

2014 Winter Workshop



DelDOT Highway Safety Improvement Program

February 14, 2014



PRESENTED BY:
Adam Weiser, P.E. PTOE
Safety Programs Manager
Delaware Department of Transportation

Agenda

- Overview of DelDOT's Safety Programs Section
 - Responsibilities and activities
- 2013 Accomplishments
- Crash data overview
- Overview of DelDOT's Highway Safety Improvement Program
 - Changes to address MAP-21
- New safety initiatives

DelDOT's Safety Programs Section

- Management of statewide highway safety programs
- Programs required by FHWA
- Work in collaboration with:
 - Delaware State Police
 - Delaware Office of Highway Safety
 - Delaware Office of Emergency Medical Services
 - Federal Highway Administration
 - National Highway Traffic Safety Services Administration



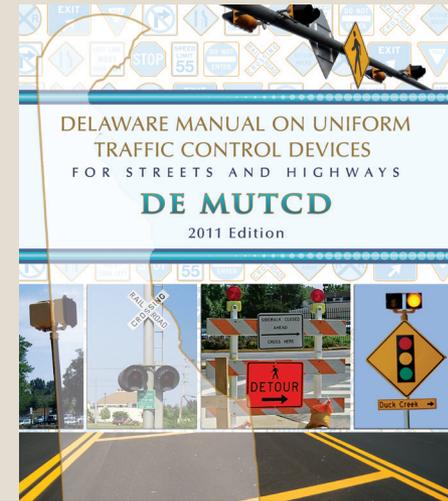
DelDOT's Safety Programs Section

- Other responsibilities
 - Work Zone Safety & Mobility Program
 - ✦ Review of highway work zones statewide
 - Field and plan reviews of TTC layouts
 - ✦ Work Zone crash investigation
 - ✦ Development of Transportation Management Plans for significant projects
 - ✦ Identifying lane closure restriction timeframes
 - Planned Special Events
 - ✦ Permit approvals
 - ✦ Development and review of event TTC plans
 - ✦ Provide TTC for events, if requested and reimbursed by organizer



DelDOT's Safety Programs Section

- Other responsibilities
 - Manual on Uniform Traffic Control Devices
 - ✦ Development of State specific manual
 - ✦ Provide official interpretations and interim guidance
 - ✦ Maintain Delaware MUTCD webpage
 - Oversize/Overweight Vehicle Permitting
 - ✦ Review routes for size restrictions/limitations for proposed moves
 - ✦ Provide special provision requirements
 - Time of move
 - Use of police escorts
 - Special move requirements
 - ✦ Mainly focus on superloads
 - ✦ Traffic control assistance



DelDOT's Safety Programs Section

- Other responsibilities

- Crash investigations

- ✦ Fatal crash reviews

- Staff on scene with State Police reconstruction unit
- Investigation focuses on roadway elements
 - Signing and pavement markings
 - Sight distance
 - Pavement drop-offs
 - Clear zone/fixed objects
- Results used to evaluate trends in crashes and address roadway deficiencies at locations with similar characteristics

- Incident management

- ✦ Work as part of Unified Command on major incidents
- ✦ Emergency detour development and implementation



2013 Accomplishments

- I-495 High-Tension Cable Barrier



2013 Accomplishments

- US Route 113 @ Kruger Road/Alms House Road
 - Median closure



2013 Accomplishments

- First section of high-friction surface treatment installed
 - Pyle Center Road



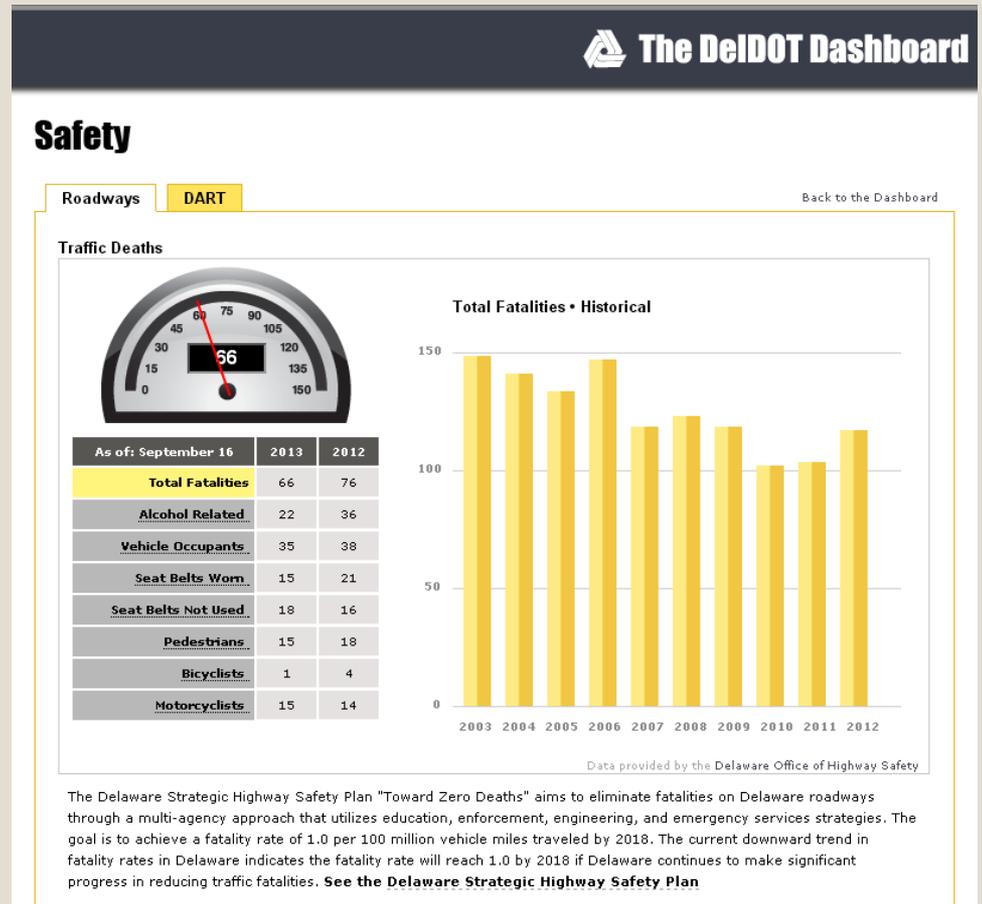
2013 Accomplishments

- Developed roundabout educational video
- Approved 417 planned special event permits
- Reviewed and approved over 50 oversize/overweight load permits
- Managed to completion, the re-write of traffic signal/lighting specifications in support of Department wide effort
- Significant overhaul of Department's Hauling Permits Manual
 - In conjunction with DMV Hauling Permits Office
- Instituted quarterly coordination meetings with Delaware State Police and Office of Highway Safety

