

March 2015

2015 Tennessee Motorcycle Safety Strategic Plan



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2015 Tennessee Motorcycle Safety Strategic Plan

prepared for

Tennessee Department of Transportation Governor's Highway
Safety Office

prepared by

Tennessee Motorcycle Safety Coalition in conjunction with
Cambridge Systematics, Inc.

date

March 2015

GOVERNOR'S HIGHWAY SAFETY OFFICE

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1.0 Vision, Mission, and Goal

The vision of the Tennessee Strategic Highway Safety Plan (SHSP) is for all safety partners to work together toward zero fatalities and serious injuries on Tennessee roadways. While the SHSP addresses motorcycle safety issues along with other road users, the Tennessee Motorcycle Safety Strategic Plan (MSSP) expands on the SHSP and its Towards Zero Deaths (TZD) vision by providing detailed strategies to improve motorcycle safety in Tennessee. The Tennessee Motorcycle Safety Coalition, a diverse group of safety stakeholders including representatives from the 4 Es (enforcement, education, engineering, and emergency medical services), including the TDOT, Motorcycle Rider Education Program (MREP), state and local law enforcement, trauma professionals, motorcycle rider groups, and motorcycle dealers developed the vision, mission, and goal of the MSP.

Vision

The MSSP supports the TZD vision and aims to “Ride to Zero.”

Mission

“To reduce the human and economic toll of motorcycle-related crashes, injuries, and deaths on Tennessee’s transportation system by implementing proven strategies to reduce motorcycle-related fatalities and serious injuries and promote rider education, motorist awareness, and involvement from motorcycle groups.”

Goal

The goal of the Tennessee MSSP is to reduce the number of fatalities by 2 percent annually within the next five years, from 130 (2009-2013 average) to 115 (2015-2019 average) and to reduce the current trend of increasing serious injuries by not exceeding 706 (2009-2013 average) serious injuries for the 2015-2019 average.





2.0 Introduction

Background

Tennessee is the 34th largest state in the U.S. encompassing 42,146 square miles and bordering eight states (Kentucky, Virginia, Georgia, Alabama, Mississippi, North Carolina, Missouri, and Arkansas). The State ranks 17th in population with 6,296,254 residents.¹ Tennessee is composed of 95 counties and 3 grand divisions within the State: the Eastern, Middle, and Western. The State's highway system is comprised of 19,721 bridges, 1,104 Interstate miles, 18 Interstate rest areas, 14 Interstate welcome centers, and 95,523 highway miles (13,884 miles are maintained by the State).

Tennessee is home to a remarkable array of scenery, including lush forests, abundant bodies of water, and breathtaking mountains resulting in some truly great motorcycle rides. The Volunteer State also offers lively cities and towns with rich histories, unique amenities, and weather ideal for riding most months of the year. Cities like Nashville, Memphis, Chattanooga, Knoxville, as well as access to the Appalachian Mountains and the Great Smoky Mountains National Park, make the State an attractive destination for motorcyclists. A nationally known destination for motorcyclists is the Tail of the Dragon at Deals Gap. This 11-mile stretch of roadway on U.S. 129 at the Tennessee/North Carolina State line has 318 curves and is considered one of America's most scenic highways for motorcyclists.

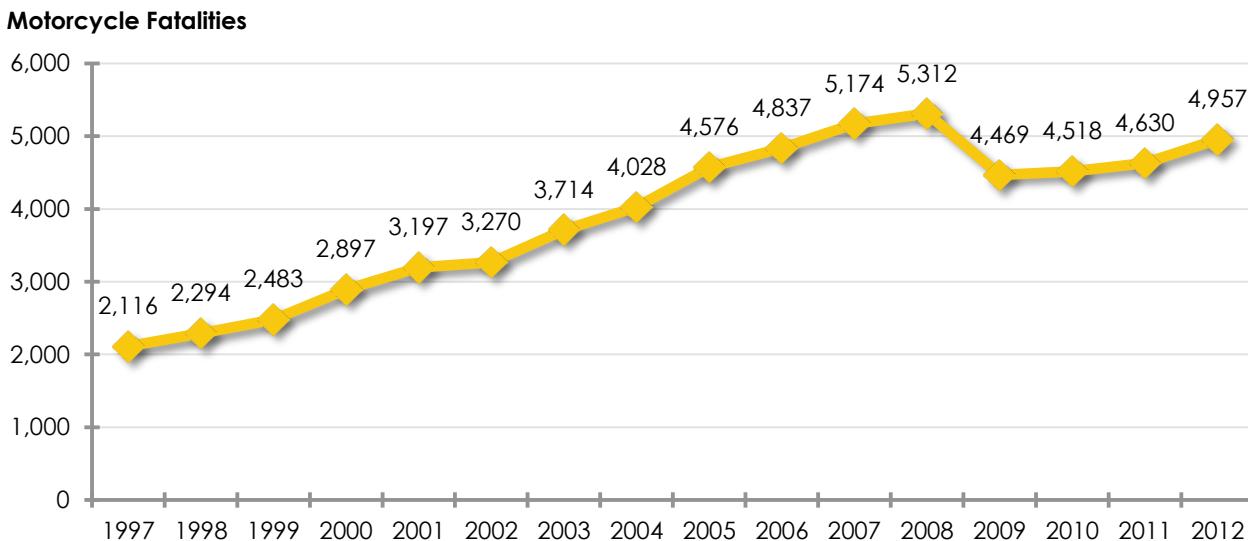
Motorcycle Fatalities

The U.S. has seen a steady decrease in motor vehicle-related fatalities in recent years. However, motorcycle-related crashes, fatalities, and serious injuries have steadily increased. Figure 2.1 shows U.S. motorcycle fatalities from 1997 to 2012 (the most recent year for which U.S. data are available). From 1997 to 2008, motorcycle fatalities steadily increased. From 2008 to 2009, motorcycle fatalities decreased by 15 percent but have continued to rise since that time.

¹ <http://www.tn.gov/local/>.



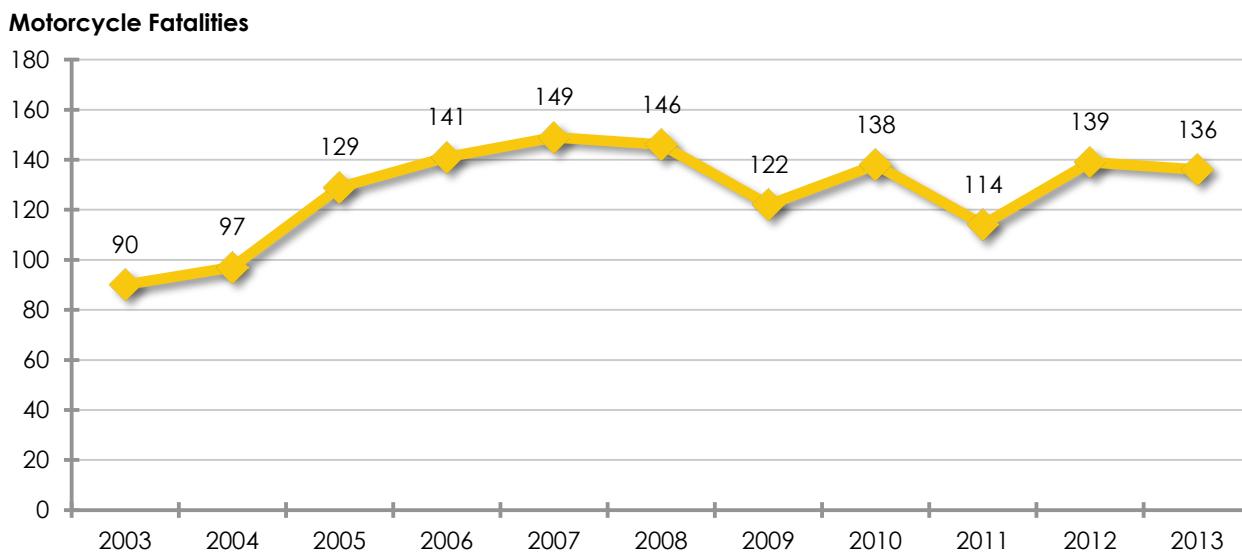
Figure 2.1 U.S. Motorcycle Fatalities



Source: NHTSA Fatality Analysis Reporting System (FARS).

