

# 2013 ANNUAL CRASH DATA BULLETIN FOR THE DELAWARE VALLEY



See the center spread for crash statistics by county and the **SPOTLIGHT ON INTERSECTION SAFETY**



**In 2013**, there were **362 crash fatalities** in the Delaware Valley, a **10 percent decrease** from 402 recorded in 2012, despite a small increase in total crashes (0.5 percent). **The number of people injured also fell** (-4 percent).

**This bulletin provides a snapshot of road safety in the Delaware Valley** by highlighting and comparing trends at the national, state, regional, and county levels, while promoting crash safety awareness and best practices.

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## Traffic Engineers Ahead of Their Time

Although engineer **Henry A. Barnes** (1906-1968) did not invent the “Barnes Dance,” he did promote its widespread use which may be why his name became associated with it. Also known as the pedestrian scramble, this intersection signal phase stops all traffic and allows pedestrians to cross in every direction at the same time, even diagonally. As for actual innovations he can claim, Barnes was responsible for implementing coordinated and actuated traffic signals and the introduction of bus lanes, all during his years with the cities of Denver, Baltimore, and New York City.



Source: [www.firsttimedenverbuyer.com](http://www.firsttimedenverbuyer.com)

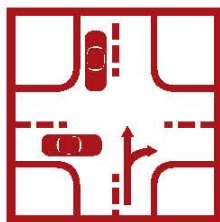
Famous Quote: "In this business there are very few problems that can't be solved with some yellow paint and a little bit of common sense."

**Hans Monderman** (1947-2008) was a traffic engineer in the Netherlands best known for innovating and applying the concept of “shared space:” the elimination of road signs and markings in lower speed settings, requiring drivers, pedestrians, and bicyclists to communicate with each other via eye contact to negotiate right-of-way inducing safer behavior among people. Taken from a 2004 interview in Wired Magazine, Monderman describes building a better intersection as “Chaos = Cooperation.”

Here are a few of his recommendations:

- Remove signs: road architecture will dictate traffic flow;
- Share the spotlight: Lights should illuminate road and the pedestrian areas;
- Eliminate curbs: Instead of a raised curb, sidewalks can be denoted by texture and color.

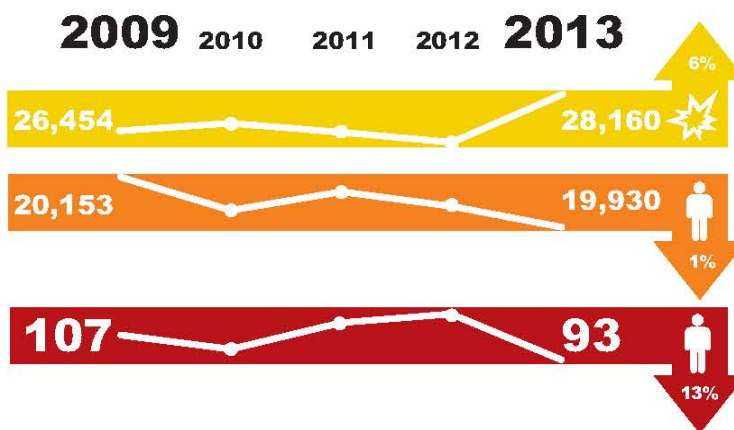
## INTERSECTION SAFETY



According to the FHWA intersections are planned points of conflict in any roadway system. Motorized and non-motorized users are crossing paths as they travel through or turn from one route to another. Therefore, it is not surprising that a major part of addressing road safety challenges involves intersections (<http://safety.fhwa.dot.gov/intersection/>).

### Intersections: Five-Year Totals

**133,752 intersection crashes** [🌟] resulted in **100,199 people injured** [👤], and **claimed the lives** [👤] of **532 people** in the five years from 2009 to 2013.

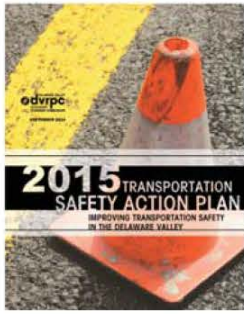


### Intersection-Related Crash Deaths in 2013

In 2013, there were 93 intersection-related deaths in the DVRPC region. Of those killed, the majority were driving at the time, that is, operating a motor vehicle and not passengers, pedestrians, or bicyclists. This percentage was nearly equal between the Pennsylvania and New Jersey counties. Not similar between Pennsylvania and New Jersey was the percentage of occupants killed: 10 percent in Pennsylvania, 20 percent in New Jersey. During the year no bicyclists were killed in intersection-related crashes in Pennsylvania, but one was killed in Camden County, New Jersey.

