

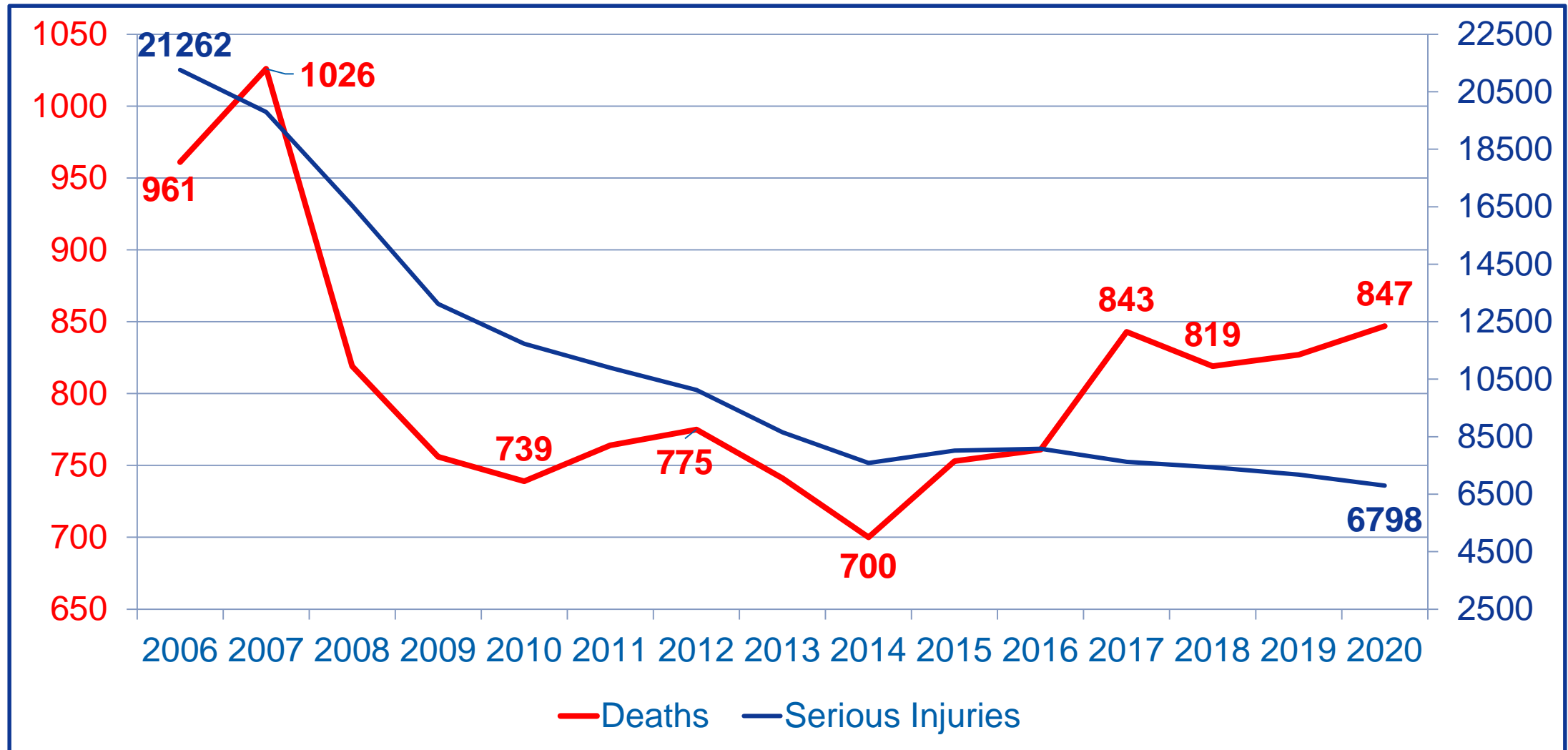
VDOT'S SYSTEMIC SAFETY IMPLEMENTATION PLAN ANNUAL REPORT

Commonwealth Transportation Board

 Mark A. Cole, PE, Virginia Department of Transportation

June 22, 2021

Virginia Traffic Deaths and Serious Injuries (2006 - 2020)



