



COMMONWEALTH of VIRGINIA

Office of the

SECRETARY of TRANSPORTATION

# Transportation Performance Management Measures and Target Setting #2

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Deputy Secretary of Transportation

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Virginia Department of Rail and Public Transportation



# Performance Management Measures and Target

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- **MAP-21 Federal Law – establish performance targets for:**
  - **Asset Management - Pavements and Bridges**
  - **System Performance**
  - **Congestion**
  - **Air Quality**
  - **Safety**
- **HB2241/SB1331 – Board to establish performance targets for surface transportation**

# Performance Measures Baseline Conditions

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- **Freight Reliability Measure**
- **CMAQ – Emissions Reduction**

# Freight Reliability Measure

## Truck Travel Time Reliability (TTTR) Index

- **Examines each segment of the Interstate during five time periods**
  - Weekdays 6a to 10a; 10a to 4p; and 4p to 8p
  - Weekends 6a to 8p
  - Overnight (all days) 8p to 6a
- **Objective is to improve reliability for trucking industry in order to predict buffer time needed for “on-time delivery”**
  - Measure looks at the ratio of the truck travel time for the 95<sup>th</sup> percentile to 50<sup>th</sup> percentile and utilizes the maximum TTTR for the 5 time periods for each interstate segment multiplied by the segment length / total length of the interstate

