



Safety Performance Measures MPO 2019 Targets

November 2, 2018

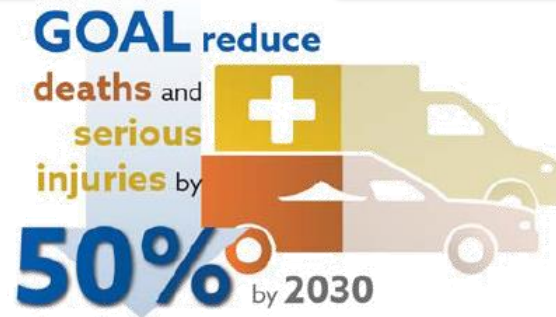
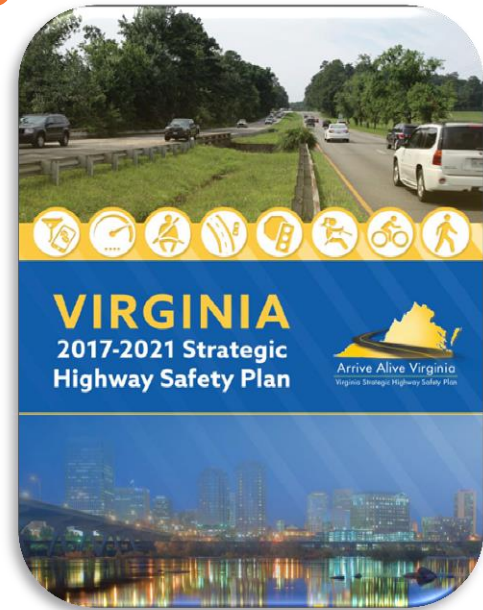
**Stephen Read, P.E.
VDOT Traffic Engineering Division**

2018 Targets Used Virginia's SHSP

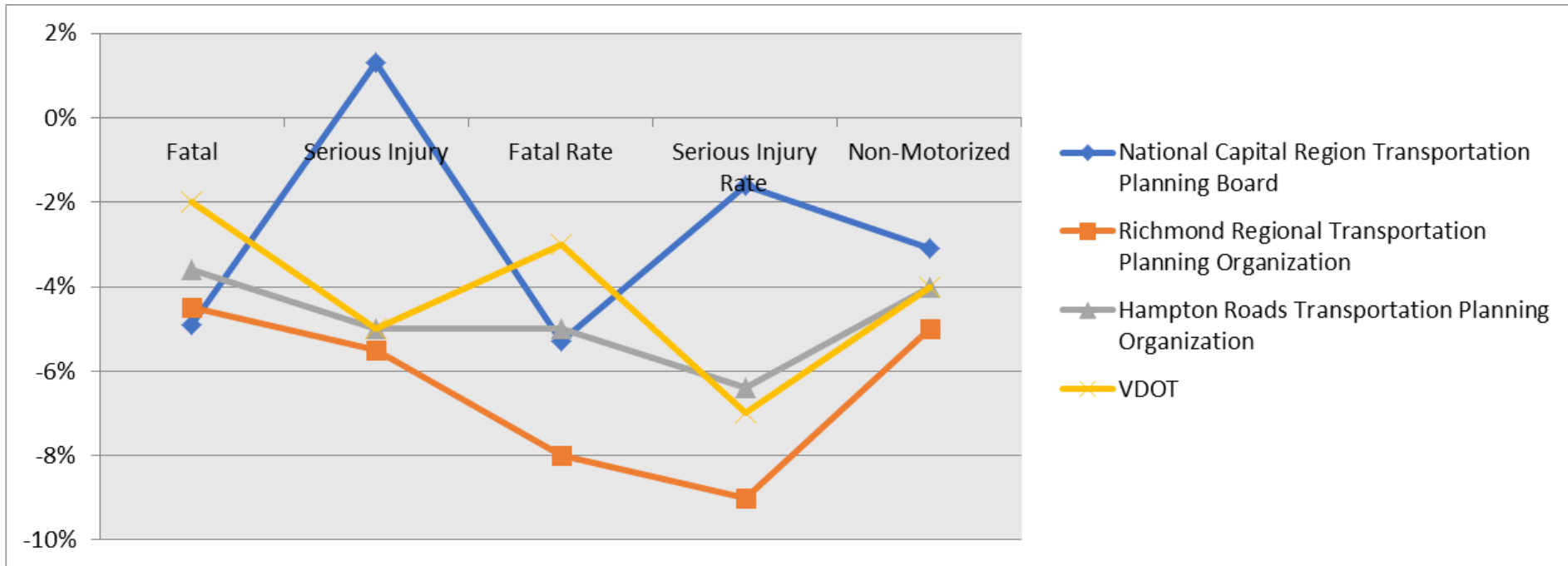
STATE & MPO SAFETY TARGETS

Virginia Applied Methodology

- Consistent with the FHWA 5-year rolling average safety performance measures
- Consistent with the 2017-2021 Virginia SHSP annual reduction objectives
- Used percent reductions for 2018 targets



