Rural Principal Arterial (RPA) - Other	6,267	55	State Highway Agency	Spot	Intersections	improving sight distance, imprvoing intersection visibility, improving signage
Intersection safety improvements at Montauk Road north of Olympian Village.	Intersection geometry	Auxiliary lanes - modify right-turn lane offset	1	Intersections	$243000	$243000	HSIP (23 U.S.C. 148)	Rural Principal Arterial (RPA) - Other Freeways and Expressways	32,951	65	State Highway Agency	Spot	Intersections	improve pavement markings, constructing offset turn lanes, improve acceleration / deceleration lanes
Intersection safety improvements at Victoria Road north of Olympian Village.	Intersection geometry	Auxiliary lanes - modify left-turn lane offset	1	Intersections	$1615000	$1615000	HSIP (23 U.S.C. 148)	Rural Principal Arterial (RPA) - Other Freeways and Expressways	31,951	65	State Highway Agency	Spot	Intersections	improve pavement markings, constructing offset turn lanes, improve acceleration / deceleration lanes
Shoulder and safety improvements from I-70 in Foristell to Rte. 61.	Shoulder treatments	Widen shoulder - paved or other	5.64	Miles	$2481000	$2481000	HSIP (23 U.S.C. 148)	Rural Major Collector	2,364	55	State Highway Agency	Spot	Roadway Departure	Install rumble strips, expand / improve shoulder treatments, expand / improve roadway visibility
Interchange improvements at Rte. U (Lucas and Hunt Road). Project involves bridge A6233. $1,013,000	Interchange design	Interchange design - other	1	Interchanges	$3106000	$3106000	HSIP (23 U.S.C. 148)	Urban Principal Arterial (UPA) - Interstate	125,299	60	State Highway Agency	Spot	Intersections	geometric improvements to deceleration lanes, acceleration lanes and ramps
Bridge improvements from Kingshighway Boulevard to 39th Street. Project involves bridges A2386, A216	Roadway	Roadway - other	7	Bridges	$2249000	$26501000	Penalty Funds (23 U.S.C. 154)	Urban Principal Arterial (UPA) - Interstate	110,267	55	State Highway Agency	Spot	Various	Install rumble strips, pedestrian crossing, signing, countdown timers, increase pavement friction
Replace signals on Page Boulevard at various locations from Clara Avenue to Grand Avenue.	Pedestrians and bicyclists	Pedestrian signal - install new at intersection	5	Intersections	$1538000	$1538000	HSIP (23 U.S.C. 148)	Urban Principal Arterial (UPA) - Other	13,469	35	State Highway Agency	Systemic	Intersections	Install pedestrian crossings, signing, markings and countdown timers
Improve safety with pavement	Roadway delineation	Roadway delineation - other	1	Intersections	$1120000	$1120000	HSIP (23 U.S.C. 148)	Urban Principal Arterial (UPA) - Other	8,186	45	State Highway Agency	Spot	Lane Departure	roadway visibility features, pavement

													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**
replacement at Hall's Ferry Circle.														markings and increase pavement friction
Installation of safety signals at six locations and on Rte. D at eight locations.	Pedestrians and bicyclists	Pedestrian beacons	15	Crosswalks	$195000	$195000	HSIP (23 U.S.C. 148)	Various	7,801	35	State Highway Agency	Systemic	Intersections	Install pedestrian crossings, signing, markings and countdown timers
Bridge improvements over Marais des Cygnes River. Project involves bridge R0115.	Roadside	Barrier- metal	0.246	Miles	$25000	$2503000	HSIP (23 U.S.C. 148)	Rural Major Collector	241	55	State Highway Agency	Spot	Roadway Departure	Minimize out of control related crashes
Bridge improvements over Mormon Fork. Project involves bridge N0789.	Roadside	Barrier- metal	0.152	Miles	$40000	$467000	HSIP (23 U.S.C. 148)	Rural Major Collector	618	55	State Highway Agency	Spot	Roadway Departure	Minimize out of control related crashes
Bridge improvements over Alder Creek. Project involves bridge N0349.	Roadside	Barrier- metal	0.08	Miles	$23000	$730000	HSIP (23 U.S.C. 148)	Rural Major Collector	200	55	State Highway Agency	Spot	Roadway Departure	Minimize out of control related crashes
Pavement and safety improvements from Rte. 14 to Rte. A in Stone County.	Roadway	Rumble strips - edge or shoulder	7.018	Miles	$206000	$912000	HSIP (23 U.S.C. 148)	Rural Major Collector	6,183	55	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes
Bridge improvements over Swan Creek south of Garrison. Project involves bridge A0739.	Roadside	Barrier- metal	0.156	Miles	$33000	$2206000	HSIP (23 U.S.C. 148)	Rural Major Collector	492	55	State Highway Agency	Spot	Roadway Departure	Minimize out of control related crashes
Pavement and safety improvements on Rte. JJ from Rte. 14 to Rte. 125 and on Rte. AA from Rte. 160 to	Roadway	Rumble strips - edge or shoulder	7.206	Miles	$196000	$836000	HSIP (23 U.S.C. 148)	Various	1,038	55	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes
Bridge improvements over Kitts Coon Creek. Project involves bridge R0124.	Roadside	Barrier- metal	0.189	Miles	$23000	$655000	HSIP (23 U.S.C. 148)	Rural Major Collector	248	55	State Highway Agency	Spot	Roadway Departure	Minimize out of control related crashes
Safety improvements at I-44 and Rte. MM.	Intersection geometry	Intersection geometry - other	0.176	Miles	$455000	$455000	HSIP (23 U.S.C. 148)	Urban Major Collector	5,067	55	State Highway Agency	Spot	Intersections	Minimize intersection related crashes

													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**
Safety improvements at various intersections from north of Rte. WW to 0.5 mile south of Farm Road 94	Intersection geometry	Intersection geometry - other	2	Crossovers	$2598000	$2598000	HSIP (23 U.S.C. 148)	Urban Principal Arterial (UPA) - Other Freeways and Expressways	25,585	65	State Highway Agency	Systemic	Intersections	Minimize intersection related crashes
Pavement and safety improvements from Carnahan Street to 0.2 mile south of Farm Road 156.	Roadway	Rumble strips - edge or shoulder	0.952	Miles	$7000	$182000	HSIP (23 U.S.C. 148)	Urban Minor Arterial	9,381	55	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes
Safety improvements at various intersections from 0.4 mile north of Calvird Drive in Clinton to nort	Intersection geometry	Intersection geometry - other	8	Crossovers	$113000	$5414000	HSIP (23 U.S.C. 148)	Rural Principal Arterial (RPA) - Other Freeways and Expressways	13,045	65	State Highway Agency	Systemic	Intersections	Minimize intersection related crashes
Bridge improvements over Tebo Creek. Project involves bridge N0522.	Roadside	Barrier- metal	0.303	Miles	$71000	$1092000	HSIP (23 U.S.C. 148)	Rural Minor Collector	306	55	State Highway Agency	Spot	Roadway Departure	Minimize out of control related crashes
Bridge improvements over the BNSF Railroad and Spring River. Project involves bridges A3556 and A355	Roadside	Barrier- metal	1.502	Miles	$23000	$4612000	HSIP (23 U.S.C. 148)	Urban Principal Arterial (UPA) - Interstate	14,467	70	State Highway Agency	Spot	Roadway Departure	Minimize out of control related crashes
Pavement and safety improvements on Rte. 59 from I-44 to Rte. 60, on Rte. V from I-49 to Rte. 59, an	Roadway	Rumble strips - edge or shoulder	33.68	Miles	$826000	$4792000	Penalty Funds (23 U.S.C. 154)	Various	7,130	60	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes
Pavement and safety improvements on Rte. HH from Rte. AA to Rte. 571 and on Rte. AA from Rte. HH to	Roadway	Rumble strips - edge or shoulder	8.094	Miles	$252000	$1089000	HSIP (23 U.S.C. 148)	Urban Major Collector	5,527	55	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes
Pavement and safety improvements on Rte. P from Rte. JJ to Rte. 66, on Rte. JJ from Rte. Z to Rte. P	Roadway	Rumble strips - edge or shoulder	15.174	Miles	$134000	$1707000	HSIP (23 U.S.C. 148)	Various	4,684	55	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes

													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**
Rail crossing improvements on Carnation Dr at BNSF Railroad and Rte K (Elliot St) at BNSF and MNA Ra	Railroad grade crossings	Railroad grade crossings - other	0.479	Miles	$2087000	$5087000	HSIP (23 U.S.C. 148)	Rural Minor Arterial	3,481	35	State Highway Agency	Spot	Railroad	Minimize intersection related crashes
Pavement and safety improvements from 0.1 mile east of Kodiak Road to Bus. 60 (Neosho Boulevard) and	Roadway	Rumble strips - edge or shoulder	5.425	Miles	$299000	$1726000	HSIP (23 U.S.C. 148)	Rural Minor Arterial	11,857	55	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes
Pavement, safety and ADA Transition Plan improvements on Rte. D (Doniphan Drive) from Lyon Drive to	Roadway	Rumble strips - edge or shoulder	8.316	Miles	$43000	$1121000	HSIP (23 U.S.C. 148)	Various	2,826	55	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes
Pavement and safety improvements from I-44 in Joplin to Rte. 60 in Seneca.	Roadway	Rumble strips - edge or shoulder	13.708	Miles	$123000	$2232000	HSIP (23 U.S.C. 148)	Rural Minor Arterial	7,887	65	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes
Add J-turns at Rte. U and Rte. Y in city of Bolivar.	Intersection geometry	Intersection geometry - other	1	Crossovers	$1621000	$1621000	HSIP (23 U.S.C. 148)	Rural Principal Arterial (RPA) - Other Freeways and Expressways	21,453	65	State Highway Agency	Systemic	Intersections	Minimize intersection related crashes
Pavement improvements on various sections from 0.5 mile north of NE 1000 Road to SE 1300 Road.	Roadway	Rumble strips - edge or shoulder	22.334	Miles	$19000	$3940000	HSIP (23 U.S.C. 148)	Rural Principal Arterial (RPA) - Other Freeways and Expressways	9,550	65	State Highway Agency	Systemic	Roadway Departure	Minimize intersection related crashes
Bridge improvements over fork of Little Drywood Creek 7 miles west of I-49. Project involves bridge	Roadside	Barrier- metal	0.133	Miles	$23000	$955000	HSIP (23 U.S.C. 148)	Rural Major Collector	131	55	State Highway Agency	Spot	Roadway Departure	Minimize out of control related crashes
Pavement and safety improvements from Rte. 60 to Rte. U.	Roadway	Rumble strips - edge or shoulder	3.024	Miles	$115000	$394000	HSIP (23 U.S.C. 148)	Rural Major Collector	1,236	55	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes
Pavement improvements and addition of two foot shoulders from Rte. 101 to Rte. JJ.	Shoulder treatments	Widen shoulder - paved or other	13.4	Miles	$1052000	$2257000	HSIP (23 U.S.C. 148)	Rural Minor Arterial	2,173	55	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes