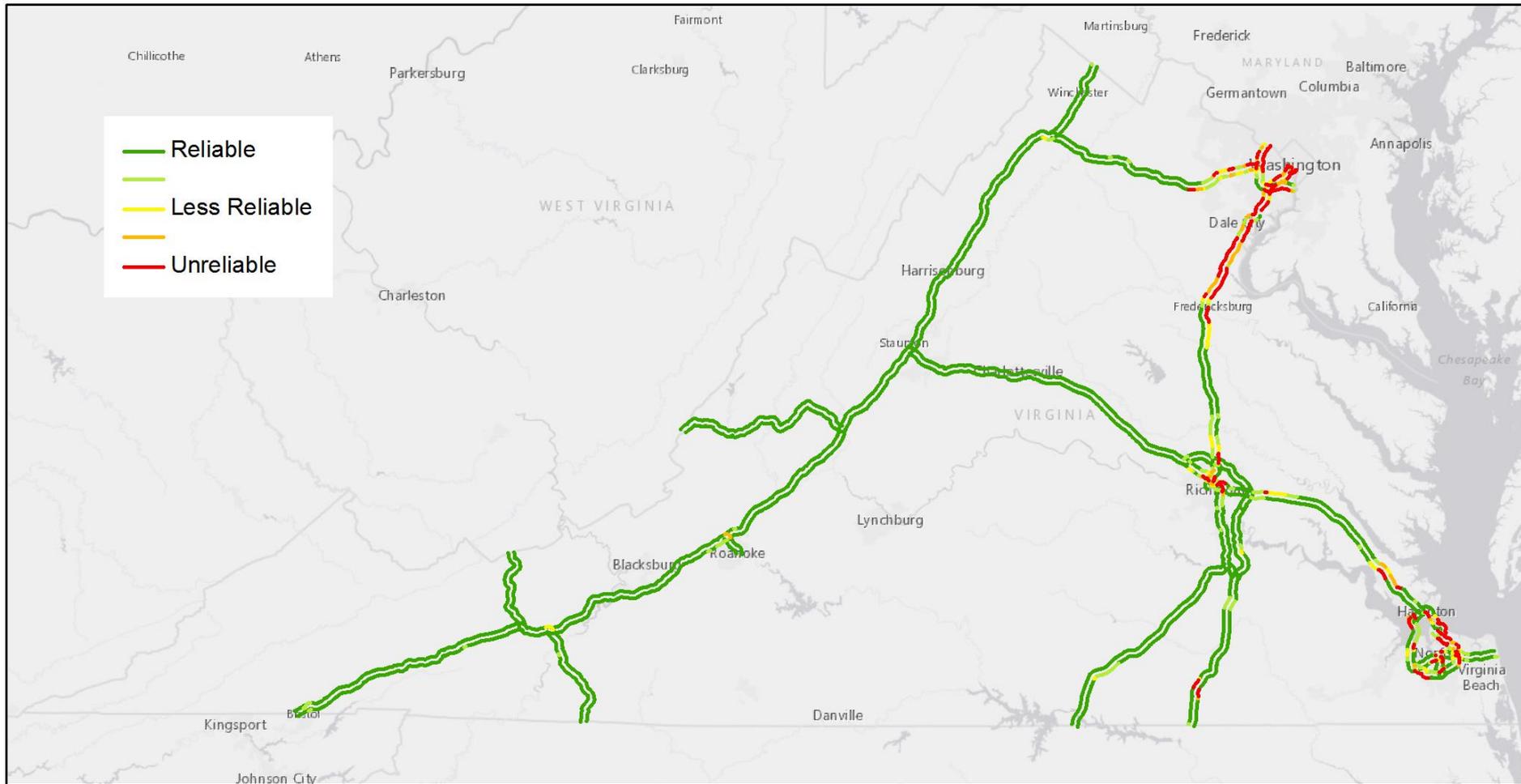
# Freight Reliability Measure Baseline

## Truck Travel Time Reliability (TTTR) Index

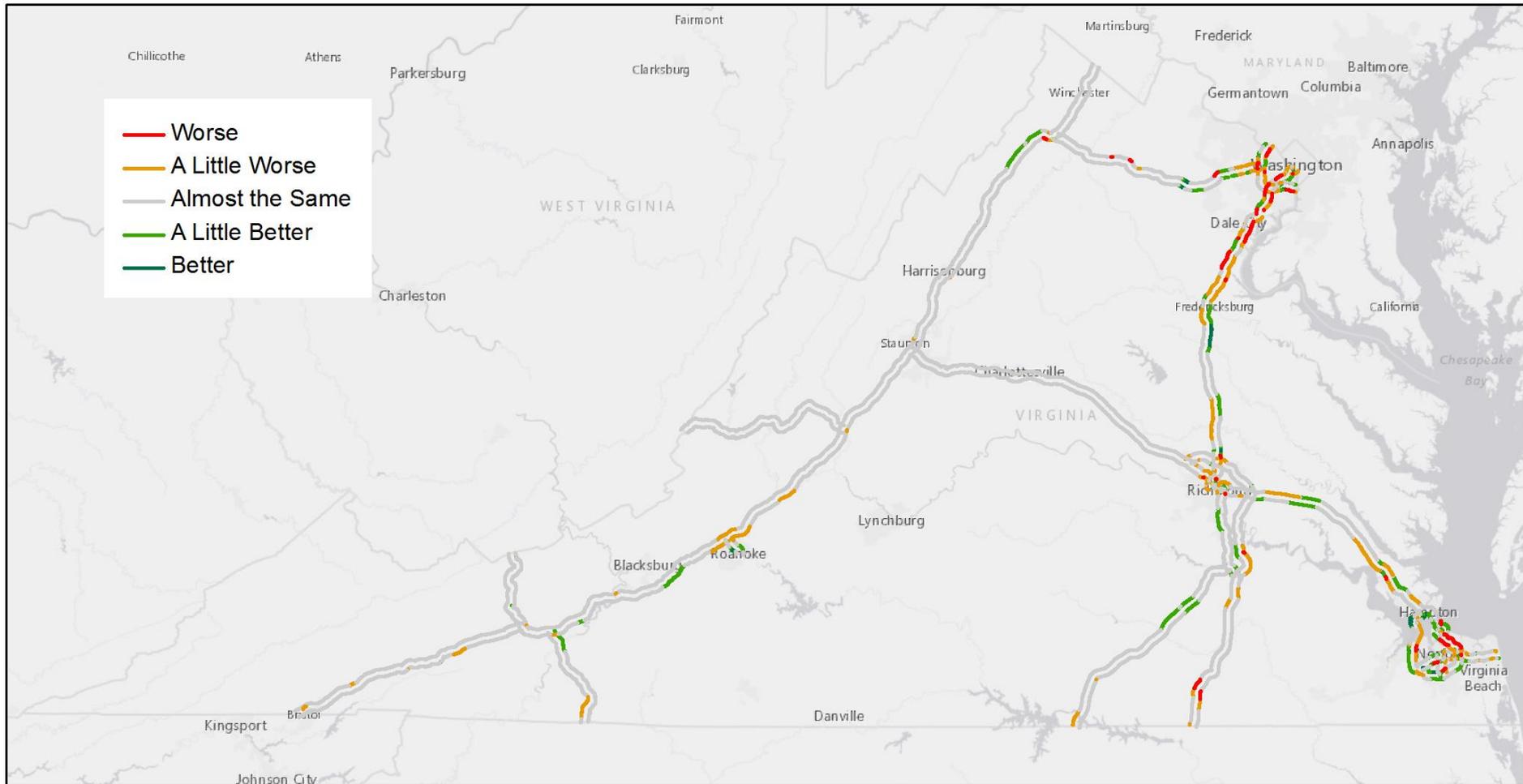
Metropolitan Planning Organization	2016 TTTR	2017 TTTR
Winchester-Frederick County MPO	1.10	1.10
Blacksburg-Christiansburg-Montgomery Area MPO	1.09	1.09
Bristol MPO	1.11	1.13
Tri Cities Area MPO	1.12	1.14
Richmond Area MPO	1.44	1.45
Staunton-Augusta-Waynesboro MPO	1.11	1.11
Roanoke Valley MPO	1.21	1.23
National Capital Region Transportation Planning Board	2.88	2.91
Charlottesville-Albemarle MPO	1.15	1.13
Hampton Roads Transportation Planning Organization	2.03	2.05
Harrisonburg-Rockingham MPO	1.06	1.06
Fredericksburg Area MPO	2.60	2.61



