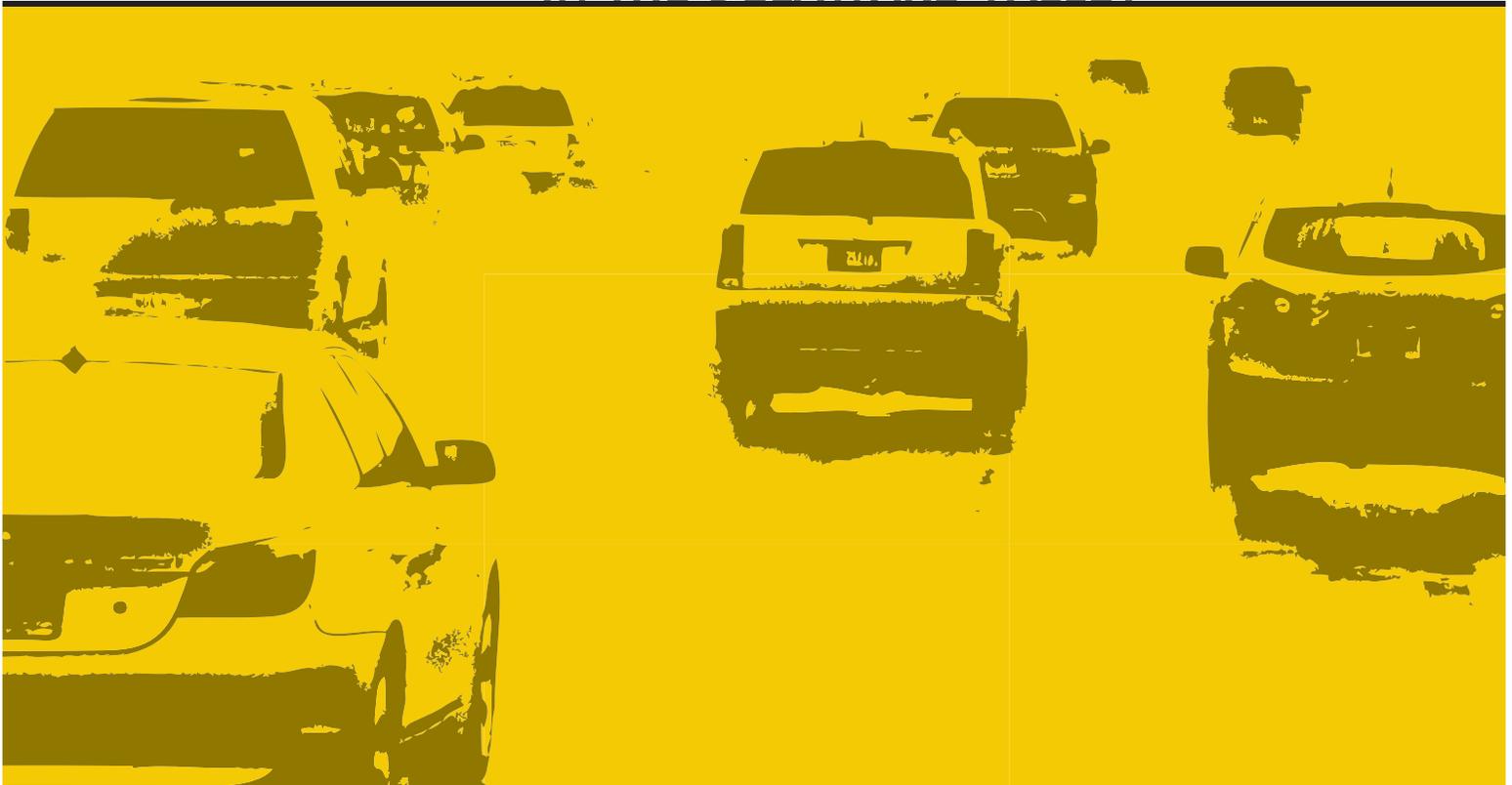




2009

SAFETY ACTION PLAN

IMPROVING TRANSPORTATION SAFETY
IN THE DELAWARE VALLEY





The Delaware Valley Regional Planning Commission is dedicated to uniting the region's elected officials, planning professionals and the public with the common vision of making a great region even greater. Shaping the way we live, work and play, DVRPC builds consensus on improving transportation, promoting smart growth, protecting the environment, and enhancing the economy. We serve a diverse region of nine counties: Bucks, Chester, Delaware, Montgomery and Philadelphia in Pennsylvania; and Burlington, Camden, Gloucester and Mercer in New Jersey. DVRPC is the official Metropolitan Planning Organization for the Greater Philadelphia Region — leading the way to a better future.

The symbol in our logo is adapted from the official DVRPC seal, and is designed as a stylized image of the Delaware Valley. The circular shape symbolizes the region as a whole. The diagonal line represents the Delaware River and the two adjoining crescents represent the Commonwealth of Pennsylvania and the State of New Jersey

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Executive Summary

Over 450 people lose their lives in an average year due to approximately 90,000 vehicle crashes occurring on the roads of the Delaware Valley. The 2009 Safety Action Plan will reduce vehicle-related crashes and fatalities in the Delaware Valley through focusing on key emphasis areas.

The Delaware Valley Regional Planning Commission (DVRPC)¹ had adopted a Regional Safety Action Plan in 2006. The current document builds upon that work and also continues to implement the comprehensive long-range plan for the region. This report and the accompanying Traffic Crash Analysis of the Delaware Valley (Publication Number 08054) cover trends in the crash data and how to improve safety.

The 2009 Safety Action Plan contains a streamlined set of emphasis areas compared to the previous report. This will help with achieving and tracking results. The emphasis areas cover those shared by the Pennsylvania and New Jersey departments of transportation (PennDOT and NJDOT) and a few additional key emphasis areas for the Delaware Valley.

The seven emphasis areas in the 2009 Safety Action Plan are contributing factors in 96% of crash fatalities in the Delaware Valley. They are:

1. Curb Aggressive Driving
2. Reduce Impaired Driving
3. Keep Vehicles on the Roadway
4. Sustain Safe Senior Mobility
5. Increase Seat Belt Usage
6. Improve the Design and Operation of Intersections
7. Ensure Pedestrian Safety

Aggressive driving was a contributing factor for more than half the traffic fatalities in the Delaware Valley, on average, from 2005 to 2007. It is the most significant emphasis area to address to improve safety.

Many successful programs to address traffic safety already exist in the Delaware Valley. The approach in this document is to focus on key emphasis areas, highlight the programs that are already helping, and identify additional recommended strategies that will reduce fatalities.

Reducing traffic fatalities in the Delaware Valley is an effort of many agencies, organizations, and individuals. The Safety Action Plan helps coordinate these efforts through an implementation table that will continue to evolve with input from DVRPC's Regional Safety Task Force (RSTF).

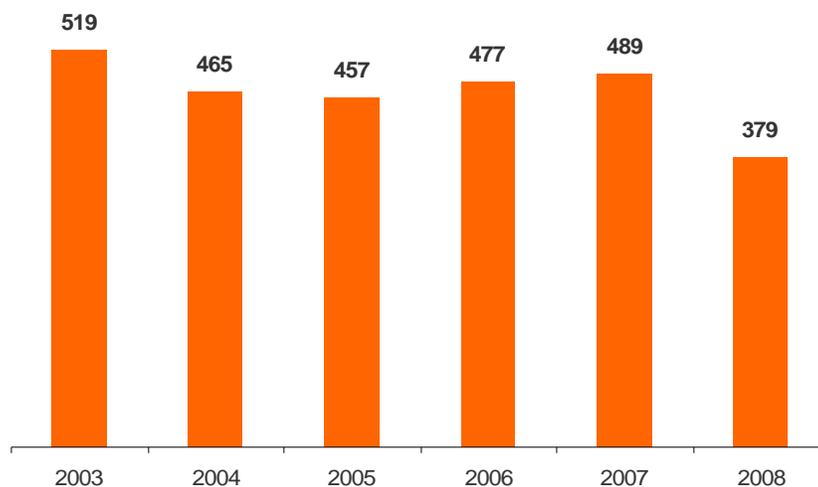
The Regional Safety Task Force is a multidisciplinary group that provided guidance for the 2006 and 2009 plans. Member organizations include NJDOT, PennDOT, counties, municipalities, Transportation Management Associations (TMAs), law enforcement agencies, and other agencies. The Task Force meets several times a year and will focus on one emphasis area each meeting. Meetings will include updates and identifying steps that remain to be taken.

¹ Many acronyms are used in this report. A full list with definitions is provided in Appendix A.

Why Have a Safety Plan?

The 2009 Safety Action Plan aims to reduce vehicle-related crashes and fatalities in the Delaware Valley through focusing on key safety emphasis areas. In the Delaware Valley, there were approximately 90,000 reported crashes on average each year between 2005 and 2007, resulting in an average of 474 fatalities per year. A successful transportation safety action plan benefits the entire region, and at a personal level it could save the life of a loved one or a neighbor. The chart below shows crash fatalities in the Delaware Valley from 2003 to 2008. The 2008 data became available after analysis for this report was completed and is included only in Figure 1.

Figure 1: Crash Fatalities in the Delaware Valley

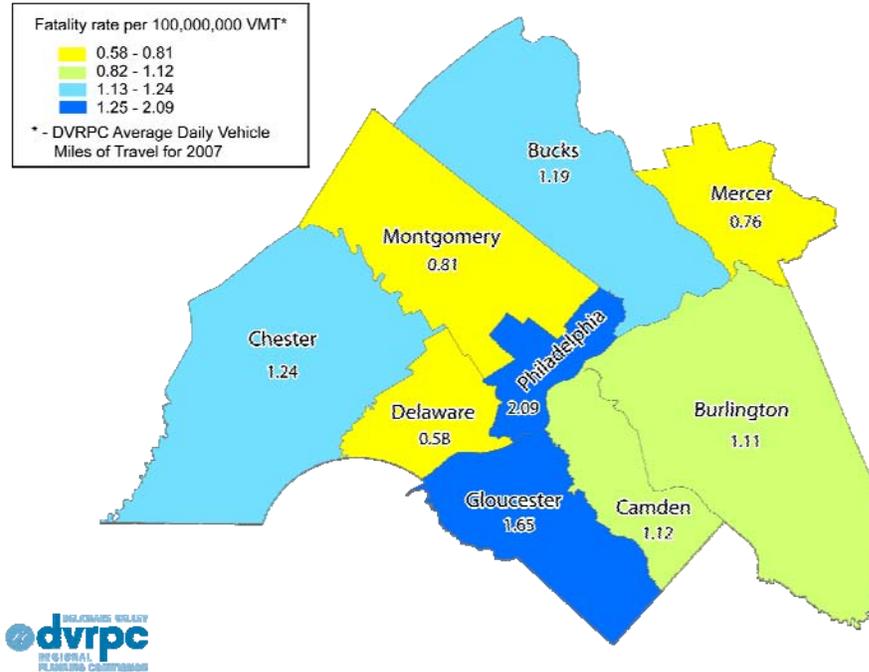


Source: NJDOT & PennDOT data, analyzed by DVRPC

There are many excellent safety programs underway in the region to reduce crashes and transportation fatalities. However, the number of fatalities due to vehicle crashes has not declined at a steady rate. In addition, it is possible that the decrease in fatalities recorded in 2008 was related to the reduction in driving associated with the spike in gas prices. The Plan explains the key safety emphasis areas for the region, suggests strategies to improve safety in these emphasis areas, and highlights existing successful programs.

There are many ways to analyze crash data. These include by absolute numbers, rates, and using the federal emphasis areas. Analysis is presented in a companion piece, Traffic Crash Analysis of the Delaware Valley. One example is shown on this page, crash rates by Vehicle Miles Traveled (VMT) for the nine counties in New Jersey and Pennsylvania that are part of the Delaware Valley Regional Planning Commission (DVRPC).

Figure 2: Fatality Rate in the Delaware Valley by VMT, 2007



Source: Crash Data from PennDOT and NJDOT, VMT from DVRPC. Graphic from Traffic Crash Analysis of the Delaware Valley.

DVRPC had adopted a Regional Safety Action Plan in 2006. The current document builds upon that work. It also continues to help implement the comprehensive long-range plan for the region. This document supports and is closely coordinated with the Pennsylvania and New Jersey strategic highway safety plans.

Background

Federal Regulations

The 2005 federal surface transportation legislation emphasized safety by increasing funding for safety and raising its stature. One way it did so was by requiring each state Department of Transportation (DOT) to develop a data-driven Strategic Highway Safety Plan (SHSP) in coordination with its partners. DVRPC is a partner in planning for the Philadelphia metropolitan region with the Pennsylvania Department of Transportation (PennDOT) and the New Jersey Department of Transportation (NJDOT). Work is underway on the next six-year federal transportation bill and it is anticipated that safety will remain an important component.

Pennsylvania's Approach

Pennsylvania developed a Comprehensive Strategic Highway Safety Improvement Plan (CSHSIP) in 2006 with a wide range of partners and support from the PennDOT Bureau of Highway Safety and Traffic Engineering (BHSTE). It focused on a set of the "Vital Six" safety focus areas based on analysis of how best to reduce highway fatalities. The focus areas in the 2006 Plan were:

1. Reducing Aggressive Driving
2. Reducing Impaired Driving
3. Increasing Seatbelt Usage
4. Safety Infrastructure Improvements (Roadway Departure and Intersection Crashes)*
5. Improving the Crash Records System
6. Improving Pedestrian Safety

*This combines two American Association of State Highway and Transportation Officials (AASHTO) emphasis areas. They are separate in the New Jersey and previous DVRPC analysis. Review of statewide data shows that Roadway Departure crashes result in almost twice as many fatalities as Intersection crashes.

The next plan will be called the Pennsylvania Strategic Highway Safety Plan (SHSP). The update was launched with a highway safety summit in January 2009. As of June 2009, the following will be the 2009 Vital Seven Safety Focus Areas:

1. Reducing Aggressive Driving
2. Reducing Impaired Driving
3. Increasing Seatbelt Usage
4. Infrastructure Improvements (Reducing Head-On Collisions, Intersection Crashes, Roadway Departure Crashes)*
5. Improving Traffic Records Data
6. Reducing Motorcycle Crashes
7. Mature Driver Safety

*See previous list

New Jersey's Approach

New Jersey completed its Comprehensive Strategic Highway Safety Plan, "Driving Down Deaths on New Jersey's Roadways," in 2007. It was also developed with a range of partners and analysis of crash data. The Plan identifies eight emphasis areas:

1. Minimize Roadway Departure Crashes
2. Improve Design/Operation of Intersections
3. Curb Aggressive Driving
4. Reduce Impaired Driving
5. Reduce Young Driver Crashes
6. Sustain Safe Senior Mobility
7. Increase Driver Safety Awareness
8. Reduce Pedestrian, Bicycle, Rail, and Vehicular Conflicts.

New Jersey anticipates starting to update its plan in 2009. The lead administrative agency is the Bureau of Safety Programs within NJDOT. The 2007 plan was guided by a New Jersey Safety Management Task Force and had technical support from the Rutgers University Transportation Safety Resource Center (TSRC). The TSRC will provide technical support for the update of the New Jersey plan as well.

Figure 3: DVRPC Region



DVRPC's Approach

DVRPC is the Metropolitan Planning Organization (MPO) for the nine-county Greater Philadelphia Region, referred to as the Delaware Valley. This region consists of five Pennsylvania counties and four New Jersey counties.

The Delaware Valley represents more than just part of Pennsylvania and part of New Jersey. This is especially striking for the five Pennsylvania counties; they represent just 5% of the state's land area, but 31% of the population and 28% of the crashes. The four New Jersey counties represent 21% of the state's land area, 19% of the population, and 20% of the crashes. The DVRPC region shares many of the safety priority issues faced by Pennsylvania and New Jersey in general, but also has its own unique character and safety concerns. For this reason, DVRPC prepares a regional Safety Action Plan that draws on the work of each state and also informs the states of specific safety needs in the Philadelphia metropolitan area.