ARRIVE ALIVE VIRGINIA

Virginia Strategic Highway Safety Plan (SHSP)



Vision

Toward Zero Deaths

Mission

Save Lives and Reduce Injuries
through 4E's of:



http://www.virginiadot.org/info/resources/SHSP/VA_2017_SHSP_Final_complete.pdf

2017-2021 SHSP Emphasis Areas

Emphasis Areas

Roadway Departure
Intersections
Impaired Driving
Occupant Protection
Speed
Young Drivers
Pedestrians
Bicyclists

Special Safety Areas

EMS
Connected / Autonomous
Vehicles
Data

Currently working on 2022-2026 Plan Update



Fatal & Serious Injury Heat Map – 2016-2020

CRASH FACTORS

Fatal and Serious Injury Crashes (2016-2020)	Total Crashes	Interstate	Primary	Secondary	Other	Intersection	Road Departure	Speeding	Alcohol	Drugs	Large Vehicles	Bicycle	Pedestrian	Unrestrained	Young Driver	Aging Driver	Motorcycle	Distracted Driver	Drowsy Driver
Total Crashes	34,231	4,714	10,592	8,989	9,936	12,116	13,931	10,721	5,873	889	2,908	704	2,666	7,697	5,184	5,962	3,680	7,057	1,639
Intersection	12,116	66	3,679	2,676	5,695		383	2,555	1,742	258	732	420	1,235	2,120	1,953	2,688	1,273	2,379	308
Road Departure	13,931	2,404	4,156	4,965	2,406	383		5,889	3,215	504	945	29	0	4,640	2,007	1,575	1,239	3,149	1,178
Speeding	10,721	2,262	3,023	3,384	2,052	2,555	5,889		2,600	410	926	52	279	3,503	1,896	1,248	1,237	2,125	491
Alcohol	5,873	597	1,599	1,973	1,704	1,742	3,215	2,600		394	219	55	733	2,168	519	407	429	1,205	242
Drugs	889	100	289	280	220	258	504	410	394		50	7	60	368	102	61	49	240	69
Large Vehicles	2,908	1,010	1,079	390	429	732	945	926	219	50		21	142	642	227	620	91	600	161
Bicycle	704	3	114	129	458	420	29	52	55	7	21		3	15	152	136	5	127	1
Pedestrian	2,666	150	592	503	1,421	1,235	0	279	733	60	142	3		96	212	337	16	379	25
Unrestrained	7,697	956	2,509	2,641	1,591	2,120	4,640	3,503	2,168	368	642	15	96		1,220	930	35	1,753	443
Young Driver	5,184	536	1,569	1,673	1,406	1,953	2,007	1,896	519	102	227	152	212	1,220		467	289	1,154	239
Aging Driver	5,962	628	2,364	1,267	1,703	2,688	1,575	1,248	407	61	620	136	337	930	467		521	1,097	193
Motorcycle	3,680	504	1,058	1,004	1,114	1,273	1,239	1,237	429	49	91	5	16	35	289	521		397	15
Distracted Driver	7,057	957	2,233	1,600	2,267	2,379	3,149	2,125	1,205	240	600	127	379	1,753	1,154	1,097	397		1,202
Drowsy Driver	1,639	393	633	349	264	308	1,178	491	242	69	161	1	25	443	239	193	15	1,202	

VDOT Systemic Plan - 8 Proven Safety Countermeasures

High-visibility Backplates



Up to 15% crash reduction

Flashing Yellow Arrow

	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.

