Local Road Safety Plan

Hancock, Harrison, & Jackson Counties

Partners

Federal Highway Administration (FHWA)

Mississippi Department of Transportation (MDOT)

Gulf Regional Planning Commission (GRPC)

Tice Engineering, Inc.

Community Stakeholders

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Introduction and Background

Purpose

The local road safety plan (LRSP) is intended to provide local leaders with a tool to address and improve safety for road users within the three lower counties which make up the Mississippi Gulf Coast. This plan outlines emphasis areas identified through the planning process and countermeasures that can be used by local leaders to effectively reduce crash frequency and severity as well as fatalities along local roadways.

Local Road Safety Plan History

The local road safety planning process began in 2019 in a partnership between Mississippi Department of Transportation (MDOT) and the Gulf Regional Planning Commission (GRPC). Through this partnership, a consultant engineer was hired and five-years of fatal, life threatening, and moderate injury (also known as KAB) crash data was analyzed across Hancock, Harrison, and Jackson counties. This analysis led to the development of emphasis areas.
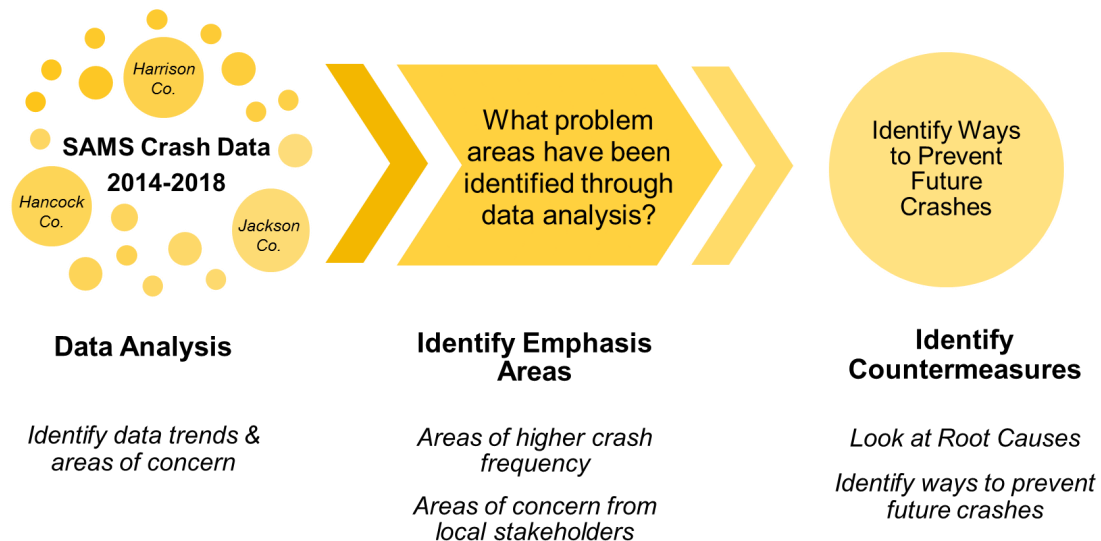
The development of the LRSP was not without hurdles. COVID-19 effectively halted progress in 2020 when GRPC was preparing to set up stakeholder meetings. By 2021, the project was back on track with modified meeting protocols.

> ## Local Road Safety Plan
> A local road safety plan provides a framework for identifying, analyzing, and prioritizing roadway safety improvements.

Process

The process for developing a LRSP began with data analysis to identify trends and areas of concern. The consultant analyzed a 5-year period (2014 to 2018) of data that focused on fatal, life threatening, and moderate injury crashes only. Emphasis areas were identified from the analyzed data and stakeholders were convened to gather input. Countermeasures were identified to aid community leaders in reducing and preventing future crashes. A graphic depiction of the planning process is provided in Figure 1.1.

The LRSP only includes local city and county roads, omitting all state-maintained roadways or roadway segments. For the purposes of this plan, the focus will remain primarily with local roadways. MDOT developed a plan for state roadways in 2019. Their plan addresses the state's goals for reducing crashes and fatalities on state-maintained roads.

Figure 1.1 Local Road Safety Planning Process

Data Analysis

Identify data trends & areas of concern

Identify Emphasis Areas

Areas of higher crash frequency

Areas of concern from local stakeholders

Identify Countermeasures

Look at Root Causes

Identify ways to prevent future crashes

Prior Strategies and Emphasis Areas

The Mississippi Gulf Coast Metropolitan Planning Organization (MPO) includes Gulfport, Pascagoula, Diamondhead, and the urban areas in-between. GRPC performs the principal planning and programming functions of the Gulf Coast MPO. In 2014, the Gulf Coast MPO launched a safety program, *Get To B*. The goal of this program is to reduce roadway crashes and reduce crash injury severity through the implementation of safety projects and activities. The *Get To B* projects and activities include improvements in Engineering, Enforcement, Education and Emergency Services.


In addition to the *Get To B* safety program, the MPO implements and updates a long-range Metropolitan Transportation Plan (MTP), Transportation Improvement Program (TIP), Congestion Management Process (CMP), freight planning, and technical studies. Many of these studies have overlapping goals and strategies that promote improvements to safety, reduction of fatalities, and mitigation of crash severity along the roadways of the Mississippi Gulf Coast.

State Strategies

In 2019, the State of Mississippi updated their Strategic Highway Safety Plan (SHSP). This plan includes implementing strategies that will reduce fatal and serious injury crashes in Mississippi with special focus on unlicensed drivers, impaired drivers, unbelted vehicle occupants, road departure crashes and intersection crashes. The ultimate goal of Mississippi's SHSP is to reduce traffic fatalities by 25% by 2023 with the ultimate goal of driving fatalities to zero.

In addition to the SHSP, the Mississippi Department of Transportation (MDOT), has a continued commitment to funding highway safety. Among some of these projects are:

- reducing traffic conflicts (i.e., roundabouts and restricted crossing U-turns),

- reducing lane departures (i.e., roadway edge line treatment),

- implementation of the circuit rider program to provide technical assistance and training to local roadway officials,

- implementation of laws to address passenger seat belts and distracted driving,

- increased enforcement activities,

- public education campaigns (i.e. Drive Sober or Get Pulled Over and Click It or Ticket), and

- driver safety education programs (i.e., Survive Your Drive).
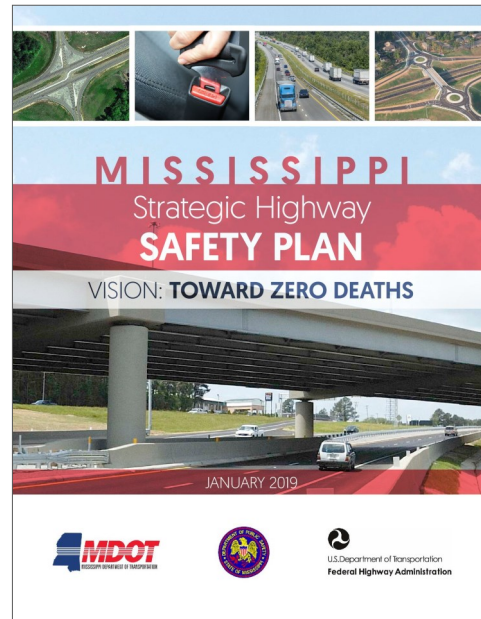
Critical Emphasis Areas

Crash Emphasis Areas

Safety Analysis Management System (SAMS) crash data, Mississippi Uniform Crash Reports (MUCRs), and aerial photography were reviewed and analyzed to identify emphasis areas, to understand trends, and to develop countermeasures for the reported crashes. For the initial analysis, all 3,285 state and local road crash points were analyzed. Once emphasis areas were identified, all analysis focused on the 1,502 crashes occurring on local roads only.

