

LOCAL & COUNTY

ROADS SAFETY NEWSLETTER



VOLUME 2 | WINTER 2016



This newsletter focuses on roads owned or maintained by counties or municipalities. These facilities are approximately 80% of the linear road miles in the Delaware Valley.

In **Pennsylvania**, the five Delaware Valley counties are responsible for very limited road miles. Municipalities are responsible for approximately 75% of linear road miles.

In **New Jersey**, the four Delaware Valley counties are responsible for approximately 18% of linear road miles. Municipalities are responsible for approximately 72% of linear road miles.

DELAWARE VALLEY REGION



Welcome to DVRPC's safety newsletter aimed at helping counties and municipalities improve the safety of local roadways.

DVRPC has prepared analysis for municipal and county staff members who work to improve safety on local roads. This volume focuses on fatal crashes and run-off-the-road crashes.

HOW MANY CRASHES OCCUR ON LOCAL ROADS?

Over 32,758 crashes occurred on local roads in the Delaware Valley on average each year between 2011 and 2013. This was approximately 40% of all crashes that occurred on all roads in the region in an average year.

TABLE 1: CRASHES ON ROADS IN THE DELAWARE VALLEY: 2011-2013

	PA	NJ	REGION
Total Crashes on Local Roads, 2011-2013	26,779	71,495	98,274
Total Crashes on All Roads, 2011-2013	102,960	142,847	245,807

Source: NJDOT & PennDOT data



Photo by Schuylkill River Development Corporation

Photo on right: Every crash has its own story, but analysis can help make bigger changes in how many crashes happen each year than just reacting to each one.

CRASH FATALITIES ON LOCAL ROADS

1,151 people died in crashes on all roads in the Delaware Valley in the three-year period, 2011 through 2013. Of those, 318 fatalities occurred on local roads; approximately 20 percent on local roads in Pennsylvania, and approximately 43 percent on local roads in New Jersey.

There are many ways to analyze crash data. This newsletter uses the number of **crash fatalities**, the number of **fatal crashes** (could have more than one fatality), and **safety emphasis areas**.

A set of 22 emphasis areas that affect roadway safety was developed by the American Association of State Highway and Transportation Officials (AASHTO). DVRPC's 2012

Transportation Safety Action Plan (Publication #12030) focuses on the seven key emphasis areas that are contributing factors in 95% of fatalities on all roads in the Delaware Valley. These seven emphasis areas were also the highest contributing factors to crash fatalities on local roads in the Delaware Valley between 2009 and 2011. A newer edition will be published in early 2016 as publication #15022 with generally similar findings.

HIGH RISK RURAL ROADS (HRRRS)

HRRRs are rural major or minor collector or rural local roads with significant safety risks. Before MAP-21, there was federal safety funding specifically available for these roads. Under MAP-21, there is only specific funding for HRRRs in states with increasing crash rates on them, though other funds may be used. For more information, see www.fhwa.dot.gov/map21/guidance/guidehrrr.cfm.

MAPPING & ANALYSIS

DVRPC identified locations on local roads that have had multiple fatal crashes. This was mapped along with the existing HRRRs. A few locations are discussed on page 3 to illustrate issues relevant to many local roads. See pages 4-5 for the regional analysis.

TABLE 2: CRASH FATALITIES ON ROADS IN THE DELAWARE VALLEY: 2011-2013

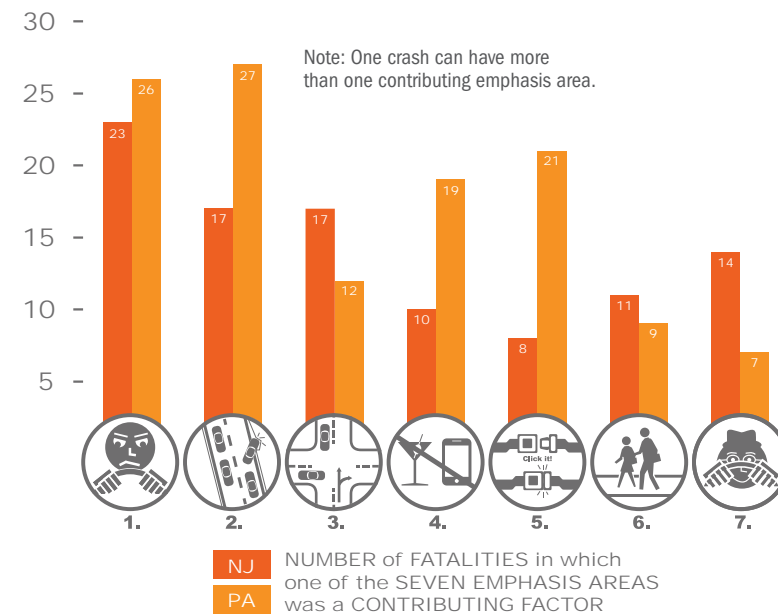
	PA FATALITIES	NJ FATALITIES	REGION FATALITIES
Total Crash Fatalities on Local Roads, 2011-2013	150	168	318
Total Crash Fatalities on All Roads, 2011-2013	761	390	1,151
Local Road Fatalities as Percent of All Road Fatalities, 2011-2013	20%	43%	28%