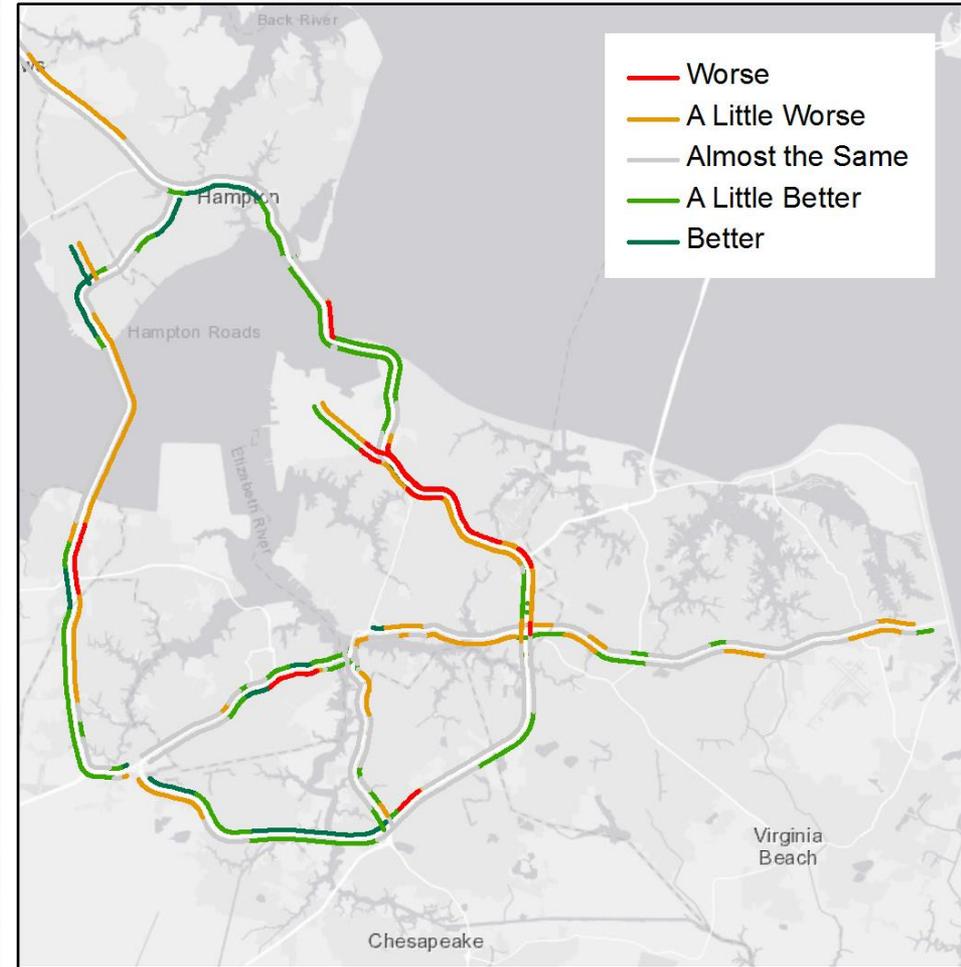
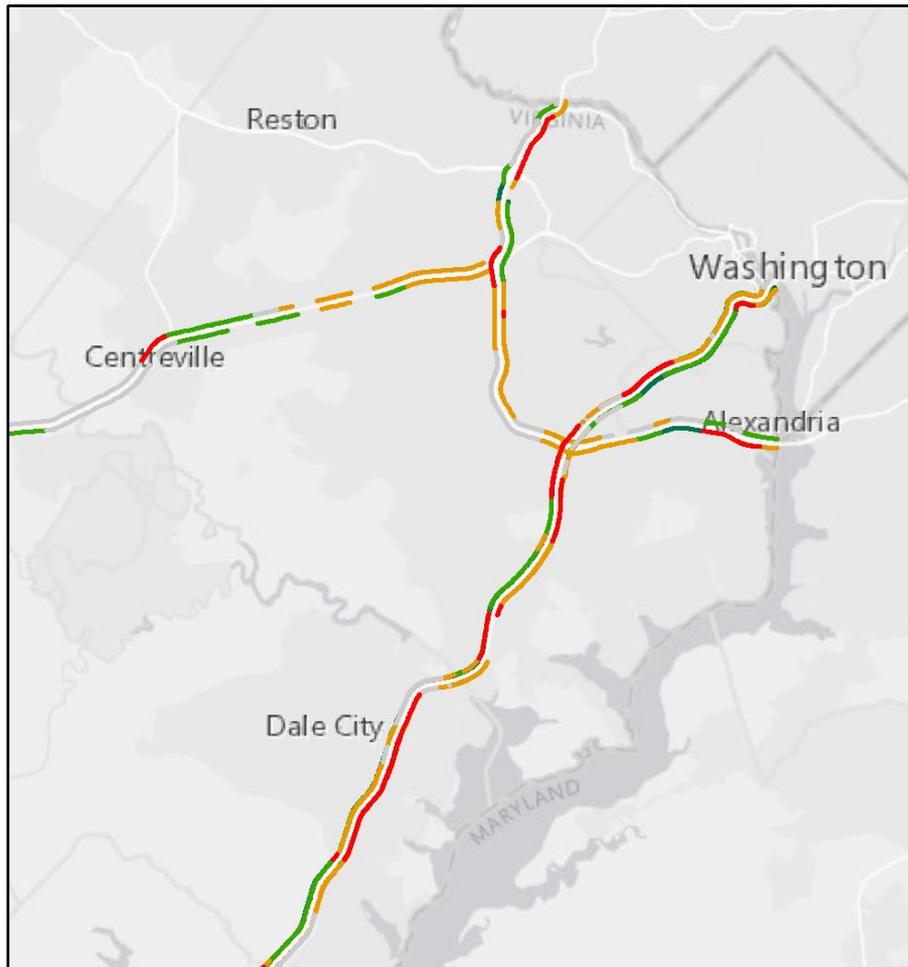
# Freight Reliability Measure 2017 TTTR Index Heat Map