													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**
Pavement improvements and addition of two foot shoulders from Rte. 61 to Rte. 102.	Shoulder treatments	Widen shoulder - paved or other	13.3	Miles	$897000	$2321000	HSIP (23 U.S.C. 148)	Rural Major Collector	1,750	55	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes
Upgrade of existing median crossover to J-turn design at intersection of Rte. 67 and New Perrine Roa	Roadway delineation	Roadway delineation - other	1	Crossovers	$103000	$1503000	HSIP (23 U.S.C. 148)	Rural Principal Arterial (RPA) - Other Freeways and Expressways	8,064	60	State Highway Agency	Spot	Intersections	Minimize intersection related crashes
Pavement improvements and addition of two foot shoulders from Rte. Z to Rte. 60.	Shoulder treatments	Widen shoulder - paved or other	11.3	Miles	$885000	$1909000	HSIP (23 U.S.C. 148)	Rural Minor Arterial	1,570	55	State Highway Agency	Systemic	Roadway Departure	Minimize out of control related crashes
On-call work zone enforcement at various locations in the Northwest District.	Speed management	Traffic calming feature	1	Numbers	$50000	$50000	HSIP (23 U.S.C. 148)	Various	10,000	55	State Highway Agency	Spot	Work Zones	Enforcement
On-call work zone enforcement at various locations in the Northeast District.	Speed management	Traffic calming feature	1	Numbers	$10000	$10000	HSIP (23 U.S.C. 148)	Various	10,000	55	State Highway Agency	Spot	Work Zones	Enforcement
On-call work zone enforcement at various locations in the Kansas City Rural District.	Speed management	Traffic calming feature	1	Numbers	$11000	$11000	HSIP (23 U.S.C. 148)	Various	10,000	55	State Highway Agency	Spot	Work Zones	Enforcement
On-call work zone enforcement at various locations in the Kansas City Urban District.	Speed management	Traffic calming feature	1	Numbers	$162000	$162000	HSIP (23 U.S.C. 148)	Various	10,000	55	State Highway Agency	Spot	Work Zones	Enforcement
On-call work zone enforcement at various locations in the Central District.	Speed management	Traffic calming feature	1	Numbers	$35000	$35000	HSIP (23 U.S.C. 148)	Various	10,000	55	State Highway Agency	Spot	Work Zones	Enforcement
On-call work zone enforcement at various locations in the St Louis District.	Speed management	Traffic calming feature	1	Numbers	$588000	$588000	HSIP (23 U.S.C. 148)	Various	10,000	55	State Highway Agency	Spot	Work Zones	Enforcement
On-call work zone enforcement at various locations in the Southwest Rural District.	Speed management	Traffic calming feature	1	Numbers	$70000	$70000	HSIP (23 U.S.C. 148)	Various	10,000	55	State Highway Agency	Spot	Work Zones	Enforcement

													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**
On-call work zone enforcement at various locations in the Southwest Urban District.	Speed management	Traffic calming feature	1	Numbers	$177000	$177000	HSIP (23 U.S.C. 148)	Various	10,000	55	State Highway Agency	Spot	Work Zones	Enforcement
On-call work zone enforcement at various locations in the Southeast District.	Speed management	Traffic calming feature	1	Numbers	$75000	$75000	HSIP (23 U.S.C. 148)	Various	10,000	55	State Highway Agency	Spot	Work Zones	Enforcement

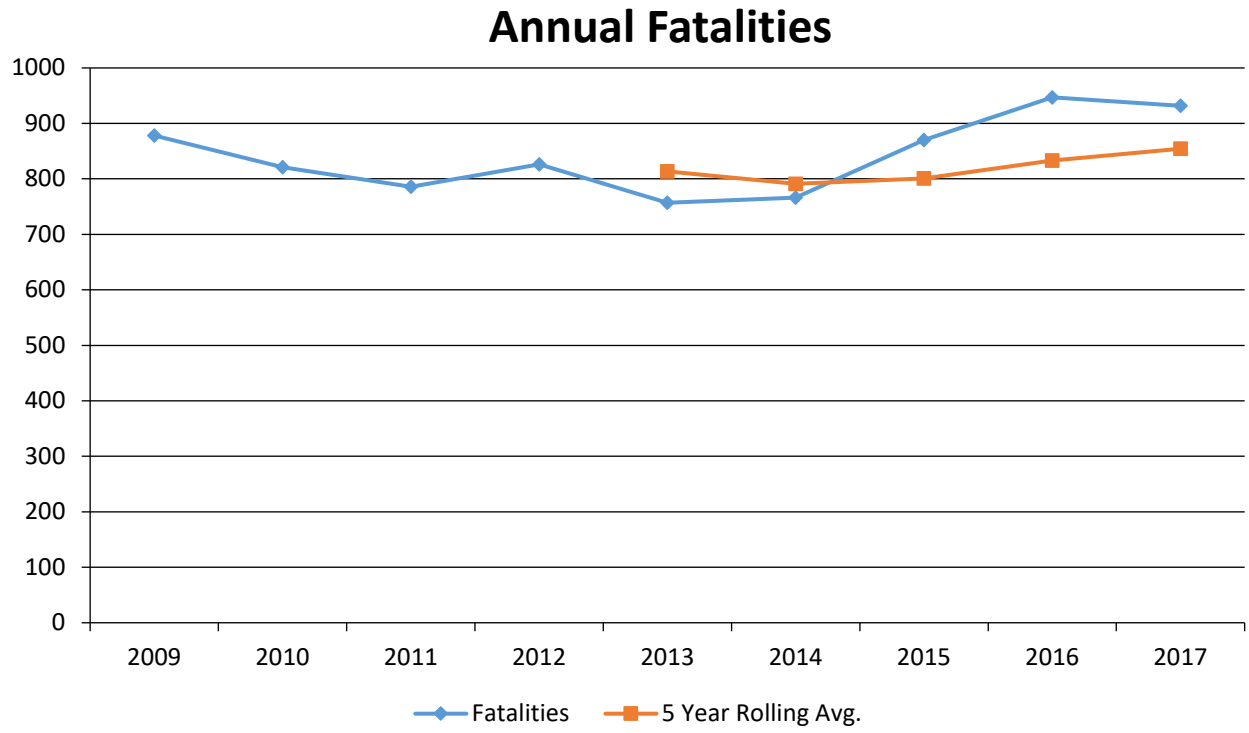
Enter additional comments here to clarify your response for this question or add supporting information.

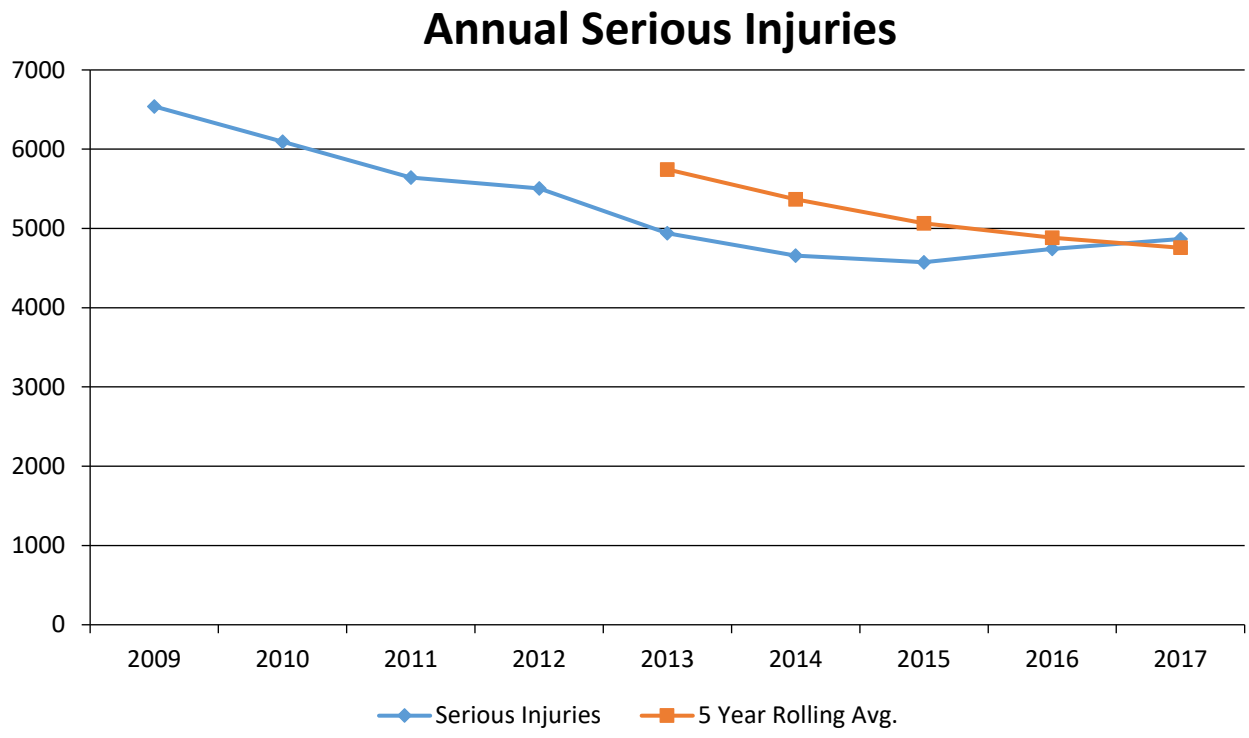
Safety Performance

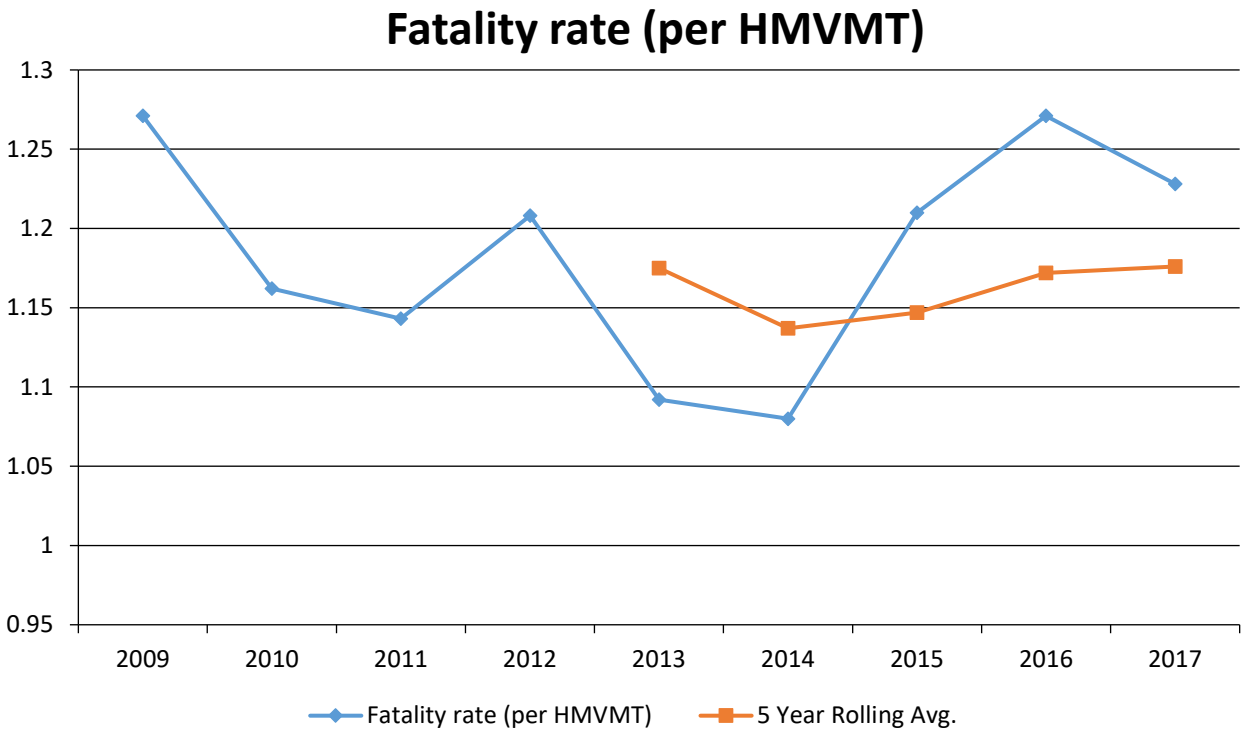
General Highway Safety Trends

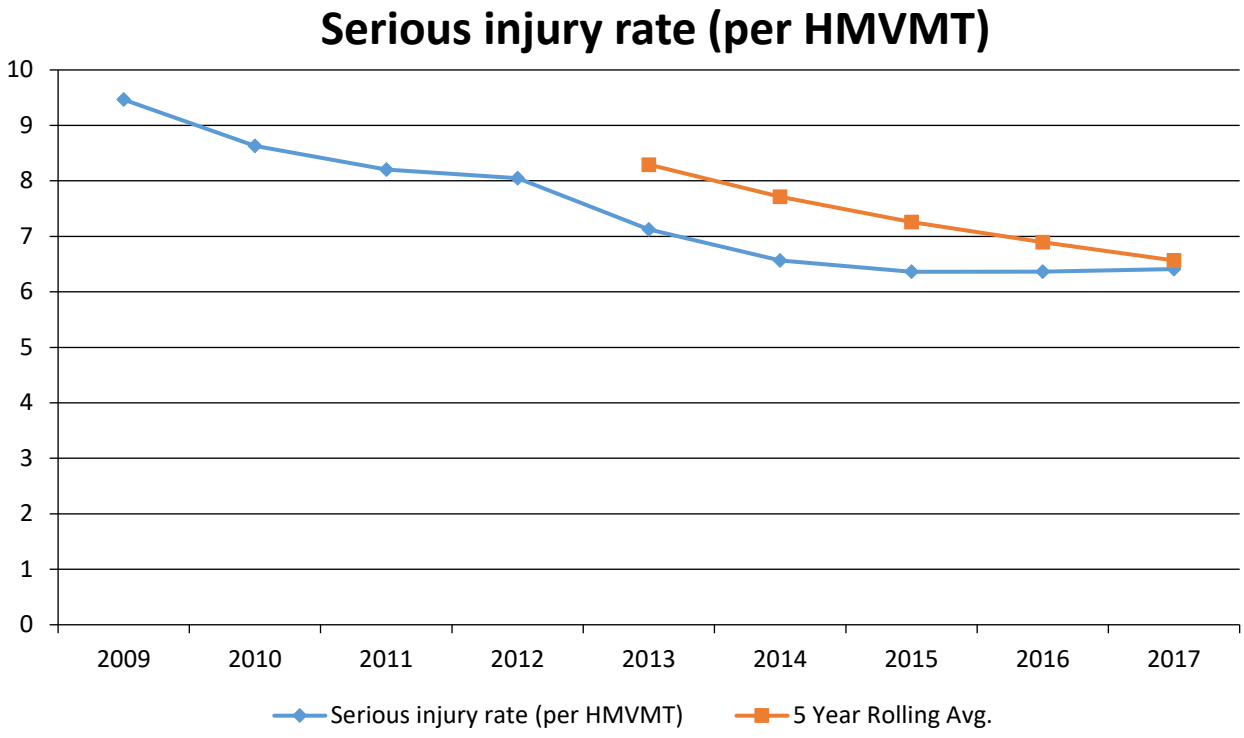
Present data showing the general highway safety trends in the State for the past five years.

