
STRATEGIC HIGHWAY SAFETY PLAN
DELAWARE
SEPTEMBER 2006

DELAWARE'S STRATEGIC HIGHWAY SAFETY PLAN

A cooperative multi-agency plan for improving safety and reducing fatalities on Delaware's highways

September 2006

Table of Contents

List of Appendices

INTRODUCTION

2008 Goal: Reduce nationwide fatality rate to 1.0 per 100 million vehicle miles traveled

In 1998, after noticing that efforts in reducing fatalities were stalling, the American Association of State Highway and Transportation Officials (AASHTO) initiated the Strategic Highway Safety Plan and encouraged various state agencies involved in highway safety to coordinate to develop innovative strategies to reduce fatalities on America's highways. In September 2003, U.S. Department of Transportation Secretary Mineta set a goal to reduce the nationwide fatality rate to 1.0 per 100 million vehicle miles traveled by 2008. The100 million vehicle miles traveled (vmt) benchmark is used to level the comparison between each state.

Delaware's current fatality rate ranges from 1.45-1.65 per 100 million VMT

While Delaware crash history indicates a peak in total crashes in 2002, the number of fatalities has been increasing. The fatality rate per 100 million vehicle miles traveled ranged from 1.45 to 1.65 between 2001 and 2004, exceeding the newly established nationwide goal. Travel in Delaware continues to increase, especially in the beach areas and in New Castle County. With this additional travel growth and the congestion it brings, providing safer roads becomes more challenging. Unlike many states, Delaware's Department of Transportation (DelDOT) maintains nearly 90 percent of the state's roadways. DelDOT and the Department of Safety and Homeland Security, which includes the Office of Highway Safety (OHS) and the Delaware State Police (DSP), recognized that through coordinating with each other they could more effectively counteract the expected growth in fatalities, and could work collectively towards achieving the nationwide goal set by Secretary Mineta.

Working with the Federal Highway Administration (FHWA) and National Highway Traffic Safety Administration (NHTSA), Delaware's coordinating agencies have established the following Mission and Vision Statements for their Strategic Highway Safety Program:

> *Mission Statement: The Delaware Strategic Highway Safety Program aims to eliminate fatalities on Delaware's roadways through a multi-agency approach that utilizes education, enforcement, engineering, and emergency service strategies.*
>
> *Vision Statement: The goal of Delaware's Strategic Highway Safety Program is to reduce the number of traffic fatalities to 100 or fewer per year, or to achieve a fatality rate of 1.0 per 100 million vehicle miles traveled.*

PROGRAM STRUCTURE

DelDOT, OHS, and the DSP worked together to develop Delaware's plan. The program followed the basic steps outlined by AASHTO's "Strategic Highway Safety Plan Model Implementation Process". Data analyses were used to create the program's mission and vision statements and then, through further analyses, identify the program's emphasis areas. The group reviewed existing Delaware programs, potential solutions proposed in the National Comprehensive Highway Research Project (NCHRP) 500-series Reports developed by the Transportation Research Board specifically for the 22 key emphasis areas identified by the Strategic Highway Safety Program, and solutions proposed by other states, as well as selected a list of solutions to address Delaware's emphasis areas.

DATA REVIEW

State crash statistics for a three (3) year period, January 2001 through December 2003, were reviewed to narrow AASHTO's 22 emphasis areas down to a reasonable number for further consideration. Initially, the group selected emphasis areas with a higher corresponding fatal crash rate in Delaware as compared to the national average as shown below. National statistics were obtained from the National Highway Traffic Safety Administration's 2003 Fatality Analysis Reporting System (FARS). Additional areas were then selected where data was missing or where agencies knew problems existed based on recent past experience. Once the key emphasis areas were selected, additional data analyses were conducted to better define the nature and magnitude of the problem. These areas and the data are summarized below.

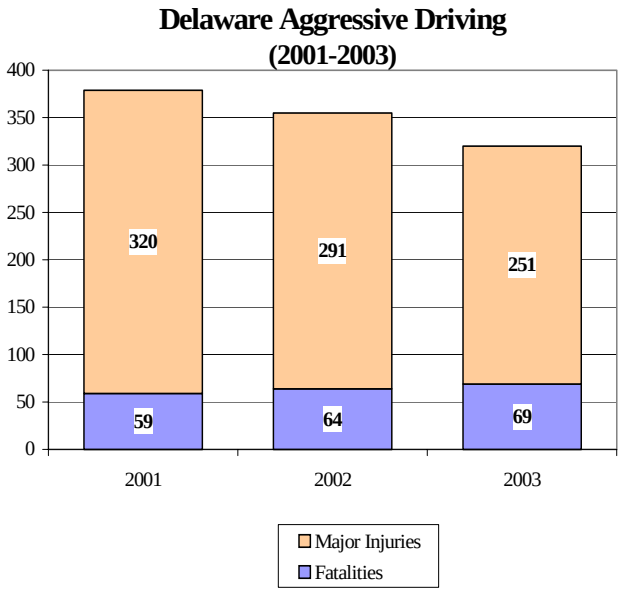
DELAWARE'S KEY EMPHASIS AREAS

Emphasis Area	*2003 National Rate*[1]	*Delaware Existing Conditions*	
		Percentage	*Number of Fatal Crashes*[2]
Curbing Aggressive Driving	41%	48%	179
Reducing Impaired Driving	17%	26%	96
Increasing Seatbelt Usage	58%	61%	195
Making Walking and Street Crossing Safer	10%	12%	46
Making Truck Travel Safer	12%	14%	51
Keeping Vehicles on the Roadway	28%	37%	137
Minimizing the Consequences of Run-off-the-road Crashes	See Below	See Below	See Below
Utility Pole	8%	15%	20
Tree	25%	23%	35
None- overturn	19%	17%	25
Posts, Poles and Supports (including signs and mailboxes)	4%	8%	11
Improving Work Zone Safety	7%	Unknown	Unknown
Improving Information and Decision Support Services	NA	NA	NA

[1]Based on 2003 FARS data
[2]Based on 2001 – 2003 data received from DelDOT

Emphasis Area #1: Curbing Aggressive Driving

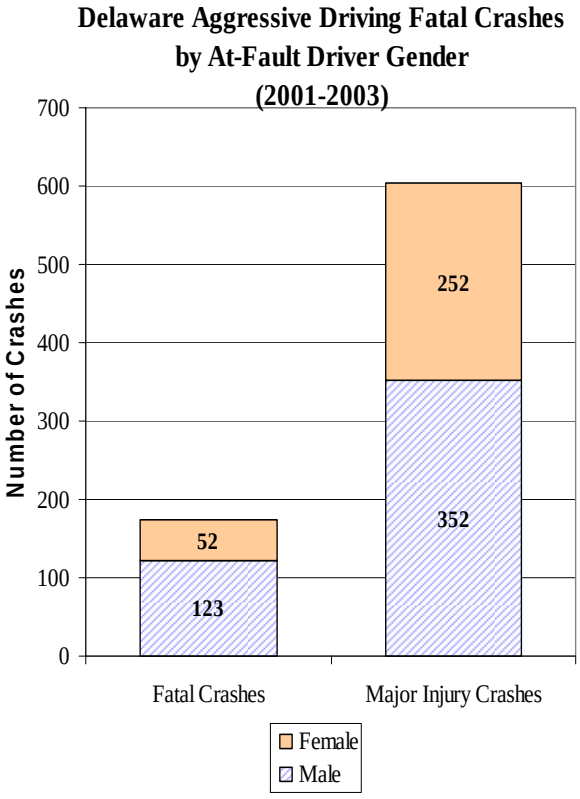
Due in part to increasing congestion and driver frustration, aggressive driving has become more prevalent on the nation's highways. Inconsistent classification of aggressive driving, and what constitutes aggressive driving acts among the fifty (50) states, makes it difficult to quantify the number of nationwide crashes attributed to aggressive driving. Delaware State Law Title 21, Chapter 41 defines aggressive driving as violating three (3) or more Title 21 Sections relating to: obedience to traffic-control devices; traffic control signals; overtaking on the right; driving within a traffic lane; following too closely; yielding to the right-of-way; vehicles entering the roadway; use of turn signals; stop signs and yield signs; overtaking and passing school buses; speed restrictions; and specific speed limits.