# Freight Reliability Measure Change in TTTR Index 2016 to 2017



# Freight Reliability Measure Change in TTTR Index 2016 to 2017

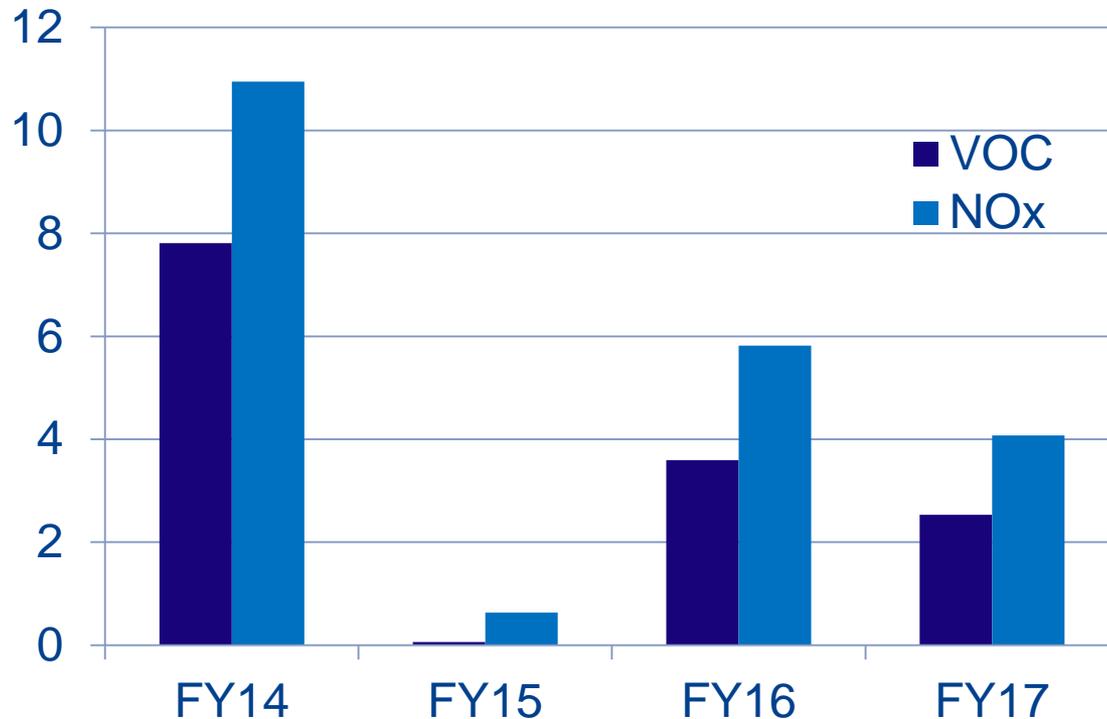


# CMAQ Emissions Reduction Measure

- **The Total Emissions Reduction is the cumulative 2-year and 4-year reported emission reductions for:**
  - **All projects funded using CMAQ funds**
  - **Applicable criteria for pollutants and or their precursors**
    - Only applies to Northern Virginia (TPB)
    - Applicable Pollutants: volatile organic compounds (VOC) and nitrogen oxides (NOx)
- **Applicable State DOTs and MPOs must coordinate and collectively to establish a methodology for developing targets**

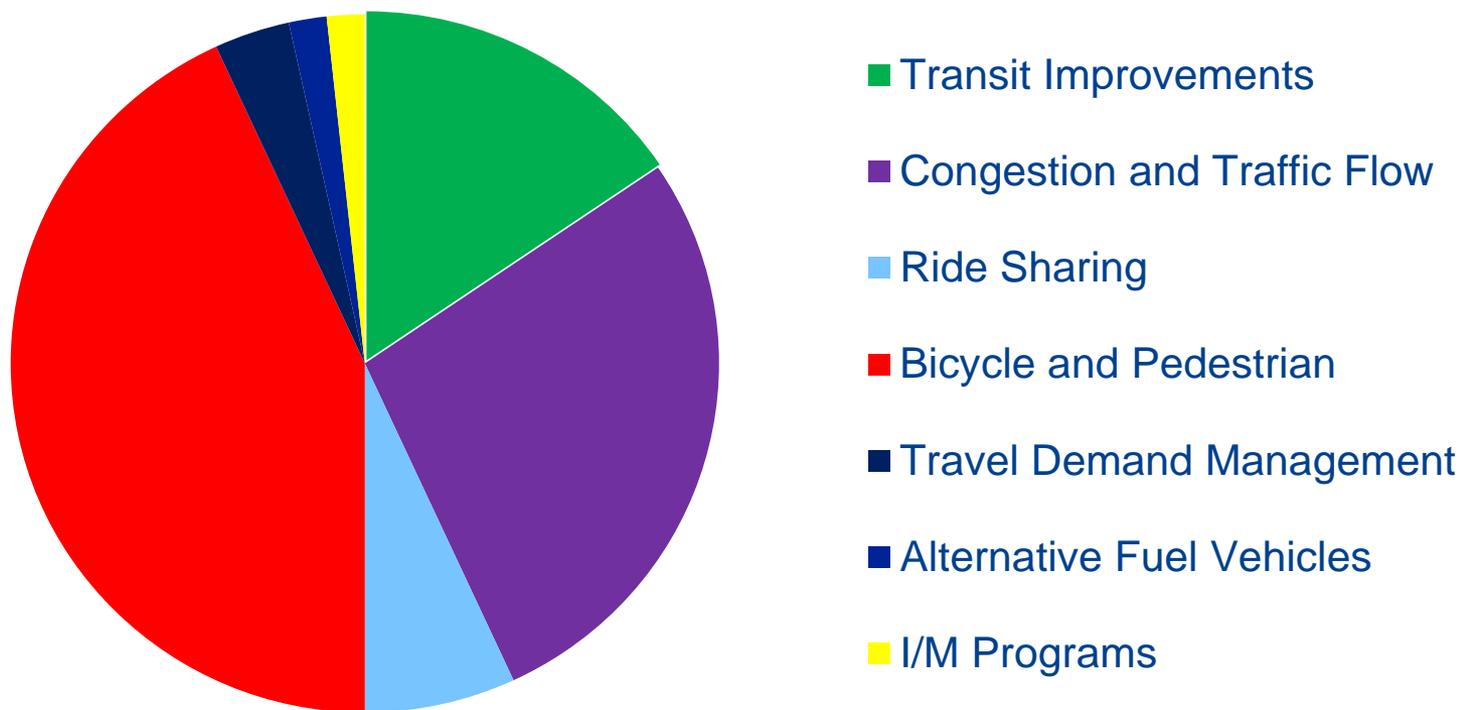
# CMAQ Emissions Reduction Measure Baseline