Through the initial data analysis of state and local road crash points, trends quickly appeared which showed just under half of the crashes and fatalities recorded during the five-year period were categorized as lane departure. Sixty percent (60%) of all crashes occurred in daylight and more than 80% occurred under dry road conditions. There were 441 DUIs reported during the study period, with almost half of those crashes occurring at night. Fatalities were attributed to 332 crashes, with almost half of fatalities also categorized as lane departure crashes. A matrix of the state and local road crash data analysis can be found in the Appendix of this report for all crashes and is also available by county.

The state and local road data was then sorted into 17 emphasis areas focused on fatalities and serious injuries (see Figure 1.2). These emphasis area totals were further broken down to state roads, county roads and city roads. Based on the results of this analysis, the critical Emphasis Areas for local roads in Hancock, Harrison, and Jackson counties are as follows:

Type	Percentage
Lane Departure Crashes	44.84%
Intersection Crashes	39.91%
Aggressive Driving & Speed Related Drivers	24.40%
Rear End, Slow, or Stop Crashes	16.65%
Young Drivers (Under 21)	16.03%
Angle Crashes	14.28%
Older Drivers (65 and Older)	12.70%
Motorcycle Crashes	10.20%
Pedestrian & Bicycle Fatalities & Injuries	9.66%

Each of the nine critical emphasis areas was further evaluated using the SAMS data and MUCRs to geographically map crash locations and develop "heat" maps which showed the frequency of crashes along the Mississippi Gulf Coast, both in urban and rural areas. These maps

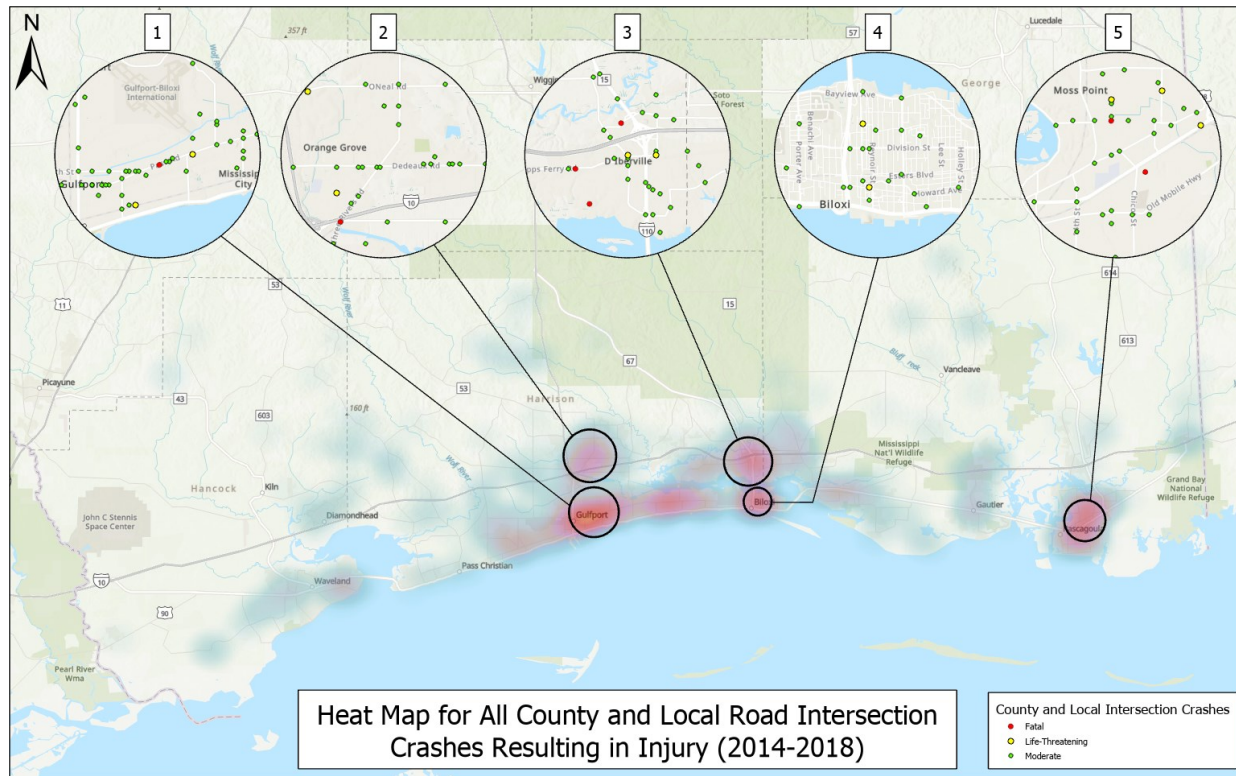*Figure 1.2 Jackson, Harrison, & Hancock County Fatalities and Serious Injuries by Emphasis Area*

	Emphasis Area	3-County Total (All Roads)		State Roads (Interstate, US, & State)		County Roads		City Streets	
		Percent	No.	Percent	No.	Percent	No.	Percent	No.
Drivers	Young Drivers (under 21)	16.03%	737	6.98%	321	3.76%	173	4.28%	197
	Unlicensed Drivers	7.89%	363	4.15%	191	0.67%	31	2.72%	125
	Older Drivers (65 and older)	12.70%	584	7.46%	343	1.24%	57	2.91%	134
	Aggressive Driving and Speed Related	24.40%	1122	14.18%	652	4.61%	212	5.18%	238
	Impaired Driving (drug and alcohol)	7.29%	335	3.96%	182	1.46%	67	1.63%	75
	Inattentive, Distracted, Asleep Drivers	1.98%	91	0.80%	37	0.57%	26	0.59%	27
	Unbelted Occupants	8.57%	394	4.48%	206	1.54%	71	2.44%	112
Special Users	Pedestrian Fatalities and Injuries	7.64%	251	3.32%	109	0.73%	24	3.59%	118
	Bicycle Fatalities and Injuries	2.44%	80	0.73%	24	0.24%	8	1.46%	48
Vehicles	Motorcycle Crashes	10.20%	425	5.35%	223	1.92%	80	2.74%	114
Highways	Train Crashes	0.33%	11	0.03%	1	0.00%	0	0.30%	10
	Lane Departure Crashes	44.84%	1,473	20.46%	672	12.33%	405	12.05%	396
	Intersection Crashes	39.91%	1,311	22.07%	725	4.38%	144	13.46%	442
	Angle Crashes	14.28%	469	8.34%	274	1.43%	47	4.51%	148
	Left Turn Same Roadway Crashes	9.22%	303	6.36%	209	0.55%	18	2.31%	76
	Overturn Crashes	2.16%	71	1.25%	41	0.30%	10	0.61%	20
	Rear End Slow or Stop Crashes	16.65%	547	12.85%	422	0.82%	27	2.98%	98

Source: Department of Public Safety Crash Database/SAMS

Notes:
1. *Drivers and Special Users Emphasis Area Categories are individual fatalities and serious injuries.*
2. *Vehicles and Highway Emphasis Area Categories are fatal and serious injury crashes.*
3. *Data includes all fatal, life threatening and moderate injury crashes for Hancock, Harrison, and Jackson Counties from 2014 through 2018.*

Figure 1.3 Sample Heat Map for Intersection Crashes

Heat Map for All County and Local Road Intersection Crashes Resulting in Injury (2014-2018)

County and Local Intersection Crashes
- Fatal
- Life-Threatening
- Moderate

and the emphasis area data collected were used to develop public presentations with community stakeholders.

Additional Emphasis Areas

While all crashes are significant and have a lasting impact to those who are involved, it is not always feasible to focus efforts on relatively small reoccurrences. However, this section of the report will briefly discuss some other emphasis areas which did not meet the report threshold. The evaluations of the additional emphasis areas includes both state and local roads.