Source: NJDOT & PennDOT data

SAFETY PLAN

The *Transportation Safety Action Plan* offers policy, education, enforcement, engineering, and emergency services strategies that can improve safety on local roads.

FIGURE 1: LEADING EMPHASIS AREAS THAT CONTRIBUTE TO FATALITIES ON LOCAL ROADS (AVERAGE, 2011-2013)



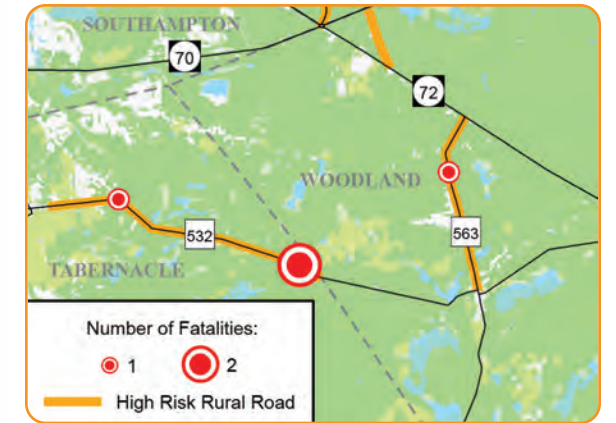
1. Curb Aggressive Driving
2. Keep Vehicles on the Roadway and Minimize the Consequences of Leaving the Roadway
3. Improve the Design and Operation of Intersection
4. Reduce Impaired and Distracted Driving
5. Increase Seat Belt Usage
6. Ensure Pedestrian Safety
7. Sustain Safe Senior Mobility

Source: NJDOT & PennDOT data

A FEW ISSUES TO CONSIDER WITH FATAL CRASHES

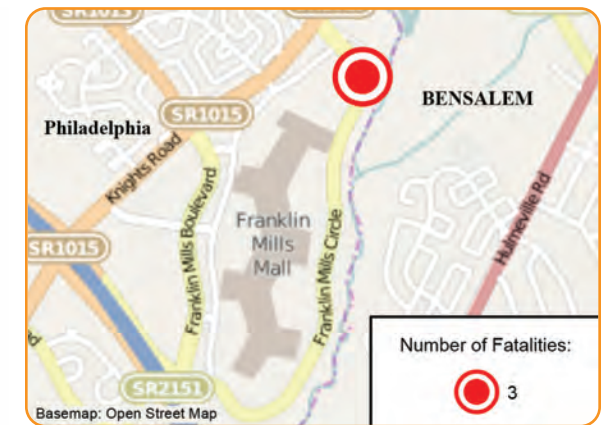
Rural Roads

Run-off-the-road crashes are more likely to result in fatalities in rural areas than more developed ones, in part because it may be easier to drive too fast for conditions and objects such as trees and ditches may be closer to lanes. Both of the fatal crashes in this Burlington County location occurred at night. Speeding was a contributing factor in one crash, alcohol impairment in the other. Especially in dark areas, rumble stripes and raised pavement markers may improve safety. A systemic approach to these low-cost measures might be an option (see p. 10 for more information).