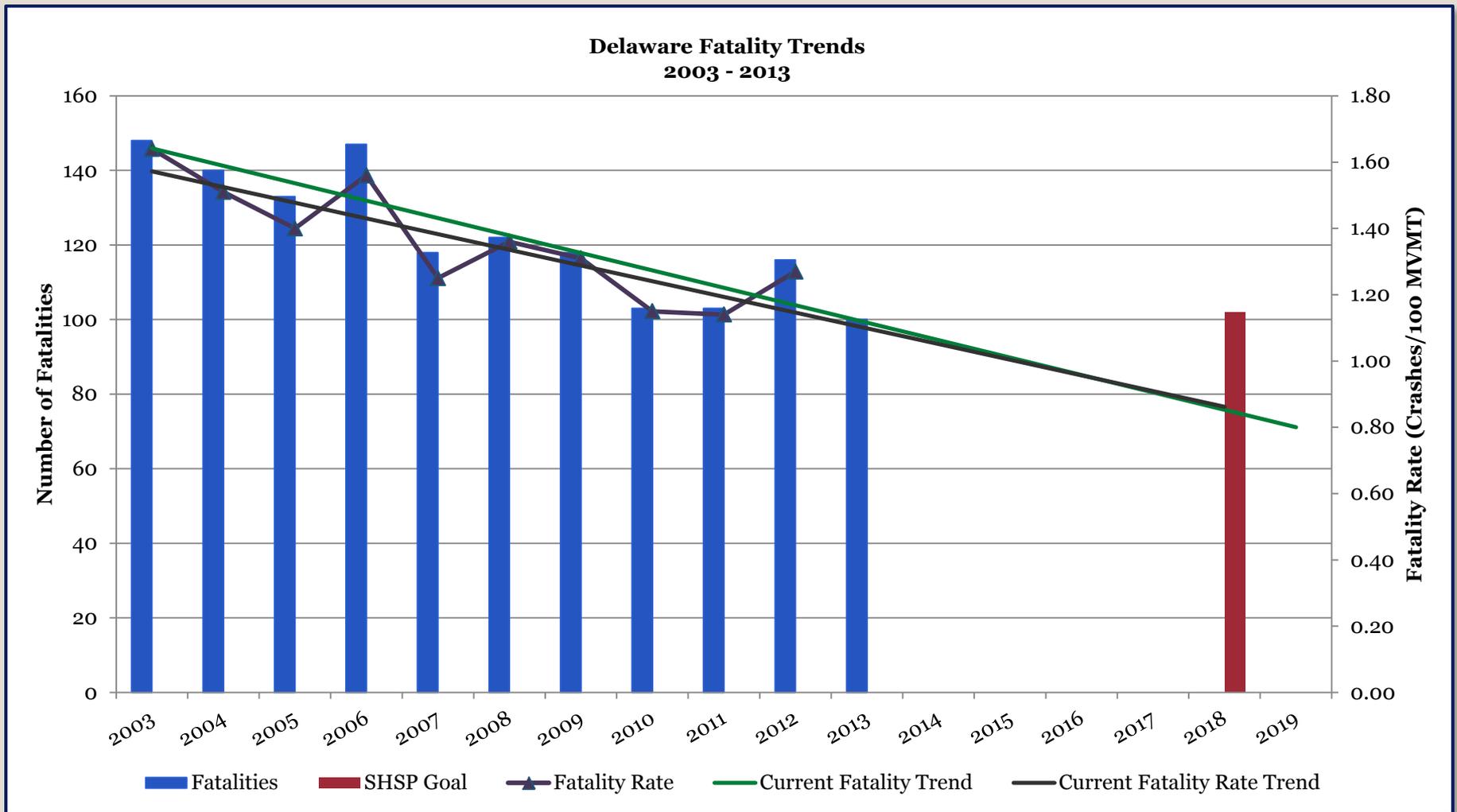


Crash Data Overview

- 2013 – 100 fatalities
 - Lowest since 1963
- Decrease from 2012
 - 116 fatalities
- Performance Goal
 - Achieve a fatality rate of 1.0 crash/100 MVMT by 2018
 - Currently on pace to meet this target

