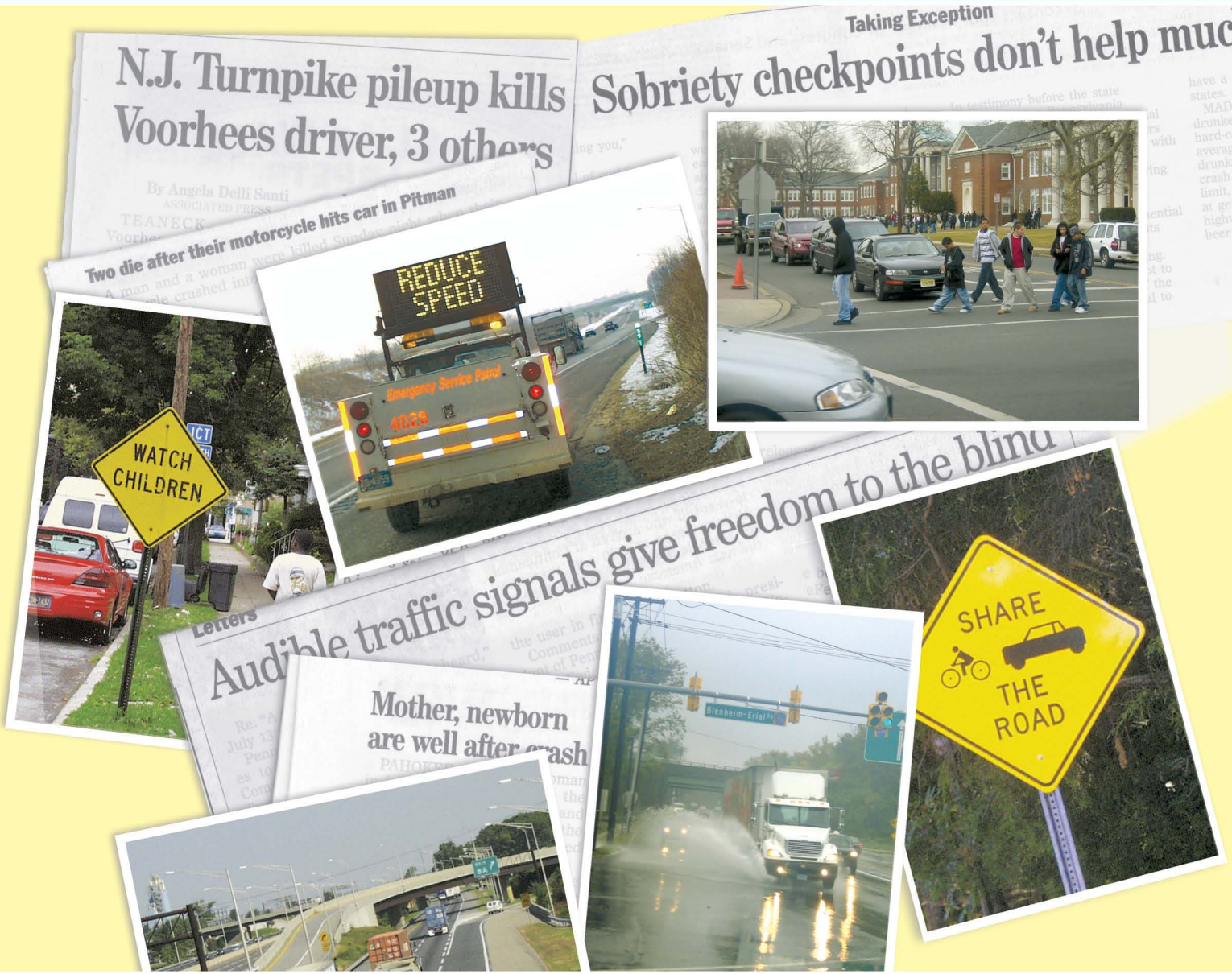
REGIONAL SAFETY ACTION PLAN

A Road Map to *Safer Travel* in the *Delaware Valley Region*



DELAWARE VALLEY REGIONAL PLANNING COMMISSION

2007

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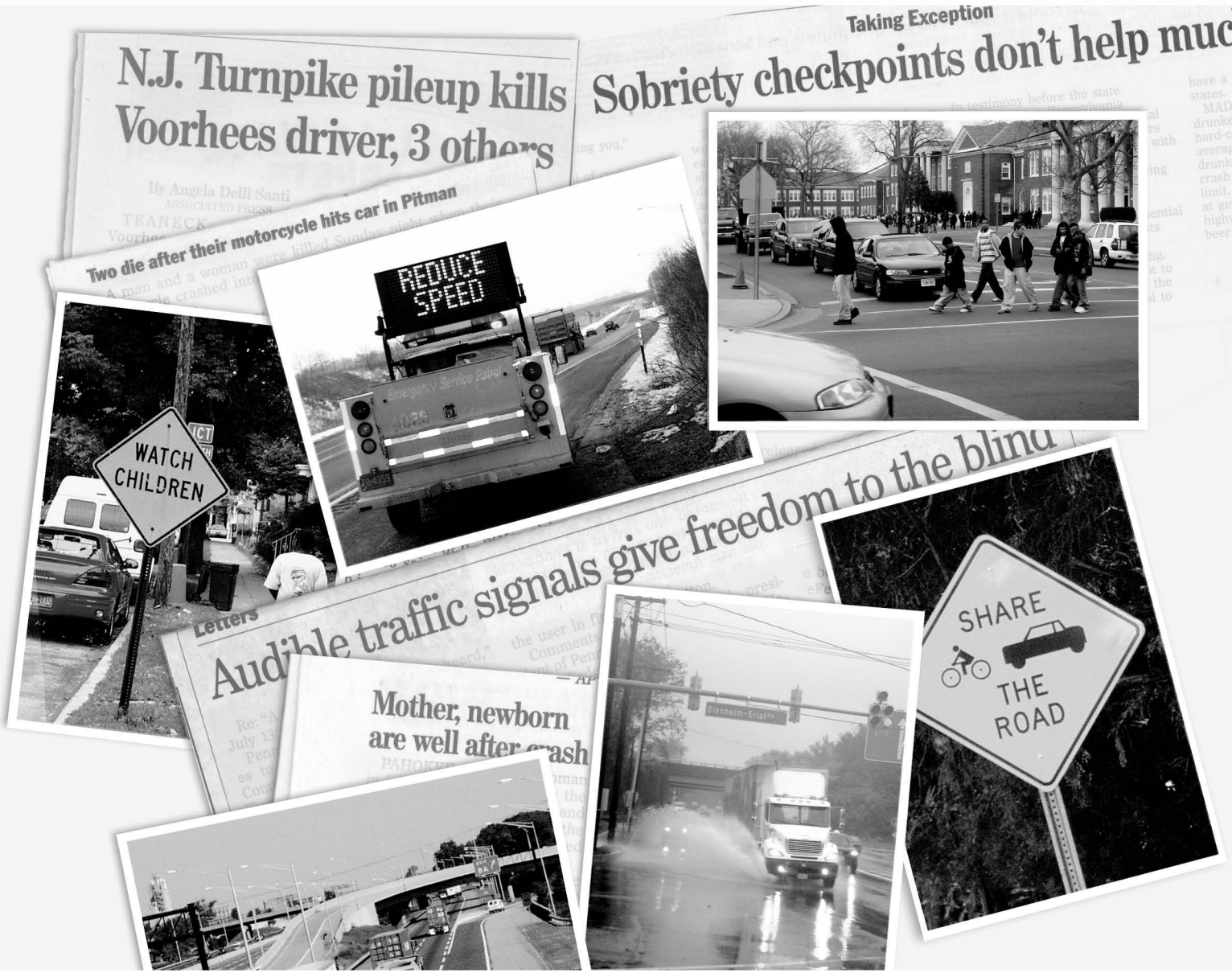

DELAWARE VALLEY
REGIONAL PLANNING
COMMISSION

2007

Created in 1965, the Delaware Valley Regional Planning Commission (DVRPC) is an interstate, intercounty and intercity agency that provides continuing, comprehensive and coordinated planning to shape a vision for the future growth of the Delaware Valley region. The region includes Bucks, Chester, Delaware, and Montgomery counties, as well as the City of Philadelphia, in Pennsylvania; and Burlington, Camden, Gloucester and Mercer counties in New Jersey. DVRPC provides technical assistance and services; conducts high priority studies that respond to the requests and demands of member state and local governments; fosters cooperation among various constituents to forge a consensus on diverse regional issues; determines and meets the needs of the private sector; and practices public outreach efforts to promote two-way communication and public awareness of regional issues and the Commission.

Our logo is adapted from the official DVRPC seal, and is designed as a stylized image of the Delaware Valley. The outer ring symbolizes the region as a whole, while the diagonal bar signifies the Delaware River. The two adjoining crescents represent the Commonwealth of Pennsylvania and the State of New Jersey.

DVRPC is funded by a variety of funding sources including federal grants from the U.S. Department of Transportation's Federal Highway Administration (FHWA) and Federal Transit Administration (FTA), the Pennsylvania and New Jersey departments of transportation, as well as by DVRPC's state and local member governments. The authors, however, are solely responsible for its findings and conclusions, which may not represent the official views or policies of the funding agencies.

PARTICIPATING ORGANIZATIONS

American Automobile Association - Mid Atlantic & South Jersey
Bicycle Access Council
Bicycle Coalition of Greater Philadelphia
Brain Injury Association of New Jersey, Inc.
Buckle Up PA
Bucks County
- Area Agency on Aging
- Planning Commission
- Transportation Management Association

Burlington County
- Engineering Department
- Highway Traffic Safety Task Force
- Department of Public Safety
- Planning Department
- Sheriff's Office

Camden County
- Engineering Department
- Public Works
- Prosecutor's Office

Chester County
- Planning Commission
- Transportation Management Association

Children's Hospital of Philadelphia
City of Burlington Police Department
City of Philadelphia
- Fire & Emergency Services Department
- Planning Commission
- Streets Department
- Mayor's Commission on Aging
- School District
- Sheriff's Office

City of Camden
- Fire Department
- Planning Department
- Police Department
- City of Burlington Police Department

Cross County Connection Transportation Management Association
Delaware County
- Emergency Health Services
- Highway Safety Project
- Planning Commission
- Sheriff's Office
- Transportation Management Association

Delaware River Port Authority
- Engineering
- Police

Delaware River Joint Toll Bridge Commission
Delaware Valley Regional Planning Commission
Federal Highway Administration – NJ & PA Divisions
Gloucester County
- Emergency Response
- Planning Commission

Gloucester Township Police Department
Greater Valley Forge Transportation Management Association
Haddon Heights Fire Department
Lower Merion Police Department
MADD Southeast Pennsylvania
Mercer County
- Engineering Department

- Planning Department
- Sheriff's Office
- Office of Emergency Management
- Transportation Management Association

Montgomery County Planning Commission
National Highway Traffic Safety Administration
New Jersey Department of Education
New Jersey Department of Transportation
New Jersey Division of Highway Traffic Safety
New Jersey State Police
New Jersey Transit
Pennsylvania Department of Transportation

- Bureau of Highway Traffic Safety and Engineering
- Engineering – District 6
- Operations Lifesaver
- Traffic Operations Center – District 6

Pennsylvania DUI Association
Pennsylvania State Police
Pennsylvania Turnpike Commission
Philly Walks
Port Authority Transit Corporation
SAFE KIDS

- Southern New Jersey
- Philadelphia

Southeastern Pennsylvania Transportation Authority
South Jersey Transportation Authority
Transportation Safety Resource Center – Rutgers University
Upper Makefield Police Department
Upper Merion Township Fire Department
Virtua Health System
Washington Township Police

ABBREVIATIONS

AASHTO	American Association of State Highway Transportation Officials
AAA	American Automobile Association
AARP	American Association of Retired Persons
BHTSE	Bureau of Highway Traffic Safety and Engineering
BTS	Bureau of Transportation Statistics
CCSAP	Congestion and Crash Site Analysis Program
CCTV	Closed Circuit Television
CHOP	Children's Hospital of Philadelphia
CMP	Congestion Management Process
DOE	State Department of Education
DOH	State Department of Health
DOT	State Department of Transportation
DRPA	Delaware River Port Authority
DUI	Driving Under the Influence
DVRPC	Delaware Valley Regional Planning Commission
DWI	Driving While Intoxicated
EMS	Emergency Medical Services
FHWA	Federal Highway Administration
GIS/GPS	Global Information Systems / Positioning Systems
HSIP	Highway Safety Improvement Program
HVE	High Visibility Enforcement
IMTF	Incident Management Task Force
ITS	Intelligent Transportation Systems
ISTEA	Inter-modal Surface Transportation Efficiency Act
LTAP	Local Technical Assistance Program
MUTCD	Manual of Uniform Traffic Control Devices
MPO	Metropolitan Planning Organization
MVMT	Million Vehicle Miles Traveled
MVC	Motor Vehicle Commission
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
NJDOT	New Jersey Department of Transportation
NJDHTS	New Jersey Division of Highway Traffic Safety
OTC	Over the Counter
PADUI	Pennsylvania Driving Under the Influence Association
PATCO	Port Authority Transit Corporation
PennDOT	Pennsylvania Department of Transportation
PSA	Public Service Announcement
ROW	Right of Way
RSAP	Road Safety Audit Program
RSTF	Regional Safety Task Force
SAFETEA - LU	Safe Accountable Flexible and Efficient Transportation Equity Act: Legacy for Users
SEPTA	Southeastern Pennsylvania Transportation Authority
SHSP	Strategic Highway Safety Plan
TEA-21	Transportation Equity Act for the 21st Century

TIP	Transportation Improvement Program
TMA	Transportation Management Association
TRB	Transportation Research Board
TSRC	Transportation Safety Resource Center
VMS	Variable Message Signs
VMT	Vehicle Miles Traveled

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1. INTRODUCTION

This document serves as the Delaware Valley Regional Planning Commission's (DVRPC) Regional Safety Action Plan. The executive summary was published as a separate document in November 2006. The plan focuses on reducing crashes and fatalities on our regional roadway system. It provides a roadmap for effective cooperation, collaboration and coordination among safety professionals and stakeholders throughout the region for the purpose of saving lives. It also helps to maintain DVRPC's focus on transportation safety planning.

Safety has always been a part of the DVRPC's planning process, though mostly undefined and uncoordinated. DVRPC has now embraced Safety Conscious Planning, which is a proactive approach for the prevention of motor vehicle crashes and unsafe transportation conditions. It is achieved when all organizations in planning, engineering, education, emergency services and enforcement routinely consider safety as an explicit planning priority that is integrated into all elements of project development and selection. The Regional Safety Action Plan will focus DVRPC's transportation safety program by:

1) assessing plans, goals and priorities of institutions in the region;

2) determining regional emphasis areas through a cooperative process, strategies and priorities; and

3) integrating goals and accompanying strategies in the Long Range Plan.

DVRPC has recognized that planning for the safe mobility in this region needs to look beyond the traditional and seek a more innovative, integrative and collaborative process. The Transportation Equity Act for the 21st Century (TEA-21) and its predecessor, the Inter-modal Surface Transportation Efficiency Act (ISTEA), laid the foundation for the development of safety in transportation planning. These Acts charged DVRPC with improving the safety of the transportation network in the Philadelphia/Camden metropolitan area for all users. The Commission satisfied this mandate by addressing safety in both its transportation planning and its regional planning projects and programs. The following have greatly expanded DVRPC's role in transportation safety for the region - the new transportation legislation, the Safe, Accountable, Flexible and Efficient Transportation Equity Act: Legacy for Users (SAFETEA-LU); DVRPC's Long Range Plan *Destination 2030*; and the Regional Safety Task Force.

SAFETEA-LU, enacted in 2005, revises funding structures and establishes a new Highway Safety Improvement Program, almost doubling infrastructure safety spending and making the funding results-based. It places greater emphasis on integrating safety in the planning process and greater funding flexibility for safety projects and programs. SAFETEA-LU mandates that each state Department of Transportation (DOT) develop a Strategic Highway Safety Plan (SHSP) in coordination with the Metropolitan Planning Organizations (MPOs) and other safety stakeholders. The SHSP is a data-driven process to identify effective remedies. It is designed to promote consistency between

comprehensive transportation improvements and the planned growth and economic development patterns at the state and local levels.

2. INTEGRATING SAFETY IN THE PLANNING PROCESS

NCHRP Report 546, Incorporating Safety in Long Range Transportation Planning outlined seven points where safety can be incorporated into the transportation planning process. This methodology suggests safety may be incorporated at all of these points: Visioning, Goals and Objectives, Performance Measures, Technical Analysis, Evaluation, Plan and Program Development, and System Monitoring. The checklist included in the publication was used to determine who, where and when safety was being included in the planning process.

After comprehensive evaluation, taking into account recognized planning committees, interagency relationships, and standing working processes; it was shown that suggested guidelines for incorporating safety are already present in the DVRPC transportation planning process. The most important of these are described below.

- The *Destination 2030* Long Range Plan, adopted in June 2005, focuses on three primary components of the transportation system – facilities, operations and finance. Safety is prominently noted in its vision of the transportation system. This vision states, *"A safe, convenient and seamless multimodal passenger and freight system that is sufficient in its capacity; attractive and affordable to its users; accessible and equitable for all citizens and visitors to locations throughout the region; and incorporating sound growth management, urban revitalization, environmental and economic development planning principles."* In developing this vision, DVRPC has gone with a process of critical internal examination, re-imagining the priorities of agencies, divisions, and specific projects with an eye towards meeting federal mandates as well as reducing crashes on the region's transportation network.

"Improving safety by reducing travel hazards through the application of technological improvements and by bringing our transportation system up to modern standards" is the first of the seven goals organized around the vision for the transportation system. This goal addresses improving safety for all users, all modes; improving regional crash data; promoting behavioral and market aspects of transportation safety; implementing effective incident management planning; considering safety issues with all regional transportation plans; and increasing public awareness of transportation security programs.

In selecting the fiscally constrained major regional projects for inclusion in the Long Range Plan, the safety goal is considered. This goal has two evaluation criteria: (1) Is the project located in a high accident location with more than twice the statewide average number of accidents for similar types of facilities; and (2) Does the project improve safety by reducing the number or severity of accidents that occur on highways or transit systems by reconstructing a facility to modern standards or improving the geometry or alignment of a facility.

Performance measures are currently being developed to track the implementation of the *Destination 2030* Long Range Plan. The performance measures will track how well the various goals, including safety, are being met.

The *Destination 2030* Long Range Plan allocates funding to ten categories. There are five highway funding categories, including Safety and Operational Improvements. In New Jersey, over $2.5 billion, or 25% of all funding dedicated to Highway improvements, is allocated for Safety and Operational Improvements. As individual projects are identified in the annual TIP update, they will be able to draw from these identified funds.

- *Congestion Management Process (CMP)* - In the update of the DVRPC Congestion Management Process, safety is an integral component. The concept of safety-conscious planning is demonstrated in two ways. First, the definition and analysis of congestion was based on eight criteria, one of which is frequent crash-related congestion (sometimes referred to as recurring/non-recurrent congestion). A methodology was developed to get at the locations of sections of road with twice or more the rate of crashes for that functional class in each state's part of the DVRPC region. Second, strategies that improve safety are specifically recommended for all types of sub-corridors; this is the only family of strategies with such a blanket recommendation. By including areas with high crashes in the criteria and making safety strategies appropriate in all locations, the CMP helps focus federal transportation funding on improving safety.

The work done by DVRPC with safety in its CMP is being recognized in the Pennsylvania-wide study of congestion management undertaken by the state's Department of Transportation. This study may be included in a statewide toolbox of techniques.

- *Transportation Improvement Program (TIP)* **-** The TIP is the regionally agreed-upon list of priority projects to be advanced during a 3-4 year timeframe. Since safety is an important goal of the long range plan and was taken into consideration in the selection of regionally significant projects for the plan, safety is addressed in the TIP when those projects are advanced. But safety is also addressed in the TIP through many smaller projects undertaken by the counties and states. DVRPC has promoted efforts to make roads safer by funding projects in the TIP to improve the visibility of road signs, lane markings and traffic signals, including the use of higher intensity LED technology and battery backup for power outages. Projects that increase the safety of bicyclists by providing designated bike lanes on streets and roadways or by constructing off-road facilities continue to be advanced. Through the TIP process the redesign of high accident locations continue to be enabled by funding intersection channelization improvements, extension of freeway accel/decel lanes, and rail-highway grade crossing improvements.

- *Unified Planning Work Program* **-** While safety considerations were implicit in DVRPC's efforts, there is a renewed emphasis on transportation safety that will be reflected in all projects and programs as appropriate. To lead that charge, an employee-based Safety Committee has been formed with representatives from all units within the commission, which fosters the exchange of safety information and resources for use in projects and programs. The committee provides a forum for employees to collaborate on safety issues, projects and programs, and to discuss strategies and actions.

Additionally, in 2006 the Office of Corridor Planning was renamed the Office of Safety and Corridor Planning to give credence to the vast amount of safety-specific projects that the commission was now undertaking.

A webpage was established on the DVRPC website with safety information and resources for employees, as well as the general public, to use for their projects. The goal is to provide planning partners and other stakeholders with a clearinghouse for safety information and related tools.

- Of particular note is the program, ***Regional Transportation Safety Program,*** which has enabled the establishment of the Regional Safety Task Force. The Regional Safety Task Force is a multi-disciplinary conglomerate of safety professionals and stakeholders, whose main purpose is to promote safety in the region through the sharing and pooling of all types of information and resources. An outcome from Local Safety Conscious Planning forums held in New Jersey and Pennsylvania, the Task Force plays an integral role in guiding and directing the Commission's safety conscious planning program through the identification, development, prioritization and implementation of regional safety strategies. The focus is diverse, multidiscipline (engineering, education, enforcement, emergency services and funding) and multimodal (automobile, trucks, transit, bicycle, pedestrian, trains).

The Task Force serves as a conduit to integrate safety conscious planning at all planning levels. It is an inclusive process and information is shared through meetings, e-mail and website postings. Task force members have access to colleagues, members of the public and elected officials to whom the Commission did not traditionally have ready access to.

As both states, Pennsylvania and New Jersey, develop their SHSP, the Task Force participants are able to address concerns and ensure regional specific issues are addressed in these plans. The Task Force also represents a collective voice on safety policy and legislative issues working to gain the attention of and educate elected officials. Communication and collaboration is fostered not only between the Commission and Task Force members but also between members of the Task Force themselves.

The Task Force currently plays a central role in the development of the Regional Safety Action Plan by developing effective safety initiatives/programs with significant input from nontraditional partners as well as our traditional planning partners.

Other safety-specific and safety-related projects and programs include:

- DVRPC's current incident management task forces - As a result of the success of this program there have been several requests for staff to replicate similar task forces in other areas of the region. Staff continues to coordinate and provide support for the current task forces and will be working closely with our planning partners and regional stakeholders to establish new ones throughout the region.
- Road Safety Audit Program – this is a collaborative effort with PennDOT District 6 to address corridors in their Safety Plan.
- Congestion and Crash Site Analysis Program – this program focuses on improving safety and traffic flow at intersections.

3. METHODOLOGY

The goal - reduce crashes, injuries and fatalities on the region's roadways while maintaining compatibility with state SHSPs and bring the New Jersey and Pennsylvania portions of the MPO into alignment.

AASHTO's goal of reducing fatalities below one per 100 million vehicle miles traveled by 2008 was adopted for the region.

The plan was developed through a data driven process incorporating the 4Es of safety conscious planning – engineering, education, enforcement and emergency medical services. The plan attempts to pair available resources with prioritized emphasis areas and strategies and is complementary to the Long Range Plan and the TIP, as well as both states' (New Jersey and Pennsylvania) SHSPs.

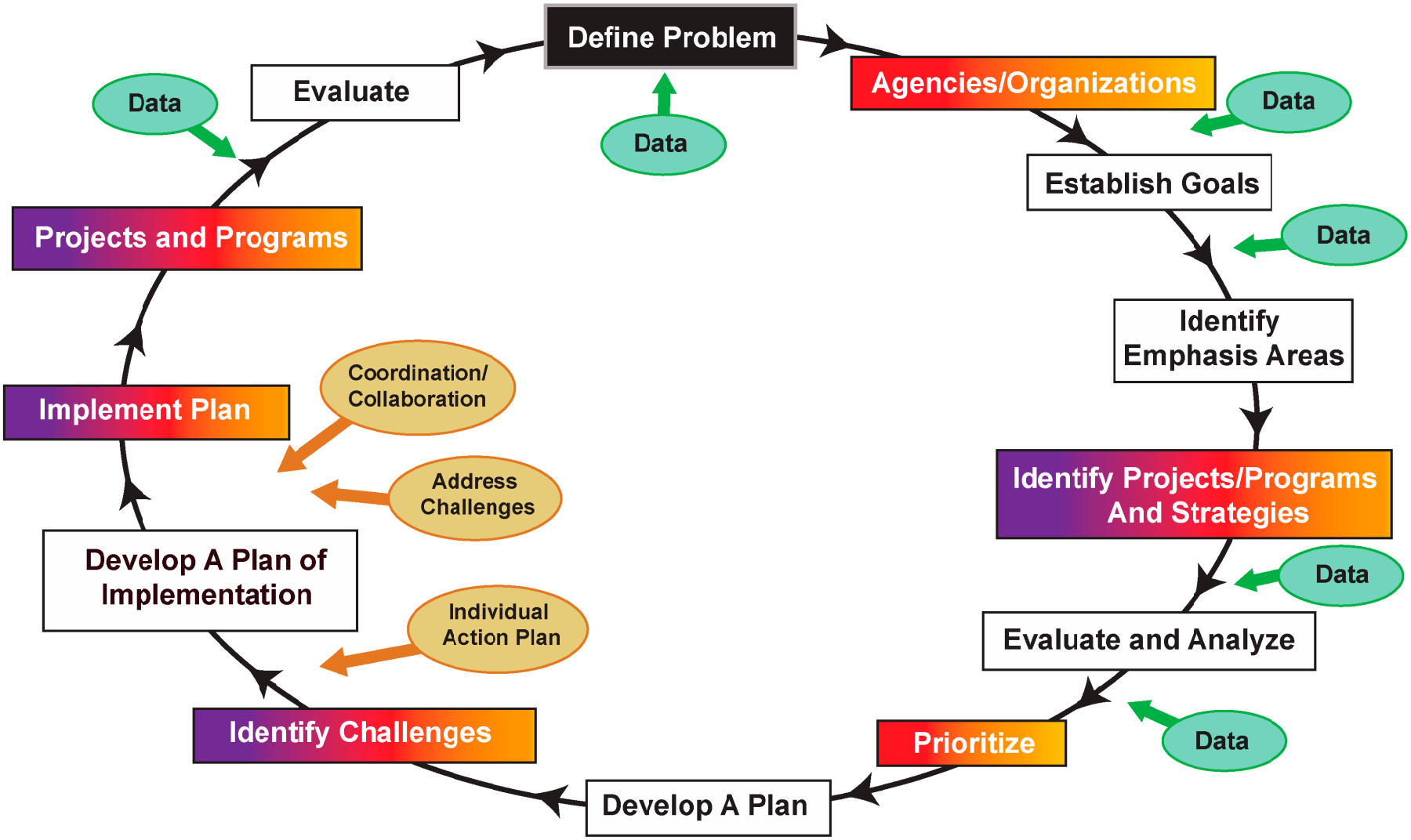
The plan is dynamic. As the issues and priorities change, the plan can be adapted to address critical transportation safety issues. The plan is also designed to be implemented. Based on the premise that coordination, pooling of resources and thinking regionally can generate tremendous benefits for addressing transportation safety; the plan recognizes existing projects and programs and associated resources/expertise.

Extensive research was conducted in preparation of the development of the Regional Safety Action Plan. Drawing on the vision, goals and objectives of the *Destination 2030* Long Range Plan, a series of internal meetings grounded in literature and policy were held to inventory and assess ongoing integration of safety into current practices.

The visioning process included a substantive analysis and review of the New Jersey and Pennsylvania Departments of Transportation (NJDOT, PennDOT) data and agency goals by DVRPC staff. Emphasis areas were drawn from the American Association of State Highway Transportation Officials (AASHTO) recommendations, and the NJDOT and PennDOT Strategic Highway Safety Planning process. The DVRPC emphasis areas were selected from the overarching guidelines under which programs were already guided, rather than created anew, so that the plan would be complementary to the Long Range Plan and the SHSPs of both states.

Since the focus was developing a practical and dynamic safety plan to reduce fatalities that can be executed, implementing agencies and organizations had to be at the table from the outset, along with the planners and other stakeholders. This enables the plan to proceed in a coordinated, comprehensive, and cohesive manner, thus preventing confusion, leveraging support, stretching resources and getting all to think in a regional perspective. Additionally, DVRPC and other agencies may now integrate and draw upon the experience of these organizations whose programs may be in advance of theirs in aspects of transportation safety - like education and marketing, which were not allowed previous to SAFETEA-LU.

Figure 1: THE PLAN DEVELOPMENT PROCESS



The Regional Safety Task Force members were organized into subcommittees to identify existing safety projects and programs in the region, appropriate strategies, and develop innovative solutions based on the emphasis areas. Five subcommittees were established – Engineering, Enforcement, Education, Emergency Services and Funding. Each subcommittee was asked to address all the identified emphasis areas and, wherever appropriate, issues would be analyzed from both a technical and a behavioral aspect.

Research was undertaken for additional strategies, programs, projects, and countermeasures. An analysis of benefits and levels of effectiveness were compiled and presented to the Regional Safety Task Force, along with an extensive crash data analysis. Armed with this information, the Task Force was able to determine priorities.

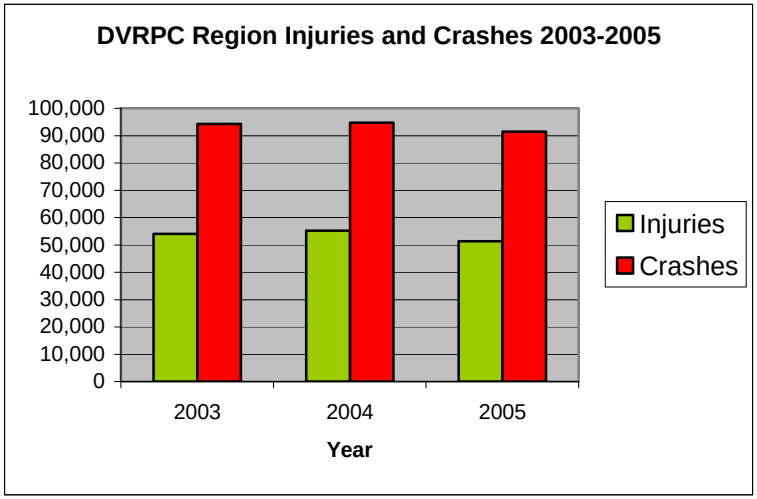
With agreed-upon priorities identified, the subcommittees were tasked with addressing implementation. An Implementation Plan was developed using identified priorities, challenges to implementing these priorities and individual action plans as a base.