Up to 20% crash reduction

Curve Signs




Up to 40% crash reduction

Pedestrian Crossings



Up to 56% crash reduction

Unsignalized Intersections



Up to 10% crash reduction

Shoulder Wedge



Up to 20% crash reduction

Centerline Rumble Strips



Up to 60% crash reduction

Edgeline Rumble Strips

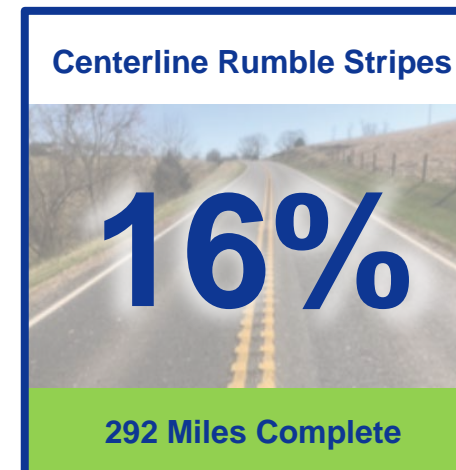
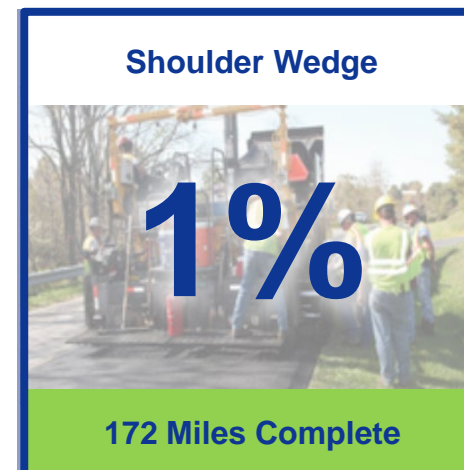
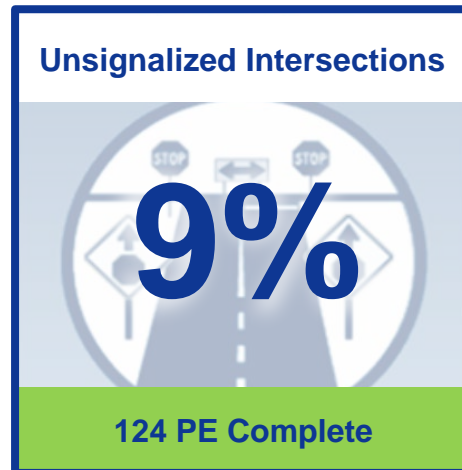
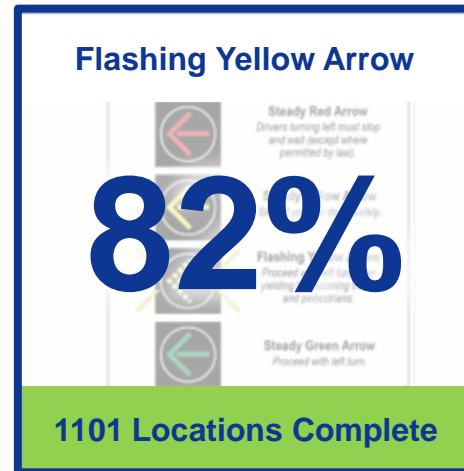


Up to 50% crash reduction

How Systemic Safety Plan Address SHSP Emphasis Areas

Countermeasure	Roadway Departure	Intersections	Pedestrians	Bicyclists	Impaired Driving	Occupant Protection	Speed	Young Drivers
High-Visibility Backplates		★			★			★
Flashing Yellow Arrow		★			★			★
Curve Signs	★				★		★	★
Pedestrian Crossings		★	★	★	★			★
Unsignalized Intersections		★			★			★
Shoulder Wedge	★							★
Centerline Rumble Strips	★				★		★	★
Edgeline Rumble Strips	★				★		★	★

8 Proven Safety Countermeasures – Progress to Date



Highway Safety Infrastructure Budget FY 2022-2027

- **Each budget cycle we adjust project budgets to match total available annual budget that is available**
- **We have adjusted funding and schedules for the systemic safety plan based on the new budget**
- **Compared to previous budget, the new budget provides more funding in first 2 years and less funding starting in FY 2024**
- **As a result, we are accelerating funding to match annual budget values**
- **In future, if budget picture in outer years improves, we will be prepared to further accelerate existing projects or begin new projects**