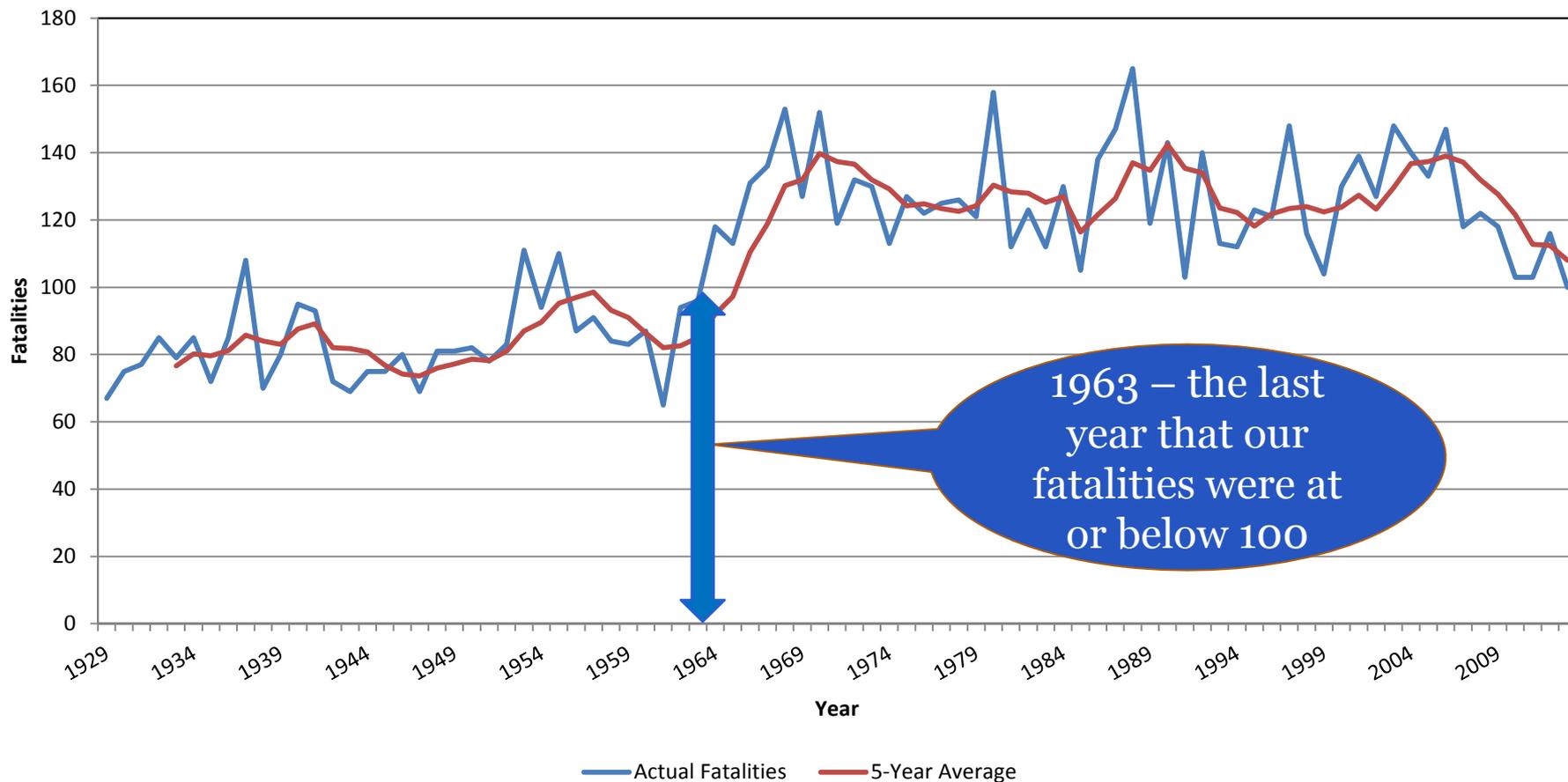


Crash Data Overview



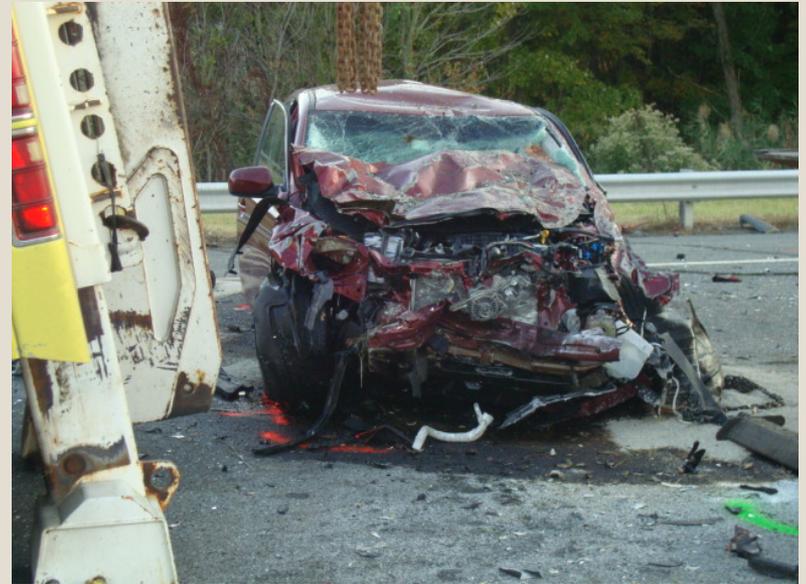
Crash Data Overview

Delaware Fatality Trends 1929 - 2013

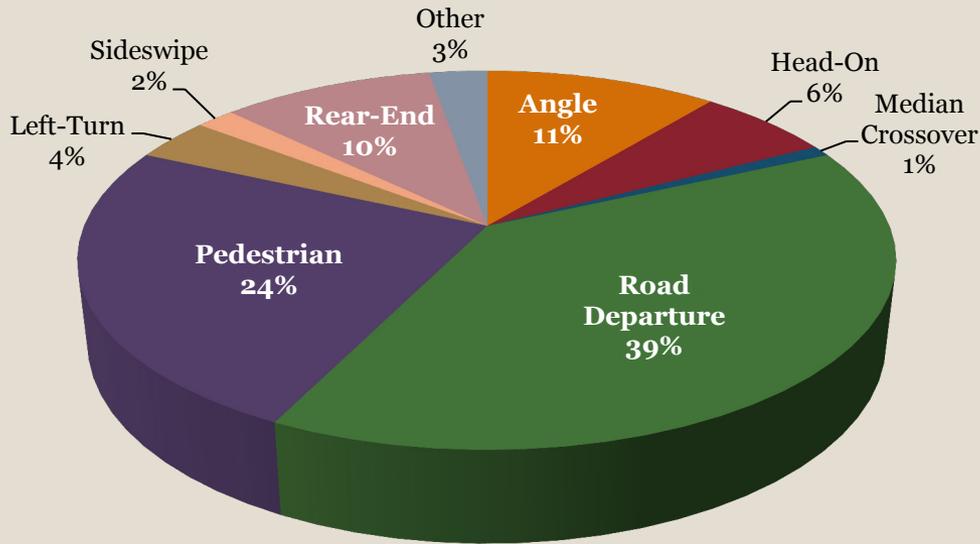


Crash Data Overview

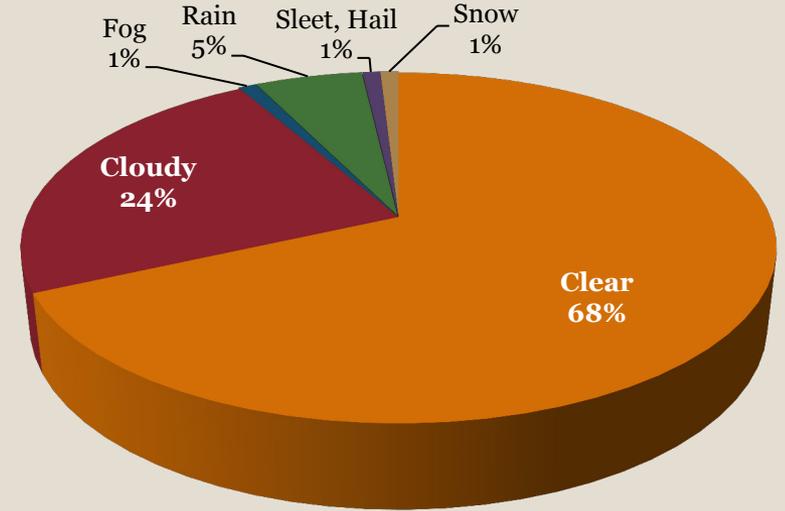
- The following preliminary trends were identifiable in 2013:
 - Thirty-four percent of the fatal crashes involved a roadway departure
 - ✦ Down from 39% the previous year
 - Four less pedestrian fatalities in 2013 than in 2012.
 - ✦ Twenty-six percent of the fatal crashes involved a pedestrian.
 - Two bicycle related fatalities compared to four in 2012.
 - First harmful events:
 - ✦ Striking a tree – 10%
 - ✦ Striking a utility pole – 5%
 - Of the 51 vehicle occupants killed in crashes in 2012, 24 of those people were unbelted.
 - Motorcycle fatalities increased by 3 in 2013.
 - ✦ Up from 17 the year before.
 - 18 intersection related fatal crashes in 2013.