4. STATE OF SAFETY IN THE REGION

According to *Destination 2030*, one of the major issues facing the Delaware Valley is the redistribution of population and jobs from core cities and older, developed suburban communities into new suburban areas. This has resulted in continued sprawl, deteriorating urban areas and increased traffic congestion. There has been a four-fold increase in development between 1930 and 2000 in the region. Additionally, the region has a mature transportation system. Many of the roads and bridges are decades old and much of the transit system is over a century old. *Destination 2030* advocates reinvestment in the existing infrastructure and implementing Smart Growth and Smart Transportation approaches to achieve change.

The disparity in transportation fatalities, injuries and crashes in the region reflects the diversity in land use patterns. As sprawl continues, vehicle miles traveled in the region increases resulting in increased exposure to crash potential. Areas with higher population density, which represent the urban areas, shows relatively higher occurrence of crashes. The *Destination 2030* approach to the overall transportation and land use issues in the region will affect safety.

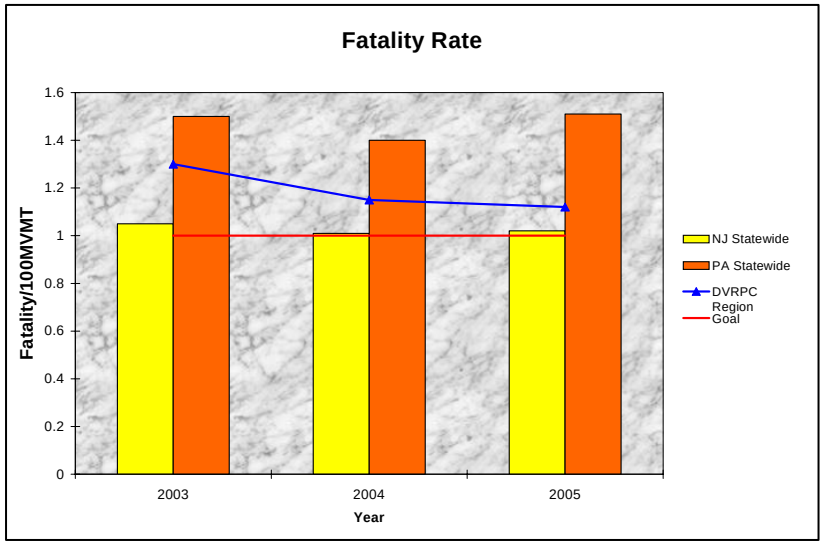
Chart 1



Source: NJDOT and PennDOT Crash Data

In 2005, there were 91,485 motor vehicle crashes recorded in the DVRPC nine-county region. These crashes resulted in 51,289 injuries and 457 deaths. **Chart 1** shows that over the three-year period, 2003-2005, fatalities have steadily decreased with 2003 recording the highest number of 519. However, injuries and crashes did not decrease similarly. The number of injuries increased in 2004 then decreased in 2005. Between 2003 and 2004, injuries increased 2% from 54,067 then decreased in 2005 by 7%, while crashes increased 0.6% in 2004 from 94,263 then decreased in 2005 by 3.5%.

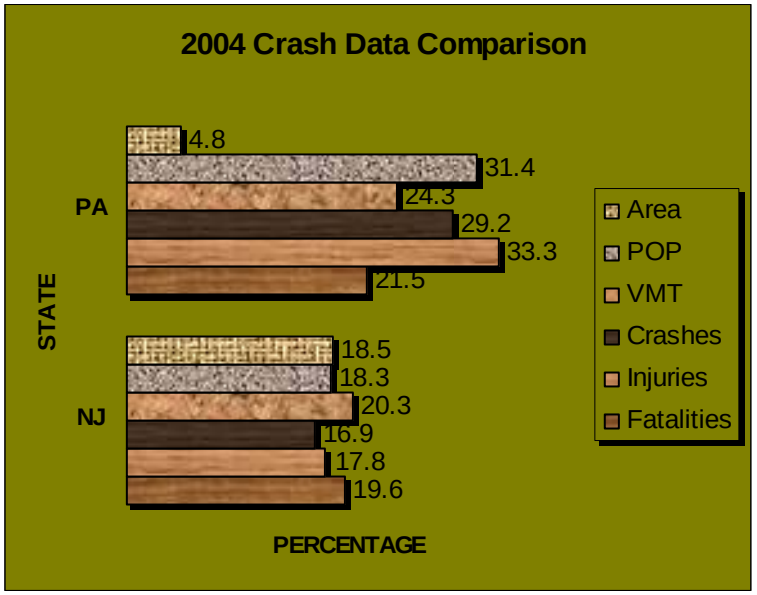
Chart 2



Source: Analysis of NJDOT, PennDOT and DVRPC Data

Chart 2 shows the fatality rate per 100 million vehicle miles traveled (MVMT) for the DVRPC nine-county region compared to the New Jersey and Pennsylvania statewide rates for the years 2003 to 2005. The regional rate falls between the two statewide rates. As shown, the regional fatality rate has fallen from 1.3 in 2003 to 1.12 in 2005. The state rates have not followed the same pattern; in 2004 the rates fell for both states and rose again in 2005. The number of fatalities also declined in the region between 2003 and 2005, but the two states' numbers fluctuated similar to the rate.

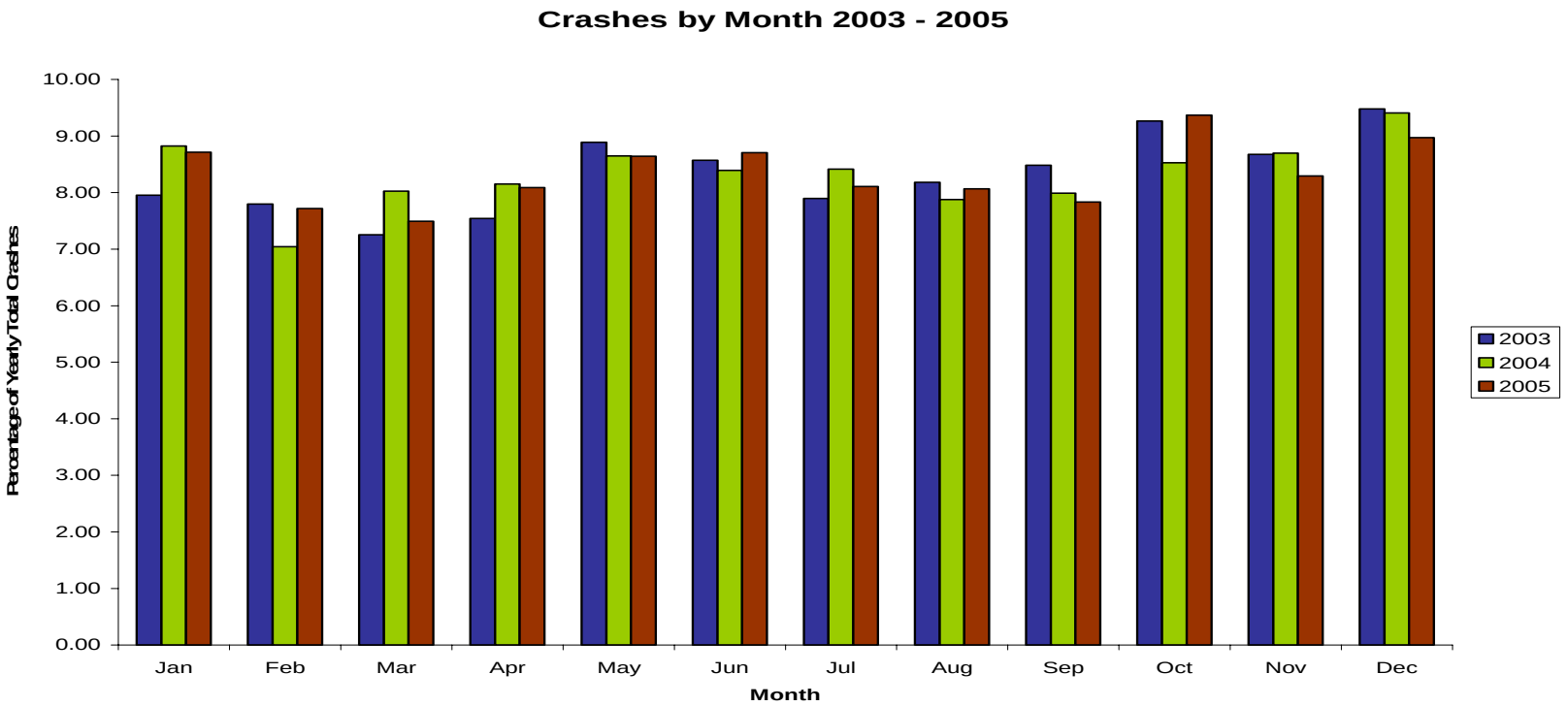
Chart 3



Source: US Census, DVRPC, NJDOT and PennDOT

Chart 3 shows the percentage of the respective state totals of fatalities, injuries and crashes occurring in the DVRPC region by state. This is shown against the percentage of land area, population and vehicle miles traveled (VMT) of the DVRPC region by state. Whereas the chart may represent some correlations (VMT and fatalities), it also shows the disparities or accounts for such between the DVRPC region in both states. The DVRPC Pennsylvania region occupies approximately 5% of the state's land area, but accounts for one-third of its injuries and more than a fifth of its fatalities.

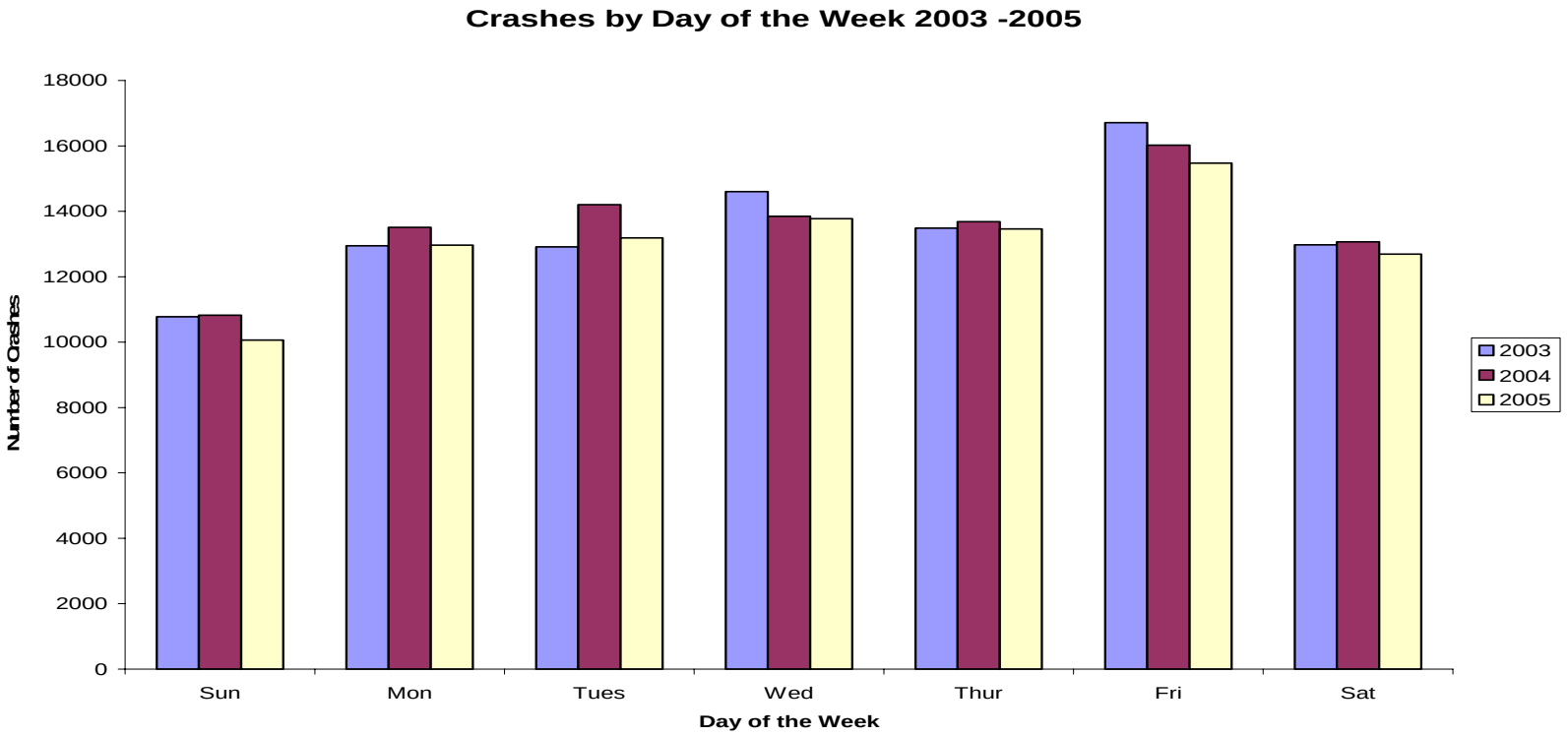
Chart 4



Source: NJDOT and PennDOT Crash Data

Chart 4 depicts the percentage of crashes for the three year period 2003 to 2005 by month. There is a 2 percent variation by month throughout the years. In general, the months of October, November and December tend to have the highest number of crashes. The chart shows decreasing numbers from January to April, but increases again in May, June and July. Whereas, this is generally true for all years, some months have shown dramatic fluctuations over the three-year period. October numbers decreased in 2004 over 2003, but rose again in 2005. September and December numbers constantly decreased over the study period.

Chart 5

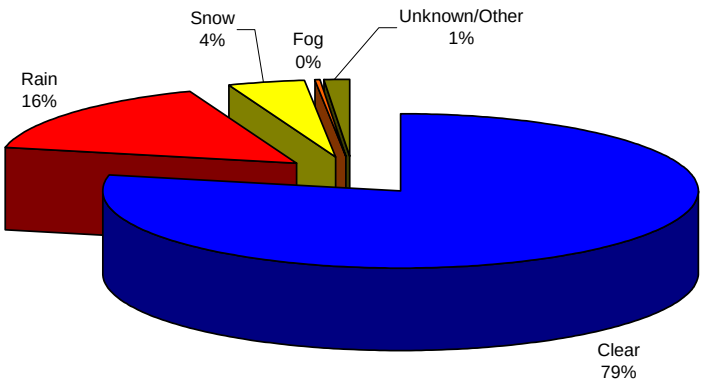


Source: NJDOT and PennDOT Crash Data

Chart 5 shows the number of crashes by day of the week for years 2003, 2004 and 2005. Weekend days, Saturday and Sunday had the least number of crashes for all years. Friday consistently had the highest number of crashes, though the numbers progressively decreased from 2003 to 2005. Except for Wednesday and Friday, the number of crashes in the region increased in 2004 and then decreased in 2005. Tuesday showed the highest number of increase in 2004 while Sunday had the lowest. Of the weekdays, Monday had the lowest number of crashes for all years.

Chart 6

Average Crash by Weather Type 2003-2005

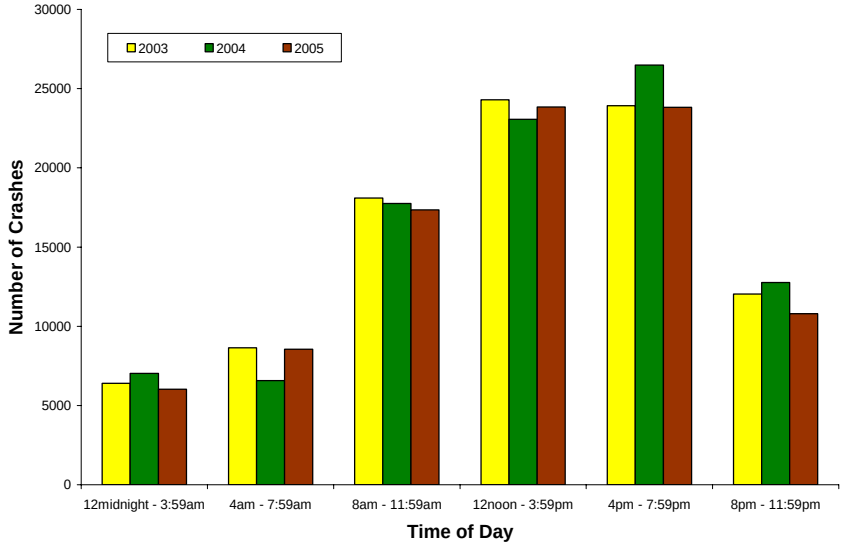


Source: NJDOT and PennDOT Crash Data

Chart 6 shows average crash by weather type for the years 2003 to 2005. Seventy-nine percent of crashes in the region occurred on days when the weather was clear. This is consistent with the statewide averages for Pennsylvania and New Jersey. Sixteen percent occurred on rainy days, while four percent occurred on snowy days. On average, 375 crashes occurred in the region each year under foggy conditions.

Chart 7

Crashes By Time Of Day for the DVRPC Region 2003 -2005



Source: NJDOT and PennDOT Crash Data

Chart 7 shows crash trend by time of day for 2003 to 2005 in four hour increments. The twelve hours between 8:00AM and 8:00PM have approximately 70% of the crashes each year with the majority occurring during the evening peak hours 4:00 PM to 8:00 PM. The four-hour period between 8:00 AM and noon was the only period that experienced a consistent decrease in number of crashes over the three years. The midnight to 4:00AM and the noon to 4:00PM periods experienced a decrease in crashes in 2004 and increase in 2005, while all others had a increase in 2004 and decrease 2005. The midnight to 4:00AM period has the lowest number of crashes.

Figure 2: Fatality Rate by Roadway Miles in 2005

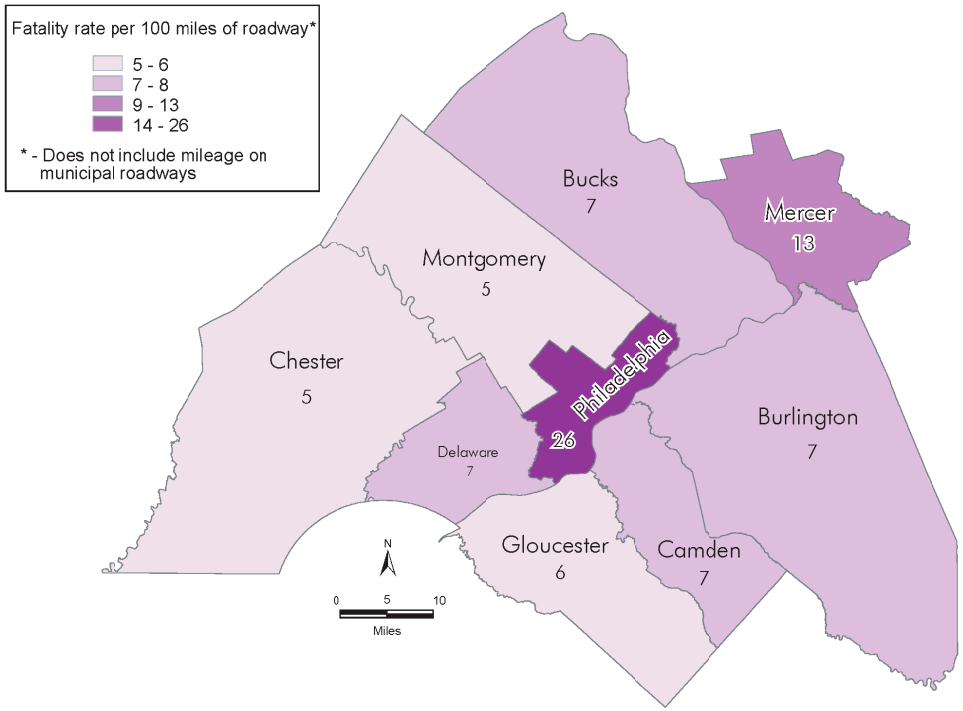


Figure 3: Fatality Rate by Population in 2005

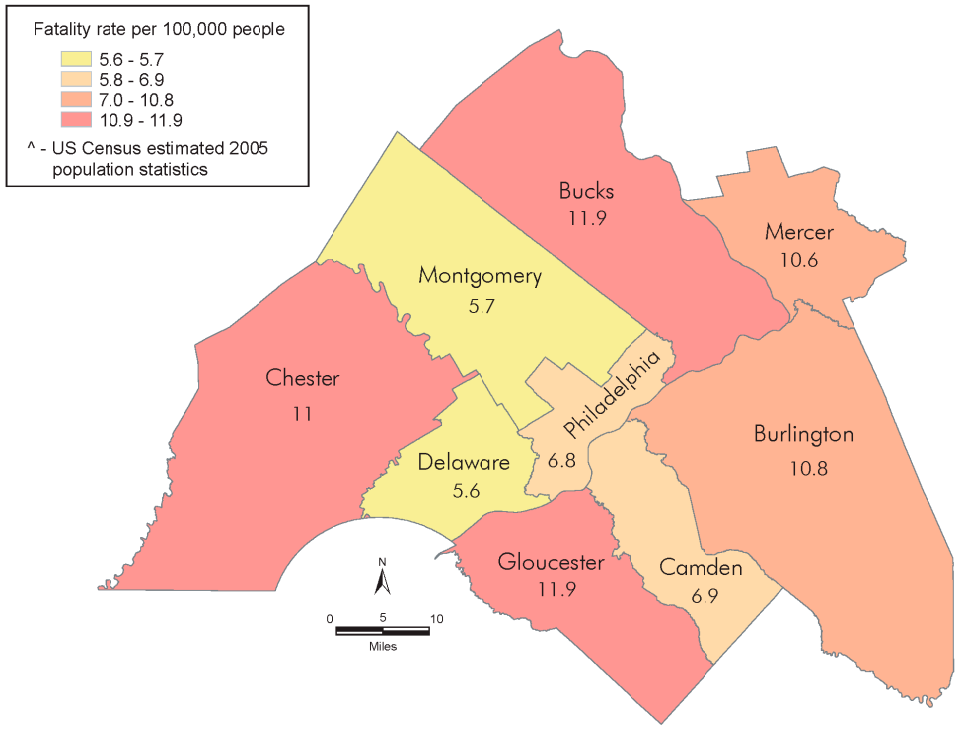
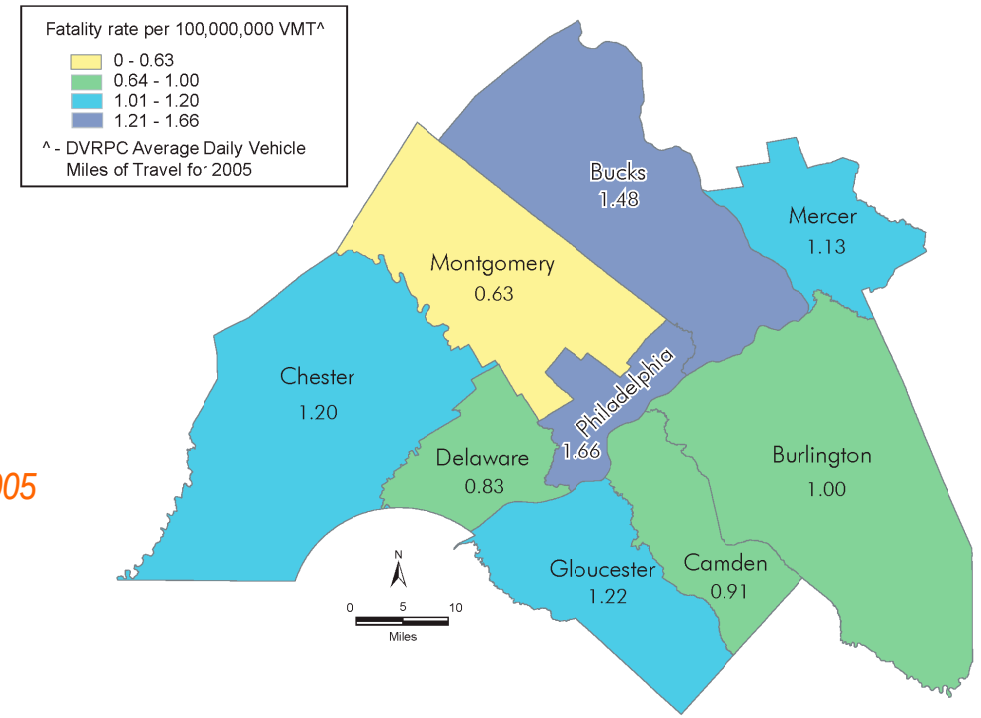


Figure 4: Fatality Rate by VMT in 2005



Figures 2, 3 and 4 show fatality rate by county in the DVRPC region for 2005. As shown in **Figure 2**, Philadelphia had the highest rate of fatalities by roadway mile in the region. During that year there were 26 fatalities for every 100 miles of roadway in the region. Mercer County was second with 13 fatalities per 100 miles of roadway, while Chester and Montgomery counties had the lowest rate with 5.

Figure 3, shows fatality rate by population. Gloucester, Chester and Bucks counties have the highest fatality rate by population with approximately 12 fatalities per 100,000 people. Mercer and Burlington counties have more than 10 fatalities per 100,000 people. Although Philadelphia had the highest rate by roadway miles, it lies within the lower group in this analysis of fatalities by population. Philadelphia had a rate of approximately 7 fatalities per 100,000 people in the 2005, while Montgomery and Delaware counties had the lowest rate in the region of approximately 6 fatalities per 100, 000 people.

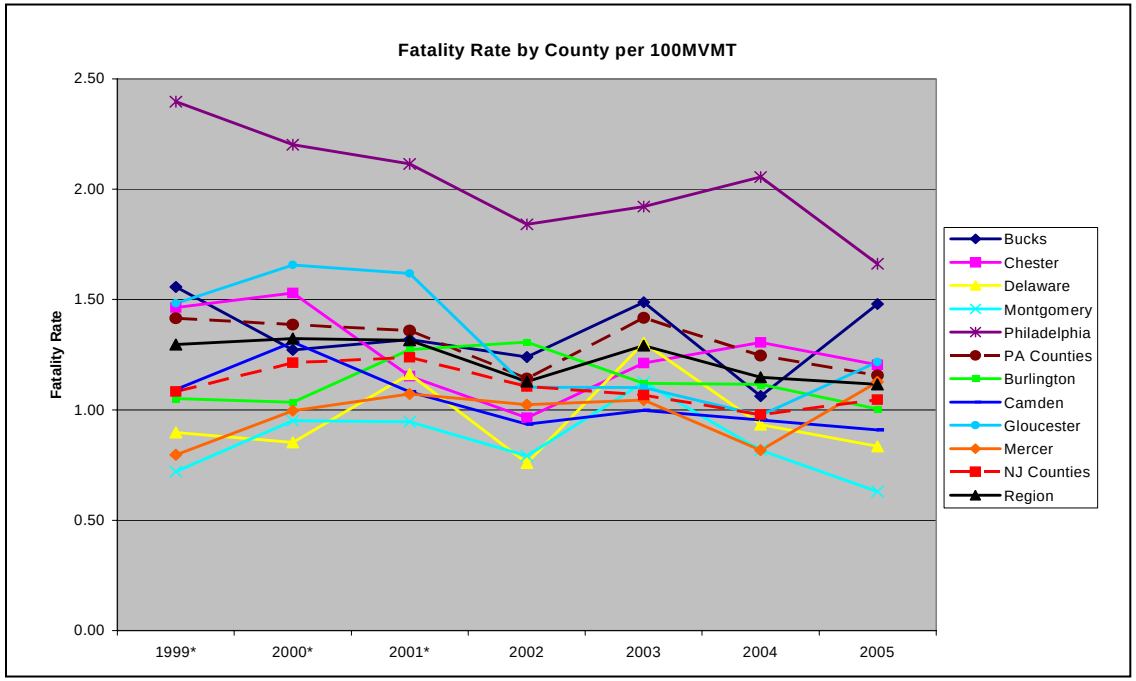
Fatality rate per 100 million vehicle miles traveled (100MVMT) by county is shown in **Figure 4**. Philadelphia and Bucks counties show the highest rates with 1.66 and 1.45 respectively. These counties along with Gloucester, Chester and Mercer counties with rates of 1.22, 1.2 and 1.13 respectively have rates higher than the regional rate in 2005. Burlington, Camden, Delaware and Montgomery counties had fatality rates per 100 MVMT in 2005 of 1 or less. Montgomery County had the lowest rate of 0.63 fatalities per 100 MVMT. Montgomery County shows the lowest rates by VMT and roadway miles and is among the lowest by population.

Table 1: Trend of Fatality Rate per 100 MVMT by County

County	1999*	2000*	2001*	2002	2003	2004	2005	Avg.
Burlington	1.05	1.04	1.27	1.31	1.12	1.12	1.00	1.13
Camden	1.09	1.31	1.08	0.94	1.00	0.95	0.91	1.04
Gloucester	1.48	1.66	1.62	1.10	1.10	0.98	1.22	1.31
Mercer	0.80	1.00	1.07	1.02	1.04	0.82	1.13	0.98
Bucks	1.56	1.27	1.32	1.24	1.49	1.06	1.48	1.35
Chester	1.46	1.53	1.15	0.96	1.21	1.31	1.20	1.26
Delaware	0.90	0.85	1.16	0.76	1.30	0.93	0.83	0.96
Montgomery	0.72	0.95	0.95	0.79	1.12	0.82	0.63	0.85
Philadelphia	2.40	2.20	2.11	1.84	1.92	2.06	1.66	2.03
Region	1.30	1.32	1.32	1.13	1.29	1.15	1.12	1.23

Source: FARS for 1999- 2001, PennDOT and NJDOT 2002-2005

Chart 8



Source: FARS for 1999- 2001, PennDOT and NJDOT 2002-2005

5. EMPHASIS AREAS

The process of reducing fatalities is expressed through targeted emphasis areas. Emphasis areas were identified to concentrate regional efforts and funding on appropriate strategies that will have a positive impact on reducing the number of crashes, injuries and fatalities resulting from these areas. Emphasis areas are chosen based on the AASHTO guide and presented as goals.