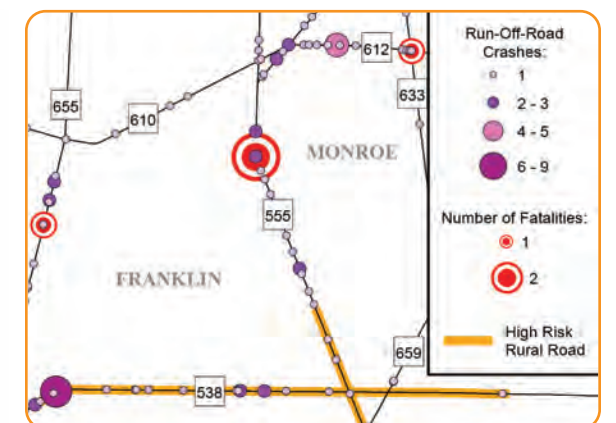
Suburban Roads

Sometimes in suburban areas the locations where people so inclined can build up speed become magnets for dangerous behaviors. In this case, the fatal crash was on the ring road around Franklin Mills Mall in suburban Lower Far Northeast Philadelphia. A speeding driver hit a fixed object resulting in the death of the driver and two occupants. In some such locations, engineering solutions such as traffic calming may help reduce speeding.



Corridors, Not Just Sites

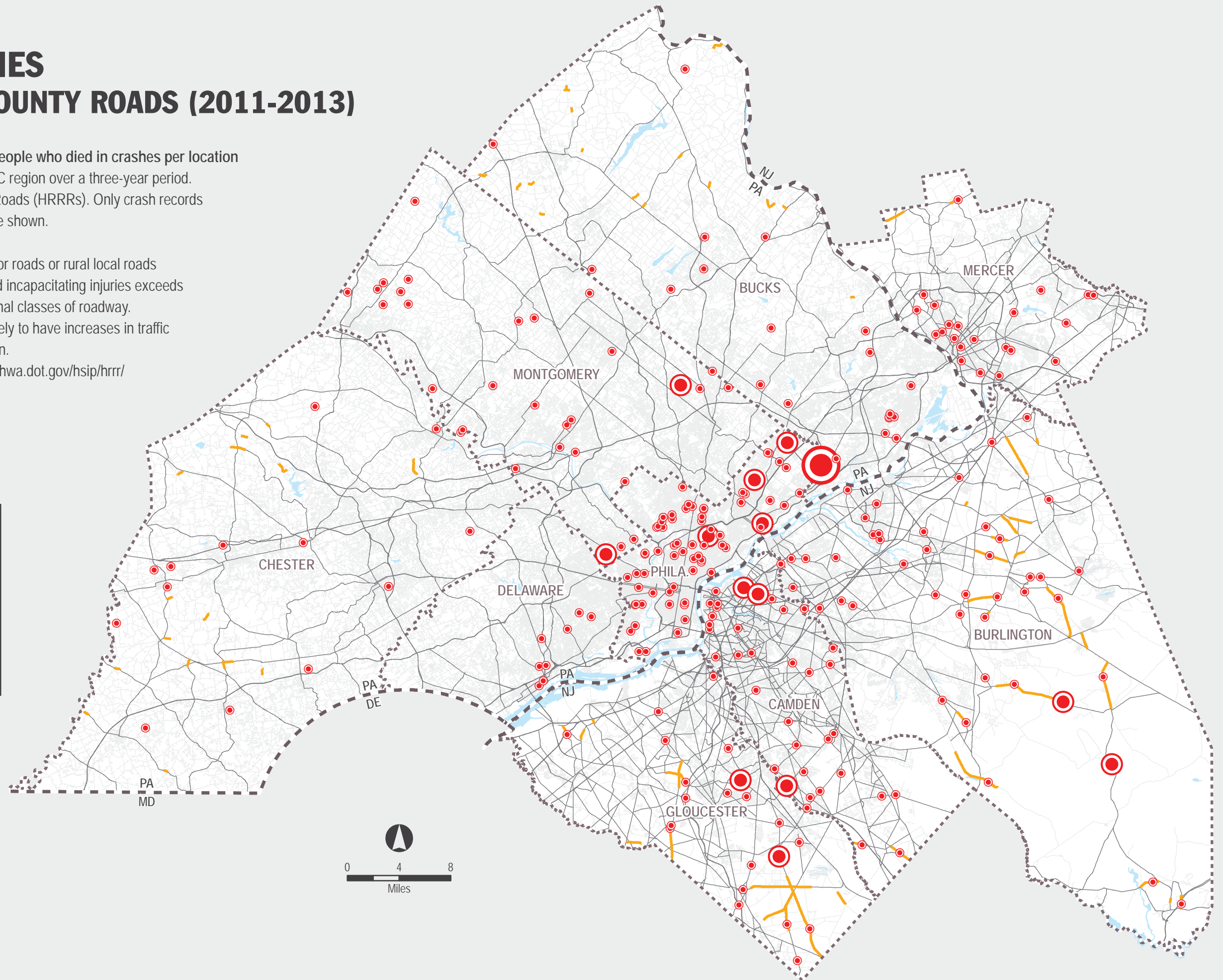
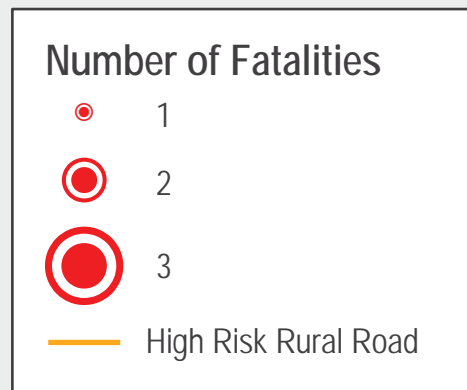
It helps to look beyond a single type of data, and beyond a single site for context. The large, red circle shows what may be a strange coincidence of fatalities: two drivers on subsequent days each hit the same mail box. Bringing in all the crash data shows a high number of non-fatal crashes in this area of Gloucester County. Follow-up could include a road safety audit to better figure out how to improve safety.



