COMMONWEALTH of VIRGINIA
Office of the
SECRETARY of TRANSPORTATION

Transportation Performance Management
2021 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
- MPOs report to DOT within 180 days

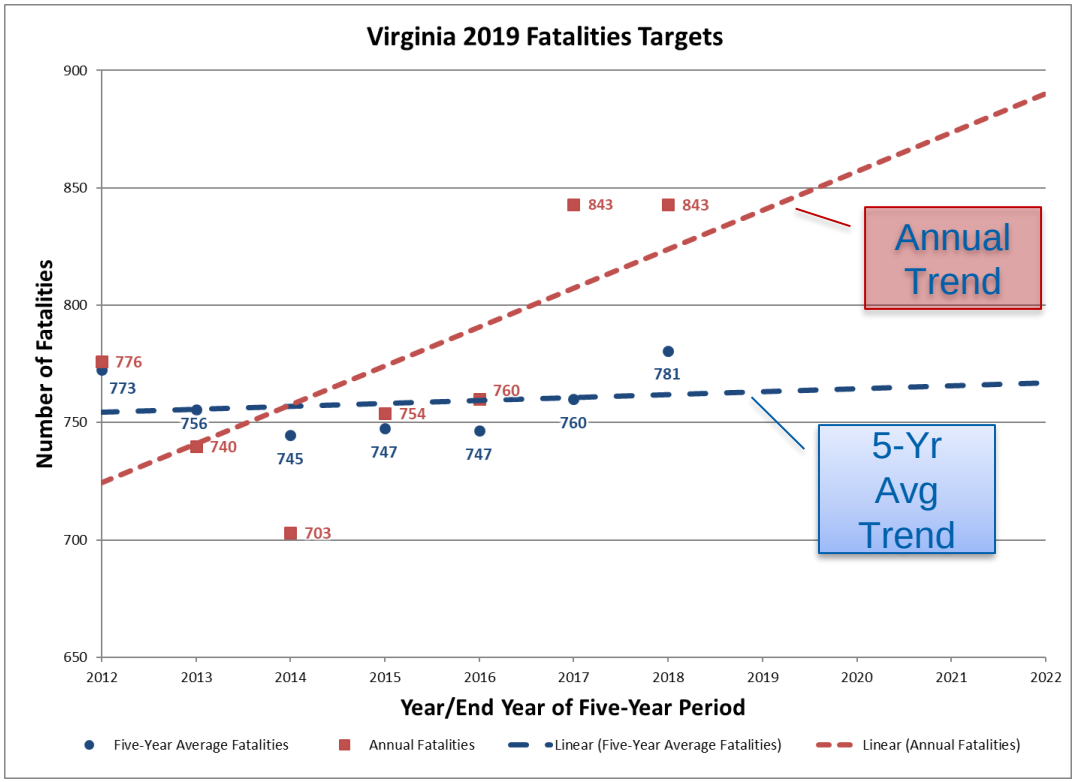
Safety Performance Measures

- **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**

Submitted as five-year average values

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

Setting 2019 Targets was Pivotal Year



Recent annual number trends did not match five-year average trends.

Commonwealth Transportation Board requested that a more data driven model and method be developed for safety targets.

Refining Target Setting: Data-Driven Method

Key steps to develop 2021 targets:

1. **Evaluate anticipated benefits of recent (or soon to be completed) infrastructure projects**
2. **Analyze external factors to predict 2019 baseline crash safety measure counts for validation**
   - **assess new factors**
   - **update and refine model for 2021 predictions**
3. **Combine the baseline predictions with project benefits to establish data-driven targets**

