



# Highway Safety Program Update

Urban Construction Initiative Annual Meeting

May 20, 2015

**Mark A. Cole**

Assistant State Traffic Engineer

**Stephen Read**

HSIP Planning Manager

**Tracy Turpin**

HSIP Delivery Manager

# Virginia Highway Crashes



# VDOT's Highway Safety Program

## What we do:

- Identify & prioritize crash locations
- Determine safety improvement projects
- Fund & Deliver safety projects
- Track results/lessons learned
- Work Zone safety

**Teamwork is Critical!**



# Traffic Engineering Division



**State Traffic Engineer**  
**Ray Khoury, PE**



**Highway Safety**  
**Mark A. Cole, PE**

- ❖ Crash Records
- ❖ Highway Safety Planning
- ❖ HSIP Delivery
- ❖ Work Zone Safety



**Traffic Studies & Data Analysis**  
**Mena Lockwood, PE**

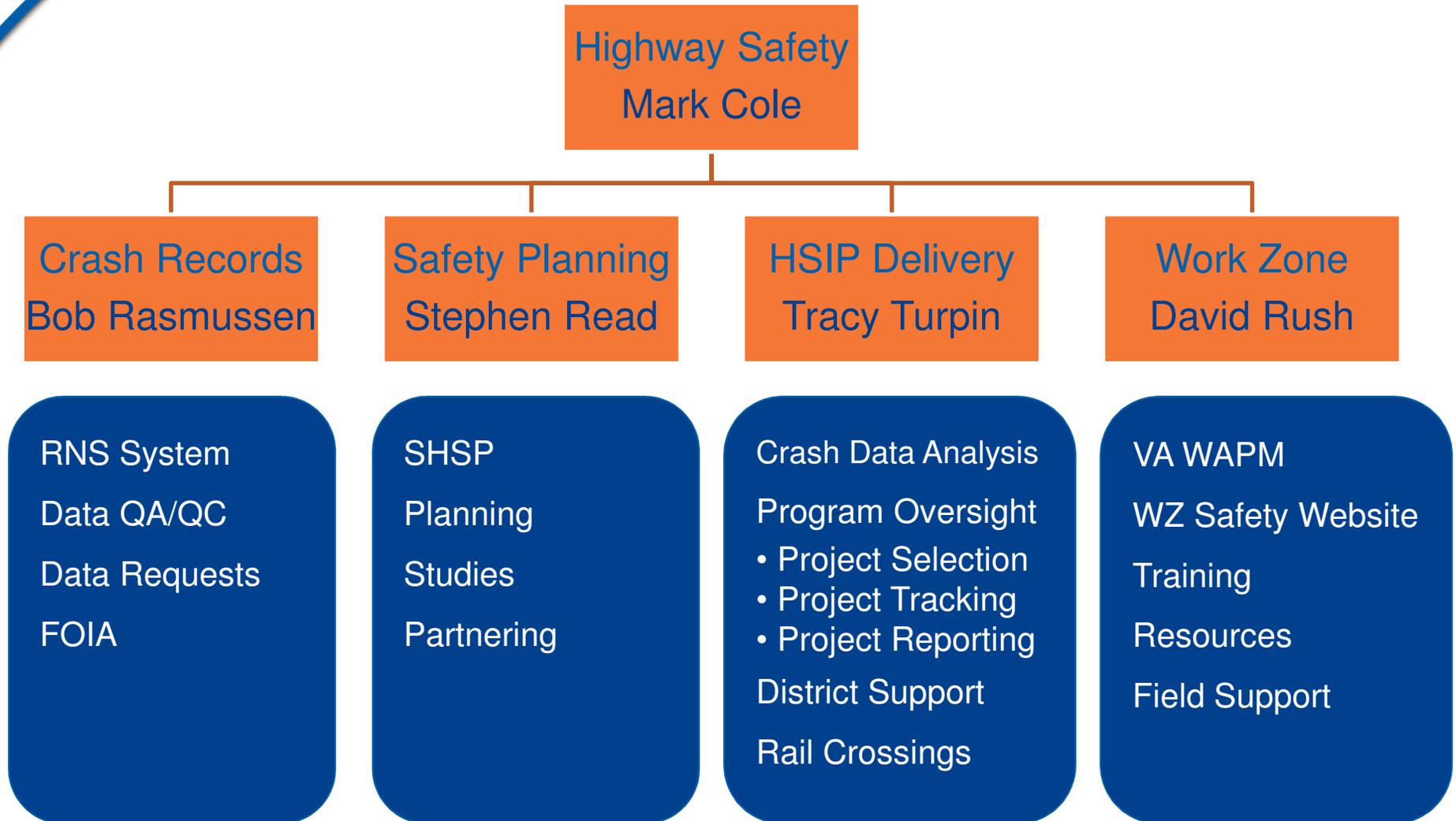
- ❖ Traffic Monitoring System
- ❖ Engineering Studies
- ❖ System Analysis
- ❖ Traffic Data Analysis