**By percentage, vehicle operators, or “drivers,” were killed in intersection-related crashes more than vehicle occupants (passengers), pedestrians, or bicyclists:**





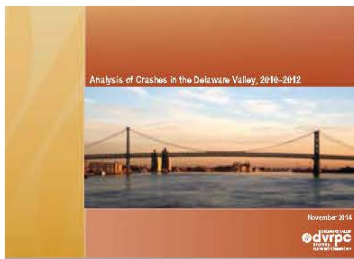
## 2015 TRANSPORTATION SAFETY ACTION PLAN

In 2013, 362 people were killed and over 40,000 were injured in automobile crashes in the Delaware Valley. A data-driven transportation safety action plan is an important first step toward improving safety for everyone. The *2015 Transportation Safety Action Plan: Improving Transportation Safety in the*

*Delaware Valley* is slated for publication in early 2015. This plan update uses AASHTO's<sup>5</sup> data-driven process to identify the emphasis areas that contribute most to crash fatalities and injuries. The plan is then shaped by the Regional Safety Task Force—a multidisciplinary group in existence since 2005—and is coordinated with the plans of Pennsylvania and New Jersey.

The 2015 plan identifies **eight emphasis areas** that **contributed to 97 percent of the crash fatalities and 88 percent of the injuries** in the Delaware Valley:

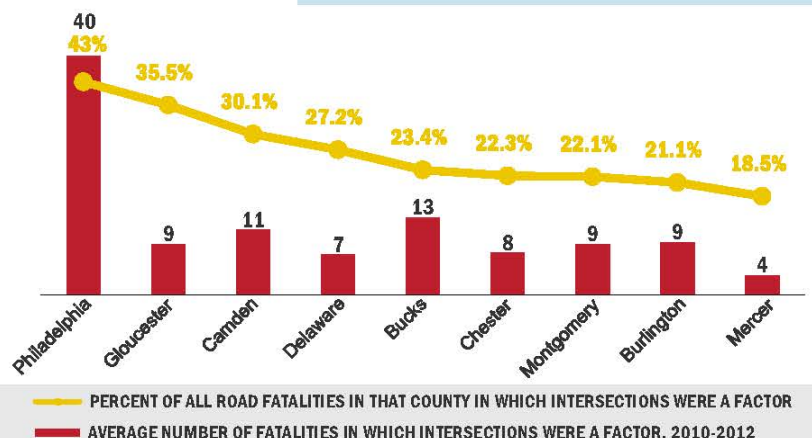
1. **Curb Aggressive Driving**
2. **Keep Vehicles on the Roadway and Minimize the Consequences of Leaving the Roadway**
3. **Improve the Design and Operation of Intersections**
4. **Reduce Impaired and Distracted Driving**
5. **Increase Seat Belt Usage**
6. **Ensure Pedestrian Safety**
7. **Sustain Safe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



## Analysis of Crashes in the Delaware Valley, 2010-2012

The *2015 Transportation Safety Action Plan* is a data-driven policy document that builds upon the analysis completed

in DVRPC's *Analysis of Crashes* report. Three years of crash data is analyzed according to the emphasis areas identified by AASHTO. These same emphasis areas are used by each state when developing their Strategic Highway Safety Plans (SHSP). Employing this methodology ensures consistency with both New Jersey and Pennsylvania. The figure at right, taken from the report, demonstrates the importance of making intersections safer by county.



## FHWA's Nine Proven Safety Countermeasures

To promote data-driven safety improvements, the FHWA is advancing a group of research-proven safety countermeasures focused on three areas: intersections, pedestrians, and roadway departure.



### Backplates with Retroreflective Borders

Inconspicuous traffic signals have been identified as

a contributing factor in intersection crashes. Signal backplates with retroreflective borders are a low-cost safety improvement that increase signal visibility by introducing a controlled-contrast background. For more information on the FHWA proven countermeasures go to <http://safety.fhwa.dot.gov/provencountermeasures/>



Source: <http://safety.fhwa.dot.gov/intersection/resources/casestudies/fhwasa09011/fhwasa09011ppt.cfm>

### The Crash Modification

**Factor Clearinghouse** ([www.cmfclearinghouse.org](http://www.cmfclearinghouse.org)) states that the use of backplates with retroreflective borders may result in a 15 percent reduction in all crashes at urban, signalized intersections.