DVRPC had previously adopted a 2006 Regional Safety Action Plan, subtitled "A Road Map to Safer Travel in the Delaware Valley Region." It addressed the following 13 emphasis areas:

1. Sustain Proficiency in Older Drivers
2. Improve Young Driver Safety
3. Curb Aggressive Driving
4. Increase Driver Safety Awareness
5. Minimize Run Off Road Crashes
6. Pedestrian/Bike Safety
7. Impaired Driving
8. Seat Belt Usage/Occupant Restraint
9. Hit Fixed Object Crashes
10. Enhance Safety on Local Roads
11. Improve Motorcycle Safety
12. Drive More Safely in Inclement Weather
13. Improve Design/Operation of Intersections

The Regional Safety Task Force is a multidisciplinary group that has been meeting since 2005 and provided substantial guidance for the 2006 Plan. It has continued meeting quarterly to help inform and guide partners in their consideration of how to proceed with implementing the Plan and generally improving transportation safety. Members of the Regional Safety Task Force include DVRPC, NJDOT, PennDOT, counties, municipalities, TMAs, law enforcement, and others.

The 2006 Regional Safety Action Plan was used by DVRPC and contributed in varying degrees to the ongoing safety planning efforts of other partners in the region. Each of the 13 emphasis areas is listed below with an abbreviated set of actions taken since 2006 by DVRPC and its partners. While the motivation for partners to take specific actions may not have always come directly from the Plan, the end results of these actions often do directly address the emphasis areas. DVRPC considers any positive outcomes to help the region reach its safety goals. For further information on the DVRPC studies referenced below, go to www.dvrpc.org/Transportation/Safety.

Table 1: Summary of Actions Taken on 2006 Emphasis Areas

	2006 Emphasis Area	Activities Completed
1	Sustain Proficiency in Older Drivers	<ul style="list-style-type: none"> ■ Highway Design for Older Drivers and Pedestrians Workshop
2	Improve Young Driver Safety	<ul style="list-style-type: none"> ■ Alive at 25 Program – Train the Trainer Course Presentations to RSTF such as NJ Teen Driver Study Commission and “A Family Guide to Teen Driver Safety” ■ Bucks County Transportation Management Association (BCTMA) – High School Seatbelt Safety Challenge
3	Curb Aggressive Driving	<ul style="list-style-type: none"> ■ DVRPC’s Taming Traffic Studies – East Atlantic Avenue, Audubon/Haddon Heights/Barrington/Lawnside Boroughs (NJ); Smithville Road, Eastampton Township (NJ); Bethlehem Pike, Springfield and Whitemarsh Townships (PA); Chester Pike, Sharon Hill Borough (PA); Washington Avenue/PA 332 Newtown Borough, Newtown Township (PA) ■ Presentations to RSTF such as “Please Heed the Speed” and the Ticketing Aggressive Cars and Trucks Pilot Project
4	Increase Driver Safety Awareness	<ul style="list-style-type: none"> ■ Presentations to RSTF, such as on the “Operation Lifesaver” Program and Access Management ■ Gloucester County safe driving video contest
5	Minimize Run off Road Crashes	<ul style="list-style-type: none"> ■ Road Safety Audits, the Congestion and Crash Site Analysis Program, and PA 100 Safety Study (Reports available from DVRPC) ■ BCTMA – Operation Safe 95; Operation Safe 1; Route 13 Corridor Improvement Coalition; Mobile Speed Awareness Monitor
6	Pedestrian/Bike Safety	<ul style="list-style-type: none"> ■ North Broad Street Pedestrian Crash Study, Philadelphia; Pedestrian Road Safety Audit of North Broad Street, Philadelphia; Roosevelt Boulevard Corridor Study; Planning for Safe Routes to School (Reports available from DVRPC); Presentation to RSTF on AAA Pedestrian Signal Safety for Older Persons
7	Impaired Driving	<ul style="list-style-type: none"> ■ New Jersey Transportation Safety Legislation Symposium, Presentation to RSTF on PA State Police Drug Recognition Expert Program
8	Seat Belt Usage / Occupant Restraint	<ul style="list-style-type: none"> ■ BCTMA – High School Seatbelt Safety Challenge
9	Hit Fixed Object Crashes	<ul style="list-style-type: none"> ■ Road Safety Audits – PA 10 (Chester County); PA 663 (Montgomery County); PA 412 (Bucks County); Williamstown Road and Erial Road (Camden County) (Reports available from DVRPC)
10	Enhance Safety on Local Roads	<ul style="list-style-type: none"> ■ Taming Traffic Studies – Clarksville Road, West Windsor Township (NJ); Parkside Area, City of Camden (NJ); Parkside Avenue, Philadelphia (PA) (Reports available from DVRPC); Safe Routes to School programs (various municipalities) ■ BCTMA – Mobile Speed Awareness Monitor; Route 413/Woods Services Safety Enhancement
11	Improve Motorcycle Safety	<ul style="list-style-type: none"> ■ Presentation to RSTF on Motorcycle Safety
12	Drive more Safely in Inclement Weather	<ul style="list-style-type: none"> ■ PA 100 Safety Study (Report available from DVRPC)
13	Improve Design/Operation of Intersection	<ul style="list-style-type: none"> ■ Road Safety Audits – Camden County (NJ); Mercer County (NJ); Bucks County (PA); Chester County (PA); Montgomery County (PA); Philadelphia County (PA) (Reports available from DVRPC) ■ Intersection Road Safety Audits – Evesham Township, Burlington County (NJ); Pemberton Township, Burlington County (NJ); Winslow Township, Camden County (NJ); Deptford Township, Gloucester County (NJ) (Reports available from DVRPC) ■ Congestion and Crash Site Analysis – Medford Township and Pemberton Township, Burlington County (NJ); Gloucester Township and Winslow Township, Camden County (NJ); Franklin Township, Gloucester County (NJ); City of Trenton and Ewing Township, Mercer County (NJ); Northampton Township, Bucks County (PA); New Garden Township and Phoenixville Borough, Chester County (PA); Aston Township and Tinicum Township, Delaware County (PA); Upper Moreland Township and Abington Township, Montgomery County (PA); City of Philadelphia, Philadelphia County (PA) (Reports available from DVRPC) ■ Corridor Studies – PA 100 Corridor Safety Study; CR 541 Corridor Safety Study (Reports available from DVRPC) ■ Regional Roundabout Analysis and Northeast Roundabout Design Workshop ■ Regional Road Diet Analysis

Source: DVRPC, 2009

Updating Emphasis Areas for the Delaware Valley

The 2009 Safety Action Plan contains a streamlined set of emphasis areas to help with achieving and tracking results. It focuses on the emphasis areas shared by the partner DOTs and on the most important emphasis areas for the Delaware Valley Region not already on that list. It has been developed in a clear, updatable manner.

The federal requirement of state DOTs is focused on highway safety. As a result, that is the focus of the Pennsylvania and New Jersey Strategic Highway Safety Plans (although the current New Jersey Plan also includes Reduce Pedestrian, Bicycle, Rail, and Vehicular Conflicts as one of its eight emphasis areas). The Delaware Valley has among the highest levels of transit use in the nation based on statistics from the American Public Transportation Association, so this Plan also briefly addresses transportation safety for transit riders (this may be enhanced in the future).

Methodology

DVRPC began this update by contacting PennDOT and NJDOT to facilitate cooperation and communication. The next step was reviewing changes in data for the thirteen emphasis areas in the 2006 Regional Safety Action Plan and further, data for all national emphasis areas. The changes since the 2006 analysis were presented at a Regional Safety Task Force meeting in January 2009. Key changes and trends are summarized in a companion document, *Traffic Crash Analysis of the Delaware Valley*.

Twenty-two national safety emphasis areas are described in the Strategic Highway Safety Plan published by AASHTO in 1997 and updated in 2004. The AASHTO report includes general strategies to address each emphasis area. It does not limit the emphasis areas or strategies that may be included in state plans.

As recommended by FHWA, Pennsylvania and New Jersey each started with analysis of these emphasis areas. Each state then worked with partners to develop their strategic highway safety plans. The emphasis areas in each of the states' plans are listed earlier in this document. This update of the bi-state Safety Action Plan incorporates emphasis areas shared by both states. The four emphasis areas shared by Pennsylvania and New Jersey are:

1. Curb Aggressive Driving
2. Reduce Impaired Driving
3. Keep Vehicles on the Roadway
4. Sustain Safe Senior Mobility

DVRPC conducted analysis of the 22 emphasis areas following the federal model of focusing on reducing fatalities. A future level of analysis would be to incorporate considerations of emphasis areas with many crashes and injuries rather than only focusing on fatalities. The following key Delaware Valley emphasis areas were identified from analysis:

1. Increase Seatbelt Usage
2. Curb Aggressive Driving
3. Keep Vehicles on the Roadway
4. Improve the Design and Operation of Intersections

Of these four analysis-based key emphasis areas, two were also shared by both states: Curb Aggressive Driving and Keep Vehicles on the Roadway. Analysis for the nine counties in the Delaware Valley indicates that Increase Seatbelt Usage and Improve the Design and Operation of Intersections are also key emphasis areas for reducing fatalities. The two remaining shared emphasis areas of the states follow closely in the results from analysis for the Delaware Valley. All of these emphasis areas had been included in the 2006 Regional Safety Action Plan.

Another important source of direction emerged from crash analysis of the Delaware Valley. In New Jersey and Pennsylvania, a field in the crash database identifies whether the crash was on a local road, although the definitions of that term differs between the states. Many crashes (approximately 30%) occurred on local roads. A step underway is to select all the fatalities that include the field for local roads and analyze the main factors for fatalities in those crashes. Any significant differences in contributing factors will be used in future planning efforts. The analysis so far suggests that safety improvement projects for corridors should address local roads, as well as state roads.

The draft set of emphasis areas was discussed at the April 8, 2009 Regional Safety Task Force meeting, where the Task Force recommended adding the federal emphasis area, Make Walking and Street Crossing Safer. Reasons for this added emphasis area include the role of encouraging walking in other goals, the number of people walking in the Philadelphia metropolitan region, and the increasing number of pedestrian fatalities in the preliminary 2008 and 2009 data for New Jersey and Pennsylvania. The name for the emphasis area was also revised by the group for use in the Safety Action Plan.

Teen and young driver safety is an important subject. The actual number of fatalities was slightly lower than the other included emphasis areas for the Delaware Valley and in discussion at the Regional Safety Task Force meeting on April 8, 2009 there was a sense that strategies to help young drivers often overlap with other emphasis areas. The conclusion was to express support in this plan for additional programs that help young drivers, but to incorporate their needs in the strategies for the other emphasis areas in the Safety Action Plan.

Resulting Set

The four emphasis areas shared by the two states and the four key emphasis areas for the unique conditions within the Delaware Valley region were combined for a proposed list of six emphasis areas in this Plan. Based on a discussion at the April 8, 2009 Regional Safety Task Force meeting, a seventh was added. The updated emphasis areas are:

1. Curb Aggressive Driving
2. Reduce Impaired Driving
3. Keep Vehicles on the Roadway
4. Sustain Safe Senior Mobility
5. Increase Seat Belt Usage
6. Improve the Design and Operation of Intersections
7. Ensure Pedestrian Safety

The proposed set of emphasis areas is shorter than the thirteen in the 2006 Plan. The shorter list is based on a clear methodology that results in a more actionable set and allows effects to be more reasonably tracked. The seven identified emphasis areas are contributing factors in 96% of fatalities in the Delaware Valley. The emphasis areas may be updated as Pennsylvania and New Jersey update their plans, but the basic methodology is a sound way to encourage coordinated, enhanced safety planning in the Delaware Valley region.

Over a million people ride transit in the Delaware Valley each day, so it is important to recognize safety for transit riders. Most safety concerns in transit typically involve engineering solutions and are strictly regulated (car design, signalization, etc). Productive areas for further attention would be customer safety and incident response. Staff training should be a focus, enabling a response to special events or unforeseen incidents which ensures the safety and security of transit riders.

Scheduled events such as parades or other celebrations during non-work or off-peak times necessitate appropriate levels of staff to insure that transit facilities remain safe from petty crime and to protect the expanded numbers of riders from other issues affecting personal safety. Incidents such as equipment malfunctions, acts of terrorism, or natural disasters require trained transit police responses to provide order, safety from injury or crime, and medical triage where appropriate. The training of staff to respond to customers during special events or unforeseen incidents is an area of transit safety and security planning that is not regularly highlighted. However, transit staff may represent the first line of response at station facilities and on transit vehicles. This is largely within the purview of transit operators, but DVRPC offers support where it would help improve overall transportation safety in the Delaware Valley.

DVRPC currently incorporates safety for transit riders and vehicles in various programs. One example was the presentation on safety in the vicinity of railroad tracks (Operation Lifesaver) at the January 2009 Regional Safety Task Force meeting.

Improving Safety in Emphasis Areas

How We Increase Transportation Safety in the Delaware Valley

The Delaware Valley is in a strong position to improve safety on its roads. Analysis has identified that just seven emphasis areas were contributing factors in a vast majority (96%) of traffic fatalities. Furthermore, just one was a contributing factor over half the time: Aggressive Driving.

Many successful programs already exist in the Delaware Valley that address these seven emphasis areas. A variety of existing programs are listed for each emphasis area to recognize them and as sources from which to learn. A wide range of strategies to consider are listed for each emphasis area. The final chapter of this report provides a short table of recommended strategies with further information for moving forward.

Table 2: 2009 Emphasis Areas for the Delaware Valley

	Emphasis Area	Brief Definition
1	Curb Aggressive Driving	Aggressive driving is a combination of dangerous, deliberate, and hostile behaviors or actions by a motor vehicle operator that endanger other persons and disregard public safety. Aggressive driving was a contributing factor for more than half of the traffic fatalities in the Delaware Valley on average for the period 2005 to 2007. This is the most significant emphasis area to address in order to improve safety.
2	Reduce Impaired Driving	Impaired driving refers to driving under the influence of alcohol in this analysis. It can also refer to driving while drug-impaired, sleep-deprived, or distracted.
3	Keep Vehicles on the Roadway	Keeping vehicles on the roadway helps reduce crashes in which vehicles leave the roadway as they often then hit fixed objects, overturn, and/or roll. Roadway departure crashes are often deadly.
4	Sustain Safe Senior Mobility	Sustaining safe senior mobility includes recognizing that although many older drivers are still capable, the effects of aging have negative consequences on the safe driving abilities of some seniors. It is important to also address the range of mobility alternatives for seniors.
5	Increase Seat Belt Usage	Wearing a safety belt is highly effective for preventing crash fatalities. All occupants of a vehicle should wear seatbelts.
6	Improve the Design and Operation of Intersections	Improving the design and operation of intersections means reducing crashes at both signalized and unsignalized intersections. In locations with pedestrians and bicyclists, it is important to also address their need to cross intersections.
7	Ensure Pedestrian Safety	Ensuring pedestrian safety involves improving the design and availability of pedestrian facilities on roadways, as well as increasing awareness of the risks and responsibilities both drivers and pedestrians must consider during their interactions.

Source: DVRPC, 2009

Emphasis Area 1: Curb Aggressive Driving

“Though there always have been aggressive drivers, incidences of crashes, injuries, and fatalities resulting from aggressive driving, they are becoming more prevalent. Nationally, more than 60 percent of drivers see unsafe driving by others as a major personal threat to themselves and their families.

Aggressive driving often manifests itself as a combination of speeding and recklessness, particularly dangerous highway behavior. Speeding excessively, changing lanes frequently without signaling, following too closely, flashing lights, driving on shoulders to pass, driving across marked barriers, shouting or gesturing at other drivers, uncontrolled anger, and stress created by traffic congestion are among the causes and manifestations of aggressive driving. Aggressive drivers also tend to be high-risk drivers—more likely to ride unrestrained and also drink and drive.” (AASHTO, p. 12)

Source: “Strategic Highway Safety Plan” (AASHTO, 2005)

Aggressive driving was a contributing factor for 53% of the traffic fatalities in the Delaware Valley on average for the period 2005 to 2007. **This is the most significant emphasis area to address in order to improve safety.** See the companion piece, Traffic Crash Analysis of the Delaware Valley (Publication Number 08054) for more background information.