Three VA MPOs With Own Targets



2019 Target Setting

METHODOLOGY CHANGE

Virginia Crash Trends Are Changing

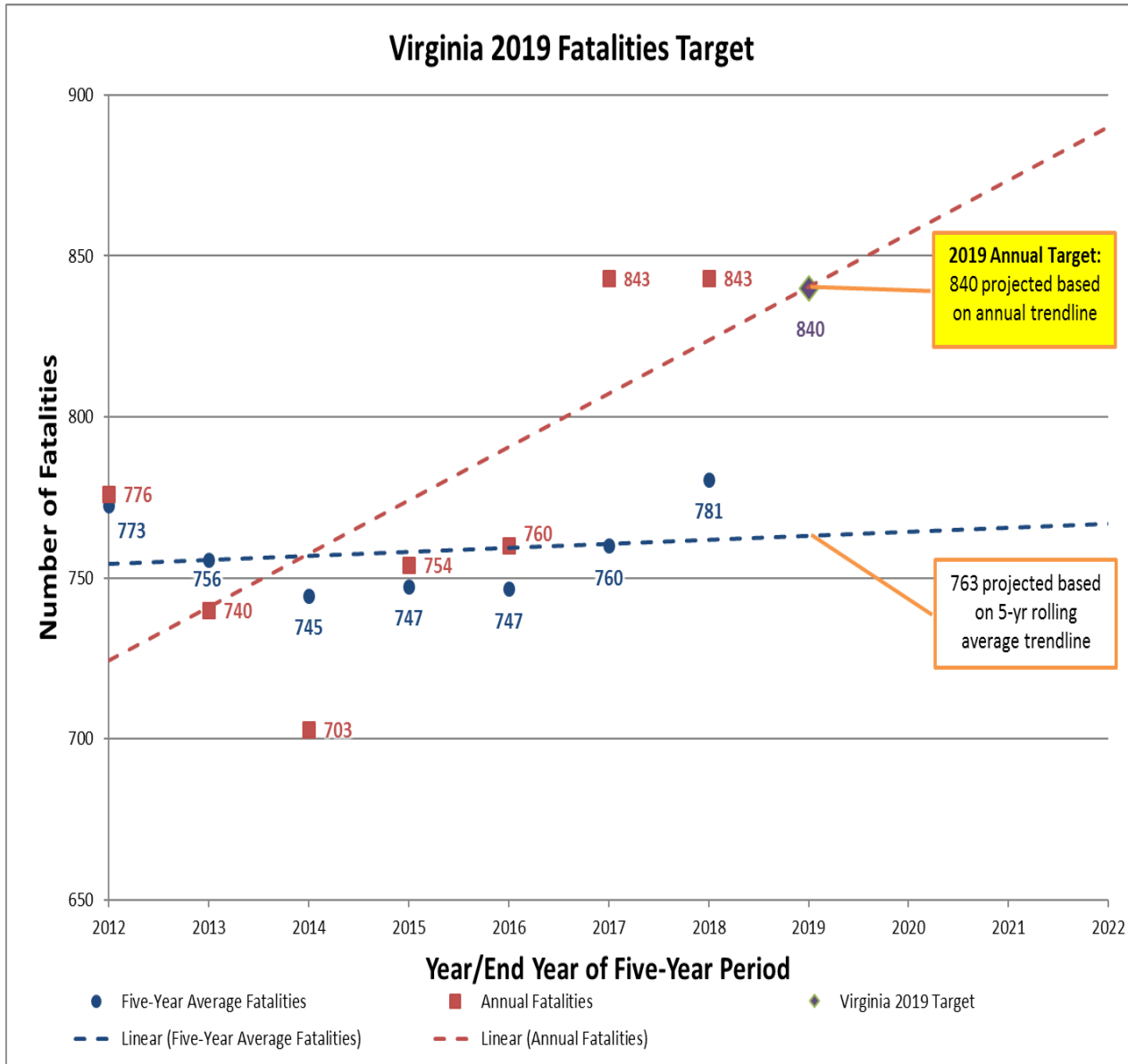
Fatalities increased in 2017 and are similar in 2018

- Difficult to make 5 year trends and annual reductions
- Used annual trend lines