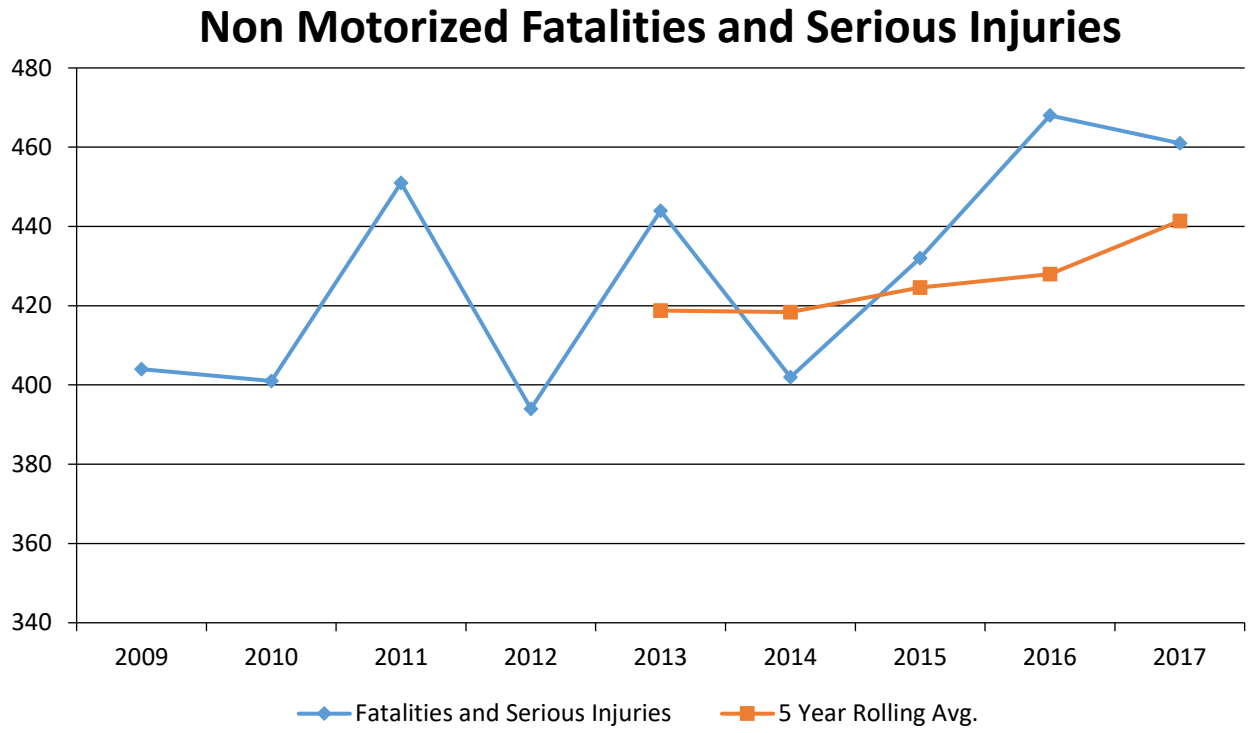
PERFORMANCE MEASURES	2009	2010	2011	2012	2013	2014	2015	2016	2017
Fatalities	878	821	786	826	757	766	870	947	932
Serious Injuries	6,540	6,096	5,643	5,506	4,939	4,659	4,574	4,743	4,867
Fatality rate (per HMVMT)	1.271	1.162	1.143	1.208	1.092	1.080	1.210	1.271	1.228
Serious injury rate (per HMVMT)	9.465	8.631	8.203	8.049	7.124	6.568	6.362	6.365	6.411
Number non-motorized fatalities	73	64	76	92	77	70	113	112	108
Number of non-motorized serious injuries	331	337	375	302	367	332	319	356	353


Annual Fatalities
1000
900
800
700
600
500
400
300
200
100
0
2009
2010
2011
2012
2013
2014
2015
2016
2017
Fatalities
5 Year Rolling Avg.


Annual Serious Injuries
7000
6000
5000
4000
3000
2000
1000
0
2009
2010
2011
2012
2013
2014
2015
2016
2017
Serious Injuries
5 Year Rolling Avg.


Fatality rate (per HMVMT)
1.3
1.25
1.2
1.15
1.1
1.05
1
0.95
2009
2010
2011
2012
2013
2014
2015
2016
2017
Fatality rate (per HMVMT)
5 Year Rolling Avg.


Serious injury rate (per HMVMT)
10
9
8
7
6
5
4
3
2
1
0
2009
2010
2011
2012
2013
2014
2015
2016
2017
Serious injury rate (per HMVMT)
5 Year Rolling Avg.



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

In previous reports, low power electric bicycles were not included in the non-motorized fatalities and serious injuries. These motorized bikes that do not meet motorcycle status (such as mopeds) are now included in the non-motorized totals starting in the 2016 data.

Data for this report was compiled in August 2018.

Describe fatality data source.

FARS

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

The fatality information provided from FARS was not published at the time of this report. The data provided was supplied from the Missouri State Highway Patrol (MSHP). The MSHP did not anticipate any changes to the fatality information they provided. The data included from the MSHP is also consistent with the fatality information from the state maintained crash database.

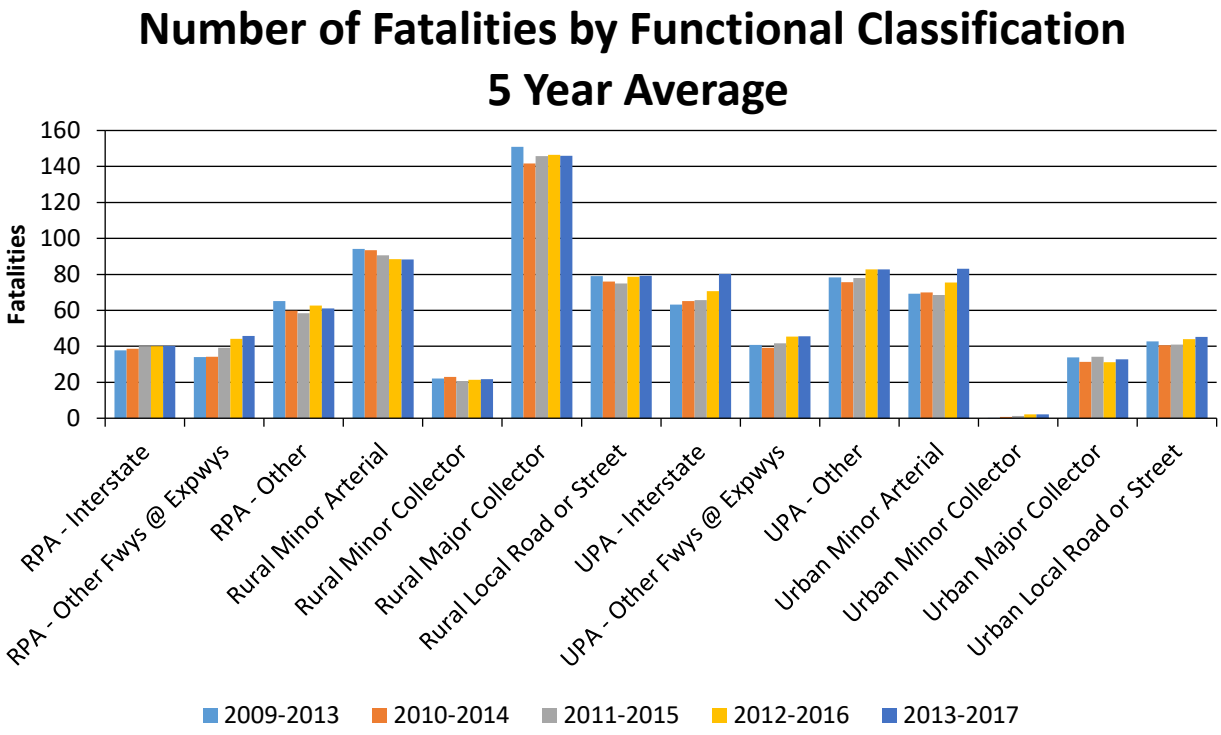
To the maximum extent possible, present this data by functional classification and ownership.