Figure 2.2 shows Tennessee's motorcycle fatalities from 2003 to 2013. During the 10-year period, motorcycle deaths peaked in 2007 with 149 deaths. Since that year, the State has not seen a steady decline in motorcycle deaths.

Figure 2.2 Tennessee Motorcycle Fatalities



Source: Tennessee Department of Safety and Homeland Security, TITAN Division, 02/19/2015.
Fatalities 2003 to 2009: NHTSA FARS Encyclopedia.
Fatalities 2010 to 2013: FARS Division Database.

Purpose

The Tennessee Motorcycle Safety Strategic Plan (MSSP) is a statewide coordinated safety plan that provides a framework for the Tennessee Governor's Highway Safety Office (GHSO) and its motorcycle safety partners to implement motorcycle safety programs and strategies that are proven to reduce or prevent motorcycle crashes, fatalities, and serious injuries on Tennessee roadways.

This plan is constructed around the National Highway Safety Administration's (NHTSA) Uniform Guidelines for State Highway Safety Programs, Highway Safety Program Guideline No. 3, Motorcycle Safety. This Guideline identifies the elements of a statewide comprehensive motorcycle safety program. Nine elements are identified as Focus Areas in this plan and detailed in Section 4.0.

Plan Development Process

The Tennessee Motorcycle Safety Strategic Plan was developed based on:

- Analysis of motorcycle crash, fatality, and injury data from 2003 to 2013 (key findings are provided in Section 3);
- Analysis of Tennessee motorcycle registration, licensing, and training data (key findings are included in Section 3);
- Recommendations from the February 2014 NHTSA Motorcycle Program Assessment;
- Feedback from motorcycle stakeholders across the State who participated in a series of roundtable meetings; and
- Input and comments from the Tennessee Motorcycle Safety Coalition.

NHTSA Motorcycle Program Assessment

In February 2014, the Tennessee Department of Transportation (TDOT) and the GHSO sponsored a motorcycle safety assessment based upon NHTSA's Highway Safety Program Guideline No. 3 to learn from national experts how the State can reduce motorcycle-related fatalities and serious injuries and promote motorcycle safety. With the assessment results in hand, the next step was to gain additional insight from the experiences of Tennessee's motorcycle safety community.

Motorcycle Safety Roundtable Meetings

GHSO hosted a series of roundtable meetings to learn what motorcycle stakeholders and safety practitioners were doing to combat motorcycle safety problems and to gain input on effective programs and opportunities to be included in the State's MSSP. Attendees included representatives from engineering, education, emergency services, enforcement, motorcycle dealers, rider groups, and legislators. Roundtable meetings were held in the following locations:

- Western Tennessee (Jackson) – August 11, 2014, 26 in attendance;
- Middle Tennessee (Murfreesboro) – August 13, 2014, 57 in attendance; and
- Eastern Tennessee (Knoxville) – August 14, 2014, 35 in attendance.



The project team provided roundtable participants an overview of the MSSP planning process, reviewed general Tennessee motorcycle-related statistics and challenges from 2006 to 2012, and discussed strategies to address motorcycle safety in nine Focus Areas:

- Motorcycle Operation Under the Influence of Alcohol and/or Other Drugs;
- Rider Education and Training;
- Law Enforcement;
- Operator Licensing;
- Rider Conspicuity and Motorist Awareness;
- Highway Engineering;
- Personal Protective Equipment;
- Legislation/Policy; and
- Program Evaluation and Data.

Communications and Program Management are also program areas identified in the NHTSA Motorcycle Program Guidelines. Strategies for these areas were incorporated into the nine focus areas discussed, as appropriate. The next step was to organize a coalition to develop the MSSP.

Tennessee Motorcycle Safety Coalition

After the roundtable meetings, GHSO initiated and convened a coalition of motorcycle safety stakeholders and professionals from across the State. The coalition met to review the data and input from the assessment and roundtable meetings and develop a strategic plan to address the State's most pressing and data-driven motorcycle safety issues. The group includes representatives from the 4 Es (enforcement, education, engineering, and emergency medical services), including the TDOT, Motorcycle Rider Education Program (MREP), state and local law enforcement, trauma professionals, motorcycle rider groups, and motorcycle dealers. A list of the organizations/agencies represented is included in Appendix C. The coalition will lead the implementation of the plan outlined in this document.



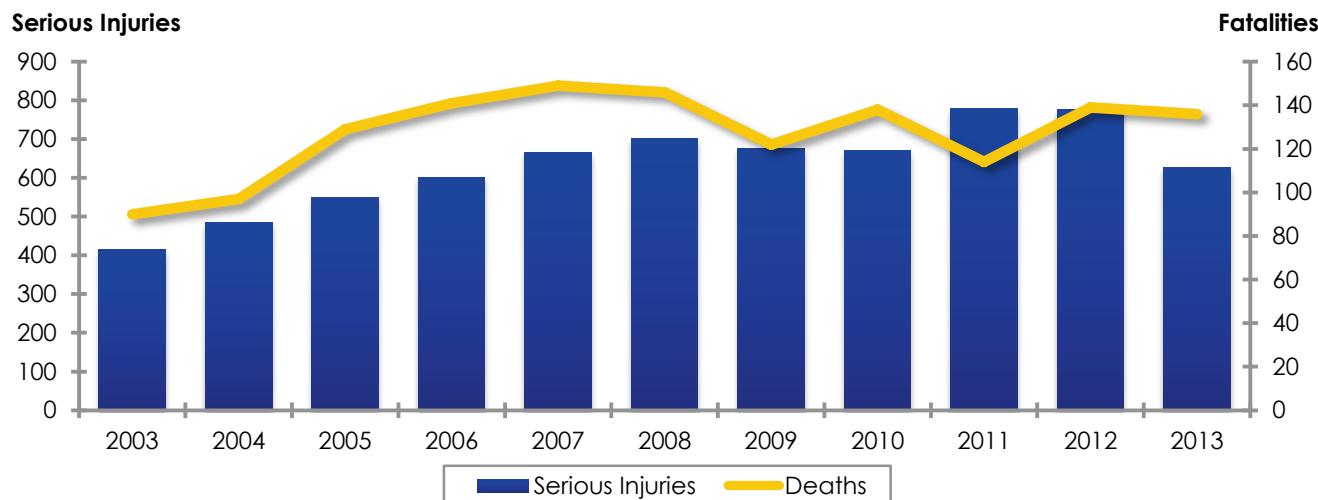
3.0 Tennessee Motorcycle Safety Challenges

Motorcycle crash and injury data were analyzed both in preparations for the NHTSA Motorcycle Safety Assessment and during the development of the strategic plan. The data summary provided in this section highlights the key findings. Additional and more detailed data are included in Appendices A, B, and C.

Overview of Crashes

Figure 3.1 shows Tennessee motorcycle fatalities and serious injuries from 2003 to 2013. The number of fatalities peaked at 149 in 2007 while serious injuries peaked at 779 in 2011. Fatalities and serious injuries are increasing for the time period.

