2014 Highway Safety Improvement Program Report

Traffic Engineering Division
Safety Section

Mississippi Department of Transportation

Federal FY 2014 Highway Safety Improvement Program

Introduction

The Mississippi Department of Transportation (MDOT) is responsible for providing a safe intermodal transportation network that is planned, designed, constructed, and maintained in an effective, cost efficient, and environmentally sensitive manner.

As stated in the mission statement, safety is at the forefront of the MDOT's short and long range plans. Providing the safest and most efficient transportation facilities possible are of critical importance to the MDOT. The primary "measuring stick" for safety in Mississippi is the reduction in the number of fatalities and serious injuries that result from motor vehicle crashes each year. The MDOT has an extensive safety program that aims to ensure that the transportation facilities are as safe as possible, from the initial planning phase through the usable life of the facility.

Purpose

The Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) established the Highway Safety Improvement Program (HSIP) as a Federal Highway Administration (FHWA) "core" program with dedicated funding for infrastructure-related highway safety improvement projects. The requirements for this program were established in Section 148 of Title 23, *United States Code* (USC).

In 2012, Congress passed a new transportation re-authorization bill, the Moving Ahead for Progress in the 21st Century Act (MAP-21). MAP-21 continued the HSIP as a core program, along with many of the previous requirements from SAFETEA-LU.

The HSIP is intended to implement safety improvement projects to reduce the number and severity of crashes at intersections or along sections of any public road with a proven history of substandard safety performance. Typical project types include: intersection improvements (i.e. channelization, traffic signals, or sight distance improvements); pavement and shoulder widening; guardrail and barrier improvements; installation of crash cushions; modification of roadway alignment, signing, pavement marking, and delineation; breakaway utility poles and sign supports; pavement grooving and skid-resistant overlays; shoulder rumble strips/stripes; and minor structure replacements or modifications.

Protection of Data from Discovery and Admission into Evidence

Section 148(g)(4) of 23 USC stipulates that data compiled or collected for the preparation of the HSIP Report "…shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in an action for damages arising from any occurrence at a location identified or addressed in such reports…" This information is also protected by 23 USC 409 (discovery and admission as evidence of certain reports and surveys).

Program Administration

The HSIP funds appropriated for Mississippi are administered centrally by the Traffic Engineering Division's Safety Section with input and oversight from the MDOT administration. All HSIP funds are allocated based on safety need, regardless of geographic location or district boundary. Local roads (non-state owned) are also candidate locations which are analyzed and considered for safety improvement. Any HSIP project located within the boundary of a Metropolitan Planning Organization (MPO) is coordinated with all vested parties and placed on the Statewide Transportation Improvement Program (STIP) and the appropriate MPO's Transportation Improvement Program (TIP).

Program Methodology

The MDOT's Safety Section generates a list of HSIP candidate projects using the Safety Analysis Management System (SAMS). The SAMS provides locations in need of remediation with established crash histories. Candidate locations are also identified from the MDOT's six construction district offices, area traffic engineers, safety engineers, and other sources within the MDOT. Feedback from private citizens and law enforcement officers regarding specific locations are also used in the location identification process.

Locations selected for HSIP funding go through rigorous statistical analysis prior to being selected. The programmed projects have, at a minimum, one of the following:

- Severity index above an acceptable level
- Elevated crash rate compared to homogenous locations
- Exceedingly high number of crashes, or
- Crashes conducive to producing fatalities or severe injuries.

The MDOT seeks to identify projects that can be tied back to the State of Mississippi's Strategic Highway Safety Plan (SHSP). The SHSP was developed with various safety partners across Mississippi and was formally adopted in early 2007. The initial goal of the plan was to reduce the number of fatalities from the benchmark of 931 in 2005 to 700 or fewer by 2011, a reduction of more than twenty-five percent. Mississippi saw

success following the implementation of the SHSP and reports that Mississippi's goal was achieved in 2009, two years before the targeted date.

Mississippi's original SHSP identified five critical emphasis areas in which to focus its safety efforts. These five critical emphasis areas were:

- Unbelted drivers
- Young drivers
- Aggressive drivers
- Impaired drivers
- Lane departure crashes

In early 2009, data analysis indicated that an additional critical emphasis area was needed. The need to add intersections as an emphasis area was discussed at the SHSP Executive Update Meeting in August 2009.