Existing Programs

The following page lists many of the programs in the Delaware Valley region that help curb aggressive driving, updated from the 2006 Regional Safety Action Plan.

Table 3: Programs in the Delaware Valley that Help Curb Aggressive Driving

Engineering	Enforcement	Education
<p>NJDOT</p> <ul style="list-style-type: none"> Installation of “Safety First” signage along highways e.g. “Maintain Safe Travel Distance” 	<p>NJDOT</p> <ul style="list-style-type: none"> Red light camera programs “Safe Corridors” program 	<p>DVRPC</p> <ul style="list-style-type: none"> Taming Traffic reports Road Safety Audits Congestion Crash Site Analysis Program
<p>PennDOT</p> <ul style="list-style-type: none"> Pavement “Dot” treatments (solid, oval pavement markings to assist drivers in establishing the recommended following distance) Example: PA 41 (Chester County) Variable Message Signs (VMS) (“Wipers on, Headlights on, “Motorcycle Awareness,” etc.) “Fender Bender” signs 	<p>PennDOT</p> <ul style="list-style-type: none"> Programs to report aggressive driving <p>PennDOT – Bureau of Highway Safety and Traffic Engineering (BHSTE)</p> <ul style="list-style-type: none"> “Drive Safe PA” program (formerly “Smooth Operator” program) provides grants to state and local police for speed enforcement 	<p>NJDOT</p> <ul style="list-style-type: none"> Aggressive driving awareness campaign
<p>Delaware County</p> <ul style="list-style-type: none"> Install “Share the Road” signs where appropriate Signal upgrade projects 	<p>NJ Division of Highway Traffic Safety (NJDHTS)</p> <ul style="list-style-type: none"> “Obey the Signs or Pay the Fines” (formerly “Smooth Operator”) - campaign to promote courteous driving (Education and Enforcement) 	<p>PennDOT</p> <ul style="list-style-type: none"> Designated highway safety corridor programs, especially the Roosevelt Boulevard Safety Task Force Education/outreach programs
<p>Gloucester County</p> <ul style="list-style-type: none"> Include traffic calming techniques in design of new projects Addition of behavioral warning signs 	<p>NJ State Police</p> <ul style="list-style-type: none"> #77 Aggressive Driving Hotline Enhanced enforcement along Safe Corridors, other strategic locations 	<p>NJDHTS</p> <ul style="list-style-type: none"> “Obey the Signs or Pay the Fines” campaign to promote courteous driving (Education and Enforcement)
<p>Mercer County</p> <ul style="list-style-type: none"> Optimize traffic signal operation through camera detection 	<p>PA State Police</p> <ul style="list-style-type: none"> “Operation Centipede” (aggressive driver enforcement) “Tag D” (saturation enforcement) 	<p>SEPTA</p> <ul style="list-style-type: none"> Operator training program – (teaches bus drivers to recognize behavior of aggressive drivers)
<p>Philadelphia Streets Department</p> <ul style="list-style-type: none"> “Drive CarePhilly – Heed the Speed” program (painted optical illusion tricks individuals into thinking a speed bump is ahead) 	<p>SEPTA</p> <ul style="list-style-type: none"> Conducts routine speed compliance audits utilizing radar guns to enforce bus driver speed 	<p>Burlington County Traffic Safety Task Force – Grants from NJDHTS</p> <ul style="list-style-type: none"> Defensive driving course (includes aggressive driving in curriculum)
	<p>Burlington County Traffic Safety Task Force – Grants from NJDHTS</p> <ul style="list-style-type: none"> Speed enforcement (joint effort of Sheriff Dept. & local police) 	<p>Delaware County</p> <ul style="list-style-type: none"> Promote traffic calming techniques
	<p>Gloucester Township Police</p> <ul style="list-style-type: none"> Traffic complaint investigation program (increase enforcement at locations identified by data) “School Transportation Safety Initiative” 	<p>Mercer County</p> <ul style="list-style-type: none"> Use of VMS to alert drivers to roadway projects, travel delays
	<p>Philadelphia Parking Authority</p> <ul style="list-style-type: none"> Red light camera programs 	<p>Mid-Atlantic Foundation for Safety & Education</p> <ul style="list-style-type: none"> Aggressive and attentive driving programs “Traffic Safety Culture Index”

Table 3: Programs in the Delaware Valley that Help Curb Aggressive Driving (continued)

Engineering	Enforcement	Education
	Tredyffrin, West Goshen, and Westtown-East Goshen Police Departments (Chester County) <ul style="list-style-type: none"> ■ Traffic Safety Units are currently active 	The Council on Addictive Diseases (COAD) Group, Exton - Chester County <ul style="list-style-type: none"> ■ Highway safety program (enforcement collaboration and educational classes)
		Various <ul style="list-style-type: none"> ■ "Put the Brakes on Fatalities" campaign

Source: DVRPC, 2009

Potential Strategies to Curb Aggressive Driving

The following strategies are a starting point to help curb aggressive driving in the Delaware Valley. They include the input from breakout groups at the Regional Safety Task Force meeting held on April 8, 2009. Other strategies were drawn from the Pennsylvania Strategic Highway Safety Plan, the New Jersey Comprehensive Strategic Highway Safety Plan, the national Strategic Highway Safety Plan (AASHTO), and input from participants in the Regional Safety Task Force. Note that legislative strategies recommended by safety partners do not constitute endorsement by specific agencies. Each strategy is usually only listed once in the category below to which it most relates, although there can be overlap.

Legislation/Policy

- ▶ Promote legislative activities aimed at curbing Aggressive Driving (*See p. 38 of 2007 NJ CSHSP for detailed actions*) including considering legislation that:
 - ◆ Defines aggressive driving as an enforceable offense and establishes stiff penalties (*Draft work on 2009 Pennsylvania SHSP*)
 - ◆ Allows local police to use radar in speed enforcement (*Draft work on 2009 Pennsylvania SHSP, 2006 Reg. Safety Action Plan*)
 - ◆ Expands the use of automated enforcement systems such as red-light and speeding cameras (*2006 Reg. Safety Action Plan*)
- ▶ Expand Intelligent Transportation Systems (ITS) technologies (automated enforcement) and inform public about technology deployment (*Draft work on 2009 Pennsylvania SHSP*)

Engineering Strategies

- ▶ Encourage consideration of “road diets” and roundabouts in various transportation plans and programs
- ▶ Use pavement markings, roadway striping, and signage to regulate traffic
- ▶ Evaluate engineering practices including signage, lane widths, signal timing, and speed limits for their potential to curb Aggressive Driving (*2007 NJ CSHSP, p. 38*)
- ▶ Evaluate and establish realistic speed limits and design speeds as a systematic approach for the region
- ▶ Identify and prioritize severely congested intersection and corridor improvement needs with a focus on reducing aggressive driving

Enforcement Strategies

- ▶ Develop and implement an enforcement program to address Aggressive Driving, including targeting areas with high rates of Aggressive Driving crashes, as well as specific Aggressive Driving behaviors (*2007 NJ CSHSP, p. 38, Draft work on 2009 Pennsylvania SHSP, 2006 Reg. Safety Action Plan*)
- ▶ Highly publicized enforcement using saturation patrols and other displays of enforcement (*2006 Reg. Safety Action Plan*)

- ▶ Develop a system to identify problem drivers based on variable repeat violations (*2006 Reg. Safety Action Plan*)
- ▶ Promote the use of advanced technologies to support enforcement efforts (*AASHTO, p. 12*)
- ▶ Continue to promote citizen reporting options including cell phones and other methods
 - ◆ Develop aggressive driving hotline for PA (*Draft work on 2009 Pennsylvania SHSP*)
- ▶ Encourage State Police to target aggressive drivers

Education Strategies

- ▶ Use variable message signs (VMS) and speed display to increase driver awareness
- ▶ Develop a multifaceted educational program, including classroom training and a media campaign that raises awareness of Aggressive Driving and programs such as Obey the Signs or Pay the Fines and Drive Safe PA (formerly Smooth Operator). (*2007 NJ CSHSP, p. 37; 2006 Reg. Safety Action Plan*)
 - ◆ Highlight statutes in the vehicle code related to aggressive driving (*2006 Reg. Safety Action Plan*)
 - ◆ Include education at the testing level (*2006 Reg. Safety Action Plan*)
 - ◆ Focus on specific demographic and community groups (*2006 Reg. Safety Action Plan*)
 - ◆ Use all channels of media, such as newspapers, magazines, television, radio, social networking websites, etc.
- ▶ Educate legislatures, specifically the transportation committees, on aggressive driving and their necessary support in helping to curb it (*2006 Reg. Safety Action Plan*)

Emergency Medical Services Strategies

- ▶ Educate about “steer clear” law, which requires motorists to move over or slow down when they encounter an emergency scene, traffic stop, or disabled vehicle. Recently passed in NJ, existing law in PA
- ▶ Utilize temporary safety zones to ensure the safety of emergency personnel during emergencies by prohibiting unauthorized individuals and vehicles from entering the safety zones
- ▶ Implement various levels of emergency response signal priority or preemption to assist in tracking and responding to aggressive driving before or after crashes (*2006 Reg. Safety Action Plan, p. 55*)
- ▶ Increase use of Closed Circuit TV (CCTV) to assist in tracking and responding to aggressive driving before or after crashes (*2006 Reg. Safety Action Plan, p. 55*)
- ▶ Provide the highest level of training and performance standards for emergency responders for all situations, but this may be especially useful for the unpredictable nature of tracking and responding to some aggressive driving situations before or after crashes (*2006 Reg. Safety Action Plan, p. 55 plus minor revision*)

Additional Resources

- ▶ NCHRP Report 500-1, A Guide for Addressing Aggressive Driving Collisions.

Emphasis Area 2: Reduce Impaired Driving

“Among all traffic safety issues, impaired driving has perhaps the highest profile, and combating it has been vigorously pursued for decades with aggressive campaigns in both the public and private sectors. All states, the District of Columbia, and Puerto Rico have enacted laws making 21 the minimum age for legal consumption of alcohol and establishing a Blood Alcohol Content (BAC) of .08 as the legal definition of impaired driving. Despite these efforts, impaired driving remains a highly difficult issue.” (AASHTO, p. 13)

Numerous statistics have been compiled on the various issues associated with alcohol and driving. The numbers and percentages are often staggeringly large. Nationally, there were 12,998 alcohol-impaired traffic fatalities in 2007—an average of one every 45 minutes. In 2007, alcohol was involved in 32 percent of fatal crashes nationally. Among drivers age 21 to 44 involved in fatal crashes, over 40 percent were alcohol-impaired.

Source: “Strategic Highway Safety Plan” (AASHTO, 2005) and “Traffic Safety Facts 2007” (NHTSA # 811002, 2008).

In addition to the issue of driving under the influence of alcohol, there is growing awareness of the safety issues related to other forms of impaired driving. These include driving while under the influence of illegal, prescription, or over-the-counter drugs, as well as driving while sleep-deprived or distracted. Distracted driving includes driving while talking or text-messaging on a cell phone. This can be extremely dangerous and puts all road users at risk, especially pedestrians and bicyclists sharing the road with drivers. Although NJDOT and PennDOT do not currently include these additional forms of impaired driving in the definition of their Reduce Impaired Driving emphasis areas, expanding these definitions should be a consideration for the future.

Impaired driving was a contributing factor for 28% of the traffic fatalities in the Delaware Valley on average for the period 2005 to 2007. While the percentages for most emphasis areas are similar across the region, impaired driving is different; it is a factor in 39% of fatalities in the region’s Pennsylvania counties and 14% in the New Jersey counties. This is due, at least in some small part, to differences in how impaired driving is treated from a legal perspective. In New Jersey, Driving Under the Influence (DUI) is not a criminal offense, which may affect the reported number of DUI crashes. See the companion piece, Traffic Crash Analysis of the Delaware Valley (Publication Number 08054) for more background information.

Existing Programs

The following page lists many of the programs in the Delaware Valley region that help reduce impaired driving, updated from the 2006 Regional Safety Action Plan.

Table 4: Programs in the Delaware Valley that Help Reduce Impaired Driving

Engineering	Enforcement	Education
	<p>PA State Police</p> <ul style="list-style-type: none"> ■ Weekly sobriety check points ■ Participation in National Highway Traffic Safety Administration (NHTSA) “Over the Limit. Under Arrest.” program (formerly “You Drink, You Drive, You Lose”) ■ Officers trained as Drug Recognition Experts 	<p>NJDHTS</p> <ul style="list-style-type: none"> ■ Defensive driving course (includes DUI in curriculum) through counties ■ Drunk driving campaign ■ DUI training for law enforcement ■ “Cops in Shops” program ■ College campus programs
	<p>NJ State & Local Police</p> <ul style="list-style-type: none"> ■ Participation in NHTSA “Over the Limit. Under Arrest.” program ■ Sobriety checkpoints ■ Officers trained as Drug Recognition Experts 	<p>PennDOT BHSTE</p> <ul style="list-style-type: none"> ■ Increased police officer training as Drug Recognition Experts
	<p>SEPTA</p> <ul style="list-style-type: none"> ■ Random drug and alcohol testing for all safety sensitive employees (BAC level more stringent than state’s) ■ Required medication usage form for all employees ■ Hours of service and fatigue audits done monthly 	<p>Mid-Atlantic Foundation for Safety and Education</p> <ul style="list-style-type: none"> ■ Alcohol awareness program ■ Fleet safety program ■ Distracted and drowsy driving program ■ Partnership with law enforcement
	<p>Gloucester County</p> <ul style="list-style-type: none"> ■ Received funding for increased enforcement (mostly checkpoints, some education) ■ DWI Sobriety Checkpoints ■ Participation in “Over the Limit. Under Arrest.” program 	<p>The COAD Group, Exton – Chester County Highway Safety Program, Alcohol Safe Driving Program</p> <ul style="list-style-type: none"> ■ Enforcement collaboration and educational classes ■ Alcohol safe driving classes ■ Services for people charged with DUI
	<p>PA DUI Association</p> <ul style="list-style-type: none"> ■ Ignition interlock quality assurance program 	<p>Gloucester Township</p> <ul style="list-style-type: none"> ■ Education program for bartenders to learn signs of intoxication. Program leverages a DUI grant ■ HERO campaign – encourages designated drivers ■ DWI pre-prom education program ■ Drug recognition evaluator training
		<p>Rutgers University</p> <ul style="list-style-type: none"> ■ Comprehensive alcohol traffic education and enforcement program

Source: DVRPC, 2009

Potential Strategies to Reduce Impaired Driving

The following strategies are a starting point to consider what will help reduce impaired driving in the Delaware Valley. They include the input from breakout groups at the Regional Safety Task Force meeting held on April 8, 2009. Other strategies were drawn from the Pennsylvania Strategic Highway Safety Plan, the New Jersey Comprehensive Strategic Highway Safety Plan, the national Strategic Highway Safety Plan (AASHTO), and input from participants in the Regional Safety Task Force. Note that legislative strategies recommended by safety partners do not constitute endorsement by specific agencies.

Legislation/Policy

- ▶ In NJ, DUI is still not a criminal offense - Push for legislation change
- ▶ Continue research into the effectiveness of the .08 Blood Alcohol Content (BAC) legislation in NJ (*2007 NJ CSHSP, p. 49*)
- ▶ Update, strengthen, and implement legislation pertaining to impaired driving, including distracted and drowsy driving (*2007 NJ CSHSP, p. 46; 2006 Reg. Safety Action Plan; AASHTO, p. 13*)
- ▶ Promote alternative transportation such as public transit (*2006 Reg. Safety Action Plan*)
- ▶ Support use of breathalyzer ignition lock devices that prevent vehicles from starting when the legal alcohol limit is exceeded. These devices are in use in Pennsylvania

Engineering Strategies (many overlap with Enforcement)

- ▶ Stronger Ignition Interlock Devices Legislation
 - ◆ Pennsylvania – support “Houghton bill” (H.B. 914) requiring installation of ignition interlock devices for multiple DUI offenders and offenders with high blood-alcohol content
- ▶ Utilize signage, variable message signs, and analysis of problem areas combined with targeted engineering approaches including rumble strips, signage, guard rails, etc.