Figure 3.1 Tennessee Motorcycle Fatalities and Serious Injuries

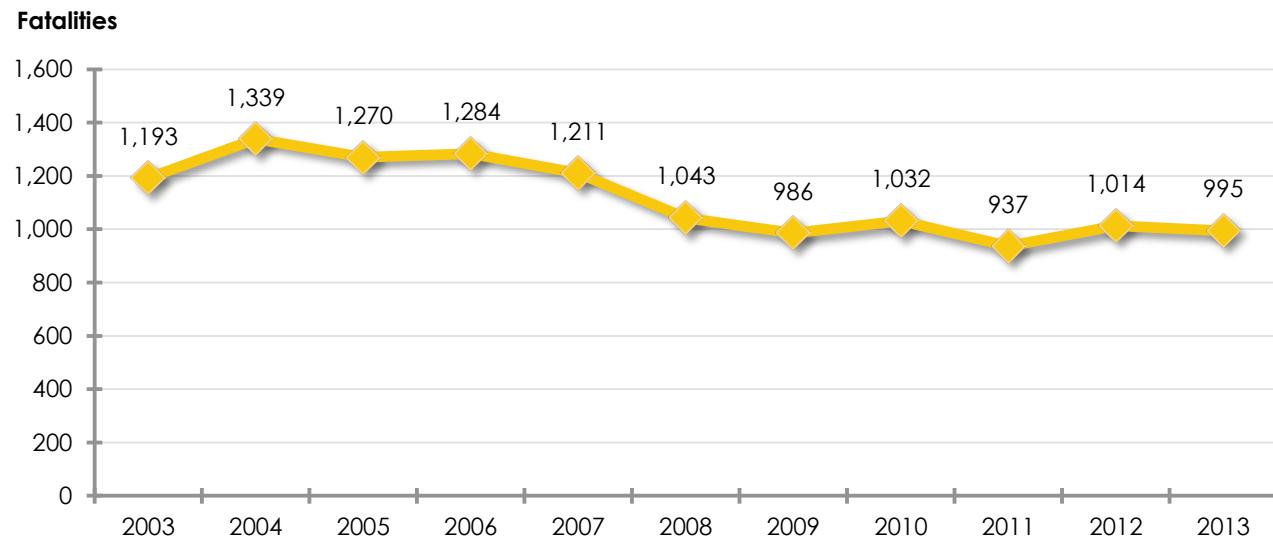


Source: Tennessee Department of Safety and Homeland Security, TITAN Division, 02/19/15.



It is important to understand the motorcycle trends as they relate to all motor vehicle fatalities on Tennessee roadways. Figure 3.2 shows motor vehicle fatalities from 2003 to 2013. Motor vehicle fatalities have been on a downward trend. Fatalities have decreased 17 percent from 1,193 in 2003 to 995 in 2013.

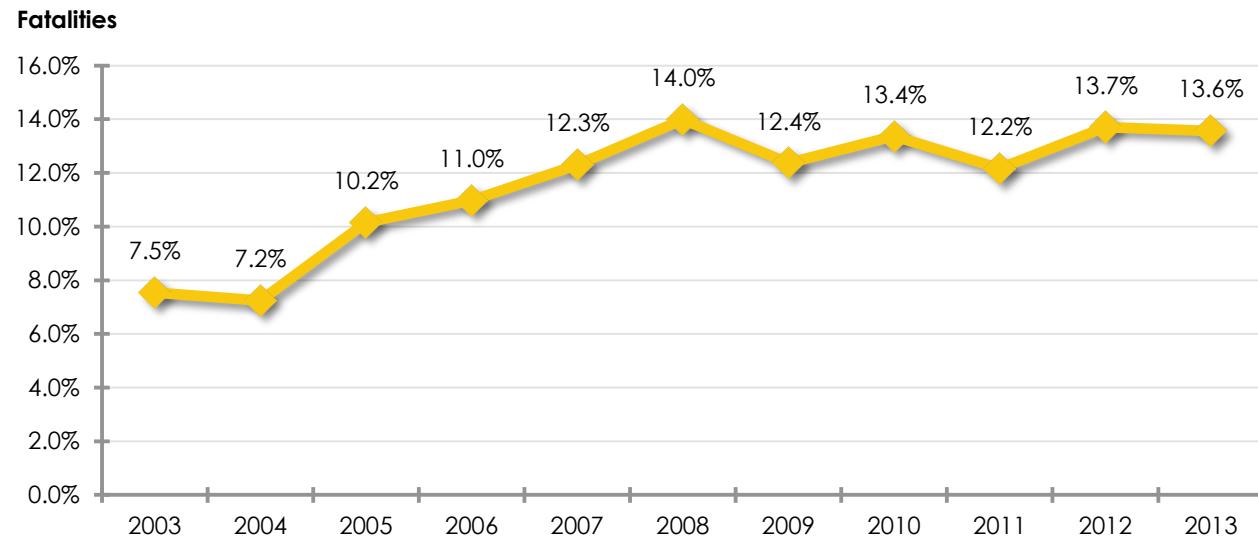
Figure 3.2 Tennessee Motor Vehicle Fatalities



Source: <http://www.tn.gov/safety/stats/CrashData/FatalityRate1950-2013.pdf>

Figure 3.3 shows the percentage of Tennessee traffic fatalities that involve motorcycles for the period 2003 to 2013. Overall, the percentage of traffic fatalities involving motorcycles has been on the rise from 7.5 percent in 2003 to 13.6 percent in 2013, with a high of 14.0 percent in 2008. This trend has occurred as motor vehicle fatalities have decreased.

Figure 3.3 Percentage of Tennessee Traffic Fatalities Involving Motorcyclists



Source: <http://www.tn.gov/safety/stats/CrashData/MotorcycleFatal1998-2014.pdf>.

Motorcycle fatalities and serious injuries for Tennessee's 95 counties are shown in Appendix B. Counties such as Blount, Davidson, Hamilton, Knox, and Shelby account for higher than average numbers of motorcycle crashes, serious injuries, and fatalities. Blount County is the location of the popular motorcycling destination Tail of the Dragon at Deals Gap.

Data Findings

The data below are from 2003 to 2013 unless noted otherwise. Fatality data are from the NHTSA Fatality Analysis Reporting System (FARS) and injury data are from the Tennessee's Integrated Traffic Analysis Network (TITAN). Motorcyclist is a combined reference to motorcycle operators and passengers.

Who Was Involved in Crashes?

- The highest number of deaths involved motorcyclists between the ages of 21 and 25.
- The highest number of serious injuries involved motorcyclists between the ages of 46 and 50.
- Male motorcyclists accounted for 1,252 deaths (89 percent), with 150 (11 percent) for females.
- Male motorcyclists accounted for 5,945 serious injuries (86 percent), with 977 (14 percent) for females.
- Motorcycle operators accounted for 93 percent of fatalities and 90 percent of serious injuries.

When Did Crashes Occur?

- The majority of motorcyclist deaths and serious injuries occurred from May to September when the weather is warm, on Saturdays and Sundays, and between the hours of 3 p.m. and 5 p.m.

Contributing Factors

- On average, 30 percent of motorcycle operators killed in crashes were unlicensed.
- Twenty-one percent of fatal and serious injury motorcycle crashes involved an impaired motorcycle operator.
- Approximately 11 percent of motorcycle operators and 15 percent of passengers killed in a crash were not wearing a helmet.²
- Approximately 88 percent of motorcyclists in serious injury crashes were wearing a helmet.

Licensing and Registrations

- Motorcycle licenses have steadily increased from 233,984 in 2003 to 358,922 in 2014.
- As of March 2015, 174,352 motorcycles or motor-driven cycles were registered in Tennessee.

² Tennessee has had a universal helmet law since 1967. A person riding a motorcycle is required to wear a crash helmet meeting Federal standard 49 CFR 571.218 (T.C.A. 55 9 302).





4.0 Focus Areas

The Tennessee Motorcycle Safety Strategic Plan (MSSP) is organized under nine key Focus Areas. Strategies are identified for each Focus Area and key initiatives are outlined for each strategy. More detailed action steps which identify the action step leaders, target completion dates, and performance measures will be developed by the Motorcycle Safety Coalition and maintained as a separate living document that will be revised and updated annually to reflect the current conditions and availability of resources. Strategies are identified as near-term (Year 1), mid-term (Year 2 or 3), or long-term (Year 4 or 5) to denote the intended priority level for implementation.



Motorcycle Operation Under the Influence of Alcohol or Other Drugs

Strategy 1 – Develop and implement impaired riding awareness programs and events.



- Encourage more rider groups to promote riding sober by providing examples of activities they can implement.
- Develop and implement programs sponsored by law enforcement motor (motorcycle officer) programs to inform riders how law enforcement motorcycle officers ride every day without getting in crashes, address frequently asked questions, and remind riders to ride sober.
- Develop and implement a motorcycle ride escort/safety program to allow new riders to get on-the-road experience with an experienced rider, and include reminders to ride sober in the program.



Strategy 2 – Create and distribute Tennessee-specific impaired riding materials.

Near Term

- Develop a data-driven (predictive analytics for crashes and impaired riding crashes) impaired riding motorcycle safety campaign and focus material distribution on the locations and demographics associated with impaired riding crashes and arrests.
- Develop targeted impaired riding campaign materials with a standard message (Ride to Zero) for use by various groups and programs.
- Provide impaired riding campaign materials to motorcycle organizations for distribution.