**Traffic Devices & Administration**  
**Vanloan Nguyen, PE**

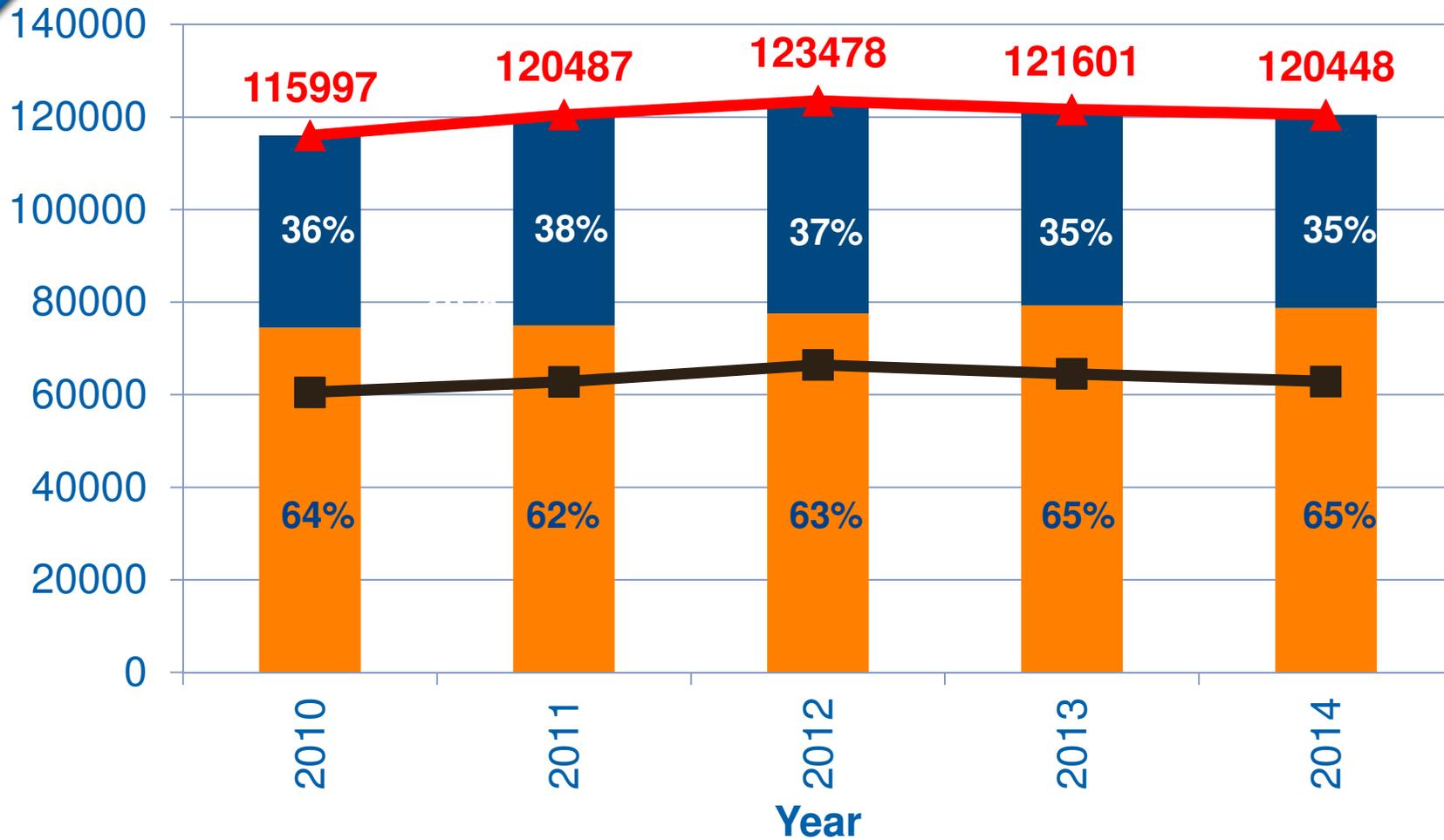
- ❖ Signal & Arterial Systems
- ❖ Electrical & Lighting
- ❖ Signs, Markings, Engineering
- ❖ Traffic Assets Management
- ❖ Statewide Signing Programs
- ❖ Resource Administration

# VDOT TED Highway Safety Team



# Crash Statistics

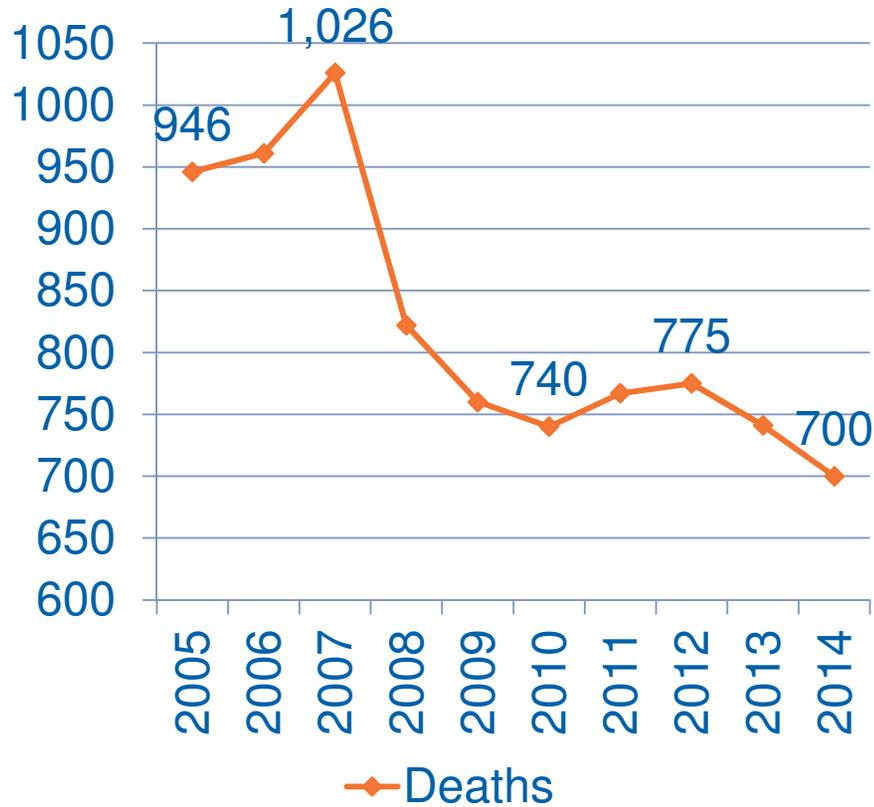
# Virginia Highway Crashes (2010 – 2014)



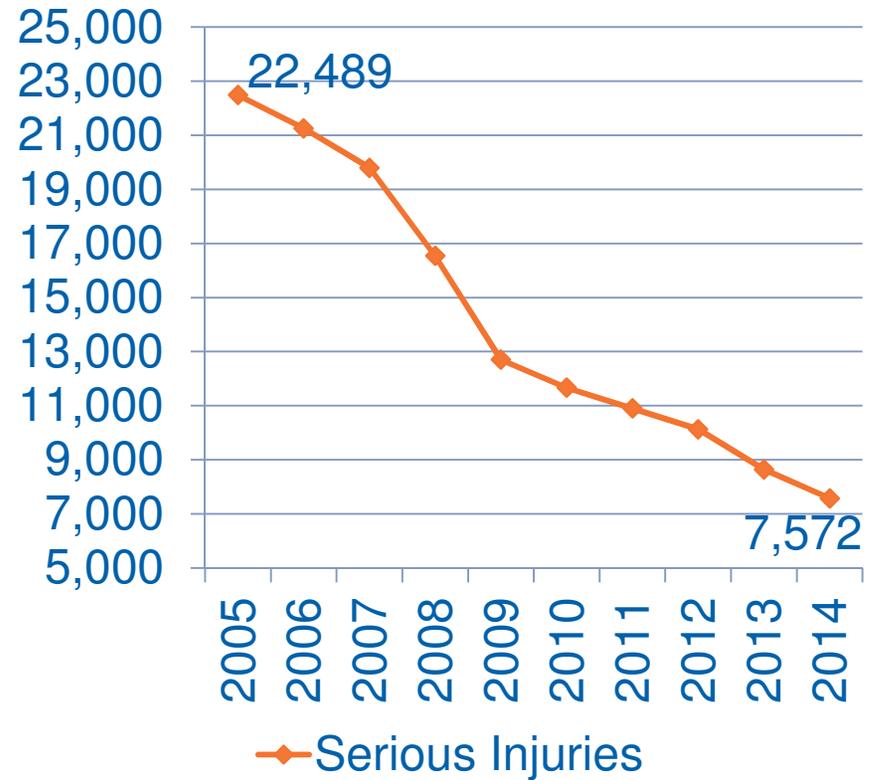
■ VDOT 
 ■ Local 
 ▲ Total Crashes 
 ■ Injuries

