COMMONWEALTH *of* VIRGINIA

Office of the

SECRETARY *of* TRANSPORTATION

Transportation Performance Management Measures and Target Setting

Nick Donohue

Deputy Secretary of Transportation

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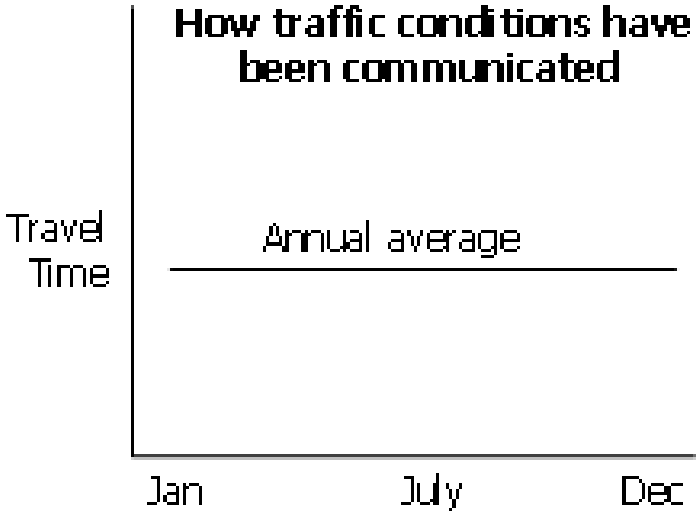
Performance Management Measures and Target

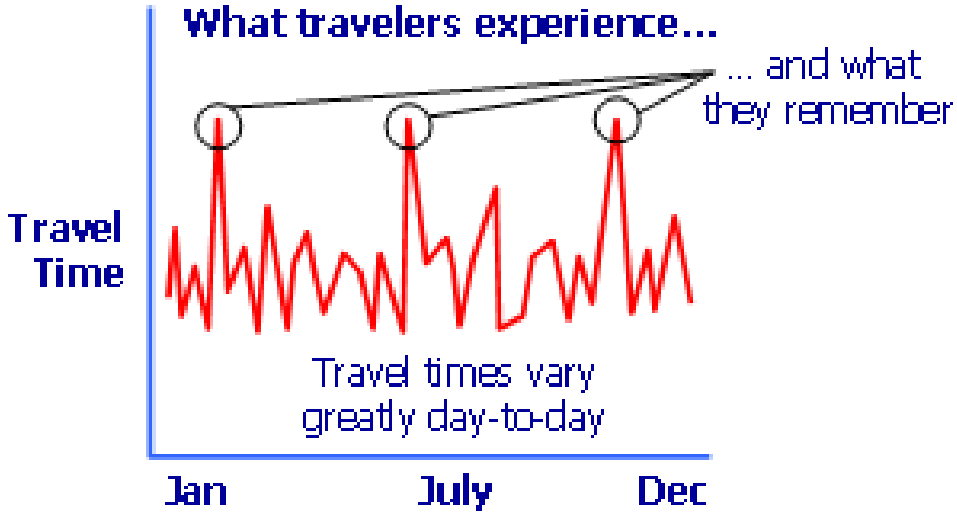
- **MAP-21 Federal Law – establish performance targets for:**
  - **Asset Management - Pavements and Bridges**
  - **System Performance**
  - **Congestion**
  - **Air Quality**
  - **Safety**
- **HB2241/SB1331 – Board to establish performance targets for surface transportation**

Performance Measures
Baseline Conditions

- Travel Time Reliability
- Peak Hour Excessive Delay
- % of Non-SOV Travel
- Pavement Conditions
- Bridge Conditions
- Safety

Travel Time Reliability





Travel Time Reliability

- **Examines each segment of the National Highway System (NHS) during four time periods**
  - **Weekdays 6a to 10a; 10a to 4p; and 4p to 8p**
  - **Weekends 6a to 8p**
- **Measure is a ratio of person miles traveled on a reliable segment of the NHS compared to all person miles traveled on the NHS**
- **A segment is determined to be unreliable if the reliability is worse than 1.50 for one or more time period**
  - **Meaning that to arrive on time 80% of the time one would need to budget 50% more time compared to a typical trip**