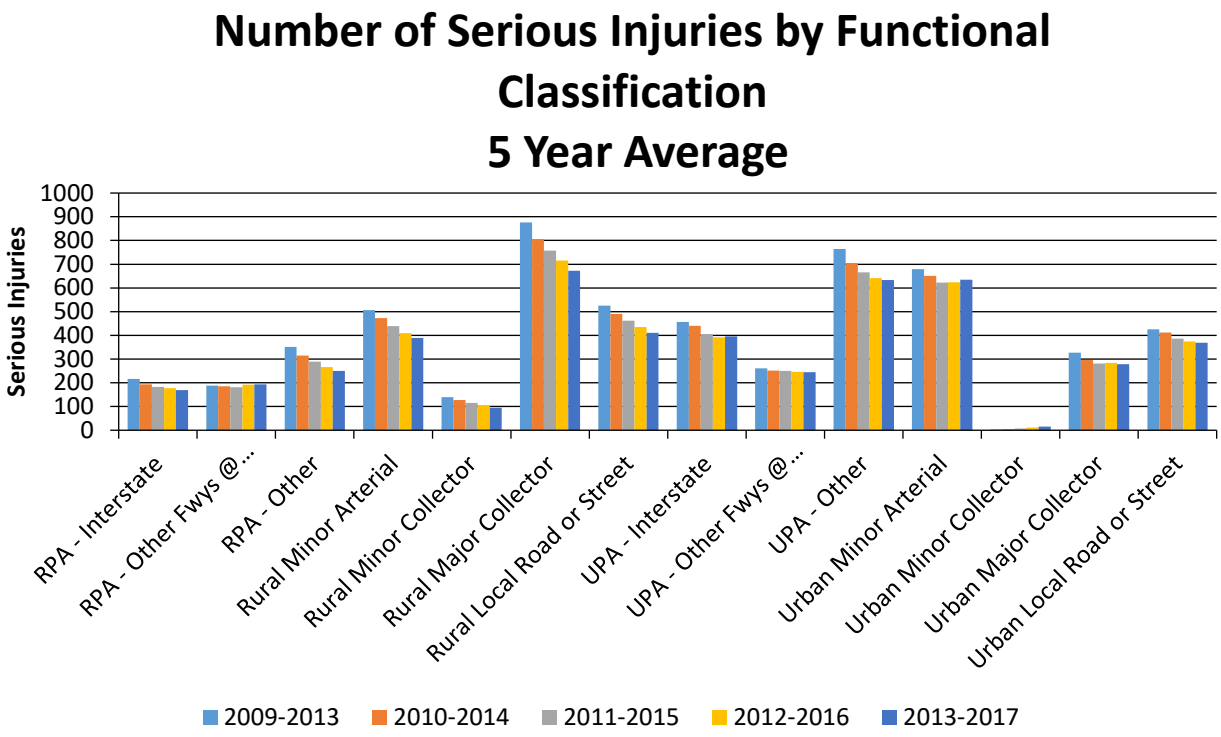
Year 2017

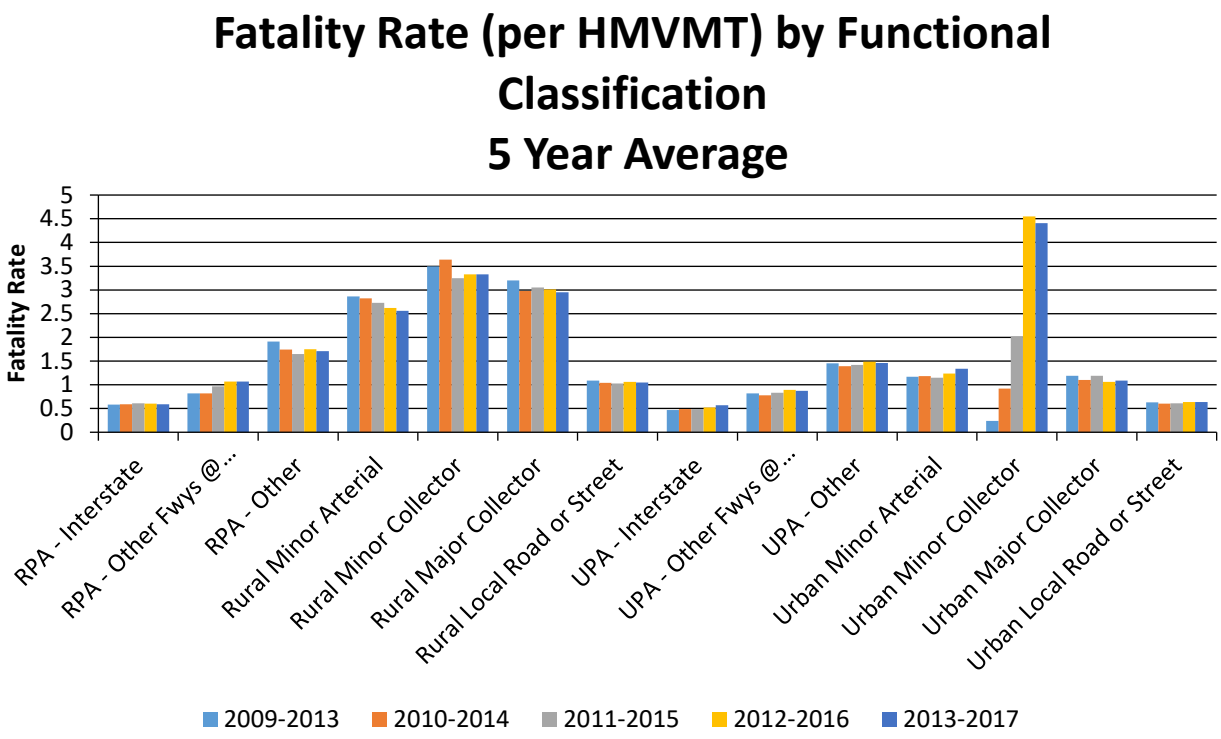
Functional Classification	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
Rural Principal Arterial (RPA) - Interstate	40.2	169.2	0.59	2.49
Rural Principal Arterial (RPA) - Other Freeways and Expressways	45.8	192.8	1.07	4.5
Rural Principal Arterial (RPA) - Other	61	250.6	1.71	7.08
Rural Minor Arterial	88.2	389.4	2.56	11.32
Rural Minor Collector	21.8	95.4	3.33	14.53
Rural Major Collector	146	672	2.95	13.59
Rural Local Road or Street	79.2	410.6	1.05	5.43
Urban Principal Arterial (UPA) - Interstate	80.2	395.4	0.57	2.84
Urban Principal Arterial (UPA) - Other Freeways and Expressways	45.6	245.2	0.87	4.7
Urban Principal Arterial (UPA) - Other	82.8	633.6	1.46	11.2
Urban Minor Arterial	83.2	635.2	1.34	10.27
Urban Minor Collector	2.2	15.6	4.41	28.77
Urban Major Collector	32.8	278.2	1.09	9.3
Urban Local Road or Street	45.2	368.4	0.64	5.21

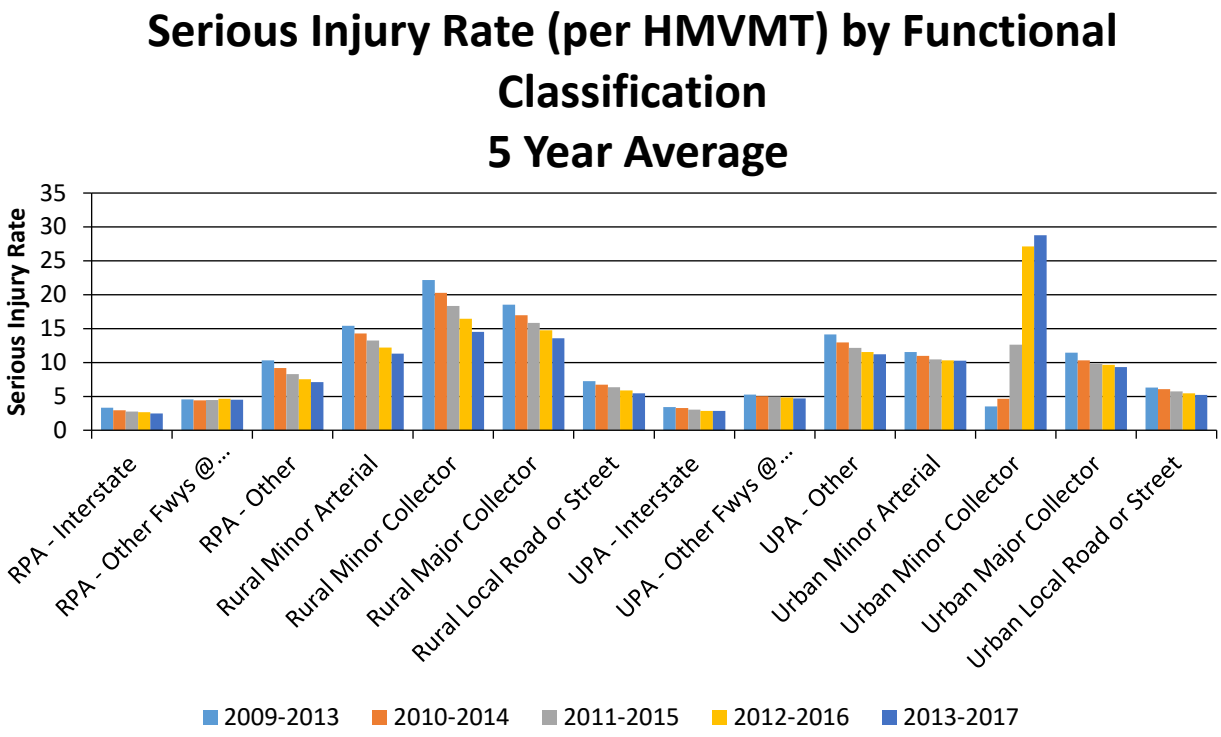
Year 2017

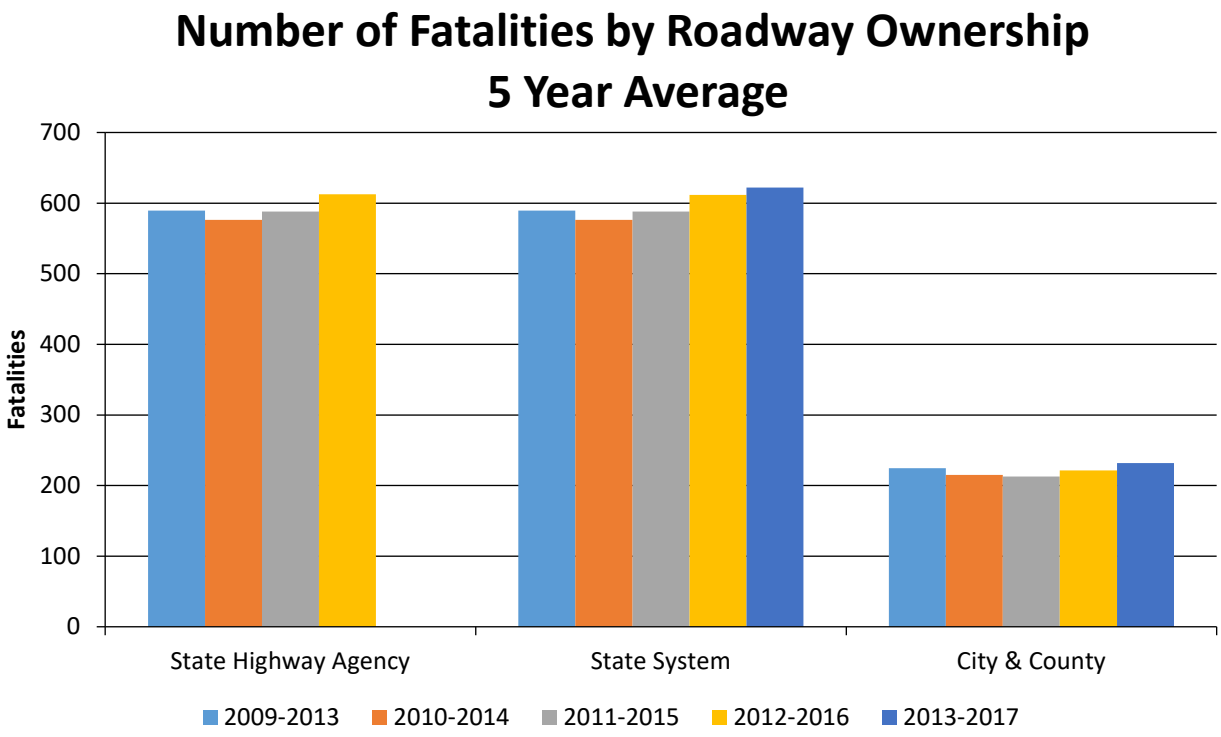
Roadways	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
State Highway Agency				
County Highway Agency				
Town or Township Highway Agency				
City of Municipal Highway Agency				
State Park, Forest, 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				
State System	622.2	3,136.6	1.25	6.32
City & County	232	1,621.4	1.01	7.11