Table 2 shows DVRPC's 14 selected emphasis areas and how they match up with AASHTO's plan and NJDOT and PennDOT SHSPs. Only 12 of AASHTO's 22 emphasis areas are included in DVRPC's plan, whereas both state plans address all areas with more focus on a smaller number.

PennDOT and NJDOT have completed their Strategic Highway Safety Plans and prioritized emphasis areas. PennDOT's prioritized areas referred to as "VITAL SIX" are reducing aggressive driving, reducing impaired driving, increasing seatbelt usage, infrastructure improvements (reducing roadway departure and intersection crashes), improving crash records system, and improving pedestrian safety. NJDOT's "Targeted Eight" aims to minimize roadway departures (run off the road, head-on and fixed-object crashes), improve operation and design of intersections; curb aggressive driving; reduce impaired driving; reduce crashes involving young drivers; sustain safe senior mobility; increase driver safety awareness; and reduce pedestrian, bicycle, rail and vehicular conflicts

Table 2: Emphasis Areas

DVRPC Emphasis Areas	NJDOT - SHSP	PennDOT - SHSP	AASHTO
Sustain Proficiency in Older Drivers	X	X	X
Improve Young Driver Safety	X	X	X
Curb Aggressive Driving	X	X	X
Increase Driver Safety Awareness	X		X
Keep Vehicles on the Roadway	X	X	X
Increase Pedestrian Safety	X	X	X
Increase Bicycle Safety	X	X	X
Reduce Impaired Driving	X	X	X
Increase Seat Belt Usage/Occupant Restraint		X	X
Minimize the Consequences of Leaving the Road	X	X	X
Improve Safety on Local Roads		X	X
Improve Motorcycle Safety		X	X
Promote Safer Driving on Inclement Road Surface			
Improve Design & Operation of Intersections	X	X	X

Source: DVRPC, PennDOT, NJDOTand AASHTO SHSPs

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Analysis of three years worth of crash data provided by the DOTs formed the basis for emphasis area selection. Although data played a major role in determining the emphasis areas, knowledge of the region was invaluable.

Crashes due to inclement weather were not included in both state databases. It was selected, however, as an emphasis area due to the high number of crashes, injuries and fatalities in the neighboring state and anecdotal evidence suggesting they be included. Though bicycle and pedestrian crashes and fatalities were relatively low in both states, the magnitude of the fatalities compared to injury crashes suggested they be included.

Chart 9

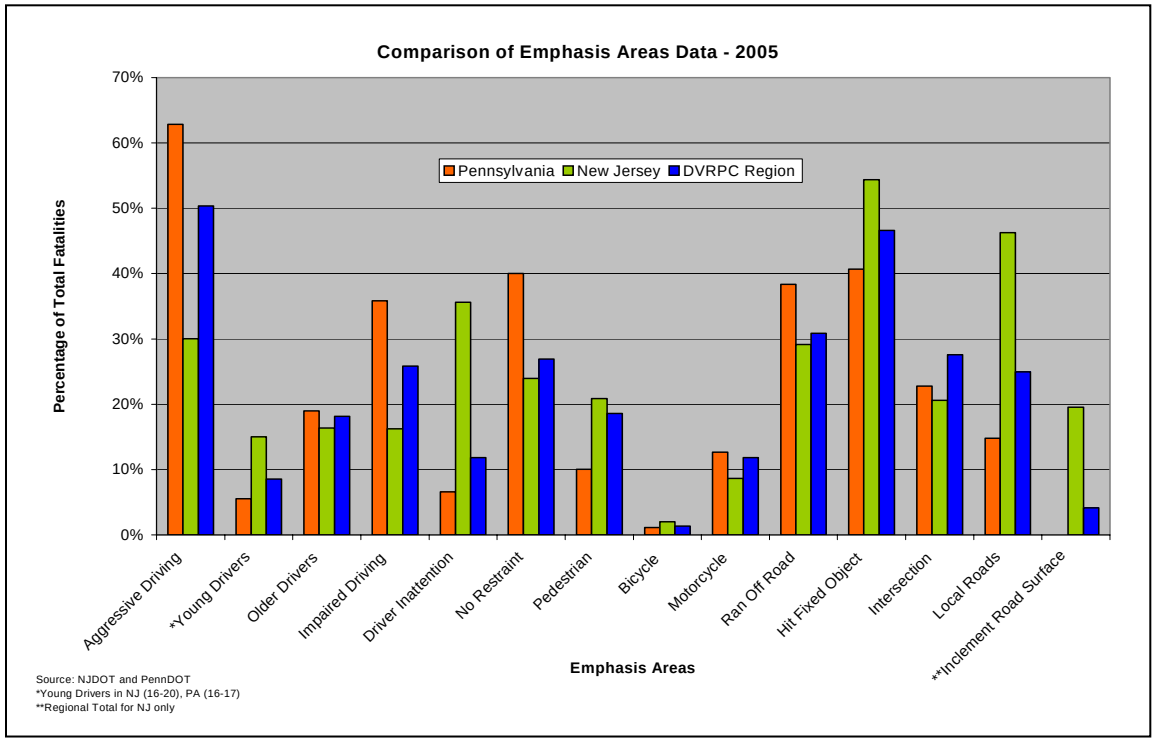


Chart 9 compares the DVRPC region's fatalities by emphasis areas to New Jersey and Pennsylvania statewide data by percentage for 2005. The total percentages of fatalities as shown in the chart will not

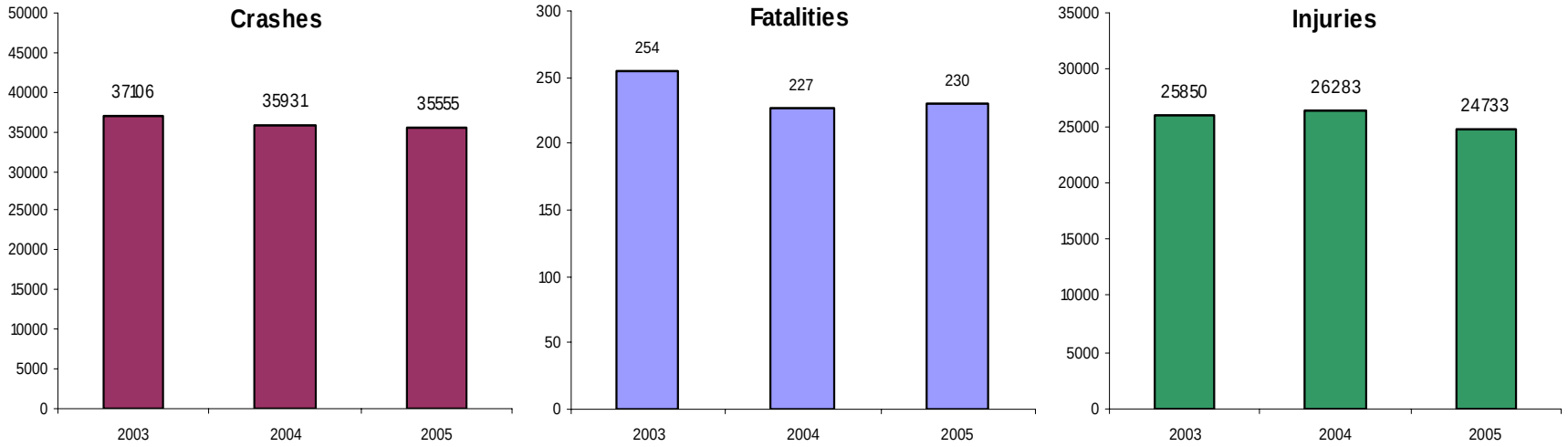
add up to 100 because a fatal crash may be more than one event (fatality resulting from a drunk driver who hits a light pole will be counted in both the “impaired driving” and “hit fixed object”). The percentage of fatalities in the DVRPC region due to intersection crashes is the only type that exceeds both Pennsylvania and New Jersey statewide percentages. Crashes involving aggressive driving, older drivers, impaired drivers, unrestrained drivers and motorcycles as well as roadway departure crashes have percentages of total fatalities higher in Pennsylvania and the DVRPC region than in New Jersey. New Jersey has higher percentages in driver inattention, pedestrians, bicyclists, hit fixed objects, and local roads.

A more detailed description of each emphasis area follows. Trends in crash data between the years 2003 and 2005 are presented. Additionally, some of the existing projects and programs in our region addressing specific emphasis areas are included.

5.1 Curb Aggressive Driving

There were 713 aggressive driving related fatalities in the region between 2003 and 2005. This represented 49.5% of total fatalities in the region during that time period. Although contributing factors to aggressive driving have been identified, many states, including New Jersey and Pennsylvania, are still struggling with a definition. This has translated into drawbacks in enforcing this offense, as well as educating the public on what constitutes aggressive driving and its deterrents.

Chart 10
Aggressive Driving Crash Data



Source: NJDOT and PennDOT Crash Data

Chart 10 shows the trends in fatalities, crashes, and injuries due to aggressive driving for the years of 2003 to 2005. The number of crashes of this type fell by 4% during this period. Fatalities initially fell in 2004 then rose slightly in 2005, while injuries rose in 2004, but then dropped in 2005.

Table 3 below shows some of the programs in the region that assist in curbing aggressive driving.

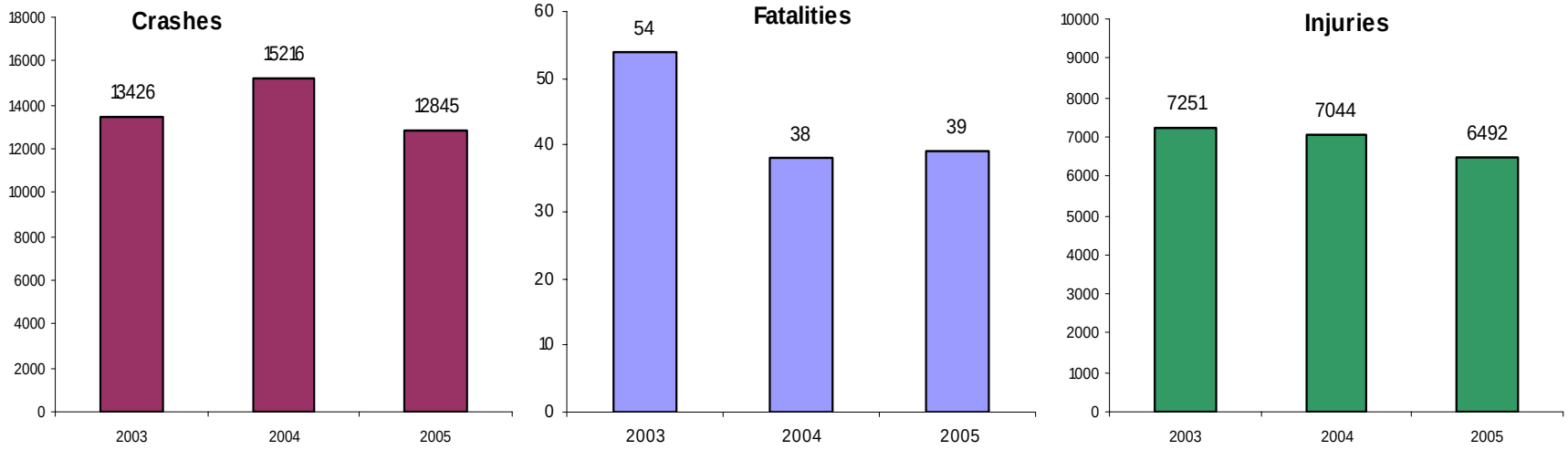
Table 3: Curb Aggressive Driving Projects/Programs

ENGINEERING	ENFORCEMENT	EDUCATION
Delaware County Planning Work with planning partners to install "Share the Road" signs where appropriate; promote traffic calming techniques; signal upgrade projects	PA State Police *Operation Centipede* – aggressive driver enforcement *Tag D* – saturation enforcement	SEPTA Operator Training Program – Defensive driving course for bus drivers; drivers taught to recognize the signs and behavior of aggressive drivers
Mercer County Engineering Optimize traffic signal operation through camera detection Use of VMS – roadway projects, travel delays	SEPTA Conducts routine speed compliance audits utilizing radar guns to check and enforce bus driver speed compliance.	Mid-Atlantic Foundation for Safety & Education Aggressive and attentive driving programs
Gloucester County Engineering Include traffic calming techniques in the design of new projects Addition of behavioral warning signs on roads	Gloucester Township Police *Traffic Complaint Investigation* Program – increase enforcement at locations identified by data	NJ Division of Highway Traffic Safety *Drive Friendly* – campaign designed to promote courteous driving
NJDOT Installation of *Safety First* signage along state highways e.g. "Maintain Safe Travel Distance"	PennDOT – BHSTE *Smooth Operator* Program Grants to state and local police for speed enforcement	Delaware County Planning Working planning partners to install "Share the Road" signs where appropriate; promote traffic calming techniques
	Burlington County Traffic Safety Task Force – Grants from NJDHTS Speed Enforcement (joint effort of Sheriff Dept. & Local Police)	Burlington County Traffic Safety Task Force – Grants from NJDHTS Defensive Drive Course (include aggressive driver in curriculum)
	NJ State Police #77 Aggressive Driving Hotline Enhanced enforcement along Safe Corridors and at other strategic locations	Mercer County Engineering Use of VMS – roadway projects, travel delays

5.2 Improve Young Driver Safety

Although only 9% of the fatalities between 2003 and 2005 were attributed to young drivers, 14% of the crashes were. Given that young drivers are defined in New Jersey as 16-20 year olds and in Pennsylvania as 16-17 year olds, the number of crashes and fatalities could be higher if they were defined as 16-20 year olds in both states.

Chart 11
Young Driver Crash Data



Source: NJDOT and PennDOT Crash Data

Chart 11 shows the trends in crashes, injuries and fatalities involving young drivers from 2003 to 2005. Crashes rose by 13% in 2004 then fell below 2003 numbers in 2005. While the number of injuries steadily decreased over the three years, fatalities fell 30% in 2004, but had a single fatality increase in 2005.

Table 4 below shows some of the programs in the region that can improve young driver safety.

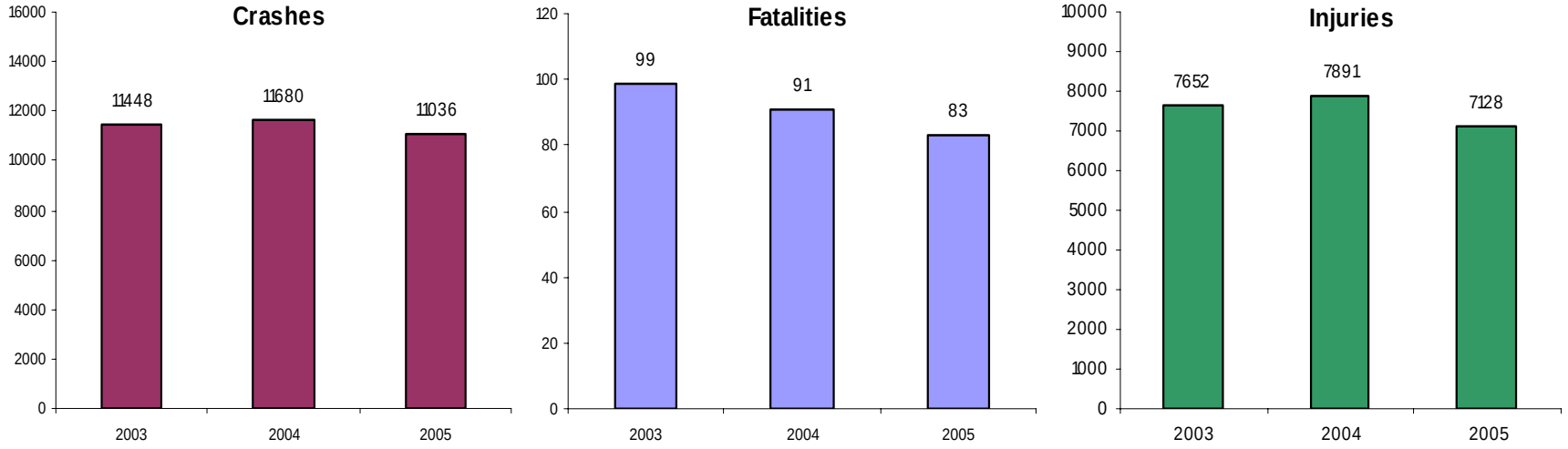
Table 4: Improve Young Drivers Safety Projects/Programs

ENGINEERING	ENFORCEMENT	EDUCATION
	NJ Motor Vehicle Commission *Cinderella Law* – young drivers not allowed to be on the roads after certain hours, and limits the number of passengers allowed in the vehicle driven by young driver	Gloucester Township Police DWI Pre-Prom Education Program – education on laws, penalties and Fatal Vision Goggle simulations
	AAA Mid-Atlantic Works with law enforcement on Graduated Drivers License	PA DUI Association Education workshops on driving under the influence of drugs and alcohol *Safety Bug* – simulating the effects of driving intoxicated *Safety SIM* –driving simulator *Safety SAM* – interactive safety program using robot
		Mid-Atlantic Foundation for Safety and Education Student Safety Council – high school clubs Public outreach - press releases, media interviews.
		Burlington County Traffic Safety Task Force – Grants from NJDHTS Defensive Drive Course Public Awareness Programs – cell phone usage, DUI, etc. *Smarter Driver Safer Streets* Program

5.3 Sustaining Proficiency in Older Drivers

There were 34,164 crashes in the region involving older drivers between 2003 and 2005. These resulted in 273 fatalities, 19% of the total number of fatalities for the three years.

Chart 12
Older Driver Crash Data



Source: NJDOT and PennDOT Crash Data

Chart 12 shows the trends in crashes, injuries and fatalities involving older drivers from 2003 to 2005. The number of fatalities fell over the three year period, by 8% between 2003 and 2004 and approximately 9% in between 2004 and 2005. Both the number of crashes and injuries increased in 2004, but fell in 2005 below the 2003 numbers.

Table 5 below shows some of the programs in the region that address older driver safety.

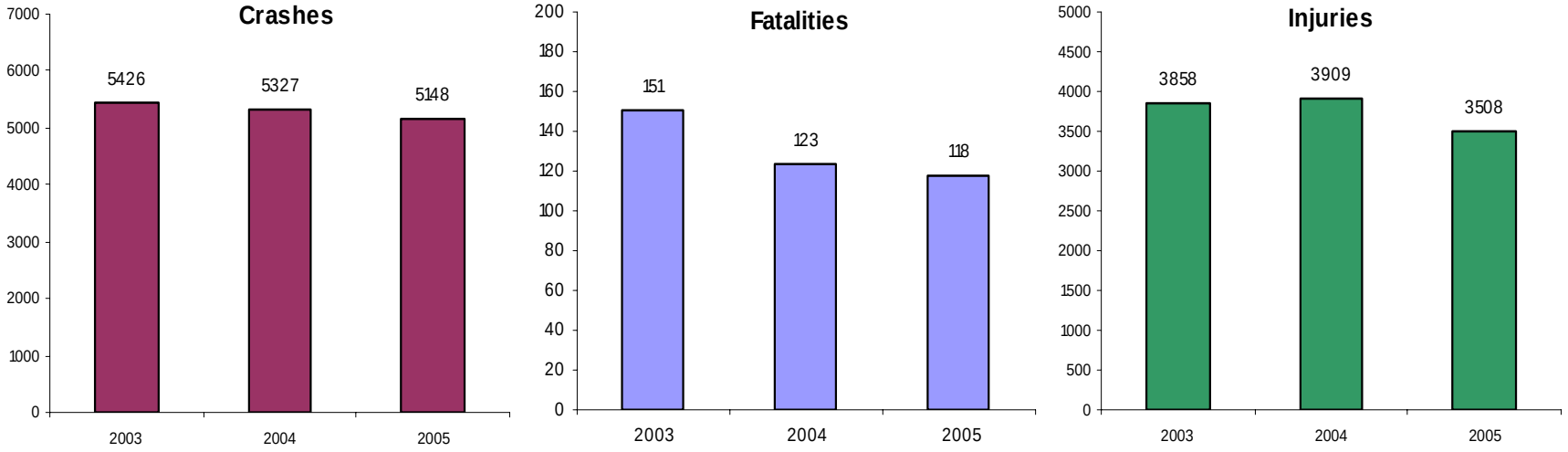
Table 5: Sustaining Proficiency in Older Driver Projects/Programs

ENGINEERING	ENFORCEMENT	EDUCATION
Gloucester County Planning Advance warning signs for major street crossings and curves. Use reflective paint for lane striping	PennDOT – BHSTE Encourage physicians' reporting of their patients' capability to drive	NJ Division of Highway Traffic Safety Older Driver Traffic Safety Committee Medical Advisory Committee
PennDOT Sign Improvements – Clearview Font; larger, higher, advance warning signs Providing alternate transportation modes		PennDOT – BHSTE Local Trip Planning – time of day Program to encourage family members in assisting the surrender of licenses
SEPTA and NJ Transit Courtesy Transportation for Seniors		Mid-Atlantic Foundation for Safety and Education CarFit Program Roadwise Review DVD Mature Operator Programs
Burlington County System-wide approach - 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; and use of wet reflective striping to improve visibility		AARP 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

5.4 Reduce Impaired Driving

Of the total number of transportation related fatalities in the region between 2003 and 2005, 27% involved an impaired driver. Impaired driving includes drunk drivers and drowsy drivers. There were approximately 16,000 crashes attributed to impaired driving during that period.

Chart 13
Impaired Driving Crash Data



Source: NJDOT and PennDOT Crash Data

The trends in fatalities, crashes, and injuries that involved impaired driving for the years 2003 to 2005 are shown in **Chart 13**. Fatalities and crashes fell over the three year period. The decrease in fatalities between 2003 and 2004 was the largest, approximately 19%. The number of injuries increased in 2004 and decreased in 2005 by 10%.

Table 6 below shows some of the programs in the region that deter drivers from driving while impaired.

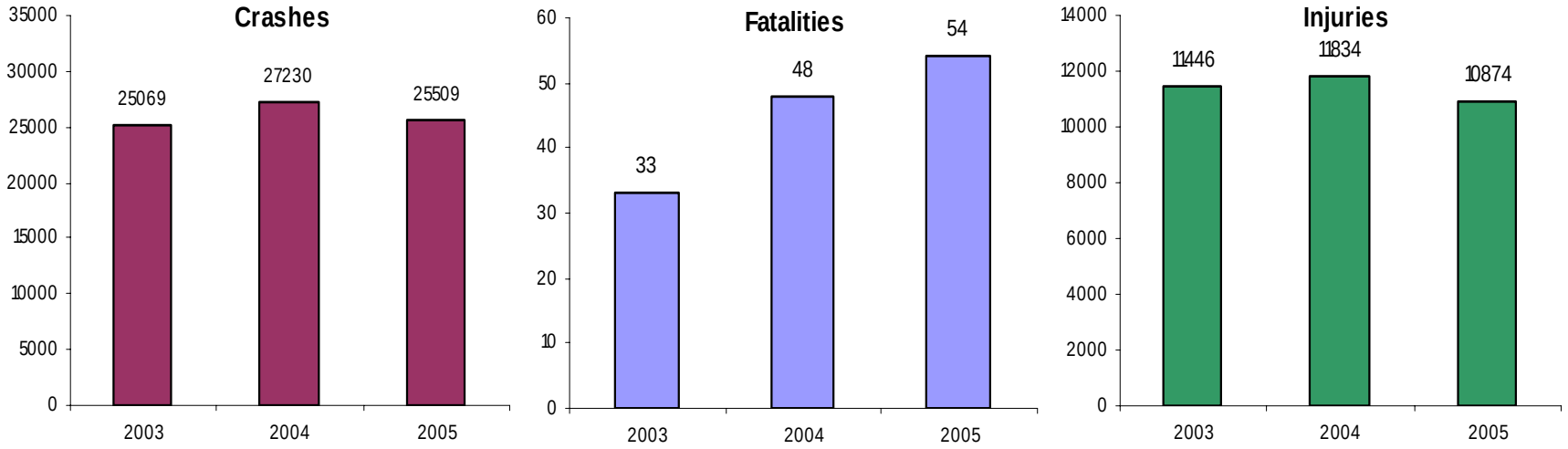
Table 6: Reduce Impaired Driving Projects/Programs

ENGINEERING	ENFORCEMENT	EDUCATION
	PA DUI Association Ignition Interlock Quality Assurance Program	NHTSA Ad campaign with *"You Drink, You Drive, You Lose"* Program
	PA State Police Weekly Sobriety Check Points Participation in NHTSA "*You Drink, You Drive, You Lose"* Program Officer trained as Drug Recognition Experts	PennDOT BHSTE Increased police officer training as Drug Recognition Experts
	NJ State & Local Police Participation in NHTSA *"You Drink, You Drive, You Lose"* Program Sobriety Checkpoints Officer trained as Drug Recognition Experts	Gloucester Township Police Alcohol Server DWI Review – educate bartenders and servers on laws and penalties *HERO Campaign* – encourages designated drivers
	SEPTA 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	Mid-Atlantic Foundation for Safety and Education Alcohol Awareness Program Fleet Safety Program Distracted and Drowsy Driving Program Partnership with law enforcement
	Gloucester Township Police Officer trained as Drug Recognition Evaluator	NJDHTS Defensive Drive Course (include DUI in curriculum) through county Drunk Driving Campaign DUI training for law enforcement

5.5 Increase Driver Safety Awareness

Approximately 28% (77,808) of total crashes for the region in the analysis period were due to driver inattention. 135 fatalities resulted from these crashes and 34,154 injuries. This represented 9% of total fatalities and 21.3% of injuries.

Chart 14
Driver Inattention Crash Data



Source: NJDOT and PennDOT Crash Data

Chart 14 shows the trends in fatalities, crashes, and injuries involving driver inattention for the years 2003 to 2005. This emphasis area shows an increase in the number of fatalities throughout the analysis period. Fatalities increase by 45% in 2004, but at a slower rate of 12% in 2005. Both crashes and injuries show an increase in 2004, but fell in 2005 below the 2003 numbers.

Table 7 below shows some of the programs in the region to increase the driver's awareness of safety while operating an automobile.

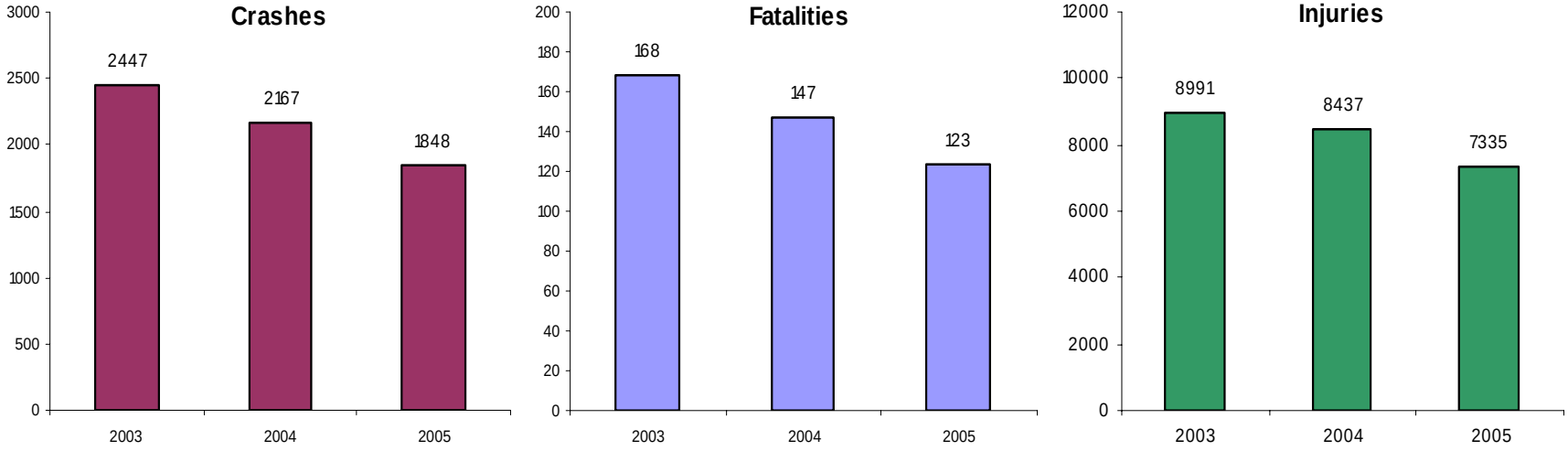
Table 7: Increase Driver Safety Awareness Projects/programs

ENGINEERING	ENFORCEMENT	EDUCATION
Gloucester County Planning Program to install raised pavement marker on county roadways as appropriate	Gloucester Township Police Collaborate with MVC on periodic roadside safety checkpoints	SAFEKIDS Creating safe community environment for children and families. Designed a comprehensive local injury data surveillance system
Delaware County Planning Work with planning partners on crash data	SEPTA Prohibit using cell phones while operating a mass transit vehicle. Discipline for these infractions can include discharge.	AAA Mid Atlantic Driver improvement classes Speaker's Bureau – outreach to schools and community groups regarding car and bicycle safety
		NJ Brain Injury Association Educational materials on transportation/helmet safety
		Operation Lifesaver Highway-Railroad Grade Crossing Safety Campaign – educational resources. Instructional materials for professional drivers and training courses for law enforcement offices
		Mid Atlantic Foundation for Safety Safe Crossings Program; No Zone Program, Student Safety Club, School Bus Safety Program
		Burlington County Traffic Safety Task Force – Grants from NJDHTS Defensive Drive Course Public Awareness Programs *Smarter Driver Safer Streets* Program

5.6 Increase Seatbelt Usage/Occupant Restraint

There were 438 of the 1,441 traffic-related fatalities, which occurred in the region between 2003 and 2005, recorded as having no restraint. This number represents 30% of the total number of fatalities. There were also 24,763 persons injured in crashes while unrestrained, 15% of the three-year total.

Chart 15
Non Seatbelt Usage/Occupant Restraint Crash Data



Source: NJDOT and PennDOT Crash Data

Chart 15 shows the trends in fatalities, crashes, and injuries involving the non-use of passenger restraints from 2003 to 2005. The crash numbers only represent the New Jersey portion of the region. Crashes consistently decreased over the period. The numbers of fatalities and injuries also decreased over the period with fatalities having higher percentage decrease than crashes or injuries.

