



COMMONWEALTH of VIRGINIA
Office of the
SECRETARY of TRANSPORTATION

Transportation Performance Management 2022 Safety Measure Targets

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Safety Performance Management Background

- **MAP-21 federal law establishes performance targets for Safety (5 measures)**
- **Safety targets must be established annually**
- **VDOT and Governor's Highway Safety Office (DMV) must agree to targets for 3 of the 5 performance measures**
- **DMV must report targets to NHTSA by June 30**
- **VDOT must report targets to FHWA by August 31**
- **FHWA makes an annual Determination of Significant Progress**

Safety Performance Management

Performance Measures

- **Number of fatalities***
- **Number of serious injuries***
- **Rate of fatalities per 100M vehicle miles traveled***
- **Rate of serious injuries per 100M vehicles miles traveled**
- **Number of non-motorized fatalities and serious injuries**

*Federal measures requiring coordination with the Governor's Highway Safety Office

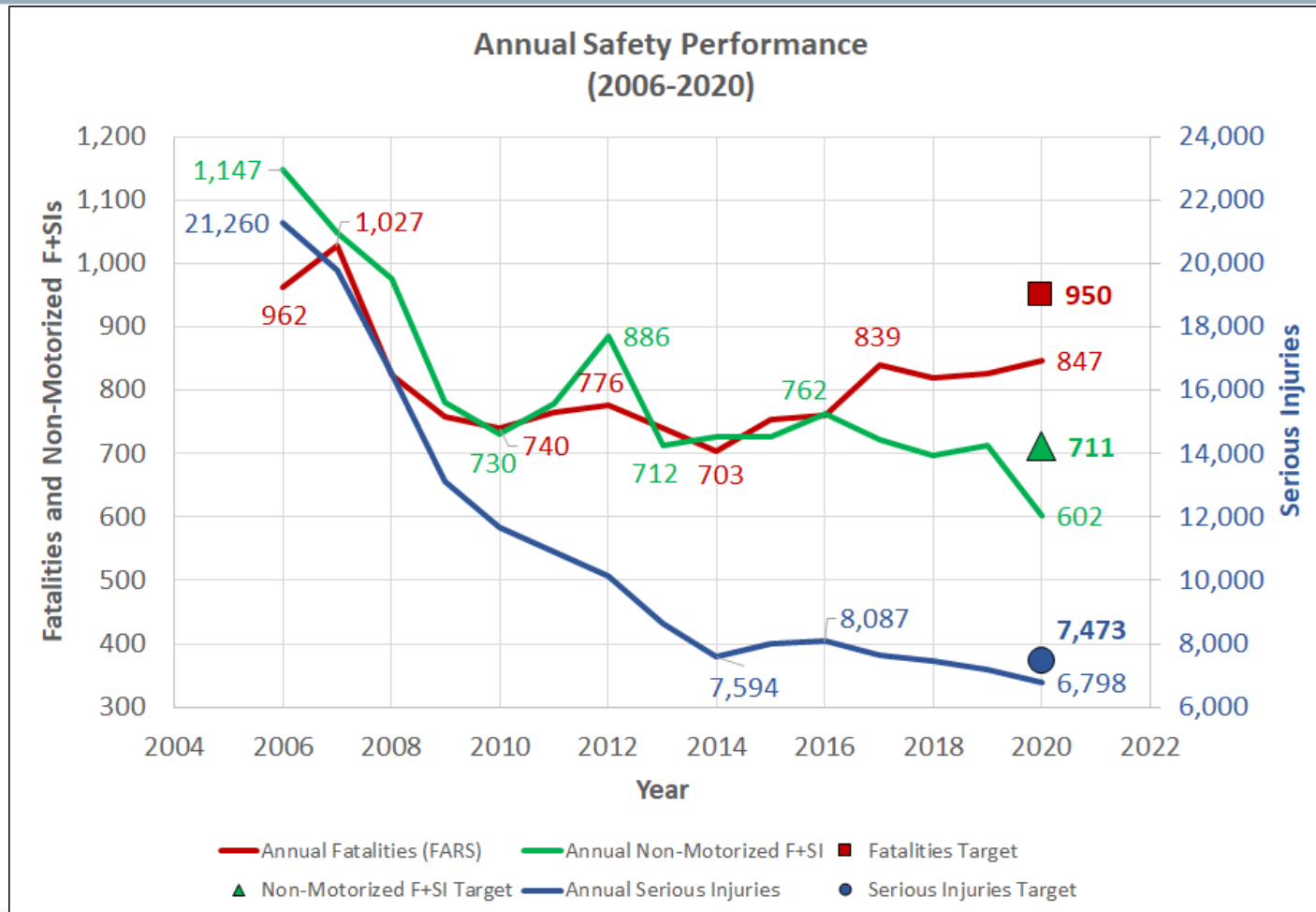
Safety Performance Measures Background

- Board adoption of 2020 and 2021 targets utilizing a data-driven methodology
- Board adoption of HSIP Project Prioritization Policy in December 2019 to improve safety outcomes
 - Initial Systemic Safety Implementation Plan
- 2020 and 2021 Legislative Actions

