

# Applying Successfully Proven Measures in Roadway Safety to Reduce Harmful Collisions in SC

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The overall goal of this research was to identify proven successful safety programs used in other states and assess the potential for safety improvement if similar programs were implemented in South Carolina. The search for proven safety programs began with an evaluation of existing crash problems, population characteristics, and driving environment. The research team not only sought out engineering solutions, but also expanded the search to include programs for enforcement, education, licensing, emergency services, and partners—therefore incorporating stakeholder groups such as SCDOT, South Carolina Department of Public Safety (SCDPS), Department of Motor Vehicles (DMV), Fire/Emergency Management Services (EMS), local transportation agencies (Metropolitan Planning Organization's (MPO's) and Council of Government's (COG's)), and private entities as necessary. In most instances, it was necessary to review policies and legislation for South Carolina in comparison to the model program state, as these could potentially be barriers to successful implementation of safety programs.

The term roadway safety refers to the data driven methods and measures used to prevent road users from being killed or seriously injured. South Carolina has consistently been among the top ten states for numerous safety problems including but not limited to road departure crashes, failure to use safety belts, impaired driving, and excessive speed. By reviewing successful initiatives in other states, South Carolina can learn from those successes and prioritize safety programming for substantial safety improvements on its own surface transportation system.

In 2015, there were 911 fatal collisions, 37,861 injury collisions, and 95,189 property damage only collisions in South Carolina. On average, fatal traffic crashes in South Carolina result in over \$7 billion in economic loss each year. South Carolina has, for many years, had one of the highest mileage death rates of any state in the nation – far exceeding the national fatality rate. While SCDOT has a federal requirement to develop and maintain the Strategic Highway Safety Plan, which identifies the state's key safety needs and guides investment decisions toward strategies and countermeasures with the most potential to save lives and prevent injuries, South Carolina legislation and state policies have effectively blocked many paths to safety improvements. Tree protection ordinances, limited policies for graduated drivers licensing, bans on camera enforcement, and lack of universal helmet laws will continue to undermine efforts to improve safety in the state. SCDOT, along with other safety partners in the state, have continued efforts to reduce fatalities, but there are significant gains to be made. The following represent a few key program adoptions/changes that could bring about significant reductions in fatal crashes in South Carolina with notable benefit/cost ratios:

- **Tree-related Fatalities (2015 - 191 Fatalities, 24.9%)** - South Carolina ranked 1st in the nation for the highest fatality rate (0.32 per 100,000 population) for crashes involving trees. The national average tree-related fatality rate is 0.12 per 100,000 pop., thus SC is 165% above the national rate. Extensive research has been conducted nationally to determine the effect of allowing trees to re-establish in areas that were intended for clear zones. A prior SCDOT research study surveyed 131 randomly selected sites to determine if recommended clear zones (or safe recovery areas) were provided. Of these, only 12 sites met the recommended criteria, and researchers determined that the odds of a site having a tree-related crash are 42 times higher if the minimum clear zone is not met. Severe crash reductions range from 27% to 60% by reclaiming up to 50% or 75% of the recommended clear zone, respectively. Considering the magnitude of the roadside hazard problem, and the deficiency of the clear zones, it appears that by providing recommended clear zones for motorists who leave the roadway, South Carolina could realize a notable decrease in roadway fatal and injury crashes. Further, clear zone reclamation also has potential benefits of decreased tree

removal and reduced hazards accrued during natural disasters. For every dollar invested in tree clearing, \$26-\$38 will be saved.