Enforcement Strategies (overlap with Engineering Strategies)

- ▶ Require responsible beverage service policies, increase vigilance at bars, and push for legislation to increase responsibility of bars/bartenders (*2006 Reg. Safety Action Plan*)
 - ◆ DUI arrests currently track where the person was drinking—use this to target bars for education
- ▶ Eliminate plea-bargaining and loopholes in prosecution (*2006 Reg. Safety Action Plan*)
 - ◆ Create stricter penalties for multiple offenders in addition to better treatment programs (*AASHTO, p. 13*)
 - ◆ Prosecution and adjudication outreach (*Draft work on 2009 Pennsylvania SHSP*)
- ▶ Increase manpower and funding for checkpoint programs, including the addition of roving patrols and high visibility enforcement efforts (*2007 NJ CSHSP, p. 46; Draft work on 2009 Pennsylvania SHSP*)
 - ◆ Increase number of sobriety checkpoints (*2006 Reg. Safety Action Plan*)

- ◆ Use targeted enforcement methods such as comprehensive sobriety checkpoints and saturation patrols (2006 Reg. Safety Action Plan; AASHTO, p. 13)
- ▶ Enforce and publicize zero tolerance laws for underage drivers (2006 Reg. Safety Action Plan)
- ▶ Enhance enforcement of commercial motor vehicle hours-of-service regulations, including for transit (2006 Reg. Safety Action Plan)
- ▶ Build State programs that target drug-impaired driving (AASHTO, p. 13)

Education Strategies

- ▶ Increase public awareness of Impaired Driving and DUI enforcement (2007 NJ CSHSP, p. 46; Draft work on 2009 Pennsylvania SHSP; AASHTO, p. 13)
 - ◆ Use new media such as YouTube and Facebook to reach a mass audience
 - ◆ Work with employers (2006 Reg. Safety Action Plan)
 - ◆ Participate in national campaigns such as “Over the Limit. Under Arrest.” program (formerly “You Drink, You Drive, You Lose”) (2006 Reg. Safety Action Plan)
- ▶ Encourage and promote designated driver programs and alternatives to impaired driving (2006 Reg. Safety Action Plan)
 - ◆ Organize a group of community volunteer drivers for impaired drivers (2006 Reg. Safety Action Plan)
 - ◆ Use mass transit advertising to raise awareness and promote transit as a safe way to travel if you’ve been drinking
 - ◆ Allow additional funding for prevention programs (2006 Reg. Safety Action Plan)
- ▶ Seek opportunities to coordinate DARE programs with Teen Driver Education programs, especially in NJ with the new laws for teen drivers
 - ◆ Use “fatal vision” goggles as an educational tool in schools (2006 Reg. Safety Action Plan)
 - ◆ Coordinate with underage drinking and driving enforcement (Draft work on 2009 Pennsylvania SHSP)
- ▶ Promote awareness of sleep deprivation as a form of impaired driving (2006 Reg. Safety Action Plan)
 - ◆ Offer training programs to teach officers how to read truckers’ log books to know if they’re sleep-deprived
 - ◆ Education campaign oriented to alerting bus and/or truck drivers to dangers of various kinds of impaired driving (2006 Reg. Safety Action Plan)
 - ◆ Partner with stores to identify OTC medications and prescription drugs that cause impairment (2006 Reg. Safety Action Plan)
- ▶ Reduce the incidence of drinking and driving in the 21-34 age group. This age group has the highest incidence of impaired driving and has not been directly targeted nationally in the past (AASHTO, p. 13)
 - ◆ Work with colleges to provide and to market means of transportation other than driving especially for younger students, such as shuttle bus/safe ride home programs
- ▶ Police training on impaired driving enforcement (Draft work on 2009 Pennsylvania SHSP)

Emergency Medical Services Strategies

- ▶ Continue to install mile markers on roadways and especially ramps where needed to make it easier for a person under the influence, tired, or confused to communicate the location of a crash in order to speed up responses (*2006 Reg. Safety Action Plan, p. 55*)

Additional Resources

- ▶ NJ Intoxicated Driver Resource Center (IDRC) - www.state.nj.us/humanservices/das/idrcshel.htm
- ▶ NHTSA resources, including National Drunk Driver Database – www.stopimpaireddriving.org

Emphasis Area 3: Keep Vehicles on the Roadway

When a vehicle leaves the roadway, the result is often disastrous. More than 40 percent of all fatal traffic crashes in 2007 involved vehicles running off the road. The statistics are even worse in rural areas, where two-thirds of fatalities result from vehicles first leaving the road and then overturning or hitting fixed objects such as trees or embankments.

In order to reduce the injuries and fatalities resulting from vehicles leaving the road, efforts must be made to: (1) keep vehicles from leaving the road, (2) reduce the likelihood of errant vehicles over turning or crashing into roadside objects, and (3) minimize the severity of an overturn or crash.

Source: "Strategic Highway Safety Plan" (AASHTO, 2005) and "Traffic Safety Facts 2007" (NHTSA # 811002, 2008).

In the Delaware Valley during the period 2005 to 2007, one or more vehicles left the roadway in 41% of traffic fatalities. See the companion piece, Traffic Crash Analysis of the Delaware Valley (Publication Number 08054) for more background information.

Existing Programs

The following page lists many of the programs in the Delaware Valley region that help keep vehicles on the roadway, updated from the 2006 Regional Safety Action Plan.

Table 5: Programs in the Delaware Valley that Help Keep Vehicles on the Roadway

Engineering	Enforcement	Education
<p>NJDOT</p> <ul style="list-style-type: none"> ■ Statewide median cross-over barrier program ■ Raised pavement markers program ■ Wet weather skid crash reduction program ■ Fixed object program 		<p>DVRPC</p> <ul style="list-style-type: none"> ■ Taming Traffic reports ■ Road Safety Audits ■ Congestion Crash Site Analysis Program
<p>PennDOT</p> <ul style="list-style-type: none"> ■ System-wide approach to install shoulder/edgeline rumble strips and improve/install guide rails ■ Proposing implementation of safety edge requirement on all 3R projects ■ Cable Median Barriers (US 202, North Valley Road to US 322; US 422 limits); I-95 in Philadelphia and Bucks counties 		<p>Delaware County</p> <ul style="list-style-type: none"> ■ Working with municipalities to familiarize them with the concept of Traffic Calming
<p>Camden County</p> <ul style="list-style-type: none"> ■ Guide rail installation program 		
<p>Delaware County</p> <ul style="list-style-type: none"> ■ Work with planning partners to encourage striped shoulders ■ Conduct spot speed studies for concerns on speed limits 		
<p>Gloucester County</p> <ul style="list-style-type: none"> ■ System-wide approach to install rumble strips; improve signage and delineation of curves; install traffic calming techniques as appropriate; improve/install guide rail; install skid-resistant pavement as appropriate; improve shoulders ■ System-wide sign management program ■ Improve/maintain roadway drainage as appropriate 		
<p>Mercer County</p> <ul style="list-style-type: none"> ■ Guide rail reviewed annually and end treatments replaced with ET 2000 treatments as needed ■ Roadway segments identified for re-surfacing on an annual basis 		
<p>Burlington County</p> <ul style="list-style-type: none"> ■ Use of Clearview font on guide signs ■ Use of raised pavement markers as appropriate ■ Use of wet reflective striping to improve visibility 		

Source: DVRPC, 2009

Potential Strategies to Keep Vehicles on the Roadway

The following strategies are a starting point to consider what will help keep vehicles on the roadway in the Delaware Valley. They include the input from breakout groups at the Regional Safety Task Force meeting held on April 8, 2009. Other strategies were drawn from the Pennsylvania Strategic Highway Safety Plan, the New Jersey Comprehensive Strategic Highway Safety Plan, the national Strategic Highway Safety Plan (AASHTO), and input from participants in the Regional Safety Task Force. Note that legislative strategies recommended by safety partners do not constitute endorsement by specific agencies.

Legislation/Policy

- ▶ Refine policies to keep vehicles on the roadway to distinguish between the following two types of roads:
 - ◆ Those with speed limits under 50 mph (more city/urban, fewer fatalities, obstacles closer to road); and
 - ◆ Those with speed limits over 50 mph (more rural, more fatalities, obstacles often farther from road).

Engineering Strategies

- ▶ Identify and implement engineering solutions to keep vehicles on the roadway including a comprehensive program to improve driver guidance through pavement markings and reflectivity, shoulder accommodations, rumble strips and stripes, and improved roadway geometry, curvature, and delineation (*2007 NJ CSHSP p. 23; Draft work on 2009 Pennsylvania SHSP; AASHTO, p. 26*)
 - ◆ Implement a targeted rumble strip program not just on shoulders, but also in the center of roads without room for a barrier (*AASHTO, p. 26*)
 - ◆ Conduct a region-wide survey/study to pinpoint “hot spots” for shoulder enlargement
 - ◆ Improve the design process to explicitly incorporate safety considerations and facilitate better design decisions (*AASHTO, p. 26*)
 - ◆ Develop better ways to maintain critical signage and ensure signs are location-specific
 - Provide proper warning signs for upcoming curves, road problems, speed limit changes, etc.
 - Lower speed limits in wet/bad weather conditions
- ▶ Make roadsides more “forgiving” while trying not to encourage speeding by selectively widening shoulders, flattening slopes, removing fixed objects, increasing offsets between utility poles, removing unsafe ditches, improving substandard guiderails, and trimming foliage as needed
 - ◆ Remove or relocate frequently hit utility poles (*Draft work on 2009 Pennsylvania SHSP*)
 - ◆ Eliminate high severity shoulder drop-offs (*Draft work on 2009 Pennsylvania SHSP*)
- ▶ Reduce the number of lane miles with 10-foot travel lanes and posted speed limits of 40 MPH or above in the region. Increase the number of lane miles where the paved shoulder is a minimum of four feet wide where appropriate

- ▶ Develop better guidance to control speed variance through combinations of geometric, traffic control, and enforcement techniques (*AASHTO, p. 26*)
- ▶ Establish programs to improve roadway maintenance to enhance highway safety (*AASHTO, p. 26*)

Enforcement Strategies

- ▶ Enforce realistic speed limits
 - ◆ Conduct a regional assessment of possible locations for speed limit changes
- ▶ Train law enforcement officers to recognize poor traffic control set-ups and take action to shut down dangerous operations

Education Strategies

- ▶ Develop, communicate, and implement a comprehensive educational program on the prevention and reduction of roadway departure crashes. (*2007 NJ CSHSP p. 22-23*)
 - ◆ Emphasize driver attentiveness
 - ◆ Encourage planning trips with enough time to allow for traffic, construction, weather, defects in the road, etc.
- ▶ Create safe work zones by educating crews about setting up road work areas as detailed in the Manual on Uniform Traffic Control Devices (MUTCD)

Additional Resources

- ▶ NCHRP Report 500-3, A Guide for Addressing Collisions with Trees in Hazardous Locations.
- ▶ NCHRP Report 500-6, A Guide for Addressing Run-Off-Road Collisions.
- ▶ NCHRP Report 500-7, A Guide for Reducing Collisions on Horizontal Curves.
- ▶ NCHRP Report 500-8, A Guide for Reducing Collisions Involving Utility Poles.

Emphasis Area 4: Sustain Safe Senior Mobility

“The increasing number and percentage of older drivers using the nation’s highways in future decades will pose many challenges. The 65 and older age group, which numbered 35 million in 2000, will swell to 70 million by 2030, accounting for roughly one-fifth of the country’s driving population. The majority of older drivers are capable drivers, but the effects of aging ultimately impact the safe driving abilities of some seniors. Once in a crash, people age 65 and older are far more likely to sustain fatal injuries.” (AASHTO, p. 11)

In 2007, more than 5,900 seniors died nationally in motor vehicle crashes—14 percent of all fatalities.

Source: “Strategic Highway Safety Plan” (AASHTO, 2005) and “Traffic Safety Facts 2007” (NHTSA # 811002, 2008).

People over 65 made up 17% of traffic fatalities in the Delaware Valley on average for the period 2005 to 2007. This includes drivers who had a role in crashes, drivers whose vehicles were hit, and people hit by vehicles. People 65 or older make up 13% of the total population of the Delaware Valley region. See the companion piece, Traffic Crash Analysis of the Delaware Valley (Publication Number 08054) for more background information.

Existing Programs

The following page lists many of the programs in the Delaware Valley region that help sustain safe senior mobility, updated from the 2006 Regional Safety Action Plan.

Table 6: Programs in the Delaware Valley that Help Sustain Safe Senior Mobility

Engineering	Enforcement	Education
<p>PennDOT</p> <ul style="list-style-type: none"> ■ Sign Improvements – Clearview font; larger, higher, advance warning signs ■ Providing alternate transportation modes ■ Senior Transit Card 	<p>PennDOT – BHSTE</p> <ul style="list-style-type: none"> ■ Encourage physicians' reporting of their patients' capability to drive 	<p>NJDOT, AARP, counties and others throughout NJ</p> <ul style="list-style-type: none"> ■ Senior defensive driving program ■ Senior Safety Task Force
<p>SEPTA</p> <ul style="list-style-type: none"> ■ Courtesy transportation for seniors ■ Senior discounts 		<p>PennDOT – BHSTE</p> <ul style="list-style-type: none"> ■ Local trip planning – time of day ■ Program to encourage family members in assisting the surrender of licenses
<p>NJ Transit</p> <ul style="list-style-type: none"> ■ Courtesy transportation for seniors ■ Reduced fare program for seniors 		<p>PATCO</p> <ul style="list-style-type: none"> ■ Ambassador program – personnel located at each station to provide assistance
<p>PATCO</p> <ul style="list-style-type: none"> ■ Reduced fare program for seniors 		<p>New Jersey Foundation of Aging, Transportation Safety Resource Center (TSRC) and Rutgers University School of Gerontology</p> <ul style="list-style-type: none"> ■ Program with a focus on helping older drivers drive safely and longer while preparing for eventual driving cessation
<p>Burlington County</p> <ul style="list-style-type: none"> ■ Use of Clearview font on guide signs ■ 3M Diamond Grade Sheeting to improve visibility on traffic control signs ■ Use of raised pavement markers as appropriate ■ Use of wet reflective striping to improve visibility 		<p>AAA</p> <ul style="list-style-type: none"> ■ Defensive driving course ■ “CarFit” program (with AARP)
<p>Gloucester County</p> <ul style="list-style-type: none"> ■ Advance warning signs for major street crossings and curves ■ Use reflective paint for lane striping 		<p>AARP</p> <ul style="list-style-type: none"> ■ Driver education program ■ Driver safety course ■ “Keeping Safe” program – “Car Safety Tips; When to Stop Driving; Helping Your Parents Stay Mobile; Resources on Safe Driving”
		<p>Mid-Atlantic Foundation for Safety and Education</p> <ul style="list-style-type: none"> ■ “Roadwise Review” DVD ■ “Mature Operator” programs
		<p>Virtua Hospital and other hospitals</p> <ul style="list-style-type: none"> ■ Skill testing for seniors to check for alertness, eye sight, etc.

Source: DVRPC, 2009

Potential Strategies to Sustain Safe Senior Mobility

The following strategies are a starting point to consider what will help sustain safe senior mobility in the Delaware Valley. They include the input from breakout groups at the Regional Safety Task Force meeting held on April 8, 2009. Other strategies were drawn from the Pennsylvania Strategic Highway Safety Plan, the New Jersey Comprehensive Strategic Highway Safety Plan, the national Strategic Highway Safety Plan (AASHTO), and input from participants in the Regional Safety Task Force. Note that legislative strategies recommended by safety partners do not constitute endorsement by specific agencies.