Strategy 3 – Develop programs to inform law enforcement and adjudication officers of impaired riding enforcement strategies.

Near Term

- Provide training on prosecuting impaired riding offenders during conferences or appropriate training activities.
- Continue providing the Law Enforcement and Motorcycle Safety course annually.
- Utilize the Judicial Liaison program to communicate impaired riding challenges to judges.

Strategy 4 – Implement additional impaired riding prevention efforts based on available data.

Near Term

- Include impaired motorcyclist enforcement as a specific component in the Strategic Highway Safety Plan (SHSP).
- Target enforcement efforts in high crash areas during motorcycle events.

Rider Education and Training

Strategy 1 – Establish an evaluation program to continuously measure the Motorcycle Rider Education Program's (MREP) impact on rider safety and motorcycle crashes.

Near Term

- Collaborate with Department of Safety to conduct study of trained and untrained riders' crash history every 5 years.

Strategy 2 – Ensure entry-level training curriculum are standardized statewide.

Near Term

- Continue use of the Model National Standards for Entry-Level Motorcycle Rider Training as a guide for assessing rider training curricula.

Strategy 3 – Increase the number of trained Tennessee motorcyclists and encourage advanced training.

Medium Term

- Study the feasibility of mandating the basic rider training for all novice motorcyclists using a tiered process.
- Mandate a motorcycle safety course in place of a driving school course ordered by courts for certain motorcycle citations, especially those cited with no Class M license.
- Promote continuous education by offering advanced training exercises/courses.

Strategy 4 – Assess data-driven and research-based training curriculum needs and develop a process to revise the curriculum.

Long Term

- Analyze data from the CRM and TITAN data systems to assess Tennessee motorcycle crash characteristics.
- Review curriculum annually to ensure most common crash characteristics are addressed in classroom and on-cycle instruction (as appropriate).

Strategy 5 – Incorporate sharing the road with motorcycles concepts and strategies into mandated driving school courses.

Long Term

Law Enforcement

Strategy 1 – Increase motorcycle-related law enforcement training.

Near Term

- Increase law enforcement training on the techniques of recognizing impaired motorcycle riders.
- Increase law enforcement training on the techniques to identify noncompliant helmets.
- Offer the motorcycle crash investigation/reconstruction course to more officers.
- Create tip cards to provide a comprehensive list of motorcycle-related laws to law enforcement.

Strategy 2 – Expand enforcement in areas of high motorcycle crashes using a data-driven approach.

Medium Term

- Develop a predictive analytics model to predict motorcycle crashes and use the data to inform motorcycle safety enforcement and education programs.
- Provide more detailed motorcycle crash data to law enforcement (e.g., speed, helmet use, residence, riding experience).

Strategy 3 – Examine the feasibility of law enforcement involved motorcycle safety programs.

Near Term

- Evaluate the feasibility of a program in which motor officers assess riding skills of experienced riders (e.g., BikeSafe Program).

Operator Licensing

Strategy 1 – Develop a graduated licensing program for motorcyclists.

Long Term

- Require minimum hours of experience before issuance of a motorcycle learner's permit or license and better supervised practices.
- Require graduated licensing for riders under age 18, with restrictions.



Strategy 2 – Ensure compliance and quality assurance for motorcycle examiners.

Long Term



- Participate in the American Association of Motor Vehicle Administrators' (AAMVA) certified motorcycle examiner program.
- Develop a compliance and quality assurance effort for Driver Services Division examiners and MREP Rider Coaches who administer the licensing test.

Strategy 3 – Reduce the number of unlicensed motorcycle operators.

Medium Term



- Promote the advantages of proper licensing through dealers, rider groups, law enforcement, etc.
- Fund training course costs to reduce barriers to enrollment in MREP's license waiver courses.
- Develop more detailed educational materials for permit holders/applicants.
- Include motorcycle-specific crash causation data in the Motorcycle Operator's Manual (MOM).

Strategy 4 – Reform licensing exercises for motorcycle testing done at driver's licensing centers.

Long Term



- Determine the feasibility of more rigorous braking exercises for testing done at driver's license centers (e.g., high-speed braking, emergency braking, etc.).

Rider Conspicuity and Motorist Awareness

Strategy 1 – Educate motorcycle riders on conspicuity strategies to increase use of high-visibility clothing and gear.

Near Term



- Utilize the reach and influence of rider groups to promote rider conspicuity at private and public events.
- Develop data-driven motorcyclist conspicuity messages with greater detail (e.g., "no zone" around vehicles.)
- Use social media to distribute conspicuity messages targeting age groups overrepresented in motorcycle crashes.
- Revisit legislation related to defining the number of headlights allowed and oscillating lights on motorcycles.

Strategy 2 – Encourage motorists to share the road with motorcycles and increase their knowledge about sharing the road with motorcyclists.

Near Term



- Develop motorist awareness messages with greater detail on sharing the road with motorcyclists and crash-specific data for Tennessee.
- Use social media to distribute motorist awareness messages targeting all age groups.
- Evaluate the impact and reach of share the road messages.

Highway Engineering

Strategy 1 – Identify opportunities to provide enhanced engineering and maintenance personnel training on motorcycle safety.



- Educate road design and maintenance personnel about hazardous conditions to motorcycles.
- Coordinate with GHSO and MREP to address specific safety needs of motorcyclists in highway engineering.

Strategy 2 – Identify opportunities to enhance design and maintenance policies/protocols to improve motorcycle safety and consider motorcyclists during maintenance and selection of materials.



- Continue using signage to warn motorcyclists of hazardous conditions (e.g., advanced warning of hazards to allow motorcyclists to reroute if desired).
- Require contractors to remove loose gravel and debris from construction zones on a regular basis.
- Consider motorcycles when placing metal plates in the right-of-way.
- Examine the use of skid resistant paint materials to avoid slippery surfaces.
- Modify median barriers to accommodate motorcycles, when appropriate (e.g., distance from roadway, widen gap beneath lower cable and ground).
- Consider using TDOT incident management vehicles/personnel to remove hazardous debris from roadway (e.g., gators).
- Review and improve secondary roadway construction protocols.
- Examine roadways with frequent maintenance operations to identify potential opportunities to reduce hazards to motorcyclists during maintenance.

Personal Protective Equipment

Strategy 1 – Increase the number of motorcyclists properly wearing all personal protective equipment.



- Survey motorcyclists about their attitudes toward personal protective equipment and use the information to formulate campaigns encouraging use.
- Develop an awareness campaign to encourage using personal protective equipment.
- Use social media to target young riders on the benefits of personal protective equipment.
- Integrate personal protective equipment messages into the State's occupant protection activities.
- Maintain Tennessee's existing motorcycle helmet law.



Strategy 2 – Encourage enforcement of the universal helmet law.



- Increase law enforcement training on the techniques to identify noncompliant helmets.

Legislation/Policy

Strategy 1 – Revise and simplify all Tennessee comprehensive administrative code definitions to allow for easier enforcement of motorcycle-related infractions.



Strategy 2 – Provide information and data analysis to support legislative actions needed to implement applicable strategies in the MSSP.



- Mandate a motorcycle safety course in place of a driving school course ordered by courts, for certain motorcycle citations [Rider Training and Education].
- Reform the existing motorcycle learner's permit process [Operator Licensing].
- Develop a graduated licensing program for motorcyclists [Operator Licensing].
- Maintain the existing motorcycle helmet law [Personal Protective Equipment].
- Revisit legislation related to defining the number of headlights allowed and oscillating lights on motorcycles [Rider Conspicuity and Motorist Awareness].

Program Evaluation and Data

Strategy 1 – Continue to use data to identify and develop motorcycle safety strategies.



- Use TITAN Predictive Analysis Model to predict future motorcycle crash factors.
- Link CRM data with TITAN data to better understand motorcycle safety challenges.
- Conduct ongoing analysis of TITAN data to compare trained and untrained rider crash frequency and severity.

Strategy 2 – Establish a formal implementation and evaluation process for motorcycle safety strategies and countermeasures.



- Develop measurable objectives and a formal evaluation of all GHSO and MREP motorcycle activities.
- Include motorcycle organizations in implementation of the evaluation process for projects/programs.
- Report progress in implementing the MSSP strategies, including barriers to success, to motorcycle stakeholders and safety practitioners annually.