# Virginia Highway Deaths & Serious Injuries 2005 - 2014

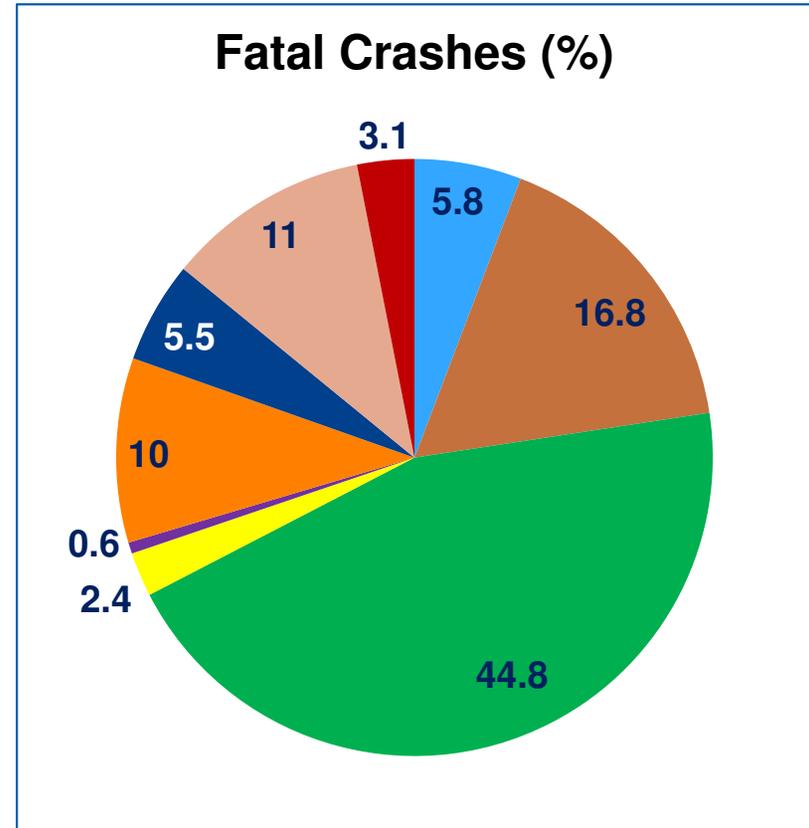
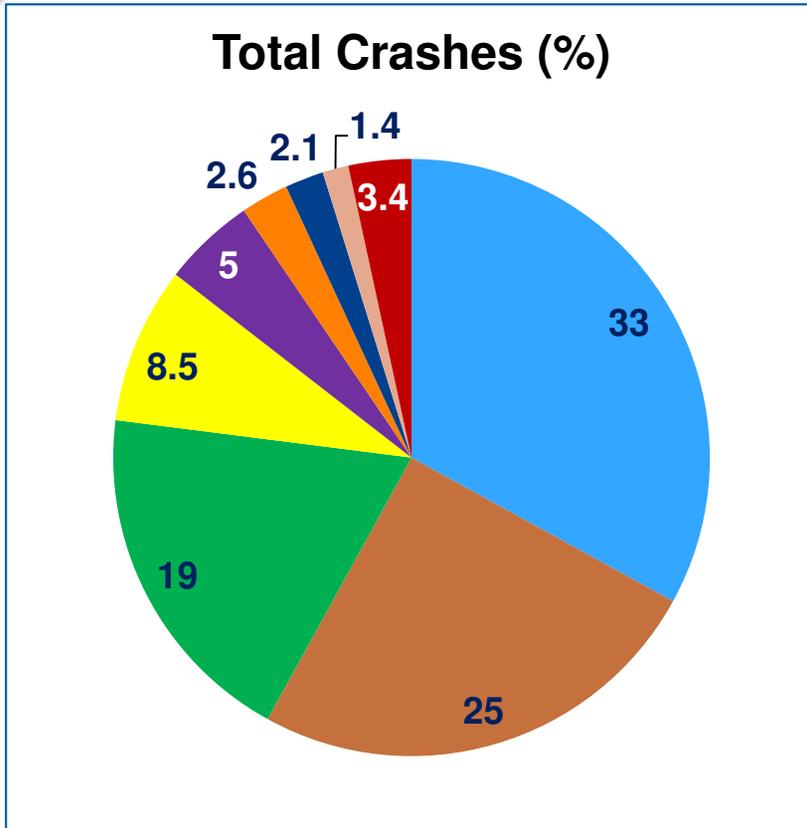
## Deaths



## Serious Injuries



# Virginia Highway Crash Types



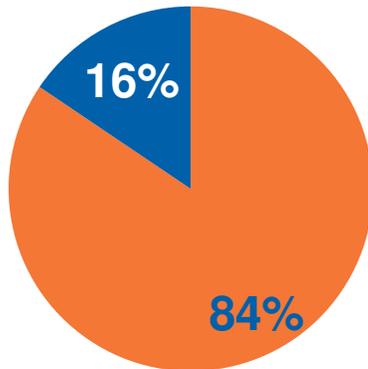
- Rear End
- Sideswipe
- Overturned

- Angle
- Animal
- Ped/Bike

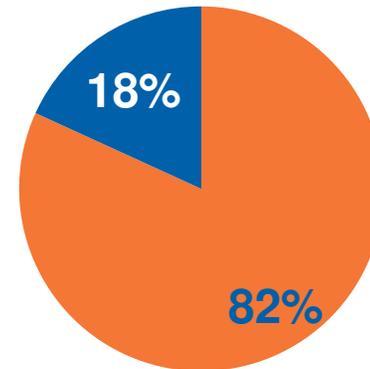
- Fixed Object Off Road
- Head On
- Others