Step 1: All Projects Expected Reductions and Cost per Annual Reduction

Description	F People	SI People	F + SI Ped/Bike People
Spot/Corridor Reduction	1.0 / Yr	11.2 / Yr	1.3 / Yr
Spot Cost / Annual Reduction	$415.5 M	$37.1 M	$193.1 M
Hybrid Reduction	1.5 / Yr	7.8 / Yr	0.6 / Yr
Hybrid Cost / Annual Reduction	$24.4 M	$4.7 M	$20.8 M
Systemic Reduction	1.1 / Yr	15 / Yr	7.5 / Yr
Systemic Cost / Annual Reduction	$19.8 M	$1.5 M	$1.85 M
Total Expected Annual Reductions	**3.6 / Yr**	**33.9 / Yr**	**9.4 / Yr**

Step 2: Analyze External Factors to Predict 2021 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 2019 data**
3. **Forecast external and annual factors for 2021 measure predictions**

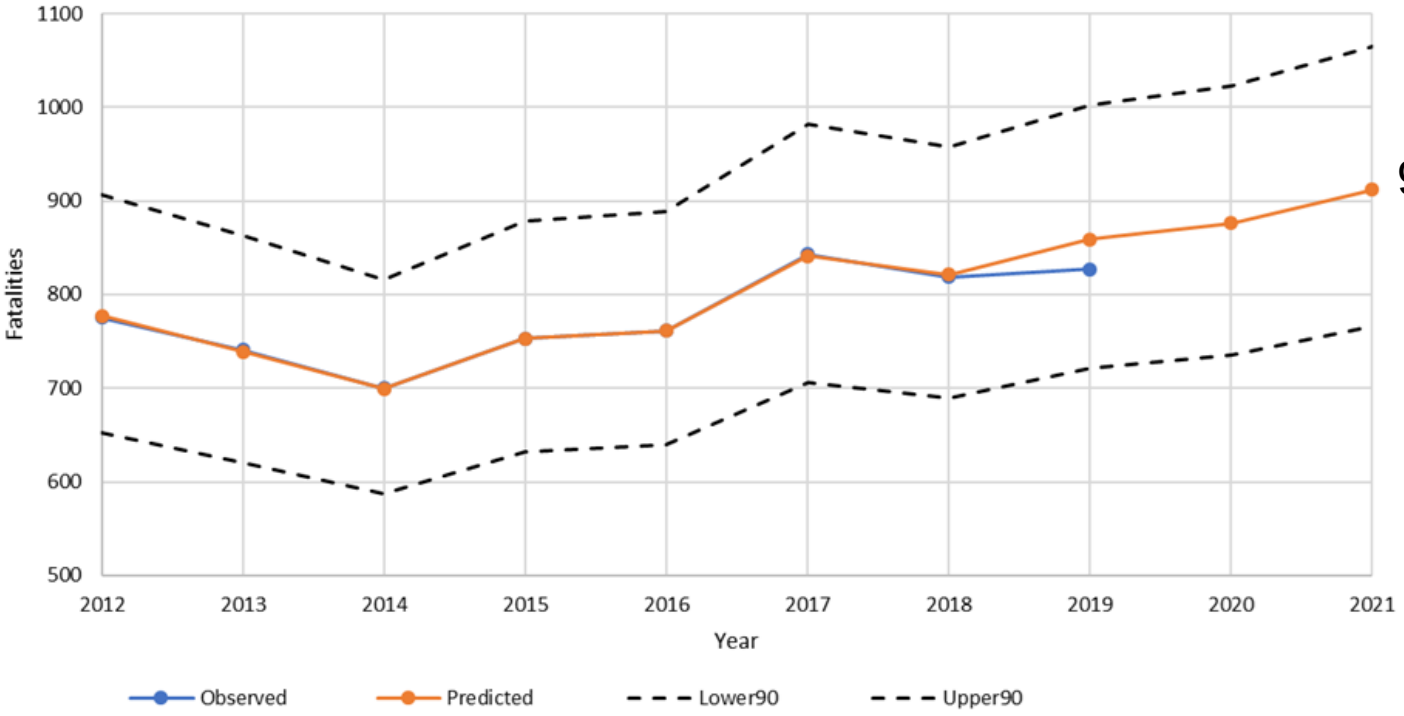
Safety Measure (by District & Month) = **Exposure (Vehicle Miles)** X **External Factors (by District & Month)** X **Annual Factor**

Step 2 - 2021 Baseline Prediction Models

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 in 2021 model

Predicted and Observed Fatalities:
Previous trends continue in 2020-2021



Note: Based on recent years, assumed flattening Annual Factor trend (but still increasing). 2019 was key indicator of changes.