(includes speeding, failing to yield ROW, disregard traffic signal, passing stop sign, improper passing and turning, following too close and driving left of center)

The crash data analyses used the following traffic violations to identify the aggressive driving problem:

- Speeding
- Following Too Closely
- Improper Lane Changes
- Improperly Passing
- Failing to Obey Traffic Control Devices
- Failing to Yield Right-of-Way

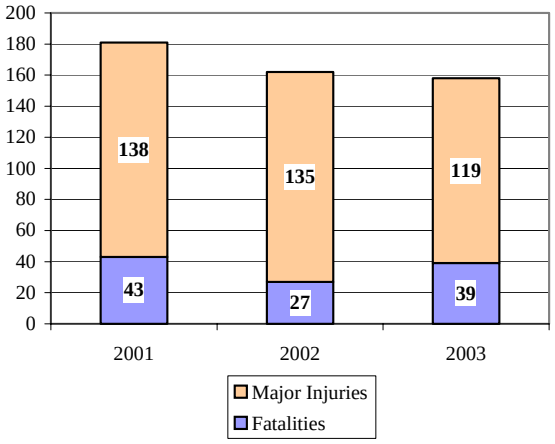


Using the first harmful event in the 2003 FARS database, 41 percent of nationwide fatal crashes were attributed to aggressive driving, while 48 percent of Delaware's total fatal crashes included aggressive driving behaviors as detailed above. Failure to yield right-of-way and speeding represented the highest contributors at 29 percent and 26 percent of all aggressive driving crashes, respectively. Throughout the three-year period analyzed, aggressive driving fatalities have been increasing in spite of an overall decline in the number of aggressive driving-related crashes (fatalities and major injuries combined). Males were responsible for 70 percent of the aggressive driving-related fatal crashes and approximately 60 percent of the major injury crashes.

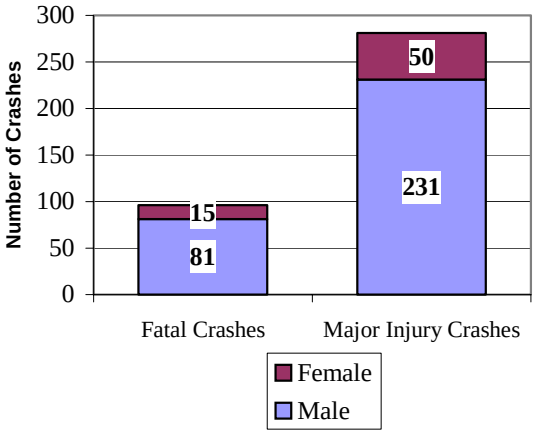
Emphasis Area #2: Reducing Impaired Driving

Impaired driving has been a nationwide problem for decades. Recently, all states passed 0.08 Blood Alcohol Content (BAC) DUI laws, which helps deter drinking and driving, but more can be done to discourage and prevent drinking and driving. In Delaware, the primary contributing circumstance for 27 percent of all fatalities was driving under the influence. The National Highway Traffic Safety Administration (NHTSA) defines "alcohol-related" crashes as those where at least one person in the crash had been drinking. In Delaware, 42 percent of fatal crashes involved alcohol. These percentages exceed the corresponding nationwide levels of 17 percent and 40 percent, respectively. According to Delaware statistics, impaired driving is the most prevalent "primary contributing factor" in crash analyses. The figures below summarize several critical factors associated with impaired driving in Delaware. The total number of alcohol-involved crashes includes at-fault pedestrians who were under the influence. While the 25-34 year old age bracket had the highest percentage of impaired driving crashes at 28 percent, 10 percent of the impaired driving fatalities were caused by drunk drivers under 21 years old. This statistic indicates that young adults still are unaware of, or disregard, the consequences of drinking and driving. Enforcement and educational campaigns are needed to discourage underage drinking.

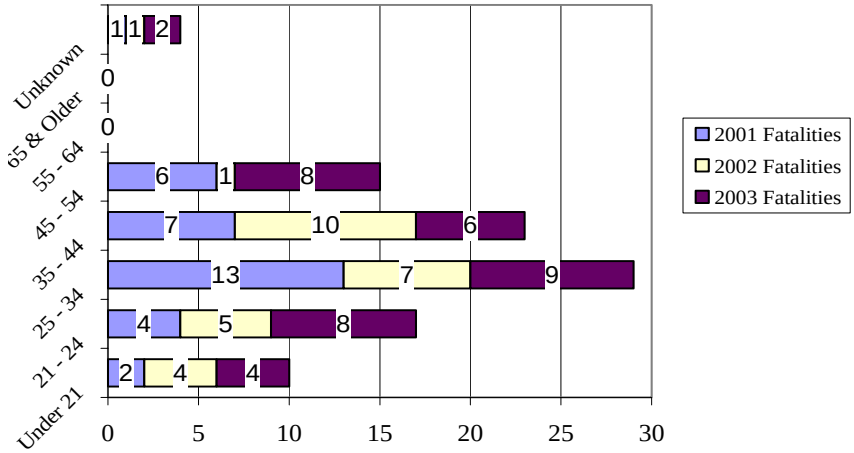
Delaware Impaired Driving
(Primary Contributing Circumstance: DUI)



Delaware Impaired Driving:
Fatal Crashes by At-Fault Gender
(2001-2003)



Delaware Impaired Driving:
Fatal Crashes by At-Fault Driver Age

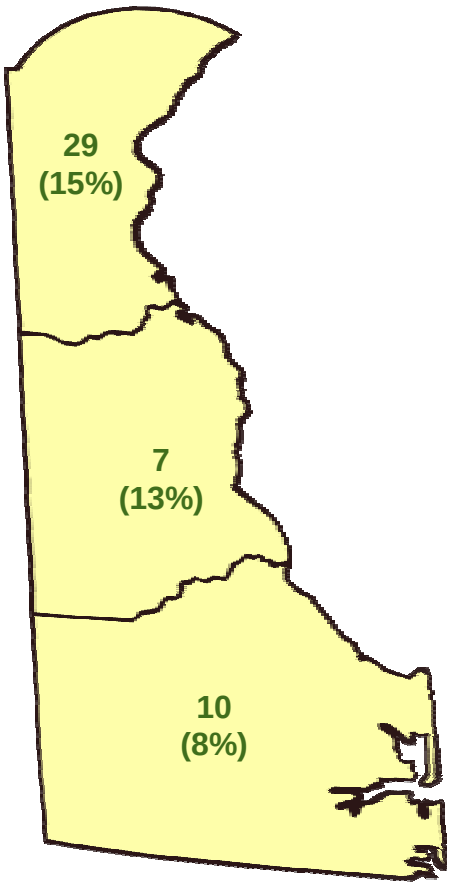


Emphasis Area #3: Increasing Seatbelt Usage

While seatbelts have been in vehicles since the 1950s, usage did not increase until mandatory use laws were passed in the 1980s. Initial laws allowed police officers to enforce seatbelt use only if the vehicle was pulled over for another traffic violation. These laws are known as "secondary" laws. More recently, states have turned to "primary enforcement" laws which allow law enforcement officials to stop a vehicle for seatbelt use violations. Delaware's secondary seatbelt law was upgraded to primary enforcement in 2003. The National Cooperative Highway Research Program (NCHRP) Report 500: Volume 11 states that primary seatbelt laws are more effective than secondary seatbelt laws, which typically only increase usage to 50 percent. Nationwide, seatbelt usage is 82 percent, and studies conducted in Delaware in 2004 indicate a statewide use of 82 percent. Delaware's usage increased to 84 percent in 2005. Even though Delaware's usage rate exceeds the nationwide rate, the coordinating agencies agreed that with additional public awareness and heightened enforcement, Delaware could further increase the rate of usage and, in doing so, contribute to a reduction in fatalities. Delaware's 2005 Highway Safety Plan indicated that 61 percent of those killed in vehicle crashes were not using a restraint system and that males represent 67 percent of the unrestrained fatalities.