CRASH FATALITIES ON LOCAL AND COUNTY ROADS (2011-2013)

This map shows the total number of people who died in crashes per location on local and county roads in the DVRPC region over a three-year period. This map also shows High Risk Rural Roads (HRRRs). Only crash records that contained locational information are shown.

HRRRs are rural major or minor collector roads or rural local roads on which the crash rate for fatalities and incapacitating injuries exceeds the statewide average for those functional classes of roadway. HRRRs are also such roads that are likely to have increases in traffic volumes likely to create such a condition. For more information, see <http://safety.fhwa.dot.gov/hsip/hrrr/>



RUN-OFF-THE-ROAD CRASHES ON LOCAL ROADS

A run-off-the-road crash involves a vehicle on the shoulder, in the median, or outside of the traffic way. The vehicle may hit an object or roll over. Nationally, these events contributed to 56% of all crash fatalities in 2013. In the Delaware Valley between 2011 and 2013, there were a total of 117 fatal run-off-the-road crashes on local roads. They led to 39% of crash fatalities on local roads in the Delaware Valley.



Pick-up truck that left the roadway and rolled over several times.

A national study found the most common contributing circumstance to run-off-the-road crashes or near crashes was driver inattention. In a related finding, 56% of the crashes occurred on straight roadways.

Source: *Contributing Factors to Run-Off-Road Crashes and Near-Crashes* (National Highway Traffic Safety Administration, 2009)



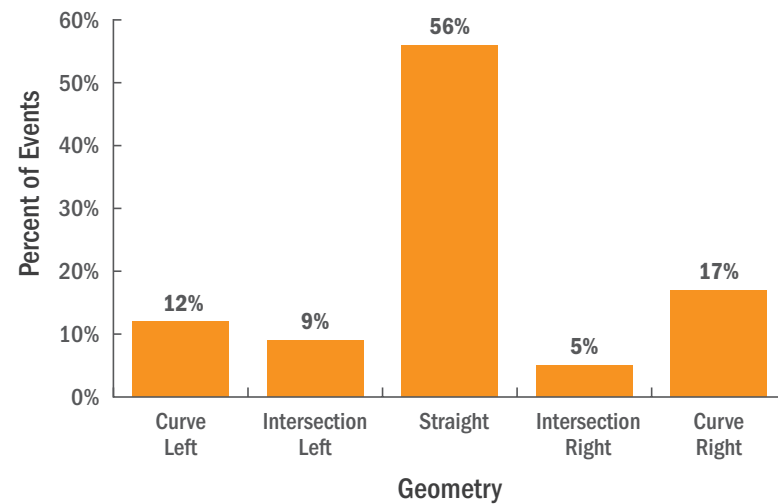
Local roads offer unique safety challenges.

TABLE 3: RUN-OFF-THE-ROAD CRASHES IN THE DELAWARE VALLEY: 2011-2013

	PA	NJ	REGION
Total Run-Off-the-Road Crashes on Local Roads, 2011-2013	6,579	5,764	12,343
Total Run-Off-the-Road Fatal Crashes on Local Roads, 2011-2013	65	52	117
Total People who Died in Run-Off-the-Road Crashes on Local Roads, 2011-2013	71	52	123
People who Died in Run-Off-the-Road Crashes as Percent of All Crash Fatalities on Local Roads, 2011-2013	47%	31%	39%