Step 3: 2021 Safety Measures Targets
With Previous Trends in Baseline Predictions

Description	F People	F Rate	SI People	SI Rate	F & SI Ped/Bike People
STEP 2: 2021 Target Baseline (Model)	912		7,533		760
STEP 1: Expected Project Annual Reductions	4	---	34	---	10
New: Expected Reductions Handheld Ban	**10**		**114**		**
STEP 3: 2021 Targets (Model)	**898**	**1.012**	**7,385**	**8.325**	**750**
CTB 2020 Adopted Targets (Model)	950	1.08	7,473	8.52	711

** Some of the Fatal and Severe Injuries reduced by the handheld ban will impact the Bike/Ped outcomes, but there is not a method to estimate the proportion.

Key Points about MPO Safety Performance Targets

- All MPOs must set a target for each of the 5 Safety Performance Measures
- MPOs may adopt and support the State's HSIP target, develop their own, or use a combination
- MPO targets are not annually assessed for significant progress toward meeting targets
- MPO targets are reported directly to VDOT by Feb each year

Source of facts and additional information can be found - https://safety.fhwa.dot.gov/hsip/spm/docs/mpo_factsheet.pdf

State Target Percent Change –
Based on 5 Year Average reported to FHWA

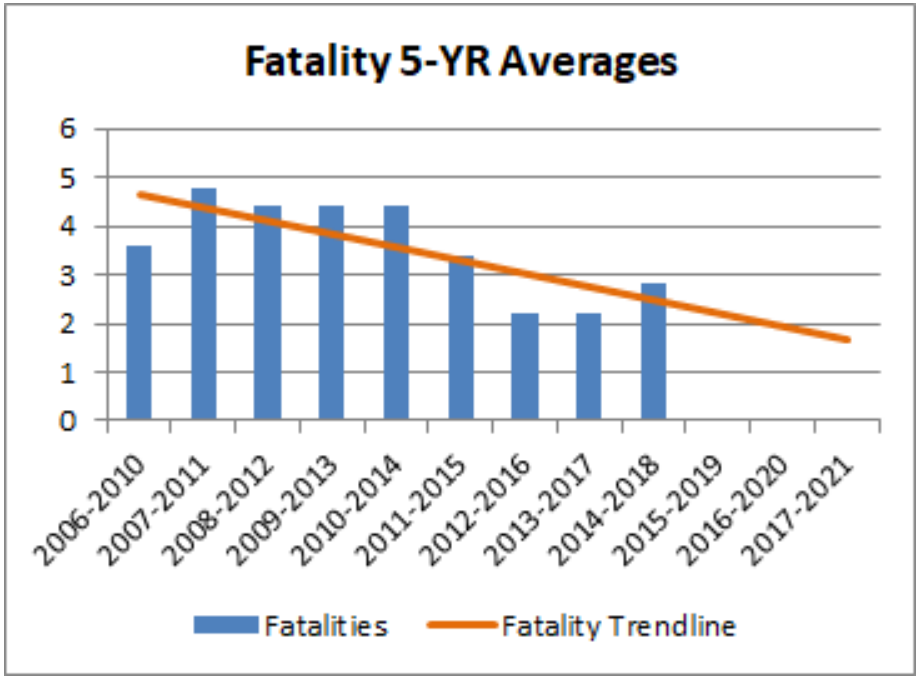
Description	F People	SI People	F & SI Ped/Bike People
2014-2019 – Actual	**801**	**7,675**	**726**
2016-2021 – Target	852	7,451	725
2 year difference	+ 51	- 224	- 1
Target % Change / Yr	**+ 3.2 %**	**- 1.46 %**	**- 0.08 %**