Table 8 below shows some of the programs in the region to encourage seatbelt and occupant restraint usage.

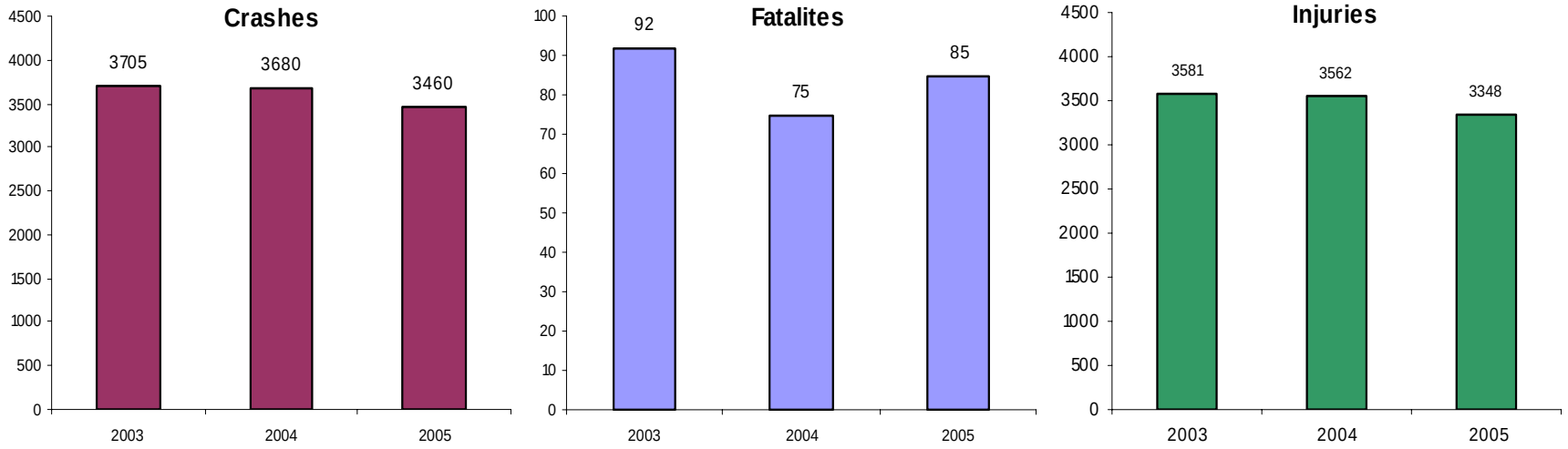
Table 8: Increase Seatbelt Usage/Occupant Restraint Projects/Programs

ENGINEERING	ENFORCEMENT	EDUCATION
	SEPTA All operators required to wear seatbelt. Random audits by both supervisors and SEPTA's Safety Department.	PennDOT BHSTE Require each county to produce a plan to increase seatbelt use Training program CPSS Technicians Car seat loaner program
	PA & NJ Police (state & some local) Participate in *"Click it or Ticket"* Campaign. Targeted enforcement per data. Night time seatbelt checks	SafeKids Provide car seat checks as well as advice and information to the community on child passenger seats and seatbelts
	AAA Mid Atlantic Involved in the legislative efforts in PA regarding passenger restraint	Gloucester Township Police Certified CPSS technicians provide service to the public
	Children's Hospital of Philadelphia Involved in the legislative efforts in PA regarding passenger restraint	Mid-Atlantic Foundation for Safety and Education *"Back is Where Its At"*; "*Your Life Your Choice Wear It"* Programs
		NJ Division of Highway Traffic Safety Through the counties and others, provide child passenger safety seat, checks and installation.
		Children's Hospital of Philadelphia Research in Child Passenger Restraint

5.7 Increase Pedestrian Safety

Crashes involving pedestrians in DVRPC's region in the years 2003 to 2005 accounted for only approximately 4% of the total crashes, while the fatalities from these crashes represented more than 17% of total fatalities. There were 252 fatalities, 10,491 injuries and 10,842 crashes in the three years. Few crashes resulted in no injury or death. This equates to about 10 pedestrians involved in a crash each day over the three years in the region.

Chart 16
Pedestrian Crash Data



Source: NJDOT and PennDOT Crash Data

Chart 16 shows the trends in fatalities, crashes, and injuries involving pedestrians from 2003 to 2005. The number of crashes and injuries fell steadily over the study period; while fatalities decreased in 2004 over 2003 by approximately 18%, but increased in 2005 by approximately 13% over 2004 numbers.

Table 9 below shows some of the programs in the region designed to keep pedestrians safe.

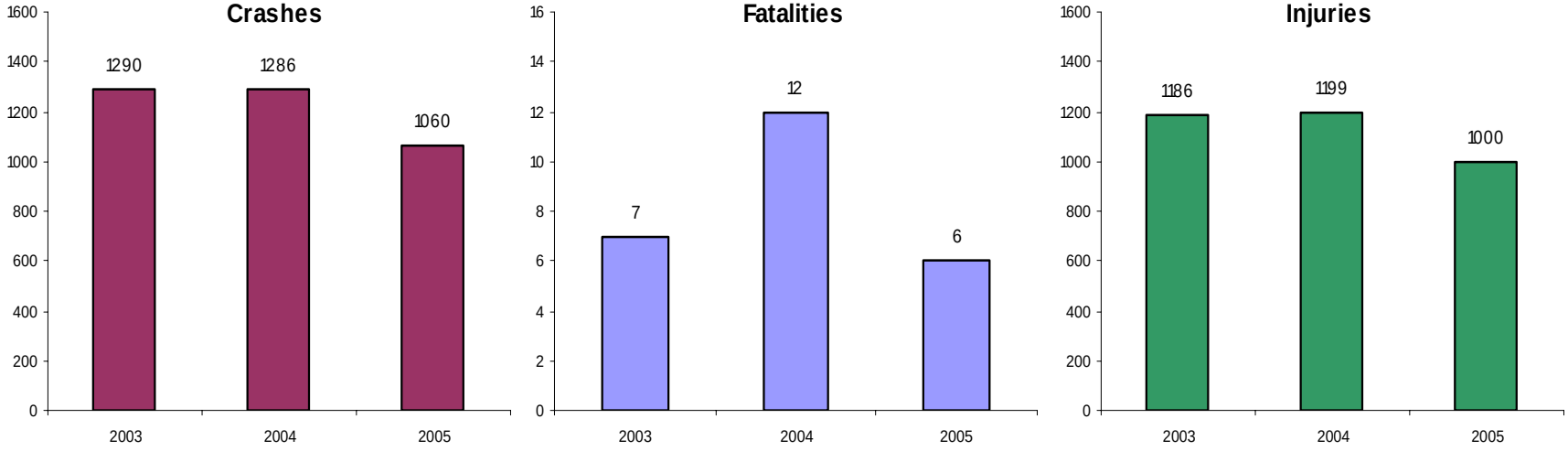
Table 9: Increase Pedestrian Safety Projects/Programs

ENGINEERING	ENFORCEMENT	EDUCATION
PennDOT Channelization devices (signs) Improve and install crosswalks; Lighted crosswalks; Pedestrian countdown signals	NJ Division of Highway Traffic Safety Targeted police patrols at high pedestrian crash locations	Delaware County Promote use of mid-block crossing pedestrians signs to municipalities
SEPTA Utilizes many pedestrian devices at railroad stations – at-grade station crosswalks with supplemental inter-track fencing; dedicated over or under passes; audio/visual warning devices at some at-grade crossings	Burlington County Traffic Safety Task Force – Grants from NJDHTS Safe Routes to School Program in cooperation with local police departments	Mid-Atlantic Foundation for Safety and Education *Otto the Auto* - talking robot car used for elementary school safety programs; and *"Safe Crossings"* Programs.
Mercer County Installation of mid-block crosswalk as appropriate. All newly constructed intersections are ADA compliant. 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		Burlington County Traffic Safety Task Force – Grants from NJDHTS Crossing guard training
Gloucester County Roadway improvement projects designed to include pedestrian enhancement. Light-activated crosswalks are installed as appropriate; "No Turn on Red" sign installed at intersections with heavy pedestrian presence.		SEPTA, PennDOT, NJDOT, NJ Transit Operation LifeSaver Program – pedestrian safety outreach and education around railroad crossings
DVRPC Projects – Pedestrian Safety and Accessibility; Safe Routes to School Program		

5.8 Increase Bicycle Safety

There were 3,636 crashes in the region involving bicyclists, representing 1.3% of total crashes in the years 2003 to 2005. There were 25 fatalities and 3,386 injuries resulting from these crashes, representing 1.7% and 2.1%, respectively, of the regional total for the three years.

Chart 17
Bicycle Crash Data



Source: NJDOT and PennDOT Crash Data

Chart 17 shows the trends in fatalities, crashes, and injuries involving bicyclists from 2003 to 2005. The number of fatalities jumped in 2004 by 71%, but fell in 2005 by 50%. Injuries followed the same trend as fatalities, though the changes were not as dramatic. Crashes decreased throughout the period with the most change between 2004 and 2005 of approximately 18%.

Table 10 below shows some of the programs in the region designed to increase bicycle safety.

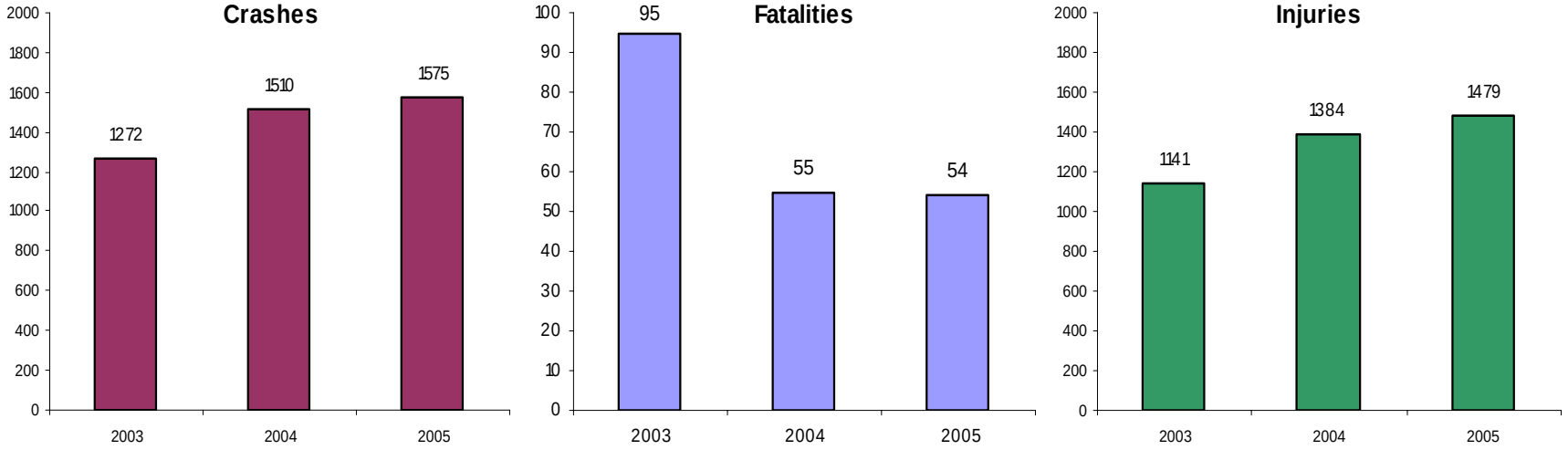
Table 10: Increase Bicycle Safety Projects/Programs

ENGINEERING	ENFORCEMENT	EDUCATION
SEPTA Buses equipped with bicycle racks.		SEPTA A tip sheet available on website for bicyclists Bike and Ride Safety tip brochure
Delaware County Work with planning partners to improve bicycle amenities on proposed and existing roads where feasible Signal replacement/improvement projects to include bicycle detection Encourage striped shoulders on re-surfaced roads where the ROW exists		The Bicycle Coalition of Greater Philadelphia Bicycle Education and Enhancement Program - Partnership with the School District of Greater Philadelphia to bring bicycle education into schools
Montgomery County Bicycle facilities will be provided on all new and reconstruction roadway projects		Mid Atlantic Foundation for Safety and Education Bike Safety Programs School Open Safety Campaign
Gloucester County Constructing county-owned bicycle trail		Brain Injury Association of NJ Bike Helmet Initiative *Kids on the Block* Program
Burlington County Use 6-inch edge lines in areas where shoulders provide the potential for bike lanes		

5.9 Increase Motorcycle Safety

There were 4,357 crashes involving motorcycles during the analysis period, 2003 to 2005. As a result, there were 204 fatalities and 4,004 injuries. The crash-to-injury ratio is very high, 10:9. The helmet law in Pennsylvania was repealed. The number of fatalities in the Pennsylvania portion of the region in 2004 and 2005 was more than twice that of New Jersey. While the number of crashes in New Jersey has been decreasing, Pennsylvania motorcycle crashes have be increasing.

Chart 18
Motorcycle Crash Data



Source: NJDOT and PennDOT Crash Data

Chart 18 shows the trends in fatalities, crashes, and injuries involving motorcycles for the years 2003 to 2005. This Emphasis Area is one of only two that had an increase in the number of crashes during the analysis period. The crashes rose 23%, with the number of injuries experiencing a similar increase. Fatalities dramatically decreased in 2004 with only a slight decrease of one fatality in 2005.

Table 11 below shows some of the programs in the region designed to increase motorcycle safety.

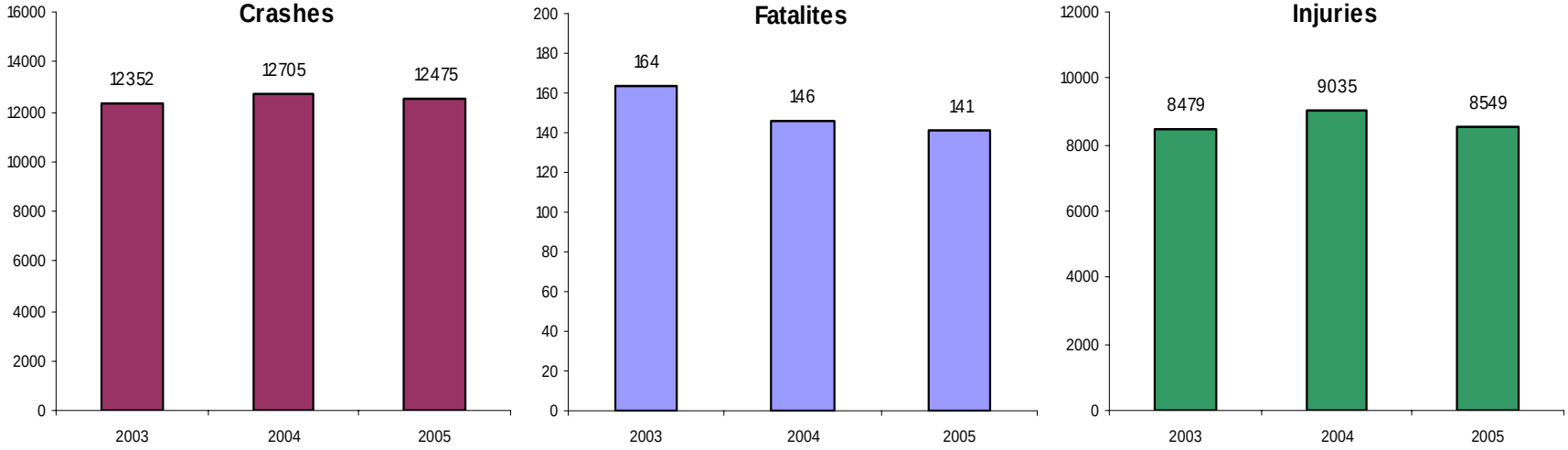
Table 11: Increase Motorcycle Safety Projects/Programs

ENGINEERING	ENFORCEMENT	EDUCATION
Delaware County Working with municipalities on several signal replacement projects that would bring signals up to current standards, which include motorcycle detection.		Mid-Atlantic Foundation for Safety and Education Motor Cycle Safety Program
Gloucester County Installing and enhancing county operated traffic signal systems that will better detect vehicles and motorcycles		PennDOT Motorcycle Safety Program

5.10 Keep Vehicles on the Roadway

Although crashes and injuries represented 14% and 16% respectively of the three year totals for 2003 to 2005, fatalities represented over 31% of the fatalities' total for the same period. 451 persons lost their lives from run-off-the-road crashes in the region and 26,063 persons were injured.

Chart 19
Run Off Road Crash Data



Source: NJDOT and PennDOT Crash Data

Chart 19 shows the trends in fatalities, crashes, and injuries for run-off-the-road vehicles from 2003 to 2005. The chart shows increases in 2004 for number of crashes and injuries with a corresponding decrease in 2005. Fatalities decreased over the three year period with an 11% decrease in 2004 and a more modest 3% decrease in 2005.

Table 12 below shows some of the programs in the region designed to prevent run-off-the-road crashes.

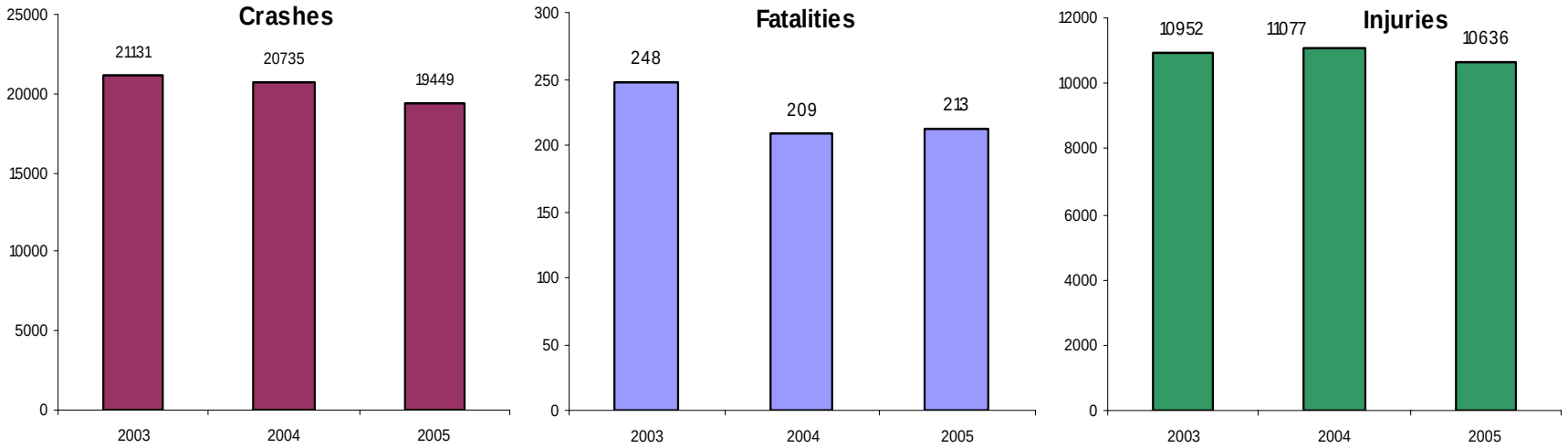
Table 12: Keep Vehicles on the Roadway Projects/Programs

ENGINEERING	ENGINEERING	EDUCATION
Mercer County Guide rail reviewed annually and end treatments are replaced with ET 2000 treatments as needed. Roadway segments are identified for re-surfacing on an annual basis	Burlington County System-wide approach - 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; and use of wet reflective striping to improve visibility	Delaware County Working with our municipalities to familiarize them with the concept of Traffic Calming
Delaware County Work with planning partners to encourage striped shoulders Conduct spot speed studies for concerns on speed limits		.
Gloucester County Developed a system-wide approach to install rumble strips; improve signage and delineation of curves; install traffic calming techniques as appropriate; improve/install guard rail and modern guard rail ends; install skid-resistant pavement as appropriate; improve shoulders Has a system-wide sign management program Improve/maintain roadway drainage as appropriate		
NJDOT Raised pavement markings program – installation of RPMs to improve visibility		

5.11 Minimize the Consequences of Leaving the Road

Hit Fixed Object crashes represented the second highest number of fatalities of the emphasis areas selected. There were 670 fatalities representing approximately 47% of the total fatalities for the period 2003 to 2005. There were 61,315 crashes with a resulting 32,665 injuries from hitting fixed objects. Crashes and injuries represented 22% and 20% respectively of their individual totals for the three year period.

Chart 20
Hit Fixed Objects Crash Data



Source: NJDOT and PennDOT Crash Data

Chart 20 shows the trends in fatalities, crashes, and injuries due to collision with a fixed object for the years of 2003 to 2005. Each showed a different trend: crashes progressively showed a decrease over the three years while injuries increased in 2004 and decreased in 2005 below the 2003 numbers; and fatalities decreased by 14% in 2004, but increased in 2005 by approximately 2%.

Table 13 below shows some of the programs in the region that minimizes the consequences of a driver leaving the road.

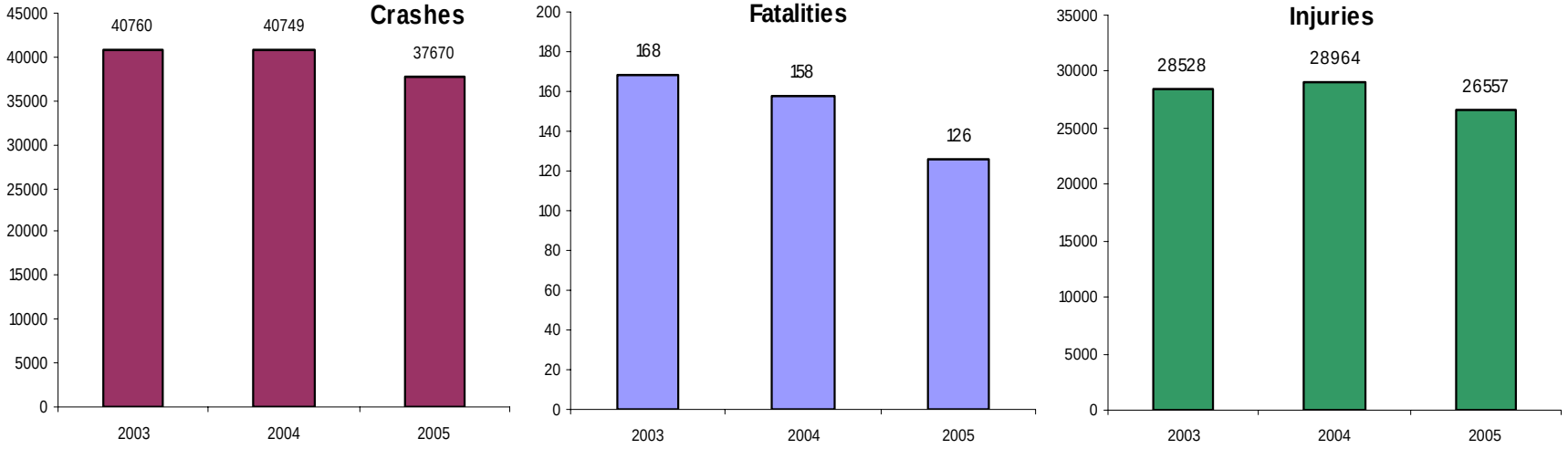
Table 13: Minimize the Consequences of Leaving the Road Projects/Programs

ENGINEERING	ENFORCEMENT	EDUCATION
NJDOT Roadway Departure/Fixed Object Safety Treatment Program – elimination of hazardous obstacles Statewide Median Cross-over Barrier Program – installation of median barriers along interstate highways		
Mercer County Adheres to standards that maintain clear area adjacent to the roadway. New development required to dedicate ROW to enable areas adjacent to roadway to remain free of obstacles		
Gloucester County Utilities are placed underground in many newer developments		

5.12 Improve the Design and Operation of Intersections

This emphasis area had the second highest number of crashes, 119,179, and the highest number of injuries, 84,049, in the region for the three years 2003 to 2005. There were 452 fatalities occurring due to intersection crashes representing 31% of the total number. Crashes and injuries were approximately 43% and 52% respectively.

Chart 21
Intersection Crash Data



Source: NJDOT and PennDOT Crash Data

Chart 21 shows the trends in fatalities, crashes, and injuries that occurred at intersections from 2003 to 2005. Crashes and fatalities showed progressive decrease over the analysis period, smaller decreases between 2003 and 2004, and larger decreases between 2004 and 2005 of 7% and 20% respectively. The numbers for injuries increased in 2004, but decreased in 2005.

Table 14 below shows some of the programs in the region that improve the design and operation of intersections.

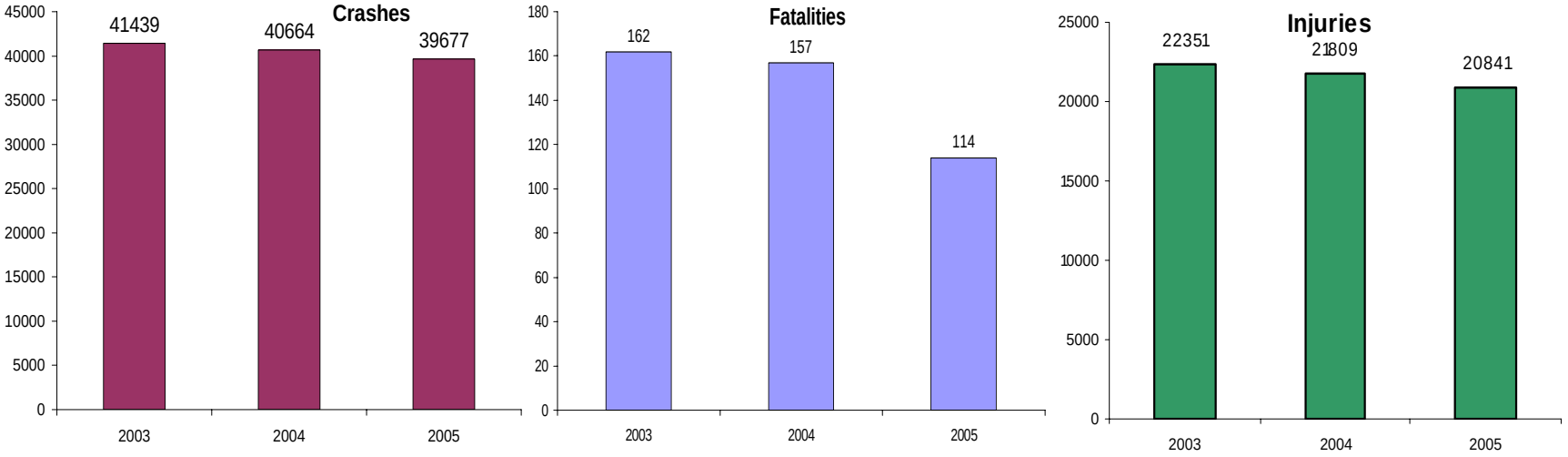
Table 14: Improve the Design and Operation of Intersections Projects/Programs

ENGINEERING	ENGINEERING	EDUCATION
SEPTA 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	Burlington County System-wide approach - 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; and use of wet reflective striping to improve visibility	NJDOT, PennDOT, SEPTA, NJ Transit Safety education for at-grade highway/rail grade crossings – Operation Life Saver
NJDOT Rail/highway grade crossing – upgrade crossings. Improve traffic flow, sign upgrades and safety education Intersection Improvement Program - Left Turn Crash Program Right Angle Crash Program identification of intersections with above average frequency of crashes, analysis and improvement recommendations	Gloucester County Planning 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	Delaware County Planning Promote the concept and benefits of roundabouts to municipalities
Mercer County Engineering 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; and outfit signals with OptiCOM system (signal preemption)	DVRPC Congestion and Crash Site Analysis Program Regional Roundabout Analysis Program	

5.13 Improve Safety on Local Roads

In New Jersey, roads are classified as state, county and local roads, whereas in Pennsylvania there are no county roads, only state and local. Therefore, in Pennsylvania the state owns and operates a larger portion of the road mileage than other states. This affects the crash data; many roadways in Pennsylvania that operate as local roads are not classified as such. Local roads showed the highest number of crashes in the region for the analysis period, 121,780. This represents approximately 44% of the total crashes for the three year period. Although the number of crashes are the highest, injuries are the third highest with approximately 40% and sixth highest in fatalities with 30%.

Chart 22
Local Road Crash Data



Source: NJDOT and PennDOT Crash Data

Chart 22 shows the trends in fatalities, crashes, and injuries that occurred on local roads from 2003 to 2005. The number of crashes and injuries decreased modestly over the three year period. Fatalities also decreased over the period with a 3% decrease between 2003 and 2004 and a higher rate of 27% between 2004 and 2005.

Table 15 below shows some of the programs in the region that improve the safety on local roads.

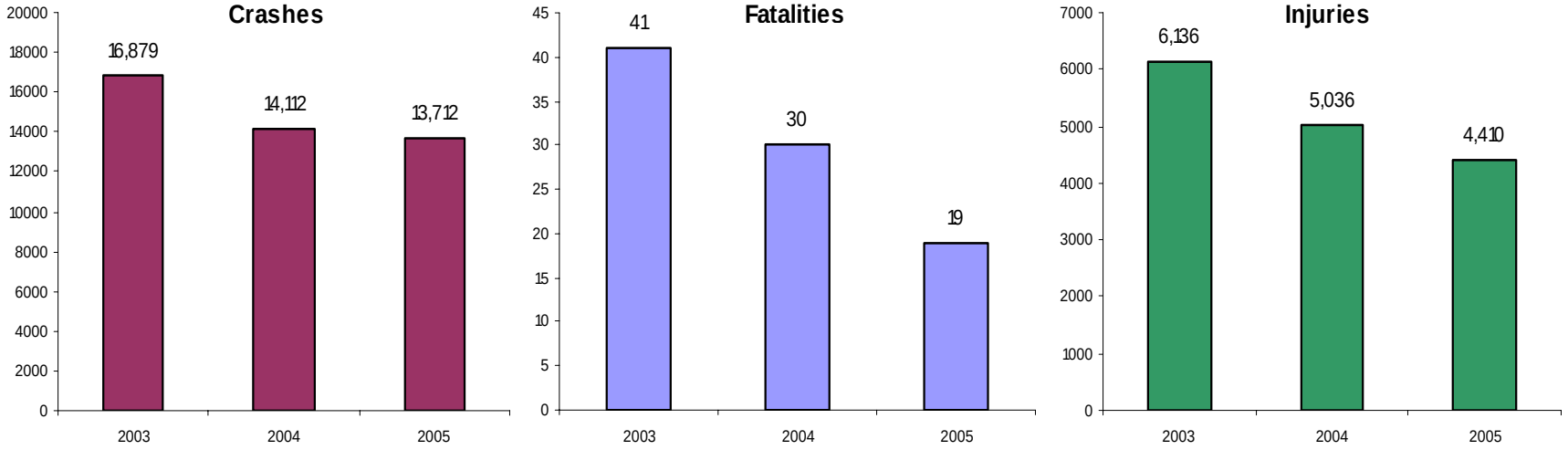
Table 15: Improve Safety on Local Roads Projects/Programs

ENGINEERING	ENFORCEMENT	EDUCATION
Delaware County Planning Conduct spot speed studies for municipalities. Work with planning partners on safety projects		Delaware County Planning Working with municipalities to - familiarize them with the concept of Traffic Calming; inform about access management and encourage them to employ these techniques with re-zoning; benefits of roundabouts
Burlington County System-wide approach - 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; and use of wet reflective striping to improve visibility		
DVRPC Congestion and Crash Site Analysis Program Regional Roundabout Analysis Program		
NJDOT Local Federal Safety Program – safety improvement program targeting local roads		

5.14 Promote Safer Driving on Inclement Road Surface

The crash data for this emphasis area is only for the New Jersey portion of the DVRPC region. Although the data was not available for the whole region, anecdotal evidence suggested that this is an issue throughout the region. As a result, of the 44,703 crashes recorded, there were 90 fatalities and 15,582 injuries for the three year period, 2003 – 2005. This represented 16% of the total regional crashes for the period, 6.2% of total fatalities and 9.7% of total injuries.