Crash Data Overview

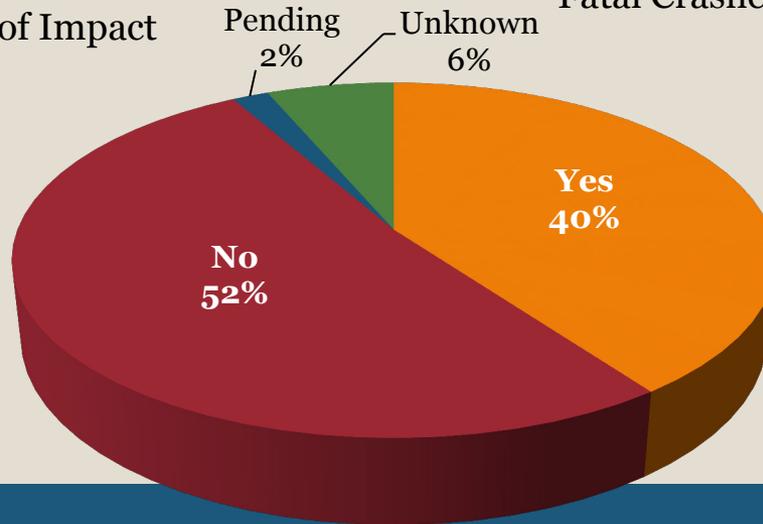


Fatal Crashes by Manner of Impact



Fatal Crashes by Weather Condition

Fatal Crashes by Alcohol Involvement

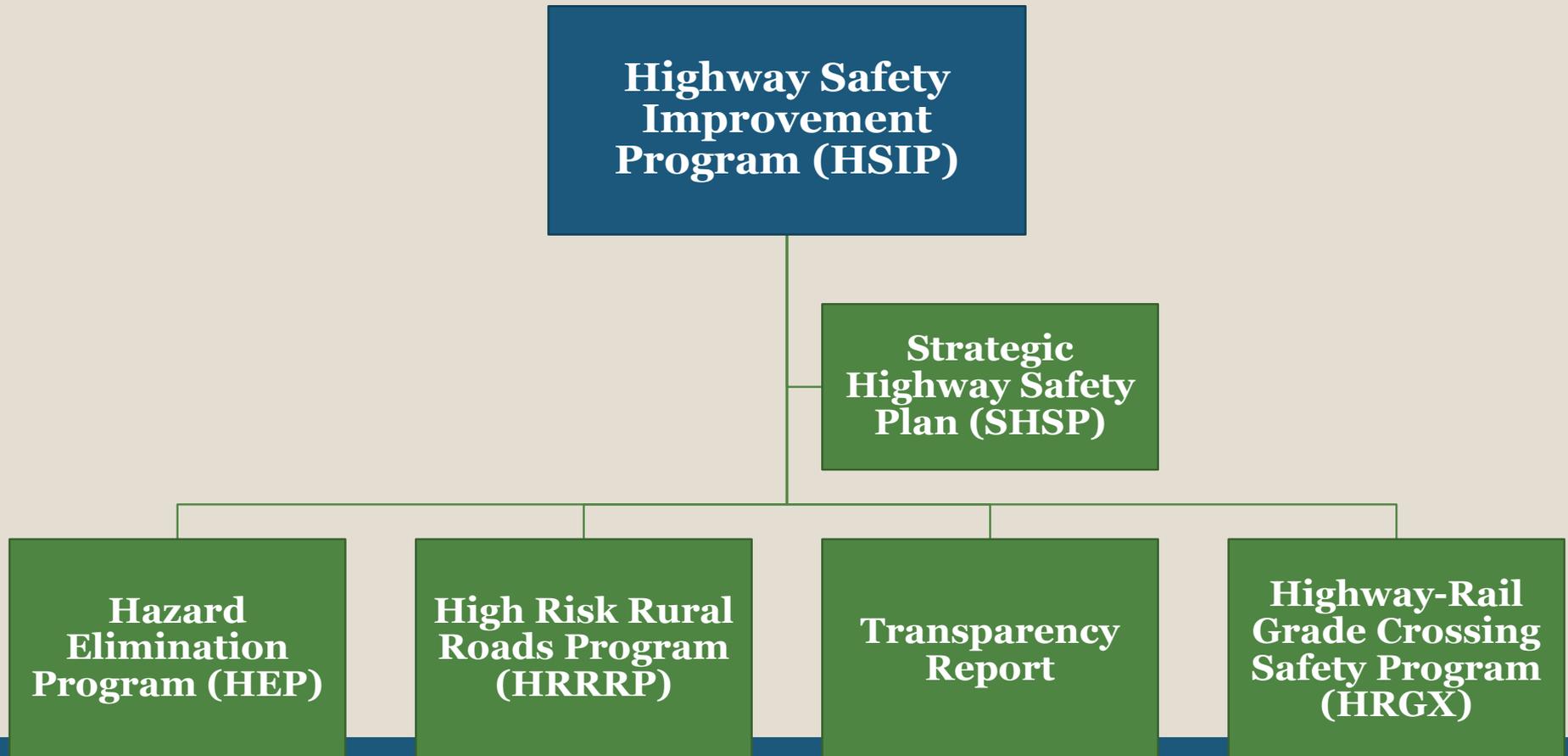


DelDOT's HSIP

- **Traditionally hot-spot safety program**
 - Address safety problems as they are identified by data review
 - Hazard Elimination Program (HEP)
- **Moving towards a mixture of systemic and hot-spot treatments**
 - Systemic improvements based on SHSP data review
 - Hot-spot improvements based on traditional HEP
- **Changes to program structure based on MAP-21**
 - SHSP is the basis of the entire program
 - No HRRRP or Transparency Report
 - Incorporating performance measures

DelDOT's HSIP

- Current program structure (prior to MAP-21)
 - Mainly a hot spot improvement program