Left Turn Same Roadway Crashes

Left Turn Same Roadway crashes made up just over 9% of the crashes in the study area. These crashes are the result of two vehicles traveling on the same roadway prior to one turning left. This may occur while passing the other vehicle or when meeting the other vehicle. A majority (73%) of these crashes happened at an intersection, with four left turn same roadway crashes resulting in fatalities.

The roadways with the most Left Turn Same Roadway crashes were:

- Gautier-Vancleave Road - 60% occurred as a vehicle was attempting to enter I-10 west ramp.
- Dedeaux Road - 40% occurred near Dye Road.
- Popp's Ferry Road - 43% involved a motorcycle and 29% (2 crashes) occurred at Cedar Lake Road
- Pass Road - largest number of left turn same roadway crashes. A majority (76%) of crashes occurred where the vehicle had a dedicated left turn lane and more than half (52%) occurred at a light-controlled intersection. Almost 24% involved a motorcycle.

Unbelted Occupants

Unbelted occupant crashes accounted for just under 9% of the crashes in the study area. Just under 11% of unbelted occupant crashes resulted in a fatality, with 21% occurring in evening hours

and less that 13% occurring at intersections. Four unbelted crashes were also associated with trains and another four were associated with pedestrians.

State-maintained roadways accounted for approximately 40% of unbelted occupant crashes. Pass Road was the largest local road contributor with approximately 5% of the reported unbelted occupant crashes. Another combined 5% of unbelted crashes were located on five other major local roads, Three Rivers Road, Dedeaux Road, 28th Street in Gulfport, Creosote Road, and Cedar Lake Road.

Unlicensed

Unlicensed driver crashes were almost 8% of the crashes reported. Of crashes that involved an unlicensed driver, almost 10% resulted in a fatality and another 8% resulted in life threatening injuries. While more than half (57%) of unlicensed driver involved in a crash were on the road during daylight hours, 68% of the fatalities associated with these drivers occurred at night. with 28% involving a pedestrian or bicycle.

Impaired Driving

Impaired Driving accounted for more than 7% of all crashes in the study area. Approximately 15% of impaired driving crashes resulted in fatalities and another 9% resulted in life threatening injuries. Almost 25% of the fatalities involved a pedestrian. Most (67%) impaired driver crashes occurred at night.

Distracted Driving

Distracted driving was reported in less than 2% of all accidents that occurred in the study period. As discussed during almost all of the stakeholder meetings, the State of Mississippi does not have a distracted driving law. In 2015, Mississippi passed a law to ban texting while driving, but there is no definitive way for an officer to prove a driver is texting without seeing it first hand or the driver admitting to the infraction. Without the technology in place to accurately identify cell phone use, a distracted driving law would be just as hard to report and prosecute as the texting ban. As a result of the difficulties associated with identifying distracted driving, it is widely assumed that the reported instances of distracted driving are lower than what actually occur.

Train

Train crashes accounted for only 0.33% of all accidents that occurred within the study period. While this percentage is small, a majority of the accidents could have been avoided. Of the 19 crashes that involved trains, 15 deaths occurred. All eight vehicle and train crashes occurred at a signalized intersection in which the train engineer also utilized his horn to warn the driver. In one instance, the driver drove around the activated crossing arms prior to being hit. In the 11 pedestrian and train collisions, a horn was specifically reported as being used in 45% of the cases. In almost all of the reported train encounters, the driver or pedestrian was reported as not paying attention to the warnings provided by the train or the signalized intersection.

Data Quality

Data accuracy and quality in crash reporting play a vital role in understanding crashes and developing meaningful countermeasures to reduce serious and fatal crashes.

MDOT has worked with Mississippi Department of Public Safety (MDPS) to make improvements to the reporting software to reduce erroneous data entry. One example of such improvement is the automatic input of GPS (global positioning systems) coordinates for the crash in lieu of manual location entry by the responding officer. Some of these improvements have made the officers' jobs easier, while others have seemingly made it more difficult. Many officers expressed concern over the length of the report and the time required to complete all of the components since the system was updated. MDOT will continue to coordinate with MDPS to better understand issues that officers are facing while reporting crashes as well as ensuring officers understand the importance of the information being requested by the software.

Another change to the reporting system is MDOT's redefining A-injury crashes from Life Threatening to Suspected Serious Injury as required to be in compliance with MMUCC IV edition. The new definition is already resulting in an increased number of A-injury crashes statewide.

All system improvements were made after 2018 when the data for this report was gathered.

Stakeholder Meetings

Background

Once critical emphasis areas were identified and analyzed, a list of potential stakeholders was established. More than 150 stakeholders were invited to attend the four emphasis area meetings. As shown in Figure 1.4, the four meetings included 33 stakeholders from 23 different departments or organizations.

Figure 1.4 Stakeholders

Stakeholders	
Biloxi Bicycle Works	Heritage Trails Partnership
City of Biloxi Police Department	Jackson County Board of Supervisors
City of Diamondhead	Jackson Co. Civic Action Committee, Inc.
City of Diamondhead Police Department	Jackson County School District
City of D'Iberville	Long Beach School District
City of Gautier Police Department	MDOT - District 6
City of Gulfport Public Works	Mississippi Highway Patrol
City of Ocean Springs	Pass Christian Public School District
Federal Highway Administration	SMPDDD
Gulf Coast Bicycle Club	United States Air Force/SFS
Harrison County	University of Southern Mississippi (USM)
Harrison County Active Living	

Meeting Details

Four meetings were held over three days to cover the nine critical emphasis areas identified. The meetings were held at the CTA - Gulfport Transit Center conference room from June 22, 2021 to June 24, 2021.

Stakeholder

People, groups, or organizations with an interest in or a role to play in the transportation network. Stakeholders can include governmental officials, city and county departments, first responders, community groups, or concerned citizens.

Stakeholder Meetings:

Tuesday, June 22, 2021
AM Session - Lane Departure Crashes
                    Young and Old Drivers

PM Session - Intersection and Angle Crashes

Wednesday, June 23, 2021
AM Session - Aggressive Driving & Speeding
                    Rear End, Slow or Stop Crashes

Thursday, June 24, 2021
PM Session - Motorcycle
                    Pedestrian & Bicycle Crashes

During the stakeholder meetings, a brief presentation was given to provide an overview of the purpose of the meetings along with some of the data analysis already conducted. Stakeholders were given an opportunity to provide feedback, including suggested countermeasures to reduce fatalities and severity of crashes in each critical emphasis area. The meetings ended with a review of the feedback received. Feedback from the stakeholder meetings can be found in the Appendix along with handouts and other meeting documents.

Priority Safety Strategies

In the previous section, crash data was evaluated within identified priority locations. Each location was analyzed to determine potential countermeasures to improve safety on a specific local roadway or intersection. The Priority Safety Strategies section will summarize the potential countermeasures for intersection, lane departure, pedestrian and bicycle crashes.

Reducing Intersection Crashes

Intersection Crashes made up 39% of the total crashes reported in the five year study period. While these strategies were developed from the twenty-three priority areas, these strategies can be utilized for any intersections where crashes frequently occur.

Strategy 1: Modify existing signals to include a flashing yellow arrow and regulatory signage.

Several intersection crashes in priority areas involved a left turning vehicle. At many of these intersections, the left turn movement is controlled with a circular green light and signage that cautioned "Left Turn Yield on Green". Accident reports indicated both drivers claimed right-of-way at the time of the accident.

An inattentive driver may perceive the circular green light as a protected left turn even with signage requires the vehicle to yield to oncoming traffic. A flashing yellow arrow is more intuitive to drivers which will more consistently convey the message that the left turn movement must yield to opposing traffic.