Description	Fatalities	F Rate	Serious Injury	SI Rate	F & SI Ped/Bike
2020 Targets	950	1.08	7473	8.52	711
2021 Targets	898	1.012	7385	8.352	750

Safety Performance Management

How are we doing?



FHWA Determination of Significant Progress

- **Annually, FHWA makes a determination of significant progress towards meeting the safety performance targets (beginning last year)**
- **Significant progress determination - at least four of the five targets were met OR target must be better than the baseline value**
- **If significant progress is not made, the state must:**
 1. **Prepare and Submit an Highway Safety Implementation Plan to FHWA by June 30 stating what the state is doing to meet targets, and**
 2. **Must obligate 100% of HSIP funds for the year that the targets were set (i.e., 2017)**

Based on FHWA's determination, Virginia MADE significant progress towards the 2019 targets

Determination of 2019 Safety Performance Targets

Performance Measure	2015-19 Average Target	2015-19 Average Outcome	2013-17 Average Baseline	Met Target	Better Than Baseline
Number of Fatalities	840.0	800.8	759.6	Yes	N/A
Rate of Fatalities	0.940	0.944	0.916	No	No
Number of Serious Injuries	7,689.0	7,674.8	7,994.4	Yes	N/A
Rate of Serious Injuries	8.750	9.072	9.660	No	Yes
Number of Non-motorized F + SI	714.0	727.0	731.2	No	Yes

Safety Performance Management

Refined Target Setting - Data-Driven Method

Key steps to develop 2022 targets:

1. **Analyze external factors to predict 2020 baseline crash safety measure counts for validation**
 - assess new factors and traffic impacts
 - update and refine model for 2022 predictions
2. **Evaluate anticipated benefits of recent (or soon to be completed) infrastructure projects**
3. **Combine the baseline predictions with project benefits to establish data-driven targets**

Step 1: Analyze External Factors to Predict 2022 Baseline

Refining the predictive baseline models includes three steps:

1. Assess past and new external factors with annual factors to calibrate the models
2. Validate the model external and annual factors with most recent year of data
3. Forecast external and annual factors for target year measure predictions



Step 1 - Findings From the Prior Prediction Models and 2022 Additions

External Factor	Effect on Fatal Crashes	Effect on Serious Injury crashes	Effect on Bike/Ped crashes
VMT growth	↑	↑	↑
Increasing local functional class % of VMT	↑	↑	↑
Increasing young population (15-24)	↑	↑	↑
Increasing aging population (75+)	↑	↑	
Gallons Liquor Sold		↑	
Liquor licenses			↑
Increased highway resurfacing spending	↓		
Increased emergency/incident management spending	↓		
Increased total behavioral programs spending	↓	↓	↓
Increased roadway maintenance spending		↓	
Increased average snowfall per month		✗	↓
Increased rural functional class % of VMT			↓
Increased non-motorized behavioral program spending			✗
Increased gas prices			✗

 = Additional factor
 = Removed factor

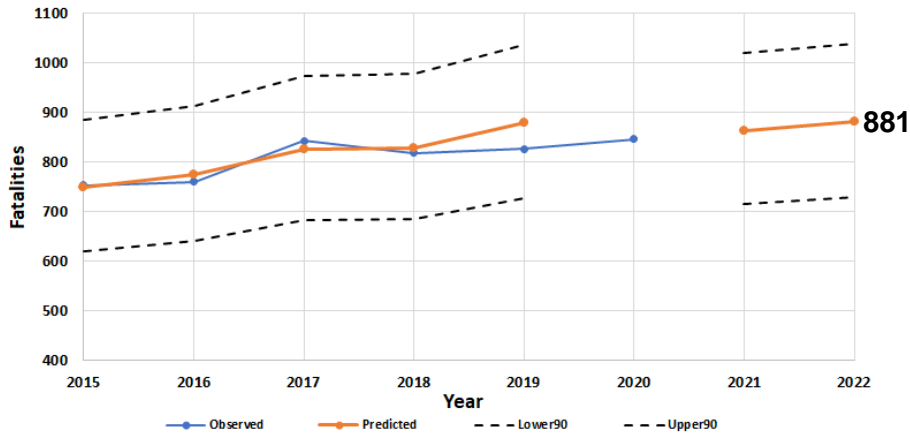
Step 1 - Key Model Assumptions

- **Model updated per new or modified external factors mentioned above**
- **External Factors and Annual Calibration Factor Trends assumed to continue from 2019**
- **Scheduled projects and additional funding assumed to continue**