Legislation/Policy

- ▶ Investigate enhanced driver's license testing procedures (*Draft work on 2009 Pennsylvania SHSP*)
 - ◆ Develop a system to address at-risk drivers' roadway safety (*2007 NJ CSHSP, p. 62*)
 - ◆ Implement a program to screen senior drivers for vision problems, including cataract screening (*Draft work on 2009 Pennsylvania SHSP*)
- ▶ Provide adequate/efficient mobility alternatives (*2006 Reg. Safety Action Plan*)
 - ◆ Identify and promote existing alternative transportation services (*2007 NJ CSHSP, p. 62, Draft work on 2009 Pennsylvania SHSP*)
 - ◆ Develop public transportation alternatives for older drivers, especially in suburban and rural areas (*2007 NJ CSHSP, p. 62*)
 - ◆ Increase opportunities for carpooling

Engineering Strategies

- ▶ Improve highway infrastructure to safely accommodate older drivers according to guidelines in the FHWA Older Drivers Highway Design Handbook (*AASHTO, p. 11*)
- ▶ Implement engineering solutions including:
 - ◆ Upgrade signs, pavement markings, lighting, and sidewalk design according to Older Driver Design Guidelines (*2007 NJ CSHSP, p. 61; Draft work on 2009 Pennsylvania SHSP; 2006 Reg. Safety Action Plan*)
 - ◆ Utilize advance warning pavement markings and intersection signs, especially on higher speed roadways (*2006 Reg. Safety Action Plan*)
 - ◆ Improve design for night-time and inclement weather conditions (*2006 Reg. Safety Action Plan*)
- ▶ Identify locations with high senior populations and crash rates for targeted improvements (*Draft work on 2009 Pennsylvania SHSP; 2007 NJ CSHSP, p. 61*)
- ▶ Train engineers on highway design concepts for older drivers (*FHWA Older Driver Highway Design Workshop*)

Education Strategies

- ▶ Develop a comprehensive educational plan (*2007 NJ CSHSP, p. 60-61*)

- ◆ Recruit members of the Senior community and organizations providing senior services (*2007 NJ CSHSP, p. 61*)
- ▶ Promote mature driver education classes (AAA/AARP/Seniors for Safe Driving) that inform older drivers about new laws, health requirements, and mobility alternatives (*Draft work on 2009 Pennsylvania SHSP*)
- ▶ Implement a comprehensive educational approach to assist older driver safety that considers individual capabilities and needs in a fair manner (*AASHTO, p. 11*)

Additional Resources

- ▶ American Medical Association – Physician’s Guide to Assessing and Counseling Older Drivers.
- ▶ NCHRP Report 500-9, A Guide for Reducing Collisions Involving Older Drivers.
- ▶ Transportation Research Record 2078, Investigation of Actual and Perceived Behavior of Older Drivers on Freeways.
- ▶ Transportation Research Record 2078, Simulation Framework for Analysis of Elderly Mobility Policies.

Emphasis Area 5: Increase Seat Belt Usage

The combination of air bags and lap and shoulder safety belts offers the most effective safety protection available for passenger vehicle occupants. In 2007, safety belt use nationwide rose to 82 percent, according to NHTSA estimates, and 15,147 lives were saved as a result. Nevertheless, data confirm that at least 54 percent of passenger car occupants who die in crashes are not belted. Because safety belts are approximately 50 percent effective for preventing fatalities in crashes in which motorists would otherwise die, NHTSA believes the number of lives saved could be substantially increased—an additional 5,000 lives—if more people used safety belts.

States have realized a significant increase in safety belt use through the combination of a primary law and aggressive awareness and enforcement efforts. In Washington State, primary law enactment was followed by an increase in safety belt use from 83 percent in 2001 to 96 percent in 2006. Currently, safety belt use is also 92 percent or greater in California, Hawaii, Michigan, and Oregon, all of which have primary safety belt use laws.

Source: "Strategic Highway Safety Plan" (AASHTO, 2005, p. 16), "Traffic Safety Facts, Occupant Protection" (NHTSA # 810991, April 2008), and "Traffic Safety Facts 2007" (NHTSA # 811002, 2008).

Not using seat belts was a contributing factor for 33% of the traffic fatalities in the Delaware Valley on average for each year, 2005 to 2007. See the companion piece, Traffic Crash Analysis of the Delaware Valley (Publication Number 08054) for more background information.

Existing Programs

The following page lists many of the programs in the Delaware Valley region that help increase seat belt usage, updated from the 2006 Regional Safety Action Plan.

Table 7: Programs in the Delaware Valley that Help Increase Seatbelt Usage

Engineering	Enforcement	Education
	<p>SEPTA/NJ Transit</p> <ul style="list-style-type: none"> ■ All operators required to wear seatbelts ■ Random audits by both supervisors and SEPTA's Safety Department 	<p>NJDHTS</p> <ul style="list-style-type: none"> ■ Grants ■ Educational and outreach programs ■ Legislative initiatives ■ Through the counties and others, provide child passenger safety seat checks and installation
	<p>NJ & PA State Police; Local Police</p> <ul style="list-style-type: none"> ■ Participate in "Click it or Ticket" campaign ■ Targeted enforcement to raise awareness of seatbelt laws 	<p>BCTMA</p> <ul style="list-style-type: none"> ■ "High School Seat Belt Safety Challenge" in second year. Increased seat belt usage by high school drivers to 90%, up from 50% at participating schools in 2008
	<p>AAA Mid-Atlantic</p> <ul style="list-style-type: none"> ■ Involved in the legislative efforts in PA regarding passenger restraint 	<p>Burlington County</p> <ul style="list-style-type: none"> ■ Child Safety Seat program (funded by NJDHTS)
	<p>Children's Hospital of Philadelphia</p> <ul style="list-style-type: none"> ■ Involved in the legislative efforts in PA regarding passenger restraint 	<p>Camden County</p> <ul style="list-style-type: none"> ■ Child Safety Seat program (monthly car seat check funded by NJDHTS)
	<p>Gloucester County</p> <ul style="list-style-type: none"> ■ Increased enforcement and awareness coordinated with "Click it or Ticket" campaign – two weeks in May 2009 	<p>Gloucester Township Police</p> <ul style="list-style-type: none"> ■ Six certified Child Passenger Safety Seat Technicians provide service to the public (funded by NJDHTS)
		<p>Mid-Atlantic Foundation for Safety and Education</p> <ul style="list-style-type: none"> ■ "Back is Where It's At" program ■ "Your Life Your Choice Wear It" program
		<p>SAFE KIDS Southeast PA and NJ</p> <ul style="list-style-type: none"> ■ Educates children, parents/caregivers, and community groups on child passenger safety and seatbelt laws ■ Educates kids on booster seat usage and appropriate seatbelt fit ■ Conducts car seat check events and provides car seats where necessary ■ Host Child Passenger Safety Technician (CPST) training classes to certify new CPS technicians
		<p>The COAD Group, Exton - Chester County Highway Safety Program</p> <ul style="list-style-type: none"> ■ Enforcement collaboration and educational classes ■ Provides listing of child car seat check locations
		<p>Children's Hospital of Philadelphia</p> <ul style="list-style-type: none"> ■ Research in Child Passenger Restraint

Source: DVRPC, 2009

Potential Strategies to Increase Seat Belt Usage

The following strategies are a starting point to consider what will help increase seat belt usage in the Delaware Valley. They include the input from breakout groups at the Regional Safety Task Force meeting held on April 8, 2009. Other strategies were drawn from the Pennsylvania Strategic Highway Safety Plan, the New Jersey Comprehensive Strategic Highway Safety Plan, the national Strategic Highway Safety Plan (AASHTO), and input from participants in the Regional Safety Task Force. Note that legislative strategies recommended by safety partners do not constitute endorsement by specific agencies.

Legislation/Policy

- ▶ Institute seatbelt usage as a primary law in Pennsylvania (*Draft work on 2009 Pennsylvania SHSP; 2006 Reg. Safety Action Plan*)
- ▶ Close back seat loophole in NJ primary seatbelt law
- ▶ Improve belt use legislation to cover all ages, seat positions, and vehicles (*2006 Reg. Safety Action Plan*)

Engineering Strategies

- ▶ Create official (MUTCD approved) “buckle-up” roadway signs to serve as reminders

Enforcement Strategies (also see Legislation/Policy)

- ▶ Continue highly publicized enforcement campaigns such as “Click it or Ticket” (*Draft work on 2009 Pennsylvania SHSP; 2006 Reg. Safety Action Plan*)
- ▶ Implement periodic, intensive, and coordinated enforcement initiatives such as by establishing checkpoints near schools (*2006 Reg. Safety Action Plan; AASHTO, p. 16*)

Education Strategies

- ▶ Implement periodic, intensive, and coordinated public information and education initiatives (*AASHTO, p. 16*)
 - ◆ Conduct public education to complement high-profile enforcement campaigns such as the “Click it or Ticket” program (*Draft work on 2009 Pennsylvania SHSP; 2006 Reg. Safety Action Plan*)
 - ◆ Target public agencies and large employers to disseminate safety information about the benefits of wearing a seatbelt to their employees
 - ◆ Coordinate efforts and resources of agencies to have more impact (*2006 Reg. Safety Action Plan*)
 - ◆ Raise awareness of the dangers that unbelted passengers pose to other vehicle occupants; this phenomenon is referred to as the “back seat bullet”
- ▶ Implement Child Passenger Safety Plans (*Draft work on 2009 Pennsylvania SHSP*)

- ◆ Train daycare providers to be child seat experts so they can regulate proper usage and installation; provide current information on car-seat recalls and technological improvements
- ◆ Better educate local law enforcement staff regarding child safety restraints (*2006 Reg. Safety Action Plan*)
- ◆ Research the current thinking/practice regarding seatbelts on school buses
- ▶ Highlight the importance of complete and accurate crash reporting on safety belt use as a part of ongoing education programs for the enforcement community (*Draft work on 2009 Pennsylvania SHSP*)

Additional Resources

- ▶ NCHRP Report 500-11, A Guide for Increasing Seat Belt Use.

Emphasis Area 6: Improve the Design and Operation of Intersections

“Injury and fatality statistics for highway intersections and interchanges are ample evidence that strategies to improve the safety of these crash-prone areas are urgently needed. On average, there are five crashes at intersections every minute and one person dies every hour of every day at an intersection somewhere in the United States.

About one in every four fatal crashes occurs at or near an intersection, one-third of which are signalized. Safety literature also indicates that the two most prominent crash scenarios involve left-turns and being struck from the rear. Furthermore, right-angle collisions are a predominate cause of death at signalized intersections.” (AASHTO, p. 28)

Source: “Strategic Highway Safety Plan” (AASHTO, 2005) and “Traffic Safety Facts 2007” (NHTSA # 811002, 2008). [The AASHTO discussion focuses on highway intersections. The Delaware Valley analysis was of all intersections. All intersections will be covered in this Plan.]

Intersections were a contributing factor for 29% of the traffic fatalities in the Delaware Valley on average for each year, 2005 to 2007. Note that these numbers include drivers, passengers, pedestrians, bicyclists, and others. See the companion piece, Traffic Crash Analysis of the Delaware Valley (Publication Number 08054) for more background information.

Existing Programs

The following page lists many of the programs in the Delaware Valley region that help improve the design and operation of intersections, updated from the 2006 Regional Safety Action Plan.

Table 8: Programs in the Delaware Valley that Help Improve the Design and Operation of Intersections

Engineering	Enforcement	Education
<p>NJDOT</p> <ul style="list-style-type: none"> ■ Rail/highway grade crossing - upgrades and safety education ■ Intersection Improvement programs: Left-Turn Crash program, Right-Angle Crash program ■ Safety Impact Team (SIT) ■ Pedestrian program ■ Local Technical Assistance Program (LTAP) 	<p>Philadelphia Streets Department</p> <ul style="list-style-type: none"> ■ Red light running camera program 	<p>DVRPC</p> <ul style="list-style-type: none"> ■ Congestion and Crash Site Analysis program ■ Taming Traffic reports ■ Roundabout Analysis ■ Transportation Operations Task Force
<p>PennDOT</p> <ul style="list-style-type: none"> ■ System-wide approach to identify high crash intersections ■ Local Technical Assistance Program (LTAP) 		<p>NJDOT, PennDOT</p> <ul style="list-style-type: none"> ■ "Operation Life Saver" program – Safety education for at-grade highway and rail grade crossings
<p>SEPTA</p> <ul style="list-style-type: none"> ■ Transit First signal prioritization program ■ Enhanced Light Rail Trolley lines grade crossing - utilizing gates and flashers or priority preemption with street traffic signals ■ Locate bus stops on far side of intersection when possible 		<p>Delaware County</p> <ul style="list-style-type: none"> ■ Promote the concept and benefits of roundabouts to municipalities
<p>Burlington County</p> <ul style="list-style-type: none"> ■ Use of Clearview font on guide signs ■ Use of raised pavement markers as appropriate 		
<p>Gloucester County</p> <ul style="list-style-type: none"> ■ Install video detection system on all county-operated signals ■ Improve geometry of intersection as appropriate ■ Consider roundabouts as an option for projects ■ Provide offset left-turn lanes as appropriate 		
<p>Mercer County</p> <ul style="list-style-type: none"> ■ Provide all-red clearance intervals at all intersections ■ Protected left-turn phase as necessary ■ Head-to-head left-turn lanes where possible ■ Eliminate skewed intersections where possible ■ Outfit signals with OptiCOM system (signal preemption) 		
<p>Montgomery County</p> <ul style="list-style-type: none"> ■ Countywide signal program ■ County Transportation program (intersection improvements and signal upgrades) 		
<p>Philadelphia Streets Department</p> <ul style="list-style-type: none"> ■ Pedestrian Safety Countdown Signals 		

Source: DVRPC, 2009

Potential Strategies to Improve the Design and Operation of Intersections

The following strategies are a starting point for to consider what will help improve the design and operation of intersections in the Delaware Valley. They include the input from breakout groups at the Regional Safety Task Force meeting held on April 8, 2009. Other strategies were drawn from the Pennsylvania Strategic Highway Safety Plan, the New Jersey Comprehensive Strategic Highway Safety Plan, the national Strategic Highway Safety Plan (AASHTO), and input from participants in the Regional Safety Task Force. Note that legislative strategies recommended by safety partners do not constitute endorsement by specific agencies.