Strategy 2: Modify existing intersection to include dedicated left turn lane.

Some of the intersection crashes in priority areas were the result of a left turning vehicle which shared the lane with through traffic. Providing a dedicated left turn lane reduces the confusion of drivers often reported in crash reporting regarding right-of-way and signalization. In addition, it removes the left turning traffic from the through lane reducing the potential for rear-end crashes.

Strategy 3: Refresh intersection pavement markings.

While not noted as a direct cause of any crash reported in the study period, many of the intersec-

tions in the priority areas had faded pavement markings. Well defined pavement markings are crucial to drivers. They provide drivers with the roadway alignment, where they need to stop, delineate pedestrian crossings, and demarcate other roadway hazards. Faded pavement markings can lead to driver confusion and are typically an inexpensive improvement to the roadway.

Strategy 4: Upgrade signals to include backplate and retroreflective border.

At least two of the crashes in priority areas reported the sun as prevalent factor in the crash. Intersecting roads that are in an east-west orientation may need backplates on signals to reduce glare from the rising and setting sun. Lights with backplates may also need retroreflective borders to make the signals easier to see at night.

Strategy 5: Provide advanced warning for stop-controlled intersections.

A few of the intersection crashes in the priority areas resulted from drivers running stop signs. While many of these were DUI-related, a review of the areas concluded that most of these intersections also lacked advance warning of the stop-controlled intersection. Installation of a "Stop Ahead" warning sign and/or transverse rumble strips would be an inexpensive improvement to intersections.

Strategy 6: Upgrade intersections with sidewalk extensions, crosswalk striping, and pedestrian signals, where warranted.

Pedestrian accidents accounted for 8% of intersection crashes. Intersections which contain pedestrian crashes should be evaluated to determine if the volume of pedestrian traffic would warrant sidewalks extensions, crosswalks, and pedestrian signals. Many of the intersections with pedestrian crashes had faded crosswalk pavement markings that need to be refreshed.

Existing crosswalks that do not lead to sidewalks or lead to sidewalks that are not ADA compliant should be upgraded to include sidewalks and ramps that carry pedestrians safely away from the intersection.

Strategy 7: Provide for safe vehicle recovery in run off road scenarios.

Roadways that do not provide a safety edge and provide no shoulder for vehicles to easily recover from running off the road should be upgraded. One crash reported a vehicle that ran off the road and was unable to recover. Roadways within the priority areas without curb and gutter should be evaluated to ensure they have a safety edge and that they provide an adequate shoulder for vehicle recovery.

A roadway safety edge provides a beveled asphalt edge that provides the driver an opportunity to safely recover when the vehicle leaves the roadway. In addition, a visual analysis of the intersection concluded that the roadside ditches appear steep and possibly unrecoverable for the driver. Evaluate intersections in priority areas without curb and gutters to determine if they have an adequate shoulder and that roadside ditches are not too steep. Deep ditches may make crash severity worse by causing vehicles to overturn. Consider enclosing roadside ditches that can not be improved due to right-of-way restrictions.

Strategy 8: Increase police presence at intersections which routinely have aggressive drivers or drivers that fail to obey traffic signs/signals.

Driver behavior is a large component of safer roads and intersections. When drivers do not obey roadway traffic signs and signals, get behind the wheel under the influence of drugs or alcohol, or drive aggressively, accidents occur that have little to do with roadway design. It is in these instances that we rely on police officers to enforce the law and provide a presence that deters poor driving behavior. Increasing police presence includes a myriad of tools such as increasing police patrols in targeted areas, utilizing radar speed signs, roadway checkpoints, and other similar tools.

Strategy 9: Reduce speeds through major intersections where routine aggressive driving is reported.

The speed through an intersection that sees an excessive number of speed-related crashes may need to be evaluated. Reducing speeds through intersections allows drivers more time to react to regulatory signage and safety measures in place. An alternative to speed limit reduction would be the placement of speed feedback signs or radar speed signs that can alert drivers to speeds that exceed the posted speed limit.

Strategy 10: Evaluate priority intersections for implementation of a roundabout.

Evaluate priority intersection locations to determine if a roundabout may reduce crash frequency and severity without compromising intersection efficiency.

Reducing Lane Departure Crashes Along Rural Local Roads

Rural Lane Departure crashes made up 28% of the total crashes reported in the five year study period. These strategies were developed from the thirty priority areas identified in the previous section; however, these strategies can be used for all rural, local roads.

Strategy 1: Refresh pavement markings and install raised pavement markers.

While not noted as a direct cause of any crash reported in the study period, an evaluation of the lane departure crash priority roadways noted faded pavement markings. Well defined pavement markings are critical to drivers. They help drivers see the roadway edge and centerline in poor visibility, dimly lit, or unlit driving conditions. They often are also used to demarcate other roadway hazards. Faded pavement markings can lead to driver confusion and are typically an inexpensive improvement to the roadway. The addition of raised pavement markers help better define pavement markings and can serve as an audible warning of a driver leaving the travel lane.

Strategy 2: Install longitudinal rumble strips.

Longitudinal rumble strips on the road edge or along the center line of the road that are milled into the pavement. They provide an auditory and vibratory alert to drivers that they have left the travel lane. For the purposes of this report, longitudinal rumble strip countermeasures for rural roadways most often refer to edge rumble strips. This is a relatively low-cost countermeasure that has been shown to significantly reduce single vehicle, run off road fatal crashes on rural roads. Center line rumble strips have shown to reduce head-on fatal crashes more than 50% along rural roads.

Strategy 3: Install curve warning delineation

Drivers losing control of a vehicle in a curve or crossing the centerline in a curve was a significant problem on rural roadways in priority areas. Providing curve delineation is a low-cost counter-measure that can reduce lane departure accidents. Curve delineation includes advanced warning signs, chevron signs in the curve, retroreflective strips on sign posts, and in-lane curve warning pavement markings. Several rural road curves had at least one type of curve delineation; however, the roadway should be evaluated to determine if incorporating multiple curve delineation methods in a single curve would have a greater effect in reducing lane departure frequency and severity.

Strategy 4: Provide for safe vehicle recovery in run off road scenarios.

Roadways that do not provide a safety edge and provide no shoulder for vehicles to easily recover from running off the road should be upgraded.

A roadway safety edge provides a beveled asphalt edge the provides the driver an opportunity to safely recover when the vehicle leaves the roadway. In addition, roadways with inadequate shoulders or steep roadside ditches can make recovery difficult if not impossible.

Roadway segments that reported run off road right crashes should be evaluated to ensure they have a safety edge and that they provide an adequate shoulder for vehicle recovery. Steep roadside ditches should be regraded to reduce steep slopes.

Strategy 5: Establish regulations for unpaved commercial and industrial driveways.

At least one rural roadway reported a crash related to migration of dirt and debris from an unpaved industrial driveway. Many businesses and industries in rural areas construct unpaved driveways for access to properties. When constructed, they are often hardened with stone or gravel to provide a roadway structure and to provide an area to deposit dirt and debris from the wheels of large equipment and trucks. Maintenance of these unpaved driveways is often overlooked and results in dirt and debris tracked onto local roadways. This debris can cause unsafe driving conditions for vehicles and can result in an accident or fatality.

Local governments should consider regulations for the construction and maintenance of unpaved driveways. These regulations should include providing paved aprons, a minimum length of hardened surface leading to paved roadways, or a requirement for truck wash down areas to be used prior to large trucks and equipment entering local roads. The regulation should also include the ability of the local government to enforce the requirements and the ability to clean up debris deposited on local roadways at the expense of the property owner.