The 2nd Edition of the SHSP was accepted in January 2014. The Vision of the 2nd Edition of the Mississippi SHSP has been changed to reflect a Towards Zero Deaths (TZD) initiative. A thorough data analysis indicated that the new emphasis areas for the updated Mississippi SHSP are:

- Unbelted drivers
- Impaired drivers
- Suspended/Revoked Licensed or Unlicensed drivers
- Lane departure crashes
- Intersection crashes

In addition to these data-driven emphasis areas, there are other areas in need of attention. It is widely recognized that distracted driving is becoming more of a problem across the United States. The extent of the problem in Mississippi is not yet known, as this information is difficult to accurately or legitimately collect once a crash has taken place. Without state-specific data, Mississippi will rely on the most recent data from the United States Department of Transportation (USDOT) to justify the addition of distracted driving.

Another area which needs continued focus and effort will be crash and road data quality. The analysis of safety information can only be as good as the quality of data available. The process of data validation must be included in the SHSP as well.

Progress in Implementing the HSIP Projects

The MDOT was appropriated $32,456,518 in federal and Section 154 funding for the HSIP in Federal Fiscal Year (FFY) 2014. All 2014 HSIP funds have been obligated. In

addition to the FFY 2014 funds, the MDOT re-obligated all HSIP funds that were released from completed projects in previous fiscal years.

Attachment A contains a list of all 2014 HSIP projects. This list includes project-specific information such as project numbers, termini, scope, and cost. Additionally, this attachment contains, where feasible, the crash data and analytical results. Attachment B identifies the connection between the HSIP projects and the SHSP.

During Federal Fiscal Year 2014, almost four percent of all apportioned HSIP dollars was spent on an off-system project, which is listed in Attachment A.

Application of Special Rule – High Risk Rural Roads

The new transportation re-authorization bill, MAP-21, which eliminated the High Risk Rural Roads set-aside program, stipulates that States track measures that relate to crashes occurring on Rural Roads. In the yearly HSIP Report, the state is required to report on fatal and serious crash trends occurring on rural roadways if the FHWA notifies the state that the High Risk Rural Road Special Rule applies. FHWA has not notified Mississippi that the Special Rule applies.

Application of Special Rule – Older Drivers and Pedestrians

The new transportation re-authorization bill, MAP-21, stipulates that States track crash data relating to Older Drivers and Pedestrians, age 65 and over. Using data provided by the Fatality Analysis Reporting System (FARS) and Mississippi Department of Public Safety (MDPS), the information below is presented to determine the applicability.

	2005	2006	2007	2008	2009	2010	2011	2012
FARS Fatalities, Driver >=65	85	67	77	66	58	61	55	78
FARS Ped >= 65	8	8	6	11	7	4	7	6
SAMS Injury A, Driver >=65	48	40	34	33	42	36	32	47
SAMS Ped Injury A >=65	6	4	4	4	0	2	3	3
K+A Total, Driver/Ped >=65	147	119	121	114	107	103	97	134
Mississippi Population, Age >= 65, Per 1000	119	124	124	125	127	129	130	130
K+A Rate, Driver/Ped >=65	1.235	0.960	0.976	0.912	0.843	0.798	0.746	1.031
Moving Average K+A Rate					0.985	0.898	0.855	0.866

1 – Data from the Fatality Analysis Reporting System (FARS)
2 – Data from the Mississippi Department of Public Safety (MDPS)

Using the information provided in the guidance developed by the Federal Highway Administration (FHWA) entitled, *Older Drivers and Pedestrians Special Rule Interim Guidance*, and using the above table, Mississippi shows a decrease in the five-year moving average of the fatal and serious injury rate of drivers and pedestrians, aged 65 and older. The five-year moving average decrease from the time period of 2006 – 2010 to 2008 – 2012 represents a drop of 3.5% in the aforementioned rate. Henceforth, at this time, the Special Rule concerning Older Drivers and Pedestrians does not apply to the state of Mississippi.

Mississippi will continue to track the involvement of Older Drivers and Pedestrians in the upcoming years. If an uptick in fatalities and serious injuries to the older population does present itself, Mississippi will revise its Strategic Highway Safety Plan to involve mitigation strategies to prevent serious and fatal crashes involving older drivers.

HSIP Effectiveness

The overall safety trend in Mississippi over the last few years is very positive. The table below illustrates how the safety efforts across the state continue to influence the primary safety indicators.