Serious Injuries are leveling off

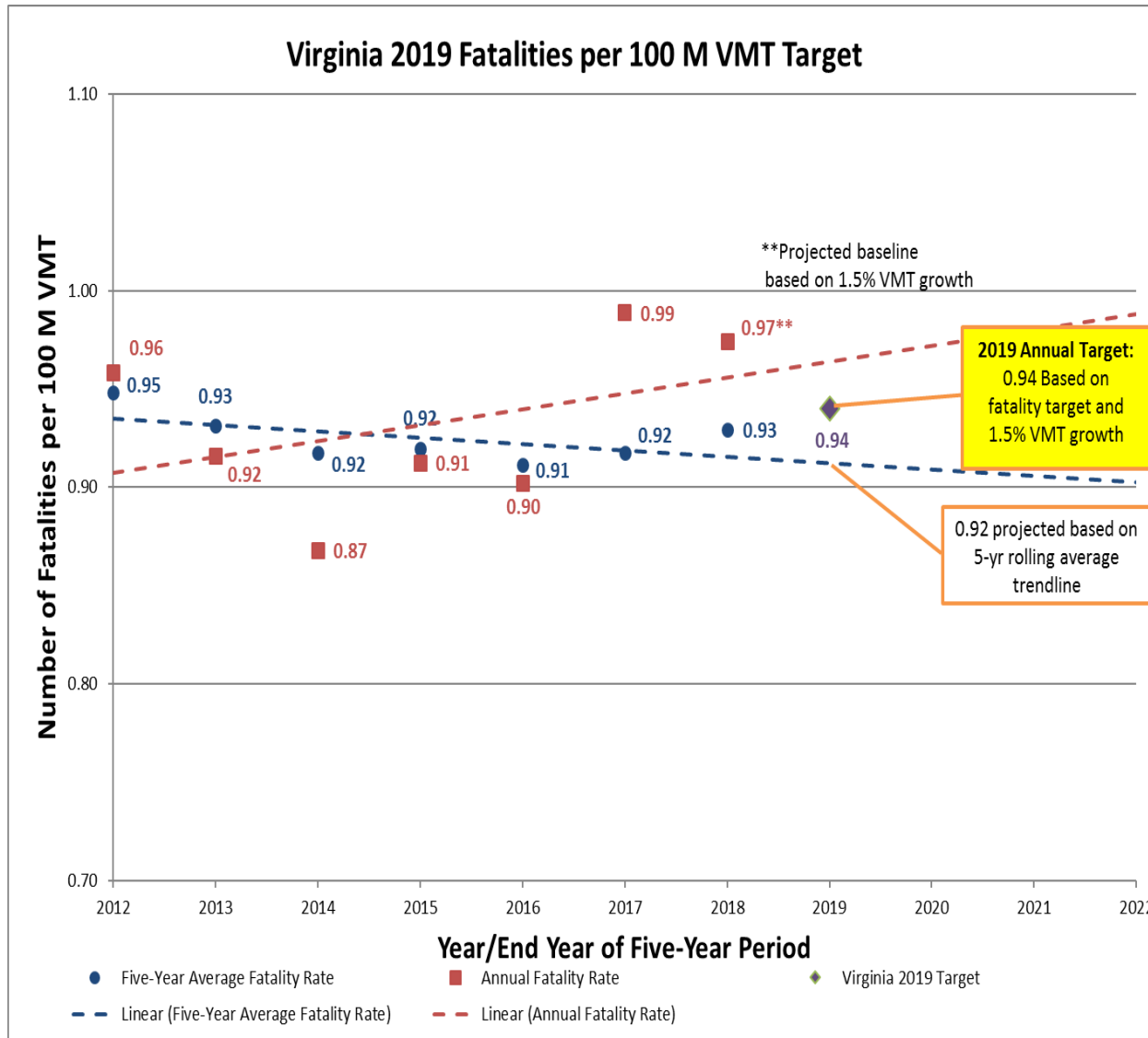
- Previous reductions are not attainable
- Used annual trend lines