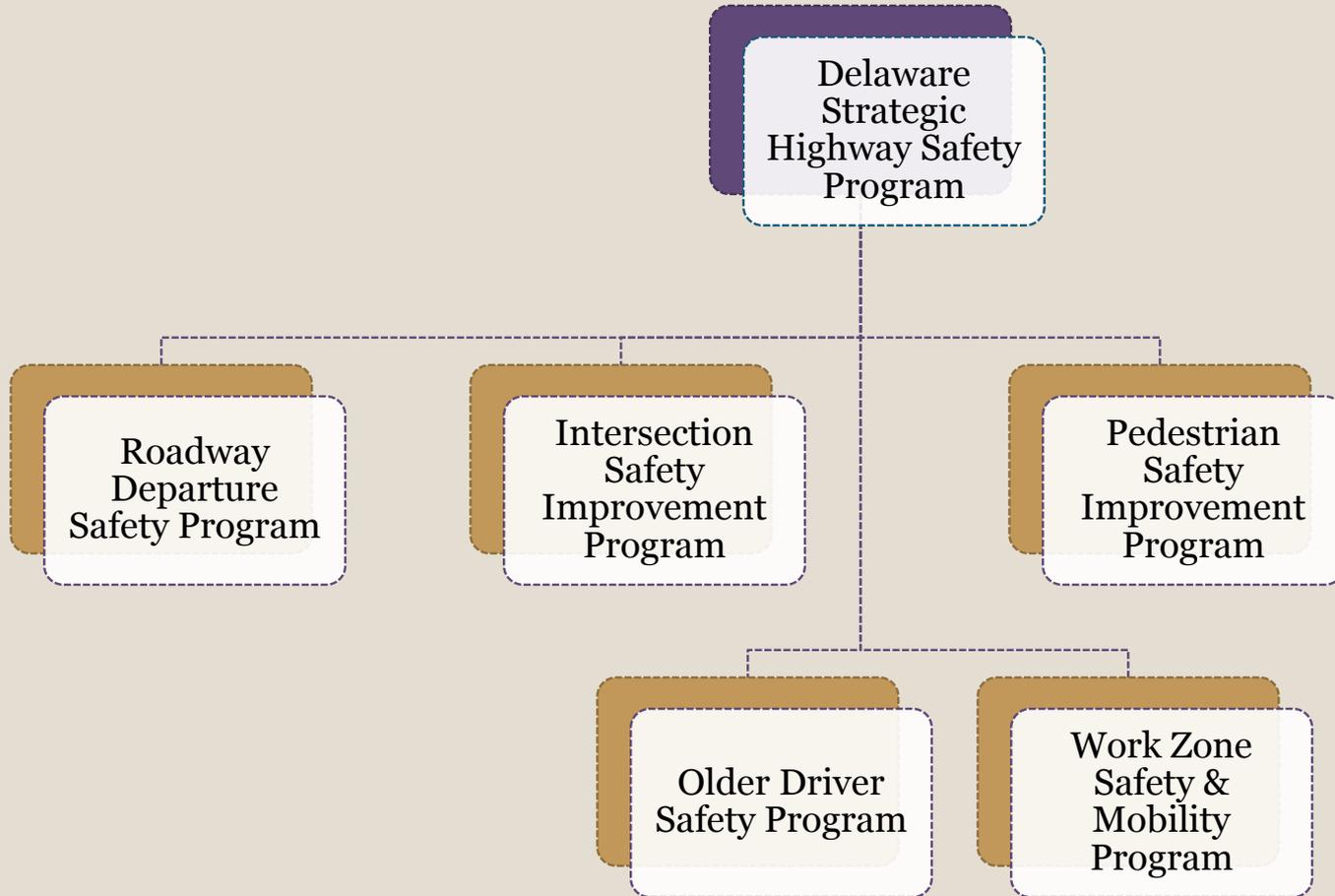


DelDOT's HSIP

- New program structure (changes based on MAP-21)
 - Incorporating a systemic program



DelDOT's HSIP



Strategic Highway Safety Plan

- **Mission Statement:** The *Delaware Strategic Highway Safety Plan: Toward Zero Deaths* aims to eliminate fatalities on Delaware's roadways through a multi-agency approach that utilizes education, enforcement, engineering and emergency services strategies.
- **Vision Statement:** The goal of Delaware's *Strategic Highway Safety Plan* is to achieve a fatality rate of 1.0 per 100 million vehicle miles traveled per year by 2018.



Strategic Highway Safety Plan

- SHSP Initiatives

- High-Tension Cable Barrier

- ✦ Successfully implemented two runs of cable barrier
- ✦ Looking at additional locations on I-95 for future installation

- Rumble Strip Installation

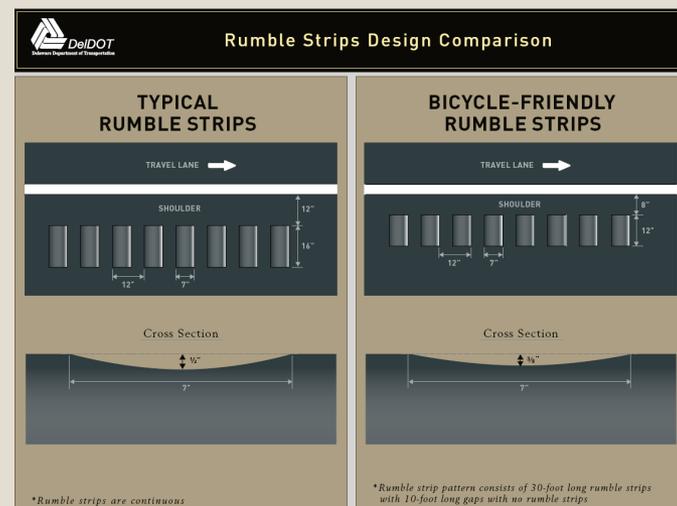
- ✦ Expanding installation to rural collectors and locals
 - Based on SHSP data review
- ✦ Open-end project awarded

- High Friction Surface Treatment

- ✦ Recently implemented test location in Sussex County
- ✦ Open-end contract under development

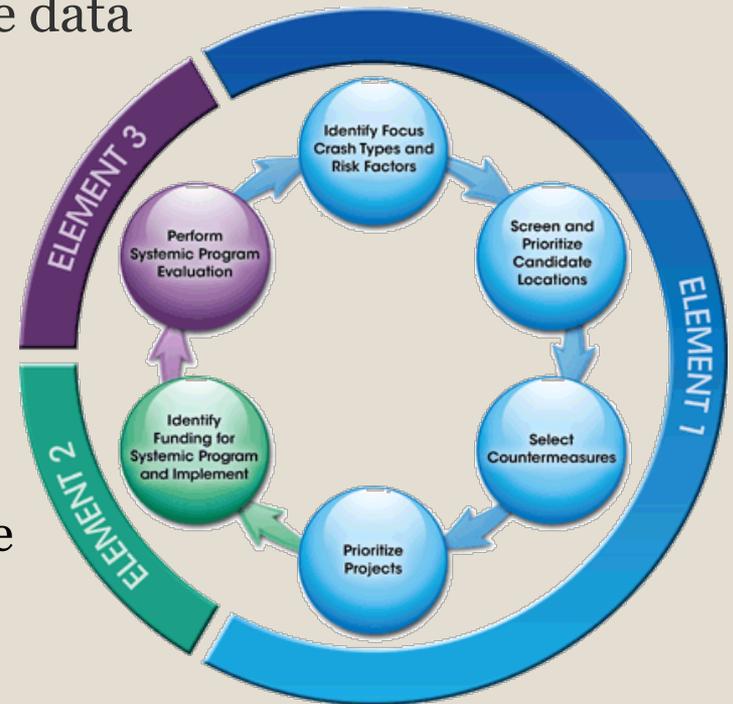
- Pedestrian/Bicycle Safety Working Group

- ✦ Address continued increase in vulnerable users crashes
- ✦ Identify corridors for pedestrian safety audits
- ✦ Develop countermeasures for addressing pedestrian crashes



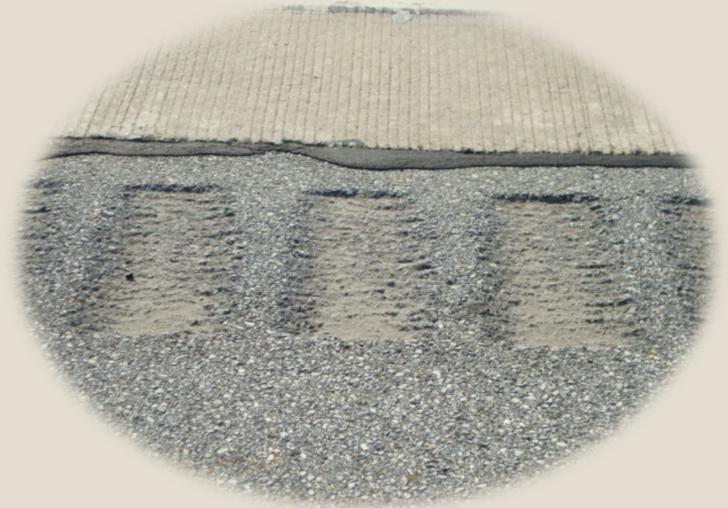
Systemic Improvements

- System Safety Improvement Program is currently under development
- Change in how we think about safety improvements
 - Identify problems based on system-wide data
 - ✦ Use SHSP to identify problem areas
 - ✦ Examples:
 - Road departure crashes
 - Pedestrian crashes
 - Wet weather related crashes
 - ✦ These types of crashes are spread across the road network, not clustered at specific locations
 - ✦ Look at roadway characteristics that are frequently present in severe crashes
 - Geometry
 - Traffic volume
 - Location