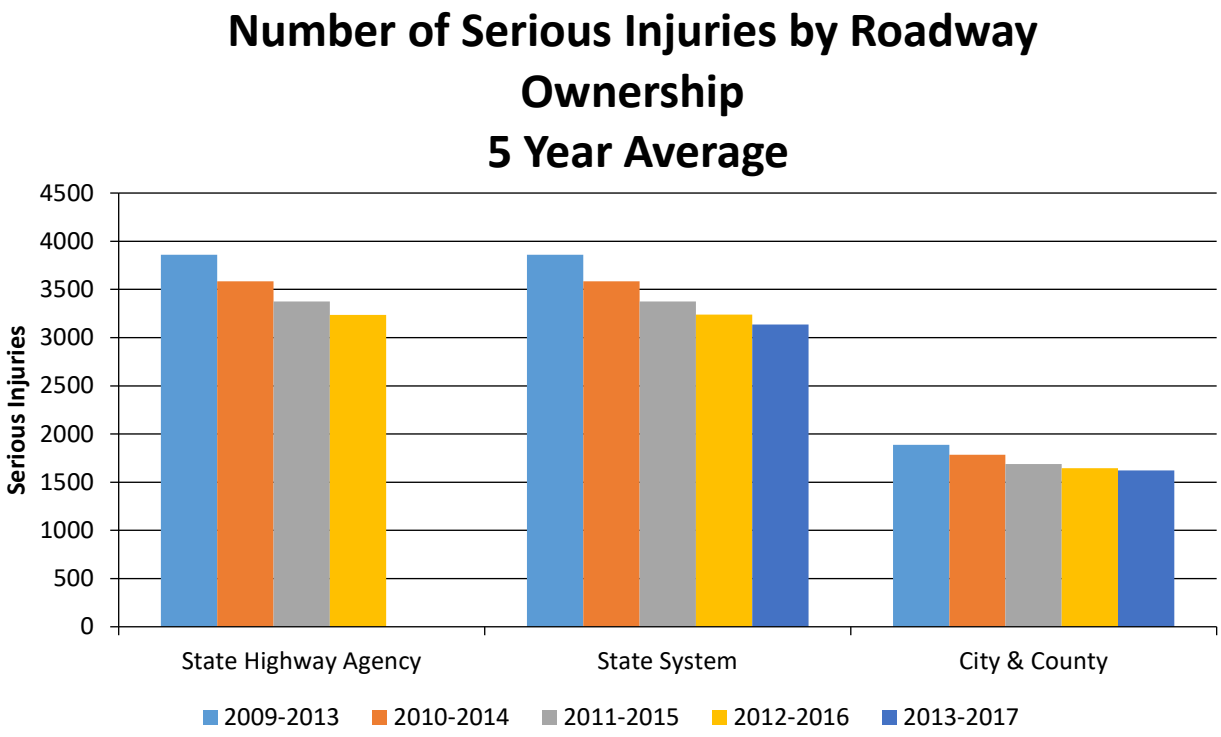

Number of Fatalities by Functional Classification
5 Year Average
Fatalities
160
140
120
100
80
60
40
20
0
RPA - Interstate
RPA - Other Fwys @ Expwys
RPA - Other
Rural Minor Arterial
Rural Minor Collector
Rural Major Collector
Rural Local Road or Street
UPA - Interstate
UPA - Other Fwys @ Expwys
UPA - Other
Urban Minor Arterial
Urban Minor Collector
Urban Major Collector
Urban Local Road or Street
2009-2013
2010-2014
2011-2015
2012-2016
2013-2017

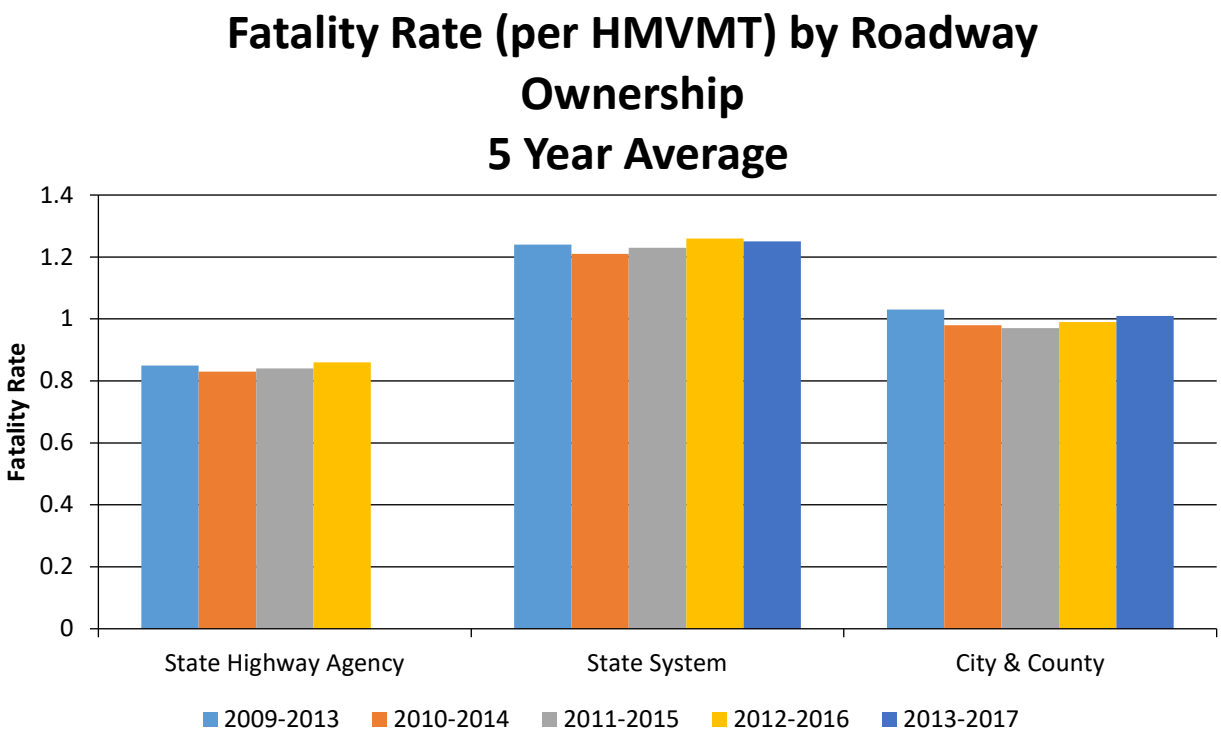

Number of Serious Injuries by Functional Classification
5 Year Average
Serious Injuries
1000
900
800
700
600
500
400
300
200
100
0
RPA - Interstate
RPA - Other Fwys @...
RPA - Other
Rural Minor Arterial
Rural Minor Collector
Rural Major Collector
Rural Local Road or Street
UPA - Interstate
UPA - Other Fwys @...
UPA - Other
Urban Minor Arterial
Urban Minor Collector
Urban Major Collector
Urban Local Road or Street
2009-2013
2010-2014
2011-2015
2012-2016
2013-2017

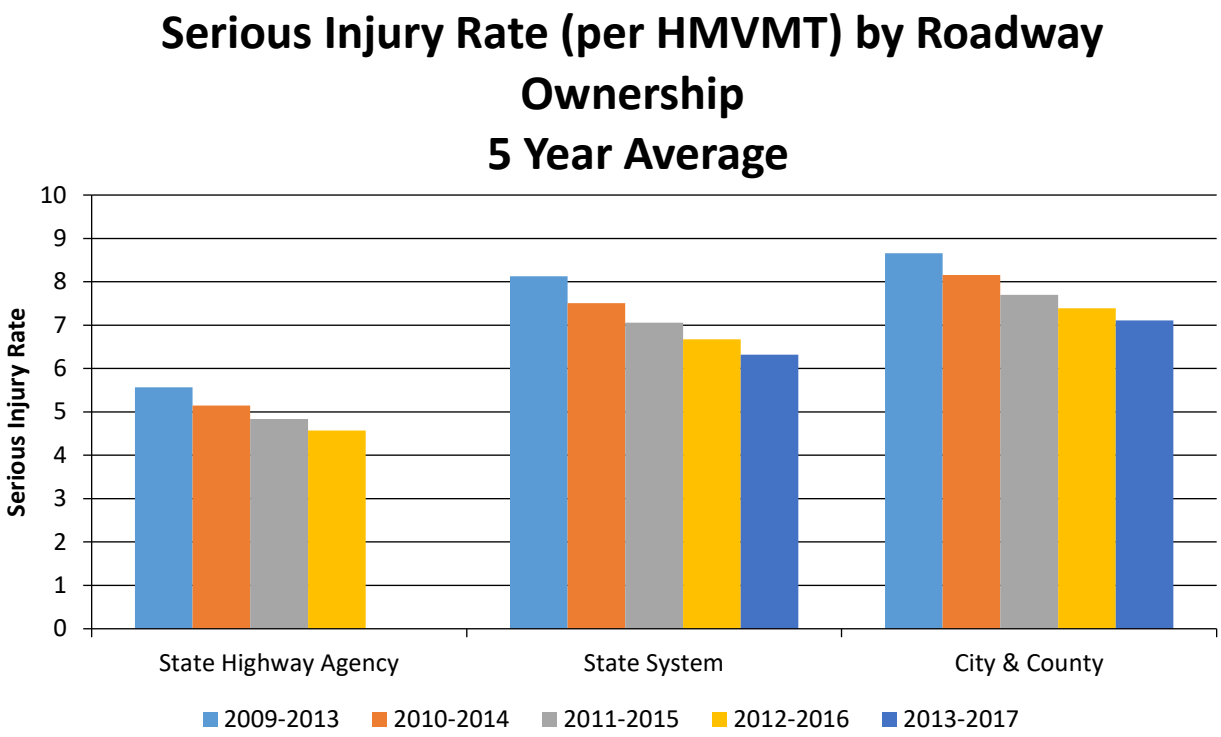

Fatality Rate (per HMVMT) by Functional Classification
5 Year Average
Fatality Rate
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
RPA - Interstate
RPA - Other Fwys @...
RPA - Other
Rural Minor Arterial
Rural Minor Collector
Rural Major Collector
Rural Local Road or Street
UPA - Interstate
UPA - Other Fwys @...
UPA - Other
Urban Minor Arterial
Urban Minor Collector
Urban Major Collector
Urban Local Road or Street
2009-2013
2010-2014
2011-2015
2012-2016
2013-2017


Serious Injury Rate (per HMVMT) by Functional Classification
5 Year Average
Serious Injury Rate
35
30
25
20
15
10
5
0
RPA - Interstate
RPA - Other Fwys @...
RPA - Other
Rural Minor Arterial
Rural Minor Collector
Rural Major Collector
Rural Local Road or Street
UPA - Interstate
UPA - Other Fwys @...
UPA - Other
Urban Minor Arterial
Urban Minor Collector
Urban Major Collector
Urban Local Road or Street
2009-2013
2010-2014
2011-2015
2012-2016
2013-2017


Number of Fatalities by Roadway Ownership
5 Year Average
Fatalities
700
600
500
400
300
200
100
0
State Highway Agency
State System
City & County
2009-2013
2010-2014
2011-2015
2012-2016
2013-2017


Number of Serious Injuries by Roadway Ownership
5 Year Average
Serious Injuries
4500
4000
3500
3000
2500
2000
1500
1000
500
0
State Highway Agency
State System
City & County
2009-2013
2010-2014
2011-2015
2012-2016
2013-2017


Fatality Rate (per HMVMT) by Roadway Ownership
5 Year Average
Fatality Rate
1.4
1.2
1
0.8
0.6
0.4
0.2
0
State Highway Agency
State System
City & County
2009-2013
2010-2014
2011-2015
2012-2016
2013-2017



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

MoDOT has improved their ability to determine HM VMT per functional class and ownership. Thus, rates for previous years have been recalculated and may differ from those included in previous HSIP reports.

It should be noted that Urban Minor Collectors had a VMT less than one hundred million. As such, the rates are higher than the annual average for this specific functional classification.

Data for this report was compiled in August 2018.

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 total annual vehicle miles traveled for Missouri have climbed steadily over the last 5 years. Missouri's VMT is now the highest it's been over the last decade. This increased amount of traffic increases the opportunity that a crash could occur. While fatalities were lower in 2017 compared to 2016, the combined total of fatalities and serious injuries continues to rise.

Pedestrian fatalities have been holding steady for the last 3 years at about 100 each year. Recognizing this as an issue, the St. Louis District coordinated with FHWA to organize a Safe Transportation for Every Pedestrian (STEP) workshop in May 2018. Several local agencies participated in this event.

Safety Performance Targets

Calendar Year 2019 Targets *

Number of Fatalities 872.3

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

The target is based on our 2016 Strategic Highway Safety Plan (SHSP). In this plan, the goal is to have fewer than 700 fatalities by 2020. The 2019 target was based on the historical 5-year rolling average of fatalities, the 2020 goal in the SHSP, and extrapolating an interim 5-year rolling average target for 2019. This target is in line with the SHSP to reduce the number of fatalities on Missouri's roadways.

Number of Serious Injuries 4433.8

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

This target was developed by projecting the historical 5-year rolling average of serious injury crashes to 2019. The historical data used to develop the trend line consisted of a 5-year rolling average from 2006 to 2016. This target is in line with the SHSP to reduce the number of serious injuries on Missouri's roadways.

Fatality Rate 1.160

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

The fatality rate was calculated by taking a 5-year rolling average of historical and forecasted annual fatality rates. Historical fatality rates were derived from observed fatality totals and estimated Annual Vehicle Miles Traveled (VMT). Forecasted rates were determined by using the number of fatalities target (developed from the SHSP target) and dividing by the estimated Annual VMT. It was assumed that Annual VMT would grow at a rate of 1% per year. This target is in line with the SHSP to reduce the number of fatalities on Missouri's roadways.