Source: NJDOT & PennDOT data

FIGURE 2: RUN-OFF-THE-ROAD CRASHES BY ROADWAY GEOMETRY



Source: *Contributing Factors to Run-Off-Road Crashes and Near-Crashes* (NHTSA, 2009)

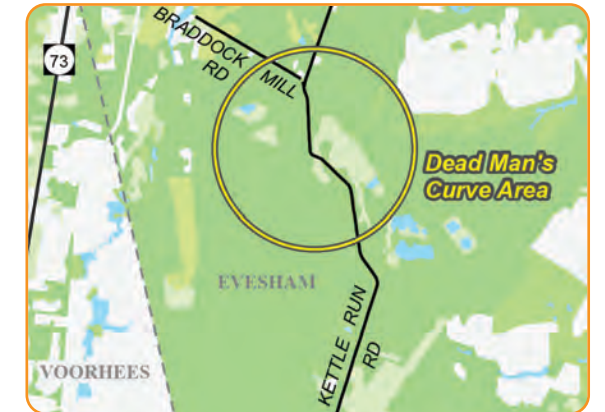
MAPPING & ANALYSIS

DVRPC identified locations with multiple run-off-the-road crashes. A few locations are discussed on page 7 to illustrate issues relevant to many local roads. See pages 8-9 for regional analysis.

A FEW ISSUES TO CONSIDER WITH RUN-OFF-THE-ROAD CRASHES

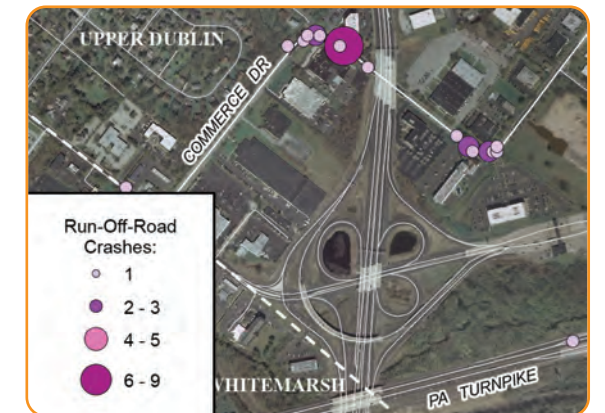
Data Quality & Changes

The circle shows what Marlton (Burlington County) Police refer to as Dead Man's Curve, but the state database doesn't show a single crash between 2011 and 2013. At the time, the precise location wasn't recorded for local road crashes. Newer equipment records it. Good data is essential for the planning that will save lives. Changing technology may cause what looks like dramatic changes in crashes.



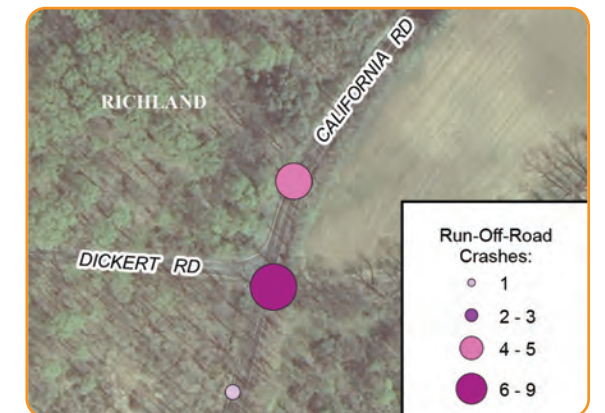
Local Roads as Industrial Access

There were 21 run-off-the-road crashes in one-third of a mile, six in one location, on this Montgomery County road. Small trucks were part of 72% of them, and many occurred on curves or in wet or dark conditions. A location that will be negotiated by many drivers not familiar with conditions may be appropriate for enhanced directional and safety signage.



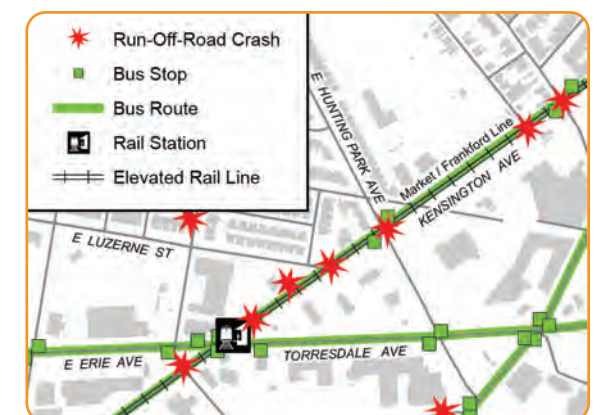
Rural Near Developing Areas

While traffic counts are low (under 3,500 vehicles per day), this Bucks County location is in a growing suburban area just north of Quakertown. To promote safety and congestion management, zoning strategies and access management should be embraced early.