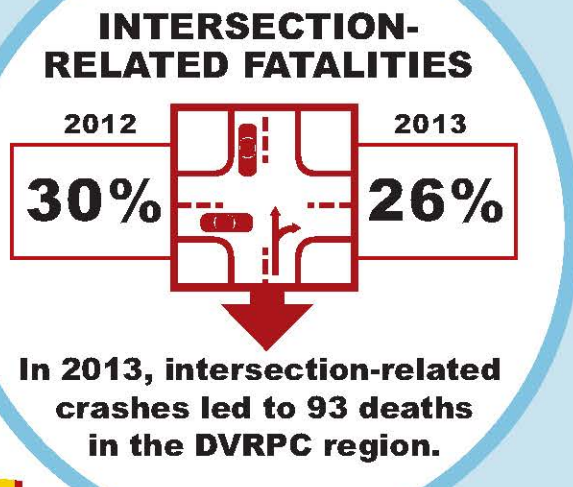
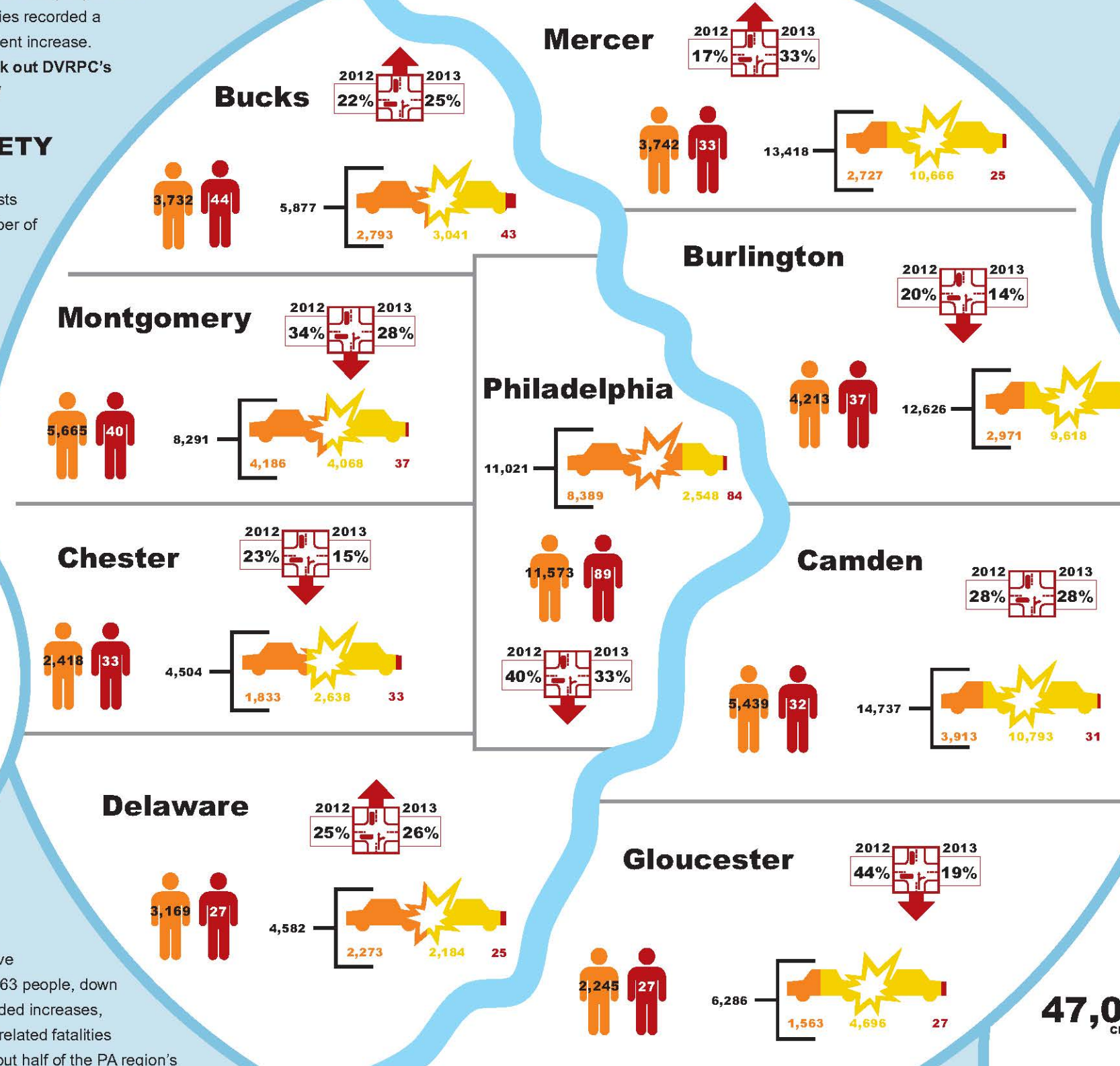
<sup>5</sup>. American Association of State Highway and Transportation Officials