Reducing Lane Departure Crashes Along Urban Local Roads

Urban Lane Departure crashes made up 25% of the total crashes reported in the five year study period. These strategies were developed from the thirty priority areas identified in the previous section; however, these strategies can be used for all urban, local roads.

Strategy 1: Refresh pavement markings and install raised pavement markers.

While not noted as a direct cause of any crash reported in the study period, an evaluation of the lane departure crash priority roadways noted faded pavement markings. Well defined pavement markings are critical to drivers. They help drivers see the roadway edge and centerline in poor visibility, dimly lit, or unlit driving conditions. They often are also used to demarcate other roadway hazards. Faded pavement markings can lead to driver confusion and are typically an inexpensive improvement to the roadway. The addition of raised pavement markers help better define pavement markings and can serve as an audible warning of a driver leaving the travel lane.

Strategy 2: Install longitudinal rumble strips, raised medians, and delineators.

This strategy focuses on providing a delineation of opposing traffic lanes. Center line longitudinal rumble strips provide an auditory and vibratory alert to drivers that they have left the travel lane. Along roadways with right-of-way restrictions this may be the most feasible option to reduce lane departure crashes. Delineators are another option when right-of-way restrictions prevent a separation of opposing lanes.

If right-of-way is available or if the roadway

contains a continuous two way left turn lane, raised medians can be used to delineate opposing traffic lanes and reduce lane departure crashes. Additional benefits of raised medians are traffic calming and providing areas of refuge for pedestrians crossing wide roadways.

Strategy 3: Install curve warning delineation

Similar to rural roadways, drivers loosing control of a vehicle in a curve or crossing the centerline in a curve was a problem on urban roadways in priority areas. Providing curve delineation is a low-cost countermeasure that can reduce lane departure accidents. Curve delineation includes advanced warning signs, chevron signs in the curve, retroreflective strips on sign posts, and in-lane curve warning pavement markings. Several curves had at least one type of curve delineation; however, the roadway should be evaluated to determine if incorporating multiple curve delineation methods in a single curve would have a greater effect in reducing lane departures.

Strategy 4: Reduce speeds along roadways where routine aggressive driving is reported.

Speeding and aggressive driving is often a contributing cause of lane departure crashes. In areas where speeding is a recurring problem, municipalities may want to evaluate roadways and determine if reducing the speed limit through curves, at intersections, or in high traffic areas would reduce the frequency and severity of lane departure crashes.

Strategy 5: Provide advanced warning for stop-controlled intersections.

A few of the urban lane departure crashes were the result of drivers running stop signs, specifically at T-intersections. While many of these were DUI-related, a review of the areas concluded that in most of these crashes the roadway lacked advance warning of the stop-controlled intersection. Installation of a "Stop Ahead" warning sign and/or transverse rumble strips would be an inexpensive improvement and could significantly reduce instances of drivers failing to stop.

Strategy 6: Evaluate bridge guardrails to ensure they meet current safety standards.

At least one fatality within the study period was related to a bridge guardrail penetrating a vehicle. Evaluate bridge crossings and guardrails to ensure they meet current safety standards and prioritize

the replacement of guardrails and warning devices that do not. In addition, ensure guardrails are properly visible with retroreflective warning signs.

Strategy 7: Increase patrols in areas with where DUIs are a frequent concern.

Increase enforcement in areas where DUIs reoccur. DUIs typically occur in the evening hours after 6:00 p.m.. DUI enforcement should include motorized vehicles, bicycle users, and pedestrians.

Reducing Crashes Related to Pedestrian and Bicycles

Pedestrian and Bicycle Crashes made up 13% of the total crashes and 27% of the total fatalities reported in the five year study period, with 142 pedestrian crashes and 56 bicycle crashes. In this report, 20 pedestrian priority areas and four bicycle priority areas were analyzed. Because the countermeasures tended to overlap, pedestrian and bicycle countermeasures are summarized together.

Strategy 1: Improve roadway lighting.

The inability of a driver to see a pedestrian or bicycle was a common theme in accident reports. Upgrading lighting in commercial corridors, where higher traffic volumes occur, is essential in keeping pedestrian and bicycle users safe. The Federal Highway Administration reports that proper intersection lighting can reduce pedestrian crashes up to 42%.

Lighting in neighborhoods and residential areas should be evaluated to ensure a balance between providing safe areas for pedestrian movement and the quality of life of the homeowners.

Strategy 2: Construct new or extend/connect existing sidewalks.

Sidewalk connectivity ensures pedestrians have the ability to safely walk between points of interest. Many of the priority areas included segments of sidewalk infrastructure but failed to provide complete connections. In many cases, pedestrian users left paths/trails in the grassed shoulders or medians where they made the connections. The crash data also identified areas where new sidewalk construction should be evaluated. Because a sidewalk typically places a buffer between the pedestrian and vehicles,

construction of a new sidewalk can significantly reduce crashes with pedestrians walking along the roadway.

Strategy 3: Refresh crosswalk pavement markings.

During the evaluation of several intersection pedestrian crashes, faded crosswalk markings were noted as a potential contributing factor. Visible crosswalks encourage pedestrians to cross at designated areas and provides vehicles with a warning of anticipated pedestrian activity. Because vehicles frequently drive over crosswalk pavement markings, they fade quicker than other traffic markings. Ensuring crosswalk pavement markings are visible and complete should enhance the safety of pedestrians at intersections.

Strategy 4: Break up continuous turn lanes with raised medians for pedestrian refuge or provide mid block crossing islands.

Raised medians and crossing islands serve multiple purposes. They provide the pedestrian a safe place to evaluate traffic midway across the road and they serve as a traffic calming device for speeding traffic. Roadway crossing was a significant cause of pedestrian crashes in the study area, specifically mid block crossing. Because of the complexity of these roadways, both the pedestrian and the vehicle struggle to always accommodate each other.

Roadways, like Pass Road, have so much hardscape (roadways, parking lots, etc.) that it makes it easier for vehicles to speed and harder for pedestrians to cross. By breaking up the continuous center turn lanes along these roads with raised medians or crossing islands, it forces the driver to slow down and become aware of their surroundings. Conversely, these areas provide an opportunity for pedestrians to focus on one direction of traffic at a time. When they are able to find a refuge in the center of the road that is not a turn lane or open travel lane, they can make more calculated decisions.

Areas with frequent pedestrian crossings should be evaluated to determine if a mid block crossing island is warranted. Unlike the raised median, the crossing island would feature a crosswalk to warn vehicles of potential pedestrian activity and provide an ADA-accessible path in the island to accommodate handicapped users.

Strategy 5: Evaluate the feasibility of a road diet.

Road diets are the reduction and reconfiguration of vehicular travel lanes within a road segment to provide better mobility and access for all users. Several road segments were recommended for evaluation for a road diet due to right-of-way restrictions and for alternative transportation access needs. By reducing travel lanes in these segments, community leaders have the opportunity to focus on provide bicycle lanes or refuge islands, or dedicated left turn lanes at busy intersections. As a secondary effect, road diets typically have a traffic calming effect which reduces vehicle speeds.

Strategy 6: Install pedestrian warning signs in high pedestrian trafficked areas.

Pedestrian warning signs can be used in high pedestrian traffic areas to warn motorist of pedestrian activity. The warning signs can be used in conjunction with crosswalks to provide motorists advanced warning of an intersection crosswalk. Careful consideration should be given to the use of signs to ensure that they are not overused nor create visual clutter to the point they are not heeded.

Strategy 7: Reduce speeds along roadways where routine aggressive driving is reported.

Speeding and aggressive driving is often a contributing cause pedestrian and bicycle crashes. In areas where speeding is a recurring problem, municipalities may want to evaluate roadways and determine if reducing the speed limit through high traffic areas would reduce the frequency and severity of crashes. If speed limits cannot be lowered, more enforcement should be considered.