5.0 Summary

While Tennessee's motor vehicle fatalities and serious injuries have been on the decline in recent years, motorcycle fatalities and serious injuries are increasing. Along with this trend, the number of motorcycle licenses and registrations has increased. The Tennessee GHSO, MREP, Motorcycle Safety Coalition, and motorcycle stakeholders are committed to reducing motorcycle-related fatalities and serious injuries and promoting the safest environment for motorcyclists in the State. The MSSP is a road map for Tennessee to begin its journey to "Ride to Zero."

Strategies for nine Focus Areas: Motorcycle Operation Under the Influence of Alcohol and/or Other Drugs, Rider Education and Training, Law Enforcement, Operator Licensing, Rider Conspicuity and Motorist Awareness, Highway Engineering, Personal Protective Equipment, Legislation/Policy, and Program Evaluation and Data have been developed using research on proven motorcycle safety countermeasures and with feedback and recommendations from the NHTSA Motorcycle Program Assessment, three stakeholder meetings across the State, and experts and motorcycle safety professionals on the Motorcycle Safety Coalition.

The Tennessee Motorcycle Safety Coalition, along with GHSO and MREP, will lead the implementation of this five-year plan and track progress towards the goal of reducing motorcycle-related fatalities by 2 percent annually and reducing the current trend of rising serious injuries by not exceeding the 2009-2013 five-year average of 706 by 2019.



APPENDIX A

Tennessee Motorcycle Safety Fact Sheet



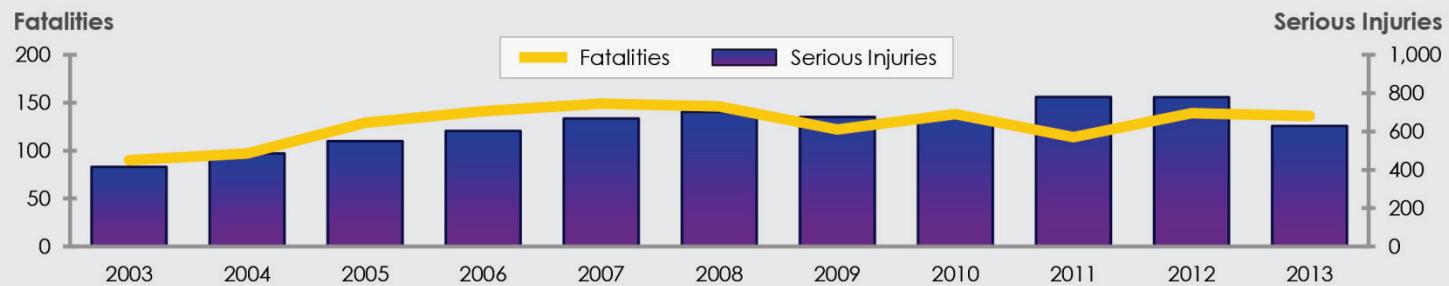
TENNESSEE MOTORCYCLE DATA FACT SHEET



2003-2013 Data

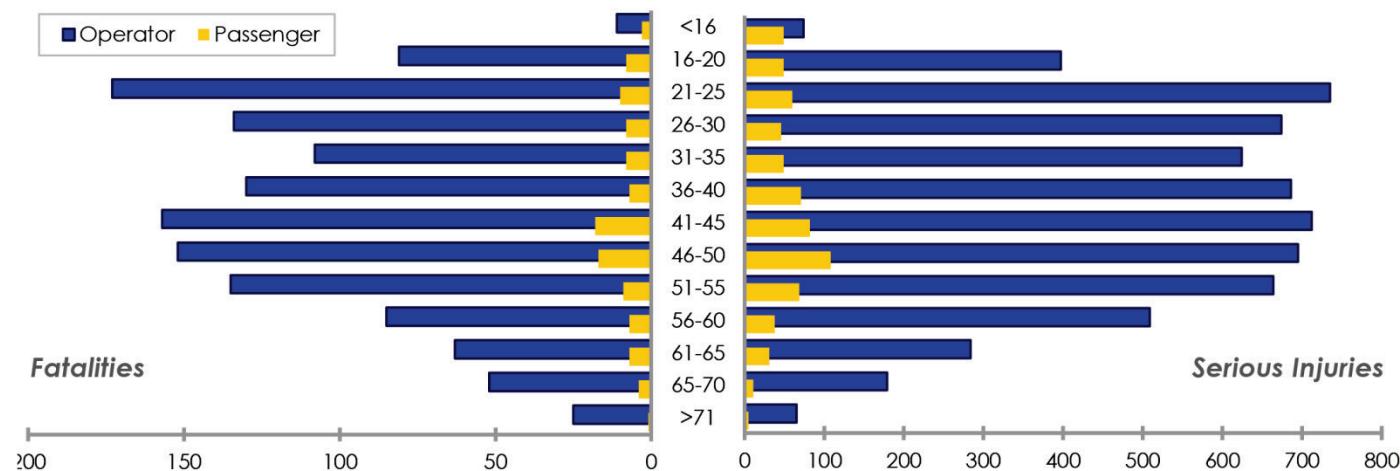
OVERVIEW OF CRASHES

Between 2003 and 2013, 1,424 people died and 7,101 were seriously injured in motorcycle-related crashes. Motorcycle deaths accounted for 11 percent of Tennessee's traffic-related deaths.



WHO WAS INVOLVED IN CRASHES?

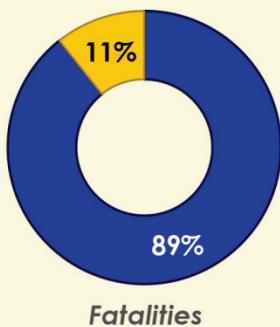
AGE



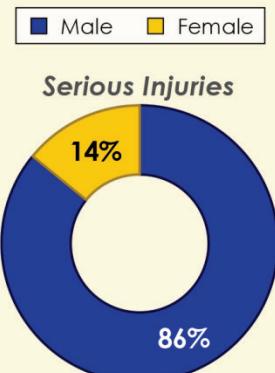
The highest number of deaths involved operators and passengers between the ages of 21 and 25.

The highest number of serious injuries involved operators and passengers between the ages of 46 and 50.

GENDER

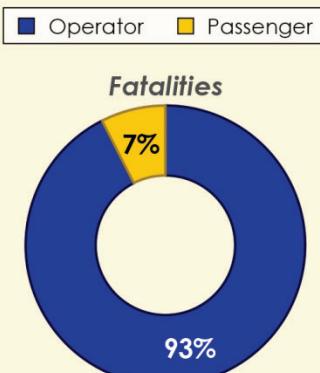


Male operators/passengers accounted for 1,252 (89%) deaths, with 150 (11%) for females.

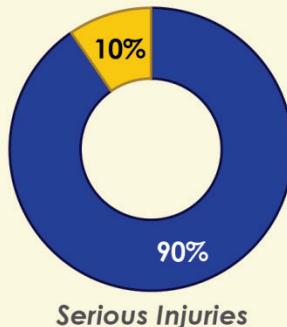


Male operators/passengers accounted for 5,945 (86%) serious injuries, with 977 (14%) for females (*27 unknown).

OPERATOR/PASSENGER



Operators accounted for 93 percent of fatalities and 90 percent of serious injuries.



Operators accounted for 90 percent of fatalities and 90 percent of serious injuries.

WHEN DID CRASHES OCCUR?

The majority of operator/passenger deaths and serious injuries occurred from May to September when the weather is warmer, on Saturdays and Sundays, and between the hours of 3 p.m. and 5 p.m.