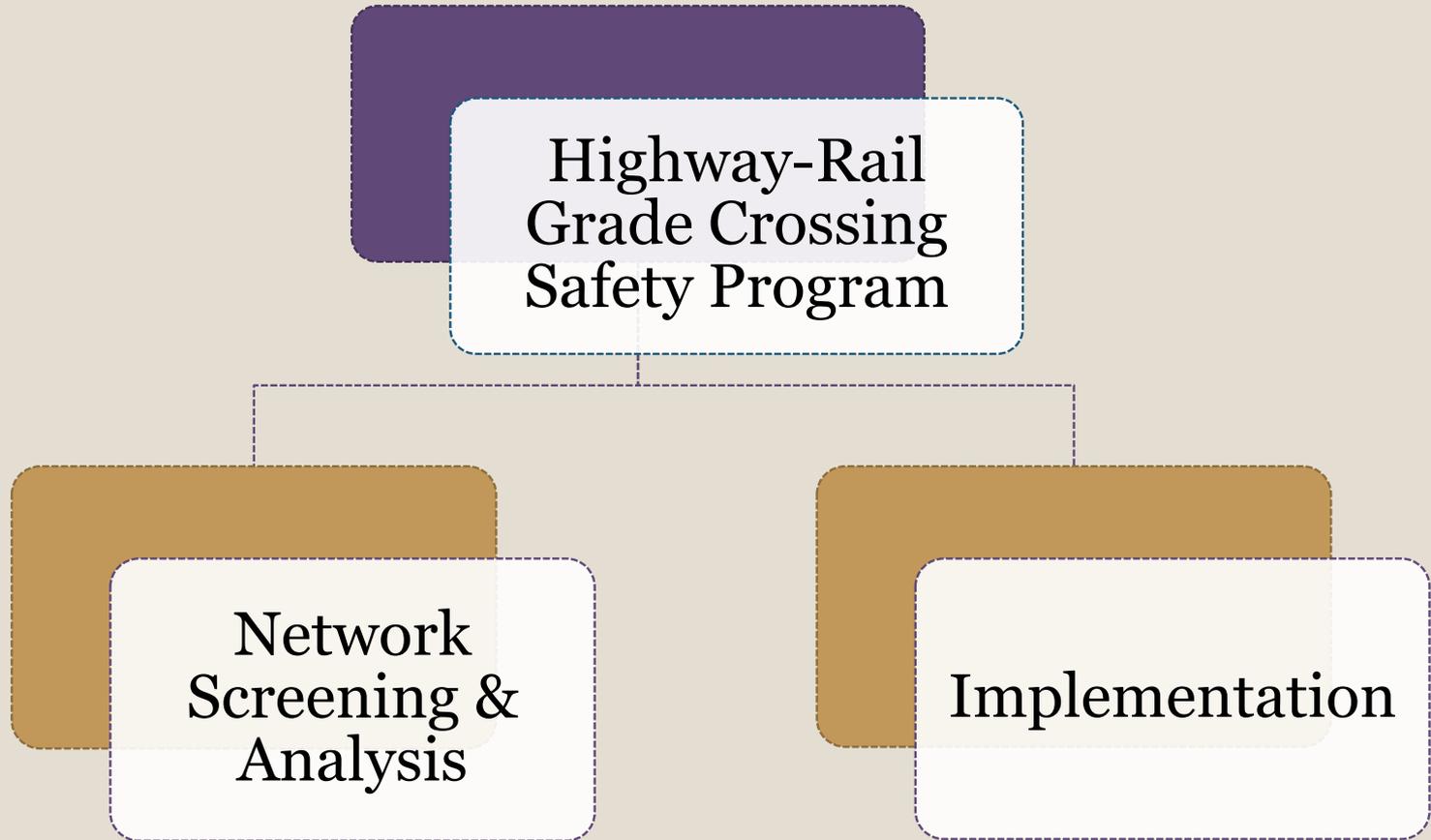


Systemic Improvements

- Focus on deploying one or more low-cost countermeasures to address specific types of crashes on specific types of roadways
 - Example improvements
 - ✦ Longitudinal rumble strips
 - ✦ Median barrier
 - ✦ Horizontal curve signage
- Program development/Next steps
 - Developed a draft process memorandum
 - ✦ Currently being finalized
 - Identify roadway types and crash types to be addressed
 - ✦ Road departures on locals and collectors
 - Identify low-cost safety improvements
 - ✦ Longitudinal rumble strips
 - ✦ High-friction surface treatment
 - Implement, implement, implement