## CRASHES, INJURIES, AND FATALITIES BY COUNTY

The infographic on this page shows crash statistics for each of the nine counties in the DVRPC region, and includes the percentage of intersection-related fatalities for each. In 2013, the region experienced a significant decline in total fatalities: 362 people were killed, down 10 percent from 402 in 2012. The Pennsylvania counties recorded a 15 percent reduction, and the New Jersey counties saw a 1.5 percent increase. For more crash statistics by county and by municipality, check out DVRPC's Municipal Data Navigator: [www.dvrpc.org/asp/DataNavigator/](http://www.dvrpc.org/asp/DataNavigator/)

## SPOTLIGHT: INTERSECTION SAFETY

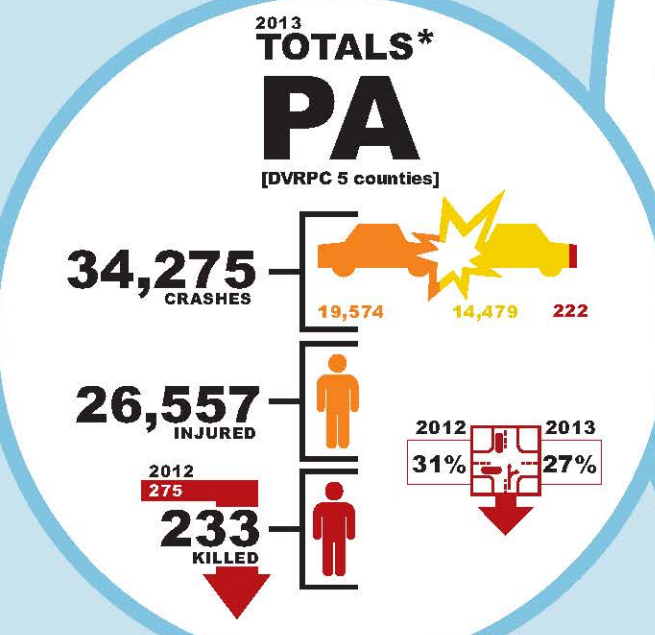
Intersections are planned points of conflict in the roadway network, and one of the most complex traffic situations that motorists must navigate. As the number of lanes increase, so does the number of conflict points and the likelihood of a crash. Featured here is the percentage of intersection-related fatalities by county in the DVRPC region comparing 2012 and 2013 data. Region-wide, there has been a small decrease in these fatalities from 2012 to 2013. These percentages represent all drivers, occupants, pedestrians, and bicyclists killed in a crash at an intersection.



## INTERSECTION SAFETY IN NJ:

In 2013, intersection-related fatalities were 23 percent of all people killed in DVRPC's four New Jersey counties, claiming the lives of 30 people. This is a slight improvement from 2012 when 26 percent of the fatalities were intersection-related. Two of the New Jersey counties experienced decreases in this category, with Gloucester County showing the biggest decrease from 44 percent in 2012 to 19 percent in 2013. Mercer County recorded an increase from 17 percent in 2012 to 33 percent in 2013.