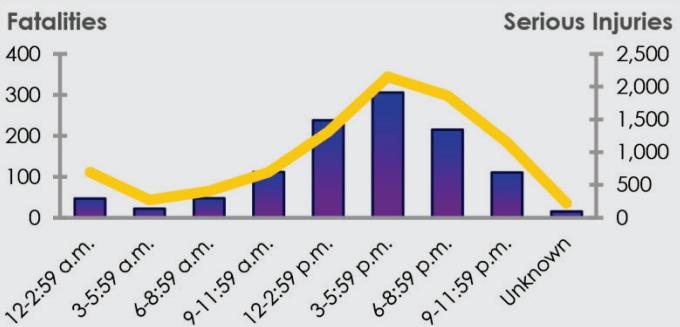
MONTH



DAY



TIME OF DAY

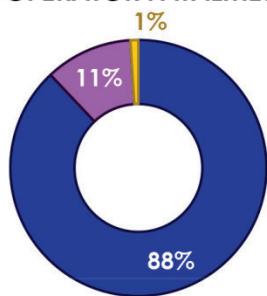


HELMET USE

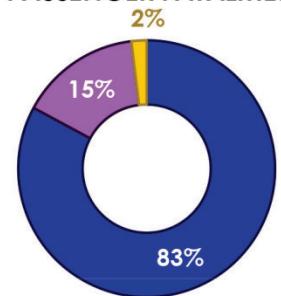
Tennessee has had a universal helmet law since 1967. A person riding a motorcycle is required to wear a crash helmet meeting Federal standard 49 CFR 571.218 (T.C.A. 55-9-302).

Approximately 11 percent of operators and 15 percent of passengers killed in a crash were not wearing a helmet.

OPERATOR FATALITIES



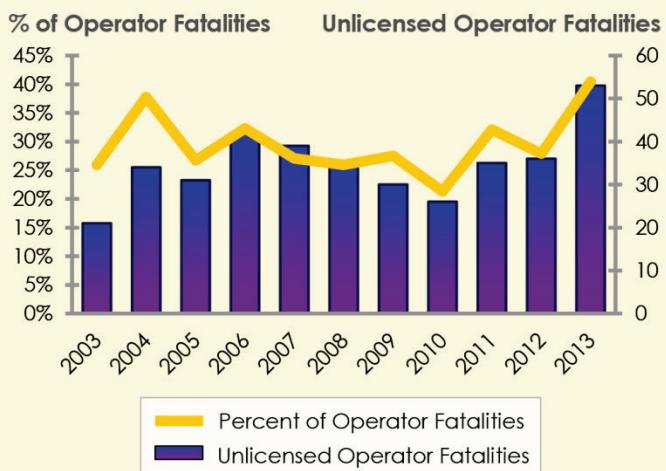
PASSENGER FATALITIES



CONTRIBUTING FACTORS

LICENSING

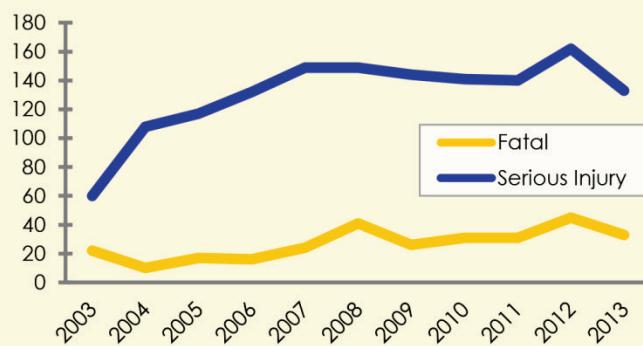
On average, 30 percent of motorcycle operators killed in a crash were unlicensed.



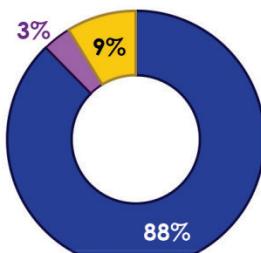
IMPAIRMENT

Twenty-one percent of fatal and serious injury motorcycle crashes involved an impaired motorcycle operator.

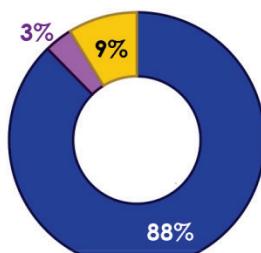
Crashes



OPERATOR INJURIES



PASSENGER INJURIES



TENNESSEE MOTORCYCLE DATA FACT SHEET

Source: Tennessee Department of Safety and Homeland Security, TITAN Division, 02/19/2015.

Serious Injuries: TITAN Crash Database.

Fatalities 2003-2009: NHTSA FARS Encyclopedia.

Fatalities 2010-2013: FARS Division Database.

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APPENDIX B

Motorcycle Fatalities and Serious Injuries by County

Motorcyclists Killed in Tennessee Traffic Crashes

County	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Anderson	1	3	1	3	5	3	4	2	1	0	2
Bedford	0	0	1	0	0	1	0	2	0	0	5
Benton	0	0	0	0	1	0	0	0	0	1	2
Bledsoe	1	0	0	1	1	0	0	0	0	0	0
Blount	3	4	7	5	9	9	4	3	5	6	2
Bradley	1	1	2	2	0	2	1	1	2	4	0
Campbell	0	0	1	3	0	0	0	1	2	0	1
Cannon	1	1	1	0	2	1	0	2	0	2	1
Carroll	1	0	0	0	2	0	0	0	0	0	1
Carter	0	1	2	2	1	1	2	0	3	0	2
Cheatham	0	1	0	1	1	0	0	1	1	0	0
Chester	0	0	0	0	0	0	0	0	0	0	0
Claiborne	1	0	3	2	2	1	1	2	1	0	0
Clay	0	0	0	0	1	0	0	0	0	0	0
Cocke	3	1	2	1	3	2	1	2	0	1	1
Coffee	1	0	1	0	1	0	0	1	0	1	1
Crockett	0	0	0	0	0	0	2	0	0	1	1
Cumberland	0	0	1	2	3	1	0	1	6	1	0
Davidson	6	7	8	8	5	8	7	8	9	15	8
Decatur	0	1	0	1	0	0	0	0	0	2	0
DeKalb	0	1	1	0	0	1	0	0	1	1	1
Dickson	0	1	0	3	1	1	4	2	1	1	3
Dyer	1	2	0	1	1	0	0	2	0	0	0
Fayette	0	0	1	0	0	0	0	0	0	0	1
Fentress	0	1	0	0	0	1	1	0	0	0	0
Franklin	0	0	2	0	1	1	1	0	0	1	1
Gibson	0	1	1	0	1	1	0	0	0	1	1
Giles	0	0	1	0	0	0	1	2	2	0	2
Grainger	0	1	0	1	1	1	1	1	0	2	0
Greene	1	1	1	2	0	2	1	2	2	5	5
Grundy	0	0	1	1	0	3	0	0	0	1	1
Hamblen	1	1	1	2	0	1	2	0	0	1	0
Hamilton	1	4	6	6	9	8	9	8	3	7	8
Hancock	1	1	0	0	1	0	0	1	0	0	0
Hardeman	1	1	0	0	2	2	0	0	0	0	1
Hardin	1	0	1	2	1	0	0	0	1	1	0
Hawkins	1	0	2	1	2	4	1	1	3	1	0
Haywood	0	0	0	0	0	0	1	0	1	0	0
Henderson	0	2	2	0	0	0	1	0	0	0	0
Henry	1	0	1	0	1	1	2	2	1	0	0
Hickman	1	0	0	0	3	0	0	0	0	1	1
Houston	0	0	0	0	0	1	0	0	0	0	1
Humphreys	0	0	1	0	1	2	1	1	0	0	1
Jackson	0	0	1	1	0	1	0	0	0	0	1
Jefferson	0	1	1	0	1	3	2	1	1	3	1
Johnson	0	1	0	0	1	0	2	0	0	0	0
Knox	4	4	13	6	8	6	14	8	8	5	5
Lake	0	0	0	0	0	0	1	0	0	0	0