Serious Injury Rate 6.168

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

The serious injury rate was calculated by taking a 5-year rolling average of historical and forecasted annual serious injury rates. Historical serious injury rates were derived from observed serious injury totals and estimated Annual Vehicle Miles Traveled (VMT). Forecasted rates were determined by using the number of serious injuries target and dividing by the estimated Annual VMT. It was assumed that Annual VMT would grow at a rate of 1% per year. This target is in line with the SHSP to reduce the number of serious injuries on Missouri's roadways.

Total Number of Non-Motorized Fatalities and Serious Injuries	445.4

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

In Missouri, there are approximately four non-motorized serious injuries for every non-motorized fatality. For this reason, the methodology for this target was influenced by the target for the number of motorized serious injuries. Achieving the 2019 number of serious injuries target requires an annual reduction of 4% in serious injury crashes. This 4% reduction was then applied to the non-motorized fatalities and serious injuries to forecast future year estimates. These future estimates, combined with historical data, allowed for calculating a 5-year rolling average, which was used to determine the Number of Non-Motorized Fatalities and Serious Injuries Target for 2019. This target is in line with the SHSP to reduce the number of non-motorized fatalities and serious injuries on Missouri's roadways.

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

Targets provided for the number of fatalities, serious injuries, and fatality rate are consistent with those reported in the HSP. Targets for the serious injury rate and number of non-motorized fatalities and serious injuries, were updated at a later time using a more complete data set for 2017 crashes.

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

For more than a decade, Missouri's Highway Safety Office has been located within MoDOT which promotes a collaborative environment between engineering and safety staff. MoDOT updated its Strategic Highway Safety Plan (SHSP) using a collaborative, team approach from August 2015 to October 2016. The team included external partners from emergency management, FHWA, FMCSA, hospitals, law enforcement, Missouri Department of Revenue, MPOs, NHTSA, RPCs, and universities. The 2016 SHSP team identified a goal of fewer than 700 fatalities by 2020. Revisions to the SHSP were shared periodically with the MPOs and RPCs.

Extensive coordination occurred between FHWA, MoDOT, MPO, and NHTSA staff when setting the Safety Targets. Missouri safety data was reviewed for trends, along with assumptions and challenges. MoDOT conducts monthly calls with planning stakeholders. In 2016, a target coordinating process was presented with feedback and consensus from the MPOs. In March, MoDOT calculated statewide and MPO data trends for each safety performance measure. This information was shared and discussed with MoDOT"s Executive Team, MPOs FHWA, and NHTSA. After feedback from partner groups, the methods and assumptions used to develop the performance targets were finalized in May. MoDOT then applied the agreed upon methodology to develop the safety performance targets and communicated them with the partners.

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.

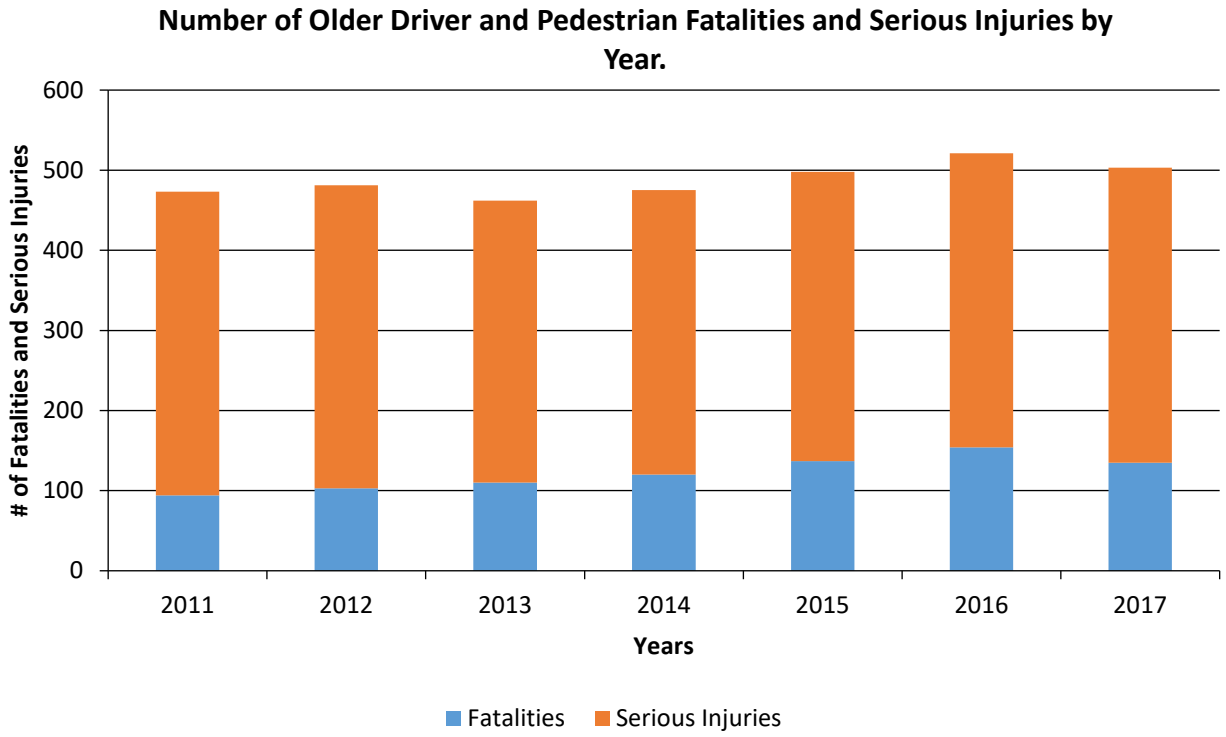
Does the HRRR special rule apply to the State for this reporting period?

No

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

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

PERFORMANCE MEASURES	2011	2012	2013	2014	2015	2016	2017
Number of Older Driver and Pedestrian Fatalities	94	103	110	120	137	154	135
Number of Older Driver and Pedestrian Serious Injuries	379	378	352	355	361	367	368



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

Data for this report was compiled in August 2018.

Evaluation

Program Effectiveness

How does the State measure effectiveness of the HSIP?

Change in fatalities and serious injuries
Other-Evaluation of individual HSIP projects and programs

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

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

MoDOT will evaluate specific HSIP projects to assess their effectiveness at reducing fatal and serious injury crashes. This information is then used to promote or discourage the use of a particular safety countermeasure.

For systemic improvements, MoDOT tracks the change in the number of fatalities as the amount of a safety improvement is further deployed. This allows MoDOT to monitor the safety benefits returned on its continued investment of a systemic strategy. One systemic strategy evaluated was the implementation of chevrons on curves where advisory speeds are at lead 15 mph less than posted speeds. Between 2013 and 2017, horizontal curve fatalities and serious injuries on minor roads decreased from 622 to 544.

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

HSIP Obligations

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

MoDOT's planning office tracks the programming of safety funds to ensure they do not lapse on HSIP funds.

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.

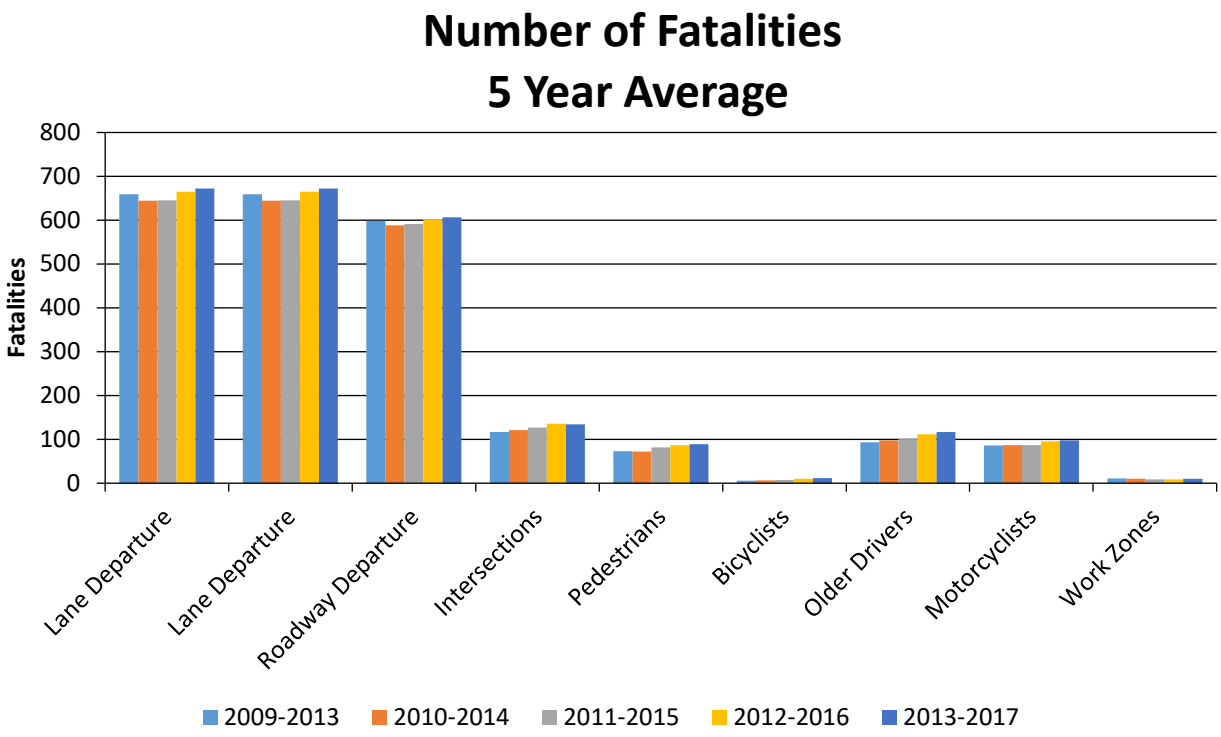
In January of 2018, the Missouri Highways and Transportation Commission approved the use of a new formula for distributing safety funds to MoDOT's Districts. This new formula places more focus on areas experiencing fatal and disabling injury crashes. This new distribution will take effect in 2021.

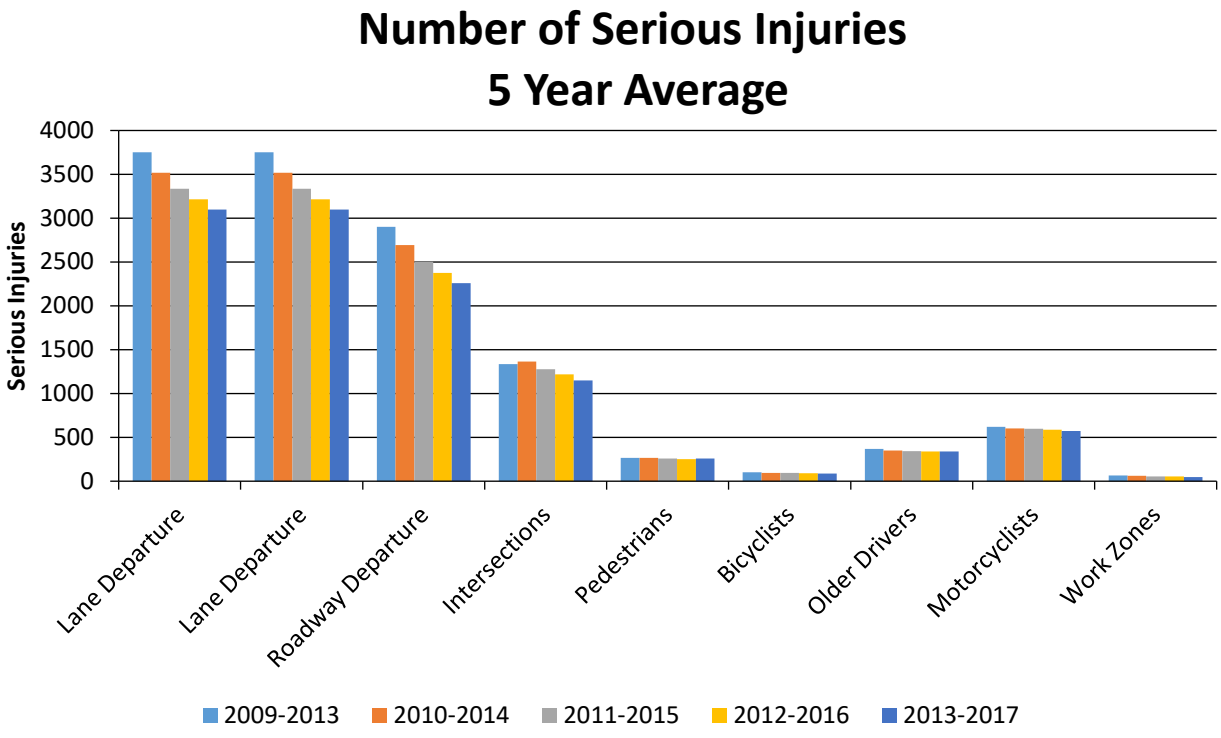
Effectiveness of Groupings or Similar Types of Improvements