2019 Virginia Highway Fatality Target



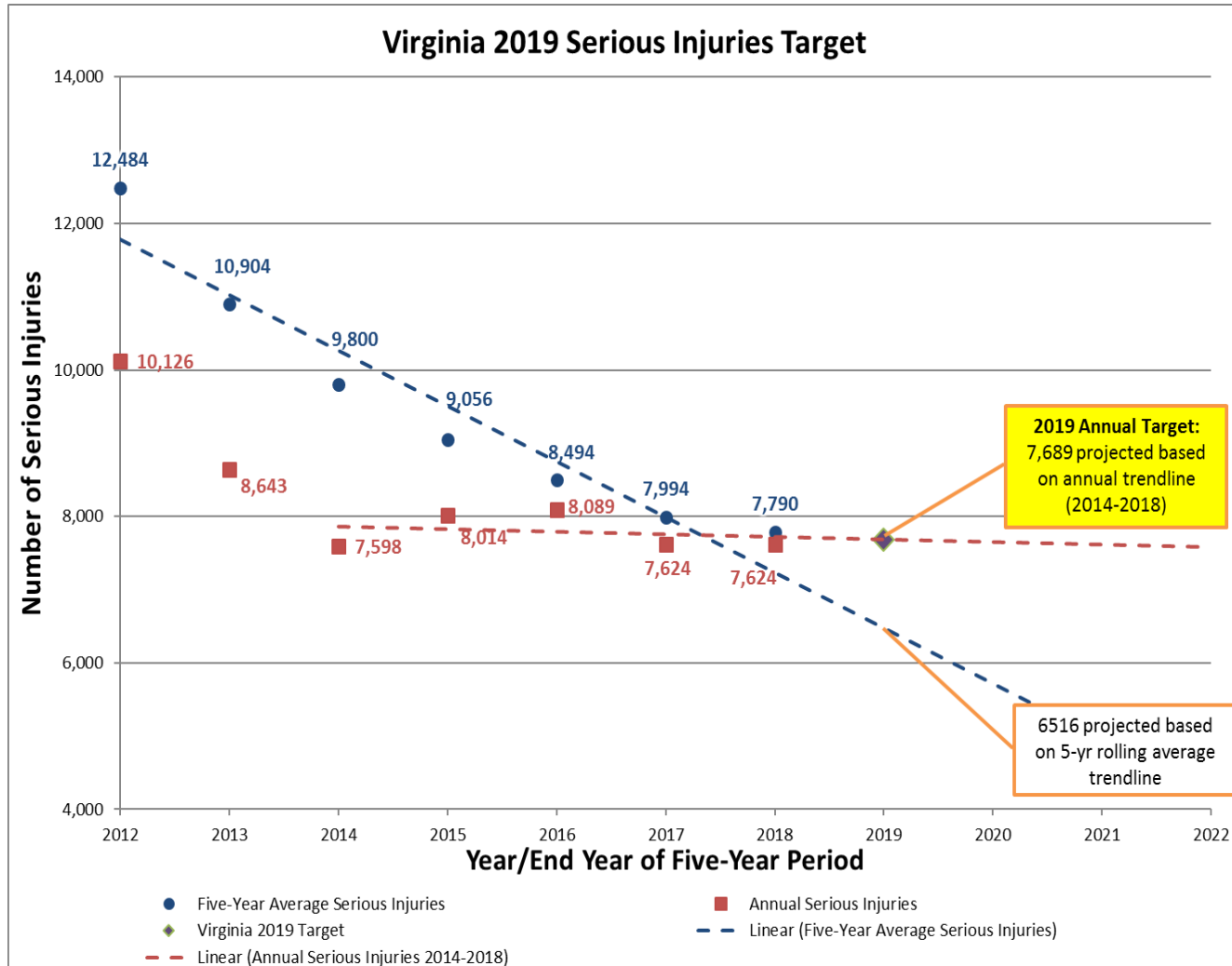
Fatality 5-Yr
Average
Target = 808

2019 Virginia Highway Fatality Rate Target



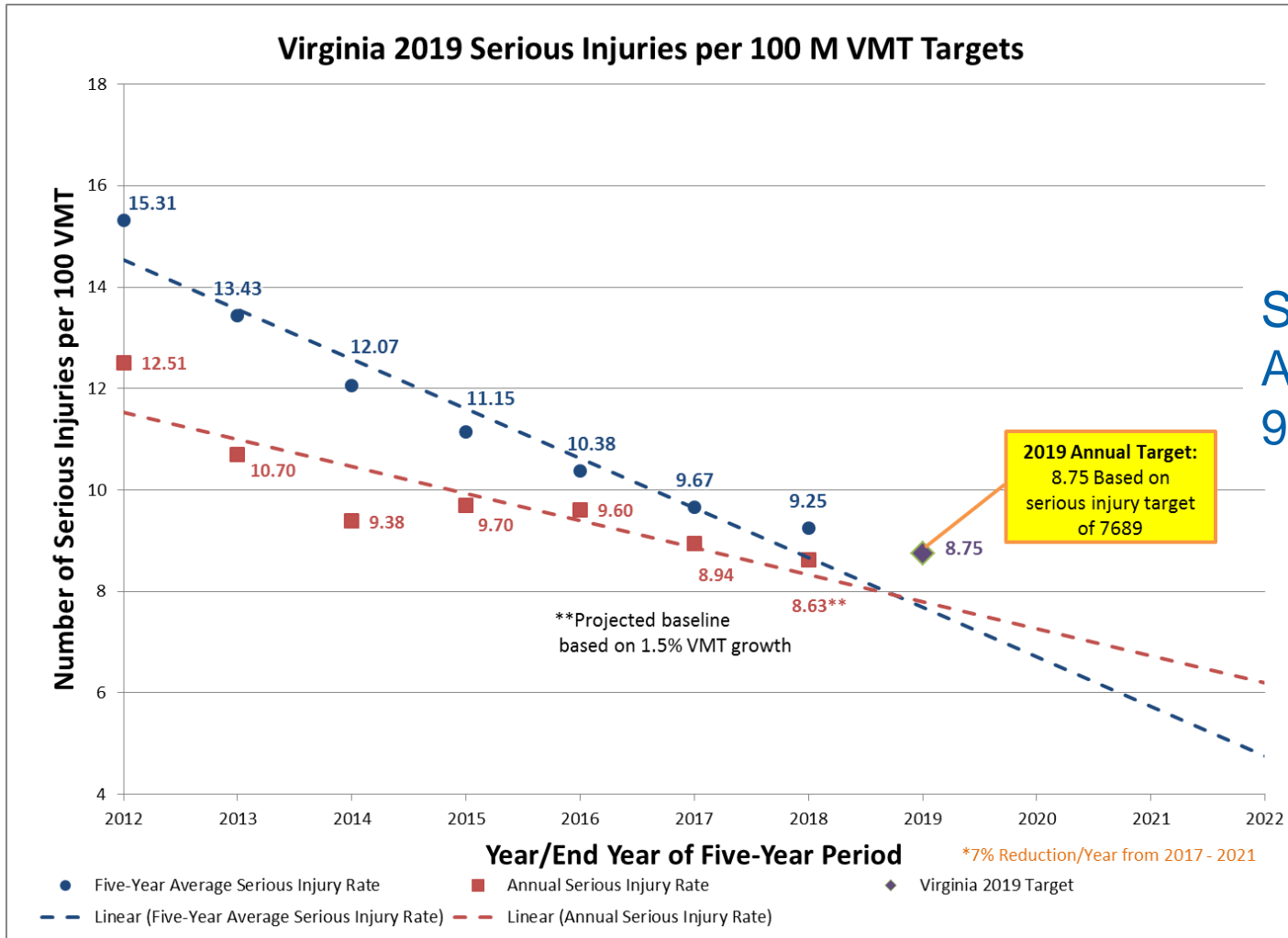
Fatality Rate 5-Yr
Average Target =
0.944