Urban

Sometimes urban local roads have many safety challenges together. This is a road under the elevated Market-Frankford rail line in Philadelphia, with a nearby train stop and busy bus stops. Half the crashes included trucks. Seven of the eight Indicators of Potential Disadvantage are high, such as limited English proficiency and high elderly populations.¹ Safety planning here needs to include the transit agency and neighborhood organizations.



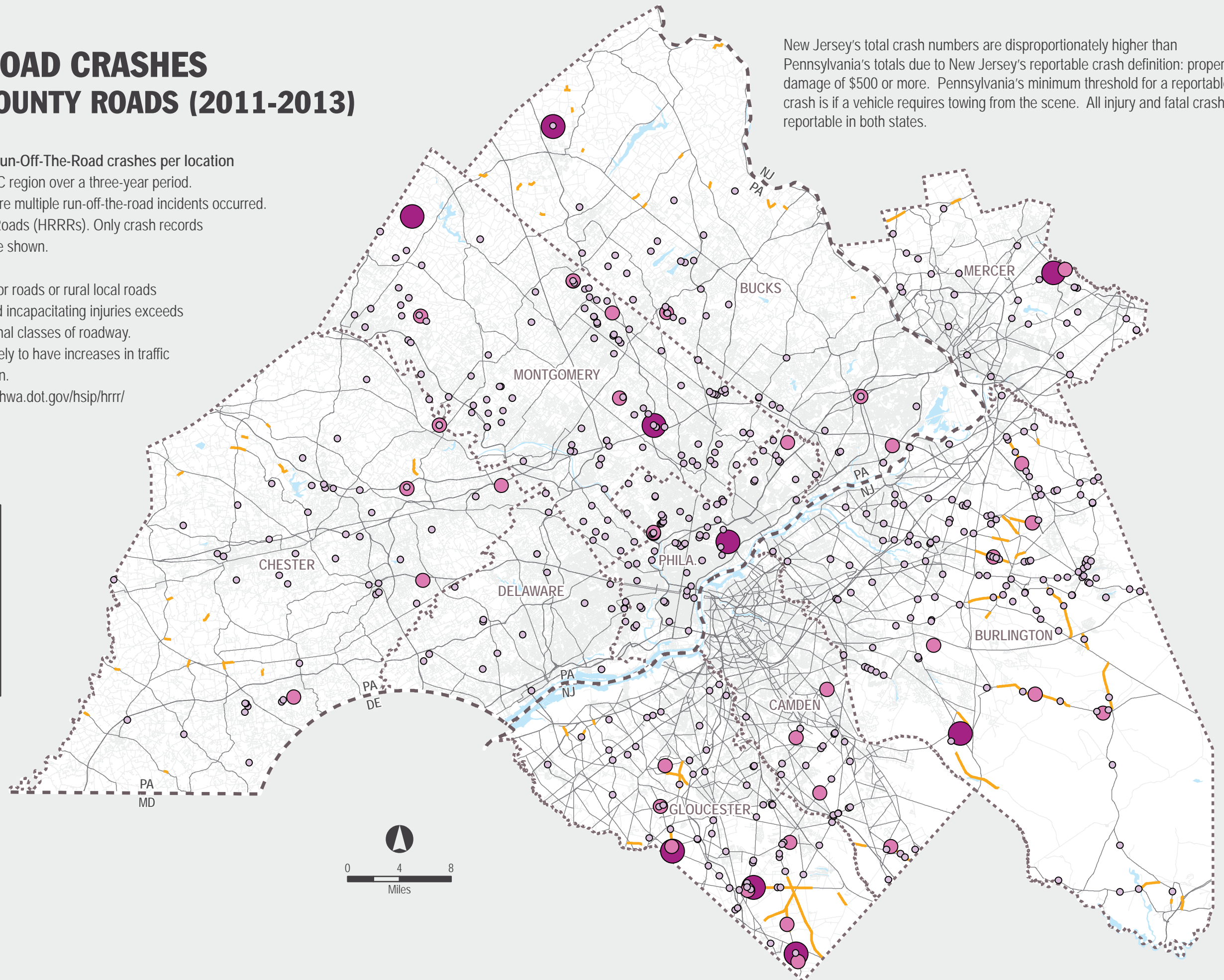
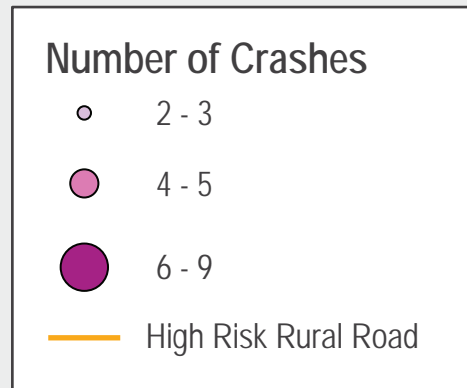
¹ For more information, go to www.dvrpc.org/GetInvolved/TitleVI