Chart 23
Inclement Road Surface Crashes



Source: NJDOT and PennDOT Crash Data

Chart 23 shows the trends in fatalities, crashes, and injuries that occurred on roadways with adverse road surface from 2003 to 2005. The chart shows a progressively decreasing trend in fatalities, crashes, and injuries over the three years. Between 2003 and 2005, crashes decreased 18%, fatalities showed a 53% decrease and injuries decreased 28%.

Table 16 identifies some current programs in the region that promote safer driving on inclement road surfaces.

Table 16: Promote Safer Driving on Inclement Road Surface Projects/Programs

ENGINEERING	ENFORCEMENT	EDUCATION
NJDOT Wet Surface Skid Crash Reduction Program - Identified and evaluated locations having high frequencies of excessively wet surface conditions and/or poor skid distance numbers for repaving Statewide installation of snow-plowable raised pavement markers		
Mercer County Engineering Undertaken a comprehensive program to install raised pavement markers		
Gloucester County Engineering Developed a schedule for plowing/salting and drainage maintenance County Highway Improvement Map – shows resurfacing schedule		
Burlington County System-wide approach - 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; and use of wet reflective striping to improve visibility		

6. PRIORITY EMPHASIS AREAS AND STRATEGIES BY DISCIPLINE

The priority emphasis areas and strategies were selected by the safety professionals and stakeholders of the Regional Safety Task Force. The selections were based on:

- Crash data – fatalities and crashes, trend analysis
- Cross-reference emphasis area data for impact
- Identified strategies for emphasis area by discipline
- Relative cost of identified strategies (high, medium, low)
- Effectiveness of identified strategies (unknown, uncertain, likely, proven)
- Time frame for implementation (short, medium, long)
- Regional crash data clusters

The priority emphasis areas and strategies will serve to focus efforts and resources. There are many diverse agencies and organizations currently operating safety programs in the DVRPC region. Those already identified with projects and programs are shown after each table. Other agencies/organizations whose contributions are also essential to the program are also noted.

6.1 ENGINEERING PRIORITY

Improve the Design and Operation of Intersections

Priority Strategies

Improve geometry of intersections
Improve sight distance and visibility (access signing and vegetation)
Provide and/or improve left- and right-turn lanes (adequate length, off-set)
Increase the use of protected left-turn signals as appropriate
Time signals (pedestrian countdown signals) to accommodate pedestrians

Minimize the Consequences of Leaving the Road

Priority Strategies

Improve/install guide rails, jersey barriers, modern guardrail ends
Improve utility pole placement, design, and technology
Improve and/or remove roadside hardware and natural objects
Widen/modify clear zones
Improve side slopes and/or remove ditches where appropriate

Keep Vehicles on the Roadway

Priority Strategies

- Improve shoulders - widening, paving
- Eliminate shoulder drop-offs
- Improve signage and delineation for curves and other changes in roadway alignment
- Improve/install guardrails, jersey barriers and modern guardrail ends
- Improve/maintain roadway drainage

Sustaining Proficiency in Older Drivers

Priority Strategies

- Utilize advance warning pavement markings
- Change font style and size of signage for better readability
- Design for night-time and inclement weather conditions
- Provide advance intersection signs, especially on higher speed roadways
- Provide adequate/efficient mobility alternatives

Improve Safety on Local Roads

Priority Strategies

- Add lighting where appropriate
- Initiate traffic calming techniques where appropriate
- Increase sign sizes and reflectivity
- Add signs where needed (advance warning, pedestrians, etc.)
- Install center line and edge line rumble strips

6.2 EDUCATION PRIORITY

Curb Aggressive Driving

Priority Strategies

- Highlight statutes in the vehicle code on aggressive driving
- Educate at the testing level on what constitutes aggressive driving
- Focus education efforts on specific demographic and community groups
- Institute media campaigns for programs such as *Smooth Operator*

Educate legislature, specifically transportation committee, on aggressive driving and their necessary support in helping to curb it

Reduce Impaired Driving

Priority Strategies

Participate in national campaigns (i.e., "You Drink, You Drive, You Lose")
Allow additional funding for prevention programs
Create a group of community volunteer drivers for impaired drivers
Promote the use of Designated Drivers in general
Use “fatal vision” goggles as educational tool in schools
Partner with stores to ID OTC medications that cause impairment as well as prescription drugs
Establish effective ways to educate bus and/or truck drivers on drowsy driving
Conduct education and awareness campaigns targeting drowsy driving
Work with employers to increase awareness
Promote alternative transportation (like transit)

Increase Driver Safety Awareness

Priority Strategies

Establish a catchy, simple campaign slogan
Provide safety awareness information in all forms of media (newsletters, TV, PSAs, videos, radio)
Promote safety at various events and community venues
Develop targeted education campaign on speeding
Remind drivers of common distractions

Increase Pedestrian Safety

Priority Strategies

Market pedestrian safety resources to township officials
Establish a Walkability checklist for local governments
Improve understanding of rules of the road
Educate, train and market resources to contractors, legislators and municipalities
Encourage safer driving habits near and around pedestrian traffic

Improve Young Driver Safety

Priority Strategies

Educate parents on the best type of vehicle for young, inexperienced drivers
Require longer hours of actual driving on the road before getting a license
Support standard Driver Education in high schools
Target Colleges (18-24 age group) for safe driving education
Evaluate deficiency of the younger driver (cognitive brain development)

Increase Seatbelt Usage/Occupant Restraint

Priority Strategies

Conduct highly publicized enforcement campaigns with Click It or Ticket program
Coordinate the efforts and resources of agencies to have more impact
Establish a catchy, simple campaign slogan

6.3 ENFORCEMENT PRIORITY

Curb Aggressive Driving

Priority Strategies

Target Enforcement to specific behaviors and locations
Legislate for use of automated systems (red-light and speeding cameras)
Highly publicize enforcement using saturation patrols and other displays of enforcement
Enabling legislation and/or policy for use of radar in speed enforcement
Develop a system that identifies problem drivers based on variable repeat violations

Reduce Impaired Driving

Priority Strategies

Increase sobriety checkpoints
Use targeted enforcement methods such as Saturation Patrols
Eliminate plea-bargaining and loopholes in prosecution
Enforce and publicize zero tolerance laws for underage drivers
Require responsible beverage service policies
Enhance enforcement of commercial motor vehicle hours-of-service regulations (including transit)
Enact or revise laws on distracted and drowsy driving

Increase Driver Safety Awareness

Priority Strategies

Properly educate on various violations during enforcement
Enforce existing statutes on cell-phone use while driving
Increase publicity of enforcement
Establish penalties that would influence safer behavior

Increase Seatbelt/Occupant Restraint Usage

Priority Strategies

Conduct highly publicized enforcement campaigns - Click It or Ticket
Institute seatbelt usage as a primary law in PA (lack of appropriate law becomes a barrier to use - "if important, there would be a law")
Establish checkpoints near schools (coordinate with DOE)
Public tends to go to local law enforcement for info on child restraint – better education of and/or access to these staff
Improve Belt Use Legislation to cover all ages, seat positions and vehicles

Improve the Design and Operation of Intersections

Priority Strategies

Use of red-light-running cameras for detection
Targeted enforcement of specific problem intersections
Implement photo radar
Monitor travel speeds on approaches

6.4 EMERGENCY MEDICAL SERVICES PRIORITY

Legislation/Policy

Priority Strategies

Establish standard practices for the collection of EMS data
Coordinated emergency response between neighboring municipalities
Increase funding for equipment, training, and staffing
Develop new policy for insurance coverage of the related costs of emergency services
Establish and facilitate development of more regional resources and/or cooperatives

Engineering

Priority Strategies

Install mile markers on roadways as appropriate
Implement various levels of signal preemption
Increase the use of Closed Circuit TV (CCTV)
Increase usage of GIS/GPS technologies in locating crash scenes and tracking responder units/equipment
Improve "wireless automatic location" capabilities. This technology is being implemented by act of Congress (E911 Act, 2004)

Enforcement

Priority Strategies

Establish “move-it” laws that encourage or even require drivers to move their vehicles out of the roadway if involved in a non-injury crash
Establish Quick Clearance Law in New Jersey (already in place in PA)
Establish law requiring motorists, when traffic conditions allow, to merge their vehicle into the left lane of traffic on multiple lane roads when emergency personnel is present at the right side of the road. If unable to merge to the left, or if on a two-lane road, slow down.
Establish law requiring motorists to move over or slow down when EMS responders approach

Education

Priority Strategies

Develop EMS training vocational track alternative for high school and community college students
Ensure highest level training and performance standards for emergency responders
Educate the public on crash scene safe practices, i.e.:" Bystander Care" training programs
Include principles of injury prevention and traffic safety as part of EMS continuing education

6.5 PUBLIC FUNDING SOURCES

SAFETEA-LU has authorized more funding with greater flexibility for safety projects and programs.

The following are some of the Federal Highway Administration (FHWA) managed programs:

- The Highway Safety Improvement Program (HSIP)

    - High Risk Rural Roads Program
- Local Federal Safety Program – New Jersey
- The Highway-Railway Crossings Program
- The Safe Routes To School Program
- Roadway Safety Improvements for Older Drivers and Pedestrians
    - No specific funding provided, “such sum” authorized for FY05-09.
- Work Zone Safety Grants - $5 million per year solicited and awarded nationally.

The following are some of the National Highway Safety Administration (NHTSA) managed programs:

- Highway Safety Programs (402)
- Occupant Protection Incentive Grants
- Safety Belt Performance Grants
- State Traffic Safety Information System Improvements
- Alcohol Impaired Driving Countermeasures Incentive Grant Program
- Motorcyclist Safety
- Child Safety and Child Booster Seat Safety Incentive Grants
- Racial Profiling (Section 1906)
- Open Container Transfer Program (Section 154)
- Repeat Offender Transfer Program (Section 164)

Others are:

- Low Cost Safety Program – Pennsylvania

Additionally, there are other types of resources that can be utilized in the region to accomplish the goals of the plan.

6.6 CHALLENGES TO IMPLEMENTATION

Table 17: Challenges to Implementation

ENGINEERING	ENFORCEMENT	EDUCATION	FUNDING
• **Competing Priorities** - Need to elevate safety concerns in appropriate agencies • **Environmental Sensitivities** - ROW Acquisition - Historical Properties - Utility pole issues • **Data** - Inconsistency in data collection - Need for standardized analysis method - Lack of local data • **Training** - Practitioners - Medium to share and exchange experience • **Regional Coordination** - Political jurisdictions - Lack of communication across boundaries • **Funding and Other Resources** - Limited funding - Getting funding and other resources to local jurisdictions - Lack of manpower at the local level	• **Data** - Data needed to properly enforce • Analysis • Target location • Automated enforcement - effectiveness • **Grants/Funding** - Cumbersome application process - Lack of Grant Writing training - Limited available funds • **Coordination** - Needed between jurisdiction - Needed between engineers and law enforcement - Court system – plea bargaining on offense • **Communication** - Ongoing communication between agencies - Need for equitable distribution on information on safety opportunities • **Education** - Lack of standardized driver education in schools - Engage law enforcement in school curriculum • **Legislation** - Necessary to be effective - Existing law needs to be modified to appropriately address the issues	• **Data** - Target programs - profiling • **Legislation** - Necessary to be effective - Existing needs modification to address issues • **Education/Training** - Lack of standardized driver education in school - Difficult for available service to get into schools - Manpower limitations - Public reluctance to accept • **Communication/Outreach** - Limited resources - Unable to get primetime media spots - Lack of Safety Advocates - Coordination - Need to be more aggressive in marketing • **Coordination** - Varying emphasis - Exchange/share program information between agencies - Control • **Funding** - Grant writing abilities of smaller organization - Cumbersome process for the application of available grants - Limited grants available	• **Programming** - Obligation limitation - Competition from other types of projects - Identifying viable projects • **Constraints** - Local match may be required - Data requirement • **Grant Application Process** - Restrictive - Difficult to navigate - Bureaucratic • **Coordination** - Existing resources, tools, and expertise • **Funds** - Limited - Lack of consistent source - Strings attached to private funding - Lack of programs paying for themselves • **Legislation/Policy** - Modify existing laws/policies to allow effective use of safety funds - Elevate safety concerns/projects - Dedication of new funding for safety

7. IMPLEMENTATION

The success of the Regional Safety Action Plan, reducing traffic-related fatalities and injuries in the DVRPC region, depends on the cooperation of all relevant federal, state, county and local agencies as well as all other safety stakeholders. As identified, resources are limited, therefore there needs to be increased coordination to impact region-wide issues. Successful coordination requires an open process where there is exchange/sharing between agencies.

7.1 Engineering Actions for Identified Priority Strategies

Safety should be established in the region as a priority in the implementation of engineering strategies. Additionally, these priority areas should be the basis on which projects for the Low Cost Safety Program (PA) and the Local Federal Safety Program (NJ) are chosen. DVRPC's Planning Work Program projects and program, built on regional consensus – e.g., Road Safety Audit Program (RSA), Congestion and Crash Site Analysis Program (CCSAP) – that addresses the priority areas, should be allowed to feed the pipeline.

- Continue to work with the state DOTs and law enforcement to improve all crash data
- Engage utility companies, environmental agencies, developers and other relevant groups/agencies to formulate solutions to identified barriers
- Educate legislature on transportation safety issues and consequences and elevate safety projects and program
- Through coordinated efforts of federal, state and local agencies work to remove barriers to get safety resources to address local roads safety issues (expansion of Local Federal Safety Program-NJ, technical assistance)
- Establish methods to evaluate level of importance of congestion versus safety for project selection process
- Establish policy to employ design standards from the Older Drivers Handbook as appropriate
- Coordinate with Local Technical Assistance Program (LTAP) and Transportation Safety Resource Center (TSRC) on training programs for practitioners on new and innovative strategies for addressing safety issues
- Coordinate with LTAP and TSRC to provide outreach to municipalities on transportation safety
- Develop a mechanism for engineers to share experiences and seek technical assistance (e.g. web-board)
- Develop quantitative methods to identify and prioritize safety deficiencies at intersections
- Establish a rate-based crash criteria for use in prioritizing intersections with deficiencies.
- Develop consistent policy for the application of improved signage, raised pavement markers and rumble strips
- Install and maintain improved signage, raised pavement markers, and centerline and edge line rumble strips region-wide

Lead Agencies
PennDOT District 6, PennDOT BHTSE, NJDOT, County Engineer and Planning Departments, LTAP, TSRC, DVRPC

Other Agencies
DRPA, Municipalities – engineers, planners, elected officials, Public Works Departments, Utility Companies, Construction Community, PA Historic and Museum Commission, New Jersey Historical Preservation Office, Environmental Protection Agency, Members of Legislature, Developers, AARP, County Offices on Aging, AAA, TMAs, Insurance Companies, Bicycle Community, NJ Transit, SEPTA, PATCO, Other Mobility Alternatives Providers

7.2 Education Actions for Identified Priority Strategies

There are a large number of organizations in the Delaware Valley devoted to highway traffic safety education with many innovative programs. Many of these organizations/agencies have come to the table, and therefore the programs are known, but there are others doing good work in the safety arena that have not yet been identified. The success of an education program towards reducing fatalities in the region will depend on an open process where organizations can share experiences and resources. Coordinating resources among agencies to expand the scope of public information and education campaigns is integral to the overall success. Additionally, considering the strong correlation of the priority emphasis areas of education and those for enforcement, law enforcement personnel should be engaged in the advancement of actions as appropriate.

- Improve and provide data to support targeted demographic when addressing specific safety issues
- Educate legislators and other elected officials on the issues and importance of transportation safety and the need for additional funding to address safety.
- Nurture old partnerships while seeking new ones to educate and inform the public on safety issues.
- Evaluate existing education outreach programs and develop a model community outreach program
- Engage State Departments of Motor Vehicle and other relevant stakeholders in updating Drivers Manual and Defensive Driving Programs to include an Aggressive Driving component.
- Engage State Departments of Education, County School Superintendents, School Boards, and other stakeholders on young driver education.
- In coordination with State Departments of Education, County School Superintendents, School Boards, State Departments of Motor Vehicle, Law Enforcement and other stakeholders, develop a standardized driver safety curriculum for schools.
- Develop a program to promote effective Defensive Driving Programs and expand as necessary

- Expand existing programs and seek ways to make it available to wider audiences (e.g., *Survival 101 Program*, *Smarter Driver Safer Streets*)
- Evaluate and improve where necessary existing walk-ability checklists for application to regional roads, and market to communities

Lead Agencies
NJDHTS, PennDOT BHTSE, State Departments of Education, County Highway Safety Task Force, NHTSA, County Public Safety Office, County Sheriff's Offices, County Planning Department, State Departments of Motor Vehicle, DVRPC

Other Agencies
NJDOT, State and Local Police, Local Engineers and Planners, DRPA, Members of Legislature, Media, AARP, County Offices on Aging, AAA, TMAs, Insurance Companies, Bicycle Community, NJ Transit, SEPTA, PATCO, Other Mobility Alternatives Providers, SAFEKIDS, CHOP, Brain Injury Association of NJ, Community Groups, Medical Community

7.3 Enforcement Actions for Identified Priority Strategies
The strong correlation of the priority emphasis of enforcement and those for education suggests the importance of education in law enforcement and the driving public to make a difference on safety issues. According to NHTSA, high visibility enforcement (HVE), "enforcement themed" public information or well publicized intensive enforcement works best, e.g. "Click it or Ticket" campaign. The media and other education facilitators should be utilized in the advancement of relevant law enforcement actions.

- Improve and provide the data for use in targeted enforcement
- Develop a mechanism through which law enforcement officers can be informed of opportunities that support national and statewide safety enforcement campaigns.
- Develop a mechanism for communications among law enforcement officers throughout the region on safety issues
- Develop a mechanism for the communication between law enforcement officers and other safety professionals
- Coordinate with LTAP and TSRC to provide training for police officers. (Data collection and analyses, Drug Recognition Expert, Grant writing)
- Educate the judiciary system on the negative effects of plea bargaining on overall roadway safety offenses
- Engage elected officials and law enforcement on the issue of municipal police and radar use in Pennsylvania in an attempt to avert speeding on regional roadways

- Engage the appropriate stakeholders to evaluate current procedures for Sobriety Checkpoints in order to streamline the process and increase the number and frequency of Sobriety Checkpoints in the region.
- Evaluate the data on the effectiveness of automated enforcement techniques in an effort to utilize them in the region
- Coordinate the law enforcement efforts across jurisdiction boundaries to deter out-of-state drivers who violate local laws with minimal repercussions
- Streamline the use of the Justice Network (J-Net) for identifying repeat offenders

Lead Agencies
NJDHTS, PennDOT BHTSE, State Motor Vehicle Departments, State and Local Police, County Prosecutor's Office, County Sheriff's Offices, County Highway Safety Task Force, County Public Safety Office, NHTSA, PA DUI

Other Agencies
DVRPC, NJDOT, PennDOT, DRPA, Municipalities, Members of Legislature, AARP, County Offices on Aging, AAA, TMAs, Insurance Companies, Bicycle Community, NJ Transit, SEPTA, PATCO, Other Mobility Alternatives Providers, Community Groups, Colleges

7.4 Emergency Medical Services Actions for Identified Priority Strategies

Strategies for Emergency Medical Services require coordination with the many stakeholders of other disciplines – engineering, enforcement, and education. DVRPC's Intelligent Transportation Systems (ITS) program and its Incident Management Task Forces (IMTF) have been working on several of these identified priority strategies. The goals of this program as stated in the Long Range Plan are – "*Implement an infrastructure to monitor traffic and transit networks, identify incidents as soon as possible, trigger an appropriate response and notify the traveling public… Because traffic congestion does not recognize jurisdictional boundaries a secondary goal of ITS is to establish institutional relationships that will allow different types of transportation agencies to coordinate their operations with each other and with non-transportation organizations like police and fire departments."* The Regional ITS Architecture establishes the framework for information sharing by identifying the interagency linkages and information flows that will be built into the region's ITS network. In order not to duplicate efforts and make best use of limited resources, the Regional Safety Task Force should partner with the Incident Management Task Forces in addressing these issues.

The following are actions identified in the Long Range Plan that are relevant to identified priority areas:

- *Deploy basis field devices including closed-circuit television (CCTV) cameras, variable message signs (VMS) and traffic flow detectors*
- *Implement fiber-optic communications networks to link field devices to operation centers*
- *Establish operation centers at all major transportation organizations: operate 24/7*
- *Deploy emergency service patrol vehicles to assist motorists*
- *Utilize incident management task forces to improve incident management coordination*
- *Establish incident management response teams to coordinate a department of transportation's response to incidents*
- *Execute the Regional Integrated Multi-modal Information Sharing (RIMIS) information exchange network*
- *Fund ITS maintenance and operations through the Transportation Improvement Program*

Additional actions to address priority strategies:

- Coordinate with the state Departments of Health to standardize the collection of EMS data
- Engage the relevant stakeholders in an effort to coordinate emergency response between neighboring municipalities and facilitate the development of regional resources.
- Coordinate with state DOTs, counties and municipalities to develop policy and a program to install mile markers on public roads
- Develop and institute protocol for the installation of signal preemption for various levels of roadway
- Based on protocol, install signal preemption for emergency vehicles
- Increase the use of GIS/GPS technologies in locating crash scenes and tracking responder units/equipment
- Engage the legislators and other elected officials to enact appropriate legislation to facilitate strategy implementation (e.g., Quick Clearance and Move It Laws)
- Develop EMS training vocational track alternative for high school and community college students
- Ensure highest level training and performance standards for emergency responders, including principles of injury prevention and traffic safety as part of EMS training
- Evaluate the appropriateness and use of existing technology for the communication of Traffic Operations Centers and Emergency Medical Service vehicles with hospital emergency rooms and trauma centers.

Lead Agencies

DVRPC, NJDOT, PennDOT, DRPA, State and Local Police, Fire Departments, State Departments of Health, County Engineers and Planners, County Prosecutor's Office, County Public Safety Office, County Emergency Services Office

Other Agencies
County Sheriff's Offices, County Highway Safety Task Forces, Municipalities, Members of Legislature, County Offices on Aging, Insurance Companies, State Departments of Motor Vehicle, Departments of Education, Local Boards of Education, Medical Community

7.5 Funding Actions
Funding streams for traffic safety are limited. In addition to seeking additional funds, actions should also be taken to maximize the benefits of existing funds and other resources through coordination and collaboration.
Many available funds are restrictive in how they can be used and safety has not always been a priority in the programming of projects. As a result of this fundamental flaw and the cumbersome application process for these funds, every year large sums of safety money are left on the table. Therefore it is imperative that a concerted effort be made to address this issue.

- Improve and make available crash data to support funding applications to address problem areas
- Establish safety as a priority in the region in order to program HSIP funds
- Modify existing laws/policies to allow effective use of safety funds
- Establish consistent sources of funding for safety projects and programs
- Identify non-public sources of funding for transportation safety
- Identify safety projects and programs that will pay for themselves
- Engage legislators and other elected officials to dedicate new funds to address transportation safety
- Use the DVRPC's Planning Work Program projects and programs (e.g., RSA, CCSAP) to feed the HSIP and Local Federal Safety Program-NJ pipelines
- Develop an open data-driven process in the application and awarding of grants

Lead Agencies
DVRPC, NJDOT, NJDHTS, PennDOT

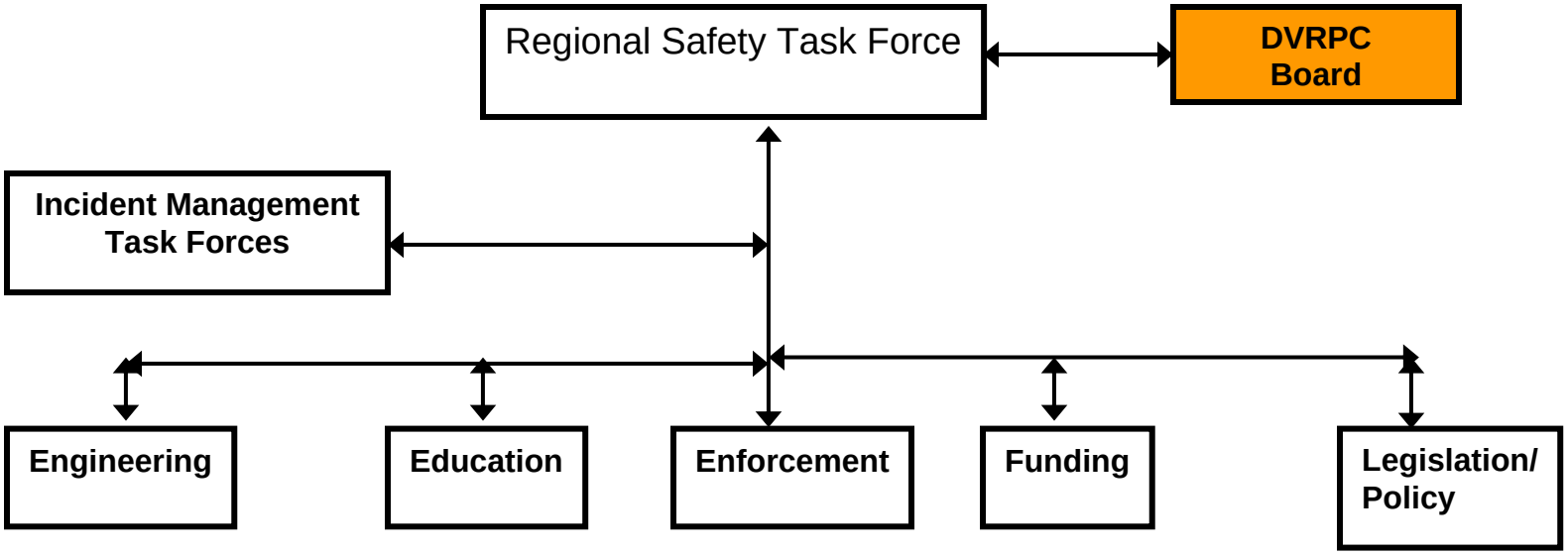
Other Agencies
Counties, Municipalities, Members of Legislature, AARP, AAA, Insurance Companies

7.6 Structure

The Regional Safety Task Force members will be instrumental in the implementation of the plan and address the identified actions as appropriate. The task force will assist in the implementation of local and regional safety efforts and will guide, coordinate and monitor regional safety efforts, as well as elevate the importance of transportation safety in the region. It will continue to provide a forum for safety stakeholders to discuss the safety of the transportation system and regional safety priority. The subcommittees established at the beginning of the plan development process will continue with the main focus of efforts on implementation. A legislation/policy subcommittee will be created to address those issues. Emergency Medical Services strategies and actions will be accomplished in coordination with the Incident Management Task Forces in the DVRPC region and other subcommittees.

Given the role of the Regional Safety Task Force in influencing transportation safety within our region, this Action Plan recommends that the Task Force be made an official standing committee of the Delaware Valley Regional Planning Commission reporting directly to its Board.

Figure 5: Implementation Structure



Source: DVRPC, 2007

8. PERFORMANCE MEASURES

Evaluation of the Regional Safety Action Plan will be closely tied to the performance indicators established in *Destination 2030*, DVRPC Long Range Plan. To measure the impact of the plan in reaching and surpassing the goal as set (to reduce fatalities, injuries and crashes on the region's roadways) several process actions will be evaluated.

Some of these measures are, but not limited to, the following:

- Increased coordination across jurisdictional boundaries
- Improved regional crash data
- Increased training efforts in transportation safety
- Successful engagement of state legislatures and other elected officials on transportation safety issues
- Increased local technical assistance
- Increased safety funding especially to local jurisdictions
- Increased engagement of group/agencies that affect transportation safety
- Improved compliance of MUTCD standards for signage region-wide
- Increased use of raised pavement markers
- Increased use of centerline and edgeline rumble strips
- Increased communication among safety stakeholders
- Increased community outreach on transportation safety issues
- Expanded Defensive Driving Program
- Increased use of a standardized driver safety curriculum for schools.
- Increased use of walk-ability checklists in regional communities
- Increased seatbelt/occupant restraint use
- Increased number of law enforcement agencies participating in national and statewide safety enforcement campaigns.
- Increased number and frequency of Sobriety Checkpoints.
- Increased use of automated enforcement techniques
- Increased conviction rate of DWI offenders
- Increased road miles with mile markers
- Increased use of Closed Circuit TV (CCTV) for incident detection
- Increased usage of GIS/GPS technologies in locating crash scenes and tracking responder units/equipment
- Enactment of "quick clearance" and "move it" laws as appropriate
- Enhancement of existing laws (e.g. Seatbelt laws)

Coordination, collaboration and open communication between agencies at all levels and other safety stakeholders are keys to the successful implementation of this plan and effectively reducing fatalities, injuries and crashes on the region's roadways.

This plan is dynamic and, as success is achieved in current priority areas or other areas rise to the top, the plan will be modified to reflect the change.