FY 14-17 Emission Reductions (kg/day)



# CMAQ Emissions Reduction Measure Baseline

## FY 14-17 Project Types



# Target Setting Methodology

- **Trends lines (straight or best fit) based on historic data to establish future conditions**
  - Captures existing trends of actual performance
- **Extrapolation (linear or exponential)**
  - Can be useful with limited data sets
- **Modeling to forecast future performance**
  - Uses existing trends/conditions along with related indicators (deterioration rates, projected growth, etc.) to project future conditions (i.e. Travel Demand Models, Pavement Management System, Bridge Management System)
- **Anticipated Projects**
  - Estimated benefits of programmed projects (i.e. CMAQ funded projects)
- **Mix of the concepts above**

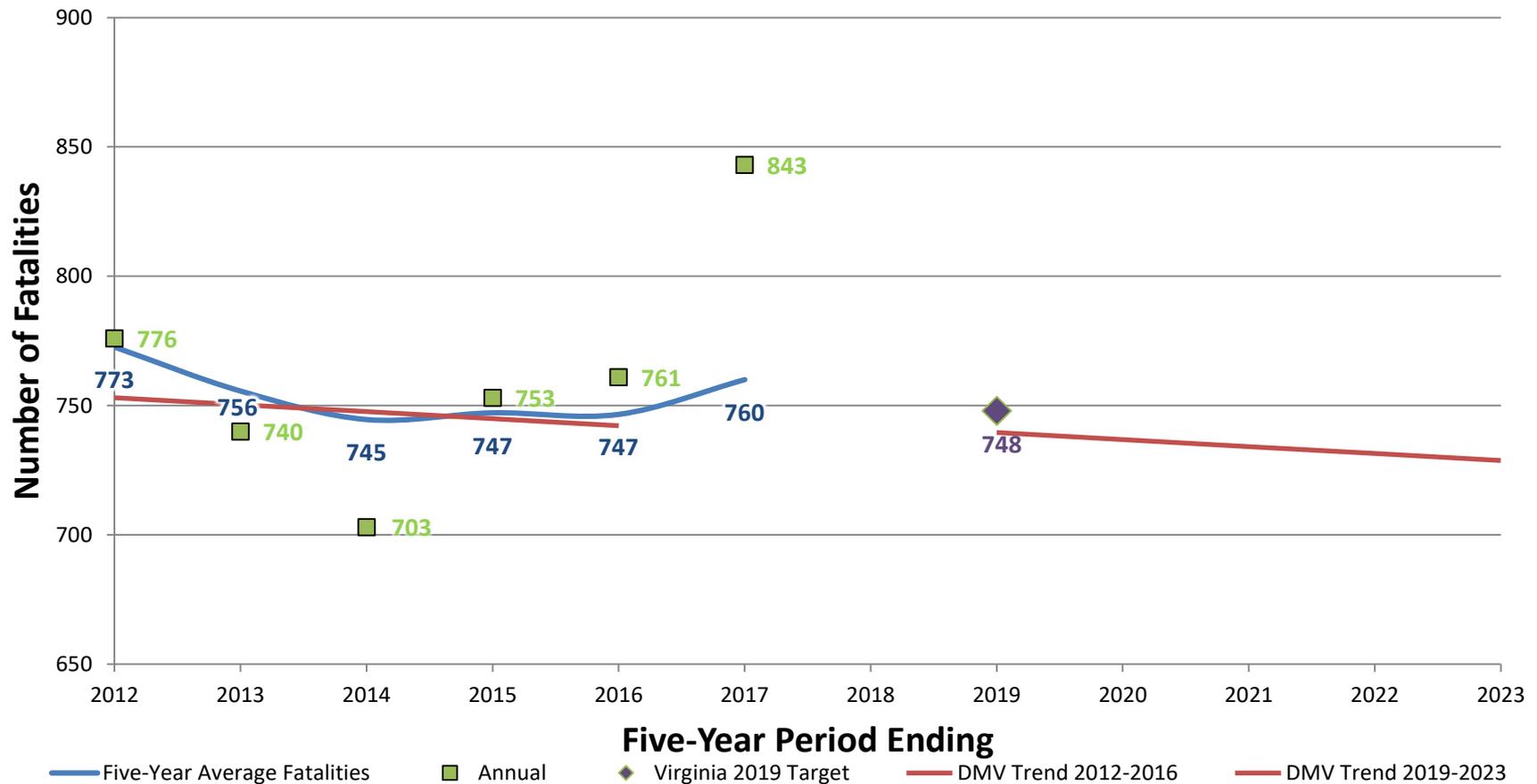
# Safety Performance Measures

- **Safety Performance Measures**
  - Number of fatalities\*
  - Number of severe injuries\*
  - Rate of fatalities per 100M vehicle miles traveled\*
  - Rate of severe injuries per 100M vehicle miles traveled\*\*
  - Number of non-motorized fatalities and severe injuries\*\*
  
- **Safety Targets Due Annually**
  - Initial targets for 2018 established August 2017
  - DMV and VDOT must agree to targets
  - DMV targets due July 1, 2018
  - VDOT targets due August 31, 2018