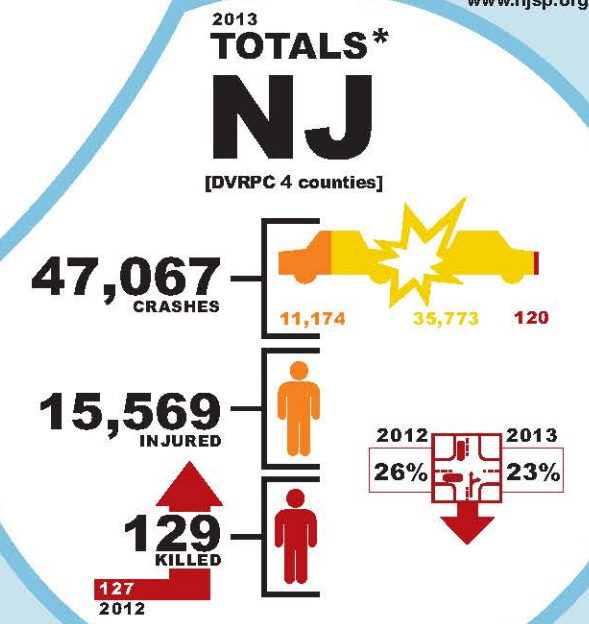
More Statistics can be found in the 2013 New Jersey State Police Fatal Crash Statistics publication: [www.njsp.org/info/fatalacc/2013\\_fatal\\_crash.pdf](http://www.njsp.org/info/fatalacc/2013_fatal_crash.pdf)



## INTERSECTION SAFETY IN PA:

In 2013, the number of intersection-related fatalities in DVRPC's five Pennsylvania counties dropped to 27 percent claiming the lives of 63 people, down from 31 percent in 2012. Only Bucks and Delaware counties recorded increases, (3 percent and 1 percent respectively). Philadelphia's intersection-related fatalities accounted for 33 percent of the City's total crash fatalities, and about half of the PA region's total killed at intersections. This is not surprising given the vastly different context in the City and the greater number of intersections.

More Statistics can be found in the 2013 Pennsylvania Crash Facts and Statistics publication: [www.dot.state.pa.us/Internet/Bureaus/pdBHSTE.nsf/InfoFb13](http://www.dot.state.pa.us/Internet/Bureaus/pdBHSTE.nsf/InfoFb13)



1. Property Damage Only (PDO): A crash where no one was killed or injured, but damage occurred to a vehicle or other property.

people: total PEOPLE INJURED total PEOPLE KILLED PERCENT of PEOPLE KILLED in INTERSECTION-RELATED crashes | crash types: Injury crash PDO crash fatal crash

\* New Jersey's total crash numbers are disproportionately higher than Pennsylvania's totals due to New Jersey's reportable crash definition: property damage of \$500 or more. Pennsylvania's minimum threshold for a reportable crash is if a vehicle requires towing from the scene. All injury and fatal crashes are reportable in both states.

## 2013 by the Numbers in the Nine-County Region

On an average day in the Delaware Valley:

- 223 crashes occurred
- 115 people were injured
- 1 person died every 24 hours

### PA

In 2013, Pennsylvania's **124,149 crashes** claimed the lives of **1,208 people** and injured another **83,089**<sup>1</sup>.

Across the State of Pennsylvania:

- 1 person was killed in a crash every 7 hours (on average)
- 2012 vs. 2013: crashes increased slightly (0.04%), but fatalities decreased by 8.4 percent

Crashes in the DVRPC's five Pennsylvania counties account for 27 percent of the total crashes recorded in the state's 67 counties.

Nineteen percent of the state's crash fatalities were recorded in the DVRPC region's five counties which are home to 32 percent of the state's residents.

### NJ

In 2013, New Jersey's **283,115 crashes**\* claimed the lives of **542**<sup>2</sup> people and injured another **84,091**.

Across the State of New Jersey:

- 1 person was killed in a traffic crash every 16 hours (on average)
- 2012 vs. 2013: crashes increased (2%), but fatalities decreased (8%)

Crashes in DVRPC's four New Jersey counties account for 17 percent of the total crashes recorded in the state's 21 counties.

Twenty-four percent of New Jersey's crash fatalities occurred in the DVRPC region's four counties which are home to 18.4 percent of the state's population.

\* New Jersey's total crash numbers are disproportionately higher than Pennsylvania's totals due to New Jersey's reportable crash definition: property damage of \$500 or more. Pennsylvania's minimum threshold for a reportable crash is if a vehicle requires towing from the scene. All injury and fatal crashes are reportable in both states.