APPENDIX A

ACTION MATRIX

EFFORT	ACTION	DISCIPLINE	LEAD
Training	• Coordinate with Local Technical Assistance Program (LTAP) and Transportation Safety Resource Center (TSRC) on training programs for practitioners on new and innovative strategies for addressing safety issues	Engineering	DVRPC/DOTs
	• Coordinate with LTAP and TSRC to provide training for police officers. (Data collection and analyses, Drug Recognition Expert, Grant writing)	Enforcement	DVRPC/NJDHTS/ BHTSE
	• Develop EMS training vocational track alternative for high school and community college students	EMS	DOE
	• Ensure highest level training and performance standards for emergency responders, including principles of injury prevention and traffic safety as part of EMS training	EMS	DOE/DOH
Communication	• Develop a mechanism for engineers to share experiences and seek technical assistance (e.g. web-board)	Engineering	FHWA/DOTs/ DVRPC
	• Develop a mechanism through which law enforcement officers can be informed of opportunities that support national and statewide safety enforcement campaigns.	Enforcement	BHTSE/NJDHTS
	• Develop a mechanism for communications among law enforcement officers throughout the region on safety issues	Enforcement	BHTSE/NJDHTS
	• Develop a mechanism for the communication between law enforcement officers and other safety professionals	All	DVRPC
	• Develop an open data-driven process in the application and awarding of grants	All	BHTSE/NJDHTS
Outreach	• Coordinate with LTAP and TSRC to provide outreach to municipalities on transportation safety	All	DVRPC/DOTs/ Counties
	• Nurture old partnerships while seeking new ones to educate and inform the public on safety issues.	Education	FHWA/DOTs/ DVRPC
	• Evaluate existing education outreach programs and develop a model community outreach program	Education	RSTF

	• Expand existing programs and seek ways to make it available to wider audiences (e.g., *Survival 101 Program*, *Smarter Driver Safer Streets*) • Evaluate and improve where necessary existing walk-ability checklists for application to regional roads, and market to communities • Educate the judiciary system on the negative effects of plea bargaining on overall roadway safety offenses	Education Education; Engineering Enforcement	BHTSE/NJDHTS DVRPC Legislators
Coordination	• Continue to work with the state DOTs and law enforcement to improve all crash data • Improve and provide data to support targeted demographic when addressing specific safety issues • Engage State Departments of Motor Vehicle and other relevant stakeholders in updating Drivers Manual and Defensive Driving Programs to include an Aggressive Driving component. • Engage State Departments of Education, County School Superintendents, School Boards, and other stakeholders on young driver education. • In coordination with State Departments of Education, County School Superintendents, School Boards, State Departments of Motor Vehicle, Law Enforcement and other stakeholders, develop a standardized driver safety curriculum for schools. • Improve and provide the data for use in targeted enforcement • Coordinate the law enforcement efforts across jurisdiction boundaries to deter out-of-state drivers who violate local laws with minimal repercussions • Utilize incident management task forces to improve incident management coordination • Establish incident management response teams to coordinate a department of transportation's response to incidents	All All Education Education Education Enforcement Enforcement EMS EMS	DOTs DOTs DOTs DOE DOE DOE/Law Enforcement Law Enforcement IMTF IMTF

	• Coordinate with the state Departments of Health to standardize the collection of EMS data • Engage the relevant stakeholders in an effort to coordinate emergency response between neighboring municipalities and facilitate the development of regional resources. • Improve and make available crash data to support funding applications to address problem areas	EMS EMS ALL	DOTs/DOE DOH/IMTF DOTs
Research	• Establish methods to evaluate level of importance of congestion versus safety for project selection process • Develop quantitative methods to identify and prioritize safety deficiencies at intersections • Establish a rate-based crash criteria for use in prioritizing intersections with deficiencies. • Develop a program to promote effective Defensive Driving Programs and expand as necessary • Evaluate the data on the effectiveness of automated enforcement techniques in an effort to utilize them in the region • Evaluate the appropriateness and use of existing technology for the communication of Traffic Operations Centers and Emergency Medical Service vehicles with hospital emergency rooms and trauma centers. • Identify non-public sources of funding for transportation safety • Identify safety projects and programs that will pay for themselves • Develop an open data-driven process in the application and awarding of grants	Engineering Engineering Engineering Education Education EMS All All All	FHWA/DOTs DVRPC DOTs/DVRPC FHWA/DOTs DVRPC MVC DOT/DVRPC/ Law Enforcement IMTF/DOTs/DOH RSTF RSTF DOTs/NJDHTS/ DVRPC
Policy	• Through coordinated efforts of federal, state and local agencies, work to remove barriers to get safety resources to address local roads safety issues (expansion of Local Federal Safety Program-NJ, technical assistance) • Establish policy to employ design standards from the	Engineering Engineering	FHWA/DOTs DVRPC DOTs

	Older Drivers Handbook as appropriate • Develop consistent policy for the application of improved signage, raised pavement markers and rumble strips • Engage the appropriate stakeholders to evaluate current procedures for Sobriety Checkpoints in order to streamline the process and increase the number and frequency of Sobriety Checkpoints in the region. • Streamline the use of the Justice Network (J-Net) for identifying repeat offenders • Coordinate with state DOTs, counties and municipalities to develop policy and a program to install mile markers on public roads • Develop and institute protocol for the installation of signal preemption for various levels of roadway • Establish safety as a priority in the region in order to program HSIP funds	Engineering Enforcement Enforcement EMS EMS Engineering	DOTs/Counties Law Enforcement Law Enforcement DOTs/IMTF DOTs DVRPC/DOTs/ Counties/FHWA
Legislation	• Educate legislature on transportation safety issues and consequences, and elevate safety projects and programs • Educate legislators and other elected officials on the issues and importance of transportation safety and the need for additional funding to address safety. • Engage elected officials and law enforcement on the issue of municipal police and radar use in Pennsylvania in an attempt to avert speeding on regional roadways • Engage the legislators and other elected officials to enact appropriate legislation to facilitate strategy implementation (e.g., Quick Clearance and Move It Laws) • Modify existing laws/policies to allow effective use of safety funds • Engage legislators and other elected officials to dedicate new funds to address transportation safety	All All Enforcement All Engineering All	RSTF RSTF RSTF RSTF RSTF RSTF
Physical	• Install and maintain improved signage, raised pavement markers, and centerline and edge line rumble strips region-wide	Engineering	DOTs/Counties/ Municipalities

	• Deploy basic field devices including closed-circuit television (CCTV) cameras, variable message signs (VMS) and traffic flow detectors • Implement fiber-optic communications networks to link field devices to operation centers • Establish operation centers at all major transportation organizations: operate 24/7 • Deploy emergency service patrol vehicles to assist motorists • Execute the Regional Integrated Multi-modal Information Sharing (RIMIS) information exchange network • Based on protocol, install signal preemption for emergency vehicles • Increase the use of GIS/GPS technologies in locating crash scenes and tracking responder units/equipment • Use the DVRPC's Planning Work Program projects and programs (e.g., RSA, CCSAP) to feed the HSIP and Local Federal Safety Program-NJ pipelines	EMS EMS EMS EMS EMS EMS EMS Engineering	DVRPC/DOTs/ Counties DVRPC/DOTs/ Counties DOTs/DVRPC DOTs DVRPC DOTs DOTs DVRPC/DOTs
Funding	• Fund ITS maintenance and operations through the Transportation Improvement Program • Establish consistent sources of funding for safety projects and programs	EMS; Engineering All	DVRPC FHWA/RSTF

APPENDIX B

Identified Engineering Strategies

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Sustain Proficiency in Older Drivers	Provide adequate lighting at intersections, curves, and RR-crossings	Moderate to High	Medium		
	Provide advance intersection signs especially on higher speed roadways	Low	Short		
	Utilized centerline and edge-line rumble strips	Low	Short		
	Utilize advance warning pavement markings	Low	Short		
	Design for night-time and inclement weather conditions				
	Provide adequate/efficient mobility alternatives	Low	Medium		
	Change font style and size of signage for better readability	Low	Short		
	Install Louvers on median barriers to prevent glare as appropriate				
	Adhere to AASHTO “Green Book” standards				
	Change signal intervals to provide for all-red clearance and protected left turns	Low	Short		
	Offset left turn lanes	Moderate to High	Medium		
	Reduce skewed intersections	Moderate to High	Medium		
	Improve signs and pavement markings according to the Older Drivers Handbook	Low	Short		
	Improve traffic control in work zones	Low	Medium		
	Provide adequate efficient mobility alternatives	Low	Medium		
	Improve roadway Delineation	Low	Short		

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Curb Aggressive Driving	Optimize traffic signals	Moderate to High	Medium		
	Adjust exit lanes to/from highways as appropriate	Moderate to High	Medium		
	Adjust lane and ramp width as appropriate	Moderate to High	Medium		
	Utilize context sensitive design solutions	Moderate to High	Medium		
	Initiate traffic calming techniques where appropriate	Moderate to High	Medium		
	Install yield instead of stop signs on local roads where appropriate	Moderate to High	Medium		
	Install red light running cameras and speed cameras	Moderate to High	Medium	Medium	Proven
	Add behavioral warning signs	Moderate to High	Medium		
	Add international signage for immigration	Low	Short		
	Use ITS technology to better inform motorists of delays	Moderate to High	Medium		
	Broaden efforts to understand and improve driving conditions that cause aggressive driving behavior	Moderate to High	Medium		

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Improve Young Drivers Safety	Develop a more efficient method in collecting, displaying and sharing safety data				
	Install better signage (similar for older drivers)				
	Install “Black Boxes” in vehicles				

Identified Engineering Strategies

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Reduce Impaired Driving	Increase use of rumble strips and median barriers	Low	Short		
	Construct wider paved shoulders				
	Reduce shoulder hazards (slopes, poles)				
	Improve intersection approaches using warning lights and rumble strips as appropriate	Low	Short		
	Provide enhanced in-lane and shoulder delineation	Low	Short		
	Improve rest areas through increased safety and security				

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Increase Seatbelt Usage	Develop a more efficient method in collecting, displaying and sharing crash data				
	Conduct pre and post surveys at locations for targeted enforcement				

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Increase Pedestrian Safety	Improve pavement markings and signs	Low	Short		
	Street closures for pedestrian use	Moderate to High	Medium		
	Install midblock and intersection crosswalks where appropriate and safe	Moderate to High	Medium		
	Improve traffic signal cycle timing for pedestrians crossing	Low	Short		
	Eliminate low spots on sidewalks				
	Improve intersection crossings to comply with ADA requirements	Moderate to High	Medium		
	Eliminate parking and other clutter at or near intersections to improve pedestrian visibility	Low	Short		
	Use bollards and posts in areas where traffic often encroaches on walkways				
	Provide sidewalks/walkways, curb ramps especially at intersections	Moderate to High	Medium		
	Increase driver awareness through use of pedestrian signals, signs and flags				
	Install pedestrian light activated crosswalks where appropriate				
	Install pedestrian activation button with traffic signals				
	Locate or relocate bus stops on far side of intersections				
	Construct pedestrian over/underpasses	High	Long		
	Install motion sensors at intersection				
	Install lighting and audio sensors for handicapped				
	Install refuge islands where appropriate at street crossing locations	Moderate to High	Medium		
	Add street lighting where appropriate	Moderate to High	Medium		
	Improve pedestrian access in and around schools	Low	Short		
	Initiate traffic calming techniques where appropriate	Moderate	Medium		
	Increase use of "No Turn on Red" at appropriate intersections for pedestrian safety	Low	Short		
	Install truncated domes and use color pavement for crosswalks.	Moderate to High	Medium		
	Establish policy for use in local ordinances establishing provisions for crosswalks				

Identified Engineering Strategies

Increase Driver Safety Awareness	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
	Increase use of centerline and edge line rumble strips	Low	Short		
	Improve lighting where appropriate	Moderate to High	Medium		
	Install appropriate warning and international signage	Low	Short		
	Install raised pavement markers as appropriate	Low	Short		
	Utilize the pavement dot treatment				
	Install interactive truck rollover signing				
	Provide enhanced in-lane and shoulder delineation	Low	Short		

Promote Safer Driving on Inclement Road Surface	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
	Develop routine schedule for plowing/salting of roadways. Ensure adequate drainage is provided.				
	Institute a repaving program for potholes				
	Utilize skid resistant pavement and processes				
	Establish data oriented resurfacing program				

Keep Vehicles on the Roadway	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
	Improve/maintain roadway drainage	Moderate	Medium		
	Re-evaluate speed limits for suitability for roadway and driver behavior				
	Improve sub-standard curves – super-elevation	High	Long		
	Install clear striping in work zones				
	Install properly sized width of rumble strips for center lines	Low	Short		
	Improve shoulders - widening, paving	Moderate to High	Medium		
	Develop a system wide approach for installing rumble strips				
	Install skid resistant pavement where appropriate	Moderate	Medium		
	Improve/install guardrails, jerseybarriers and modern guardrail ends	Moderate to High	Medium		
	Initiate traffic calming techniques where appropriate				
	Eliminate Shoulder Drop-offs	Low	Medium		
	Widen lane widths	Moderate to High	Medium		
	Develop a maintenance program for signs				
	Ensure adequate lighting				
	Improve signage and delineation for curves and other changes in roadway alignment	Low	Short		
	Provide adequate sight distance	Low	Short		
	Install automated anti-icing systems				
	Establish more consistent roadway design standard				
	Develop a road resurfacing and restriping program				
	Develop policy for vehicles and potential speeds				

Identified Engineering Strategies

Minimize the Consequences of Leaving the Road	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
	Relocate utilities underground	High	Long		
	Improve/install guardrails, jerseybarriers, modern guardrail ends	Moderate to High	Medium		
	Improve utility pole placement, design, and technology	Low	Medium		
	Improve side slope and/or remove ditches where appropriate	Moderate to High	Medium		
	Improve delineation of roadside objects	Low	Short		
	Widen/modify clear zones	Moderate to High	Medium		
	Improve and /or remove roadside hardware and natural objects	Low	Short		
	Implement vegetation removal and mowing control guidelines	Low	Short		
	Adhere to AASHTO standards for roadside standards				

Increase Motorcycle Safety	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
	Improve pavement conditions (rutting)				
	Install or enhance traffic signal detection				

Improve Safety on Local Roads	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
	Evaluate the need to change posted speed limits				
	Establish and/or enhance access management control standards				
	Develop unified safety standards for local roads				
	Add lighting where appropriate				
	Develop a more efficient method in collecting, displaying and sharing safety data				
	Initiate traffic calming techniques where appropriate				
	Consider the installation of roundabouts at intersections as appropriate				
	Design and improve vertical sight lines, horizontal displacement				
	Increase sign sizes and reflectivity				
	Install center line and edge line rumble strips	Low	Short		
	Improve pavement markings	Low	Short		
	Designate appropriate locations for bus pull-outs				
	Establish and design passing zones/no passing zones	Moderate	Medium		
	Add signs were needed (advance warning, pedestrians, etc)	Low	Short		
	Provide center two-way left-turn lanes for four- and two-lane roads	Moderate to High	Short		
	Reallocate total two-lane roadway width (lane and shoulder) to include a narrow "buffer median"	Low	Medium		

Identified Engineering Strategies

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Increase Safer Safety	Design for bicycles on existing roadway (increasing shoulder widths, or bike lanes)				
	Designate bicycle routes (dangerous routes for bicyclist vs. safer ones)				
	Retrofit storm water grates to make them bike friendly				
	Incorporate the planning of bicycle facilities in the development of future roadway projects				
	Equip signalized intersection with bicycle detection where appropriate (bike paths)				

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Improve the Design and Operation of Intersections	Install red light running cameras and/or video detection at key intersections	Moderate	Medium		
	Install lead sign for signalized intersection	Low	Short		
	Employ emergency vehicle signal preemption	Moderate	Medium		
	Add and maintain pavement markings	Low	Short		
	Increase the size of the signal head and use of backplates as appropriate				
	Install rumble strips on approaches especially on high speed roadways	Low	Short		
	Improve sight distance and visibility (access signing and vegetation)	Low	Short		
	Increase the use of protected left turn signals as appropriate	Moderate	Short		
	Improve stop sign visibility (multiple signs, flashing signals)	Low	Short		
	Provide supplemental pavement markings (Stop Ahead)	Low	Short		
	Convert two-way streets to one-way pair where appropriate	High	Long		
	Provide and/or Improve left and right turn lanes (adequate length, off-set)	Moderate to High	Medium		
	Improve geometry of intersections	Moderate to High	Medium		
	Time signals (ped count down signals) to accommodate pedestrians	Low	Short		
	Install or provide additional safety amenities for pedestrians (bump outs, refuge islands, crosswalks)				
	Construct pedestrian over/underpasses where feasible	High	Long		
	Provide acceleration deceleration lanes for right and left turns onto and off of highway	Moderate	Long		
	Relocate transit stops on the far side of intersections				
	Employ coordinated signaling and queue detection to control traffic flow	Low	Short		
	Consider installation of roundabouts where appropriate	High	Long		
	Increase use of "No Right Turn On Red" signs	Low	Short		
	Remove unwarranted signals and remove excess signs	Low	Short		
	Delineate medians and turning paths	Low	Short		
	Widen shoulders	Medium	moderate		
	Employ the use of limited visibility warning signals/signs where appropriate				
	Establish better access management control techniques for properties at or close to the intersection	Low	Short		

Identified Education Strategies

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Sustain Proficiency in Older Drivers	Outreach and education at senior communities, clubs, and specialty events, hospitals, etc.	Moderate	Medium		
	Distribute educational materials with drivers license renewal				
	Provide information in all forms of media (newsletters, TV, videos, radio)				
	Insurance companies and HMO newsletters				
	Increase seatbelt use through targeted education	Low	Short		
	Encourage seniors not to drive during certain hours (night and pre-dawn)				
	Establish mandatory driving retesting and driver history update	Moderate	Medium		
	Establish and reinforce driver skills and health issues programs through employers	Moderate	Medium		
	Develop random retesting programs for all ages including seniors				
	Require mandatory driving skill testing on renewal of license	Moderate	Medium	Medium	
	Establish policy to re-evaluate for licensing with classroom training and re-testing including reaction time	Moderate	Medium		
	Establish coalition to address older adults specific needs	Low	Medium		

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Improve Young Driver Safety	Educate parents on the type of vehicle for young, inexperienced drivers				
	Evaluate deficiency of the younger driver (cognitive brain development)				
	Target Colleges (18-24 age group) for safe driving education				
	Encourage safe driving habits with incentives				
	Encourage police and parents to model safe driving behavior				
	Educate young drivers on the privileges of the established graduated licensing program	Low	Short	Medium	Varies
	Promote programs that assist parents in driver education (I.e., Checkpoints, Driving Skills for Life, Road Ready Teens)				
	Promote various statewide targeted young driver safety programs				
	Require mandatory driver's ed program on weekend, in order to drive to school				
	Require longer hours of actual driving on the road before getting a license	Low	Medium	High	Proven
	Require mandatory comprehensive re-testing before issuing regular licenses	High	Long	Low	
	Provide effective ways to disseminate educational material for safe driving behavior (mobile workshop, website, etc)	High	Long		Ineffective
	Standard Driver Education	High	Long		Ineffective
	Post License or advanced drivers education	High	Long	Low	

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Improve Safety on Local Roads	Target educational efforts with large group of bicyclists				
	Encourage and educate drivers to share the road with all users				
	Educate and encourage bicyclists to use bicycle helmets				

Identified Education Strategies

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Reduce Impaired Driving	**Drinking Alcohol**				
	Hand-out flyers in bars				
	Create a group of community volunteer drivers for impaired drivers	Medium	Short	Unknown	
	Create seniors volunteer group to drive during Prom season				
	Promote the use of Designated Drivers in general	Low	Short	Medium	
	Non-Vehicle entities to affect drinking and driving – Affect attitude, behavior modification - promotion				
	Use “fatal vision” goggles as educational tool in schools				
	Establish a catchy simple campaign slogan(s)				
	Publicize enforcement in general				
	Increase intervention at medical facilities for alcohol abuse	Medium	short	Medium	Proven
	Participate in national campaigns (i.e. "You Drink, You Drive, You Lose")	High	Medium	High	Proven
	Promote Youth Programs such as SADD	Varies	Medium	High	Uncertain
	Promote Responsible Beverage Service	Medium	Medium	Medium	Likely
	Promote Youth Programs such as SADD				
	Over-the-Counter Drugs				
	Partner with stores to educate patrons on the dangers of “Huffing”				
	Partner with stores to ID over the counter medication, which cause impairment				
	Drowsiness				
	Encourage seniors not to drive during certain hours (night and pre-dawn)				
	Advertise medication that cause drowsiness where ever sold				
	Establish effective ways to educate bus and or truck drivers on drowsy driving				
	Conduct education and awareness campaigns targeting drowsy driving	Medium	Medium		
	Work with employers to increase awareness	Low	Short		

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Improve Motorcycle Safety	Increase driver education programs about motorcyclist awareness	Varies	Medium		
	Partner with motorcycle dealers to educate motorcyclists on safe use of the road				
	Provide insurance incentives for safer behavior				
	Provide safety education through riding clubs				
	Promote the need for motorcycle helmet law to legislators				
	Provide motorcycle safety training courses	Medium	medium	High	Uncertain
	Educate riders DUI problems specific to them	Medium	medium		
	Encourage Helmet use through outreach campaigns	Varies	medium	Low	

Identified Education Strategies

Increase Driver Safety Awareness	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
	Develop targeted education campaign on speeding				
	Create marketing homepage for safer cell phone use				
	Distribute vehicle safety info at service centers				
	Establish a catchy simple campaign slogan				
	Violation – education during enforcement				
	Remind drivers of common distractions	Medium	Medium		
	Publicize share the road information through print and electronic media	Medium	Medium		
	Provide safety awareness information in all forms of media (newsletters, TV, PSA's, videos, radio)	Medium	Medium		
	Promote safety at various events and community venues	Medium	Medium		
	Establish education campaign on sharing the road with large commercial vehicles (trucks and buses)				

Increase Seat Belt Usage/Occupant Restraint	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
	Coordinate the efforts and resources of agencies to have more impact	Low	Short		
	Publicize the use and impact of child safety restraints	Moderate	Medium		
	Network through county system for child safety seat fitting stations	Low	Short		
	Offer child seat safety checks and training	Low	Short		
	Establish a catchy simple campaign slogan				
	Collaborate with Schools and Employers for focused education	Varies	Varies		Proven
	Target education to low-use groups	Low	Short		
	Conduct highly publicized enforcement campaigns with Click It or Ticket program	High	Medium	Medium	Proven

Promote Safer Driving on Inclement Road Surface	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
	Use VMS signs to make motorist aware				
	Use all forms of media to inform the public (PSA, radio, cell phones, TV)				
	Utilize GIS application of status of roadway conditions				

Increase Bicycle Safety	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
	Provide more safe routes to school initiatives				
	Establish bicycle/pedestrian safety program in schools				
	Promote bicycle-transit safety in and around transit facilities				
	Establish effective marketing of share-the-road				
	Educate through signs and stickers				
	Integrate bicycle safety training in driver training				
	Provide incentives for wearing helmet				
	Establish policy for use in local ordinances for safer bicycle travel awareness				

Identified Education Strategies

Increase Pedestrian Safety	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
	Improve understanding of rules of the road	Moderate	Short		
	Educate on the proper use in midblock crossings	Low	Short		
	Develop educational program highlighting use of safer pedestrian travel	Moderate	Short		
	Utilize simulations models for specific groups of people				
	Educate, train and market resources to contractors, legislators and municipalities	Moderate	Short		
	Develop interactive and fun educational kid programs	Moderate	Short		
	Encourage safer driving habits near and around pedestrian traffic	Moderate	Short		
	Market pedestrian safety resources to municipal officials	Low	Short		
	Establish a Walkability checklist for local governments				

Minimize the Consequences of Leaving the Road	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
	Form partnerships with insurance companies and Dept of Motor Vehicles				
	Establish a catchy simple campaign slogan to educate motorists on keeping alert				
	Educate legislature and residents on the relocation potential of utility poles				

Curb Aggressive Driving	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
	Highlight statutes in the vehicle code on aggressive driving		Short		
	Focus education efforts on specific demographic and community groups	Medium	Short	Medium	Likely
	Educate at the testing level on what constitutes aggressive driving	Medium	Short	Medium	Likely
	Educate the public whenever there is changes to statutes	Medium	Short	Medium	Likely
	Educate safety professionals to understand and improve driving environments which lead to aggression				
	Educate on state sponsored programs	Medium	Short		
	Broaden efforts to understand and improve driving conditions that cause aggressive driving behavior				
	Institute media campaigns for programs such as Smooth Operator	Medium	Short	Medium	Likely
	Educate Legislature on aggressive driving and their necessary support in helping to curb it				
	Get the legislators at the table – members of Transportation Committee				

Improve the Design and Operation of Intersections	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
	Develop a campaign on new pedestrian signal heads and proper use				
	Educate proper/safe use of 4-way stops, roundabouts				
	Provide public information and education on specific intersections	Low	Short		

Identified Enforcement Strategies

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Curb Aggressive Driving	Deduct points for excessive speeding and hold mandatory dept hearing	Low	Medium	High	Proven
	Encourage law enforcement to penalize – high fines				
	Address behavior in ways other than ticketing (warning, signs, classroom training)	Low	Medium		
	Education should come before Enforcement – law	Low	Medium		
	Enforcement in a different manner; more of an objective standpoint	Low	Medium		
	Formulate variable means for reporting aggressive driving				
	Target Enforcement to specific behaviors and locations	Low	Short		
	Develop a system that identifies problem drivers based on variable repeat violations	Low	Medium	Low	Unknown
	Highly publicize enforcement using saturation patrols and other displays of enforcement	High	Medium	Low	Uncertain
	Enabling legislation and/or policy for use of radar in speed enforcement				
	Legislation to impound vehicles of drivers with suspended license				
	Legislate for use of automated systems (red-light and speeding cameras)	High	Medium	Medium	Proven
	Revise laws to stiffen penalties and target repeat offenders	Low	Short	Low	Unknown

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Keep Vehicles on the Roadway	Stricter enforcement to minimize driver distractions (sign clutter, cell phone use, etc)				
	Increase the penalty of use of cell phones while driving from a secondary to primary offense				

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Improve Safety on Local Roads	Continue to enforce Seat belt usage				
	Target specific areas for enforcement using data				
	Establish a more effective way to enforce statute for sharing the road				
	Increase enforcement of bike helmet law				

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Improve the Design and Operation of Intersections	Monitor travel speeds on approaches				
	Targeted enforcement of specific problem intersections	Medium	Short		
	Implement photo radar				
	Use of red light running cameras for detection	Moderate	Medium		

Identified Enforcement Strategies

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Reduce Impaired Driving	**Drinking Alcohol**				
	Automated enforcement to deal with the magnitude of the problem				
	Enforce and publicize zero tolerance laws for underage drivers	Medium	Short	Unknown	Likely
	Increase use of technology in enforcement of impaired drivers				
	Increase sobriety checkpoints	High	Short	Medium	Proven
	Use data to determine location of checkpoints without profiling				
	Eliminate plea-bargaining and loopholes in prosecution	Low	Short	Medium	Proven
	Use Passive Alcohol Sensors	Medium	Short	Unknown	Proven
	Increase use of ignition interlocks	Medium	Medium	Medium	Proven
	Establish stronger penalties for BAC test refusal	Low	Short	Unknown	Proven
	Lower BAC limit for repeat offenders	Low	short	Low	Uncertain
	Imposes stricter sanctions for High-BAC level	Low	short	Medium	Uncertain
	Require responsible beverage service policies	Medium	Medium	Medium	Likely
	Increase state excise tax on beer and use increased revenues to fund alcohol treatment and enforcement				
	Legislation to allow beer collar, impound vehicle and revoke license	Varies	short	Medium	Varies
	Introduce legislation for lower BAC for the young driver age group	Medium	Short	Unknown	Likely
	Introduce legislation to revoke license of second time offenders				
	Increase monitoring of offenders (probation, treatment, intensive supervision)	High	Medium	Unknown	Proven
	License plate revocation and vehicle immobilization	Varies	short	Medium	Varies
	Suspend licenses upon arrest - Automatic License Revocation	High	Medium	High	Proven
	Drug/alcohol Courts	High	Medium	Low	Likely
	Increase screening for problem drinkers during judicial/sentencing phase	Varies	Varies	High	Proven
	Implement Court Monitoring Programs to promote consistency and accountability	Low	Short	Unknown	Proven
	Use targeted enforcement methods such as Saturation Patrols	Medium	Short	high	Proven
	Over-the-Counter Drugs				
	Train and hire drug recognition experts for police departments				
	Use dummy systems				
	ID OC medication and encourage enabling legislation to regulate the sale of OC medication that causes impairment				
	Drowsiness				
	Encourage reporting by medical personnel and citizens of medical conditions	Variable	Medium	Unknown	unknown
	Enhance enforcement of commercial motor vehicle hours-of-service regulations (including transit)				
	Enact or revise laws on distracted and drowsy driving	Varies	Varies	short	Unknown
	Establish a way to test for drowsiness				

Identified Enforcement Strategies

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Increase Seatbelt Usage/Occupant Restraint	Public tend to go to local law enforcement for info on child restraint				
	Train law enforcement to check for and install proper child restraints	Medium	Short		
	Establish checkpoints near schools (coordinate with DOE)				
	Conduct pre and post surveys at locations for targeted enforcement				
	Hire and train coordinators for CPS				
	Conduct highly publicized enforcement campaigns - Click It or Ticket	High	Medium	Medium	Proven
	Target Enforcement at specific locations and times of day	High	Medium	Unknown	Likely
	Increase belt use law penalties				
	Institute seatbelt usage as a primary law in PA	Low	short	Medium	Proven
	Regulate animal restraints when traveling as passenger in automobile				
	Require animal-restraints for large animals while driving				
	Increase the age for booster seats and or child passenger seat				
	Improve Belt Use Legislation to cover all ages, seat positions and vehicles	Low	short	Unknown	Medium
	Instutue Local Primary Seatbelt Use law	Low	short	Low	Likely
	Develop policy requiring animal-restraints for large animals while driving				

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Increase Pedestrian Safety	Increase enforcement of pedestrian right-of-way				