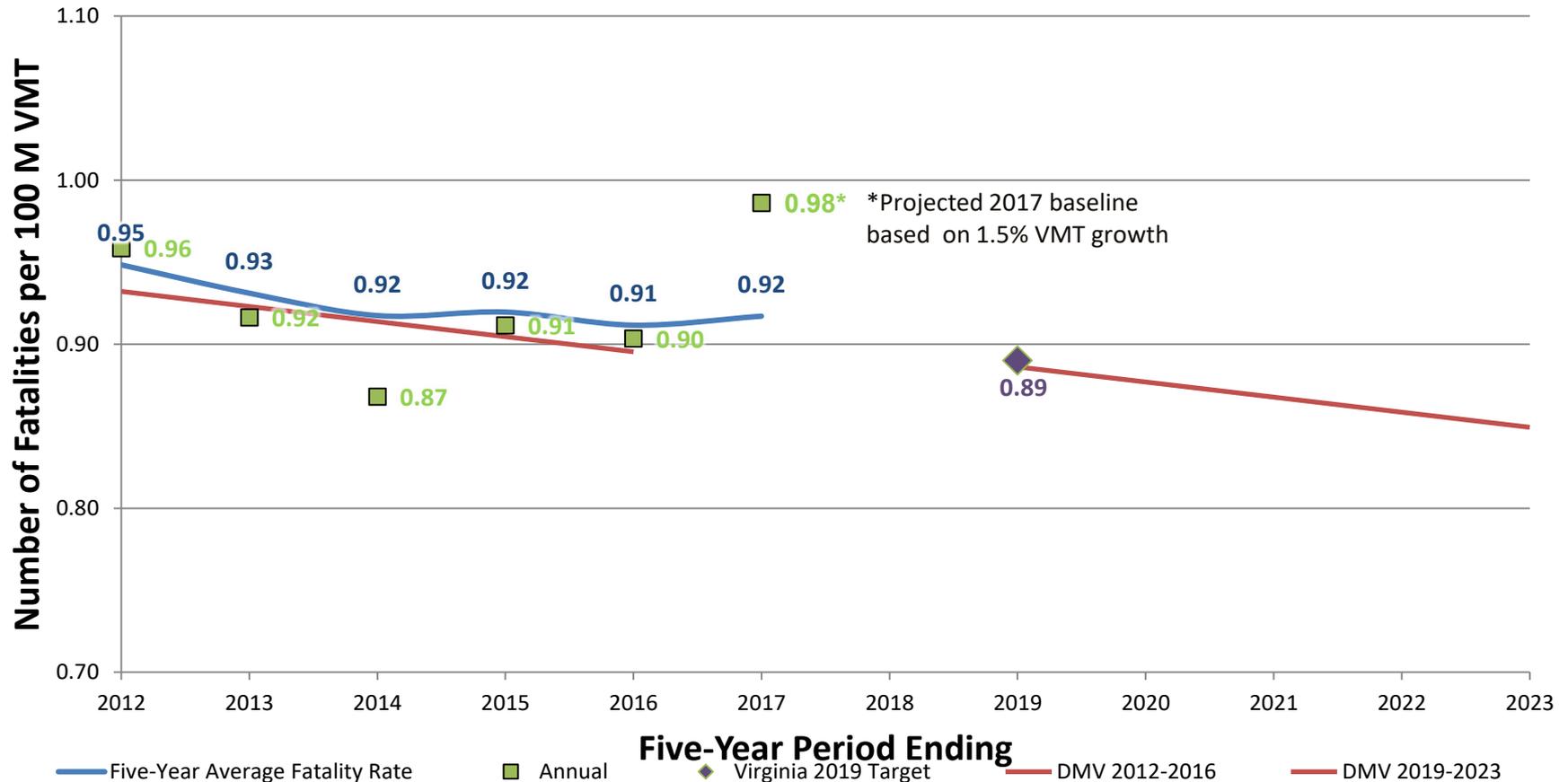
\*Federal measure impacting VDOT and DMV