Legislation/Policy

- ▶ Establish Quick Clearance laws in New Jersey that require drivers to move their vehicles out of the roadway if involved in a non-injury crash to minimize impact on operations and reduce chances of secondary crashes (*2006 Reg. Safety Action Plan, p. 55*)
- ▶ Consider pursuing legislative changes necessary to use technology to monitor and increase safety at intersections. (*2006 Reg. Safety Action Plan*)
- ▶ Enhance methodologies and standardization for problem identification, prioritization, and evaluation. (*1997 NJ CSHSP, p. 30*)
 - ◆ Establish an Intersection Improvement Program (IIP) for the region to help with analysis, recommendations, and funding
 - ◆ Implement IIPs on a municipal and county-wide basis

Engineering Strategies

- ▶ Reduce signalized intersection crashes (*Draft work on 2009 Pennsylvania SHSP*)
 - ◆ Provide and/or improve turn lanes (*2006 Reg. Safety Action Plan*)
 - ◆ Increase the use of protected left-turn signals as appropriate (*2006 Reg. Safety Action Plan*)
 - ◆ Improve intersection safety by upgrading signalized intersection controls that smooth traffic flow. Target intersections with high incident rates (*AASHTO, p. 29*)
 - ◆ Improve visibility of signals by using LED bulbs, larger signal heads and back plates
 - ◆ Time signals to accommodate pedestrians, install pedestrian countdown timers, and install Yield to Pedestrian Channelizing Devices (YPCDs) (*2006 Reg. Safety Action Plan*)
- ▶ Reduce stop-controlled intersection crashes (*Draft work on 2009 Pennsylvania SHSP*)
 - ◆ Expand use of roundabouts as an effective intersection improvement
 - ◆ Increase visibility of intersection and signage
- ▶ Improve access management near unsafe intersections (*Draft work on 2009 Pennsylvania SHSP*)
- ▶ Improve sight distance, visibility, and geometry of intersections (*2006 Reg. Safety Action Plan*)
- ▶ Locate bus pull-offs and transit stops on the far side of intersections

- ▶ Utilize new technologies including queue detection and video detection to improve intersection safety (*AASHTO, p. 29*)
- ▶ Improve the PennDOT Crash Records System to create more complete and useable data to be shared with planning partners

Enforcement Strategies

- ▶ Target enforcement at specific problem intersections using automated methods to monitor and enforce intersection traffic control (*1997 NJ CSHSP, p. 31; 2006 Reg. Safety Action Plan; AASHTO, p. 29*)
 - ◆ Use red-light running cameras for detection where allowed (*2006 Reg. Safety Action Plan*)
 - ◆ Implement photo radar where allowed (*2006 Reg. Safety Action Plan*)
- ▶ Monitor travel speeds on approaches (*2006 Reg. Safety Action Plan*)

Education Strategies

- ▶ Educate the public on Intersection Safety issues (*1997 NJ CSHSP, p. 31*)
 - ◆ Involve NJDOT, PennDOT, and other applicable agencies in media campaigns for intersection safety
 - ◆ Include effective access management policies with a safety perspective (*AASHTO, p. 29*)
- ▶ Utilize mobile speed display boards to raise awareness of speed limits

Emergency Medical Services Strategies

- ▶ Further coordinate emergency responses between neighboring municipalities and regional resources to speed clearance of crashes and improve speed of access to medical treatment (*2006 Reg. Safety Action Plan, p. 55*)
- ▶ Educate the public on crash scene safe practices to maintain operations of intersections and improve speed of access to medical treatment using programs such as Bystander Care training (*2006 Reg. Safety Action Plan, p. 55*)
- ▶ Collaborate with EMS on future Transit First signal prioritization efforts to develop a hierarchy of signal preemption

Additional Resources

- ▶ NCHRP Report 500-5, A Guide for Addressing Unsignalized Intersection Collisions.
- ▶ NCHRP Report 500-12, A Guide for Reducing Collisions at Signalized Intersections.

Emphasis Area 7: Ensure Pedestrian Safety

Although the annual number of pedestrian deaths has been steadily declining, pedestrians still account for about 11 percent of motor vehicle deaths nationally. In 2007, a pedestrian was killed, on average, every 113 minutes on the nation's roadways— nearly 4,700 men, women, and children in all—and the issue is most problematic for the elderly. Pedestrian deaths are primarily an urban problem, as many are killed at crosswalks, sidewalks, median strips, and traffic islands.

The highest priority area of concern involves inadequacies in pedestrian facilities and the lack of good design information for them. Another major concern identified is the lack of awareness of the risks and responsibilities both drivers and pedestrians encounter during their interaction.

Source: "Strategic Highway Safety Plan" (AASHTO, 2005, p. 17) and "Traffic Safety Facts, Pedestrians" (NHTSA # 810994, 2008).

Crashes involving pedestrians were a contributing factor for 20% of the traffic fatalities in the Delaware Valley on average for each year, 2005 to 2007. These numbers include drivers, passengers, pedestrians, bicyclists, and others. See the companion piece, Traffic Crash Analysis of the Delaware Valley (Publication Number 08054) for more background information.

Nationally, crashes involving bicyclists result in much smaller numbers of fatalities than those involving pedestrians. In the Delaware Valley, 92 people died on average each year from 2005 to 2007 in crashes in which pedestrians were a contributing factor (in the technical sense of the term) and nine people died on average each year in crashes in which bicyclists were a contributing factor. Despite this lower number of fatalities, it is still important for a variety of reasons to improve safety for bicyclists. Many of the strategies and programs that improve safety for pedestrians also improve safety for bicyclists, although there are some unique safety concerns related to bicyclists. Further information is available in the AASHTO Strategic Highway Safety Plan (page 19) and in other resources. Contact DVRPC for more information on this or other elements of the plan.

Existing Programs

The following page lists many of the programs in the Delaware Valley region that help ensure pedestrian safety, updated from the 2006 Regional Safety Action Plan.

Table 9: Programs in the Delaware Valley that Help Ensure Pedestrian Safety

Engineering	Enforcement	Education
<p>DVRPC</p> <ul style="list-style-type: none"> ■ Pedestrian safety and accessibility project ■ “Safe Routes to School” program 	<p>NJDOT (also Engineering)</p> <ul style="list-style-type: none"> ■ “Pedestrian Safety” program ■ “Safe Routes to School” program ■ “Safe Streets to Transit” program 	<p>NJDOT</p> <ul style="list-style-type: none"> ■ Statewide driver education curriculum with emphasis on rights and responsibilities of drivers regarding pedestrians
<p>NJDOT</p> <ul style="list-style-type: none"> ■ Funding for pedestrian safety projects and improvements ■ “Safe Routes to School” program ■ “Safe Streets to Transit” program ■ “Pedestrian Safety Corridor” program ■ LTAP “Walkable Communities” program 	<p>Philadelphia Streets Department</p> <ul style="list-style-type: none"> ■ “Drive CarePhilly – Heed the Speed” program (painted optical illusion tricks individuals into thinking a speed bump is ahead) 	<p>PennDOT</p> <ul style="list-style-type: none"> ■ “Walk Smart” and “Bike Safe” programs and websites (www.dot.state.pa.us/Pedestrian/web/index.htm and www.dot.state.pa.us/BIKE/WEB/index.htm)
<p>PennDOT</p> <ul style="list-style-type: none"> ■ Yield to Pedestrian Channelizing Devices (YTPCDs) ■ Improve and install crosswalks ■ Lighted crosswalks ■ Pedestrian countdown signals ■ Bicycle/Pedestrian checklists for project development ■ “Hometown Streets” program ■ LTAP “Walkable Communities” program 	<p>NJDHTS</p> <ul style="list-style-type: none"> ■ Provide funding for targeted police patrols at high pedestrian crash locations 	<p>NJ State Police</p> <ul style="list-style-type: none"> ■ Youth leadership safety program, including the “Pedestrian Safety Lesson”; this program provides regular presentations in every school
<p>SEPTA</p> <ul style="list-style-type: none"> ■ Pedestrian devices at railroad stations including at-grade crosswalks with inter-track fencing, dedicated over or under passes, and audio/visual warning devices 	<p>Burlington County Traffic Safety Task Force</p> <ul style="list-style-type: none"> ■ “Safe Routes to School” program in cooperation with local police departments ■ Funded by grants from NJDHTS 	<p>NJDHTS</p> <ul style="list-style-type: none"> ■ Grants ■ Educational and outreach programs ■ Legislative initiatives
<p>Gloucester County</p> <ul style="list-style-type: none"> ■ Roadway improvement projects include pedestrian enhancements ■ Light-activated crosswalks installed ■ “No Turn on Red” signs installed at intersections with heavy pedestrian presence 	<p>Camden County Traffic Safety Task Force</p> <ul style="list-style-type: none"> ■ “Safe Routes to School” program in cooperation with local police departments ■ Funded by grants from NJDHTS 	<p>Burlington County Traffic Safety Task Force</p> <ul style="list-style-type: none"> ■ Crossing guard training ■ Bike and pedestrian safety public awareness campaign ■ Funded by grants from NJDHTS
<p>Mercer County</p> <ul style="list-style-type: none"> ■ Installation of mid-block crosswalks ■ Begin to install pedestrian-activated flashers and in-pavement lights ■ “No Turn on Red” signs considered at intersections with exclusive pedestrian phase ■ Countdown indicators at all new traffic signals 	<p>General</p> <ul style="list-style-type: none"> ■ School crossing guards 	<p>Camden County</p> <ul style="list-style-type: none"> ■ Bicycle Safety program including Bicycle Rodeos ■ Bicycle and pedestrian safety public awareness campaign

Table 9: Programs in the Delaware Valley that Help Ensure Pedestrian Safety
(continued)

Engineering	Enforcement	Education
<p>Montgomery County</p> <ul style="list-style-type: none"> ■ County revitalization program (pedestrian streetscape improvements in older communities) ■ County transportation program (sidewalks, crosswalks, pedestrian signals with some projects) 		<p>Delaware County</p> <ul style="list-style-type: none"> ■ Promote use of mid-block crossing pedestrian signs to municipalities
<p>Philadelphia Streets Department</p> <ul style="list-style-type: none"> ■ Pedestrian count-down signals 		<p>Gloucester County</p> <ul style="list-style-type: none"> ■ Emergency services coordination program ■ Project TRASH (Traffic Responsibility and Safety Habits) – Teaches fourth graders pedestrian and biking safety habits
<p>Princeton Borough, Township, & University</p> <ul style="list-style-type: none"> ■ Pedestrian designs and traffic calming 		<p>Mid-Atlantic Foundation for Safety and Education</p> <ul style="list-style-type: none"> ■ “Otto the Auto” - talking robot car used for elementary school safety programs ■ “Safe Crossings” programs

Source: DVRPC, 2009

Potential Strategies to Improve Pedestrian Safety

The following strategies are a starting point to consider what will help improve pedestrian safety in the Delaware Valley. They include the input from breakout groups at the Regional Safety Task Force meeting held on April 8, 2009. Other strategies were drawn from the Pennsylvania Strategic Highway Safety Plan, the New Jersey Comprehensive Strategic Highway Safety Plan, the national Strategic Highway Safety Plan (AASHTO), and input from participants in the Regional Safety Task Force. Note that legislative strategies recommended by safety partners do not constitute endorsement by specific agencies.

Legislation/Policy

- ▶ Make the law clear that vehicles must stop for pedestrians rather than yield and increase penalties for failing to stop
- ▶ Design, develop, and implement a transportation system that accommodates all users (*2007 NJ CSHSP, p. 76-77*)
- ▶ Ensure that safety is addressed in policy, planning, and land use decisions (*2007 NJ CSHSP, p. 77*)
- ▶ Continue to improve pedestrian safety in Transportation Enhancements (TE), Hometown Streets (HS) and Safe Routes to Schools (SR25) programs (*Draft work on 2009 Pennsylvania SHSP*)

Engineering Strategies

- ▶ Maintain clear crosswalk markings and other pedestrian crossing safety devices such as cones, raised crosswalks, and chevrons painted on the road that give the optical effect of raised crosswalks
- ▶ Implement safe-crossing designs for mid-block crossings, including curb extensions and refuge islands as appropriate (*Draft work on 2009 Pennsylvania SHSP*)
- ▶ Deploy yield-to-pedestrian channelizing devices and measure their effectiveness (*Draft work on 2009 Pennsylvania SHSP*)
- ▶ Improve signal hardware for pedestrians, including pedestrian signals and timing, accessible pedestrian signals, right-turn on red restrictions, pedestrian countdown signals, etc.) (*Draft work on 2009 Pennsylvania SHSP*)
- ▶ Work with 55+ communities that may not have been designed for needs of older people (shared item with Sustain Safe Senior Mobility emphasis area)
- ▶ Make sure pedestrian and ADA amenities get built into road projects, especially in areas where a high percent of people don't have access to cars
- ▶ Eliminate on-street parking near intersections to improve pedestrian visibility
- ▶ Promote and expand LTAP "Walkable Communities" program

Enforcement Strategies (also see Education Strategies)

- ▶ Enforce pedestrian in crosswalk laws more strictly

- ▶ Enforce speed limits, especially in school zones
- ▶ Enhance local ordinances to complete sidewalk network including through future land development or other means

Education Strategies

- ▶ Educate law enforcement officials about pedestrian safety laws
- ▶ Provide education, outreach, and training to motivate change in specific behaviors that can lead to fewer pedestrian injuries (*Draft work on 2009 Pennsylvania SHSP*)
 - ◆ Educate teens about using helmets, crosswalks, etc.; this could be run by schools regularly to reinforce annual presentations by State Police
 - ◆ Educate pedestrians about wearing reflective materials to increase visibility to drivers
 - ◆ Build driver respect and knowledge of laws regarding pedestrians (*2006 Reg. Safety Action Plan*)
 - ◆ Include bicyclist and pedestrian questions on written driving exams (*Draft work on 2009 Pennsylvania SHSP*)
- ▶ Educate and encourage all stakeholders on enforcement to reduce pedestrian, bicycle, rail, and vehicular conflicts (*2007 NJ CSHSP, p. 75-76*)
- ▶ Run Pedestrian Decoy Training Program regularly in high pedestrian crash areas, such as the City of Camden in New Jersey (Education & Enforcement)
 - ◆ Adopt a program like New Jersey's Pedestrian Decoy Program in Pennsylvania (Education & Enforcement)
- ▶ Educate, train, and market resources to contractors, legislators and municipalities (*2006 Reg. Safety Action Plan*)
 - ◆ Market pedestrian safety resources to township officials (*2006 Reg. Safety Action Plan*)
 - ◆ Establish or distribute walkability checklist for local governments (*2006 Reg. Safety Action Plan*)

Emergency Medical Services Strategies

- ▶ Encourage better coordination among emergency services to clarify who can respond (focusing on speed rather than geographic boundaries) and on sharing specialized services. Especially important in that pedestrians hit by vehicles have a high rate of serious injuries

Additional Resources

- ▶ NCHRP Report 500-10, A Guide for Reducing Collisions Involving Pedestrians.

Next Steps

For the Safety Action Plan to accomplish the goal of reducing traffic fatalities in the Delaware Valley, the recommended strategies must result in action. There are many partner organizations that share the responsibility of reducing fatalities in the Delaware Valley, including federal, regional, state, county, and local agencies, as well as other safety stakeholders. Forming strategic partnerships is essential to the success of the Plan. The Regional Safety Task Force can help coordinate the implementation effort by clarifying who will work on which tasks to improve safety, as well as tracking completed actions, successes and failures, and steps that remain to be taken.

During these trying economic times, it is important to consider low-cost, high-impact solutions while still taking the time to evaluate additional programs. All partners can benefit from understanding which strategies are working and which are less effective. Some strategies have already been demonstrated as effective, including sobriety checkpoint programs, road safety audits, and shoulder rumble strip programs. These programs should continue to be implemented where opportunities arise.

There are a number of federal, state, and local funding sources available for safety projects and programs. More information is available upon request and will be provided in a brochure to be prepared by DVRPC in FY 2010.

An emphasis on linking the region's transportation planning processes, including the DVRPC Long-Range Plan and Transportation Improvement Program (TIP), will be essential to get the most value from safety investments. Fortunately, as demonstrated throughout this report, the region is in position to build on a solid foundation of successful existing safety programs and coordination.

Seven Emphasis Areas and 25 Priority Strategies to Reduce Vehicle-related Fatalities in the Delaware Valley

The following table builds on the existing programs and potential strategies discussed throughout this report. The focus of the table is on finding strategies for each emphasis area that will achieve the maximum impact with the least amount of resources and time commitment. Extra consideration was given to strategies recommended multiple times.