DelDOT's HSIP

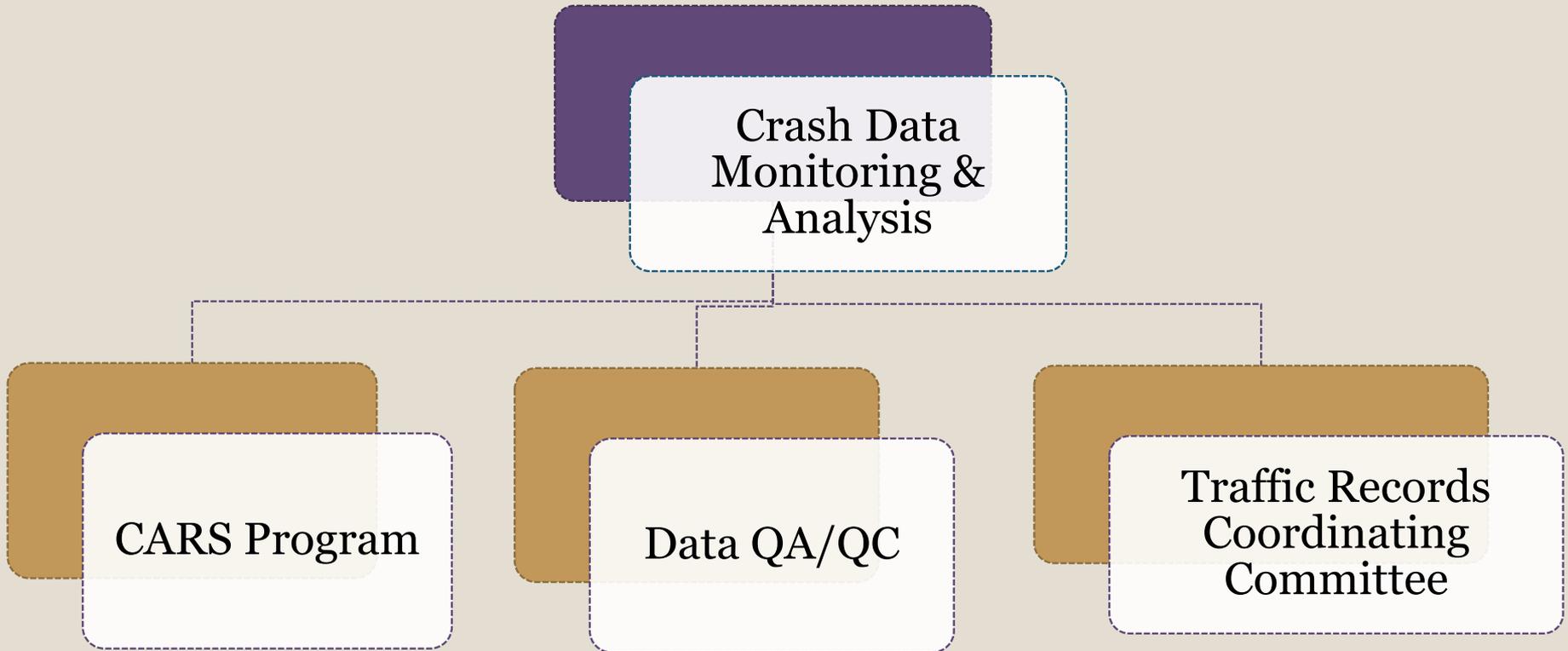


HRGX Examples

- **SR 4 Rail Crossing**
 - Gates added to rail crossing
 - Implemented rail pre-emption
 - Queue detection
- **SR 100 Rail Crossing**
 - Gates added to rail crossing
 - Implemented rail pre-emption
- **West Main Street (Newark)**
 - Added gates to the crossing
 - Advance warning flashers
 - Pavement marking improvements



Delaware's HSIP



Crash Analysis Reporting System

Crash Occurs

- DSP or local police agency responds to collect data.
- Drivers, passengers and witnesses are interviewed

Report Approval

- Higher ranking officers within each troop review all crash reports for clarity and accuracy
- Reports are approved and then included in the database

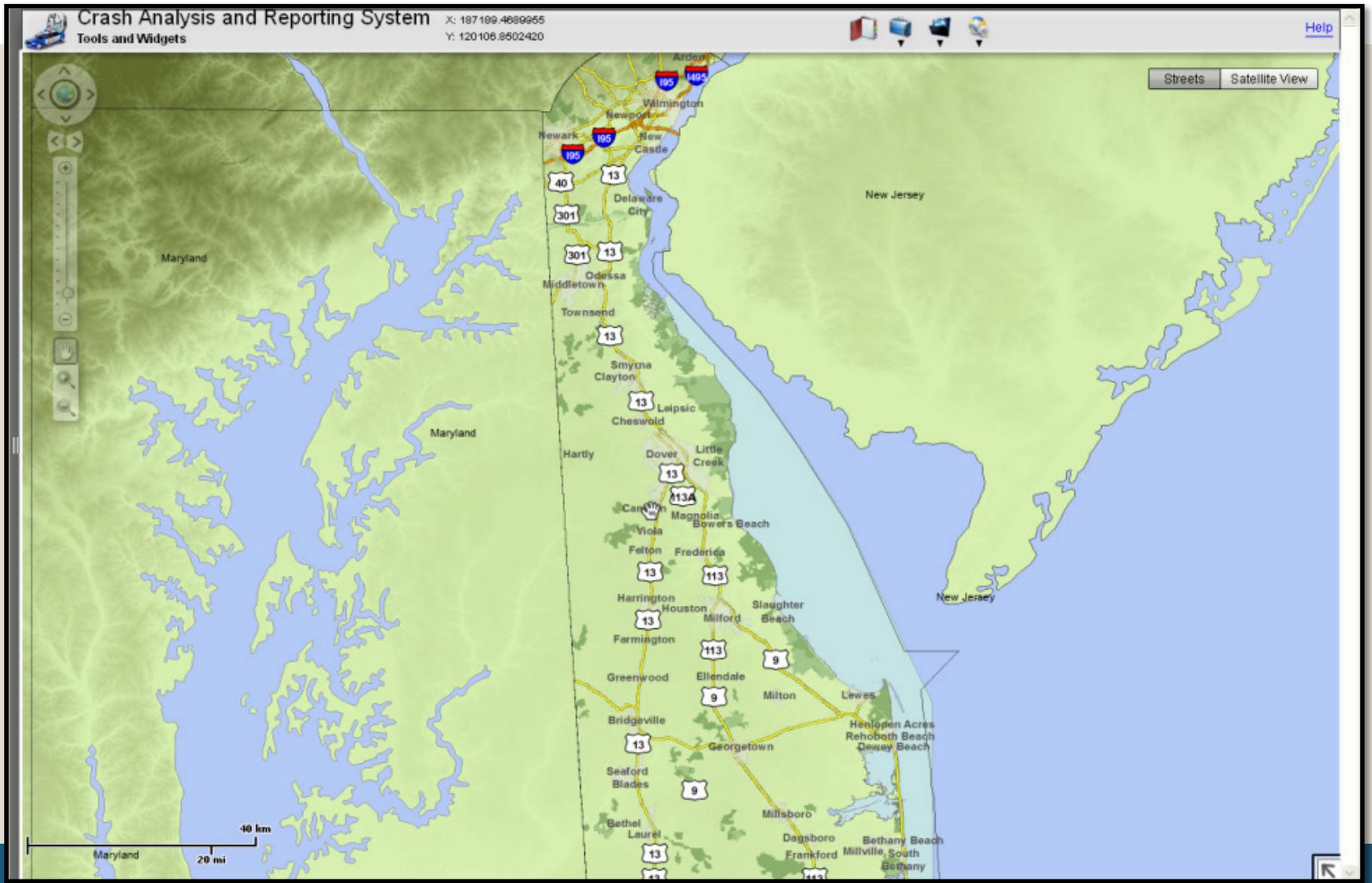
Transfer of Data

- On a nightly basis, crash data is electronically transferred from DelJIS to DelDOT and stored in DelDOT's crash database
- Database populates information into CARS for study purposes

Crash Data Review

- DelDOT staff utilizes database to review crash data
- Crash data can be viewed in the mapping program or specialized queries can be developed, depending upon need

Crash Analysis Reporting System



Crash Analysis Reporting System

The screenshot displays the 'Crash Analysis and Reporting System' interface. At the top, the title bar reads 'Crash Analysis and Reporting System' with coordinates X: 225677.5266611 and Y: 56442.0063628. Below the title bar is a 'Tools and Widgets' menu. A 'Crash Buffer Tools' window is open on the left, showing the following settings:

- Maintenance Road #: 00363
- MilePost: 0.00 Extend: 0.0 miles
- MilePost: 2.73 Extend: 0.0 miles
- Buffer Size: 50 feet
- Buffer Color: [Color Selection]
- Buttons: Generate Road Buffer, Clear/Reselect

The main map area shows a road network with a blue buffer zone around a specific road segment. Green circles with numbers (7, 4, 5, 5, 2, 4, 2, 2, 3, 3, 3, 4, 3, 3, 3, 4) are placed along the road, representing crash data points. The map includes labels for 'LIZARDS HILL RD', 'CENTRAL AVE', 'OLD CHURCH CEMETERY RD', 'CAMP BARNES RD', and 'Miller Creek Park Mobile Home Park'. A scale bar at the bottom left indicates 500 meters and 2000 feet. The top right corner has 'Streets' and 'Satellite View' buttons, and a 'Help' button is in the top right corner.