RUN-OFF-THE-ROAD CRASHES ON LOCAL AND COUNTY ROADS (2011-2013)

This map shows the total number of Run-Off-The-Road crashes per location on local and county roads in the DVRPC region over a three-year period. Each symbol represents a location where multiple run-off-the-road incidents occurred. This map also shows High Risk Rural Roads (HRRRs). Only crash records that contained locational information are shown.

HRRRs are rural major or minor collector roads or rural local roads on which the crash rate for fatalities and incapacitating injuries exceeds the statewide average for those functional classes of roadway. HRRRs are also such roads that are likely to have increases in traffic volumes likely to create such a condition. For more information, see <http://safety.fhwa.dot.gov/hsip/hrrr/>

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.



NEXT STEPS

Driver error is commonly estimated to be the cause of approximately 90% of all crashes. More specifically, driver inattention is the most common contributing factor in run-off-the-road crashes. Speaking on a phone, texting, eating, and similar activities remove the driver's eyes and/or attention from the road.

HANG UP! JUST DRIVE!*

Even hands-free cell phone use is dangerous. Studies show that distracted driving can be as dangerous as drunk-driving. For an example, see www.distraction.gov/downloads/pdfs/a-comparison-of-the-cell-phone-driver-and-the-drunk-driver.pdf

*New Jersey Division of Highway Traffic Safety tagline (Fall, 2013)

There is a clear need for a comprehensive approach including the four E's (education, enforcement, engineering, and emergency services to quickly treat crash victims), as well as policy approaches.

In the past, the focus of many safety initiatives has been on state and federal highways. The numbers show that we need to pay more attention to local roads where 40% of crashes are occurring in the Delaware Valley.



Injured person being removed from a crash by first responders.

HOW DO WE REDUCE CRASHES ON LOCAL ROADS?

Programs to educate and encourage people to drive more safely are run throughout the Delaware Valley by Transportation Management Associations (TMAs) and many other organizations. Such programs are essential, but it can be difficult to measure their effectiveness. It is known that when educational efforts are paired with enforcement, both efforts become more effective. Enforcement is effective, but expensive. A frequently relied-upon approach is engineering.

Engineering approaches include traditional worst-first projects and newer approaches.

- ▶ Traditional approaches include analysis to identify high-crash locations, evaluate strategies, and implement cost-efficient projects. The strategies considered should include FHWA proven safety countermeasures such as rumble strips and stripes, Safety Edge_{SM}, and enhanced delineation and friction for horizontal curves. For more information, see <http://safety.fhwa.dot.gov/provencountermeasures>.
- ▶ Newer approaches address many locations with similar risk characteristics even though they might not all have high numbers of crashes. Then one or more appropriate counter-measures can be applied widely. This may be especially useful on rural roads where crashes are spread out and low-cost measures can be widely applied. A source of more information about a newer approach is <http://safety.fhwa.dot.gov/systemic>.
- ▶ Hit-fixed-object crashes have specific low-cost measures that include reflective tape for non-removable fixed objects and increasing safe zones where there have been objects hit repeatedly. New regulations are in effect for retroreflectivity of signs and there are guides available at http://safety.fhwa.dot.gov/roadway_dept/night_visib/signtechguidance.cfm.
- ▶ Stop-controlled intersections are relatively common on local roads; a source of information about them is http://safety.fhwa.dot.gov/intersection/resources/fhwasa09020/chap_2.cfm.
- ▶ A great resource for exploring a wide array of safety strategies is the FHWA crash reduction factor publications and tool. For more information, see <http://safety.fhwa.dot.gov/tools/crf>.