Table 10: Priority Strategies to Reduce Vehicle-related Fatalities

Emphasis Area	Recommended Strategies
Curb Aggressive Driving (Highest priority)	<ol style="list-style-type: none"> 1. Promote legislation aimed at curbing Aggressive Driving 2. Maintain multifaceted education/awareness programs 3. Fund targeted, publicized enforcement programs 4. Evaluate, implement, and maintain engineering solutions 5. Evaluate and establish realistic speed limits and design speeds as a systematic approach for the region 6. Address severely congested intersections and corridors with a focus on reducing aggressive driving
Reduce Impaired Driving	<ol style="list-style-type: none"> 1. Promote legislation to include distracted and drowsy driving as impaired driving; continue to refine laws regarding driving under the influence of alcohol and drugs; push for legislation to make DUI a criminal offense in NJ 2. Increase manpower and funding for checkpoint programs and other enforcement efforts 3. Maintain multifaceted education/awareness program
Keep Vehicles on the Roadway	<ol style="list-style-type: none"> 1. Continue to implement engineering solutions at problematic locations as indicated by crash data analysis or as part of a systematic approach 2. Conduct a region-wide survey/study to identify and evaluate locations where paved shoulder enlargement is appropriate to increase safety 3. Reduce roadside hazards and/or make the roadside more forgiving while not encouraging excessive speeds
Sustain Safe Senior Mobility	<ol style="list-style-type: none"> 1. Provide and publicize adequate/efficient mobility alternatives 2. Implement engineering solutions including larger lettering on signs, brighter pavement markings, lighting, etc. 3. Promote mature driver education classes, and/or enhanced driver education for all ages
Increase Seat Belt Usage	<ol style="list-style-type: none"> 1. Implement child passenger safety plans and programs 2. Create official “buckle-up” roadway signs to serve as reminders 3. Continue highly publicized enforcement campaigns such as “Click it or Ticket” 4. Encourage seat belt usage as a primary law in PA; Close back seat loophole in NJ primary law
Improve the Design and Operation of Intersections	<ol style="list-style-type: none"> 1. Enhance standardization for problem identification, prioritization, and funding 2. Implement engineering solutions to reduce intersection crashes, such as making signals/intersections as visible as possible and reducing rear end crashes by improving/maintaining signal timing between intersections 3. Continue to develop and implement specific intersection safety programs
Ensure Pedestrian Safety	<ol style="list-style-type: none"> 1. Implement and maintain engineering solutions including traffic calming, crosswalks, cones, yield-to-pedestrian channelizing devices, curb extensions, pedestrian signals including countdown timers, etc. 2. Provide education, outreach, and training to change specific behaviors that can lead to fewer pedestrian injuries and fatalities 3. Enforce pedestrian in crosswalk laws more strictly

Source: DVRPC, 2009

It is essential that partners take ownership of the Plan and assume responsibility for implementing the strategies their organization or agency is best suited to handle. The implementation table that follows lists recommended strategies for each emphasis area with key implementation partners. Current and Potential Leaders are partner organizations with existing programs or expertise relevant to the specific emphasis area and recommended strategies. This is not an exclusive or complete list, but rather a starting point for updates at Regional Safety Task Force meetings. Additional participants are very welcome. In the table, leaders are listed in order from regional to local scale. Numbers next to leaders refer to the strategies for that emphasis area which seem best suited to the leader’s unique abilities and resources.

Table 11: Safety Action Plan Implementation Matrix

Emphasis Area	Recommended Strategies and Who is Doing What	Current and Potential Leaders (Numbers refer to strategies)
Curb Aggressive Driving	<ol style="list-style-type: none"> 1. Promote legislation aimed at curbing Aggressive Driving <ol style="list-style-type: none"> a. DVRPC – Continue to offer a PA Legislative Safety Symposium 2. Maintain multifaceted education/awareness program <ol style="list-style-type: none"> a. Various, including NJ Division of Highway Traffic Safety (NJDOT), DVRPC – For example, supporting the “Put the Brakes on Fatalities” campaign b. NJDOT – “Aggressive Driving Awareness” campaign c. PennDOT – Expand aggressive driving portion of “Drive Safe PA” program (formerly “Smooth Operator” program) to include special emphasis on using crash data d. NJ Motor Vehicle Commission – Aggressive driving state initiative e. AAA Mid-Atlantic, NJDHTS, PennDOT – Educate about “steer clear” laws f. Mid-Atlantic Foundation for Safety and Education – Education programs; Traffic Safety Culture Index 3. Fund targeted, publicized enforcement programs <ol style="list-style-type: none"> a. NJ State Police – Aggressive driving hotline (#77); Enhanced enforcement at strategic locations and along Safe Corridors b. PA State Police – “Operation Centipede”; “TAG-D” program (Ticket the Aggressive Driver) c. NJDHTS – “Obey the Signs or Pay the Fines” program d. NJDOT – “Safe Corridors” program (fines doubled for moving violations in select 10-mile corridors with higher than average crash rate) e. PennDOT – Aggressive driving enforcement and education program; strategically locate and construct police enforcement sites; explore other means of accommodating enforcement sites f. Philadelphia Parking Authority – Red light running cameras program 4. Evaluate, implement, and maintain engineering solutions <ol style="list-style-type: none"> a. DVRPC (with support from Counties, PennDOT, and NJDOT) – Taming Traffic, Road Safety Audits (RSA), Congestion Crash Site Analysis Program (CCSAP) work program projects b. NJDOT, PennDOT – Engineering solutions include dynamic speed display information, advance curve pavement markings, peripheral transverse pavement markings, and lane narrowing with pavement markings and rumble strips where feasible c. Philadelphia Streets Dept. – “Drive CarePhilly – Heed the Speed” program 5. Evaluate and establish realistic speed limits and design speeds as a systematic approach for the region 6. Address severely congested intersections and corridors with a focus on reducing aggressive driving <ol style="list-style-type: none"> a. NJDOT, PennDOT – Reduce congestion at severely congested intersections or corridors b. NJ Transit, SEPTA – Provide additional routes and reduce headways on existing routes where appropriate c. DVRPC, TMAs – Promote other work commute options and carpooling 	<ul style="list-style-type: none"> ■ Federal Highway Administration (FHWA) (4, 5, 6) ■ DVRPC (1, 2, 4, 6) ■ NJDOT and PennDOT (2, 3, 4, 5, 6) ■ PA and NJ State Police (2, 3) ■ Mid-Atlantic Foundation for Safety and Education (2) ■ AAA Mid-Atlantic (1) ■ NJ Division of Highway Traffic Safety (NJDOTS) (1, 2, 3) ■ NJ Motor Vehicle Commission, PA Driver and Vehicle Services (2) ■ Transportation Safety Resource Center – Rutgers Center for Advanced Infrastructure and Transportation (2) ■ Council on Addictive Diseases (COAD) (1, 2) ■ Transportation Management Associations (TMAs) (2, 6) ■ County and municipal agencies and officials (2, 3, 4, 6) ■ NJ County Highway Safety Task Forces (Camden, Gloucester, Burlington) (2) ■ Philadelphia Streets Department (2, 4) ■ Local Police (2, 3, 5) ■ Public Health Management Corporation – Street Smarts (2)
Reduce Impaired Driving	<ol style="list-style-type: none"> 1. Promote legislation to include distracted and drowsy driving as impaired driving; continue to refine laws regarding driving under the influence of alcohol and drugs; push for legislation to make DUI a criminal offense in NJ <ol style="list-style-type: none"> a. NJDOT - Conduct research on the effectiveness of .08 Blood Alcohol Content (BAC) legislation in NJ 2. Increase manpower and funding for checkpoint programs and other enforcement efforts <ol style="list-style-type: none"> a. Various – “Cops in Shops” programs b. NJ and PA State and Local Police – “Over the Limit. Under Arrest.” program; Sobriety checkpoint programs c. AAA Mid-Atlantic – Public opinion polls and media campaigns 3. Maintain multifaceted education/awareness program <ol style="list-style-type: none"> a. Various – Drunk driving campaigns 	<ul style="list-style-type: none"> ■ NJDOT and PennDOT (3) ■ NJ and PA State Police (2, 3) ■ PA and NJ DARE programs (1, 3) ■ PA and NJ Department of Education (3) ■ Mothers Against Drunk Driving (MADD) (1, 3) ■ PA DUI Association (1, 3) ■ NJDHTS (1, 2, 3) ■ NJ Division of Alcoholic Beverage Control, PA Liquor Control Board (1)

Table 11: Safety Action Plan Implementation Matrix (continued)

Emphasis Area	Recommended Strategies and Who is Doing What	Current and Potential Leaders (Numbers refer to strategies)
Keep Vehicles on the Roadway	<p>b. Various – College campus programs, for example Rutgers University’s “Comprehensive Alcohol Traffic Education and Enforcement” program</p> <p>c. Various – Underage drinking campaigns, for example Public Health Management Corporation – Street Smarts</p> <p>d. NJDHTS – “Hang Up Just Drive” program (Program targets distracted driving only, not DUI)</p> <p>e. Mid-Atlantic Foundation for Safety and Education – Alcohol awareness program; Distracted and drowsy driving program</p> <p>1. Continue to implement engineering solutions at problematic locations as indicated by crash data analysis or as part of a systematic approach</p> <p>a. NJDOT, PennDOT, DVRPC, and Counties – Continue to collectively develop a comprehensive inventory and prioritization of identified safety problems and potential projects</p> <p>b. DVRPC (with support from Counties, PennDOT, and NJDOT) – Taming Traffic, RSA, and CCSAP work program projects</p> <p>c. NJDOT and PennDOT – Rumble strips (edge and center)</p> <p>d. NJDOT – Wet weather program; PennDOT – All weather pavement markings</p> <p>e. NJDOT – Median barrier program; Raised pavement markers</p> <p>f. PennDOT – Curve ahead warning signs with positive guidance through curve, other alerts; Skid resistant surface through curves; Re-engineer roadways to promote desired, safe speeds</p> <p>2. Conduct a region-wide survey/study to identify and evaluate locations where paved shoulder enlargement is appropriate to increase safety</p> <p>3. Reduce roadside hazards and/or make the roadside more forgiving while not encouraging excessive speeds</p> <p>a. NJDOT and PennDOT – Hit fixed object program</p> <p>b. PennDOT – Eliminate hazardous roadside ditches, low shoulders, and open swales by constructing new parallel closed drainage systems. Assist local municipalities with their drainage plans to improve high crash locations</p>	<ul style="list-style-type: none"> ■ Mid-Atlantic Foundation for Safety and Education (2, 3) ■ AAA Mid-Atlantic (1, 2) ■ COAD (1, 3) ■ Public Health Management Corporation – Street Smarts (3) ■ Rutgers University (3) ■ FHWA (1, 2, 3) ■ DVRPC (1) ■ NJDOT and PennDOT (1, 2, 3) ■ County and municipal agencies and officials (1, 2)
Sustain Safe Senior Mobility	<p>1. Provide and publicize adequate/efficient mobility alternatives</p> <p>a. SEPTA and NJ Transit – Courtesy transportation for seniors; discounts for seniors</p> <p>b. PATCO – Ambassador program; reduced fare program</p> <p>c. PennDOT – Senior transit card</p> <p>d. TMAs – Various programs</p> <p>2. Implement engineering solutions including larger lettering on signs, brighter pavement markings, lighting, etc.</p> <p>3. Promote mature driver education classes and/or enhanced driver education for all ages</p> <p>a. AAA Mid-Atlantic, NJ Motor Vehicle Commission, NJ Division of Health and Senior Services – Senior Safety Program (NJ)</p> <p>b. AARP – Driver education program</p> <p>c. AAA Mid-Atlantic and Mid-Atlantic Foundation for Safety and Education – AAASeniors.com; “DriveSharp” program; “CarFit” program; “Roadwise Review” CD-ROM screening tool; “Mature Defensive Driving” program; Advanced driving, defensive driving, online defensive driving courses</p>	<ul style="list-style-type: none"> ■ FHWA (2) ■ PennDOT and NJDOT (1, 2, 3) ■ NJDHTS (3) ■ NJ Motor Vehicle Commission, PA Driver and Vehicle Services (3) ■ AARP (1, 3) ■ Seniors for Safe Driving (1, 3) ■ AAA Mid-Atlantic (3) ■ SEPTA, NJ Transit, and PATCO (1, 2) ■ TMAs (1, 3) ■ NJ Foundation of Aging – Transportation Safety Resource Center and Rutgers University School of Gerontology (1, 3) ■ PA Department of Aging (1, 3) ■ Mid-Atlantic Foundation for Safety and Education (3) ■ NJ County Highway Safety Task Forces (Camden, Gloucester, Burlington) (1, 3) ■ County planning staff (County Offices of Aging)

Table 11: Safety Action Plan Implementation Matrix (continued)

Emphasis Area	Recommended Strategies and Who is Doing What	Current and Potential Leaders (Numbers refer to strategies)
Increase Seat Belt Usage	<ol style="list-style-type: none"> 1. Implement child passenger safety plans and programs <ol style="list-style-type: none"> a. SAFE KIDS Southeast PA and NJ – Child Passenger Safety Technician (CPST) trainings; other education programs b. COAD – Listing of child car seat check locations c. NJDHTS, counties – Child passenger seat check programs d. PennDOT – Child passenger safety fitting program; car seat loaner program 2. Create official “buckle-up” roadway signs to serve as reminders <ol style="list-style-type: none"> a. NJDHTS, NJDOT – Developing a “Buckle Up/Hang Up” entry sign for NJ b. PennDOT – Created “Buckle Up Every Million Miles” and “Buckle Up PA” signs 3. Continue highly publicized enforcement campaigns such as “Click it or Ticket” 4. Encourage seat belt usage as a primary law in PA; Close back seat loophole in NJ primary law <ol style="list-style-type: none"> a. NJ Child Passenger Safety Coalition – Developed multimedia outreach website: www.njbackseatbulletins.com 	<p>(1, 3)</p> <ul style="list-style-type: none"> Local hospitals (3) Division of Health and Senior Services (3) NJDOT and PennDOT (2, 3) PA and NJ State and Local Police (3) NJDHTS (1, 2, 3, 4) SAFE KIDS Southeast PA and NJ (1) AAA Mid-Atlantic (1, 4) Mid-Atlantic Foundation for Safety and Education (1, 3) TMAAs (3) COAD (1) NJ Child Passenger Safety Coalition (4) NJ County Highway Safety Task Forces (Camden, Gloucester, Burlington) (1, 3) Buckle-Up PA (1, 3, 4) Public Health Management Corporation – Street Smarts (1, 3)
Improve the Design and Operation of Intersections	<ol style="list-style-type: none"> 1. Enhance standardization for problem identification, prioritization, and funding <ol style="list-style-type: none"> a. PennDOT and NJDOT – Intersection Improvement Programs (IIPs) b. FHWA and PennDOT – Developing a 3 to 5 year Intersection Safety Implementation Plan to reduce intersection fatalities and help meet the overall safety goal in PA c. DVRPC – Crash data management program outreach especially with counties and for local roads 2. Implement engineering solutions to reduce intersection crashes, such as making signals/intersections as visible as possible and reducing rear end crashes by improving/maintaining signal timing between intersections <ol style="list-style-type: none"> a. NJDOT, PennDOT, DVRPC, and Counties – Continue to collectively develop a comprehensive inventory and prioritization of identified safety problems and potential projects b. PennDOT – Promote advanced detection control to reduce dilemma zone crashes at signalized intersections; Promote the use of best practices for signalized intersections at unsignalized intersections to reduce problems related to turning in or pulling out, including pavement markings, islands, and/or delineation 3. Continue to develop and implement specific intersection safety programs <ol style="list-style-type: none"> a. NJDOT –Left Turn Crash program, Right Angle Crash program, and Safety Impact Team b. NJDOT and PennDOT – Work with counties and local municipalities in developing their own intersection safety programs 	<ul style="list-style-type: none"> FHWA (1, 2, 3) DVRPC (1, 2) NJDOT and PennDOT (1, 2, 3) SEPTA and NJ Transit (2) Transportation Safety Resource Center – Rutgers Center for Advanced Infrastructure and Transportation (1) County and municipal agencies and officials (1, 2, 3) Philadelphia Streets Department (1, 2, 3)
Ensure Pedestrian Safety	<ol style="list-style-type: none"> 1. Implement and maintain engineering solutions including traffic calming, crosswalks, cones, yield-to-pedestrian channelizing devices, curb extensions, pedestrian signals including countdown timers, etc. <ol style="list-style-type: none"> a. DVRPC – (FY '10) Four Road Safety Audits, possibly one as a pedestrian safety audit; Taming Traffic studies; Corridor Studies b. NJDOT – Pedestrian safety corridor program c. PennDOT – Implement and/or improve energy-efficient lighting at crosswalks and along pedestrian corridors that will be feasible for local municipalities to maintain 2. Provide education, outreach, and training to change specific behaviors that can lead to fewer pedestrian injuries and fatalities 	<ul style="list-style-type: none"> FHWA (1) DVRPC (1, 2) NJDOT (1, 3) PennDOT (1, 2) NJ and PA State and Local Police (2) NJ and PA Department of Education (2) NJDHTS (2, 3) AAA Mid-Atlantic (2)