2019 Virginia Serious Injury Target



SI 5-Yr
Average
Target =
7808

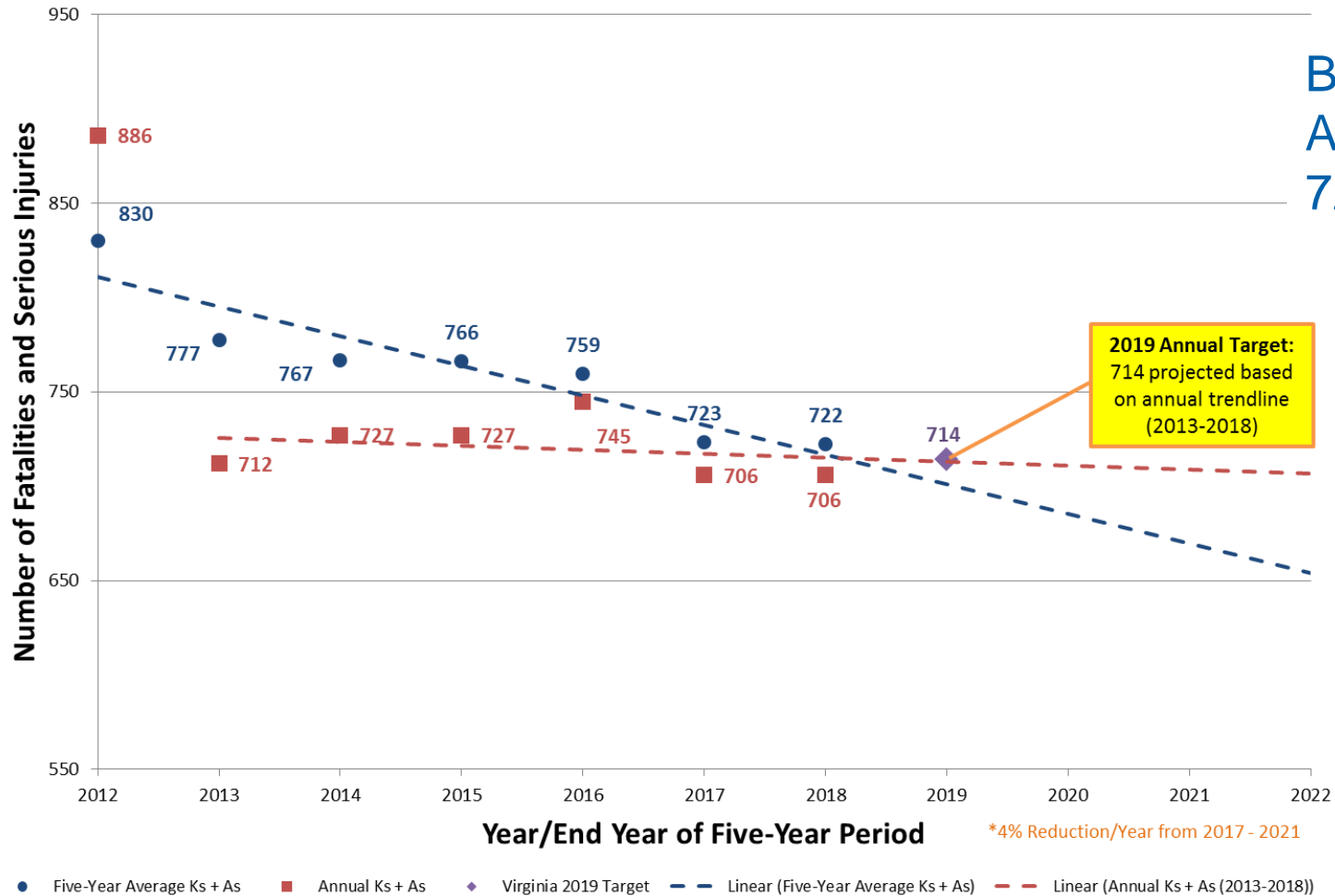
2019 Virginia Serious Injury Rate Target



SI Rate 5-Yr
Average Target =
9.16

2019 Virginia Bike and Ped Target

Virginia 2019 Non-Motorized Fatalities and Serious Injuries Targets



B&P 5-Yr
Average Target =
720

VDOT Crash Data - Tableau Crash Analysis Tool (Workbook Update)

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SUMMARY DETAILED MAP MPO SUMMARY TOTAL CRASH_RATE DEATH RATE SEVERE INJURY_RATE MPO_FUNC_CRASHES MPO_FUNC_DVMT

CRASH SUMMARY: Choose Filters below to see the Detailed Map in the next tab.