THE DATA NEEDED FOR CRASH ANALYSIS IS AVAILABLE

- ▶ One way the Federal Highway Administration demonstrates its commitment to making roads safer is through Local Technical Assistance Program (LTAP) classes. Training is available to all levels of public works employees. There is no cost for municipalities in Pennsylvania and costs are low in New Jersey. Topics include best practices in the variety of work undertaken by public works departments with emphasis areas of maintenance and safety. LTAP can also provide an expert at no charge to consult on a municipality's roadway safety issues. For more information in Pennsylvania, visit www.ltap.state.pa.us and in New Jersey, visit www.ltap.rutgers.edu.
- ▶ In New Jersey, any municipality or county staff member can get access to Plan4Safety, a helpful tool for analyzing crash data, at <http://cait.rutgers.edu/tsrc/plan4safety>. New Jersey data and analysis are also available at www.state.nj.us/transportation/refdata/accident.



Providing information helps reduce secondary crashes.

- ▶ In Pennsylvania, staff from a municipality or county would start with analysis available at <http://dotcrashinfo.pa.gov/PCIT/welcome.html>. An appropriate staff member may then request analysis from PennDOT-District 6 by writing an e-mail or letter with the name of the person who will use the data, the purpose, and the location. The crash information requested needs to fulfill a legitimate governmental function, such as to conduct a traffic safety study or to develop a traffic safety program. Correspondence should be sent to Vincent Cerbone, Highway Safety Engineer (vcerbone@pa.gov) or Louis Belmonte, District Traffic Engineer (lbelmonte@pa.gov); the mailing address is 7000 Geerdes Blvd., King of Prussia, PA 19406.

DVRPC staff members offer to help with analysis as time permits. A resource for getting started is *Using Crash Data to Improve Safety in the Delaware Valley* (Publication #09020), available from www.dvrpc.org/asp/publicationsearch. DVRPC has also published municipal-level crash analysis available interactively through www.dvrpc.org/asp/DataNavigator/default.aspx.

FUNDING SAFETY IMPROVEMENTS

DVRPC can help municipalities or counties prepare applications for funding as time permits, however the following resources are an important starting point:

- ▶ PennDOT Bureau of Municipal Services - www.dot34.state.pa.us/BMSInfo.aspx
- ▶ NJDOT Local Aid and Economic Development Funding Programs - www.state.nj.us/transportation/business/localaid/funding.shtm
- ▶ DVRPC Municipal Resource Guide - www.dvrpc.org/asp/MCDResource

FUNDING AVAILABLE TO REDUCE RUN-OFF-THE-ROAD CRASHES ON LOCAL ROADS IN NEW JERSEY

DVRPC, in cooperation with NJDOT, coordinates New Jersey's Annual Highway Safety Improvement Program (HSIP) Local Safety and Design Assistance Program. Available to counties and cities, this program funds safety improvements on local roads. In addition, DVRPC assists local partners with problem identification and application preparation for this program. Both spot improvements and systematic safety projects are eligible. For more information, contact Kevin Murphy, Assistant Manager, Safety Programs at kmurphy@dvrpc.org or (215) 238-2864.

OTHER RESOURCES

- ▶ FHWA Local Road Safety Checklists and other resources: http://safety.fhwa.dot.gov/local_rural/training
- ▶ FHWA e-mail update subscription on local and rural roads: <http://safety.fhwa.dot.gov/esubscribe.cfm#local>
- ▶ FHWA Local and Rural Roads Safety Peer-to-Peer Program: http://safety.fhwa.dot.gov/local_rural/training/p2p
- ▶ Speed Management: A Manual for Local Rural Road Owners (FHWA-SA-12-027) available at http://safety.fhwa.dot.gov/local_rural/training/fhwasa010413spmgmt; FHWA, 2012.
- ▶ Non-Motorized User Safety: A Manual for Local Rural Road Owners (FHWA-SA-12-026) available at http://safety.fhwa.dot.gov/local_rural/training/fhwasa010413/nonmotorize.pdf; FHWA, 2012
– DVRPC staff contributed to this report.



Improving safety involves engineering, enforcement, education, emergency services, and policies.



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Abstract: Roads maintained by counties and municipalities are the site of approximately 40% of all crashes

in the nine-county Delaware Valley, however many safety programs focus on state and interstate highways. This newsletter provides engineers, planners, and other staff members at counties and municipalities analysis and pointers on what can be done in this region to improve safety.



Please drive safely!

Photo by Anita Behrman

For more information or to let us know what additional efforts would be helpful, contact:

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The Delaware Valley
Regional Planning
Commission is

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

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