- **DUI Fatalities** (2015 - 301 fatalities, 30.7%) - South Carolina has some of the weakest laws in the United States relating to DUI offenders. A driver's license is suspended for refusal to take a test for alcohol; however, a driver may obtain a temporary alcohol license or a route-restricted license upon release from jail. Emma's Law, passed in 2014, increased the penalties for DUI convictions, requiring first-time convicted offenders with a BAC of 0.15% or greater to complete the state's Ignition Interlock Device Program. The same law removed the hard suspension period for second and subsequent convictions, allowing drivers to get their licenses back sooner by completing an Alcohol and Drug Safety Action Program. A 2016 Impaired Driving Assessment (2016) refers to this SC statute as "...poorly drafted and archaic...and mandates unsafe roadside practices endangering the public and the officer making the stop" Further, South Carolina is one of only two states in the nation where police officers prosecute their own DUI cases. Nebraska and Arizona have implemented some of the strictest laws requiring first-time offenders and repeat offenders to install ignition interlock systems. Before the program was enacted in Arizona in 2007, DUI fatalities comprised 54% of the total fatalities. By 2012, DUI fatalities in Arizona had dropped to 28% of the total fatalities. This along with many programs (DUI courts, beverage server training, and solicitor case handling) could be implemented to reduce DUI-related factors in South Carolina. For every dollar invested in DUI courts, \$49 will be saved.
- **Speed-related Fatalities** (2015 - 361 fatalities, 36.9%) - Almost 40% of the fatalities on South Carolina roadways were speed-related. Speed-related is defined as: exceeding authorized speed limit, and/or driving too fast for conditions. This is the 2<sup>nd</sup> highest rate in the nation. Speed is a behavioral issue that is must be managed through enforcement activities, and the reality is that drivers far outnumber enforcement officers. Auto-enforcement with cameras has the potential to expand speed management programs and reduce crashes - not only speed-related crashes, but all crashes. Unfortunately, in 2010, South Carolina banned the use of red light cameras and speed cameras in the state. Camera enforcement began for the first time in 1987 in Arizona. Since then, speed cameras have been used in 12 states and the District of Columbia and have lowered fatal crashes up to a 25% at fixed camera sites and up to almost 50% with mobile camera operations. An added benefit is that they also foster better traffic flow with more uniform speeds. For every dollar invested in camera speed enforcement, \$13 dollars will be saved.

- **Teen Driver Fatalities** (2015 - 40 fatalities, 6%) - In 2015, there were 37 fatal crashes among 15-17 year-old drivers, which produced a crash cost of \$347.8 million in South Carolina. Traffic fatalities are the leading cause of death of teens, greater than homicide, suicide, and disease combined. Graduated Drivers Licensing programs have reduced teen crashes by 10-40% on average in the US through a three-stage criterion for granting young drivers full driver's license privileges. The three stages are: a supervised learning period, a restricted intermediate licensing stage, and a full license stage, in which the driver is granted an unrestricted license after fulfilling all requirements. The purpose of the GDL programs are to maximize experience while minimizing common risks that teens face while driving. Estimates by the Insurance Institute of Highway Safety indicate that at least 10 states, including South Carolina, could reduce their rate of teen driver related fatal crashes by nearly 50% or more by adopting the strictest GDL provisions. For South Carolina, a 45% reduction could be realized by adopting three stricter GDL criteria including: raising the permit age to 16 and the unrestricted licensing age to 17, raising the minimum number of practice hours to 70, and restricting teen passengers during the intermediate driving phase. For every dollar invested in adopting strict GDL provisions, \$156 will be saved.

To make significant gains, all partners must have a complete vision of their role and responsibilities in the priority programs and seek collective efficacy through collaboration across the state. The development of this comprehensive safety program assessment, along with identification of funding sources, will enable forward movement on all fronts. Using a data driven approach to safety program selection will yield support for changes in programs, policies, and standards, and have positive impacts on safety, operational, and economic aspects of the South Carolina roadway system. Further, the implementation of a data-driven safety management program will help to assure that the most appropriate strategies are implemented.

The successful implementation of this research will likely result in a substantial reduction in loss of life and injuries associated with motor vehicle crashes in the state of South Carolina. This research is expected to have significant benefits for SCDOT and the motoring public. These benefits fall into several categories, and are related to reduced numbers of crashes and the resulting deaths and injuries, improved system operations and reduced delay, decreased fuel consumption and emissions, as well as potential cost savings for SCDOT and other stakeholder agencies.

For full report: <http://www.scdot.scitap.org/wp-content/uploads/2017/05/SPR-711-FHWA-SC-17-08.pdf>  
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