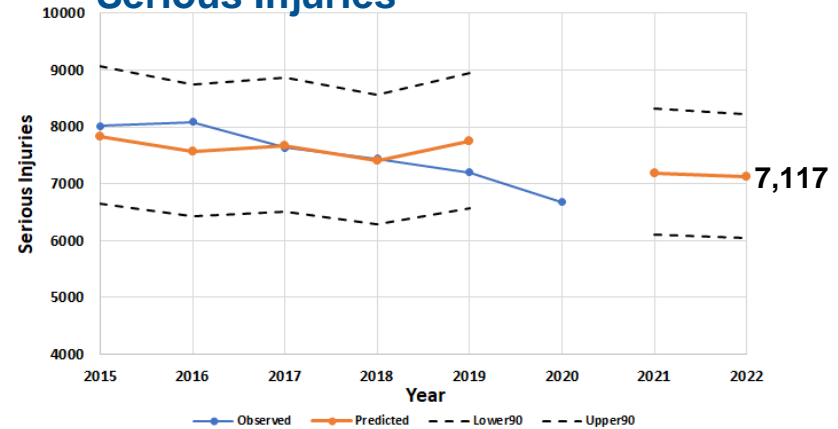
Observed and Predicted Baselines

Volumes Rebound with 2017-2019 Growth

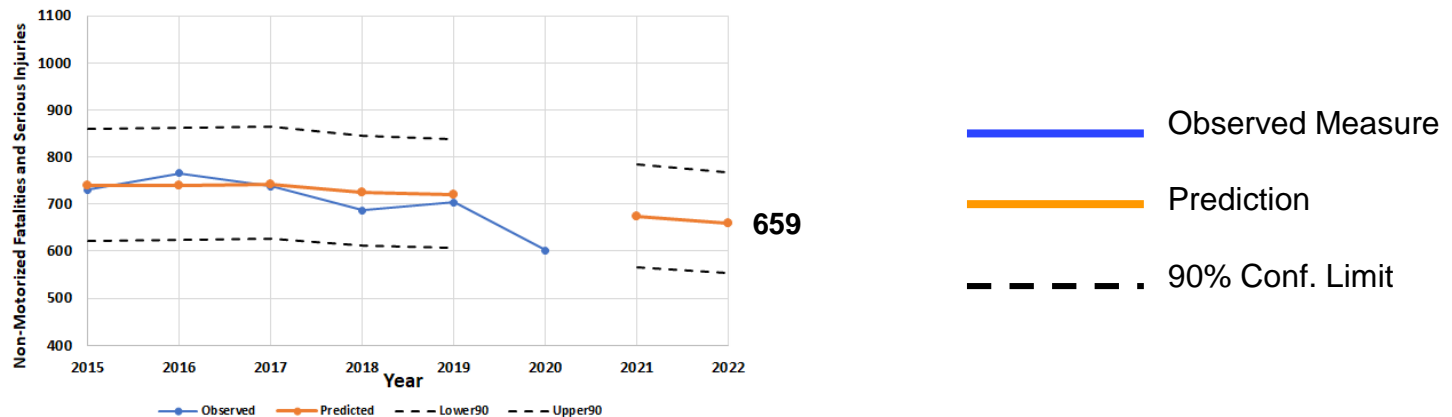
Fatalities



Serious Injuries



Non-M Fatal + Serious Injury



—●— Observed Measure
—●— Prediction
- - - 90% Conf. Limit

Step 2: Expected Benefits of Spot and Corridor Projects

- Reviewed 130 SMART SCALE and HSIP projects constructed or to be completed between January 2020 and March 2022
 - 70 SS projects = \$1.0 B
 - 60 HSIP* projects = \$ 48.2 M in safety funds; \$60.2 M in total funds
- Project influence areas consistent with SMART SCALE safety scoring methodology