	2006	2007	2008	2009	2010	2011	2012	2013
Fatalities[1]	911	884	783	700	641	630	582	613
Fatality Rate (Fatalities/HMVMT)	2.2	2.04	1.79	1.73	1.61	1.61	1.51	1.58
Life Threatening Injury Crashes[2]	692	630	608	496	605	532	521	512
Moderate Injury Crashes[2]	6,579	6,218	5,441	4,572	4,833	4,535	4,304	4,290
Fatalities[3]					784	728	667	633
Fatality Rate[3]	-	-	-	-	1.87	1.76	1.65	1.61

[1] – Data from Fatality Analysis Reporting System (FARS)
[2] – Data from Mississippi Department of Public Safety (MDPS)
[3] – Five Year Moving Average

From 2005 through 2012, the number of traffic fatalities across Mississippi has steadily decreased. In 2013, traffic fatalities in Mississippi rose back above the 600 level, to 613. While this was the first year since 2005 that Mississippi has seen an increase in traffic fatalities, both the total number of fatalities and the fatality rate have dropped thirty-two and twenty-eight percent, respectively, since 2006. In 2013, Mississippi achieved a fatality rate of 1.58 fatalities per hundred million vehicle miles traveled (Fatalities/HMVMT). While the fatality rate is still above the national goal of 1.0 Fatalities/HMVMT, the overall reduction illustrates the progress of all the safety programs across our state.

Project Evaluation

There are sixty-three HSIP projects that have at least one year of post-construction crash data. Of these projects, reductions were achieved in both the average severity index and crash rate from the “pre-construction” period to the “post-construction” period. For the average severity index, a reduction of twenty-four percent was realized. This is a remarkable decrease and significant step toward the goal of reducing fatal and injury-producing crashes in the state. A nineteen percent decrease was realized in the average crash rates when studying the same “before” and “after” periods.

When you break down the evaluation, we are able to get a clearer picture on the effectiveness of the HSIP projects. The following chart helps to illustrate this point for both similar projects and projects grouped by their emphasis area in the SHSP.

	Before	After	%Reduction	Before	After	%Reduction
	Severity Index			Crash Rate		
All HSIP Projects	0.76	0.57	24	2.37	1.91	19
HSIP – Lane Departure	0.83	0.61	27	2.93	2.23	24
HSIP – Intersections	0.72	0.56	22	1.63	1.11	31
Traffic Signal Projects	0.64	0.51	19	1.67	1.11	33
Cable Barrier Projects[1]	1.19	0.59	50	0.26	0.27	-3

[1] – Data Only Looks at Head On and Run Off Road – Left Crashes

It can be noted that the evaluation of Cable Barrier Projects can be a bit deceiving. First, several MDOT Districts let the jobs as Districtwide projects, it is impossible to get a good measure of the traffic volume measure for the entire project, hence the inability to calculate an accurate crash rate. Secondly, there is only one crash type that is affected by the installation of cable barrier – cross median crashes. Furthermore, one would expect crashes to increase in areas where cable barrier has been installed as the cable barrier does impose an obstruction in the clear zone. Prior to the median cable barrier being installed, a vehicle that was to enter the median would not have struck the cable barrier. Now, a vehicle that enters the median is more likely to strike the obstruction, requiring a crash report. While the crash rate may not be an accurate measure of the effectiveness of the cable barrier, the severity index can be a better descriptor of the success realized in the implementation of cable barrier along Mississippi roadways. The severity index of the crashes in the cable barrier sections decreased by over fifty percent!

All “Before” and “After” period analyses can be seen in *Attachment C – 2013 Before and After*.

Summary

2013 saw the first increase in fatalities in Mississippi since 2005, breaking a string of seven consecutive years with fatality reductions. While disappointing that the number of traffic fatalities took an uptick this past year, this report of the HSIP Program shows the continued success of the MDOT’s effort to eliminate serious and fatal crashes on all public roads.

The sustained and steady effort of the MDOT HSIP Program, partnering with other safety-centric agencies and organizations, has enabled Mississippi to experience a significant decrease in the number of traffic fatalities. This effort allowed Mississippi to reach its initial goal of 700 or fewer fatalities in the original SHSP two years in advance.

Furthermore, since 2006, Mississippi has seen an overall reduction in traffic fatalities in excess of thirty-two percent. Additionally, HSIP project selection and countermeasure implementation successes can be seen by looking at reductions in both severity indices and crash rates, with reductions of twenty-four and nineteen percent respectively for completed projects.

In terms of fiscal responsibility, Mississippi continues to lead the nation in the successful utilization of HSIP funds available. This successful utilization allows Mississippi to increase and enhance the safety of the traveling public.

As even one fatality is too many to suffer, Mississippi will continue to work towards realizing a reduction in fatalities and serious injuries, so that, once again, we will be on track to achieving our vision of zero fatalities on any public roadway in Mississippi.