Year of CRASH_DT	PED KILLED	PED INJURED	PERSONS KILLED	SEVERE INJURIES	PERSONS INJURED	SEVERE INJURY CRASH	FATAL_CRASH	INJURY CRASHES	PDO CRASH	TOTAL CRASH
2006	83	1,923	960	21,260	73,348	15,937	865	52,083	98,748	151,696
2007	88	1,761	1,026	19,796	68,822	14,916	940	49,138	95,325	145,403
2008	76	1,696	854	16,543	69,145	12,993	782	48,893	85,542	135,317
2009	73	1,397	756	13,128	63,042	10,317	694	44,338	76,261	121,299
2010	76	1,519	743	11,667	60,989	9,267	692	42,772	72,546	115,010
2011	77	1,713	767	10,901	63,888	8,597	703	43,996	75,818	108,517
2012	101	1,852	780	10,149	67,123	8,212	719	44,954	77,914	123,587
2013	78	1,748	741	8,643	65,069	6,969	683	43,199	77,727	121,609
2014	90	1,686	700	7,594	63,565	6,154	656	41,727	78,359	120,742
2015	78	1,718	753	8,014	65,029	6,526	711	42,957	82,132	125,899
2016	121	1,653	761	8,007	67,331	6,598	723	44,213	83,851	126,797
2017	114	1,613	843	7,634	65,317	6,344	787	42,466	84,426	127,675
Total/Average	1,055	20,279	9,684	143,416	792,168	112,830	8,955	540,736	988,759	1,538,450

Year of CRASH_DT (All)

VSP Used (All)

Planning District (All)

Mpo Name (All)

District Used (All)

Physical Jurisdiction (All)

Ped Related (All)

Bike Related (All)

BIKE_PED (All)

WORK_ZONE_RELATED (All)

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People Killed

Year	Persons Killed
2006	960
2007	1,026
2008	854
2009	756
2010	743
2011	767
2012	780
2013	741
2014	700
2015	753
2016	761
2017	843

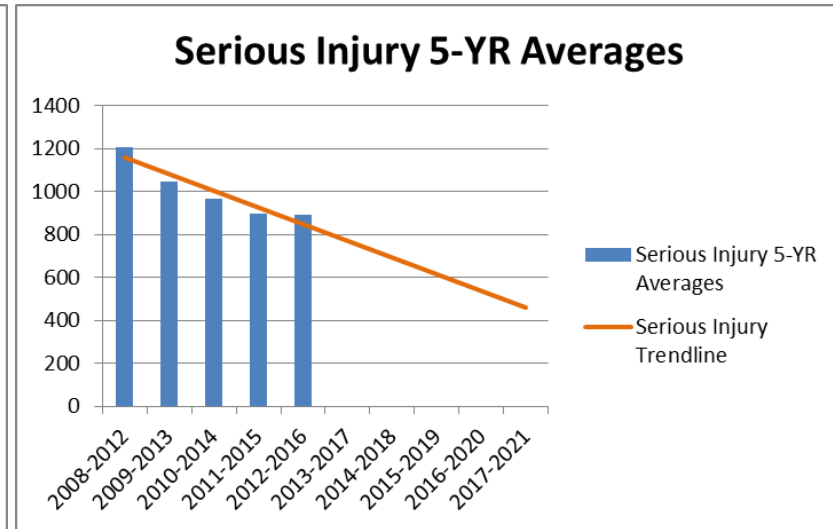
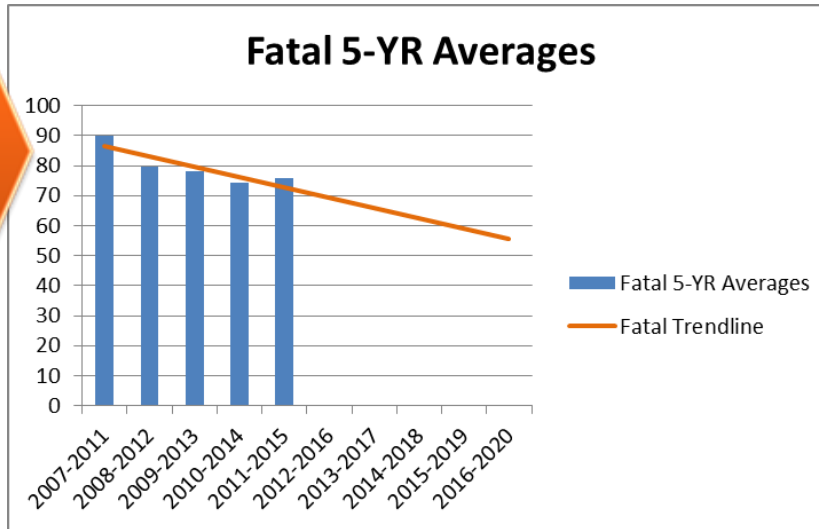
Severe Injuries

Year	Severe Injuries
2006	21,260
2007	19,796
2008	16,543
2009	13,128
2010	11,667
2011	10,901
2012	10,149
2013	8,643
2014	7,594
2015	8,014
2016	8,087
2017	7,994

https://public.tableau.com/profile/tien.simmons#!/vizhome/MPO_CRASHES/SUMMARY

Trends Testing

5-Year
Average
Linear
Projection



Projected Historical Trendline Summary (Based off of 5-YR Averages)	2016	2017	2018	2019	2020	2021	Yearly Change	Average Percent Change
Fatal	73	69	66	63	59	--	-3.40	5.0%
Fatal Rate	0.66	0.63	0.60	0.56	0.53	--	-0.03	5.4%
Serious Injury	--	769	692	614	536	459	-77.64	12.1%
Serious Injury Rate	--	6.80	6.02	5.24	4.47	3.69	-0.78	14.1%