# 2010 - 2014 Network Comparison

## Lane Mileage

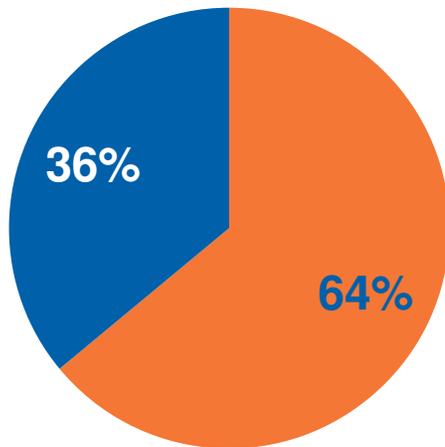


## DVMT

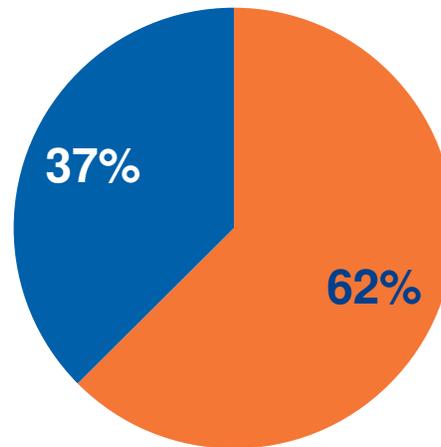


■ VDOT  
■ Local

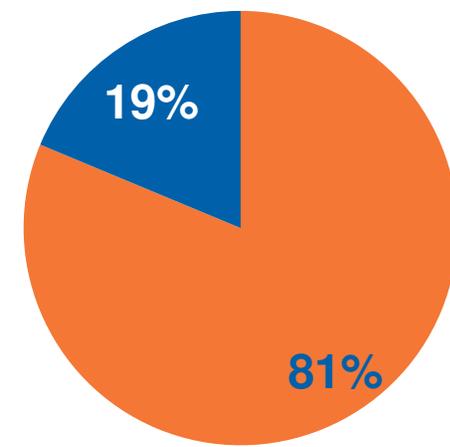
## Crashes



## Injuries



## Deaths



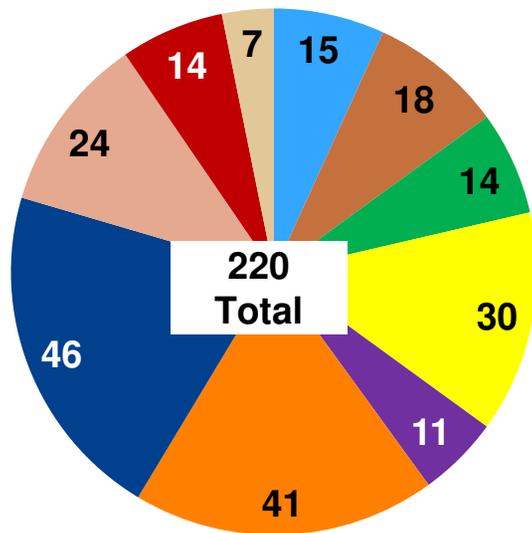
# Roadway Departure Crashes

Owner	Fatal (K) RD %	Severe Injury (A) RD %	Visible Injury (B) RD %
VDOT	70%	54%	45%
Locals	49%	28%	20%

# Active Project Status

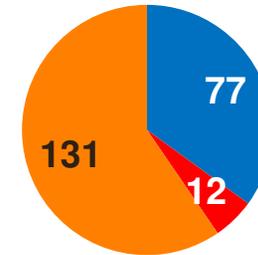
# Highway Safety Project Inventory – All Projects

### Active Projects By District\*



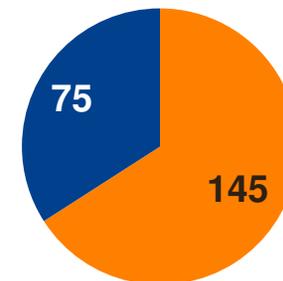
- Bristol
- Culpeper
- Fredericksburg
- Hampton Roads
- Lynchburg
- Northern VA
- Richmond
- Salem
- Staunton
- Statewide

### Active Projects By Phase\*



- PE
- Right-of-way
- Construction

### Project Administration\*

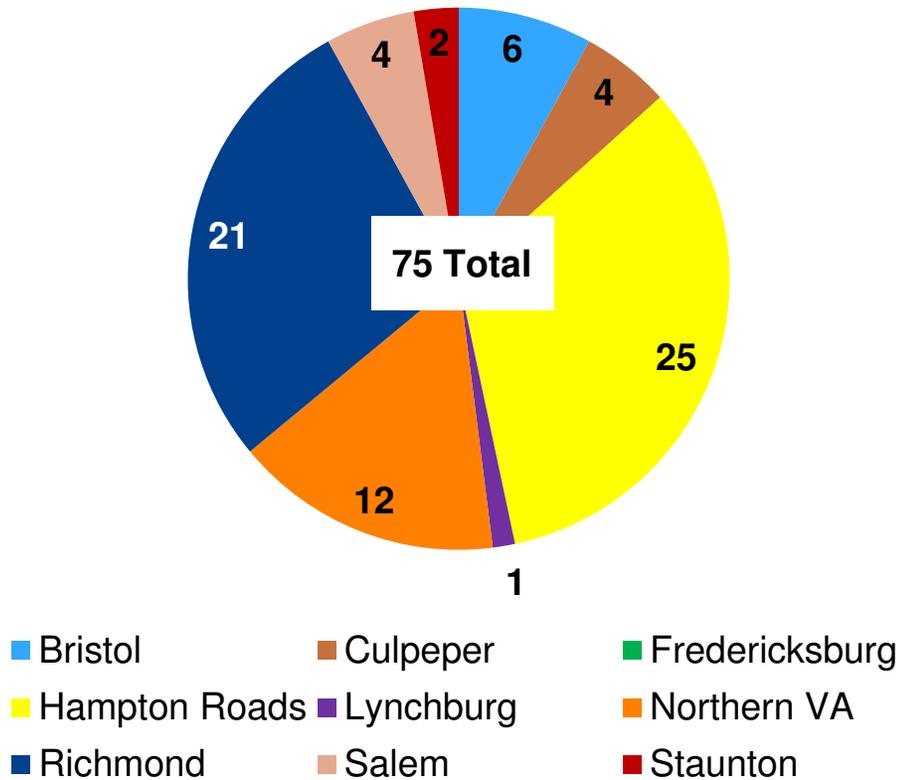


- VDOT
- Local

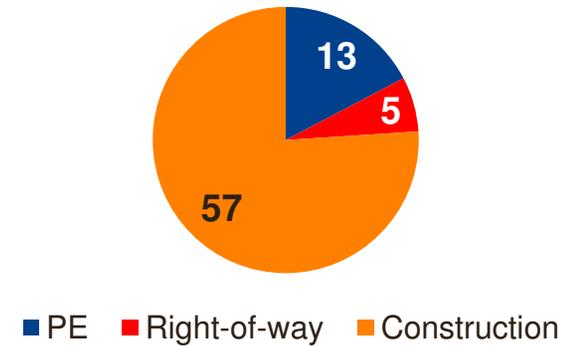
\*Active means in preliminary engineering, right-of-way, or construction phases as of April, 2015