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Increase Bicycle Safety	Promote law enforcement video of bicyclists as best practice				
	Enforce current bicycle laws				
	Stricter enforcement of bicyclist roadway violations				
	Create a share-the-road enforcement campaign				
	Develop helmet laws				

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Increase Motorcycle Safety	Use video detection in enforcement				
	Stricter enforcement of existing motorcycle helmet law	Low	Medium	Unknown	Unknown
	Enforce DUI issues specific to Motorcyclists	Varies	Varies	Unknown	Unknown
	Strict enforcement of licensing	Low	medium	High	Uncertain
	Improve legislation/policies that address DUI issues specific to motorcyclists	Varies	Varies	Unknown	Unknown
	Establish a law for mandatory use of motorcycle helmets	Low	short	medium	Proven

Identified Enforcement Strategies

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Sustain Proficiency in Older Drivers	Equip law enforcement with the capability to measure proficiency in elderly				
	Publicize enforcement of existing laws such as seat belt use	Varies	Varies	Medium	Likely
	Form partnerships with police and insurance companies to recommend any driver for re-testing	Moderate	Medium	Low	Proven
	Make mandatory for physicians to report impaired seniors	Low	Medium		
	Allow ophthalmologists to notify state	Low	Medium		
	Make recertification mandatory for all drivers every 5 years	Moderate	Medium	High	Proven
	Enabling legislation and enforcement for physicians and citizens (relatives) to report impaired seniors	Low	Medium	Low	Proven
	Develop random retesting programs for all ages including seniors				
	Establish Graduated De-licensing Programs (time or area restrictions)	Low	Short	Unknown	Likely
	Establish or Improve Medical Licensing Boards	varies	Medium	Hugh	Unknown
	Allow ophthalmologists to notify state on senior diminished capacity to drive	Low	Medium		

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Minimize the Consequences of Leaving the Road	Strict enforcement of law and maintenance governing placement of objects in ROW				

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Increase Driver Safety Awareness	Properly educate various violations during enforcement				
	Participate in national programs such as "Click it or Ticket it" and "Smooth Operator"				
	Enforce existing statutes on cellphone use while driving	Varies	Short	Low	Uncertain
	Increase publicity of enforcement				
	Establish penalties that would influence safer behavior				

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Improve Young Driver Safety	Target enforcement around schools				
	Strictly enforce existing graduated licensing program and zero tolerance laws	Medium	short	Unknown	likely
	Ensure adequate graduated licensing program	Medium	Long	High	Proven

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Promote Safer Driving on Inclement Road Surface	Improve radar technology for more efficient use in inclement weather				
	Develop better coordination between police officers and the court system (offense and penalty)				
	Consider banning certain vehicles on roads during hazardous conditions				

Identified EMS Strategies

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Legislation/Policy	Coordinated emergency response between neighboring municipalities				
	Develop model response plans				
	Increase funding for equipment, training, and staffing				
	Develop new policy for insurance coverage of the related costs of emergency services				
	Establish programs to use nonEMS employees as first-responders, i.e.: law enforcement, park rangers, highway work crews				
	Develop policy for integrating EMS support into hospital programs				
	Establish and facilitate development of more regional resources and/or cooperatives				
	Develop policy to integrate EMS systems into "Safe Communities" effort				
	Establish standard practices for the collection of EMS data				
	Increase government responsibility in oversight and control				
	Establish personnel exchange programs between agencies to foster EMS education				
	Establish training and performance standards for emergency responders				

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Engineering	Implement various levels of signal pre-emption				
	Increase usage of GIS/GPS technologies in locating crash scenes and tracking responder units/equipment				
	Increase the use of Closed Circuit TV (CCTV)				
	Evaluate usage and effectiveness of Automated Collision Notification Systems				
	Incorporate access points for EMS vehicles through highway sound walls				
	Integrate communication systems that operate over jurisdictional boundaries				
	Improve "wireless automatic location" capabilities. Being implemented by act of Congress (E911 Act, 2004)				

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Enforcement	Establish “move-it” laws that require drivers to move their vehicles out of the roadway if involved in a non-injury crash				
	Establish Quick Clearance Law in New Jersey (already in place in PA)				
	Establish law requiring motorists to merge into far lane when emergency personnel are present at the side of the road.				
	Establish law requiring motorists to move over or slow down when EMS responders approach				

	Strategies	Relative Cost	Time Frame*	Use	Effectiveness
Education	Educate the public on crash scene safe practices, i.e.:" Bystander Care" training programs				
	Ensure highest level training and performance standards for emergency responders				
	Develop EMS training vocational track alternative for high school students				
	Include principles of injury prevention and traffic safety as part of EMS continuing education				

*Time Frame: Short (<1 year), Medium (1-2 years), Long (>2 years)

Sources:"Countermeasures That Work: A Highway Safety Countermeasures Guide for State Highway Safety Offices"-USDOT,NHTSA-Jan 2006; NCHRP 17-18(3) and NCHRP Report 500

APPENDIX C

Cross-referencing the Impacts of the Identified Emphasis Areas for the NJ Region 2004

	Aggressive		Young Drivers		Older Drivers		Alcohol Related		No Seat Belt		Pedestrian		Bicycle		Motorcycle		Ran Off Road		Hit Fixed Object		Intersection		Local Roads		Inclnt. Wthr.	
Total	13,828		10,536		6,586		2,031		2,167		770		469		521		4,609		11,000		21,686		29,124		10,188	
Aggressive			33%	3,494	31%	2,026	23%	457	30%	641	11%	85	9%	41	19%	97	33%	1,502	31%	3,421	32%	6,965	27%	7,820	34%	3,462
Young Drivers	25%	3,494			N/A	0	15%	305	23%	507	9%	73	9%	44	12%	65	21%	989	20%	2,235	22%	4,686	22%	6,317	22%	2,241
Older Drivers	15%	2,026	N/A	N/A			4%	82	12%	250	5%	38	2%	10	7%	37	3%	126	3%	360	15%	3,173	12%	3,638	10%	1,028
Impaired Driving	3%	457	3%	305	1%	82			15%	332	8%	61	1%	5	6%	29	9%	405	9%	986	4%	765	4%	1,232	3%	299
No Seat Belt	5%	641	5%	507	4%	250	16%	332			N/A	N/A	N/A	N/A	N/A	N/A	6%	299	6%	700	4%	851	4%	1,190	3%	346
Pedestrian	1%	85	1%	73	1%	38	3%	61	N/A	N/A			N/A	N/A	2%	8	<1%	7	<1%	24	2%	336	2%	518	1%	99
Bicycle	<1%	41	<1%	44	<1%	10	<1%	5	N/A	N/A	N/A	N/A			<1%	1	<1%	1	<1%	6	1%	303	1%	385	<1%	35
Motorcycle	1%	97	1%	65	1%	37	1%	29	N/A	N/A	1%	8	<1%	1			1%	53	1%	134	1%	221	1%	320	<1%	10
Ran Off Road	11%	1,502	9%	989	2%	126	20%	405	14%	299	1%	7	<1%	1	10%	53			37%	4,040	5%	987	8%	2,462	14%	1,423
Hit Fixed Object	25%	3,421	21%	2,235	5%	360	49%	986	32%	700	3%	24	1%	6	26%	134	N/A	N/A			3%	729	19%	5,569	30%	3,093
Intersection	50%	6,965	44%	4,686	48%	3,173	38%	765	39%	851	44%	336	65%	303	42%	221	21%	987	7%	729			51%	14,997	39%	4,023
Local Roads	57%	7,820	60%	6,317	55%	3,638	61%	1,232	55%	1,190	67%	518	82%	385	61%	320	53%	2,462	51%	5,569	69%	14,997			52%	5,289
Inclnt Wthr	25%	3,462	21%	2,241	16%	1,028	15%	299	16%	346	13%	99	7%	35	2%	10	31%	1,423	28%	3,093	19%	4,023	18%	5,289		

Source: NJDOT 2004 Crash Data

Emphasis Areas Ranked By Fatalities and Crashes

Rank	Emphasis Areas	2001 Fatalities	2002 Fatalities	2003 Fatalities	2004 Fatalities	Average Fatalities '01-'04	Rank	Emphasis Areas	2001 Crashes	2003 Crashes	Average Crashes '01 & '03
1	Aggressive Driving	250	227	256	227	240	1	Intersection	39,190	40,758	39,974
2	Hit Fixed Object	228	178	231	192	207	2	Local Road	38,094	41,440	39,767
3	Seatbelt Non-Use**	191	170	168	147	169	3	Aggressive Driving	36,089	37,107	36,598
4	Intersection	178	142	168	158	162	4	Driver Inattention	23,014	24,554	23,784
5	Local Road	164	153	162	157	159	5	Hit Fixed Object	17,041	20,419	18,730
6	Roadway Departure	151	146	164	146	152	6	Inclement Road Surface***	10,559	16,879	13,719
7	Impaired Driving	134	112	151	123	130	7	Young Drivers*	12,597	13,423	13,010
8	Senior Drivers	108	85	103	91	97	8	Senior Drivers	12,405	11,767	12,086
9	Pedestrian	78	85	92	75	83	9	Roadway Departure	9,228	12,353	10,791
10	Motorcyclist	50	44	95	55	61	10	Impaired Driving	5,408	5,426	5,417
11	Young Drivers*	49	37	54	38	45	11	Pedestrian	3,681	3,705	3,693
12	Driver Inattention	44	42	32	47	41	12	Seat Belt Non-use**	2,956	2,447	2,702
13	Inclement Road Surface***	35	33	41	30	35	13	Motorcyclist	1,209	3,330	2,270
14	Bicyclist	12	12	7	12	11	14	Bicyclist	1,306	1,290	1,298
	Regional Total	530	475	519	465	497		Regional Total	87,427	94,365	90,896

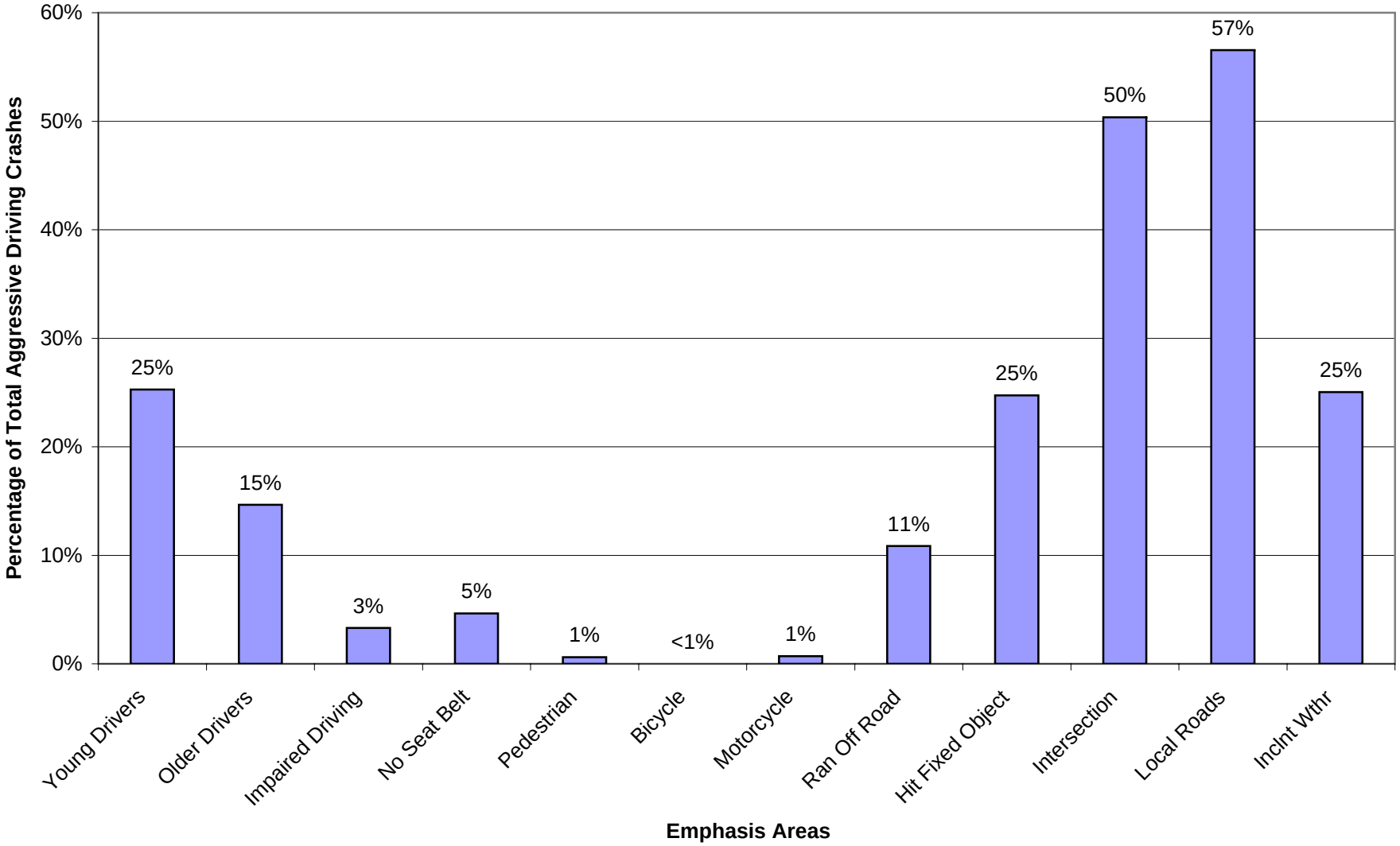
Source: NJDOT and PennDOT Crash Data

*young drivers defined differently in NJ(16-20yrs) and PA(16-17yrs)