Emphasis Area #4: Improving Pedestrian Safety

Nationwide trends indicate a decrease in pedestrian fatalities and crashes, but experts believe this can be attributed to the decline in the number of pedestrians. Many pedestrians consider safety, in addition to infrastructure and proximity of destination, when deciding to consider walking as a transportation alternative. Therefore, improving pedestrian safety can contribute to increasing pedestrian activity and, in the process, reduce congestion on national roadways. In 2003, 10 percent of all fatal crashes nationwide involved pedestrians; Delaware had a corresponding rate of 12 percent. Further analysis showed that 26 percent of Delaware pedestrian-related fatalities were alcohol-related. In New Castle County, many of the pedestrian fatalities occurred along two major corridors that include numerous bars and hotels on both sides of the roadways. Approximately 90 percent of the pedestrian fatalities occurred mid-block with only 15 percent of the personal injury crashes occurring at intersections.



Delaware Pedestrian-Related Fatal Crashes
(2001-2003)
Number of Fatalities
(Percentage of Total County Crashes)

Emphasis Area #5: Making Truck Travel Safer

Heavy truck crashes are a higher percentage of fatalities than most other vehicles on the roadway. This is largely due to the size and weight of heavy trucks. According to NHTSA, truck drivers are less likely than others to be cited for driver-related moving violations. Studies indicate that truck drivers exceed posted speed limits by less than other drivers, but fatalities are more likely if a heavy truck is involved. Delaware's police reports define heavy vehicles as any of the following:

- 6-wheel truck
- 10-wheel truck
- Tractor and Semi-trailer

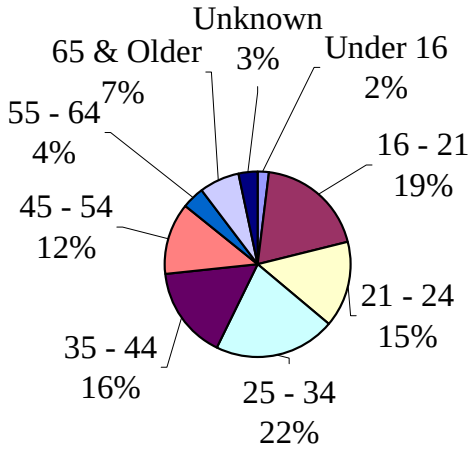
Delaware statistics indicate that 14 percent of the total fatalities involved a heavy truck in contrast to only 3 percent of personal injury crashes. Of the fatal crashes involving heavy trucks, 16 percent occurred in New Castle County, the only Delaware county with interstates. The figure below indicates that the majority of the heavy truck involved crashes occurred along Interstate-95 in New Castle County.

Delaware New Castle County Crashes Involving Heavy Vehicles (2001-2003)

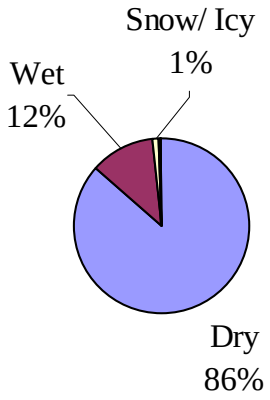
Emphasis Area #6: Keeping Vehicles on the Roadway

Run-off-the-road crashes involve vehicles that exit the travel way and continue onto the shoulder. These vehicles then may strike one or multiple objects located off the edge of pavement such as trees, utility poles, ditches, and bridge abutments. Typically, these crashes involve a single vehicle; therefore, strategies should focus on the first harmful event or the initial action during a crash that caused injury or property damage. By addressing the first harmful event, the strategies could reduce the number of related fatalities. The majority of the run-off-the-road fatal crashes resulted in overturned vehicles, striking trees, or hitting utility poles. Twenty-eight percent of the nationwide fatalities were caused by run-off-the-road crashes, while 37 percent of Delaware's crashes were run-off-the-road. The fatal crashes in Delaware appeared not to be weather or pavement surface-related since 86 percent of the run-off-the-road fatalities occurred on dry pavement. While the 25-34 year old age bracket was responsible for the highest percentage (22%) of run-off-the-road fatalities, drivers under 21 were involved in 19 percent of the run-off-the-road fatalities.

Delaware Run-off-the-Road Fatalities by At-Fault Driver Age (2001-2003)



Delaware Run-off-the-Road Fatalities by Surface Condition (2001-2003)



Emphasis Area #7: Minimizing the Consequences of Run-off-the-Road Crashes

As stated previously, to address run-off-the-road crashes, a Strategic plan should consider the first harmful event, which is the first object struck. Therefore, Delaware is focusing on the following run-off-road consequences because of their high occurrence percentage:

First Harmful Event	National Percentage of Fatal Crashes[1]	Delaware Percentage of Fatal Crashes[2]
Utility Pole	8%	15%
Tree	25%	23%
None-overturn	19%	17%
Posts, Poles and Supports (including signs and mailboxes)	4%	8%

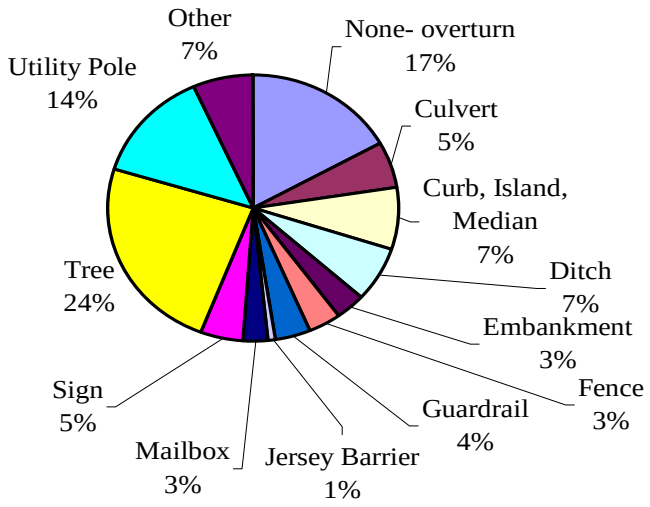
[1]2003 FARS Data
[2]2001-2003 Delaware Data

Utility poles and trees represent two large, unforgiving objects that are often difficult to remove from the edge of road; therefore, separating these obstructions from the traveling public must be considered as a mitigation strategy.

AASHTO's *Roadside Design Guide* prioritizes how to address roadside obstacles as follows:

1. Remove the obstacle.
2. Redesign the obstacle so it can be safety traversed.
3. Relocate the obstacle to a point where it is less likely to be struck.
4. Reduce impact severity by using an appropriate breakaway device.
5. Shield the obstacle with a longitudinal traffic barrier designed for redirection or use a crash cushion.
6. Delineate the obstacle if the above alternatives are not appropriate.

Delaware Item Struck by Run-Off-The-Road Fatalities (2001-2003)



Emphasis Area #8: Designing Safer Work Zones

Due to the inherent dangers and complexity of work zones, drivers need to be more cautious and aware of their surroundings when traveling through them. Nationally in 2003, 7 percent of crashes occurred in work zones. Although the state's former manual crash reporting format did not include work zone crash data, the current automated crash reporting system will capture this data. While actual data to support this emphasis area is not available, DelDOT has made work zone safety a priority in its planning process. Within this emphasis area, Delaware plans to develop, implement, and enforce more effective work zone policies and procedures, increase work zone visibility, increase public awareness of work zones and their safety issues, and improve data collection and analyses.