Strategy 8: Construct multi-use pathways where pedestrian and bicycle crashes overlap to separate pedestrian and bicycle traffic from motorized vehicles.

Much like a sidewalk, multi-use pathways provide a separation between motorized vehicles and pedestrians and bicycles. Multi-use pathways were recommended in areas that appeared to have available right-of-way and which did not already provide for dedicated pedestrian or bicycle facilities. Alternatively, the multi-use pathway can be split into a sidewalk and a dedicated bike lane. Ensure pedestrian and bicycle facilities provide complete, continuous connections between destinations.

Strategy 9: Provide crosswalks, curb ramps and pedestrian signals at signalized intersections.

Along multiple roadways, sidewalks ended abruptly and intersections provided crosswalks that didn't access sidewalks or had non-compliant or non-existent curb ramps. An evaluation of sidewalks, crosswalks, and pedestrian signals should be completed in priority areas. This may have already been completed with an ADA Transition Plan for public rights-of-way. This evaluation should include a prioritized plan to bring all intersections into compliance and provide pedestrian signals at signalized intersections.

Strategy 10: Provide educational opportunities for pedestrian and bicycle users.

Based on the accident reports reviewed, many pedestrian and bicycle users lacked knowledge that would make sharing the road with motorized vehicles safer. By providing educational opportunities for pedestrians and bicycle users, communities can make a roadways safer for all modes of transportation.

Educational meetings should be focused in priority areas and conducted through community organizations, such as neighborhood watch, neighborhood associations, churches, and summer camps. These event can also serve as a useful community outreach tool for police officers. Consider incorporating pedestrian and bicycle safety into school programs such as Driver's Education. Provide brochures and pamphlets to police officers to hand out to pedestrian and bicycle users for impromptu educational trainings while on patrol.

The majority of pedestrian and bicycle accidents involved adults and should be the focus group of educational information provided. However, educational opportunities should also be provided to children and young adults.

Strategy 11: Install enhanced crosswalks at high pedestrian traffic crossings and advanced warning of pedestrian crossings.

In areas that see significant pedestrian crossing activity, enhanced crosswalks and signing may be required. This can include flashing pedestrian warning signs, advanced roadway pavement markings, raised crosswalk, flashing crosswalks, and other similar treatments.

Priority Locations

After emphasis areas were identified and stakeholder feedback was received, additional analysis of the crash data was completed to identify priority locations.

This analysis began by identifying roadways where most crashes occurred during the study period. Crashes occurred on 516 local roads; however, less than 20 crashes were reported on 98% of roadways. Figure 1.5 provides a list of the local roads that experienced 20 or more crashes.

Figure 1.5 Crash Location by Roadway

County	Street	No. of Crashes
Harrison	Pass Road	118
Harrison	Popp's Ferry Road	47
Harrison	Three Rivers Road	31
Jackson	Gautier Vancleave Road	34
Harrison	Lamey Bridge Road	27
Harrison	28th Street	26
Jackson	Lemoyne Boulevard	22
Harrison	Dedeaux Road	21
Jackson	Tucker Road	20

While the initial analysis was important to identify local roads where most crashes occur, the data was further analyzed to determine priority locations along roadway segments under each emphasis area that resulted in a significant number of crashes. These priority segments were evaluated to develop countermeasures which can be used to develop roadway projects that could potentially reduce the frequency and severity of future accidents.

Priority Location

A roadway segment or intersection that is given emphasis in prioritization due to patterns of fatal or suspected serious injury crashes, or patterns of certain crash types that may lead to higher risk for injury should they continue.

Intersection Crashes

Priority locations within the intersection crash emphasis area were based on three (3) or more crashes at a single intersection. Approximately 39% of all local crashes were reported at intersections, with 16% of those resulting in fatality and almost 42% of the crashes resulted in moderate injuries. Figure 1.6 provides a breakdown of intersection crashes by crash type.

Figure 1.6 Intersection Crash Breakdown by Crash Type
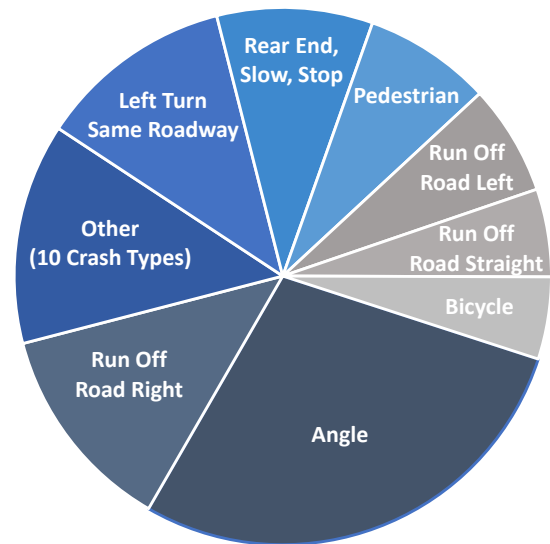

Figure 1.7 provides a list of the priority locations for intersection crashes that occurred within the study period. An analysis of each intersection priority location is provided along with possible countermeasures.

Figure 1.7 Intersection Crash Priority Areas

Intersection	County	City	No. of Crashes	Rural/Urban Designation	Functional Class	Traffic Control Type
Pass Rd & Popp's Ferry Rd	Harrison	Biloxi	5	Urban	Other Principal Arterial	Signalized
Pass Rd & 8th Ave	Harrison	Gulfport	4	Urban	Other Principal Arterial	Signalized
Pass Rd & Gulf Ave	Harrison	Gulfport	4	Urban	Other Principal Arterial	Minor Road Stop
Three Rivers Rd & Dedeaux Rd	Harrison	Gulfport	4	Urban	Minor Arterial	Signalized
Jefferson Ave & Macphelah St	Jackson	Moss Point	4	Urban	Major Collector	Signalized
Popp's Ferry Rd & Atkinson Rd/ Old Bay Road	Harrison	Biloxi	4	Urban	Other Principal Arterial	Signalized
Pass Rd & Eisenhower Dr/ Goose Pointe Blvd	Harrison	Biloxi	3	Urban	Other Principal Arterial	Signalized
Pass Rd & Big Lake Rd	Harrison	Biloxi	3	Urban	Other Principal Arterial	Signalized
Pass Rd & Cowan Rd (MS 605)	Harrison	Gulfport	3	Urban	Other Principal Arterial	Signalized
Pass Rd & Veterans Ave	Harrison	Biloxi	3	Urban	Other Principal Arterial	Signalized
Pass Rd & Courthouse Rd	Harrison	Gulfport	3	Urban	Other Principal Arterial	Signalized
Popp's Ferry Rd & Vee St	Harrison	Biloxi	3	Urban	Other Principal Arterial	Minor Road Stop (T)
Three Rivers Rd & O'Neal Rd	Harrison	Gulfport	3	Urban	Major Collector	Signalized
Lamey Bridge Rd & Mallet Rd/ Sangani Blvd	Harrison	D'Iberville	3	Urban	Minor Arterial	Signalized
Government St & Halstead Rd	Jackson	Ocean Springs	3	Urban	Minor Arterial	All Way Stop (T)
Ingalls Ave & Chicot St	Jackson	Pascagoula	3	Urban	Minor Arterial	Minor Road Stop (T)
Vidalia Rd & 16th Section Rd	Harrison	n/a	3	Rural	Major Collector	Minor Road Stop (T)
Caillavet St & Division St	Harrison	Biloxi	3	Urban	Minor Arterial	Signalized
Tucker Rd/Washington Ave & Cook Rd/Seaman Rd	Jackson	n/a	3	Urban	Minor Arterial	Signalized
Old Mobile Avenue & Chicot St	Jackson	Pascagoula	3	Urban	Minor Arterial	Signalized
Old Hwy 67 & Old Hwy 15	Harrison	Biloxi	3	Rural	Minor Arterial	Minor Road Stop (T)

Lane Departure Crashes

Lane departure crashes are the result of a vehicle leaving the travel lane and are recorded in crash data as a Run Off Road-Right, Run Off Road-Left, Run Off Road-Straight, Sideswipe, or Head On. From the data provided, more than 53% of crashes reported during the study period were categorized as lane departure crashes, with over 42% categorized as single vehicle lane departure crashes. Approximately 8% of lane departure crashes were fatal. Nine percent (9%) were life threatening and remaining 83% were moderate-injury.