\*\*Federal measure impacting VDOT only

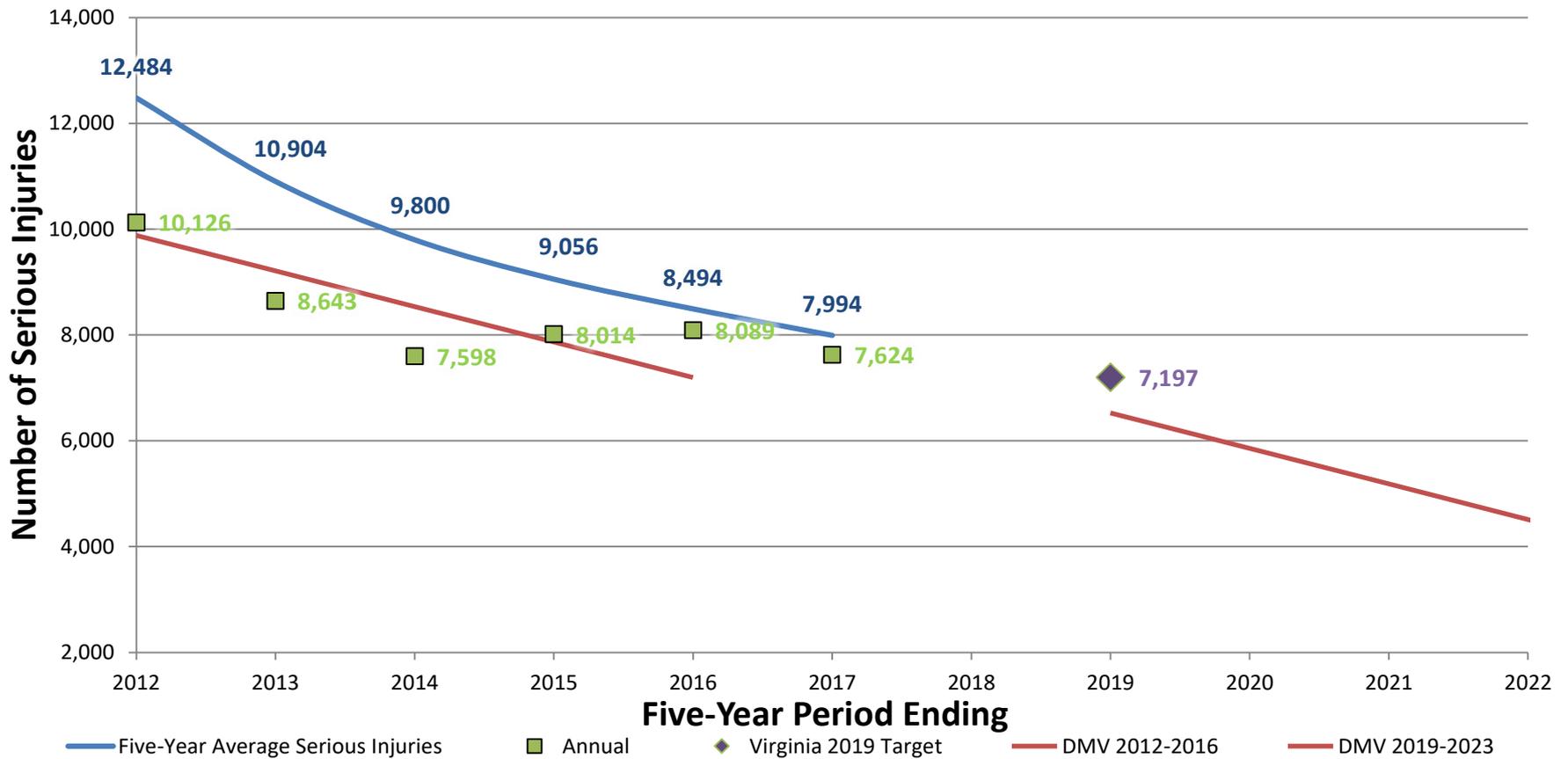
# 2019 Fatalities Based on Trend-line



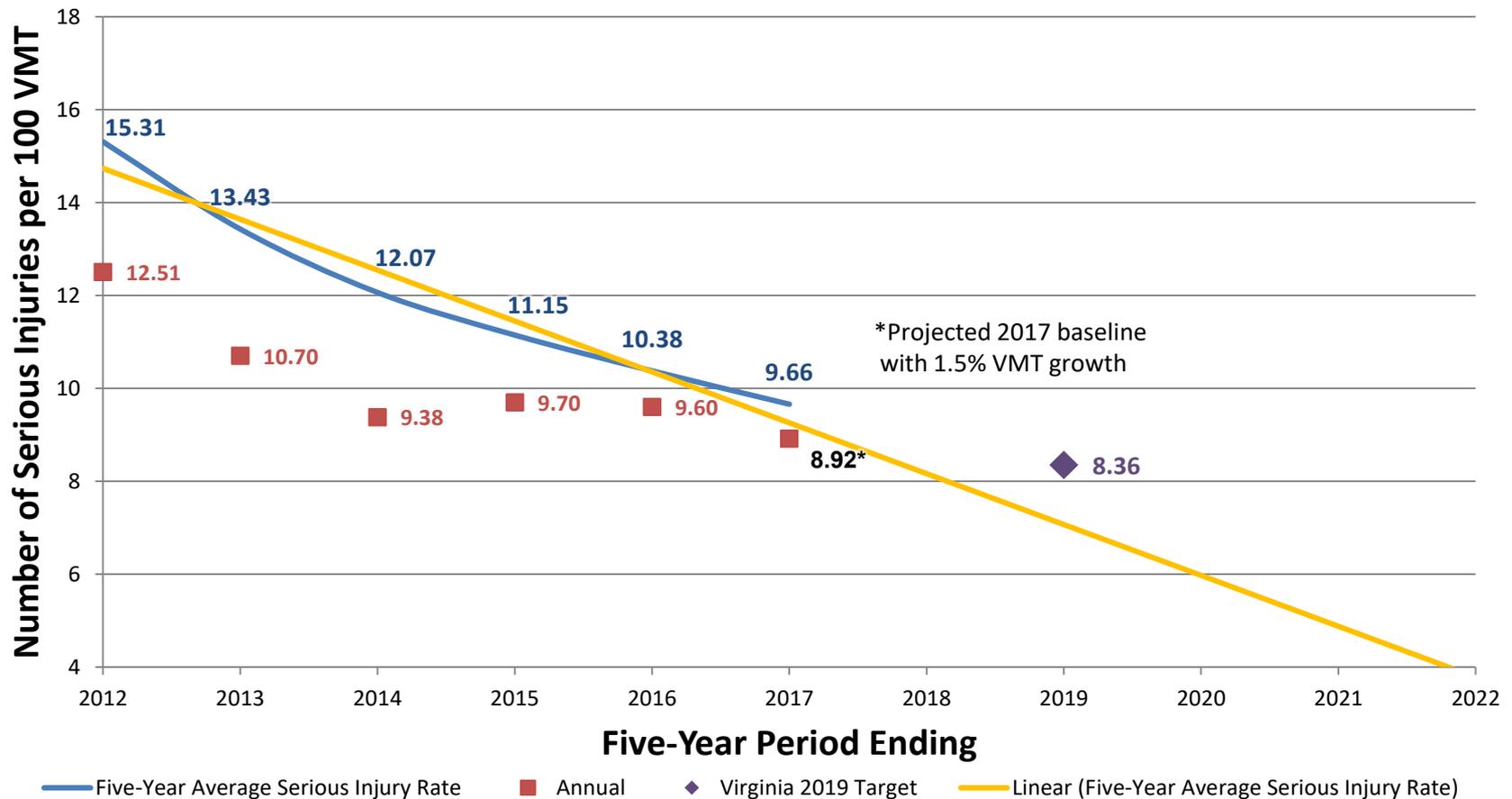
# 2019 Fatalities per 100M VMT Based on Trend-line