# HSIP Program Inventory – Local Projects

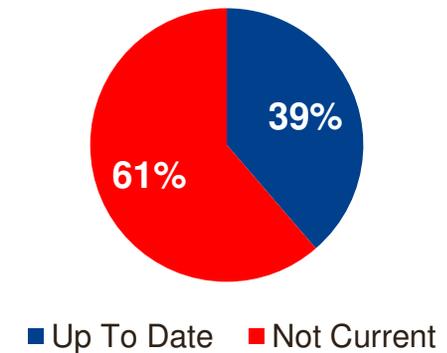
### Active Local Safety Projects By District\*



### Active Projects By Phase\*

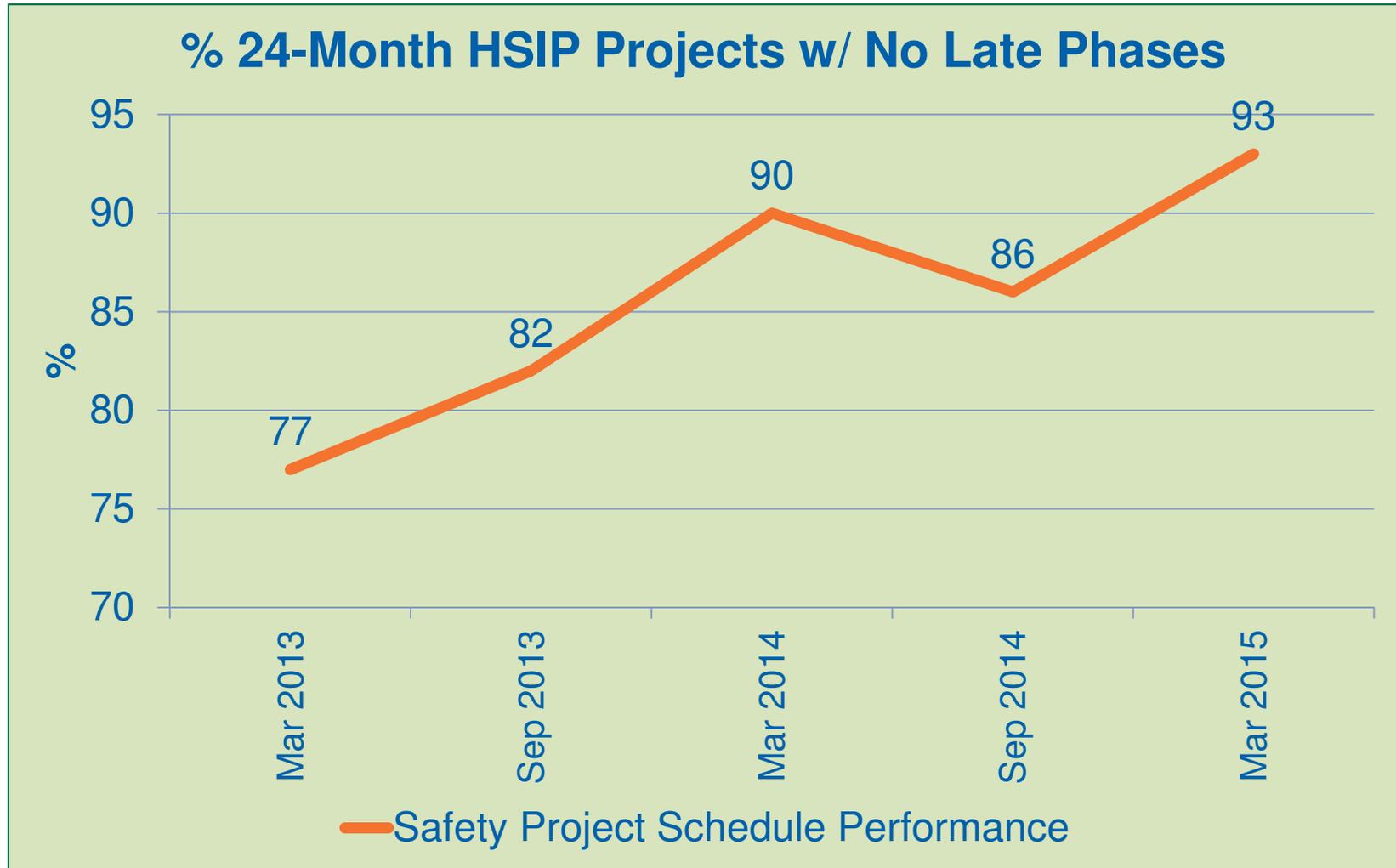


### Schedule Status



\*Active means in preliminary engineering, right-of-way, or construction phases as of April, 2015

# HSIP Project Schedule Trends



## Local Safety Projects By Jurisdiction

Jurisdiction	Active Projects By Phase				% Schedules Up-to-date
	PE	RW	CN	Total	
Hampton	1		11	12	92%
Richmond	1	1	10	12	8%
Henrico County			6	6	17%
Newport News	1	1	3	5	20%
Arlington County	4			4	100%
Prince William County		3	1	4	75%
Bristol			3	3	0%
Chesapeake			3	3	67%
Norfolk			3	3	0%
Others	6		17	23	26%
<b>TOTALS</b>	<b>13</b>	<b>5</b>	<b>57</b>	<b>75</b>	<b>39%</b>

\*Based on schedule information available in project pool through 4/16/2015

# Funding for New Projects

## Locally Administered Safety Projects

- In 2009, VDOT stopped funding local safety projects
  - Project Delivery concerns
- Locally Administered Safety Project Status:
  - 74 active project representing \$45M in safety funds
  - 77% of active projects in construction
  - All active projects scheduled for completion within 18 months
- VDOT plans to resume funding for locally administered safety projects in FY2017 and will implement new qualification criteria to ensure localities are prepared to deliver safety projects

**Come TOMORROW to Hear more details!!!**

**What will a successful  
project proposal look  
like?**

## LAP HSIP Successful Projects

### What We Know:

- Highway Safety Funding is very limited.
- Severe crashes are spread out across our roadway network

### As a result, we must:

- Select projects based on data-driven approach
- Take advantage of low cost solutions that can be deployed at many locations (We call these SYSTEMIC projects)

For Example ...