Systemic Implementation Plan – Funding & Schedule

ORIGINAL 2019 Plan

Source	HSIP Funding Through FY 25 (\$M)	FY 20	FY 21	FY 22	FY 23	FY 24	FY 25	Schedule (Calendar Year)
High-Visibility Backplates (VDOT)	15.2	8.8	2.4	4				Complete by July 1, 2021
Flashing Yellow Arrows (VDOT)	17	7.4	1.95	7.65				Complete by July 1, 2021
Curve Delineation (VDOT)	29	1.8			12	15.15		Complete 2024
Pedestrian Crossings (VDOT)	22	2.2	2.3	3	3.3	6.9	4.75	Complete 2025
Unsignalized Intersection (VDOT)	8.35	3.35	3		2			PE 2020, CN Start 2021. \$17M still needed
Shoulder Wedge (VDOT)	Maintenance funds							Resurfacing Cycle - 15 yr
CL Rumbles - Primaries (VDOT)	3.1	1.35	0.35	0.35	0.35	0.35	0.35	Resurfacing Cycle - 15 yr
Edge Rumbles - Primaries (VDOT)	21.6	2	3	3	3	7.6	3	Resurfacing Cycle - 15 yr
Total	116.7	26.9	13	18	20.7	30	8.1	

REVISED 2021 Plan

Source	HSIP Funding Through FY 25 (\$M)	FY 20	FY 21	FY 22	FY 23	FY 24	FY 25	Schedule (Calendar Year)
High-Visibility Backplates (VDOT)	15.2	8.8	2.4	4				Complete by December 2021
Flashing Yellow Arrows (VDOT)	17	7.4	1.95	7.65				Complete by December 2021
Curve Delineation (VDOT)	30	1.8		16.7	11.5			Funding increase. Complete 2023
Pedestrian Crossings (VDOT)	34.1	2.2	2.3	12.3	15.5	1.8		Funding increase. Complete 2025
Unsignalized Intersection (VDOT)	24.2	3.35	3	10.3	6.8	0.7		Fully fund. Complete 2024
Shoulder Wedge (VDOT)	Maintenance funds							Resurfacing Cycle - 15 yr
CL Rumbles - Primaries (VDOT)	3.1	1.35	0.35	0.35	0.35	0.35	0.35	Resurfacing Cycle - 15 yr
Edge Rumbles - Primaries (VDOT)	21.6	2	3	3	5	8.6		Resurfacing Cycle - 15 yr
Total	145.2	26.9	13	54.3	39.1	11.5	0.4	

LEGEND

PE & CN

PE

CN

RED = Update from Original

Performance To Date

- All 8 countermeasures have been proven and promoted by FHWA and others
- Before-and-after crash studies will be conducted to determine effectiveness
- Expect to report preliminary findings for first locations beginning with next years annual report to CTB

Systemic Safety Improvement	Benefit/Cost Ratio
High-Visibility Backplates (VDOT)	9.0
Flashing Yellow Arrows (VDOT)	12.6
Curve Delineation (VDOT)	1.7
Pedestrian Crossings (VDOT)	8.9
Unsignalized Intersection (VDOT)	1.3
Shoulder Wedge (VDOT)	17.0
CL Rumbles - Primaries (VDOT)	40.0
Edge Rumbles - Primaries (VDOT)	29.8

Next Steps

- **Focus on accelerating and completing 8 systemic countermeasures on VDOT roads as quickly as funding allows**
- **Summer& Fall 2021**
 - **Finalize new Strategic Highway Safety Plan, emphasis areas, and next systemic safety implementation plan. Includes outreach to localities.**
- **Winter 2021**
 - **Bring SHSP and Implementation Plan to CTB for approval**
- **Spring 2022**
 - **Include funding for next Implementation Plan in FY 23-28 SYIP**

Thank you!

Mark A. Cole, P.E.
VDOT Assistant State Traffic Engineer
Mark.Cole@VDOT.Virginia.gov
(804) 786-4196