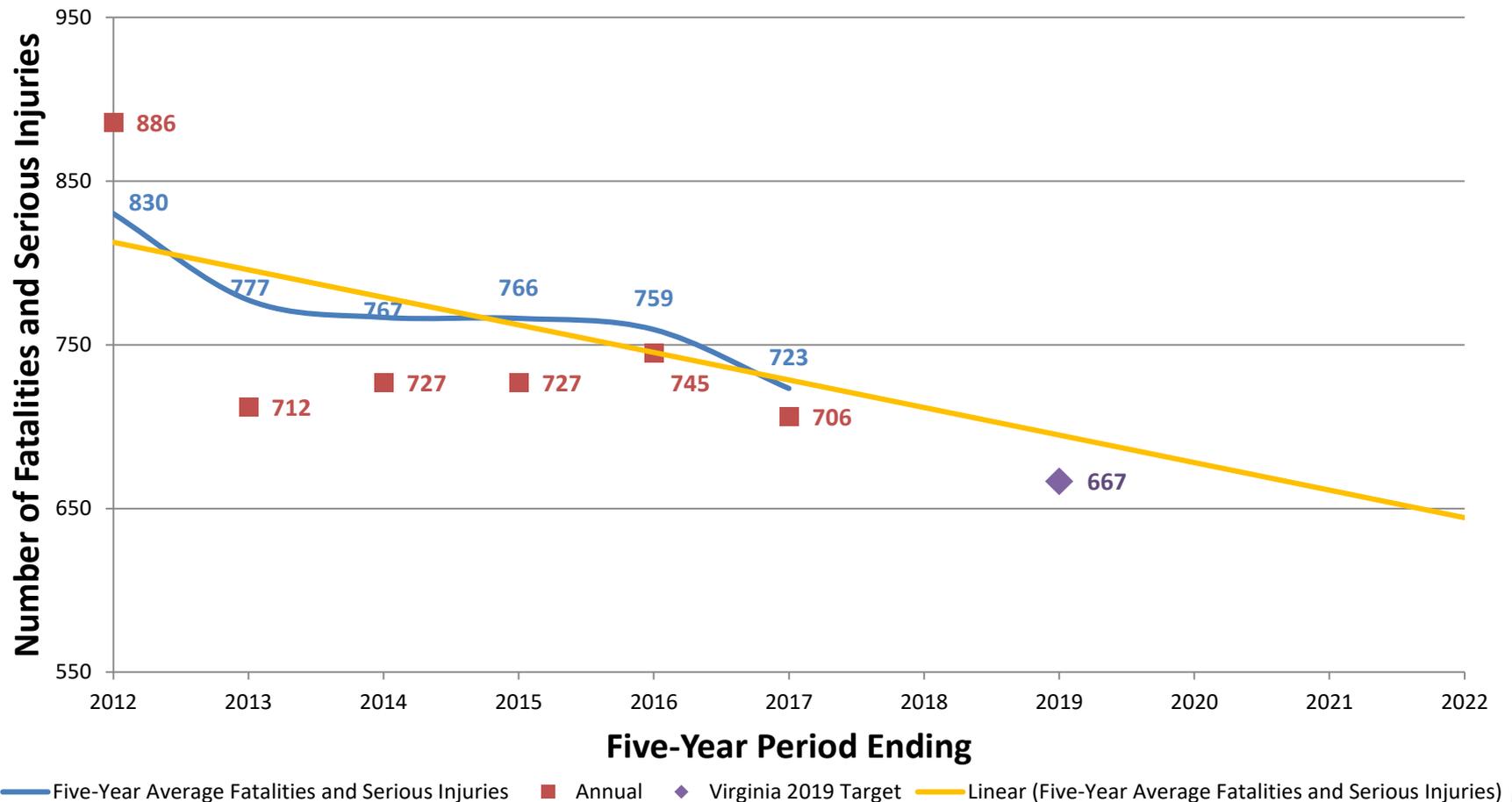
# 2019 Serious Injuries Trend-line



# 2019 Serious Injuries per 100M VMT Based on Trend-line



# 2019 Non-Motorized Fatalities and Serious Injuries Trend-line



# Safety Targets

**National Highway Transportation Safety Administration and FHWA recommend using trend-line analysis to establish targets**

- **Trend-line analysis has a 1-2 year lag**
- **“5-year rolling average” includes 9 years of data, the trends have changed during this time period**
- **Does not take into account new investment strategies or laws and policies**

# Safety Targets

- **Challenged staff to develop a new data-based methodology to establishing targets**
- **Draft concept includes—**
  - **Review causes of fatalities and severe injuries**
  - **Determine which causes can be influenced by capital improvements**
  - **Determine whether travel will increase/decrease**
  - **Evaluate safety impact of projects that opened to traffic the previous year**

# Next Steps

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- **Methodology for Target Setting**
  - ✓ **Define Purpose**
  - ✓ **Set Target parameters**
  - ✓ **Assemble baseline data and analyze trends**
  - ✓ **Present remaining baseline data at following meeting**
  - 4. **Develop targets for the Board's consideration**
  - 5. **Seek feedback from Board and other stakeholders**
  - 6. **Provide adopted targets to USDOT by October**