Travel Time Reliability

- More time and data are necessary to better capture 'person' miles traveled
  - Bus ridership, vehicle occupancy – HOT lanes versus general purpose
- Federal measure may mask improvement in very unreliable areas
  - Improving 'buffer index' from 3.2 to 1.7 would not register any improvements
- Federal measure may be misleading as all person miles from a road segment road are considered 'unreliable' even if only one of the four time periods is unreliable

Travel Time Reliability

I-95 northbound in Stafford in the morning

7:00a on the left

8:15a on the right

Travel experiences vary greatly over peak period

Reliably Congested

Interstate 66 Eastbound in the evening is congested each weekday

5:00pm

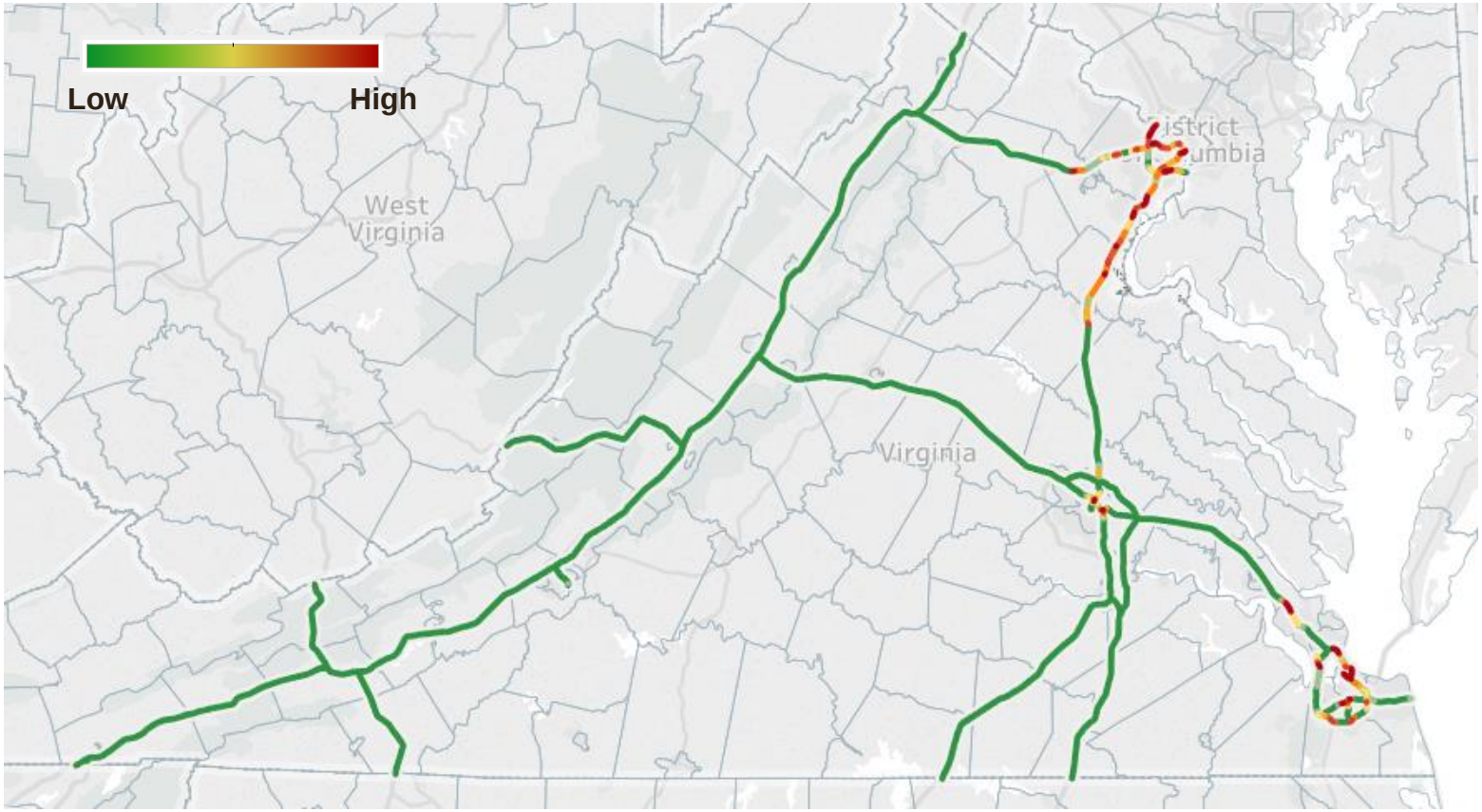
6:00pm

Travel Time Reliability Measure Baseline

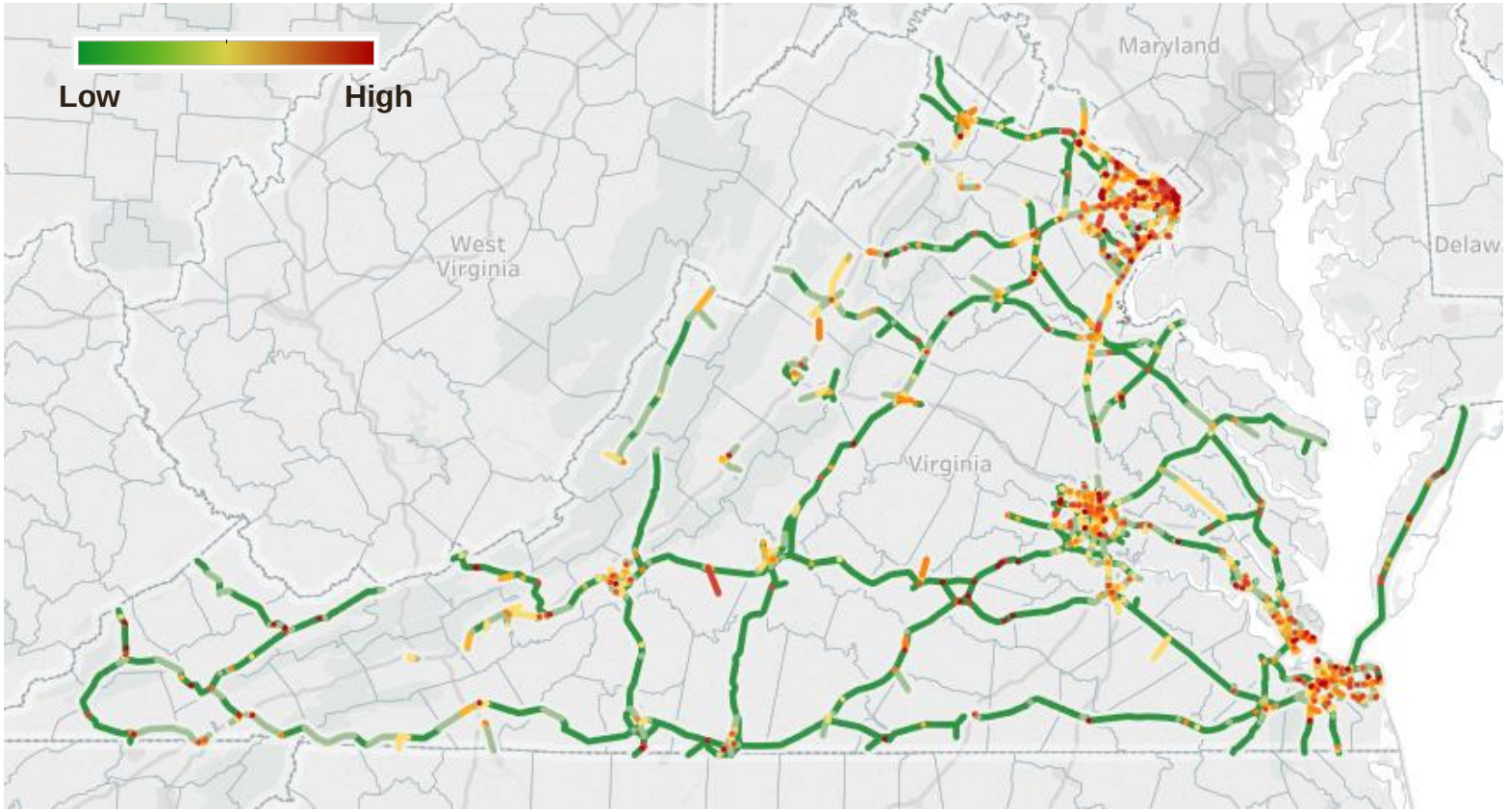
Virginia MPOs	LOTTR – Reliable Percentage	
	Interstate	Non-Interstate
Bristol MPO	100	91.4
Central Virginia MPO	N/A	93.0
Charlottesville-Albemarle MPO	100	85.7
Danville MPO	N/A	98.7
Fredericksburg Area MPO	53.1	85.5
Hampton Roads Transportation Planning Organization	85.7	88.2
Harrisonburg-Rockingham MPO	100	81.7
Kingsport MTPO	N/A	99.0
National Capital Region Transportation Planning Board	56.1	72.1
New River Valley MPO	100	80.5
Richmond Area MPO	94.3	89.6
Roanoke Valley MPO	100	90.2
Staunton-Augusta-Waynesboro MPO	100	77.6
Tri Cities Area MPO	100	75.8
Winchester-Frederick County MPO	100	76.2
Non-MPO	100	93.8
Grand Total	82.3	85.0