Projects	Fatality + Serious Injury Crashes	Fatalities	Serious Injuries	Ped/Bike Fatalities	Ped/Bike Serious Injuries
130	778	77	912	16	34

* Several HSIP projects are larger projects with a small portion of HSIP funds

Spot and Corridor Projects Expected Reductions

Description	Fatalities	Serious Injuries	Ped/Bike Fatalities	Ped/Bike Serious Injuries
Crash Totals	77	912	16	34
Expected After Completion	66	768	13	25
Reduction	11 (1.4/yr)	144 (17.0/yr)	3 (0.4/yr)	9 (1.1/yr)
Percent Reduction	15%	16%	21%	28%
Spot Cost / Annual Reduction	\$764.3 M	\$62.9 M	\$713.3 M	

Investment Cost = \$1.07 B

Step 2: Expected Benefits of Hybrid Projects

- Reviewed 15 Hybrid projects constructed or to be completed between January 2020 and March 2022
 - 2 SS projects = \$4.7 M
 - 13 HSIP projects = \$35.9 M in safety funding; \$36.6 M in total funding
- Project influence areas consistent with SMART SCALE safety scoring methodology

Projects	Fatality + Serious Injury Crashes	Fatalities	Serious Injuries	Ped/Bike Fatalities	Ped/Bike Serious Injuries
15	487	68	599	10	9

Hybrid Projects

Expected Reductions

Description	Fatalities	Serious Injuries	Ped/Bike Fatalities	Ped/Bike Serious Injuries
Crash Totals	68	599	10	9
Expected After Completion	48	527	8	9
Reduction	20 (2.2/yr)	72 (8.2/yr)	2 (0.2/yr)	0 (0.0/yr)
Percent Reduction	29%	12%	23%	0%
Hybrid Cost / Annual Reduction	\$18.7 M	\$5.0 M	\$206.5 M	

Investment Cost = \$41.3 M

Step 2: Expected Benefits of Systemic HSIP Projects

- **Low cost improvements systemically spread on network at intersections and curves or on the pavement**
 - 55 HSIP projects = \$69.8 M in safety funding; \$70.1 M in total funding
- **HSIP projects constructed between January 2020 and March 2022**

Projects	Fatality + Serious Injury Crashes	Fatalities	Serious Injuries	Ped/Bike Fatalities	Ped/Bike Serious Injuries
55	4,799	439	5,471	88	462

Systemic Projects Expected Reductions

Description	Fatalities	Serious Injuries	Ped/Bike Fatalities	Ped/Bike Serious Injuries
Crash Totals	439	5,471	88	462
Expected After Completion	386	4,780	75	369
Reduction	53 (5.9/yr)	691 (76.8/yr)	13 (1.4/yr)	93 (10.3/yr)
Percent Reduction	12%	13%	15%	20%
Systemic Cost / Annual Reduction	\$11.9 M	\$0.9 M	\$6.0 M	

Investment Cost = \$70.1 M

Step 2: All Projects Expected Reductions and Cost per Annual Reduction

Description	Fatalities	Serious Injuries	Ped/Bike F + SI
Spot/Corridor Reduction	1.4/yr	17.0/yr	1.5/yr
Spot Cost / Annual Reduction	\$764.3 M	\$62.9 M	\$713.3 M
Hybrid Reduction	2.2/yr	8.2/yr	0.2/yr
Hybrid Cost / Annual Reduction	\$18.7 M	\$5.0 M	\$206.5 M
Systemic Reduction	5.9/yr	76.8/yr	11.7/yr
Systemic Cost / Annual Reduction	\$11.9 M	\$0.9 M	\$6.0 M
Total Expected Annual Reductions	9.5/yr	102/yr	13.4/yr

Step 3: Proposed 2022 Safety Measures Targets

Description	Fatalities	Fatality Rate	Serious Injuries	Serious Injury Rate	Ped/Bike F & SI
STEP 1: 2022 Target Baseline (Model)	881		7117		659
STEP 2: Expected Project Annual Reductions	10	---	102	---	13
New: Expected Reductions Handheld Ban	10		114		**
STEP 3: Proposed 2022 Targets (Model)	861	0.995	6901	7.971	646
CTB 2021 Adopted Targets (Model)	898	1.012	7,385	8.325	750
CTB 2020 Adopted Targets (Model)	950	1.080	7,473	8.520	711

Next Steps

- **Provide feedback on proposed targets**
- **Adopt targets at the June meeting to meet the Federal reporting deadlines**





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Thank you.