Emphasis Area #9: Improving Information and Decision Support Services

The lack of an integrated data traffic crash collection system has hampered the state's ability to utilize comprehensive traffic safety data when making resource allocation decisions. Delaware, through the Department of Safety and Homeland Security and the Delaware Department of Transportation, is in the process of implementing a new system for recording and maintaining police reports. The Traffic and Criminal Software (TraCS) automates the data collection at the crash site, including a drawing and narrative. In the future, it will allow for more timely data collection and subsequent crash prevention countermeasures, provide mapping of crashes and GIS analysis, and identify high traffic violation areas of the state, as well as facilitate the sharing of information between agencies and users. With the use of this system as well as the Crash Outcome Data Evaluation System (CODES), Delaware plans to link medical, location, adjudication, and DMV records to motor vehicle crashes for highway safety and injury control decision making.

Strategy Selection

A list of general strategies to mitigate crashes in each of the critical emphasis areas was considered by combining NCHRP recommended strategies and those strategies proposed by states with existing Strategic Highway Safety Plans, primarily Washington and Minnesota. These solutions were compared to existing Delaware programs. A combination of strategies was then selected from all of the resources. The comprehensive list of general strategies is included in the "General Strategies" table that follows. The list was narrowed down based on resource limitations or combined with similar strategies to avoid redundancies. These "critical" strategies, along with a detailed summary of each, are included in Appendix A.

Performance Measures

Recognizing the diversity of the strategies, the coordinating agencies chose to review overall reductions in fatalities in future years. The diverse and complex nature of the strategies makes it difficult to determine which strategy or strategies most effectively reduce the number of fatalities, especially since crashes may fall into several categories. For example, a fatality may involve a heavy truck whose driver was not wearing a seatbelt who drove off the road and struck a tree.

Federal Legislation and Programs

Several federal laws and programs have supported the conception of the Strategic Highway Safety Program and may be used to sustain its existence. The Highway Safety Act of 1966 (Public Law No. 89-564), enacted by Congress on September 9, 1966, was the first major effort at the Federal level to reduce the number and severity of highway-related crashes. The primary purpose of this legislation was to provide for a coordinated national highway safety program through financial assistance to the States to accelerate highway traffic safety programs. Later, the Highway Safety Act of 1973 established categorical funding for five specific program areas: highway-rail crossings, high hazard locations, pavement marking demonstration programs, elimination of roadside obstacles, and the Federal-aid safer roads demonstration. The Surface Transportation Assistance Act of 1978 consolidated these programs into the Highway-Rail Grade Crossings and Hazard Elimination Programs. To ensure that these programs are carried out in an organized, systematic manner where the greatest benefits can be achieved, a formalized Highway Safety Improvement Program (HSIP) was established.

The National Highway Traffic Safety Administration (NHTSA) administers the State and Community Highway Safety Grant Program (U.S.C. Title 23, Section 402) which is funded through the Highway Trust Fund. This program provides funds for a highway safety program determined effective in reducing crashes, injuries, and fatalities.

In July 2005, Congress enacted the Safe, Accountable, Flexible, and Efficient Transportation Equity Act-A Legacy for Users (SAFETEA-LU), and President Bush signed it on August 10, 2005. SAFETEA-LU extends most of the current structure of federal highway safety funding as outlined in the Transportation Equity Act of the 21st Century (TEA-21). The legislation provides federal funding for a variety of behavioral highway safety priority areas in addition to the Section 402 State and Community Highway Safety Grant Program, including occupant protection, traffic records, impaired driving, motorcycle safety, and other priority areas.

SAFETEA-LU requires that each state have a *Strategic Highway Safety Plan* by October 1, 2006 in order to be eligible for full funding apportionments. Crash data must be used to identify safety problems and assist with countermeasure analyses. The plan should identify and analyze highway safety problems, and provide programs and strategies to reduce these identified safety problems. The plan must be evaluated regularly to ensure data accuracy and priority of improvements. SAFETEA-LU requires that the following agencies, programs and persons be consulted in the development of the plan:

- Highway safety representative of the Governor's office
- Regional and metropolitan planning organizations
- Representatives of major transportation modes
- State and Local traffic enforcement
- Persons responsible for administering Section 130
- Operation Lifesaver
- Motor Carrier Safety program
- Motor Vehicle Administration
- Major state and local safety stakeholders

These agencies are expected to cooperatively develop and implement strategies to reduce highway fatalities, injuries and crashes. Delaware's Highway Safety Agencies and representatives will continue to actively apply for appropriate federal grants to achieve the goals of their Strategic Highway Safety Program.

GENERAL STRATEGIES

Emphasis Area	Objective	Strategies
Aggressive Driving	Conduct Outreach	Increase high visibility education, especially among high-risk groups (i.e. 25-34 year olds and young teen drivers)
		Emphasize aggressive driving factors separately (i.e. speeding, illegal passing, red light running, etc.)
	Educate Young Drivers	Ensure Driver Education teachers incorporate aggressive driving traits, factors, and risks in lesson plans
		Combine classroom safety education and behind-the-wheel education
		Strengthen graduated driver's licensing program through legislative action
	Educate High-Risk Drivers, Especially 25-34 Year-Old Drivers	Ensure Defensive Driving Class addresses aggressive driving traits, factors, and risks
		Emphasize aggressive driving factors separately (i.e. speeding, illegal passing, red light running, etc.)
	Improve Compliance	Increase enforcement resources to better address aggressive driving problem at high crash locations
		Promote the use of 911 to report aggressive driving
		Evaluate automated speed enforcement systems, especially for school and work zones
		Provide law enforcement tools, such as radar, necessary to reduce aggressive driving
	Limit Occurrence	Conduct judicial outreach to promote consistency in verdicts and sentencing
		Increase the fine structure and penalties for aggressive driving
		Conduct targeted enforcement at high-crash locations and for high-risk driving populations with tendency to drive aggressively
	Improve Driver Consistency	Coordinate signals, where possible
		Improve incident management and notify public of incidents and potential delays
Impaired Driving	Conduct Outreach	Increase high visibility public information and education especially among high risk groups
		Educate servers and liquor store workers on identifying impaired persons and discouraging such persons from driving
		Include impaired driving awareness in drivers' education programs
		Advertise Designated Driver Program in bars near the University of Delaware

GENERAL STRATEGIES

Emphasis Area	Objective	Strategies
	Deter Impaired Driving with Increased Enforcement	Conduct target enforcement at high impaired driving locations and for driving populations with high incidence
		Provide impaired driving equipment and technology in all police vehicles
	Enact Legislative Revisions	Strengthen DUI laws to increase fines and penalties for offenses
		Enact open container law
	Enhance Processing of Impaired Driver-related Cases	Conduct judicial outreach to provide consistency in verdicts and sentencing
		Enhance prosecutor's ability to present the strongest case for impaired driving offenses
		Maintain contracts with private substance abuse prevention agencies for impaired driving offences
Seatbelt Usage	Conduct Outreach	Increase perception of risk by publicizing information about enforcement initiatives
		Implement seatbelt awareness campaigns
	Increase Seatbelt Use through Enforcement	Conduct high visibility enforcement campaign to maximize use
	Enact Legislation	Restructure penalty, including fines, to increase compliance
		Remove seatbelt "assessment" provision, which can reduce the penalty
Pedestrian Safety	Improve Compliance	Increase pedestrian-related enforcement
	Conduct Outreach	Increase education to improve vehicle-pedestrian right-of-way and responsibilities
		Include pedestrian right-of-way issues in driver's education courses
		Participate in health and safety fairs
	Improve Engineering Design to Emphasize Pedestrian Crossings	Consider sidewalk and bike lane improvements in all new projects and review pedestrian crossings at high crash locations
		Provide consistent pedestrian crossing designs
		Improve design to focus on sight distance to crosswalks and warning signs
Heavy Truck Crashes	Conduct Outreach	Increase public awareness of truck travel and truck blind spots
	Improve Data	Establish uniform data reporting requirements.
	Improve Driver Compliance	Conduct judicial outreach to promote consistency between verdicts
		Strengthen commercial vehicle laws and penalties to encourage compliance.
		Allocate resources to provide portable truck inspection equipment and safe areas for temporary inspection/weigh stations
		Increase enforcement of truck travel laws
		Construct weigh-in-motion detectors along heavily traveled truck routes