County	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Lauderdale	1	1	0	1	0	1	0	0	1	2	0
Lawrence	0	1	1	1	0	4	0	0	2	1	4
Lewis	1	0	0	0	0	0	0	1	0	0	0
Lincoln	1	0	2	3	0	0	0	0	1	2	0
Loudon	0	1	0	1	1	2	0	4	0	0	1
McMinn	0	2	1	2	4	4	1	2	1	0	1
McNairy	1	1	2	1	0	1	0	0	0	0	0
Macon	0	0	0	1	0	1	1	1	1	2	0
Madison	1	0	1	4	3	0	0	3	1	4	0
Marion	0	0	0	3	2	3	2	1	3	2	0
Marshall	0	0	1	0	0	1	0	0	2	2	0
Maury	7	1	2	0	4	1	0	1	1	1	1
Meigs	1	0	0	0	0	1	0	1	0	0	2
Monroe	2	3	1	0	2	2	2	5	1	2	2
Montgomery	2	3	5	3	5	3	2	2	2	7	6
Moore	0	0	0	0	1	0	0	0	0	0	0
Morgan	0	0	0	2	2	1	1	2	0	0	0
Obion	1	1	2	1	1	0	1	1	0	0	1
Overton	0	0	0	1	0	0	0	3	0	0	2
Perry	0	1	1	2	0	1	0	0	0	0	2
Pickett	1	0	0	0	0	0	0	0	0	0	0
Polk	2	0	0	1	3	2	1	3	0	0	0
Putnam	0	1	0	1	1	0	1	2	3	0	2
Rhea	1	0	0	0	0	1	0	0	0	2	0
Roane	0	0	2	1	0	0	2	3	0	2	1
Robertson	1	1	1	0	3	2	0	2	1	1	1
Rutherford	2	2	3	6	4	7	2	2	5	5	3
Scott	0	1	1	0	1	0	1	0	0	0	0
Sequatchie	1	1	0	0	0	0	0	0	1	0	0
Sevier	1	1	3	8	2	2	2	5	2	2	4
Shelby	18	13	11	24	19	15	12	15	13	13	19
Smith	0	1	0	2	1	0	2	0	0	0	1
Stewart	0	2	1	0	0	2	0	1	0	1	2
Sullivan	0	6	2	2	7	6	3	2	4	7	1
Sumner	2	3	4	2	0	0	1	5	5	2	1
Tipton	3	0	2	1	0	1	1	1	0	1	2
Trousdale	0	1	1	0	0	0	0	1	0	2	0
Unicoi	0	2	2	0	0	1	0	0	0	0	0
Union	1	0	1	0	0	1	3	1	0	1	1
VanBuren	1	0	0	0	1	0	0	0	0	0	0
Warren	0	0	0	0	2	3	0	5	2	2	4
Washington	1	2	3	1	3	3	2	2	0	3	2
Wayne	0	0	2	0	0	1	1	1	0	0	1
Weakley	0	0	0	0	0	0	2	0	1	2	3
White	1	0	1	4	1	0	1	1	1	1	0
Williamson	2	1	2	0	2	2	3	0	2	1	2
Wilson	1	1	1	5	2	2	5	2	4	1	3
Unknown	0	0	0	0	0	0	0	0	0	0	0
Total	90	97	129	141	149	146	122	138	114	139	136

Source: Tennessee Department of Safety and Homeland Security, TITAN Division, 02/19/2015.

Total Crashes: TITAN Crash Database.

Serious Injuries: TITAN Crash Database.

Fatalities 2003 to 2009: NHTSA FARS Encyclopedia.

Fatalities 2010 to 2013: FARS Division Database.

Motorcyclists Seriously Injured in Tennessee Traffic Crashes

County	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Anderson	12	9	9	7	5	8	7	8	6	7	5
Bedford	4	3	3	4	7	4	6	8	6	8	5
Benton	1	0	2	1	2	2	1	3	0	2	1
Bledsoe	4	4	2	0	5	2	4	1	3	6	1
Blount	15	30	26	32	38	50	32	28	49	43	49
Bradley	7	11	8	9	8	9	7	9	12	13	8
Campbell	2	2	3	4	7	4	2	4	4	8	3
Cannon	1	0	1	0	1	1	4	2	1	0	0
Carroll	1	1	2	6	4	1	10	5	8	7	2
Carter	7	10	4	1	3	5	7	12	15	12	6
Cheatham	2	4	4	9	2	4	9	10	3	4	6
Chester	0	0	0	0	1	2	2	2	1	6	1
Claiborne	0	1	0	2	3	0	4	9	2	2	2
Clay	0	0	0	1	0	1	0	0	0	1	0
Cocke	4	5	8	9	8	5	7	4	8	8	7
Coffee	2	5	5	1	9	2	3	6	6	8	4
Crockett	0	1	2	0	2	1	1	3	0	0	0
Cumberland	0	2	3	4	2	8	1	3	6	3	4
Davidson	33	26	26	37	36	40	22	22	28	33	35
Decatur	0	2	0	0	2	2	2	2	4	1	2
DeKalb	1	3	1	2	1	0	1	1	7	4	3
Dickson	1	2	5	2	4	3	6	6	6	6	7
Dyer	0	3	8	2	8	2	5	6	3	3	2
Fayette	4	1	4	2	0	6	3	5	2	2	2
Fentress	1	2	0	0	0	0	0	0	1	0	0
Franklin	1	1	2	2	2	5	1	3	8	2	3
Gibson	6	3	5	5	3	4	3	5	5	6	2
Giles	2	1	5	5	1	4	0	5	4	2	5
Grainger	4	2	4	3	3	2	5	3	4	7	3
Greene	4	6	8	8	9	10	13	14	19	13	12
Grundy	0	1	4	0	2	6	1	1	3	0	4
Hamblen	4	7	5	7	9	10	4	11	14	5	7
Hamilton	16	24	28	30	29	29	43	48	56	68	49
Hancock	0	2	2	2	0	0	4	0	0	0	0
Hardeman	0	1	4	5	1	2	1	2	3	5	1
Hardin	1	6	1	1	0	3	4	4	7	4	5
Hawkins	3	6	7	4	9	10	8	3	10	5	6
Haywood	0	0	1	1	1	3	0	0	2	2	1
Henderson	5	2	4	2	1	3	5	0	7	2	1
Henry	6	4	4	2	7	7	5	10	8	6	6
Hickman	1	1	2	0	0	9	4	4	3	5	0
Houston	0	0	2	1	0	0	9	0	1	0	2
Humphreys	0	2	2	1	2	0	1	1	4	3	7
Jackson	0	1	0	0	2	2	1	0	1	1	1
Jefferson	2	4	13	5	7	6	10	9	11	5	6
Johnson	2	5	2	4	3	3	0	2	6	3	1
Knox	26	30	39	41	46	44	60	44	50	55	38
Lake	0	0	0	2	1	0	0	1	0	0	0
Lauderdale	1	1	2	0	1	4	6	1	3	2	0
Lawrence	2	2	6	1	7	3	5	4	7	5	3
Lewis	1	0	1	1	5	6	4	3	3	2	3
Lincoln	2	4	7	4	10	6	5	4	8	3	5
Loudon	4	1	4	8	7	8	7	10	2	6	6
McMinn	6	5	7	13	6	8	10	11	5	12	5
McNairy	1	1	0	0	0	2	2	3	6	2	2



County	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Macon	1	2	1	2	0	0	0	1	2	1	0
Madison	8	8	9	7	8	10	9	13	8	13	9
Marion	6	1	4	2	9	8	12	5	7	3	2
Marshall	0	3	0	4	2	10	7	4	3	7	7
Maury	5	8	10	3	7	9	15	4	8	9	7
Meigs	0	2	2	0	1	0	3	3	0	3	2
Monroe	3	11	5	8	24	10	15	16	9	17	13
Montgomery	24	25	28	31	27	28	26	29	40	49	35
Moore	0	2	1	1	2	3	1	1	5	1	0
Morgan	0	2	4	2	4	2	4	3	5	3	1
Obion	4	6	12	6	5	13	4	7	0	5	1
Overton	1	5	0	0	1	4	0	2	2	4	1
Perry	0	4	1	3	2	6	4	4	6	4	0
Pickett	0	0	0	0	0	0	0	1	2	0	0
Polk	2	4	1	8	9	7	7	6	6	7	5
Putnam	5	2	6	12	14	8	11	11	6	18	17
Rhea	4	2	2	2	0	1	2	5	2	2	4
Roane	8	4	3	3	13	8	11	6	5	5	1
Robertson	4	4	3	11	4	5	7	8	6	8	10
Rutherford	14	16	18	22	24	21	19	24	30	22	30
Scott	1	1	0	1	1	0	1	1	1	0	1
Sequatchie	4	3	1	2	0	2	0	4	4	2	2
Sevier	13	19	19	24	16	22	9	21	19	17	11
Shelby	43	43	47	64	74	53	56	44	51	53	42
Smith	3	0	1	2	2	2	3	1	2	2	2
Stewart	3	6	9	3	3	6	5	8	12	3	2
Sullivan	7	9	12	17	19	15	18	9	12	18	12
Sumner	10	6	14	9	14	23	14	12	21	20	13
Tipton	4	4	5	8	8	5	4	6	11	10	8
Trousdale	1	0	0	0	0	1	0	0	1	0	0
Unicoi	2	0	1	5	4	2	2	3	3	2	2
Union	0	1	1	3	1	2	4	1	0	3	1
VanBuren	0	0	4	1	1	2	2	0	0	2	1
Warren	3	1	1	3	1	2	1	2	7	1	1
Washington	4	8	6	9	10	13	6	11	5	15	6
Wayne	5	4	2	1	2	5	2	3	3	2	3
Weakley	3	1	3	2	1	5	3	9	4	1	6
White	1	2	1	2	0	0	3	2	3	6	6
Williamson	14	7	9	11	13	13	9	9	13	13	13
Wilson	3	9	6	15	9	14	9	8	14	9	12
Unknown	0	0	0	0	0	0	0	0	0	0	0
Total	415	485	549	602	667	701	675	672	779	778	628