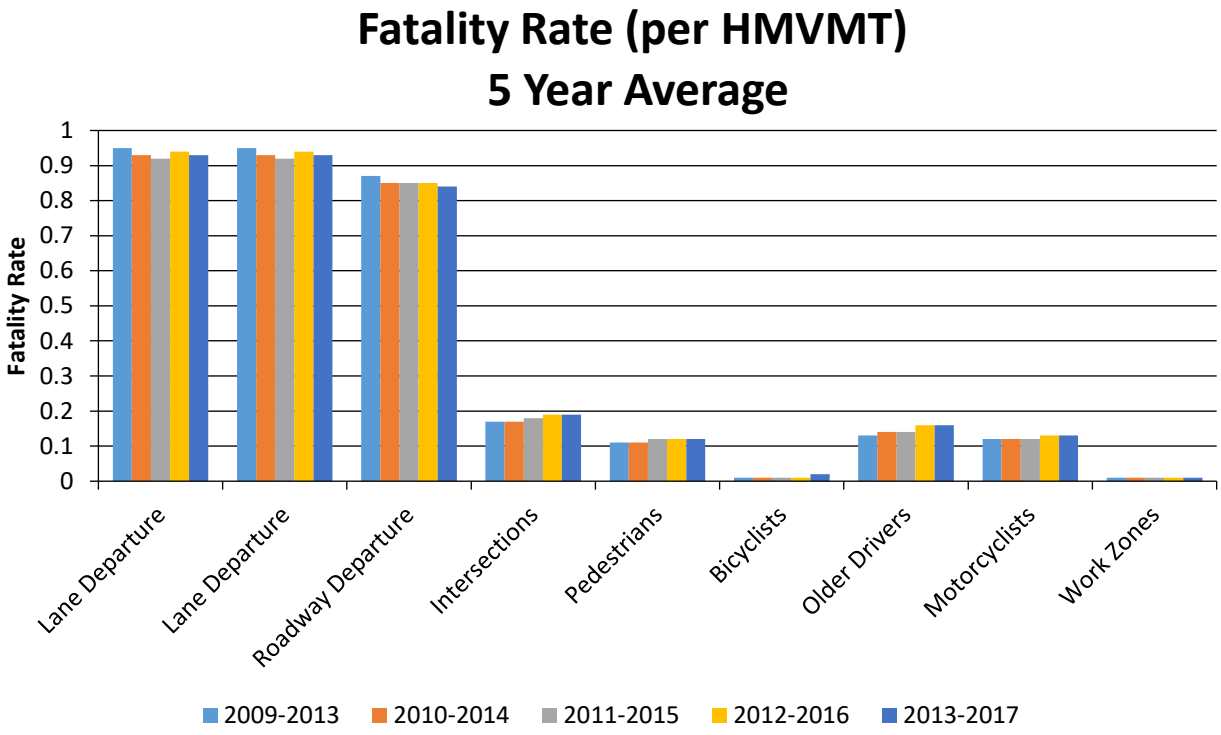
Present and describe trends in SHSP emphasis area performance measures.

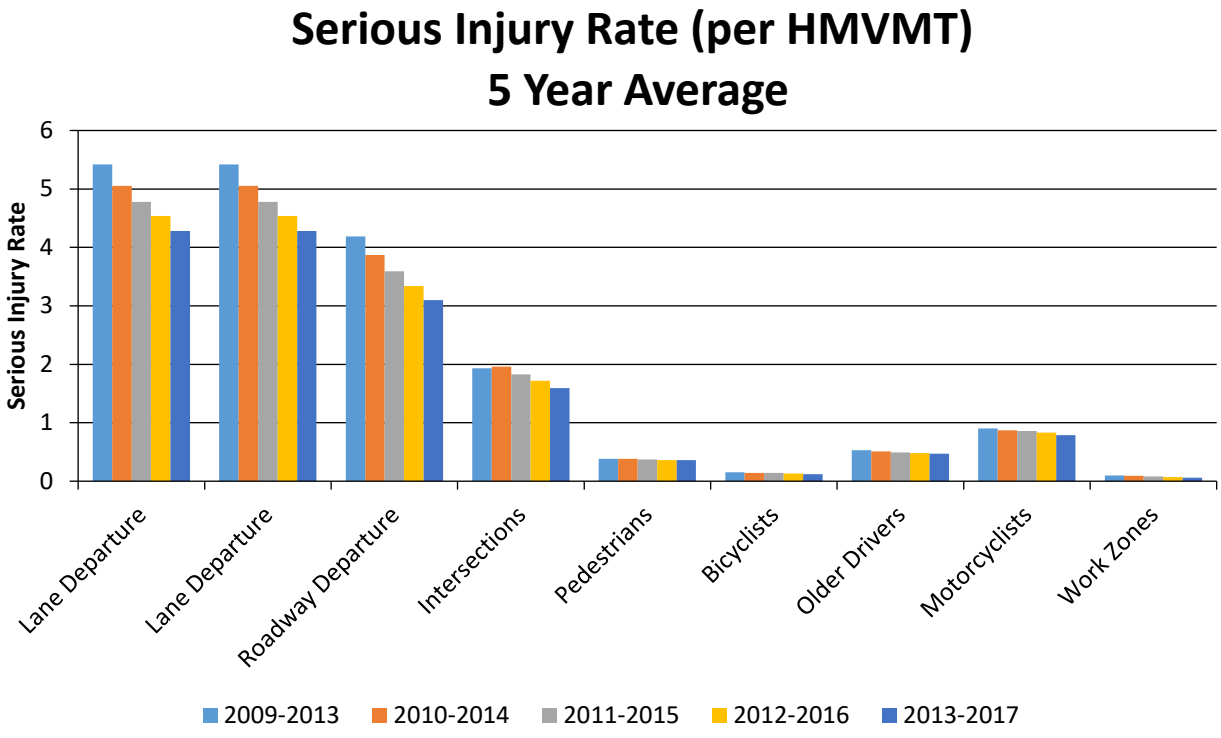
Year 2017

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
Lane Departure		672.4	3,098.4	0.93	4.28	0	0	0
Roadway Departure		606.4	2,259.8	0.84	3.1	0	0	0
Intersections		134	1,148.4	0.19	1.59	0	0	0
Pedestrians		89	260.4	0.12	0.36	0	0	0
Bicyclists		11.4	87.8	0.02	0.12	0	0	0
Older Drivers		117	337.8	0.16	0.47	0	0	0
Motorcyclists		97.8	572.4	0.13	0.79	0	0	0
Work Zones		10	47	0.01	0.06	0	0	0


Number of Fatalities
5 Year Average
Fatalities
800
700
600
500
400
300
200
100
0
Lane Departure
Lane Departure
Roadway Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
2009-2013
2010-2014
2011-2015
2012-2016
2013-2017


Number of Serious Injuries
5 Year Average
Serious Injuries
4000
3500
3000
2500
2000
1500
1000
500
0
Lane Departure
Lane Departure
Roadway Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
2009-2013
2010-2014
2011-2015
2012-2016
2013-2017





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

MoDOT has improved their ability to identify roadway departure crashes and is now reporting on this crash type which was not included in previous HSIP reports.

Low power electric bicycles, that do not meet motorcycle status (such as mopeds), are now included in the

2018 Missouri Highway Safety Improvement Program
bicyclist SHSP emphasis area starting in the 2016 data.

Data for this report was compiled in August 2018.

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

No

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

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 OTHER INJURY BEFORE	ALL OTHER INJURY AFTER	TOTAL BEFORE	TOTAL AFTER	EVALUATION RESULTS (BENEFIT/COST RATIO)
US 71, Resurface roadway and shoulders on northbound lanes from north of Rte. 59 interchange, near S	Rural Principal Arterial (RPA) - Other Freeways and Expressways	Roadway	Roadway - other	6.00	6.00				2.00	4.00	1.00	10.00	9.00	-0.498714285714286
US 136, Install edgeline and centerline rumble stripes from Rte. M (Atchison Co.) to Rte. 71 (Nodawa	Rural Principal Arterial (RPA) - Other	Roadway	Rumble strips - edge or shoulder	4.00	7.00				1.00	2.00	2.00	6.00	10.00	-9.09253731343284
US 59, Intersection lighting at the intersection with Rte. 45, near Winthrop.	Rural Principal Arterial (RPA) - Other	Lighting	Intersection lighting	3.00						1.00		4.00		3.34363636363636
RT A, Intersection improvements at Rte. T near Turney.	Rural Minor Collector	Intersection geometry	Intersection geometry - other											0
MO 3, Pedestrian improvements on both sides of the road from the city limits to Clinton Street in Cl	Rural Major Collector	Pedestrians and bicyclists	Install sidewalk	2.00	1.00							2.00	1.00	0.0846774193548387
IS 49, Interchange improvements at Rte. 58 in Belton.	Rural Principal Arterial (RPA) - Interstate	Intersection traffic control	Systemic improvements - signal-controlled	16.00	72.00				1.00	5.00	24.00	21.00	97.00	-6.65786885245902
MO 2, Pavement improvements, including shoulder additions, from Commercial Street in the city of Har	Rural Minor Arterial	Roadway	Pavement surface - miscellaneous	51.00	55.00	2.00		5.00	5.00	20.00	21.00	78.00	81.00	20.0115618661258
US 50, Median protection from 2nd Street to Chipman Road in the city of Lee's Summit.	Rural Principal Arterial (RPA) - Other Freeways and Expressways	Roadside	Barrier - cable	52.00	27.00			4.00		8.00	8.00	64.00	35.00	8.24775641025641
US 71, Median protection at various locations from 63rd Street in	Urban Principal Arterial (UPA) - Other	Roadside	Barrier - cable	8.00	21.00	2.00	1.00	2.00	2.00	14.00	6.00	26.00	30.00	3.51

LOCATION	FUNCTIONAL CLASS	IMPROVEMENT CATEGORY	IMPROVEMENT TYPE	PDO BEFORE	PDO AFTER	FATALITY BEFORE	FATALITY AFTER	SERIOUS INJURY BEFORE	SERIOUS INJURY AFTER	ALL OTHER INJURY BEFORE	ALL OTHER INJURY AFTER	TOTAL BEFORE	TOTAL AFTER	EVALUATION RESULTS (BENEFIT/COST RATIO)
Kansas City to Rte. 7 in Harrisonv														
MO 7, Pavement improvements from Colbern Road to Rte. 50 and from Cass County Line to the city of Ha	Rural Major Collector	Roadway	Rumble strips - edge or shoulder	44.00	49.00	2.00	2.00	10.00	8.00	23.00	38.00	79.00	97.00	-0.75
RT V, Corridor improvements, including the addition of shoulders and rumbles, from Rte. 40 to Rte. 3	Rural Minor Collector	Roadway	Rumble strips - edge or shoulder	15.00	17.00	2.00	3.00	1.00	2.00	16.00	14.00	34.00	36.00	-8.14
MO 7, Resurfacing and shoulder treatments from Rte. 24 to Pink Hill Road in the City of Independence	Rural Major Collector	Roadway	Rumble strips - edge or shoulder	14.00	13.00	2.00		9.00	5.00	8.00	9.00	33.00	27.00	13.42
MO 350, Median protection from I-470 to approximately 1.5 miles west near the cities of Raytown and	Rural Minor Arterial	Roadside	Barrier - cable							2.00	1.00	2.00	1.00	0.6
US 54, High friction surface treatment on the eastbound and westbound lanes near Madison Street in J	Urban Principal Arterial (UPA) - Other Freeways and Expressways	Roadway	Pavement surface - high friction surface	48.00	8.00			1.00		23.00	1.00	72.00	9.00	43.0742574257426
MO 5, Construct five lanes in Lebanon. *Economic Recovery Project*	Urban Principal Arterial (UPA) - Other Freeways and Expressways	Roadway	Roadway - other	35.00	47.00				1.00	6.00	11.00	41.00	59.00	-30.5354166666667
MO 79, Add left-turn lanes at Rte. Y, Hackmann Road, Vomund Road, and Dyer Road.	Rural Minor Arterial	Intersection geometry	Auxiliary lanes - add left-turn lane	29.00	29.00		1.00	3.00	1.00	16.00	8.00	48.00	39.00	-4.8862202189311
IS 170, Guardrail and guard cable improvements from I-270 to Page Avenue.	Urban Principal Arterial (UPA) - Interstate	Roadside	Barrier - cable	720.00	844.00	3.00	2.00	19.00	19.00	214.00	235.00	956.00	1100.00	5.33773216031281
RT D, Signal, lighting and ADA facilities improvements at Skinker Parkway,	Urban Principal Arterial (UPA) - Interstate	Pedestrians and bicyclists	Pedestrian signal - install new at intersection	65.00	116.00			4.00	4.00	46.00	50.00	115.00	170.00	-1.71936936936937