GENERAL STRATEGIES

Emphasis Area	Objective	Strategies
Run-off-the-road Crashes	Consistently Implement Policies and Technologies to Keep Vehicles on the Road	Develop guidance for installing rumble strips
		Implement new delineator guidance
		Implement guidance to use wider edge lines in known high-crash locations
		Develop standards for using skid resistant surfaces, including how and when to test pavements
		Improve shoulder maintenance standards and practices
Consequences of Run-off-the-road Crashes	Eliminate Roadside Obstacles	Strive to maintain clear zone requirements
		Reevaluate tree guidance to proactively plan and design for impacted trees
		Install delineators, or reflectors, on trees often struck or shield the tree(s)
	Delineate Roadside Obstacles	Restructure utility permitting to require companies to delineate poles for future projects
		Improve guidelines for when to use guardrail, attenuators, and delineators for utility poles
Work Zone Safety	Improve Driver Compliance with Existing Laws	Increase enforcement of and presence within work zones
		Consider using automated speed enforcement within work zones
	Improve Work Zone Awareness	Complete work zone safety guidelines as mandated by FHWA's *Final Rule*
		Increase contractor penalties for non-compliance of maintenance of traffic manual requirements
		Improve "basic" (i.e. equipment, materials, specifications, training) maintenance of traffic safety issues
	Improve Work Zone Operations	Train workers, inspectors, and law enforcement on work zone procedures to achieve consistency
Traffic Crash Data	Improve Traffic Crash Data Accuracy, Uniformity, and Timeliness	Conduct enforcement training to establish uniform reporting
		Provide training for data analysts and users
		Automate data collection to enhance accurate crash location system
	Improve Traffic Records Accessibility	Integrate data systems
		Create query tools
		Continue linkage of crash, hospital discharge, and EMS data through CODES
		Promote public use and accessibility of traffic crash data

Appendix A: Critical Strategies

Critical Strategy #1: Create a communications/public relations plan to conduct media outreach to raise public awareness of key traffic safety issues (i.e. aggressive driving, impaired driving, seatbelt use, pedestrian safety, truck travel, and work zone safety).	
Goal	Develop consistent public information messages to maximize public awareness of highway safety issues.
Strategy Description	The strategy is intended to raise public awareness regarding the leading causes of crashes and how to prevent them. By alerting the public to the pervasiveness of these emphasis areas, the team hopes to curb dangerous driving behaviors. Outreach formats may include billboard, radio and television advertisements, developing a visual to convey the extensive nature of the problem, and establishing memorable slogans or phrases to enhance awareness. Furthermore, this strategy should streamline several statewide programs that already address similar issues, such as pedestrian safety and aggressive driving. Currently, several programs provide pedestrian safety messages, but they are not consistent.
Supporting Data	Between January 2001 and December 2003, 192 aggressive driving-related and 109 impaired driving-related fatalities occurred. Primarily, males make up aggressive (70%) and impaired (84%) driving-related fatalities. While the 25-34 year old age bracket had the highest percentage of impaired driving crashes at 28 percent, 10 percent of the impaired driving fatalities were caused by drunk drivers under 21 years old. The Office of Highway Safety's FY05 Highway Safety Plan reported that in 2003, 55 percent (62 of 113) of vehicle-occupant fatalities were not wearing seatbelts. Forty-eight (48) pedestrian fatalities occurred between 2001 and 2003, and half of these were alcohol-related. The majority of the crashes occurred in New Castle County along several active corridors. Furthermore, the pedestrian was cited at-fault for 50 percent of the pedestrian-related crashes.
Target(s)	Increase safety awareness among drivers with poor driving behaviors that often lead to fatalities. Unify the message presented by several existing programs to provide efficient and effective guidance to the public. Create a survey online to assess the public's understanding of the safety risks associated with selected emphasis areas, especially aggressive driving, impaired driving, and seatbelt use.
Expected Effectiveness	Public information and education campaigns can significantly increase awareness and help to reduce unsafe driving behaviors. Public information and education campaigns are proven to be more effective when used in combination with targeted enforcement.

Critical Strategy #1: Create a communications/public relations plan to conduct media outreach to raise public awareness of key traffic safety issues (i.e. aggressive driving, impaired driving, seatbelt use, pedestrian safety, truck travel, and work zone safety).	
Keys to Success	The public information campaigns must be tailored to ensure that they are reaching the identified high-risk driving audience – those identified based on crash data. The messages should be clear and concise and convey how to make roads safer, as well as identify the consequences of unsafe driving behaviors.
Appropriate Measures and Data	While direct measures of effectiveness are difficult, we can look forward to decreases in crashes caused by these poor driving behaviors.
Potential Obstacles	Creating and/or obtaining quality media material that will impact driver behavior; high cost of TV/radio advertisement/billboards/internet.
Responsible Agency	OHS - lead DelDOT, OHS, OEMS, DSP

Critical Strategy #2: Provide adequate resources to allow state and local law enforcement agencies to perform targeted traffic enforcement, including aggressive driving, impaired driving, seatbelt use, pedestrian safety, truck travel, and work zones.	
Goal	Conduct enforcement activities at high crash locations on days of the week and at times of the day, as warranted by the data.
Strategy Description	The intent of this strategy is to encourage state and local agencies to provide funding and other resources needed to enable police agencies to perform essential traffic enforcement. Often, understaffed and under-funded police agencies are forced to cutback on traffic enforcement in order to meet other responsibilities considered a higher priority (i.e., homeland security, responding to domestic calls, etc.). By providing funding for additional traffic enforcement, police will be able to prevent crashes by discouraging poor driver behaviors or by apprehending offenders before a crash can occur. Support of national enforcement mobilizations will be incorporated into the enforcement strategy, as necessary.
Supporting Data	Between January 2001 and December 2003, 192 aggressive driving-related and 109 impaired driving-related fatalities occurred. Primarily males comprise of aggressive (70 percent) and impaired (84 percent) driving-related fatalities. While the 25-34 year old age bracket had the highest percentage of impaired driving crashes at 28 percent, 10 percent of the impaired driving fatalities were caused by drunk drivers under 21 years old. The Office of Highway Safety's FY05 Highway Safety Plan reported that in 2003, 55 (62 of 113) percent of vehicle-occupant fatalities were not wearing seatbelts. Forty-eight (48) pedestrian fatalities occurred between 2001 and 2003, and half of these were alcohol-related. The majority of the crashes occurred in New Castle County along several active corridors – U.S. 40, U.S. 13, and SR 2/Kirkwood Highway. Furthermore, the pedestrian was cited at-fault for 50 percent of the pedestrian-related crashes.
Target(s)	The target for this strategy is to reduce crashes that occur due to poor driver behaviors (i.e., speeding, impaired driving, fatigued driving, etc.), deter pedestrian-vehicle crashes by enforcing pedestrian safety laws, discourage impaired pedestrians from illegal crossings, and to decrease the severity of a crash by increasing seatbelt use of vehicle occupants.
Expected Effectiveness	With continual and consistent law enforcement, traffic behaviors have been shown to change. Increasing traffic enforcement will reduce crashes in the areas and corridors of enforcement.

Critical Strategy #2: Provide adequate resources to allow state and local law enforcement agencies to perform targeted traffic enforcement, including aggressive driving, impaired driving, seatbelt use, pedestrian safety, truck travel, and work zones.	
Keys to Success	In order to reduce traffic fatalities and personal injuries, a comprehensive outreach campaign targeting high-risk populations is needed in combination with the targeted enforcement activity.
Potential Obstacles	Obtaining resources and manpower to conduct targeted enforcement, especially considering the number of competing programs. Implementation can only occur once funding to the police has been identified. Often, budgets are set for an entire year and this limits increased traffic enforcement until the following fiscal year.
Appropriate Measures and Data	While direct measures of effectiveness are difficult, we can look for decreases in crashes in areas or corridors with increased enforcement.
Responsible Agency	DSP, local law enforcement agencies, and OHS
Organizational, Institutional, and Policy Issues	The public, as well as the government, must be educated on the importance of providing high levels of traffic enforcement.
Training and Other Personnel Needs	Coordinate specialized law enforcement training as necessary to include impaired driving enforcement training.