## Example

### Traditional Intersection Project

- Rebuild Intersection
  - Move curb
  - Add capacity
  - Rebuild/replace signal
  - Some R/W required
- Typical Cost: \$2-4 Million
- Typical Schedule: 2-4 years
- Typical crash reduction
  - 10-15 crashes/year

### Systemic Intersection Project

- Deploy flashing yellow arrow at 25 intersections
- Approximate Cost: \$500K
- Approx. Schedule: 1 year
- Expected crash Reduction
  - 36% of all left turn angle collisions
  - Approximately 90 crashes/year

# Systemic Projects – Flashing Yellow Arrow

## Estimated Cost:

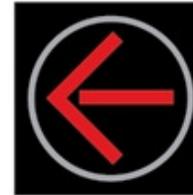
→ \$20K/intersection

## Estimated Crash Reduction:

→ 36 % of left turn angle crashes

## Estimated Schedule:

→ about a year



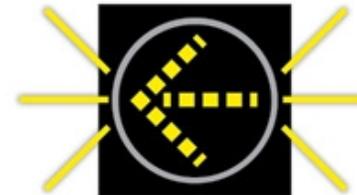
### **Steady Red Arrow**

*Drivers turning left must stop and wait (except where permitted by law).*



### **Steady Yellow Arrow**

*Stop, if you can do so safely.*



### **Flashing Yellow Arrow**

*Proceed with left turn after yielding to oncoming traffic and pedestrians.*



### **Steady Green Arrow**

*Proceed with left turn.*

# Systemic Projects – Retroreflective Traffic Signal Backplates

## Estimated Cost:

→ \$5-7K/intersection  
(much less if doing other work)

## Estimated Crash Reduction:

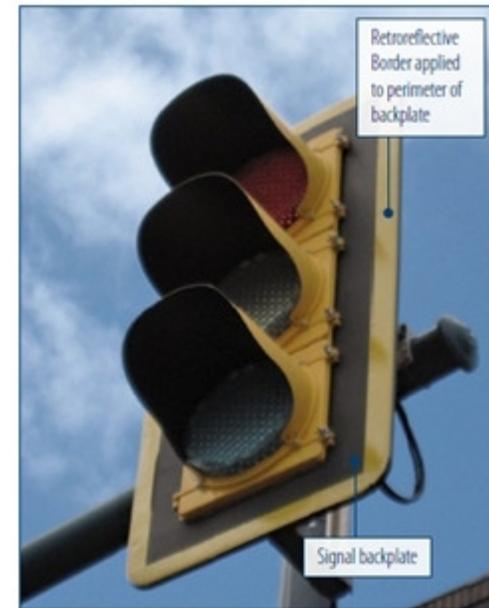
→ 15 % of all intersection crashes

## Estimated Schedule:

→ less than a year

## Other Notes:

FHWA's proven safety countermeasure



# Systemic Projects – Road Diets

## Estimated Cost:

→ \$20-30K/mile for pavement marking changes

## Estimated Crash Reduction:

- 20-47 % of all crashes
- particularly rear end, angle, and sideswipe crashes
- risk reduction for peds and bikes

## Estimated Schedule:

→ less than a year if coordinated with resurfacing

## Other Notes:

FHWA proven safety countermeasure



# Systemic Projects –Signal Timing

## Elements:

- Cycle length, split, Offset, Yellow and Red Clearance intervals, pedestrian clearance interval, pedestrian phase selection.

## Estimated Cost:

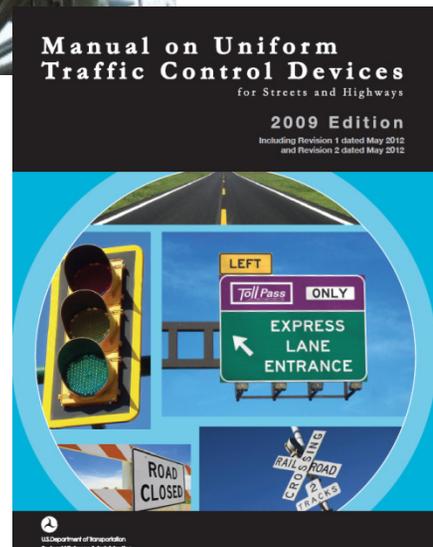
→ \$5K/intersection

## Estimated Crash Reduction:

→ 20-33 % of all crashes

## Estimated Schedule:

→ less than a year



# Systemic Projects – Ped Refuge Islands

## Estimated Cost:

→ \$20-30K/location if no R/W needed

## Estimated Crash Reduction:

→ 40-45 % of all crashes

## Estimated Schedule:

→ 1-2 years

## Other Notes:

FHWA proven safety countermeasure



# Systemic Projects – Other Ped/Bike Projects

## Element w/ Estimated Cost:

- **Ped countdown Signals**
  - \$1200/Each
- **Rectangular Rapid Flashing Beacon**
  - \$30-40K per location
- **HAWK Signal**
  - \$90-120K per location
  - FHWA Proven Safety Countermeasure
- **High-Visibility Crosswalk**
  - \$5-10K/intersection
- **Green Bike Lanes in conflict areas**
  - \$20/square foot



## Systemic Projects – Curve Delineation

### Estimated Cost:

→ \$5K/location

### Estimated Crash Reduction:

→ 30-50% of all crashes

### Estimated Schedule:

→ less than 1 year

### Other Notes:

FHWA proven safety countermeasure



## Systemic Projects – Rumble Strips

### Estimated Cost:

- \$7K/mile – center line RS
- \$12K/mile – shoulder RS

### Estimated Crash Reduction:

- 44-64% - center line RS
- 36% - shoulder RS

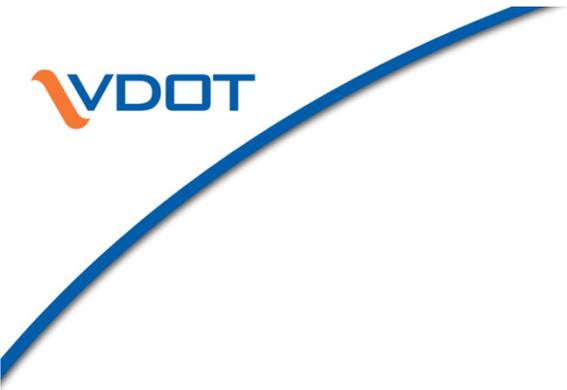
### Estimated Schedule:

- less than 1 year

### Other Notes:

FHWA proven safety countermeasure



A thick, blue, curved line starts in the upper left quadrant and arcs towards the right, ending near the top edge of the slide.