Source: Tennessee Department of Safety and Homeland Security, TITAN Division, 02/19/2015.

Total Crashes: TITAN Crash Database.

Serious Injuries: TITAN Crash Database.

Fatalities 2003 to 2009: NHTSA FARS Encyclopedia.

Fatalities 2010 to 2013: FARS Division Database.

APPENDIX C

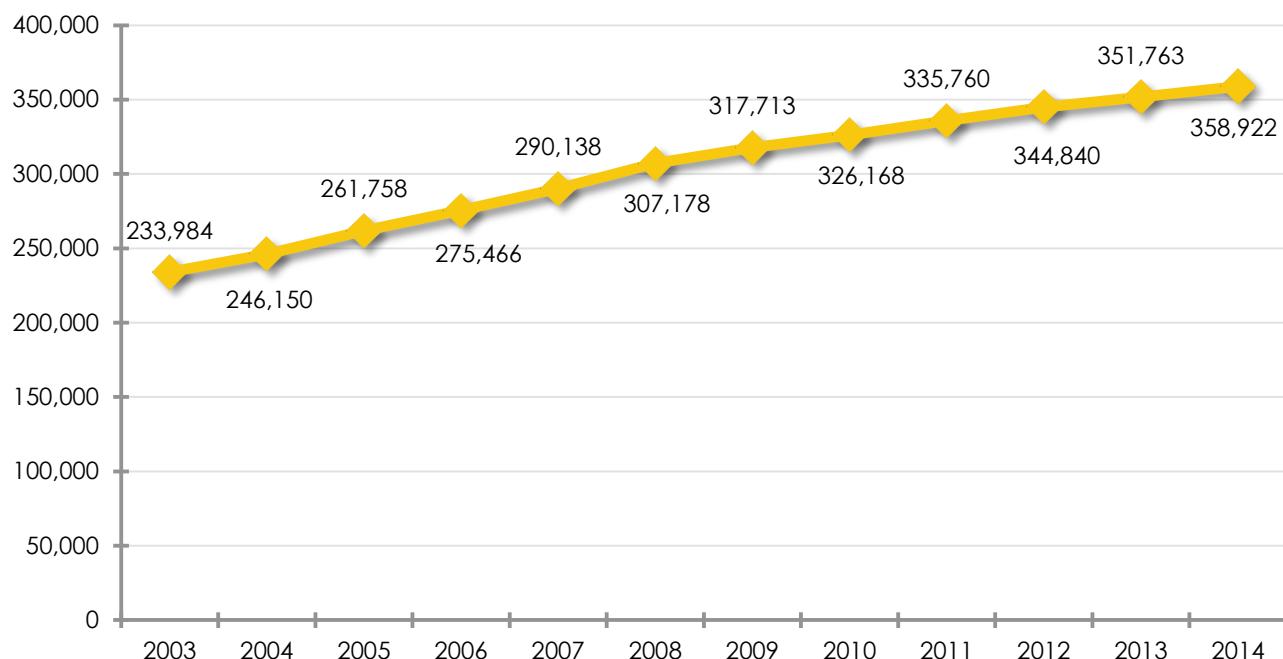
Motorcycle Registration and Licensing Statistics

Licenses and Registrations

The State of Tennessee requires motorcycle riders to be licensed. The operator of a motorcycle, motor-driven cycle, or motorized bicycle/scooter will need to apply for a Class M license and register the motorcycle.

Figure 1 shows the number of Class M motorcycle licenses held in Tennessee from 2003 to 2014. Licenses have steadily increased over the 10-year period. Motorcycle licenses by county can be found at http://www.tn.gov/safety/stats/DL_Handgun/DL/MotorcycleLicensesByCounty.pdf.

Tennessee Motorcycle Licenses



Source: http://www.tn.gov/safety/stats/DL_Handgun/DL/MotorcycleLicensesByCounty.pdf.

As of March 2015, 174,352 motorcycles or motor-driven cycles were registered in Tennessee.



Registrations by County as of March 2015

Anderson	1	2,887	Hamilton	33	9,123	Morgan	65	579
Bedford	2	1,414	Hancock	34	149	Obion	66	878
Benton	3	720	Hardeman	35	442	Overton	67	683
Bledsoe	4	408	Hardin	36	728	Perry	68	284
Blount	5	5,578	Hawkins	37	2,041	Pickett	69	211
Bradley	6	3,306	Haywood	38	221	Polk	70	717
Campbell	7	950	Henderson	39	819	Putnam	71	2,416
Cannon	8	303	Henry	40	1,231	Rhea	72	1,122
Carroll	9	779	Hickman	41	714	Roane	73	1,801
Carter	10	2,038	Houston	42	288	Robertson	74	1,913
Cheatham	11	1,707	Humphreys	43	662	Rutherford	75	6,968
Chester	12	458	Jackson	44	397	Scott	76	390
Claiborne	13	953	Jefferson	45	1,890	Sequatchie	77	674
Clay	14	223	Johnson	46	607	Sevier	78	3,682
Cocke	15	1,423	Knox	47	10,258	Shelby	79	11,487
Coffee	16	1,824	Lake	48	102	Smith	80	521
Crockett	17	271	Lauderdale	49	459	Stewart	81	616
Cumberland	18	2,063	Lawrence	50	1,035	Sullivan	82	5,950
Davidson	19	11,093	Lewis	51	396	Sumner	83	5,444
Decatur	20	379	Lincoln	52	710	Tipton	84	1,830
DeKalb	21	579	Loudon	53	2,039	Trousdale	85	242
Dickson	22	1,438	McMinn	54	1,886	Unicoi	86	730
Dyer	23	861	McNairy	55	791	Union	87	574
Fayette	24	1,215	Macon	56	579	Van Buren	88	206
Fentress	25	522	Madison	57	2,092	Warren	89	1,010
Franklin	26	1,491	Marion	58	1,136	Washington	90	4,496
Gibson	27	1,336	Marshall	59	840	Wayne	91	393
Giles	28	959	Maury	60	2,545	Weakley	92	865
Grainger	29	973	Meigs	61	513	White	93	844
Greene	30	2,494	Monroe	62	1,727	Williamson	94	5,002
Grundy	31	353	Montgomery	63	8,378	Wilson	95	3,879
Hamblen	32	1,892	Moore	64	257	Statewide		174,352

Source: Tennessee Department of Safety, March 2015.

APPENDIX D

Tennessee Motorcycle Safety Coalition

Agency/Organization List

Tennessee Governor's Highway Safety Office (GHSO)	Tennessee Department of Safety, Motorcycle Rider Education Program (MREP)
Tennessee Department of Transportation	Tennessee Highway Patrol
Tennessee Department of Safety, Driver Services Division	Vanderbilt University
Tennessee Department of Safety, Statistics and Research	Gold Wing Road Riders Association
Smyrna Police Department	Concerned Motorcyclists of Tennessee (CMT)/ABATE
Motorcycle Awareness Foundation of Tennessee (MAFT)	Columbia State University
Motorcycle Awareness Foundation of Tennessee (MAFT)	