Critical Strategy #3: Initiate discussions with agencies that provide drivers education to consider program improvements to include a curriculum addressing emphasis areas related to driver behavior.	
Goal	Initiate discussion with Department of Education, Insurance Commissioner's Office, and Division of Motor Vehicles.
Strategy Description	This strategy is intended to update the driver education programs by emphasizing certain high-risk driver behaviors which have become more prevalent in recent years, such as aggressive driving and impaired driving. Both the graduated driver's licensing program and defensive driving classes should highlight factors associated with aggressive and impaired driving, seatbelt usage, and other emphasis areas related to driver behavior.
Supporting Data	Between January 2001 and December 2003, 192 aggressive driving-related and 109 impaired driving-related fatalities occurred. Primarily males comprise of aggressive (70 percent) and impaired (84 percent) driving-related fatalities. While the 25-34 year old age bracket had the highest percentage of impaired driving crashes at 28 percent, 10 percent of the impaired driving fatalities were caused by drunk drivers under 21 years old. In 2005, 61 percent of all fatalities were not using a restraint system, and males comprised of 67 percent of the unrestrained fatalities.
Target(s)	This strategy aims to reduce fatal crashes caused by high-risk driving behaviors associated with identified emphasis areas.
Expected Effectiveness	A reduction in crashes related to aggressive and impaired driving is expected, as well as an increase in seatbelt use.
Keys to Success	Establishing effective lines of communication to clearly outline improvements to driver education curriculum.
Potential Obstacles	Obtaining support from driver education officials and obtaining resources to carry out recommendations.
Appropriate Measures and Data	Implementation of revisions/improvements to the driver's education curriculum.
Responsible Agency	OHS, DSP, and DelDOT.

Critical Strategy #4: Support legislative action to strengthen aggressive driving, impaired driving, and commercial vehicle and occupant protection laws.	
Goal	Promote legislation that reduces fatalities and serious personal injuries, especially in the areas of aggressive driving, impaired driving, and occupant protection.
Strategy Description	By increasing the penalty and/or fine structure associated with the offenses and removing potential legislative loopholes, drivers may be deterred from driving irresponsibly. Currently, the primary seatbelt law in Delaware is a civil offense. Drivers pay a $25 fine but do not incur any points associated with the offense. The law includes an assessment penalty, which allows judges to modify the fine for failure to comply with occupant protection law.
Supporting Data	Between January 2001 and December 2003, 192 aggressive driving-related and 109 impaired driving-related fatalities occurred. Ten percent of the impaired driving fatalities occurred as a result of underage drinking where the at-fault driver was under 21 years of age. From January 2001 through December 2003, 14 percent of the 410 fatalities involved heavy trucks. The Office of Highway Safety's FY05 Highway Safety Plan reported that in 2003, 55 percent of fatalities were not wearing seatbelts.
Target(s)	Increased penalties would deter harmful driving behaviors by threatening the driving privileges of any offender.
Expected Effectiveness	Past studies indicate that open container laws can reduce alcohol-involved fatal crashes by 3.7 to 4.8 percent. Studies have shown that states with primary seatbelt laws experience higher usage rates as compared with those states that only have secondary laws.
Keys to Success	In order for these laws to be effective at deterring irresponsible or reckless driving behavior, the law must be strictly enforced; otherwise, these behaviors are unlikely to change. Furthermore, these laws must be upheld consistently by judges and prosecutors to maximize their effectiveness.
Potential Obstacles	The Delaware State legislature has been reluctant to pass an open container law.
Appropriate Measures and Data	While direct measures of effectiveness are difficult, the number of fatalities or serious injuries should be monitored after implementation of these laws, especially decreases in the number of fatalities and injuries for aggressive driving and impaired driving-related crashes and number of persons using the seatbelt as well as commercial vehicle involved crashes.

Critical Strategy #4: Support legislative action to strengthen aggressive driving, impaired driving, and commercial vehicle and occupant protection laws.	
Responsible Agency	OHS – lead. DSP, DelDOT, OEMS
Training and Other Personnel Needs	Education of the public is needed regarding changes in the law and its requirements. Active public education and enforcement would be needed in order to make these laws effective.
Legislative Needs	Enact an open container law. Increase seatbelt and aggressive driving-related fines.

Critical Strategy #5: Improve driver expectancy by reducing driver frustration.	
Goal	Manage the highway system more efficiently.
Strategy Description	Use new and existing intelligent transportation systems effectively to relieve congestion and driver frustration. For example, ensuring that traffic signals along congested corridors are coordinated reduces driver travel time. Reducing the frustration caused by the driving environment can eliminate or lessen a major contributor of aggressive driving.
Supporting Data	192 aggressive driving-related fatalities were reported with 55 percent of the crashes caused by drivers between 16 and 34 years old. The most prevalent hours for aggressive driving-related crashes are 7-10 AM (17%) and 3-6 PM (20%), which correspond to the peak commuting hours when the most congestion occurs.
Target(s)	Provide up-to-date information to drivers, which will keep them informed of roadway conditions and allow them to make appropriate decisions. Coordinating signals, and improving signal timing, especially along heavily traveled corridors, will reduce vehicle delay and driver frustration. Provide uniform traffic control devices including signing, signal timing, and pavement markings.
Expected Effectiveness	While no existing studies quantify impacts of improving driver environment on aggressive driving, ITE advocates programs such as signal coordination to reduce congestion and its related frustrations (NCHRP Report 500 Vol. 1).
Keys to Success	Ensuring that law enforcement, EMS, and DelDOT coordinate their efforts to improve incident clearance. Obtaining adequate personnel to address issues and maintain consistent traffic control devices.
Potential Obstacles	Lack of adequate resources.
Appropriate Measures and Data	The performance can be measured by both the change in frequency of aggressive driving-related citations and behaviors, as well as ultimately the decline of aggressive driving-related crashes.
Responsible Agency	DelDOT - lead agency; DSP, EMS providers
Organizational, Institutional, and Policy Issues	New policies may need to be developed to help identify high aggressive driving areas and determine which response(s) will be most effective.
Issues Affecting Implementation Time	Depending upon the scope of the areas considered and the treatments, the implementation timeframe will vary based upon complexity of event/ treatment.
Training & Other Personnel Needs	Train DelDOT staff and obtain adequate resources to hire additional staff.

Critical Strategy #6: Develop an open forum with the judicial branch to discuss the processing of impaired driving (DUI) cases and commercial vehicle cases.	
Goals	Consistently and successfully adjudicate impaired driving and commercial vehicle cases.
Strategy Description	Due to the complexity of Driving Under the Influence (DUI) and commercial vehicle cases, verdicts often vary and as a result some officers may be discouraged from pursuing these cases. Many drivers do not appreciate the potential dangers and consequences they, and other motorists, pedestrians, and bicyclists, face when they drive impaired. This strategy is intended to make people reconsider their actions by emphasizing that they will be punished if caught. When the courts suspend, reduce, or eliminate traffic charges for impaired drivers and commercial vehicle drivers, especially repeat offenders, a message is sent to the driver and the rest of the public that the actions were tolerable. The purpose of this strategy is to let the public know they will be held responsible for their actions.
Supporting Data	Between January 2001 and December 2003, 109 impaired-driving fatalities occurred, or 27 percent of all fatalities.
Target(s)	Often, police officers face significant challenges with impaired driving cases in court. Unlike other traffic violations, violators tend to hire attorneys and prepare rigorous defenses for impaired driving offenses. By presenting consistent, thorough evidence, consistently severe verdicts can be made to discourage this behavior. For example, Arizona recently developed a PowerPoint presentation that the police force uses in court to reduce the complexity of impaired driving trials. The presentation includes all the relevant case evidence, including photos of the offender, at the time of the offense.
Expected Effectiveness	Through consistent enforcement and prosecution, drivers will change their behaviors due to a high risk of being penalized. States with "Administrative License Revocation" which authorize police officers to confiscate the license of an impaired driver have experienced a 13 percent decline of fatal crashes involving drivers with a blood alcohol content greater than 0.10 (NCHRP Report 500 Vol. 16).
Keys to Success	Court and DSP support of this revised evidence presentation is needed for the success of this strategy.
Appropriate Measures and Data	The effectiveness can be evaluated by either the change in the number, or percentage of impaired driving cases that resulted in the maximum penalty(ies) assessed by the courts or by quantifying the number of

Critical Strategy #6: Develop an open forum with the judicial branch to discuss the processing of impaired driving (DUI) cases and commercial vehicle cases.	
	impaired driving-related fatalities, serious personal injuries, and crashes.
Responsible Agency	OHS - lead.
Training and Other Personnel Needs	Active communication with the judicial system is needed to improve the processing of impaired driving cases. Possible judicial and prosecution training may be necessary.