Unlike the other emphasis areas, lane departure crashes were separated into rural and urban crashes. In rural areas, lane departure crashes are more indicative of the roadway (i.e., curves, etc.) and in urban areas crashes typically point towards driver behavior (i.e., distracted drivers, etc.).

For lane departure, this report will look at the top 30 rural and urban priority locations based on the number of injury inducing crashes per mile within a particular roadway segment. Roadway segments were determined through the identification of crash clusters along a given route.

Urban vs. Rural

Urban areas will include all areas within the boundary of the Metropolitan Planning Organization (MPO).

Rural areas will include all areas within the three county study area outside the MPO boundary.

Rural Lane Departure Crashes

Approximately 28% of all crashes were categorized as rural lane departure, with 84% of those being single vehicle lane departures. Rural lane departure crashes account for 40% of local road fatalities and just over 40% of life threatening injuries.

Figure 1.8 provides a list of the top 30 priority locations for rural lane departure crashes that occurred within the study period. An analysis of each location is provided after the table along with possible countermeasures.

Figure 1.8 Rural Lane Departure Crash Priority Areas

Route	County	Route Segment Limits	No. of Crashes	Approx. Route Length (mile)	Crashes Per Mile	Functional Class
Old River Road - Segment 1	Jackson	Granada Rd to Wade Vancleave Rd	5	0.9	5.56	Major Collector
Shaw Road	Harrison	MS Hwy 53 to Morgan Lane Rd	4	1.0	4.00	Minor Collector
Kenneth Cole Road	Jackson	MS Hwy 57 to Blue Grass Lane	3	0.8	3.75	Minor Collector
Lower Bay Road - Segment 2	Hancock	Clermont Rd to US Hwy 90	7	1.9	3.68	Major Collector
County Farm Road - Segment 2	Harrison	I-10 to Wildflower Rd	2	0.6	3.33	Minor Arterial
East Wortham Road	Harrison	US Hwy 49 to Hwy 67	12	4.2	2.86	Major Collector
Saracennia Rd - Segment 2	Jackson	Kings Rd to Coda Rd	3	1.1	2.73	Major Collector
Lamey Bridge Rd - Segment 2	Harrison	MS Hwy 67 to Palm Ridge Dr	9	3.8	2.37	Major Collector

Figure 1.8 Rural Lane Departure Crash Priority Areas (continued)

Route	County	Route Segment Limits	No. of Crashes	Approx. Route Length (mile)	Crashes Per Mile	Functional Class
Old US Hwy 49 - Segment 2	Harrison	Fish Hatchery Rd to Wortham Dr	4	1.7	2.35	Minor Collector
W. Wortham Road - Segment 2	Harrison	Borzik Rd to Sky Lane	3	1.3	2.31	Major Collector
Old US Hwy 49 - Segment 1	Harrison	W. Wortham Rd to Desoto Park Rd	3	1.3	2.31	Minor Collector
Saucier Lizana Rd - Segment 1	Harrison	MS Hwy 53 to W. Wortham Rd	9	4.2	2.14	Major Collector
Lily Orchard Rd	Jackson	Nutbank Rd to Dunn Rd	3	1.5	2.00	Local Road
W. Wortham Rd - Segment 1	Harrison	Owen Ladner Rd to Gaylord Rd	4	2.4	1.67	Major Collector
Big Creek Rd	Harrison	Alcede Lizana Rd to Cable Bridge Rd	4	2.6	1.54	Local Road
Tucker Rd	Jackson	Cook Rd to Daisy Vestry Rd	5	3.3	1.52	Minor Arterial
Saracennia Rd - Segment 1	Jackson	Greenfields Rd to Jackson Co. Rd 33	5	3.4	1.47	Major Collector
Wolf River Rd	Harrison	Jake Bell Rd to Cable Bridge Rd	6	4.6	1.30	Major Collector
Edwin Ladner Rd	Harrison	16th Section Rd to Vidalia Rd	5	3.9	1.28	Major Collector
Tanner Williams Rd	Jackson	MS Hwy 613 to MS/AL State Line	8	6.3	1.27	Major Collector
Firetower Rd - Segment 2	Harrison	I-10 to Vidalia Rd	6	4.8	1.25	Major Collector
Caesar Necaise Rd	Hancock	Hancock Co Line to Wendell Ladner Rd	10	8.0	1.25	Major Collector
Vidalia Rd - Segment 1	Harrison	Cuevas Delisle Rd to Firetower Rd	7	5.8	1.21	Major Collector
Forts Lake Rd	Jackson	Independence Rd to MS/AL State Line	6	5.3	1.13	Major Collector
Seaman Road - Segment 2	Jackson	Lake Forest Dr to Jim Ramsay Rd	9	8.1	1.11	Major Collector
Kiln Delisle Rd - Segment 1	Hancock/ Harrison	Menge Ave to I-10	5	4.6	1.09	Major Collector
Vidalia Rd - Segment 2	Harrison	Firetower Rd. to F. Malley Rd	4	3.7	1.08	Major Collector
Gautier Vancleave Rd - Segment 2	Jackson	Martin Bluff Rd to MS Hwy 57	6	5.9	1.02	Minor Arterial
Wade Vancleave Rd	Jackson	Fish Lake Rd to MS Hwy 63	4	4.0	1.00	Major Collector
County Farm Rd - Segment 1	Harrison	Landon Rd to John Clark Rd	5	5.1	0.98	Minor Arterial

Urban Lane Departure Crashes

Approximately 25% of all crashes were categorized as urban lane departure, with 71% of those being single vehicle lane departures. Urban lane departure crashes account for 16% of local road fatalities and just over 26% of life threatening injuries.

Figure 1.9 provides a list of the top 30 priority locations for urban lane departure crashes that occurred within the study period. An analysis of each location is provided after the table along with possible countermeasures.