# Tools to Help You

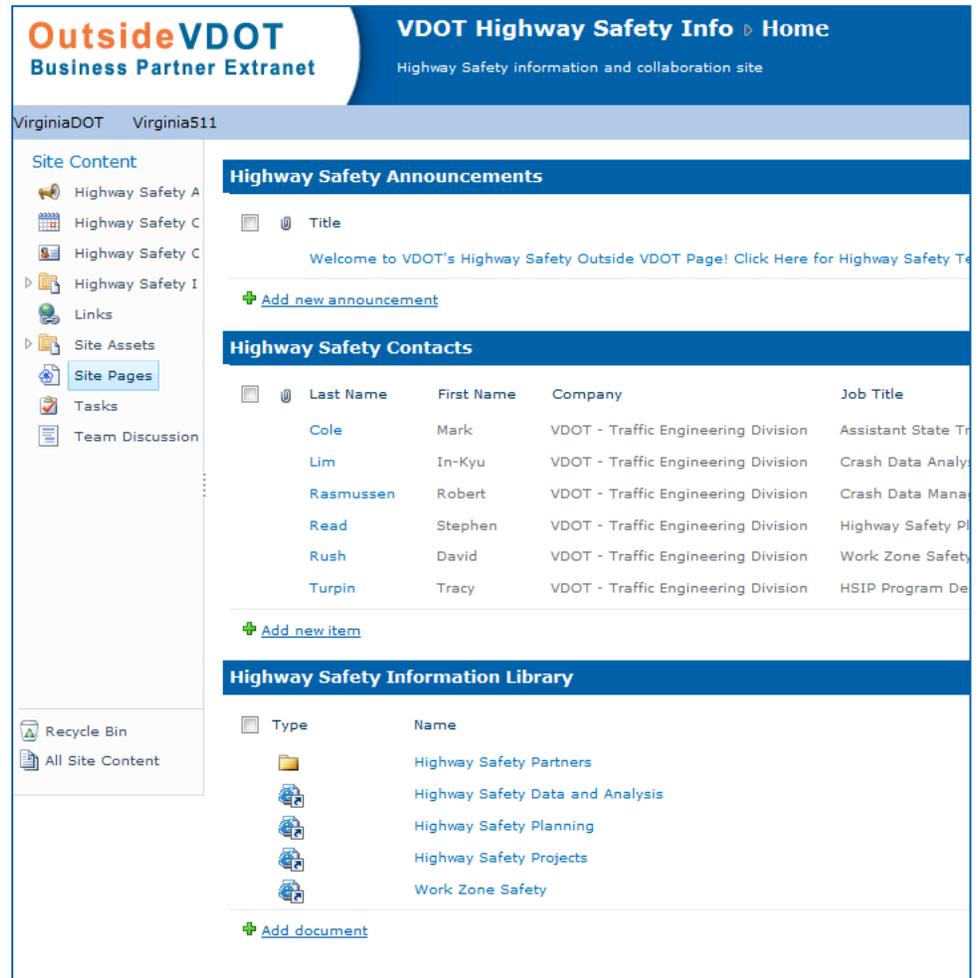
# New Highway Safety Info OutsideVDOT Page

New page that allows VDOT to share highway safety information with local and consultant partners to include:

- Crash Data
- HSIP Project Information
- Work Zone Safety Information

Need to Fill out two IT forms to gain access.

For access, contact Mark Cole at:  
 (804) 786-4196  
[Mark.Cole@VDOT.Virginia.gov](mailto:Mark.Cole@VDOT.Virginia.gov)



The screenshot displays the 'OutsideVDOT Business Partner Extranet' interface. The main header includes 'VDOT Highway Safety Info' and 'Home', with a subtitle 'Highway Safety information and collaboration site'. The left sidebar shows a 'Site Content' menu with options like 'Highway Safety A', 'Highway Safety C', 'Links', 'Site Assets', 'Site Pages', 'Tasks', and 'Team Discussion'. The main content area is divided into three sections:

- Highway Safety Announcements:** Features a 'Title' field and a welcome message: 'Welcome to VDOT's Highway Safety Outside VDOT Page! Click Here for Highway Safety Te'. It includes an 'Add new announcement' link.
- Highway Safety Contacts:** A table listing contact information for several individuals in the Traffic Engineering Division.
 

Last Name	First Name	Company	Job Title
Cole	Mark	VDOT - Traffic Engineering Division	Assistant State Tr
Lim	In-Kyu	VDOT - Traffic Engineering Division	Crash Data Analy
Rasmussen	Robert	VDOT - Traffic Engineering Division	Crash Data Mana
Read	Stephen	VDOT - Traffic Engineering Division	Highway Safety Pl
Rush	David	VDOT - Traffic Engineering Division	Work Zone Safety
Turpin	Tracy	VDOT - Traffic Engineering Division	HSIP Program De

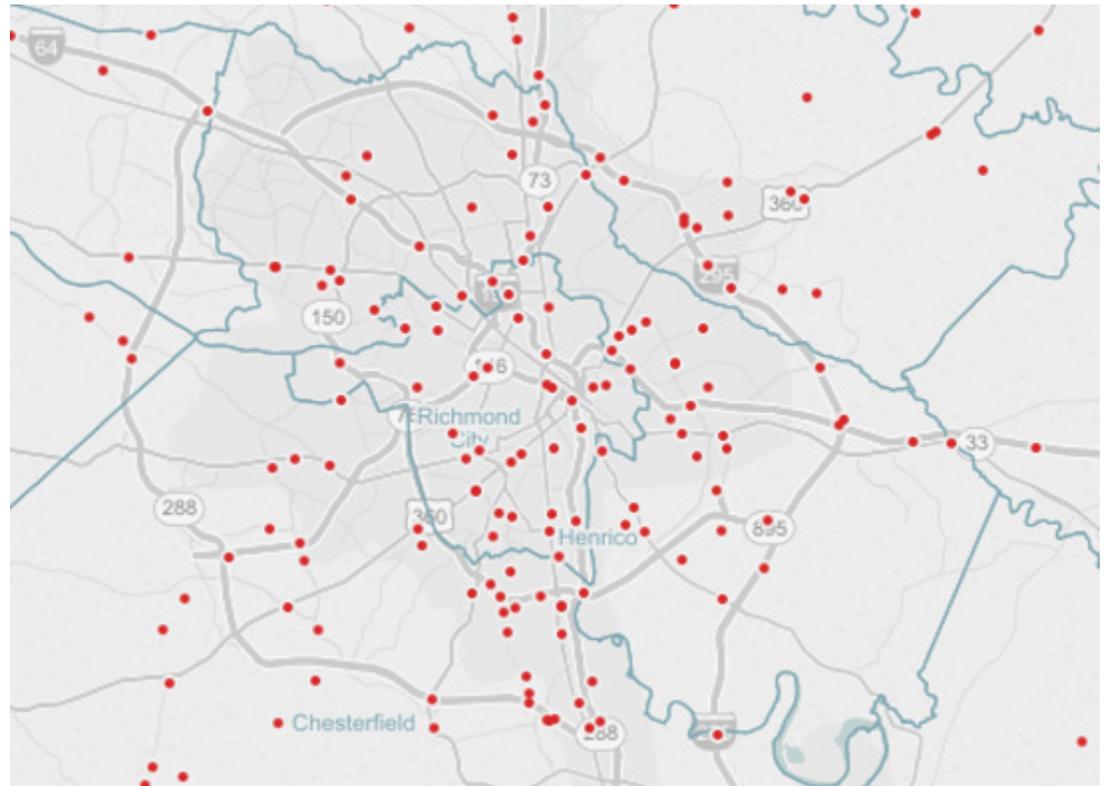
 It also includes an 'Add new item' link.
- Highway Safety Information Library:** A list of document types including 'Highway Safety Partners', 'Highway Safety Data and Analysis', 'Highway Safety Planning', 'Highway Safety Projects', and 'Work Zone Safety'. It includes an 'Add document' link.