Critical Strategy #7: Improve pedestrian crossings design.	
Goal	Incorporate pedestrian facilities in the design of all projects to reduce the potential for pedestrian crashes.
Strategy Description	Pedestrians are not always considered in early stages of transportation projects. While it is difficult to quantify, inadequate pedestrian facilities or safety perception can often discourage pedestrians from walking.
Supporting Data	Forty-eight (48) pedestrian fatalities occurred between 2001 and 2003, and half of these were alcohol-related. The majority of the crashes occurred in New Castle County along several active corridors with limited pedestrian accommodations. Furthermore, the pedestrian was cited at-fault for 50 percent of the pedestrian-related crashes.
Target(s)	This strategy aims to reduce the pedestrian's exposure to traffic and increase their visibility when crossing roadways using a number of engineering treatments. Where appropriate, traffic calming may be used to improve pedestrian safety, such as in neighborhoods and on lower speed roadways.
Expected Effectiveness	Implementing appropriate guidelines and modifying design criteria and processes may simply involve implementing existing treatments such as sidewalks, striped crosswalks, providing pedestrian refuges within medians, etc. Furthermore, by eliminating conflicts between pedestrians and vehicles through the use of protected left-turn phasing, pedestrian-related crashes can be reduced. These treatments have been proven to be effective and typically experience the following crash reductions: • Sidewalks – 50-90% • Exclusive left-turn phasing with pedestrian phasing – 50%
Potential Obstacles	Obtaining capital improvement funding. May deteriorate capacity at intersection by providing adequate "walk" time for pedestrians.
Responsible Agency	DelDOT - lead agency. OHS, DSP.
Organizational, Institutional, and Policy Issues	Additional policies and procedures may need to be implemented to require design changes to include considering pedestrian-friendly alternatives and the various treatments available.
Training and Other Personnel Needs	Provide training for designers.

Critical Strategy #8: Develop consistent shoulder designs and maintenance of shoulders.	
Goal	Reduce the consequences of run-off-road crashes.
Strategy Description	A wider and smoother shoulder area increases the probability that an errant vehicle in the shoulder can recover safely.
Supporting Data	There were 147 fatalities and 625 serious personal injuries caused by run-off-road crashes between January 2001 and December 2003. Approximately 83 percent of these occurred under dry conditions.
Target(s)	Improve the recovery ability of vehicles in the shoulder, especially those that continue off the roadways and strike an object or overturn.
Expected Effectiveness	The NCHRP Report 500 indicates that the effectiveness of flattening side slopes can range from 8- to 27-percent reduction of single-vehicle crashes. Minnesota safety and maintenance experts indicate that maintaining even gravel shoulders can prevent up to 15-percent of the run-off-the-road crashes.
Keys to Success	Consistent application throughout Delaware's roadway network, beginning with critical areas with a known safety problem, is vital to succeeding.
Potential Difficulties	Cost of implementing statewide, but impacts may be minimized by focusing on known safety problems first.
Appropriate Measures and Data	The effectiveness can be determined by monitoring the crash rates, especially run-off-road and their severity.
Responsible Agency	DelDOT
Organizational, Institutional, and Policy Issues	Establish guidelines for design, construction and consistent maintenance of shoulders.
Training and Other Personnel Needs	Train inspectors and designers how to effectively build and maintain shoulders especially during pavement rehabilitation projects.

Critical Strategy #9: Develop guidance for testing pavement and determining when to use skid-resistant pavement.	
Goal	Establish procedures to determine the skid-resistance of pavement.
Strategy Description	Skidding occurs when the frictional demand exceeds the friction force between the tire and the pavement. Typically, skidding occurs under wet conditions, but it can also occur during dry weather, especially on older pavements. While many factors affect skid resistance, such as pavement age, structural condition, and traffic volume, friction is most controlled by speed. Therefore, high speed roadways may need more frequent testing and stronger pavement surfaces.
Supporting Data	There were 147 fatalities and 625 major injuries caused by run-off-road crashes from January 2001 through December 2003. 16 percent of the total fatal crashes occurred on wet pavement.
Target(s)	This strategy will target areas where skidding is determined to be a problem, in either wet or dry conditions, but primarily those resulting in run-off-road crashes and rear end collisions.
Expected Effectiveness	Studies for skid-resistant treatment have shown results of a 50 percent reduction in wet pavement crashes and a 20 percent reduction in total crashes. According to NCHRP Report 500, while the reduction in run-off-road crashes is not conclusive, it appears that these reduce by at least the same as for total crashes.
Keys to Success	Regularly scheduled evaluations of pavement condition should occur to monitor skid resistance. These checks should include details of the treatment, the before and after crashes, and the rainfall. In order to simplify the check process, these spot checks may need to target areas prone to friction failure.
Potential Obstacles	This strategy will require a strong commitment and adequate targeting of areas in poor condition.
Appropriate Measures and Data	Effectiveness will be determined by monitoring the before and after crash rates.
Responsible Agency	DelDOT will be responsible for this strategy. Little coordination with other agencies is necessary.

Critical Strategy #9: Develop guidance for testing pavement and determining when to use skid-resistant pavement.	
Organizational, Institutional, and Policy Issues	This strategy requires DelDOT to develop guidance on skid resistance testing.
Issues Affecting Implementation Time	Depending upon the treatment selected, the time varies.
Training and Other Personnel Needs	Employees will need to be aware of the new guidance and trained on how to select appropriate sites.

Critical Strategy #10: Install and utilize cost effective lane departure improvements.	
Goal	Implement rumble strip and RPM guidance to reduce run-off-the-road crashes.
Strategy Description	Several improvements and strategies can work together to prevent or reduce the severity of run-off-road crashes. Combined strategies may be more effective in some situations than individual strategies. These strategies may include installing delineators, using wider edgelines and/or installing raised pavement markings (RPMs) to highlight the edge of pavement, or using delineators, reflective tape, shields or guardrail to delineate trees and/or utility poles within the clear zone. Many run-off-road crashes occur by inattention or drowsiness. Rumblestrips can alert drivers that they are approaching the edge of the road or crossing the centerline, and can allow drivers to regain control of the vehicle.
Supporting Data	Between January 2001 and December 2003, there were 147 fatalities and 625 serious personal injuries caused by run-off-the-road crashes. 83 percent of the run-off-road crashes struck an object located off of the edge of road. Half of the fatalities were due to speed, inattention, or careless driving.
Target(s)	Rumblestrips warn inattentive and/or drowsy drivers that they are approaching the edge of the road. They are most effective in warning drivers that they are leaving the travel lanes, either off the edge of road or crossing into oncoming traffic. By increasing the visibility of obstacles along the edge of pavement, drivers may be better able to navigate difficult sections of roadway and avoid run-off-road collisions.
Expected Effectiveness	The effectiveness will depend upon the specific strategy(ies) chosen and whether the strategy was used in an appropriate location. Past studies indicate the following: • Early studies indicated a 15 percent reduction on rural two-lane curves with post-mounted delineators. • Wider edge lines might result in a 10 to 15 percent decrease in run-off-road crashes according to a NYDOT study. • NYDOT found that, if applied at high crash locations, RPMs can reduce fixed-object and run-off-road crashes by approximately 19 percent. • Past studies have found that shoulder rumble strips have a 20-30% reduction in the number of run-off-road crashes. Centerline rumblestrips have shown a 30 percent reduction of head-on and run-off-road crashes.