- Calculated internally by VDOT staff with 2017 INRIX NPMRDS 82.9
- PMT used 1.54 vehicle occupancy factors from 2009 as 2017 numbers are not yet available

2017 LOTTR Heat Map Interstates



2017 LOTTR Heat Map Non Interstate NHS



Traffic Congestion

PHED Measure: Annual Hours of Peak Hour Excessive Delay (PHED) Per Capita

- Excessive delay is travel below 60% of the posted speed limited or 20mph, whichever is greater, on NHS route

Non-SOV Travel Measure: Percent of Non-Single Occupancy Vehicle (SOV) Travel

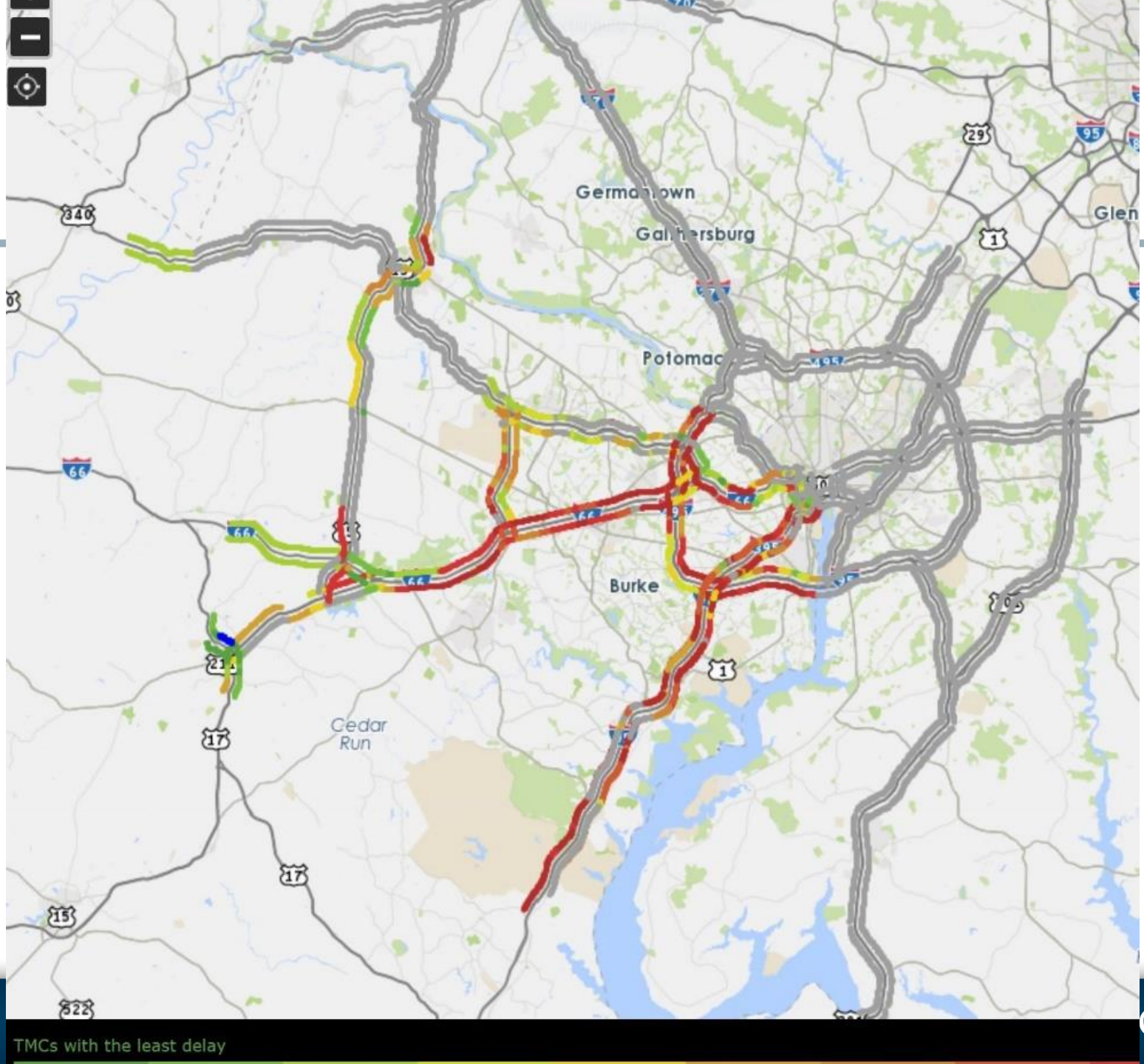
Under Federal Rules Applies to Areas that meet the following:

- ✓ **Designated Urban Areas**
- ✓ **Contains NHS mileage AND population > 1,000,000**
- ✓ **Nonattainment or maintenance area**

Annual Hours of Peak Hour Excessive Delay per Capita (2017)

Virginia MPOs	PHED	PHED /capita
National Capital Region	125,758,655	50.53
Hampton Roads	47,356,054	28.37