**crash data NJ only - fatalities for NJ and PA

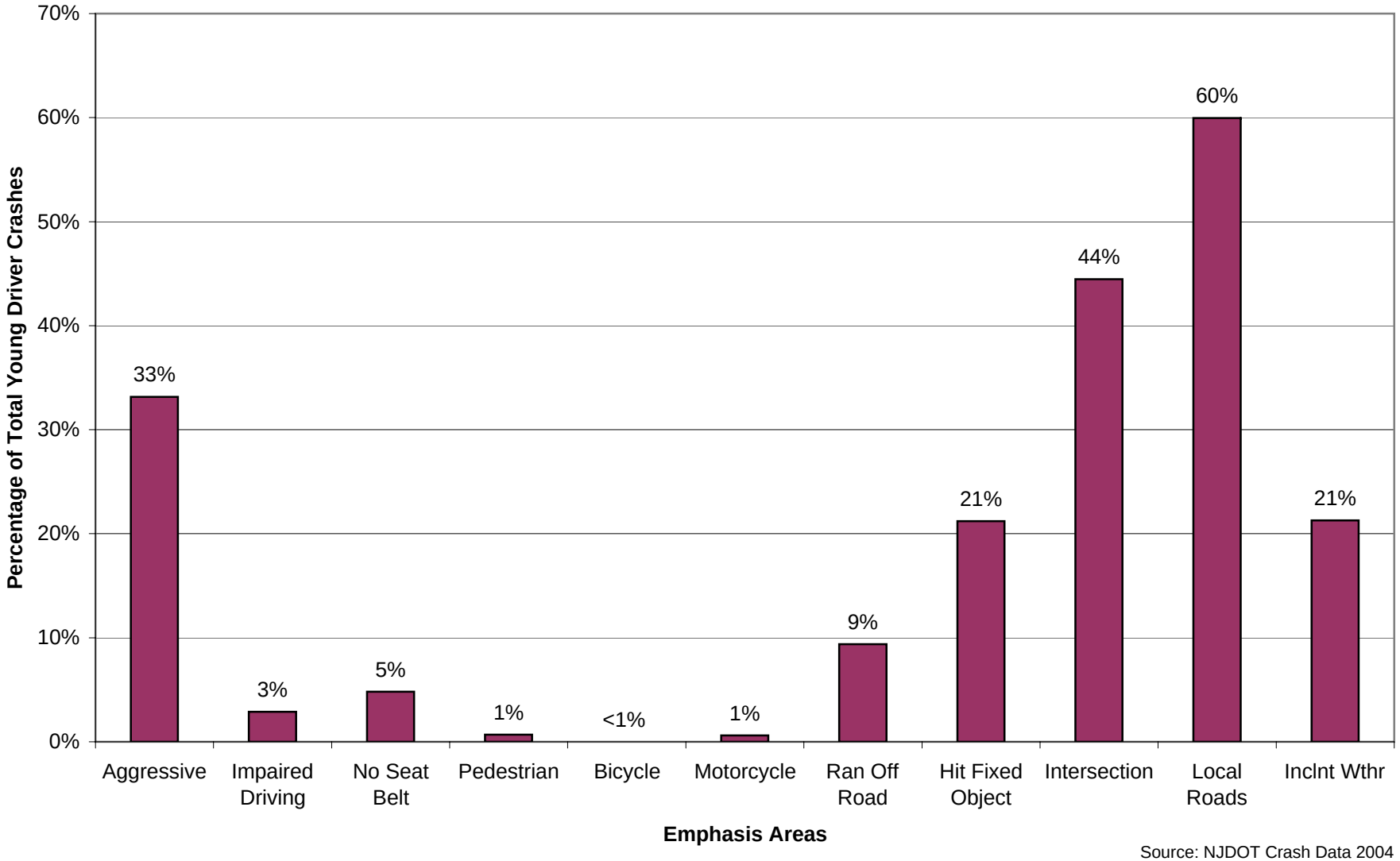
***data for NJ only

DVRPC-NJ Region Aggressive Driving Crashes by Identified Emphasis Area 2004



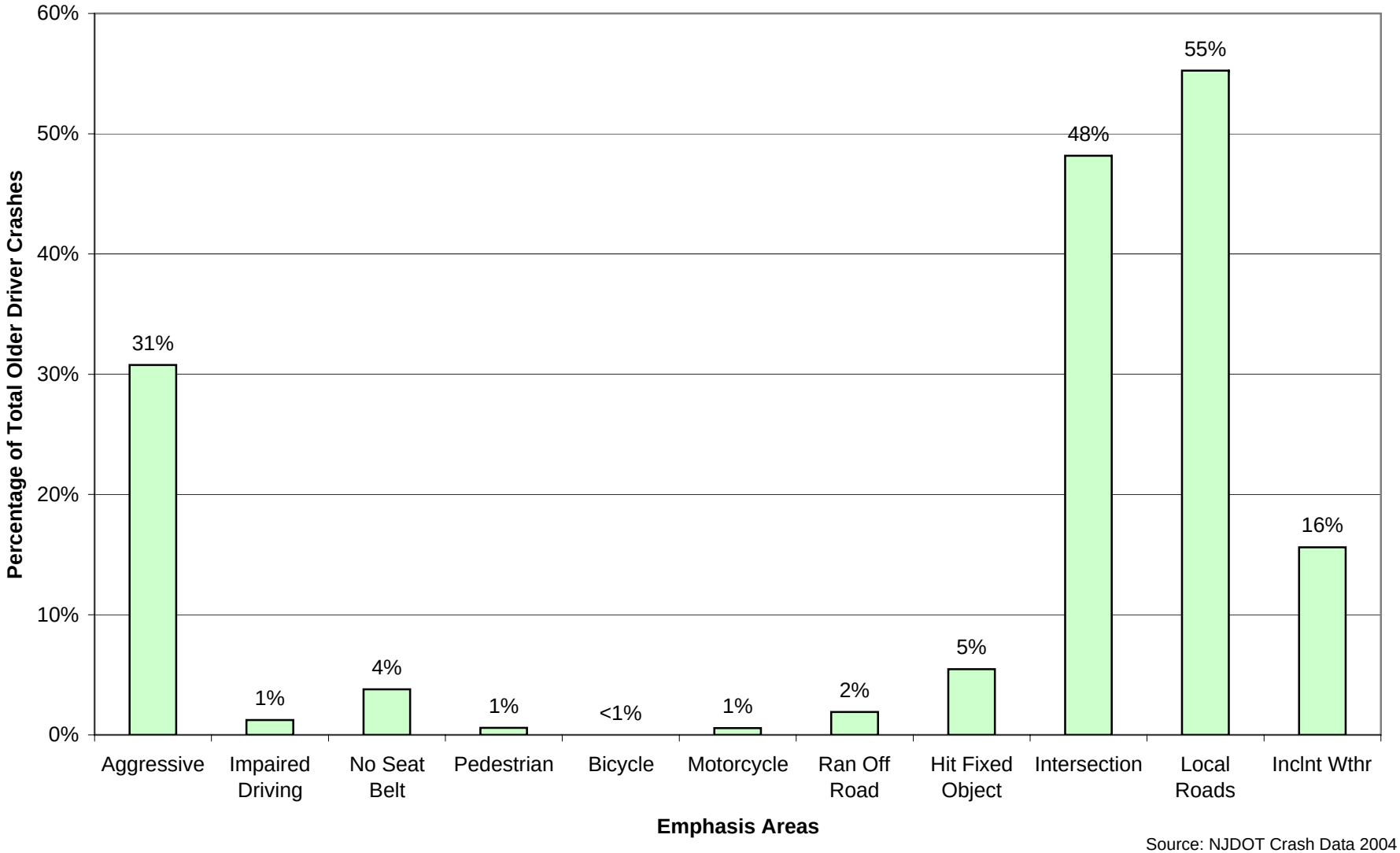
Source: NJDOT Crash Data 2004

DVRPC-NJ Region Young Drivers Crashes by Identified Emphasis Area 2004



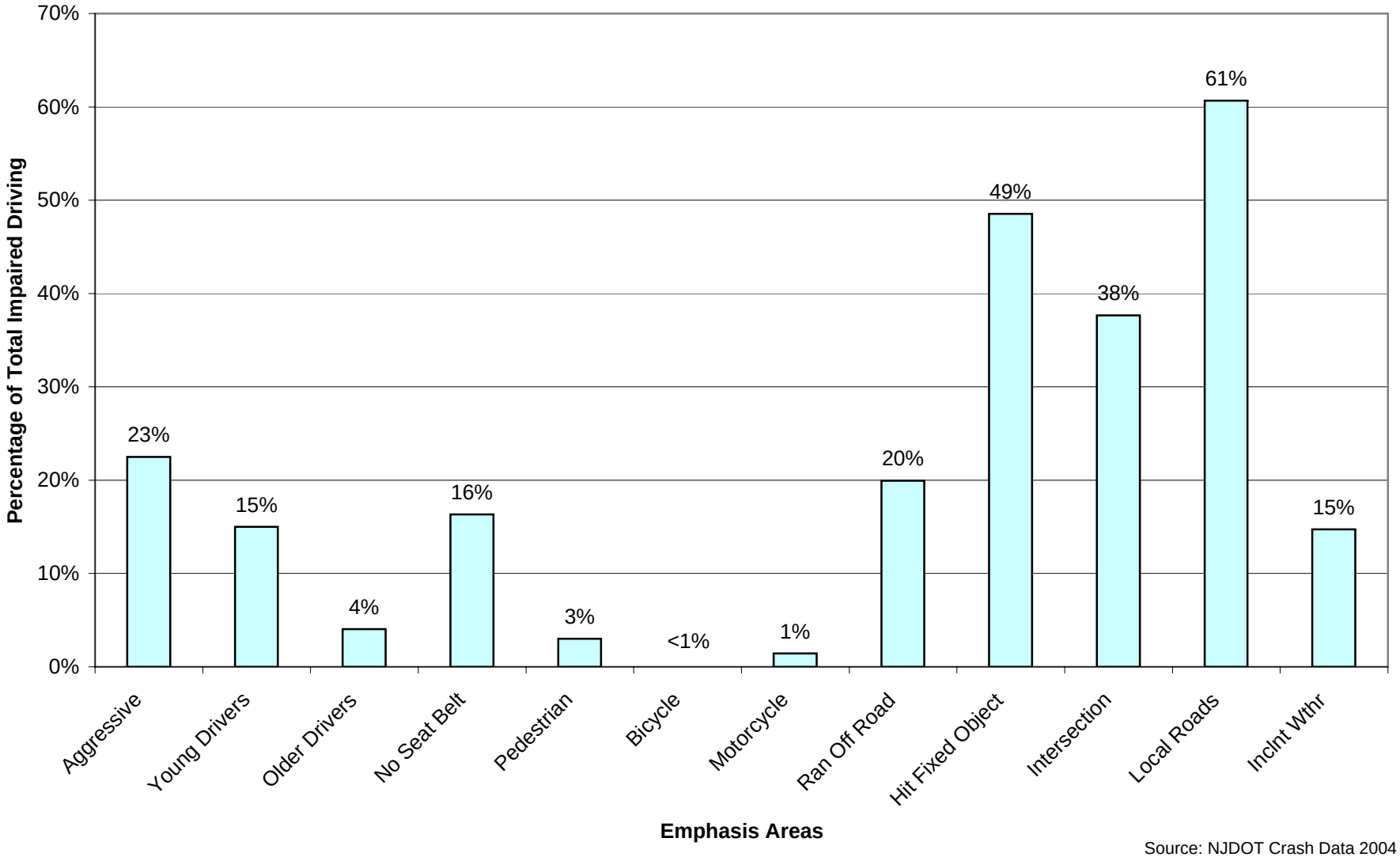
Source: NJDOT Crash Data 2004

DVRPC-NJ Region Older Drivers Crashes by Identified Emphasis Area 2004



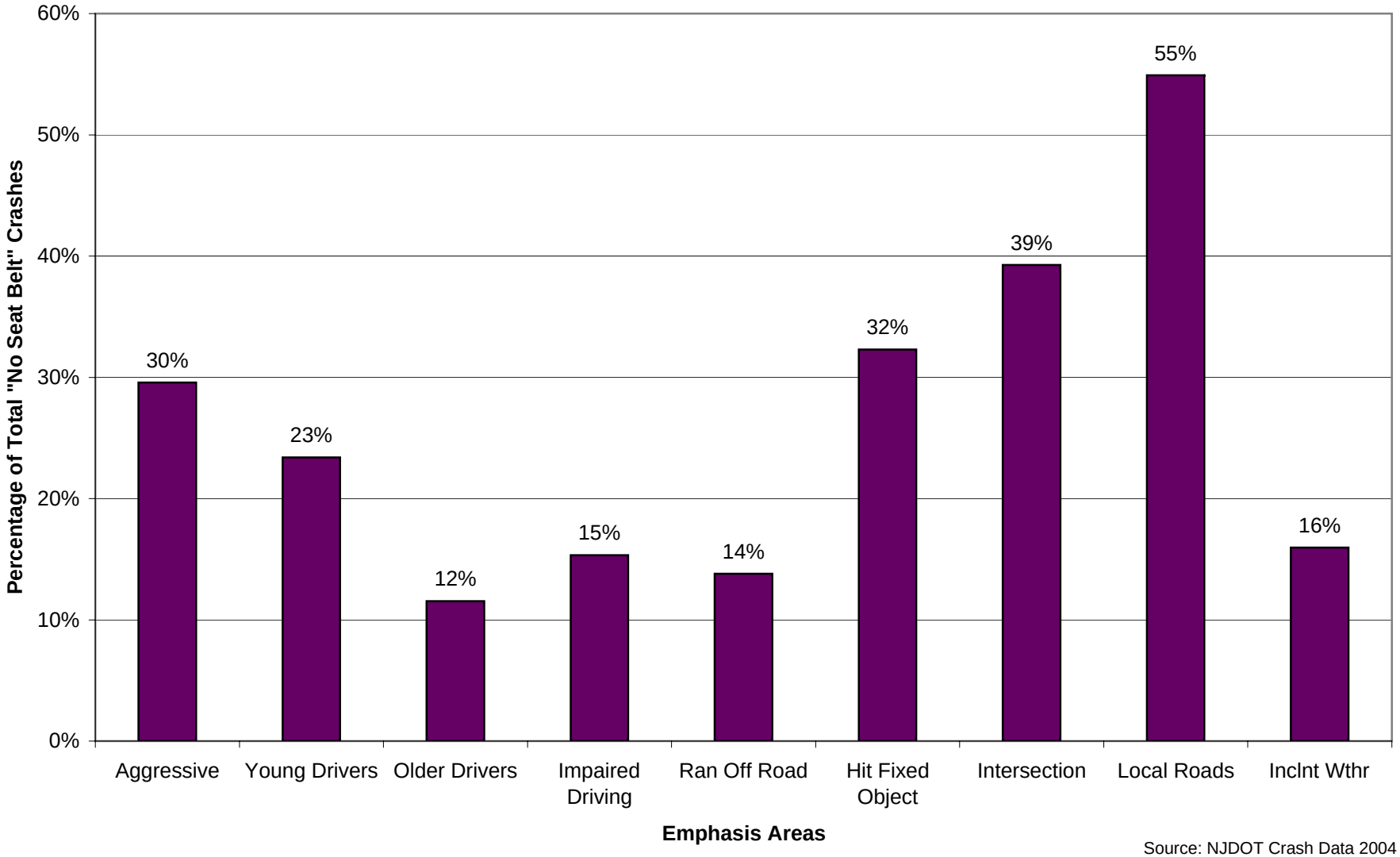
Source: NJDOT Crash Data 2004

DVRPC-NJ Region Impaired Driving Crashes by Identified Emphasis Area 2004



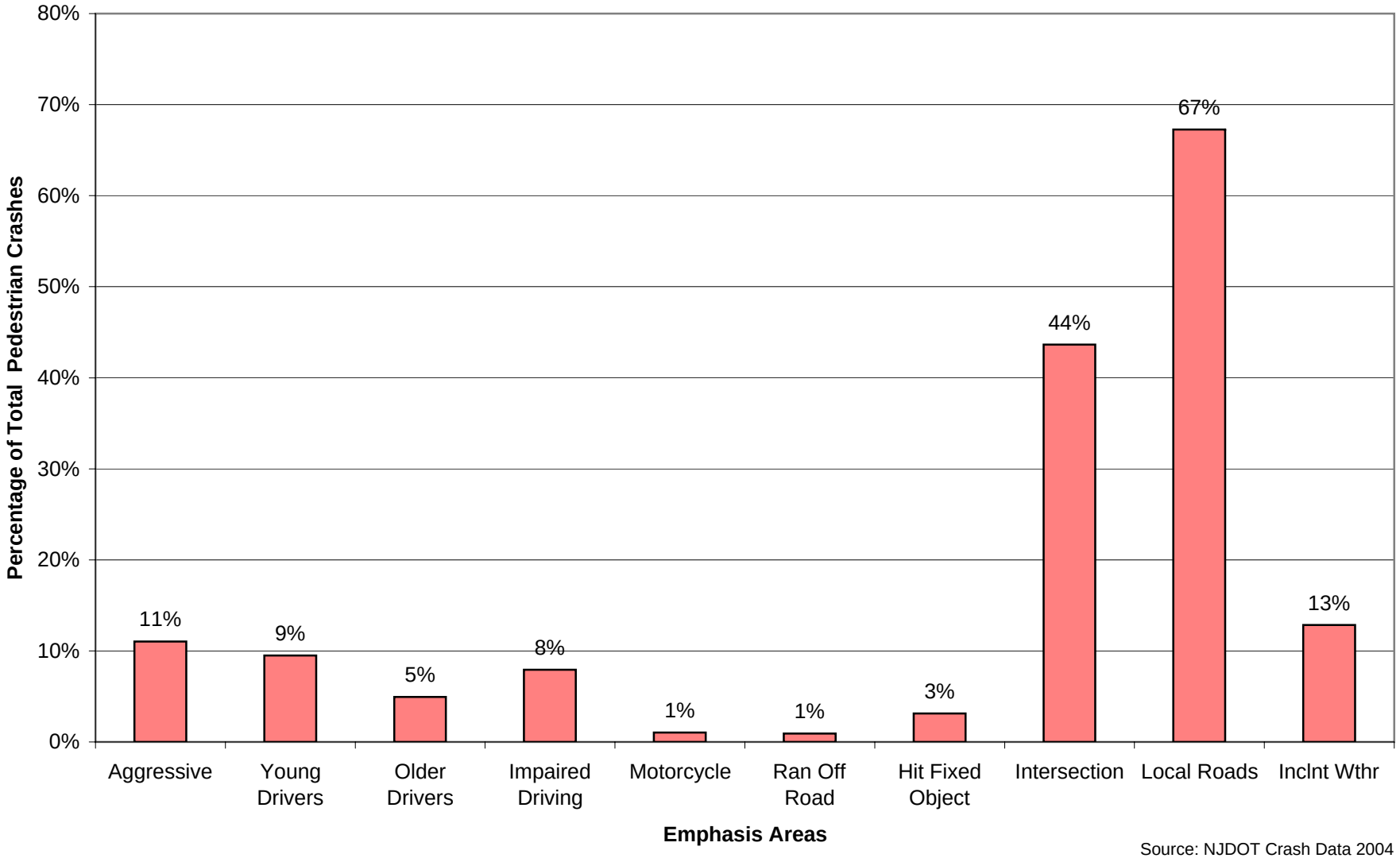
Source: NJDOT Crash Data 2004

DVRPC-NJ Region No Seat Belt Crashes by Identified Emphasis Area 2004



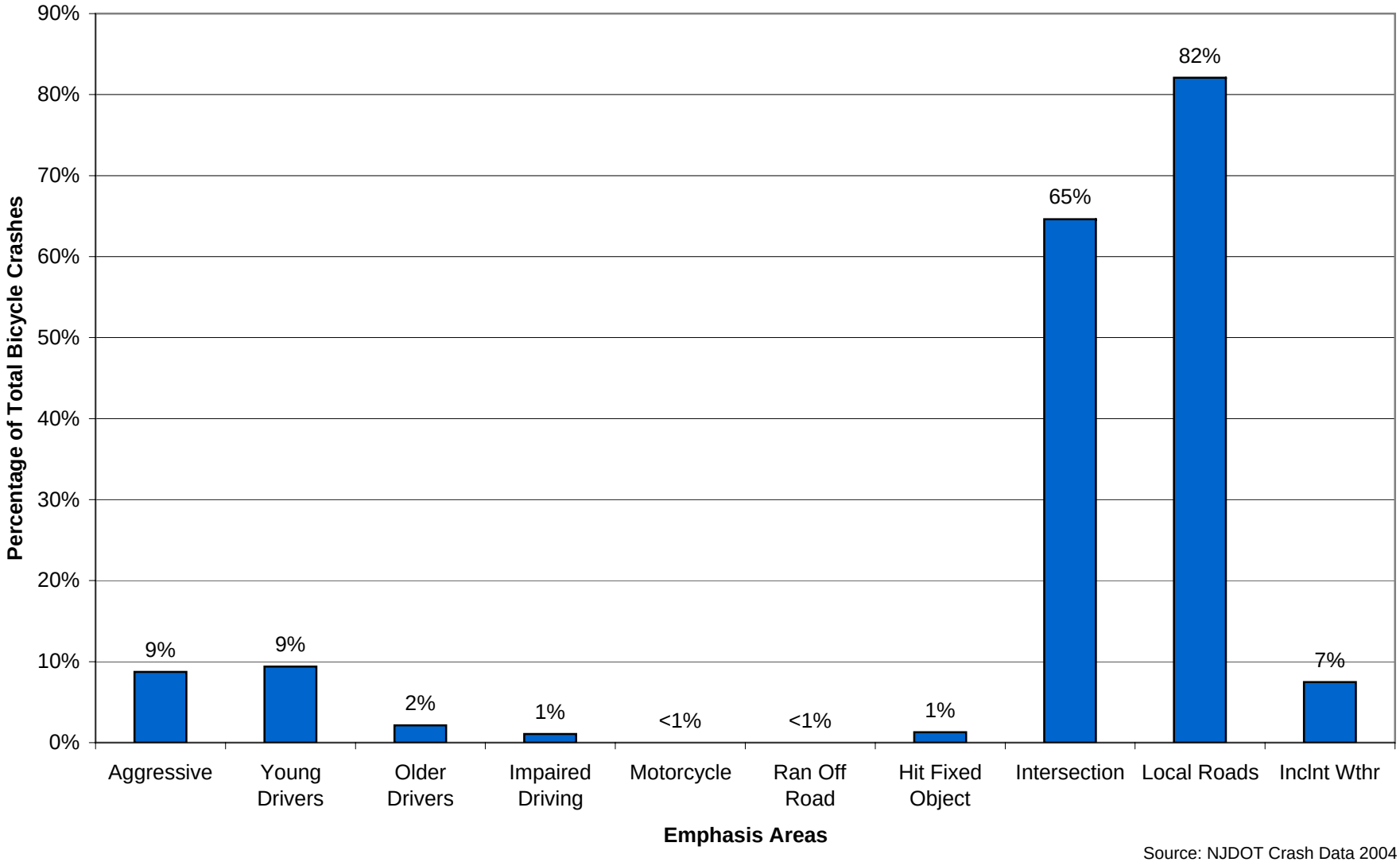
Source: NJDOT Crash Data 2004

DVRPC-NJ Region Pedestrian Crashes by Identified Emphasis Area 2004



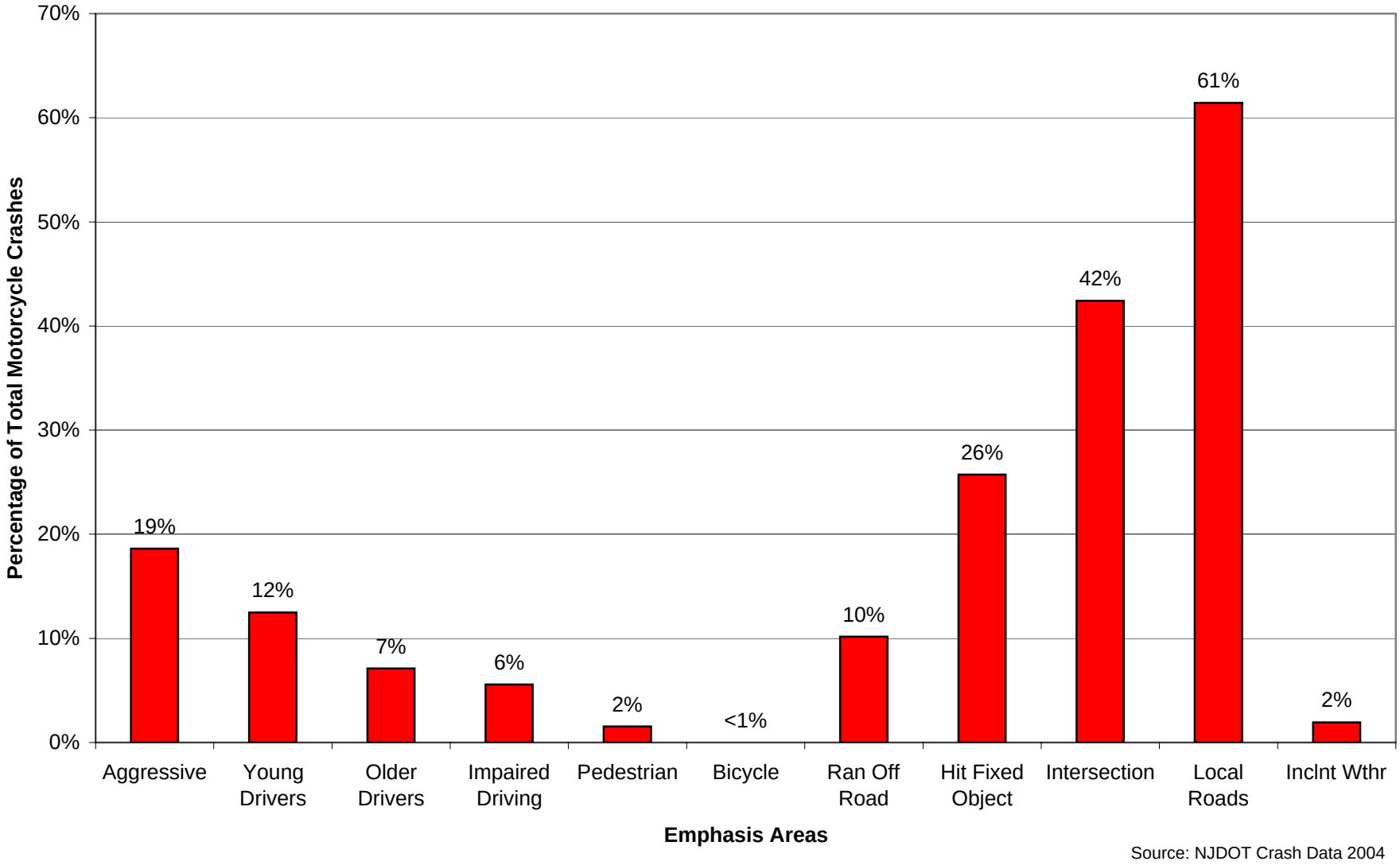
Source: NJDOT Crash Data 2004

DVRPC-NJ Region Bicycle Crashes by Identified Emphasis Area 2004



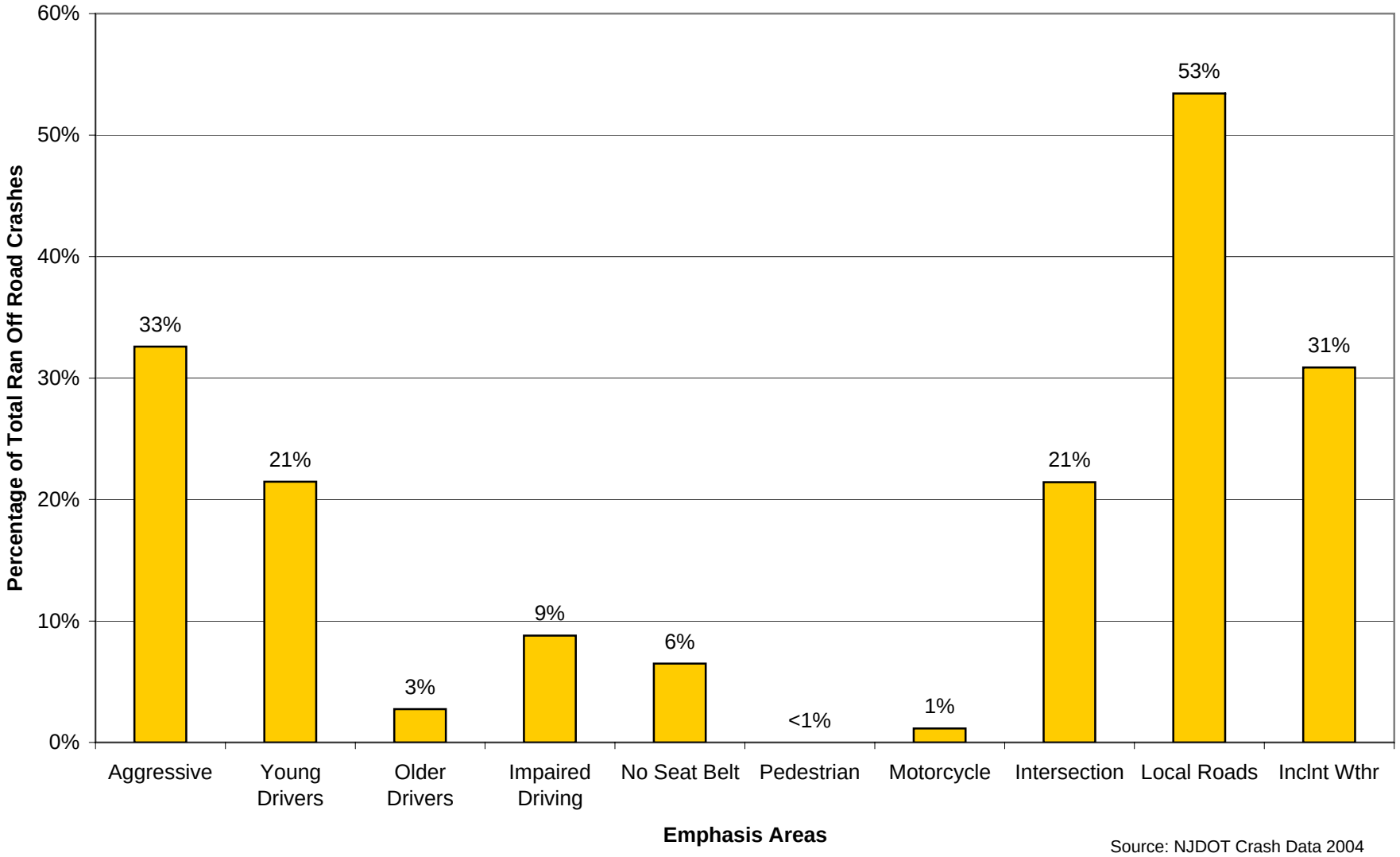
Source: NJDOT Crash Data 2004

DVRPC-NJ Region Motorcycle Crashes by Identified Emphasis Area 2004



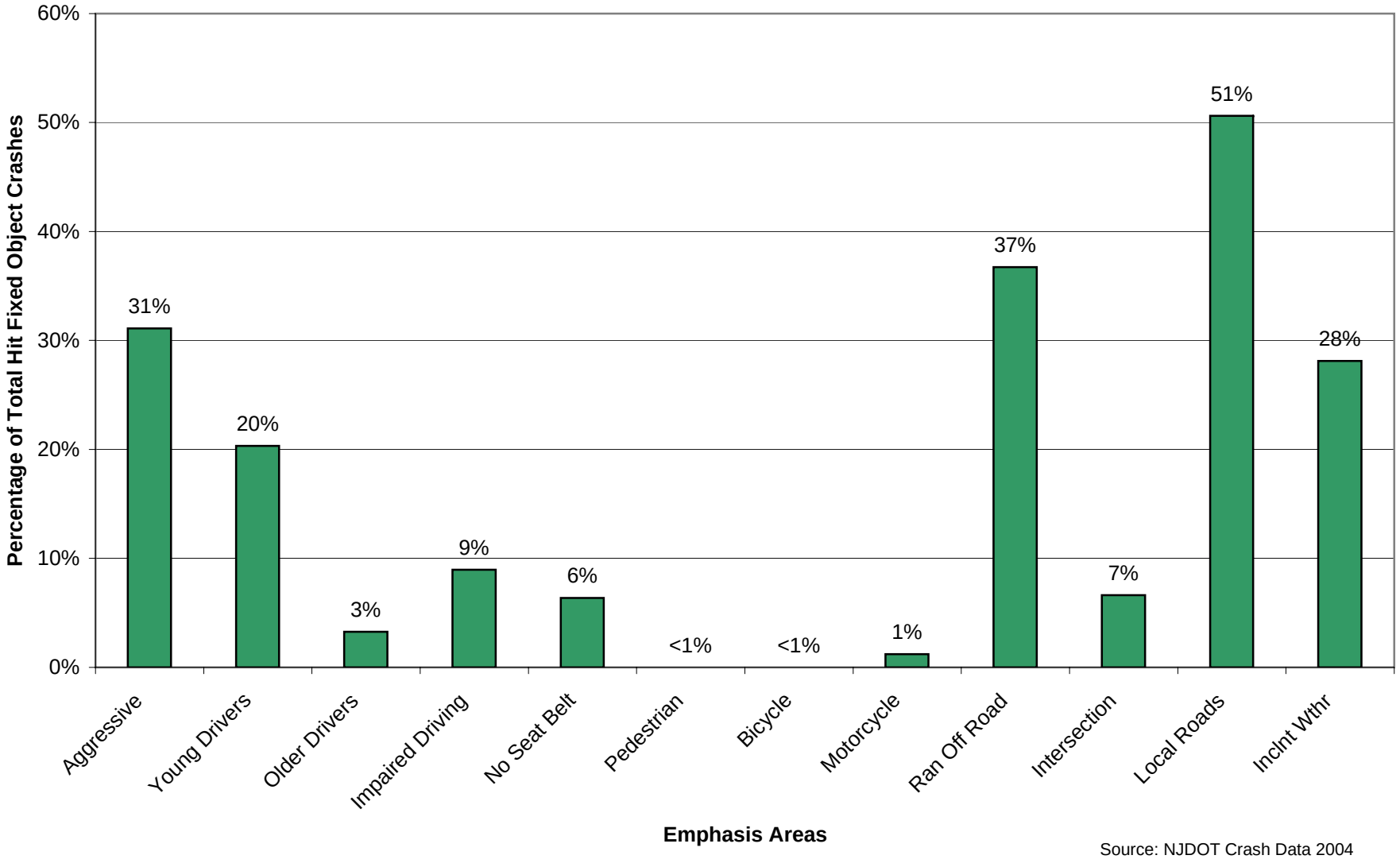
Source: NJDOT Crash Data 2004

DVRPC-NJ Region Ran Off Road Crashes by Identified Emphasis Area 2004



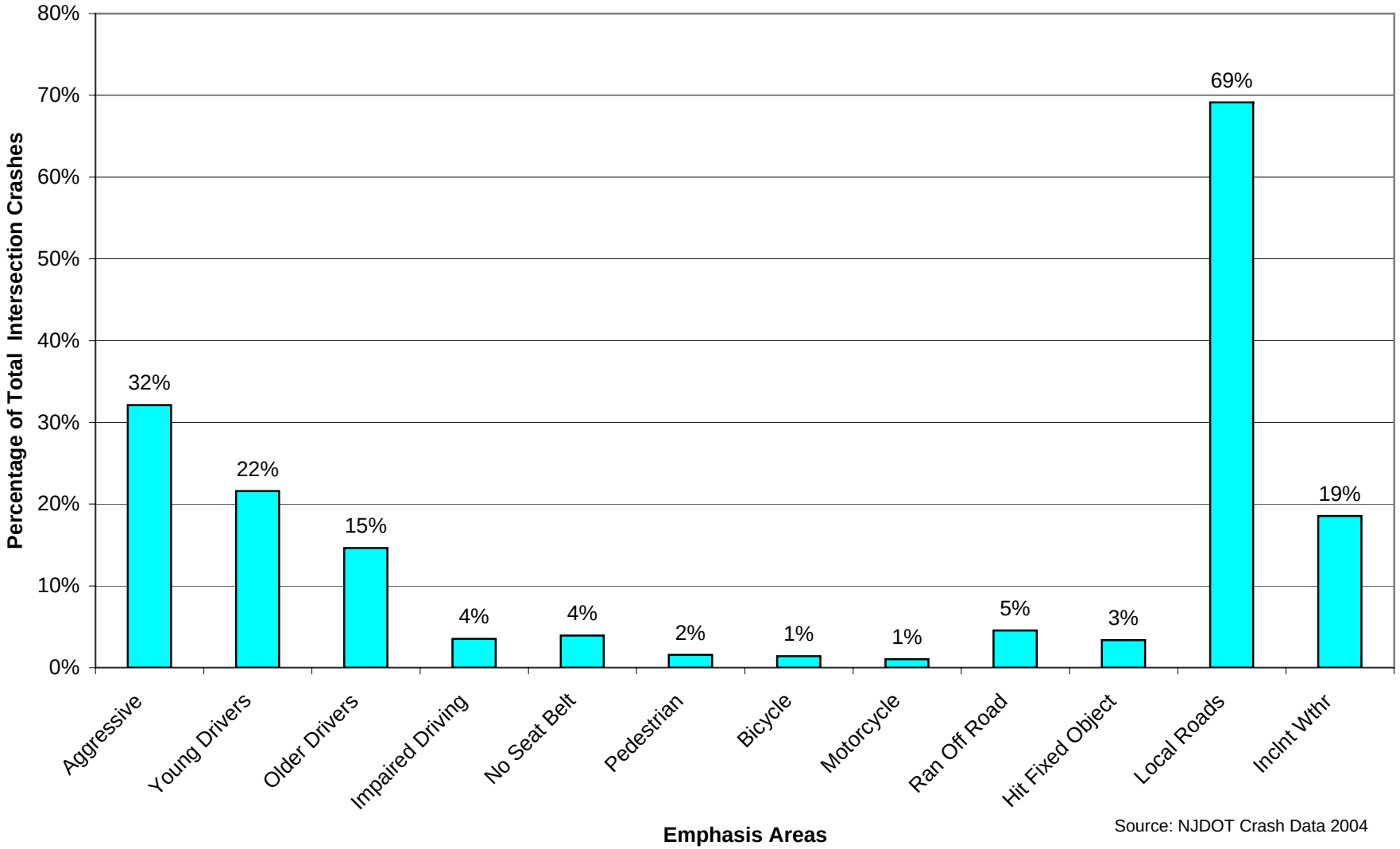
Source: NJDOT Crash Data 2004

DVRPC-NJ Region Hit Fixed Object Crashes by Identified Emphasis Area 2004



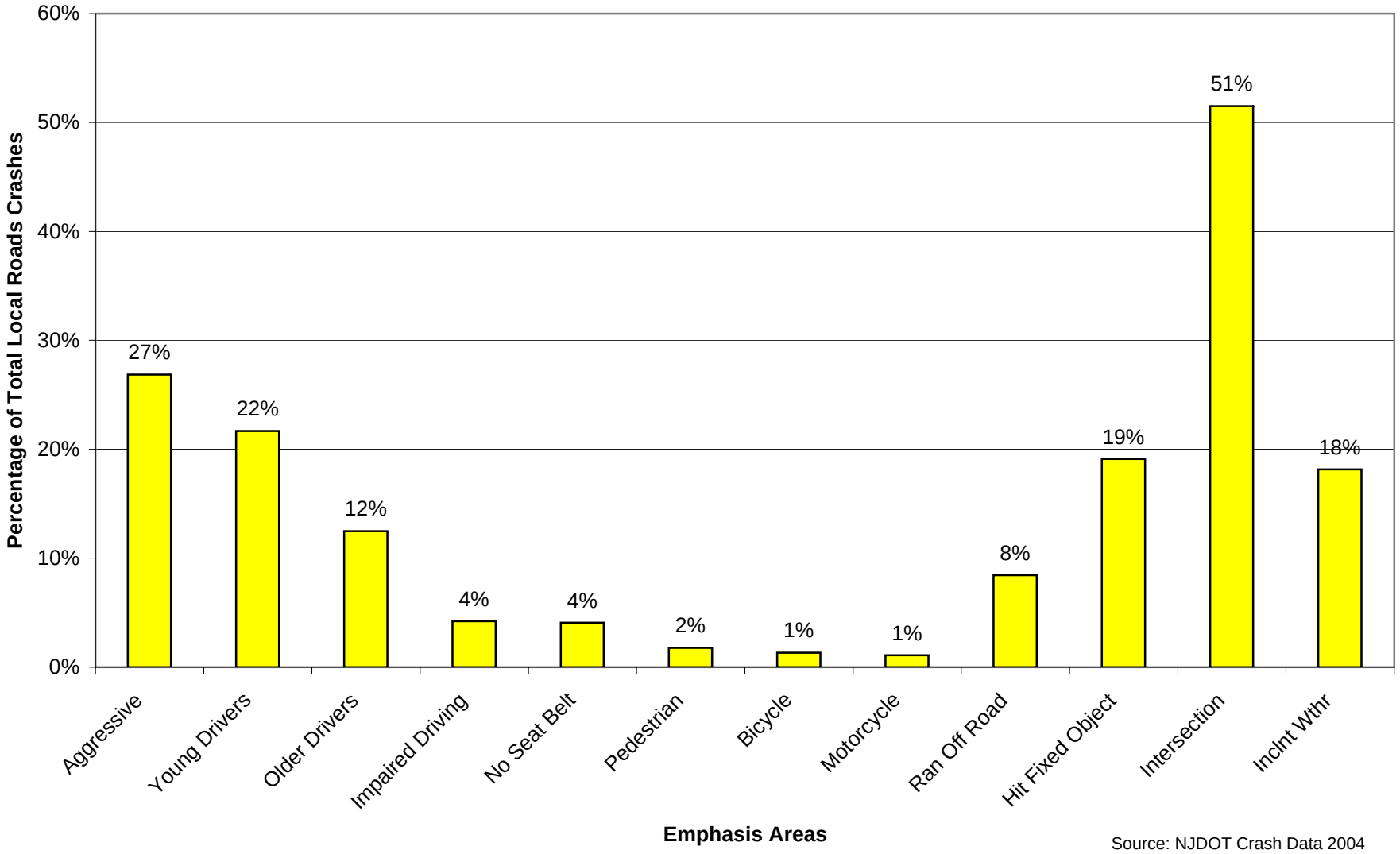
Source: NJDOT Crash Data 2004

DVRPC-NJ Region Intersection Crashes by Identified Emphasis Area 2004



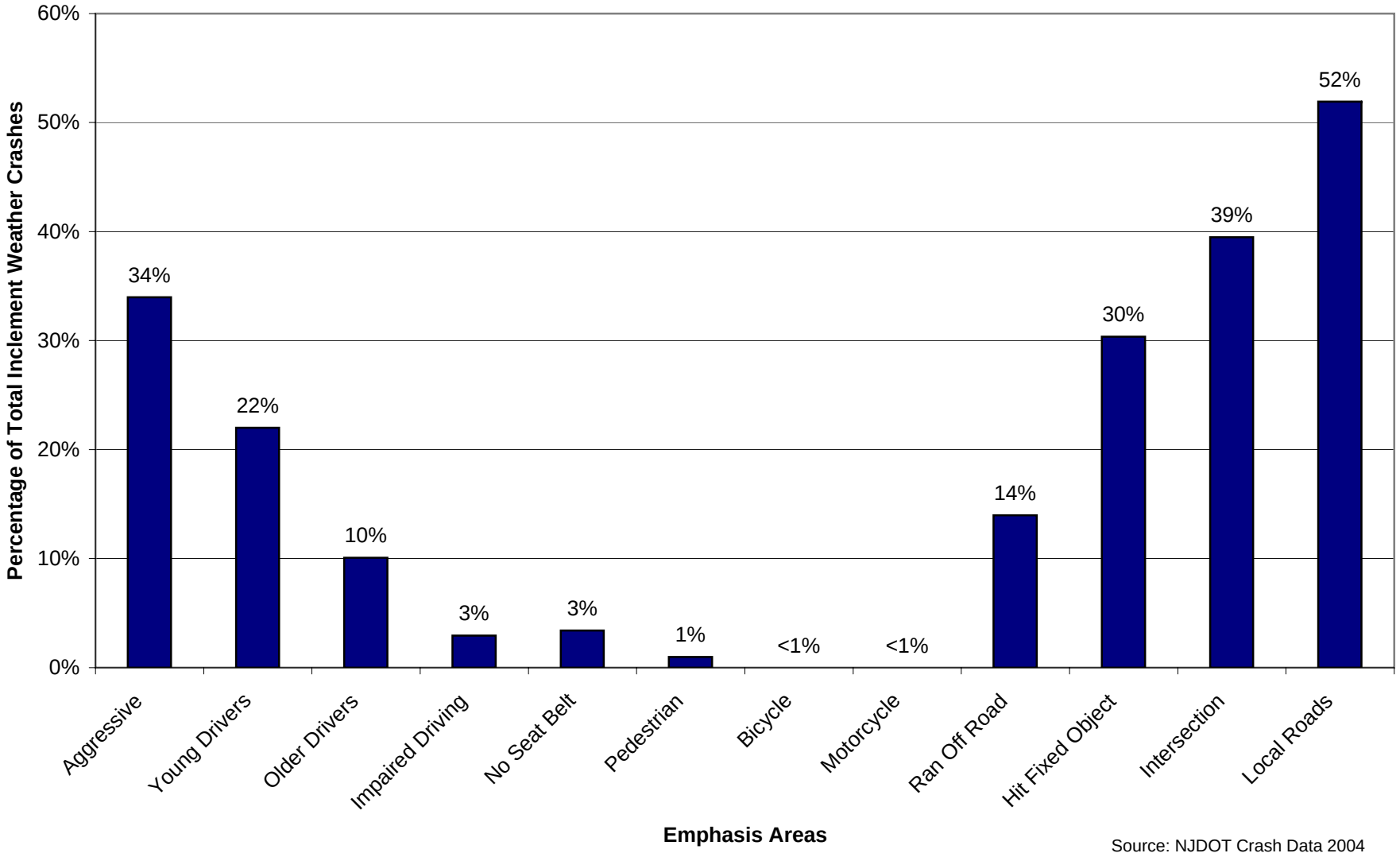
Source: NJDOT Crash Data 2004

DVRPC-NJ Region Local Roads Crashes by Identified Emphasis Area 2004



Source: NJDOT Crash Data 2004

DVRPC-NJ Region Inclement Weather Crashes by Identified Emphasis Area 2004



Source: NJDOT Crash Data 2004

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ABSTRACT: This document serves as the Delaware Valley Regional Planning Commission (DVRPC) Regional Safety Action Plan. The plan focuses on reducing crashes and fatalities on our regional roadway system. It provides a roadmap for effective cooperation, collaboration and coordination among safety professionals and stakeholders throughout the region for the purpose of saving lives. It documents agreed-upon prioritized emphasis areas and strategies and documents potential challenges to the implementation of these strategies. A course of action is laid out and performance measures are identified to track progress.

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