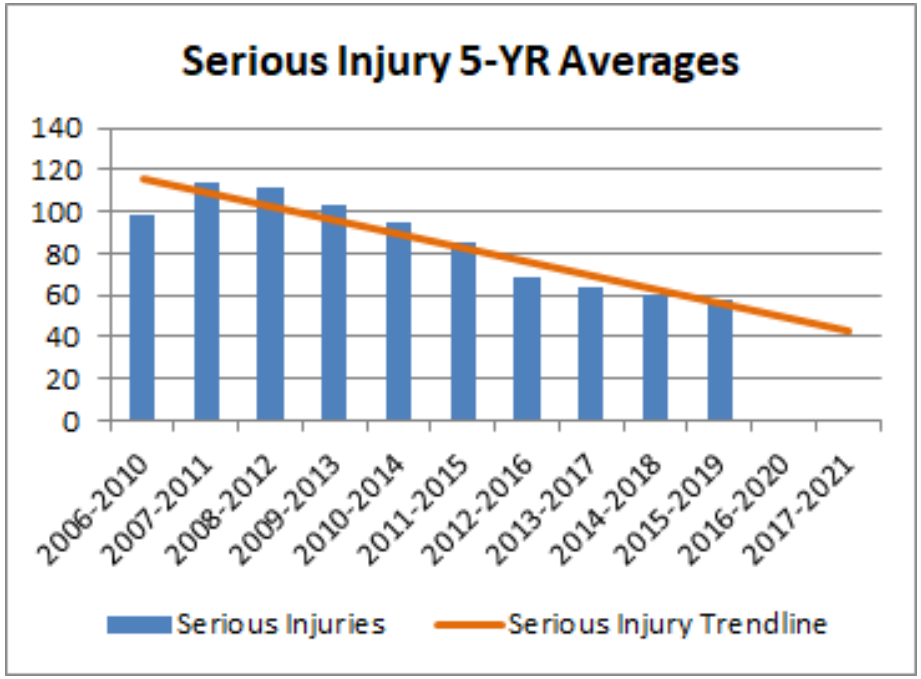
VMT: Projected statewide increase = + 1.07% / year from 2019 to 2021

Using most recent historic "actual" data available
- Reduction, + Increase

Review MPO Crash Data and Trends

Provided in spreadsheet tabular and graphical format





Separate tab in workbook for ped/bike values

Submit MPO Safety Target Letter

Sign and submit to VDOT - State Traffic Engineer by end of February each year

Future Target Annual Percent Changes

The VDOT statewide annual goal percent changes and the projected change in VMT are provided in the following table. Indicate the MPO's plan to adopt the statewide annual goal percent changes to set safety targets or to establish a different methodology.

Target Description	*Statewide Annual Goal Percent Change	MPO Adoption of Statewide Goal (Yes/No)	If No, Enter MPO Annual Goal Percent Change
Fatalities	+3.20%	Yes/No	
Serious Injuries	-1.46%	Yes/No	
Non-Motorized Fatalities and Serious Injuries	-0.08%	Yes/No	
Vehicle Miles Traveled (VMT)	+1.07%	Yes/No	

*A positive value represents an increase and a negative value represents a reduction in five-year averages each year from 2019 to 2021.

Additional Information on Methodology

Enter data analysis and summary information here if the statewide annual percent changes are not adopted. Other options could include a non-trendline-based analysis or a trendline-based analysis using five-year rolling averages, three-year rolling averages, or annual values.

Adopt statewide goal percent change or establish MPO goal

Describe methodology if statewide percent changes are not adopted

Enter target values

2021 Safety Performance Targets

The following five-year average target values were calculated using the MPO ap… percent changes or other methodology:

Target Description	Target Value
Fatalities	XX
Fatality Rate	X.XXX
Serious Injuries	YYY
Serious Injury Rate	Y.YYY
Non-Motorized Fatalities and Serious Injuries	ZZ

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