- **Allows customized filtering and mapping of crash data**
- **Available on OutsideVDOT**
- **Requires Free Tableau Reader software**

**Contact Tracy Turpin at:  
(804) 786-6610**

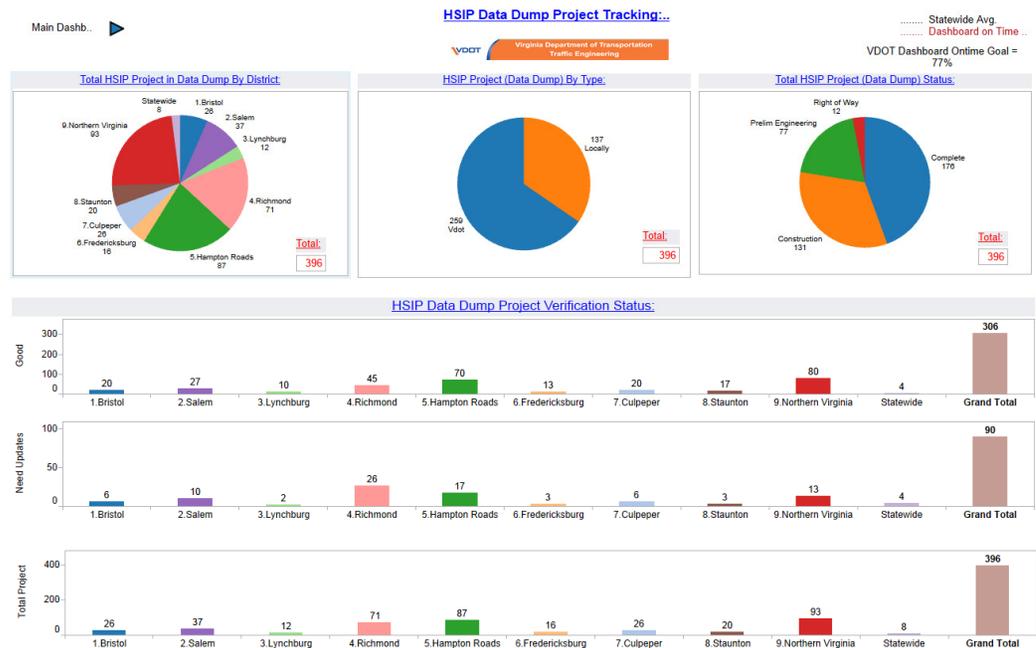
**[Tracy.Turpin@VDOT.Virginia.gov](mailto:Tracy.Turpin@VDOT.Virginia.gov)**

## **Tableau Crash Tool**



# Tableau Safety Project Tracking Tool

- Allows status tracking and mapping of safety projects
- Available on OutsideVDOT
- Requires Free Tableau Reader software
- Can be used to verify your project status in VDOT project management system



Contact Tracy Turpin at:  
(804) 786-6610

[Tracy.Turpin@VDOT.Virginia.gov](mailto:Tracy.Turpin@VDOT.Virginia.gov)

# New HSIP Implementation Guidelines

Available by June 1, 2015 on

- VDOT External Website
- Highway Safety OutsideVDOT page

Significant changes to Chapter 6 which pertains to Locally-administered safety projects.

- Funding eligibility criteria
- Submittal schedule

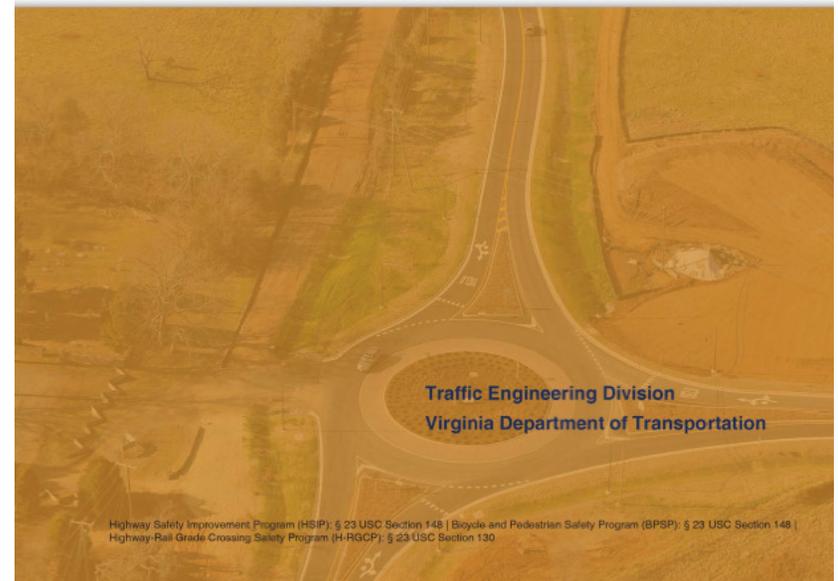
Contact Tracy Turpin at:

(804) 786-6610

[Tracy.Turpin@VDOT.Virginia.gov](mailto:Tracy.Turpin@VDOT.Virginia.gov)



Highway Safety  
Improvement Program  
Implementation Guidelines



# Questions?

## Contact Information:

**Mark A. Cole, PE**

**(804) 786-4196**

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**Stephen Read, PE**

**(804) 786-9094**

**[Stephen.Read@VDOT.Virginia.gov](mailto:Stephen.Read@VDOT.Virginia.gov)**

**Tracy Turpin, PE**

**(804) 786-6610**

**[Tracy.Turpin@VDOT.Virginia.gov](mailto:Tracy.Turpin@VDOT.Virginia.gov)**