<sup>1</sup> 2013 Pennsylvania Crash Facts and Statistics (PennDot, 2013)

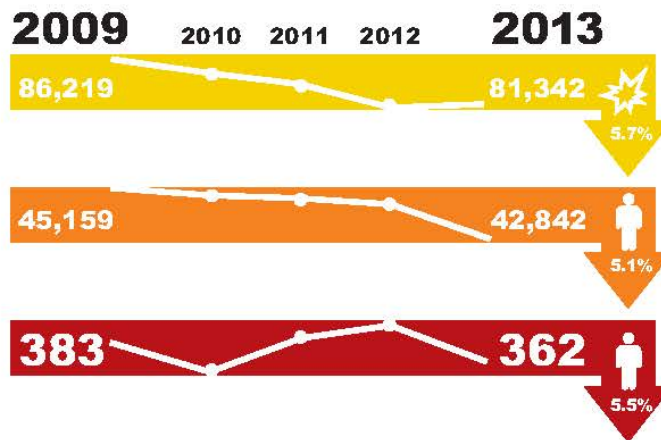
<sup>2</sup> New Jersey State Police Fatal Accident Investigation Unit ([www.njsp.org/fatalacc/](http://www.njsp.org/fatalacc/))

## AFTER A SLIGHT INCREASE IN 2012, U.S. CRASH FATALITIES DECREASED IN 2013

According to the **National Highway Traffic Safety Administration (NHTSA)** traffic fatalities decreased by **3.1 percent to 32,719 in 2013, down from 33,782 in 2012**<sup>3</sup>. This decrease puts the nation back on track, continuing the overall decline in crash fatalities that began in 2007. This is in contrast to the 0.6 percent rise in vehicle miles traveled indicating that crash fatalities fell despite increased travel (VMT<sup>4</sup>). The fatality rate also decreased slightly to 1.11 deaths per 100 million VMT down from 1.13 in 2012. Throughout these recent fluctuations highway deaths have remained at 1950's levels; a time when total VMT was significantly less. Regionally speaking, the Delaware Valley's 10 percent decrease in fatalities in 2013 exceeded national performance.

### Regional Crash Safety: Five-Year Trends

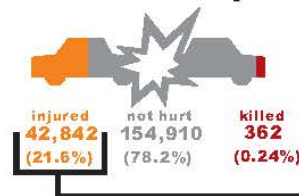
The Delaware Valley's five-year downward trend in crashes and injuries continued in 2013 with a 5.7 percent drop in total **crashes** [💥], and a 5.1 percent drop in **injuries** [👤] since 2009. After two consecutive increases in crash **fatalities** [👤], a decrease of 10 percent was recorded in 2013, dropping to 362 from 402 crash deaths in 2012, and a drop of 5.5 percent since 2009.



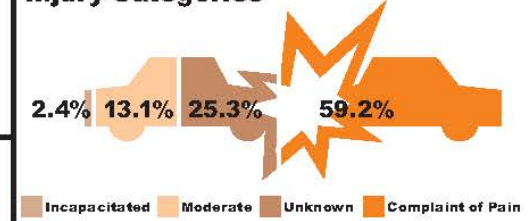
### Injury Severity Level in 2013

As a result of the 81,342 crashes in the region, 362 people died, 42,842 people were injured, and 154,910 people involved reported no injury. Among those **injured** [👤], complaint of pain was the most common injury type accounting for over 59 percent of all injuries.

### 2013 Crashes by Severity



### Injury Categories



<sup>3</sup> [www.nrd.nhtsa.dot.gov/Pubs/812101.pdf](http://www.nrd.nhtsa.dot.gov/Pubs/812101.pdf)

<sup>4</sup> Vehicle Miles Traveled (VMT): Total number of miles driven by all vehicles within a given time period and location.



Source: Associated Press

# BETTER INTERSECTIONS: SAFETY BY DESIGN

**“INTERSECTIONS ARE PLANNED POINTS OF CONFLICT IN ANY ROADWAY...** motorized and non-motorized users are crossing paths as they travel through or turn from one route to another.”<sup>6</sup> According to the FHWA, over the last several years an average of 21% of crash fatalities—almost 7,000 people killed in 2013—and about 50% of all serious injuries have been attributed to intersections in the U.S. There are an estimated 300,000 signalized intersections in the U.S.