LOCATION	FUNCTIONAL CLASS	IMPROVEMENT CATEGORY	IMPROVEMENT TYPE	PDO BEFORE	PDO AFTER	FATALITY BEFORE	FATALITY AFTER	SERIOUS INJURY BEFORE	SERIOUS INJURY AFTER	ALL OTHER INJURY BEFORE	ALL OTHER INJURY AFTER	TOTAL BEFORE	TOTAL AFTER	EVALUATION RESULTS (BENEFIT/COST RATIO)
Hodiamont Avenue and Unio														
US 65, Safety improvements at Rtes. BB and A near Saddlebrook.	Rural Principal Arterial (RPA) - Other Freeways and Expressways	Intersection traffic control	Intersection flashers - add "when flashing" warning sign-mounted		4.00			1.00	1.00	2.00	2.00	3.00	7.00	-0.51219512195122
MO 43, Intersection improvements at Rte. 96.	Rural Major Collector	Intersection geometry	Intersection geometry - other	3.00	7.00	1.00		2.00		2.00		8.00	7.00	16.4229437229437
MO 13, Safety improvements at the Rtes. U and Y intersection.	Rural Principal Arterial (RPA) - Other Freeways and Expressways	Intersection geometry	Auxiliary lanes - modify right-turn lane offset	1.00					1.00		2.00	1.00	3.00	-1.76161616161616
US 65, Intersection improvements at Rochester Road.	Rural Principal Arterial (RPA) - Other Freeways and Expressways	Intersection geometry	Intersection geometry - other	3.00	4.00		1.00	2.00			1.00	5.00	6.00	-19.5433551198257
MO 53, Resurface existing pavement and stabilize shoulders from Poplar Bluff to Qulin and Campbell t	Rural Major Collector	Roadway	Roadway - other	216.00	201.00	1.00	3.00	11.00	6.00	96.00	81.00	324.00	291.00	-155.253191489362
RT N, Pavement and safety improvements from Rte. 21 North to Rte. 21 South.	Rural Minor Collector	Roadway	Roadway - other	22.00	17.00	1.00		8.00	3.00	18.00	7.00	49.00	27.00	5.98288879770209
US 67, Pavement improvements on existing lanes from 1.4 miles south of Rte. C to Wayne County line.	Rural Principal Arterial (RPA) - Other	Roadway	Roadway - other	410.00	495.00	7.00	10.00	19.00	15.00	116.00	125.00	552.00	645.00	-746.05
US 67, Pavement treatments from Rte. 72 to St. Francois County line.	Rural Principal Arterial (RPA) - Other	Roadway	Roadway - other	230.00	258.00	2.00	4.00	6.00	8.00	62.00	47.00	300.00	317.00	-67.2154929577465
US 67, Median crossover improvements from Declue Lane to Rte. JJ.	Rural Principal Arterial (RPA) - Other	Access management	Median crossover - unspecified	299.00	339.00	5.00	7.00	10.00	10.00	76.00	76.00	390.00	432.00	-24.1636579572447
US 67, Construct east outer road from Northwood Drive in Bonne Terre to Hedgeapple Road.	Rural Principal Arterial (RPA) - Other	Roadway	Roadway - other	232.00	262.00	2.00	4.00	6.00	8.00	62.00	48.00	302.00	322.00	-13.46

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

The projects included above were completed during calendar year 2013, and have 3 years of before and after crash data.

Some of the projects implemented during this timeframe were systemic improvements. These improvements may have been deployed at locations with characteristics associated where crashes could occur without necessarily having an immediate history of severe crashes.

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?

10/17/2016

What are the years being covered by the current SHSP?

From: 2016 To: 2020

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

2020

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

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

	NON LOCAL PAVED ROADS - SEGMENT		NON LOCAL PAVED ROADS - INTERSECTION		NON LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
MIRE NAME (MIRE NO.)	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE
ROADWAY SEGMENT										
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	30					100	30		
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)	100	100								
Functional Class (19)	100	100					100	100	100	100
Median Type (54)	30	30								
Access Control (22)	100	20								

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
One/Two Way Operations (91)	100	20								
Number of Through Lanes (31)	100	30					100	20		
Average Annual Daily Traffic (79)	100	80					100	0		
AADT Year (80)	100	80								
Type of Governmental Ownership (4)	100	100					100	100	100	100
INTERSECTION										
Unique Junction Identifier (120)			100	100						
Location Identifier for Road 1 Crossing Point (122)			100	100						
Location Identifier for Road 2 Crossing Point (123)			100	100						
Intersection/Junction Geometry (126)			100	100						
Intersection/Junction Traffic Control (131)			100	80						
AADT for Each Intersecting Road (79)			100	80						
AADT Year (80)			100	80						
Unique Approach Identifier (139)			100	100						
INTERCHANGE/RAMP										
Unique Interchange Identifier (178)					100	100				
Location Identifier for Roadway at Beginning of Ramp Terminal (197)					100	100				
Location Identifier for Roadway at Ending Ramp Terminal (201)					100	100				
Ramp Length (187)					100	100				
Roadway Type at Beginning of Ramp Terminal (195)					100	100				
Roadway Type at End Ramp Terminal (199)					100	100				

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
Interchange Type (182)					100	100				
Ramp AADT (191)					100	100				
Year of Ramp AADT (192)					100	100				
Functional Class (19)					100	100				
Type of Governmental Ownership (4)					100	100				

*Based on Functional Classification

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.

MoDOT will use several methods over the next several years to meet the requirements for the collection of fundamental data elements on all public roads. MoDOT will prioritize these needs by addressing the Non-Local Paved roads data gaps first.

Surface Type/Number of Lanes/one-two way operations/access control/Median Type – These data items will be addressed through the cooperative program we have with our local authorities that ensures we have complete and correct geospatial network. As we continue these reviews in the future, we will ask them to provide these additional four items. Also, much of this data can be collected through other sources such as aerial photography and video logging. The targeted completion data for the collection and storage of this data is December 31, 2023.

The second priority will be the Local Paved Roads.

Surface Type/Number of through lanes – These items will be collected at the same time they are collected on Non-Local Paved roads. Since geospatial reviews include all public roads, this data will have already been collected.

AADT – it is estimated that an additional 80,000 traffic count locations will be needed to fulfill this requirement. Based on historical cost and practices, this will equate to an additional cost of $2 million annually. After a complete inventory of the other fundamental data elements are available, a better estimate will be able to be established. The funding required to collect these additional volume counts will come at the expense of an equal value of safety improvements on the system. In addition, MoDOT has worked with several local agencies to "share" traffic data, but there has been little success. Few agencies collect traffic data in a manner that allows the calculation of AADT. Local government collect traffic data, often one time only, for specific purposes like signal timing. Local agencies do not have permanent sites or a history of short term counts available to create AADT's. We anticipate, with the additional investment of $2 million annually, the AADT data for Local Paved Roads could be completed by September 30, 2026.

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	Disabling	No	N/A	No	N/A	No
Crash Report Form Instruction Manual	Disabling	No	When observed at the scene, the person sustained non-fatal injuries that prevent	No	Severe laceration Broken or distorted limb	No

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 *
			walking, driving, or continuing activities the person was capable of performing prior to the crash. Transport by ambulance from the scene does not necessarily indicate the individual sustained disabling injuries.		Skull or chest injury Abdominal injury Unconsciousness at or when taken from the crash scene Unable to leave the crash scene without assistance	
Crash Database	Disabling	No	N/A	No	N/A	No
Crash Database Data Dictionary	Disabling	No	When observed at the scene, the person sustained non-fatal injuries that prevent walking, driving, or continuing activities the person was capable of performing prior to the crash. Transport by ambulance from the scene does not necessarily indicate the individual sustained disabling injuries.	No	Severe laceration Broken or distorted limb Skull or chest injury Abdominal injury Unconsciousness at or when taken from the crash scene Unable to leave the crash scene without assistance	No

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

The Missouri State Highway Patrol (MSHP) is planning on implementing the “Suspected Serious Injury” attribute and definition on 01/01/19. The MSHP has sent information out already to crash report vendors so they can prepare for the change as well as Law Enforcement Agencies that do not report electronically, but use a computer generated crash report form. The actual revised hardcopy crash report forms and MUCR Preparation Manual will be disseminated in the October/November timeframe. The changes to STARS will also be completed for the 1/1/19 implementation.

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?
No

When does the State plan to complete it’s next HSIP program assessment.

2020

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

The last HSIP assessment took place in 2016 and highlighted the strengths and weaknesses of Missouri's HSIP process. Some of the program strengths identified include:
• The ability to align its safety projects with other transportation improvements to save on costs and extend HSIP benefits.
• The flexibility for each district to program HSIP funds to projects that best suit the needs of their region.
• The systemic approach to safety improvements, which has been widely regarded as a best practice nationally.

The following are some of the focus areas to continue improving the HSIP program:

• Strong relationships and partnerships between State and local agencies are key to successful HSIP local road safety policies.
• Local agencies and officials often need technical support or techinical guianace to overcome technical expertise barriers.
• Data driven and systemic safety improvement practices lend authority to project selection decisions and make it easier to work with stakeholders.
• Regional or county/parish safety plans can be a useful tool for guiding project selection and spending.
• Application and implementation procedures need to be documented but flexible enough to handle unique circumstances and needs.

Optional Attachments

Program Structure:

Project Implementation:

Safety Performance:

Evaluation:

Compliance Assessment:

Glossary

5 year rolling average	means the average of five individuals, consecutive annual points of data (e.g. annual fatality rate).
Emphasis area	means a highway safety priority in a State's SHSP, identified through a data-driven, collaborative process.
Highway safety improvement project	means strategies, activities and projects on a public road that are consistent with a State strategic highway safety plan and corrects or improves a hazardous road location or feature or addresses a highway safety problem.
HMVMT	means hundred million vehicle miles traveled.
Non-infrastructure projects	are projects that do not result in construction. Examples of non-infrastructure projects include road safety audits, transportation safety planning activities, improvements in the collection and analysis of data, education and outreach, and enforcement activities.
Older driver special rule	applies if traffic fatalities and serious injuries per capita for drivers and pedestrians over the age of 65 in a State increases during the most recent 2-year period for which data are available, as defined in the Older Driver and Pedestrian Special Rule Interim Guidance dated February 13, 2013.
Performance measure	means indicators that enable decision-makers and other stakeholders to monitor changes in system condition and performance against established visions, goals, and objectives.
Programmed funds	mean those funds that have been programmed in the Statewide Transportation Improvement Program (STIP) to be expended on highway safety improvement projects.
Roadway Functional Classification	means the process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide.
Strategic Highway Safety Plan (SHSP)	means a comprehensive, multi-disciplinary plan, based on safety data developed by a State Department of Transportation in accordance with 23 U.S.C. 148.
Systematic	refers to an approach where an agency deploys countermeasures at all locations across a system.
Systemic safety improvement	means an improvement that is widely implemented based on high risk roadway features that are correlated with specific severe crash types.
Transfer	means, in accordance with provisions of 23 U.S.C. 126, a State may transfer from an apportionment under section 104(b) not to exceed 50 percent of the amount apportioned for the fiscal year to any other apportionment of the State under that section.