3. Set Future Target Reduction

Fatality Reduction	3.0%
Serious Injury Reduction	12.0%
VMT % Increase	1.0%

Review Historical Percent Changes

Input Test Percent Change for Future Targets

Future Target Setting

**NEW METHODOLOGY
DEVELOPMENT**

CTB Presented Target Setting Method Development Plan

Analysis plan includes five steps:

1. Determine main factor of crash—infrastructure or behavioral
2. Determine degree to which behavioral crashes can be addressed through infrastructure countermeasures
3. Analyze external factors to predict future crash levels to establish anticipated baseline condition
4. Evaluate anticipated impacts of funded projects and strategies
5. Establish data-driven, realistic and attainable safety targets

2013-2017 Behavioral Crash Patterns Fatalities

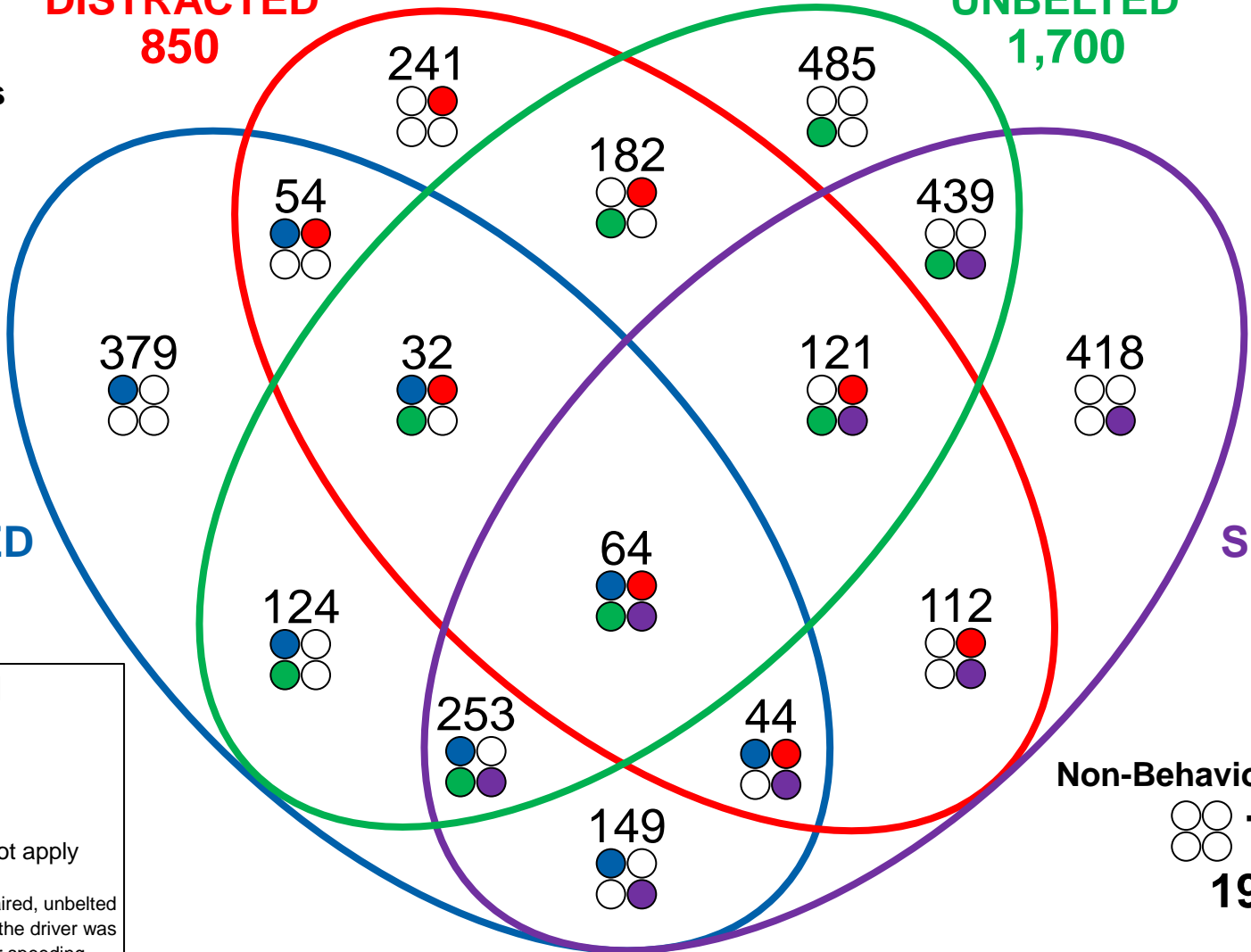
Total Fatalities
3,805

DISTRACTED
850

UNBELTED
1,700

IMPAIRED
1,099

SPEEDING
1,600



Non-Behavioral Fatalities
709
19%

Legend

- Impaired crash
- Distracted crash
- Unbelted crash
- Speeding crash
- Behavior does not apply

EXAMPLE

= Number of impaired, unbelted fatalities where the driver was not distracted or speeding