Table 11: Safety Action Plan Implementation Matrix (continued)

Emphasis Area	Recommended Strategies and Who is Doing What	Current and Potential Leaders (Numbers refer to strategies)
	<ul style="list-style-type: none"> a. DVRPC – Municipal implementation tool on improved design for pedestrians (FY '10) b. NJDHTS – Bicycle safety program; pedestrian safety campaigns; bicycle helmet safety awareness campaign; "Safe Routes to School" program; pedestrian safety corridor program c. PennDOT – "Hometown Streets" program; "Walk Smart" website; pedestrian/bicycle education programs; bicycle safety program; pedestrian safety campaigns; bicycle helmet safety awareness campaign; "Safe Routes to School" program; pedestrian safety corridor program d. AAA Mid-Atlantic, Mid-Atlantic Foundation for Safety and Education – "School Safety Patrol" program; "School's Open-Drive Carefully" program; Halloween safety campaigns; crossing guard training <p>3. Enforce pedestrian in crosswalk laws more strictly</p> <ul style="list-style-type: none"> a. NJDOT – Pedestrian safety corridor program b. NJDHTS – Continue the pedestrian decoy program, aiming to have a training in the Delaware Valley Region; "Shared Responsibility" program c. NJDHTS, TMAs – Expand "Pedestrian Injury Prevention" program into more suburban counties 	<ul style="list-style-type: none"> ■ Mid-Atlantic Foundation for Safety and Education (2) ■ NJ County Highway Safety Task Forces (Camden, Gloucester, Burlington) (2) ■ TMAs (2) ■ County and municipal agencies and officials (1, 2) ■ Philadelphia Streets Department (1) ■ Public Health Management Corporation – Street Smarts (2) ■ Local School Districts (2)

Source: DVRPC, 2009

APPENDIX A



Abbreviations and Acronyms

AARP	American Association of Retired Persons
AASHTO	American Association of State Highway and Transportation Officials
BAC	Blood Alcohol Content
BCTMA	Bucks County Transportation Management Association
BHSTE	Bureau of Highway Safety and Traffic Engineering (PennDOT)
CCSAP	Congestion Crash Site Analysis Program
CCTV	Closed Circuit TV
COAD	The Council on Addictive Diseases
CPST	Child Passenger Safety Technician
CSHSIP	Comprehensive Strategic Highway Safety Improvement Plan
DUI	Driving Under the Influence
DRPA	Delaware River Port Authority
DVRPC	Delaware Valley Regional Planning Commission
EMS	Emergency Medical Services
FHWA	Federal Highway Administration
IDRC	Intoxicated Driver Resource Center
IIP	Intersection Improvement Program
ITS	Intelligent Transportation Systems
LED	Light-Emitting Diode
LTAP	Local Technical Assistance Program
MADD	Mothers Against Drunk Driving
MPH	Miles Per Hour
MPO	Metropolitan Planning Organization
MUTCD	Manual on Uniform Traffic Control Devices
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NJDHTS	New Jersey Division of Highway Traffic Safety
NJDOT	New Jersey Department of Transportation
PATCO	Port Authority Transit Corporation
PennDOT	Pennsylvania Department of Transportation
RSA	Road Safety Audit
RSTF	Regional Safety Task Force
SEPTA	Southeastern Pennsylvania Transportation Authority
SHSP	Strategic Highway Safety Plan
SIT	Safety Impact Team
TIP	Transportation Improvement Program
TMA	Transportation Management Associations
TSRC	Transportation Safety Resource Center (Rutgers University)
VMS	Variable Message Sign
VMT	Vehicle Miles Traveled
YPCD	Yield to Pedestrian Channelizing Device

APPENDIX B



Regional Safety Task Force

Members Participating in the Update of the Plan

The list that follows includes representatives who participated in shaping the 2009 Safety Action Plan. **The Regional Safety Task Force is co-chaired by Larry Bucci (PennDOT) and Ray Reeve (NJDOTS).**

Organization	Web Site	Representative(s)
AAA Mid-Atlantic	www.aaamidatlantic.com	Ela Voluck
AARP	www.aarp.org	Janine Bauer, Mary Beth Dixon, Ray Rauanheimo
Bicycle Access Council	www.bicycleaccess-pa.org	Joe Stafford
Brain Injury Association of New Jersey	www.bianj.org	Susan Quick
Buckle-Up PA	www.buckleuppa.org	Gordon Beck
Bucks County Planning Commission	www.buckscounty.org/government/departments/CommunityServices/PlanningCommission/index.aspx	Richard Brahler
Bucks County TMA	www.bctma.com	Bill Rickett
Burlington County Engineer's Office	www.co.burlington.nj.us/departments/engineers/index.htm	Carol Ann Thomas
Burlington County Office of Aging	www.co.burlington.nj.us/departments/aging/index.htm	Linda Cushing
Burlington County Sheriff's Department	www.co.burlington.nj.us/departments/sheriff/index.htm	Marc Sano
Camden County Division of Highway Traffic Safety	www.camdencounty.com/health/safety/traffic/safety.html	Diane Kozak, Sam Spino
Camden County Prosecutor's Office	www.camdencounty.com/government/offices/prosecutor/index.html	Fred Lang
Chester County COAD Group	www.coadgroup.com	Lori Aguilera
Chester County Planning Commission	www.chesco.org/planning	Matthew Anderson
Cross County Connection TMA	www.driveless.com	Bill Ragozine
Delaware County Planning Department	www.co.delaware.pa.us/planning	Justin Dula, Louis Hufnagle
Delaware County Sheriff's Office	www.co.delaware.pa.us/sheriff/index.html	Cpl. Brian Snyder
Delaware County TMA	www.dctma.org	Lindsey Bernacki
Delaware River Port Authority	www.drpa.org	Linda Hayes, James McQuilkin, Robert Only, Karl Ziemer, Sgt. Joe Zito
Delaware Valley Regional Planning Commission	www.dvrpc.org	Stacy Bartels, Jesse Buerk, Erin Burke, Ted Dahlburg, Matt Gates, Laurie Matkowski, Regina Moore, Kevin Murphy, Zoe Neaderland, Stan Platt, John Ward

Organization	Web Site	Representative(s)
DVRPC Goods Movement Task Force	www.dvrpc.org/Freight/DVGMTF.htm	Kelvin MacKavanagh
DVRPC Regional Citizen's Committee	www.dvrpc.org/GetInvolved/RegionalCitizensCommittee	Ray Rauanheimo (official representative to RSTF, also with AARP), Warren Strumpfer
Federal Highway Administration – New Jersey	www.fhwa.dot.gov/njdiv	William Hoffman, Caroline Trueman
Federal Highway Administration – Pennsylvania	www.fhwa.dot.gov/padiv	Mike Castellano, Carmine Fiscina
Gloucester County Emergency Medical Services	www.co.gloucester.nj.us/government/departments/emergencymgt/ems/emsHome.cfm	Andy Lovell
Gloucester County Emergency Response	www.co.gloucester.nj.us/government/departments/emergencymgt/main.cfm	Thomas J. Butts
Gloucester Township Police	www.glotwp.com/police	Lt. Edward Bryant
Greater Valley Forge TMA	www.gvftma.com	Steve Ferich, Scott Greenly, Shayne Trimbell
McMahon Associates	www.mcmtrans.com	Joe Fiocco
Mercer County Engineering	www.state.nj.us/counties/mercer/departments/transportation/eng	George Fallat
Mercer County Planning	www.state.nj.us/counties/mercer/departments/planning	Matthew Lawson
Montgomery County Planning Commission	planning.montcopa.org	Wes Ratco
New Jersey Department of Transportation	www.state.nj.us/transportation	William Beans, Dave Bowlby, Pat Ott
New Jersey Division of Highway Traffic Safety	www.state.nj.us/lps/hts/index.html	Charles Feggans, Violet Marrero, Suzanne O'Hearn, Ray Reeve (co-chair of RSTF)
New Jersey State Police	www.njsp.org	Capt. Warren Shakespeare, Lt. Tina Arcaro, Sgt. Greg Williams, Trooper Jay Wolf
New Jersey Transit Police	www.njtransit.com/tm/tm_servlet.srv?hdnPageAction=PoliceTo	Robert Gatchell, Frank Iurato
PATCO	www.ridepatco.org	Dave Fullerton, Carmella Monteleone
Pennsylvania Senator Daylin Leach's Office	www.senatorleach.com	Emily Rollins
Pennsylvania Department of Transportation	www.dot.state.pa.us	Lou Belmonte, Larry Bucci (co-chair of RSTF) , Gary Modi, Ashwin Patel, Jenny Robinson
Pennsylvania State Police	www.psp.state.pa.us	Sgt. Wayne Mason, Sgt. Chris Paris, Sgt. Robert Tyler
Philadelphia City Planning Commission	www.philaplanning.org	Debbie Schaaf
Philadelphia Mayor's Commission for Aging	www.phila.gov/aging	Debbie Merlin
Philadelphia Police - Traffic Unit	www.ppdonline.org/hq_conunits.php	Daniel Abbott, Tom Bullick
Philadelphia Public Health Management Corp.	www.phmc.org	Donna Ferraro, Jessica Jones, Alesia Mitchell, Nicole Taite
Philadelphia School District	www.phila.k12.pa.us	Brendan Lee
Philadelphia Sheriff's Office	www.phillysheriff.com	Joe Evans
Philadelphia Streets Department	www.phila.gov/streets	Richard Montanez, Jabulani Moyo, Patrice Nuble

Organization	Web Site	Representative(s)
Safe Kids Children's Hospital of Philadelphia (CHOP)	www.safekids.chop.edu	Gina Duchossois
Safe Kids Southern New Jersey	usa.safekids.org/state_display.cfm?coalition_state=nj	Maureen Donnelly
Safe Streets	www.ppdonline.org/ops/ops_safestreets.php	Alfred Foulds
SEPTA	www.septa.com	Jim Bahn
South Jersey Transportation Planning Organization	www.sjtpo.org	Bill Schiavi
Transportation Safety Resource Center	cait.rutgers.edu/tsrc	Carissa Sestito, Sarah Weissman

APPENDIX C



Relative Cost and Time Frame of Strategies

The following table lists strategies for each emphasis area with relative costs and time frames. Relative costs and time frames were derived from National Cooperative Highway Research Program (NCHRP) Report #500, "Guidance for Implementation of the AASHTO Strategic Highway Safety Plan."

Emphasis Area	Recommended Strategies	Relative Cost of Strategies	Relative Time Frame of Strategies
Curb Aggressive Driving	<ol style="list-style-type: none"> Promote legislation aimed at curbing Aggressive Driving Maintain multifaceted education/awareness programs Fund targeted, publicized enforcement programs Evaluate, implement, and maintain engineering solutions Evaluate and establish realistic speed limits and design speeds as a systematic approach for the region Address severely congested intersections and corridors with a focus on reducing aggressive driving 	<ol style="list-style-type: none"> Low Moderate Low Low to Moderate N/A Moderate to High 	<ol style="list-style-type: none"> Long (>2 years) Short (<1 year) Short (<1 year) Medium (1-2 years) N/A Long (>2 years)
Reduce Impaired Driving	<ol style="list-style-type: none"> Promote legislation to include distracted and drowsy driving as impaired driving; continue to refine laws regarding driving under the influence of alcohol and drugs; push for legislation to make DUI a criminal offense in NJ Increase manpower and funding for checkpoint programs and other enforcement efforts Maintain multifaceted education/awareness program 	<ol style="list-style-type: none"> Low Moderate to High Moderate 	<ol style="list-style-type: none"> Long (>2 years) Short (<1 year) Medium (1-2 years)
Keep Vehicles on the Roadway	<ol style="list-style-type: none"> Continue to implement engineering solutions at problematic locations as indicated by crash data analysis or as part of a systematic approach Conduct a region-wide survey/study to identify and evaluate locations where paved shoulder enlargement is appropriate to increase safety Reduce roadside hazards and/or make the roadside more forgiving while not encouraging excessive speeds 	<ol style="list-style-type: none"> Low to Moderate Low to Moderate Moderate to High 	<ol style="list-style-type: none"> Short to Medium (<2 years) Short to Medium (<2 years) Medium to Long (1-2 or more years)
Sustain Safe Senior Mobility	<ol style="list-style-type: none"> Provide and publicize adequate/efficient mobility alternatives Implement engineering solutions including larger lettering on signs, brighter pavement markings, lighting, etc. Promote mature driver education classes, and/or enhanced driver education for all ages 	<ol style="list-style-type: none"> Moderate to High Low Moderate 	<ol style="list-style-type: none"> Medium to Long (>1 or 2 years) Short (<1 year) Medium (1-2 years)
Increase Seat Belt Usage	<ol style="list-style-type: none"> Implement child passenger safety plans and programs Create official "buckle-up" roadway signs to serve as reminders Continue highly publicized enforcement campaigns such as "Click it or Ticket" Encourage seat belt usage as a primary law in PA; Close back seat loophole in NJ primary law 	<ol style="list-style-type: none"> Low to Moderate N/A Moderate to High Low 	<ol style="list-style-type: none"> Short (<1 year) N/A Medium (1-2 years) Medium (1-2 years)
Improve the Design and Operation of Intersections	<ol style="list-style-type: none"> Enhance standardization for problem identification, prioritization, and funding Implement engineering solutions to reduce intersection crashes, such as making signals/intersections as visible as possible and reducing rear end crashes by improving/maintaining signal timing between intersections Continue to develop and implement specific intersection safety programs 	<ol style="list-style-type: none"> N/A Low to Moderate Low 	<ol style="list-style-type: none"> N/A Short to Medium (<2 years) Short (<1 year)
Ensure Pedestrian Safety	<ol style="list-style-type: none"> Implement and maintain engineering solutions including traffic calming, crosswalks, cones, yield-to-pedestrian channelizing devices, curb 	<ol style="list-style-type: none"> Moderate to High Moderate 	<ol style="list-style-type: none"> Short to Medium (<2 years) Medium

Emphasis Area	Recommended Strategies	Relative Cost of Strategies	Relative Time Frame of Strategies
	<p>extensions, pedestrian signals including countdown timers, etc.</p> <ol style="list-style-type: none"> 2. Provide education, outreach, and training to change specific behaviors that can lead to fewer pedestrian injuries and fatalities 3. Enforce pedestrian in crosswalk laws more strictly 	<ol style="list-style-type: none"> 3. Moderate 	<p>(1-2 years)</p> <ol style="list-style-type: none"> 3. Short (<1 year)

Publication Title: 2009 Safety Action Plan: Improving Transportation Safety in the Delaware Valley

Publication Number: 09032

Date Published: October 2009

Geographic Area Covered: The nine-county Greater Philadelphia area which covers the counties of Bucks, Chester, Delaware, Montgomery, and Philadelphia in Pennsylvania and Burlington, Camden, Gloucester, and Mercer in New Jersey

Key Words: Traffic fatalities, crashes, safety, transportation, emphasis areas, aggressive driving, impaired driving, roadway departure, senior mobility, seat belt usage, intersections, walking, pedestrians, Regional Safety Task Force, strategic highway safety plan

Abstract: Over 450 people die in crashes on the roads of the nine-county Delaware Valley in an average year. Over 50,000 people are injured in approximately 90,000 crashes. The Safety Action Plan includes a methodology to define key safety emphasis areas, a range of strategies for each of the seven emphasis areas, and a focused implementation table to reduce the number of fatalities.

The Safety Action Plan was developed with guidance from the multi-disciplinary Regional Safety Task Force. The implementation table is an agreed-upon starting point for how partners will work together to improve traffic safety in the region. Each meeting of the Regional Safety Task Force will include reporting back on progress on the implementation table. The Safety Action Plan will be updated regularly. Analysis of crash data for the region is provided in Traffic Crash Analysis of the Delaware Valley (Publication Number 08054).

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