Figure 1.9 Urban Lane Departure Crash Priority Areas

Route	City/County	Route Segment Limits	No. of Crashes	Approx. Route Length (mile)	Crashes Per Mile	Functional Class
Three River Rd - Segment 2	Gulfport	Lavelle Drive to Mustang Place	5	1.0	5.0	Major Collector
Macphelah Road	Moss Point/ Pascagoula	Shortcut Road to Meridian Street	4	1.0	4.00	Major Collector
Jordan Road	Jackson Co.	Seaman Road to Georgia Street	4	1.0	4.00	Local Road
Popp's Ferry Road - Segment 1	Biloxi	Pass Rd to Causeway Drive	6	1.7	3.53	Other Principal Arterial
Pass Road - Segment 3	Biloxi	Popp's Ferry Rd to Ploesti Dr	9	2.6	3.46	Other Principal Arterial
Jefferson Avenue	Moss Point	River Road to 2nd Street	5	1.5	3.33	Major Collector
Martin Bluff Rd - Segment 1	Gautier	Stanfield Point Rd to Brookside Dr	5	1.5	3.33	Major Collector
Gautier Vancleave Rd - Segment 1	Gautier	US Hwy 90 to Martin Bluff Rd	7	2.1	3.33	Other Principal Arterial
Cook Road	Jackson Co.	Mallet Rd/Thomas St to Tucker Rd	4	1.4	2.86	Local Road
Pass Road - Segment 2	Gulfport/ Biloxi	MS Hwy 605 to Popp's Ferry Rd	8	3.0	2.67	Other Principal Arterial
Lemoyne Boulevard	D'Iberville	Lamey Bridge Rd to Riviera Dr	6	2.3	2.61	Minor Arterial
Beachview Dr	Jackson Co	Old Walnut Rd to Seacliff Blvd	4	1.6	2.50	Major Collector
Chicot Street	Pascagoula	Ingalls Ave to Shortcut Rd	5	2.0	2.50	Minor Arterial
Popp's Ferry Rd - Segment 3	Biloxi/ D'Iberville	Cedar Lake Rd to Lamey Bridge Rd	6	2.6	2.31	Other Principal Arterial
Beatline Road	Long Beach	W. Railroad St. to Hickory Dr	4	1.8	2.22	Minor Arterial
Popp's Ferry Rd - Segment 2	Biloxi	Causeway Dr to Cedar Lake Rd	6	2.9	2.07	Other Principal Arterial
Martin Bluff Rd - Segment 2	Gautier	Gautier Vancleave Rd to I-10	4	2.0	2.00	Major Collector
Pass Road - Segment 1	Gulfport	US Hwy 49 to MS Hwy 605	8	4.2	1.90	Other Principal Arterial

Figure 1.9 Urban Lane Departure Crash Priority Areas (continued)

Route	City/County	Route Segment Limits	No. of Crashes	Approx. Route Length (mile)	Crashes Per Mile	Functional Class
28th St - Segment 1	Long Beach	Red Creek Rd to Canal Rd	6	3.5	1.71	Minor Arterial
Lamey Bridge Rd - Segment 1	D'Iberville	I-10 to Lickskillet Rd	3	1.8	1.67	Major Collector
Daisy Vestry Road	Jackson Co.	Cook Road to Tucker Rd	5	3.1	1.61	Major Collector
Seaman Rd - Segment 1	Jackson Co	Tucker Rd to Lake Forest Dr	4	2.7	1.48	Major Collector
Three Rivers Rd - Segment 1	Gulfport	Airport Rd to Dedeaux Rd	3	2.2	1.36	Minor Arterial
28th Street - Segment 2	Gulfport	Canal Rd to Pass Rd	5	3.7	1.35	Minor Arterial
Dedeaux Road	Gulfport	US Hwy 49 to MS Hwy 605	5	4.1	1.22	Minor Arterial
Menge Avenue	Harrison Co.	E. 2nd Street to Red Creek Rd	3	2.5	1.20	Minor Arterial
Canal Road - Segment 2	Harrison Co.	1-10 to John Clark Rd	4	3.4	1.18	Minor Arterial
Ocean Springs Road	Ocean Springs	Bienville Blvd to MS Hwy 57	5	4.5	1.11	Minor Arterial
Old Spanish Trail	Ocean Springs	MS Hwy 57 to Ladnier Rd	5	4.6	1.09	Minor Arterial
Canal Rd - Segment 1	Harrison Co.	28th Street to I-10	3	2.8	1.07	Minor Arterial

Pedestrian and Bicycle Crashes

Pedestrian and bicycle crashes include crashes where at least one pedestrian or bicycle were involved in a crash that resulted in moderate, life-threatening, or fatal injuries. For the purposes of SAMs data, both a pedestrian and bicycle are counted as a vehicle in the crash report.

Approximately 55% of all pedestrian and bicycle crashes occur in darkness or low-light conditions, with 34% occurring in dark-unlit conditions (occurring at night in a location without street lights). During a review of crash data, many witnesses reported pedestrians and bicyclists not utilizing reflective clothing and equipment as a contributing cause of the crash. As a result, a general recommendation for all priority areas will be to continue or increase educational training efforts with alternative transportation users.

Pedestrian Crashes

This report will focus on the top 20 pedestrian priority locations. Approximately 10% of all local crashes involved pedestrians, with 20% of those resulting in fatalities and 70% in moderate injuries.

Figure 1.10 provides a list of the priority locations for pedestrian crashes that occurred within the study period. An analysis of each priority location is provided along with possible countermeasures.

Figure 1.10 Pedestrian Priority Areas

Route	City/County	Route Segment Limits	No. of Crashes	Approx. Route Length (mile)	Crashes Per Mile
Pass Road - Segment 2	Gulfport	250' W of Ford St to Varnado Lane	4	0.20	20.00
Veterans Boulevard	Pascagoula	400' South to 400' North of Shortcut Rd	3	0.15	20.00
Central Avenue	D'Iberville	Sunset Drive to Bay Shore Drive	2	0.10	20.00
14th Street Service Road	Pascagoula	Denny Avenue to Dead End	2	0.10	20.00
Irish Hill Drive	Biloxi	Travia Avenue to Rodenberg Avenue	2	0.19	10.53
Lamey Bridge Road - Segment 1	D'Iberville	Toncrey Road to Big Bridge Road	3	0.32	9.38
Three Rivers Road - Segment 1	Gulfport	Seaway Road to 250' N of Angela Dr.	5	0.70	7.14
Waveland Avenue	Waveland	Donlard Street to Spruce Street	2	0.35	5.71
Courthouse Road - Segment 1	Gulfport	30th Street to 250' N of Pass Road	2	0.48	4.17
33rd Street	Gulfport	24th Avenue to 26th Avenue	2	0.50	4.00
East Old Pass Road	Long Beach/ Gulfport	North Cleveland Avenue to 44th Avenue	5	1.75	2.86
Tucker Road	Jackson Co.	400' S of Parker Road to McClelland Road	3	1.13	2.65
Ingalls Avenue	Pascagoula	8th Street to Chicot Street	2	1.23	1.63
Pineville Road	Long Beach	Ashley Lane to Seal Avenue	2	1.43	1.40
Pass Road - Segment 3	Biloxi	Fernwood Road to Ploesti Drive	5	3.70	1.35
Pass Road - Segment 1	Gulfport	US Highway 49 to MS Highway 605	5	4.20	1.19
Dedeaux Road	Gulfport	US Highway 49 to Jessica Drive	4	3.40	1.18
Lemoyne Boulevard	Jackson Co.	Bienville Drive to Laura Acres Drive	2	2.2	0.91
28th Street	Long Beach/ Gulfport	Simmons Drive to 18th Avenue	3	3.86	0.79
Government Street	Ocean Springs	Washington Avenue to Ridgeview Drive	3	4.51	0.67

Bicycle Crashes

Bike priority locations were developed from bicycle crashes found within pedestrian priority areas as well as any significant clusters of bicycle crashes.

Approximately 4% of all local crashes involved bicycles, with 88% of those resulting in moderate injuries and only one (2%) resulting in a fatality.

Figure 1.11 provides a list of the priority locations for pedestrian crashes that occurred within the study period. An analysis of each priority location is provided along with possible countermeasures.

Figure 1.11 Bicycle Priority Areas

Route	City/County	Route Segment Limits	No. of Crashes	Approx. Route Length (mile)	Crashes Per Mile
Ingalls Avenue	Pascagoula	Belair Street to Chicot Street	3	0.70	4.29
Tucker Road	Jackson Co.	Parker Road to McClelland Road	3	1.0	3.00
Howard Avenue	Biloxi	I-110 Overpass to Oak Street	4	1.6	2.45
Pass Road	Gulfport/ Biloxi	Gulf Avenue to Popp's Ferry Road	3	5.5	0.55