2013-2017 Behavioral Crash Patterns Serious Injuries

Total Serious Injuries
40,006

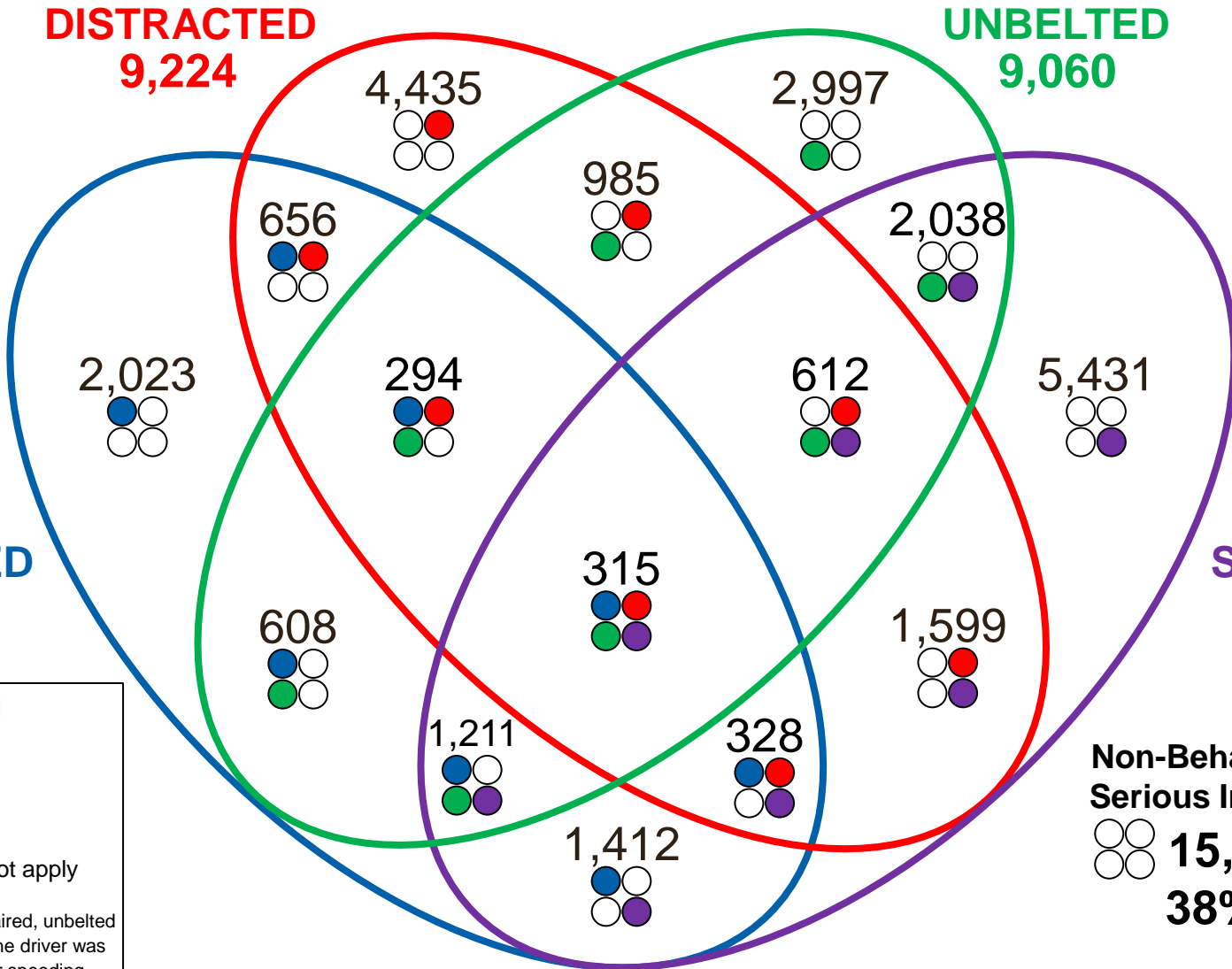
DISTRACTED
9,224

UNBELTED
9,060

IMPAIRED
6,847

SPEEDING
12,946

Non-Behavioral Serious Injuries
15,062
38%



Legend

- Impaired crash
- Distracted crash
- Unbelted crash
- Speeding crash
- Behavior does not apply

EXAMPLE

● ○ ● ○ = Number of impaired, unbelted injuries where the driver was not distracted or speeding

Safety “Count” Measure Predictions and Targets

Step 1

- Predict target year base deaths with external factors model
- Use NCHRP 17-67 (TTI/UMTRI) model as start

Step 2

- Adjust base with expected benefits of infrastructure and behavioral programs
- Consider complex modelling of project effects

Step 3

- Annual updates to model to account for trends and program adjustments
- Consider findings of detailed crash assessments for program funding and model refinements

CTB Presented Target Setting Method Development Plan

New methods outcomes:

- 1. Determine if 2019 targets will be revised with FHWA and NHTSA concurrence**
- 2. Evaluate spatial and temporal refinements to the predictions**
- 3. Determine annual scope of effort for target setting starting with 2020**

Actions to Address Trends

PROJECT PLANNING & PROGRAMMING

SMART SCALE

Promoting new thinking:

- **Justify widening or new signals**
- **Consider innovative intersections and interchanges**
- **Be multi-modal with non-motorized and transit accommodations**

Highway Safety Improvement Program

Promoting systemic thinking:

- **Completed Pedestrian Safety Action Plan with additional \$8M funding**
- **Shifting some focus from signalized to stop controlled intersections**
- **Continue addressing roadway departures**

Highway Safety Programs



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