Crash Analysis Reporting System

Crash Analysis and Reporting System X: 183366.5630256
Tools and Widgets Y: 188494.3476320

Crash Query Results

Items 1 to 200 of 732

Complaint Number	Date of Crash	Roadway ID	Maint Road	Highway Direction Code	Milepoint Num
<input type="checkbox"/> 0605028850	03-18-2005	100085	56	WB	6.13
<input type="checkbox"/> 0605112647	10-11-2005	100088	59	SB	12.19
<input type="checkbox"/> 0605045183	04-29-2005	100085	56	WB	6.06
<input type="checkbox"/> 0605054473	05-22-2005	88	59	NB	0.01
<input type="checkbox"/> 0605048962	05-04-2005	88	59	NB	0.66
<input type="checkbox"/> 0605082860	07-29-2005	88	59	NB	0.3
<input type="checkbox"/> 0605129705	11-23-2005	100085	56	WB	6.2
<input type="checkbox"/> 0605099243	09-07-2005	95	56	EB	10.97
<input type="checkbox"/> 0605140995	12-21-2005	85	56	EB	10.52
<input type="checkbox"/> 0605068195	06-24-2005	88	59	NB	0.37
<input type="checkbox"/> 0605053256	05-19-2005	2047	6091	NB	0.29
<input type="checkbox"/> 0605023220	03-04-2005	85	56	EB	11.3
<input type="checkbox"/> 0605095031	08-27-2005	85	56	EB	11.2
<input type="checkbox"/> 0605130837	11-25-2005	100085	56	WB	6.25
<input type="checkbox"/> 0105039598	04-15-2005	100088	59	SB	12.1
<input type="checkbox"/> 0605069876	06-27-2005	100085	56	WB	5.76
<input type="checkbox"/> 0605042339	04-22-2005	88	59	NB	0.69
<input type="checkbox"/> 0605044494	04-27-2005	100085	56	WB	5.67
<input type="checkbox"/> 0605097305	09-03-2005	100085	56	WB	6.11
<input type="checkbox"/> 0605083514	07-30-2005	85	56	EB	10.62
<input type="checkbox"/> 0605129939	11-23-2005	88	59	NB	0.57
<input type="checkbox"/> 0605118516	10-21-2005	100085	56	WB	5.75
<input type="checkbox"/> 0605125626	11-13-2005	100085	56	WB	5.85
<input type="checkbox"/> 0605107419	09-28-2005	2047	6091	NB	0.26

Selected Ids: 0

State of Delaware Crash Study Summary

Study Period from 04-07-2008 to 04-07-2011

Summary		Classification		Manner Of Impact	
	# of Crashes		# of Crashes		# of Crashes
Total Crashes	42				
Fatal Crashes	1	Non-Reportable	3	% of Total Crashes	7.14%
Total Alcohol-Related Crashes	2	Reportable	20		47.62%
Total Non Alcohol-Related Crashes	40	Personal Injury	18		42.86%
Total Fatalities	1	Fatality	1		2.38%
Total Pedestrian Fatalities	0	Total	42		
Total Pedestrian Injuries	0			Front to rear	2
Total Pedestrian Crashes	0			Front to front	7
Total Motorcycle Crashes	1			Angle	7
Total Pedalcyclist Crashes	0			Sideswipe, same direction	0
				Sideswipe, opposite direction	1
				Rear to side	0
				Rear to rear	0
				Other	9
				Unknown	0
				Not a collision between two vehicles	16
				Total	42

Alcohol Related Crashes by Classification					
	Non-reportable	Reportable	Personal Injury	Fatality	Total
Alcohol Related	0	1	1	0	2
Non-Alcohol Related	3	19	17	1	40
Total	3	20	18	1	42

Manner of Impact By Classification					
	Non-Reportable	Reportable	Personal Injury	Fatality	Total
Front to rear	0	1	1	0	2
Front to front	0	3	4	0	7
Angle	0	1	6	0	7
Sideswipe, same direction	0	0	0	0	0
Sideswipe, opposite direction	0	1	0	0	1
Rear to side	0	0	0	0	0
Rear to rear	0	0	0	0	0
Other	3	3	2	1	9
Unknown	0	0	0	0	0
Not a collision between two vehicles	0	11	5	0	16
Total	3	20	18	1	42

Crash Analysis Reporting System

- **Current status**

- Programming for basic operation is completed and in production
 - ✦ Intersection and road buffers
 - ✦ Standardized queries
 - ✦ Advanced query builder
- Programming for HEP and other Safety Programs functions completed and in production
 - ✦ HEP, crash rate generation
 - ✦ Custom critical crash ratio tool (systemic analysis tool)
- Next steps
 - ✦ Upgrade platform for Arc GIS 10.1
 - ✦ Incorporate road inventory parameters into query functions

Safety Programs Website

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Delaware Strategic Highway Safety Plan

Home Contact



Rumble Strips Reduce Highway Departure Crashes

A roadway departure crash is a non-intersection crash which occurs after a vehicle crosses an edge line, a center line or otherwise leaves the traveled way... read more

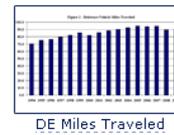
- Reducing the Frequency and Severity of Roadway Departure Crashes
- Curbing Aggressive Driving
- Increasing Seatbelt Usage
- Reducing Impaired Driving
- Improving the Design and Operation of Highway Intersections
- Making Walking and Street Crossing Safer
- Increasing Motorcycle Safety and Increasing Motorcycle Awareness

Our Mission
The Delaware Strategic Highway Safety Plan: Toward Zero Deaths aims to eliminate fatalities on Delaware's roadways through a multi-agency approach that utilizes education, enforcement, engineering and emergency services strategies.

Our Vision
The goal of The Delaware Strategic Highway Safety Plan: Toward Zero Deaths is to achieve a fatality rate of 1.0 per 100 million vehicle miles traveled by 2018.

Overview

The Delaware Strategic Highway Safety Plan is a statewide coordinated safety plan that provides a comprehensive framework to reduce fatalities on Delaware's roadways by identifying specific goals and objectives and integrating the four E's - engineering, education, enforcement and emergency medical services (EMS). The plan was developed in collaboration with representatives from DeIDOT, Delaware Office of Highway Safety, Delaware State Police, Delaware Department of Justice, Delaware Office of Emergency Medical Services, Federal Highway Administration and the National Highway Traffic Safety Administration. The plan is updated on a three year basis to review the success of the plan and to review crash data to ensure resources are being used appropriately to reduce the number of fatalities in Delaware. See the plan.



Primary Areas of Emphasis

Recent News

- 2012 Work Zone Safety Awareness Campaign

www.safety.deldot.gov

Thank you!

Questions???

Contact Info:

Adam Weiser, P.E., PTOE

Safety Programs Manager

Delaware Department of Transportation

169 Brick Store Landing Road

Smyrna, DE 19977

P: (302) 659-4073

E: Adam.Weiser@state.de.us