<sup>6</sup> <http://safety.fhwa.dot.gov/intersection/>

## Is there a safer design that retains efficient throughput? Yes, the roundabout.

The benefits of roundabouts are research-proven. In an appropriate application, a well-designed roundabout will reduce crash frequency and severity as compared to a standard stop-controlled or signalized intersection at the same location. By converting to a roundabout from:



Source: FHWA

- 1) a two-way stop control mechanism, an 82 percent reduction in fatal and injury crashes and a 44 percent reduction in overall crashes is possible;
- 2) a signalized intersection, up to a 78 percent reduction in fatal and injury crashes and a 48 percent reduction in overall crashes can be realized.

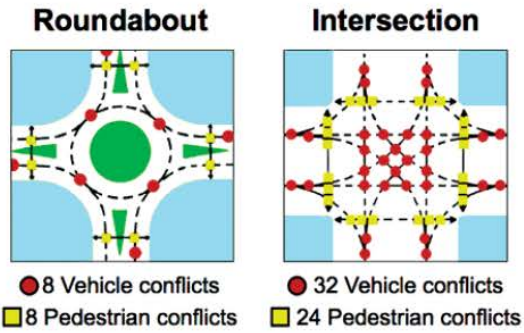
## Roundabout Resources

Many resources are available to aid planners and engineers in evaluating the benefit and suitability of converting a traditional intersection to a roundabout. *Roundabouts: An Informational Guide* (NCHRP Report 627) is a great starting point when researching roundabouts. Also, please visit the FHWA’s Proven Safety Countermeasure’s webpage for more information on roundabouts and other research-proven intersection safety treatments: [http://safety.fhwa.dot.gov/provencountermeasures/fhwa\\_sa\\_12\\_005.cfm](http://safety.fhwa.dot.gov/provencountermeasures/fhwa_sa_12_005.cfm)

**In 2014, Burlington County, New Jersey implemented a roundabout in Chesterfield Township.** Constructed using Federal Highway Safety Improvement Program funds, this roundabout replaced a former stop sign and flashing signal at a county-route intersection which was the site of a fatal school bus crash in 2012.

Photo Source: Burlington County Engineers Office, Burlington County, NJ

**Why are roundabouts safer?** Fewer conflict points. Traditional intersections present more opportunities for a crash. With roundabouts, head-on and high-speed right angle (T-bone) crashes are virtually eliminated by design.



Source: [www.nextstl.com](http://www.nextstl.com)

The diagram above demonstrates the number and location of each potential conflict point between a roundabout and typical intersection.



**Be sure to check out  
the 2013 COUNTY  
CRASH DATA  
BULLETINS:  
[www.dvrpc.org/asp/  
publicationsearch/](http://www.dvrpc.org/asp/publicationsearch/)**



**Safety Planning at DVRPC**

Safety matters to everyone, so DVRPC pursues an active, wide-ranging approach to improve safety in the Delaware Valley. Safety is incorporated in many of DVRPC's Work Program efforts, in addition to the projects managed by the Office of Transportation Safety and Congestion Management. For more information search 'Safety' on [www.dvrpc.org](http://www.dvrpc.org)

**Abstract:**

DVRPC's Annual Crash Data Bulletin provides a snapshot of road safety and crash trends in the nine counties of the Delaware Valley region and the nation. It highlights select emphasis areas from DVRPC's *Transportation Safety Action Plan*. The goal of the bulletin is to raise awareness of traffic crashes, discuss causal factors, and promote programs and agencies working toward improving safety.

**For more information please contact:**

Kevin Murphy  
Principal Transportation Planner  
[kmurphy@dvrpc.org](mailto:kmurphy@dvrpc.org)

Regina Moore  
Transportation Engineer  
[rmoore@dvrpc.org](mailto:rmoore@dvrpc.org)



**JANUARY 2015**

**190 N Independence Mall West  
Philadelphia, PA 19106  
215-592-1800  
[www.dvrpc.org](http://www.dvrpc.org)**

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

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DVRPC fully complies with Title VI of the Civil Rights Act of 1964 and related statutes and regulations in all programs and activities. DVRPC's website ([www.dvrpc.org](http://www.dvrpc.org)) may be translated into multiple languages. Publications and other public documents can be made available in alternative languages and formats, if requested. For more information, please call (215) 238-2871.

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Analysis in this document was derived from the NJDOT and PennDOT crash databases, unless otherwise noted.

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