Critical Strategy #10: Install and utilize cost effective lane departure improvements.	
Keys to Success	These applications should be tested on an experimental basis especially in areas where drivers need further guidance.
Potential Obstacles	Damage to delineators and pavement markings during snow plowing may affect their effectiveness and lead to maintenance concerns. Rumblestrips may cause problems for bicyclists and motorcyclists. Roadway and shoulder width, as well as surface type, may prohibit rumblestrip installation at some locations. Noise near residential areas needs to be adequately addressed prior to installing rumble strips.
Appropriate Measures and Data	The effectiveness can be determined by monitoring the before and after crash rates.
Responsible Agency	DelDOT DelDOT Maintenance
Organizational, Institutional, and Policy Issues	Revise on-call contract language to address response time for repairing damaged delineators.
Issues Affecting Implementation Time	As relatively inexpensive treatments, both rumblestrips and delineators should be able to be installed within a short timeframe.
Training and Other Personnel Needs	Train designers to use best practices in locating devices. Train maintenance and construction on when and how to use delineators and devices.

Critical Strategy #11: Delineate objects located off the travel way that may be struck by a run-off-road vehicle.	
Goal	Reduce the severity of run-off-road crashes.
Strategy Description	While it would be ideal to remove the object(s) being struck, resources limit the likelihood of being able to eliminate all objects located outside of the travel way. This strategy aims to reduce the impact of a run-off-road event by delineating or removing fixed objects located near the travel way, especially those that crash data indicate are struck frequently.
Problem Data	Between January 2001 and December 2003, there were 147 fatalities and 625 serious personal injuries caused by run-off-road crashes. Eighty-three percent of the run-off-road crashes struck an object located off of the edge of the road, with 25 percent of these striking trees and another 8 percent hitting utility poles.
Target(s)	By increasing the visibility of obstacles along the edge of pavement, drivers may be better able to navigate difficult sections of roadway and avoid impact with these obstacles. This strategy should initially aim to delineate those objects with the highest frequency of being struck.
Expected Effectiveness	While the effectiveness of delineating objects is still under study by AASHTO, it is expected to reduce fixed object crashes by providing additional guidance cues and possibly providing "safer escape route" information to drivers off the roadway (NCHRP Report 500 Vol. 16).
Keys to Success	Using crash data to most effectively determine what locations and objects warrant delineation.
Potential Obstacles	If delineated objects continue to be struck, simply replacing the delineators will not resolve the safety problem and other measures should be considered. Maintenance of delineators continuously struck may require additional staff or time. Removal of objects struck can be costly and difficult.
Appropriate Measures and Data	The effectiveness can be determined by monitoring the before and after crash rates.
Responsible Agency	DelDOT.

Critical Strategy #12: Complete work zone safety guidelines.	
Goal	Develop and implement "Work Zone Safety and Mobility" guidelines that meet federal requirements.
Supporting Data	Work zones demand additional attention of drivers, which creates a problematic situation for both workers and drivers alike. In order to enhance driver awareness, standard work zone treatments need to be implemented to notify drivers that they are approaching and are within work zones. Strategies may include establishing more effective day and night work zone operation review procedures, developing more effective public information guidelines, and demonstrating more advanced technology applications for work zones. Currently, DelDOT and DSP have not reached agreement on how to define and code work zone crashes. In order to evaluate work zones effectively, work zone data will need to be collect consistently.
Problem Statement	Currently, DelDOT and DSP are experiencing difficulty obtaining accurate work zone related crash information.
Target(s)	By increasing work zone visibility and awareness, motorists may drive more cautiously in these vulnerable areas, reducing the chance of a crash.
Expected Effectiveness	Once DelDOT obtains reliable work zone data, they can proactively work towards reducing work zone-related crashes. FHWA's *Work Zone Best Practices Manual* summarizes some of the benefits associated with various work zone treatments and strategies. Quantifying the effectiveness is difficult, especially for public awareness campaigns that may be used to encourage drivers to recognize the risks associated with work zones.
Keys to Success	Coordinating DelDOT, law enforcement, and contractors to understand the importance of providing safe work zones and notifying the public of the risks associated with them.
Appropriate Measures and Data	Obtaining quality work zone crash reports and reducing work zone crashes, fatalities and injuries.
Responsible Agency	DelDOT, DSP, and OHS.

Critical Strategy #12: Complete work zone safety guidelines.	
Organizational, Institutional, and Policy Issues	This strategy will require developing new work zone safety procedures (which are currently in progress) at DelDOT, including meeting the "Final Rule in Safety and Mobility in Work Zones" requirements as proposed by FHWA. Establish a memorandum of understanding between DelDOT and law enforcement agencies on how law enforcement can assist within work zones.
Issues Affecting Implementation Time	New procedures are in the process of being developed and prioritized based on available resources. With the implementation of Traffic and Criminal Software (TraCS), obtaining quality, timely data should be achievable within a short time frame.
Training and Other Personnel Needs	DelDOT construction inspectors, DelDOT Maintenance, DelDOT Designers, DelDOT Planning, and law enforcement agencies will need training on the new policies and how these best practices will be implemented.

Critical Strategy #13: Develop an integrated traffic crash data collection system to increase accuracy, uniformity, and timeliness.	
Goal	Create an integrated traffic crash data collection system and implement TraCS in all Delaware law enforcement agencies.
Strategy Description	Improve crash data accuracy, uniformity, and timeliness as well as traffic records accessibility by implementing the recommendations outlined in the Traffic Records Coordinating Committee Strategic Plan.
Supporting Data	Crash data is the backbone of highway safety and the entire Strategic Highway Safety Program depends on accurate, timely data to make informed program decisions and implement appropriate strategies. Inaccurate and incomplete data hampers all highway safety program planning.
Target(s)	While this strategy does not address a specific crash type, accurate, timely data can better enable users to identify emphasis areas and high crash locations to apply resources. The system should include automated data collection, automated query tools, and integrated data between agencies and users.
Expected Effectiveness	Better data will improve state agencies' ability to effectively allocate resources to known crash problems and locations although the exact impact on reducing fatalities is difficult to estimate.
Keys to Success	All responsible agencies and end users must coordinate efforts to ensure that all of the necessary data is collected in a consistent manner so that it can be used to improve traffic safety decision making.
Potential Obstacles	Coordinating agencies that may be resistant to change, providing adequate resources, and training officers in the importance of completing the crash forms thoroughly.
Responsible Agency	DSP with support from OHS, DelDOT, DelJIS, EMS, and DMV
Training and Other Personnel Needs	Staff, including police officers, data managers, and data users, will need to be trained in collecting, managing, and using the new system.

Appendix B: Glossary of Terms

AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act
BAC	Blood Alcohol Content
CODES	Crash Outcome Data Evaluation System
DelDOT	Delaware Department of Transportation
DelJIS	Delaware Judicial Information System
DMV	Division of Motor Vehicles
DSP	Delaware State Police
DUI	Driving Under the Influence
FARS	Fatality Analysis Reporting System
FHWA	Federal Highway Administration
NCHRP	National Comprehensive Highway Research Project
NHTSA	National Highway Traffic Safety Administration
OEMS	Office of Emergency Medical Services
OHS	Office of Highway Safety
RPM	Raised Pavement Marker
SAFETEA-LU	Safe, Accountable, Flexible, and Efficient Transportation Equity Act- A Legacy for Users (Enacted August 10, 2005)
TEA-21	Transportation Equity Act for the 21st Century
TraCS	Traffic and Criminal Software
VMT	Vehicle Miles Traveled

Questions or requests for copies of this document should be directed to:

Delaware Department of Transportation
dot-public-relations@state.de.us
P.O. Box 778
Dover, DE 19903