Richmond Region	22,170,112	18.66

- Based on estimated figures and will be updated


Germantown
Gaithersburg
Potomac
Burke
Cedar Run
TMCs with the least delay

% Non-SOV Travel

	Drove Alone	Carpooled	Public Transportation	Walked	Other	Teleworked	% of Non-SOV
Virginia	77%	9%	4%	2%	2%	5%	**23%**
Arlington County	54%	6%	26%	5%	3%	6%	**46%**
Fairfax County	71%	10%	10%	2%	2%	6%	**29%**
Loudoun County	78%	9%	4%	1%	1%	7%	**22%**
Prince William County	75%	13%	5%	1%	1%	4%	**25%**
Alexandria City	58%	8%	22%	4%	3%	5%	**42%**
Fairfax City	71%	9%	10%	4%	1%	5%	**29%**
City of Falls Church	60%	7%	20%	3%	3%	7%	**40%**
Manassas City	78%	12%	3%	2%	1%	4%	**22%**
Manassas Park City	71%	18%	6%	0%	1%	3%	**29%**
National Capital Region	70%	10%	11%	2%	2%	6%	**30%**

Based on American Community Survey 2016 results

Pavement and Bridge Inventory

Virginia Department of Transportation
3rd Largest Transportation Agency in the U.S.

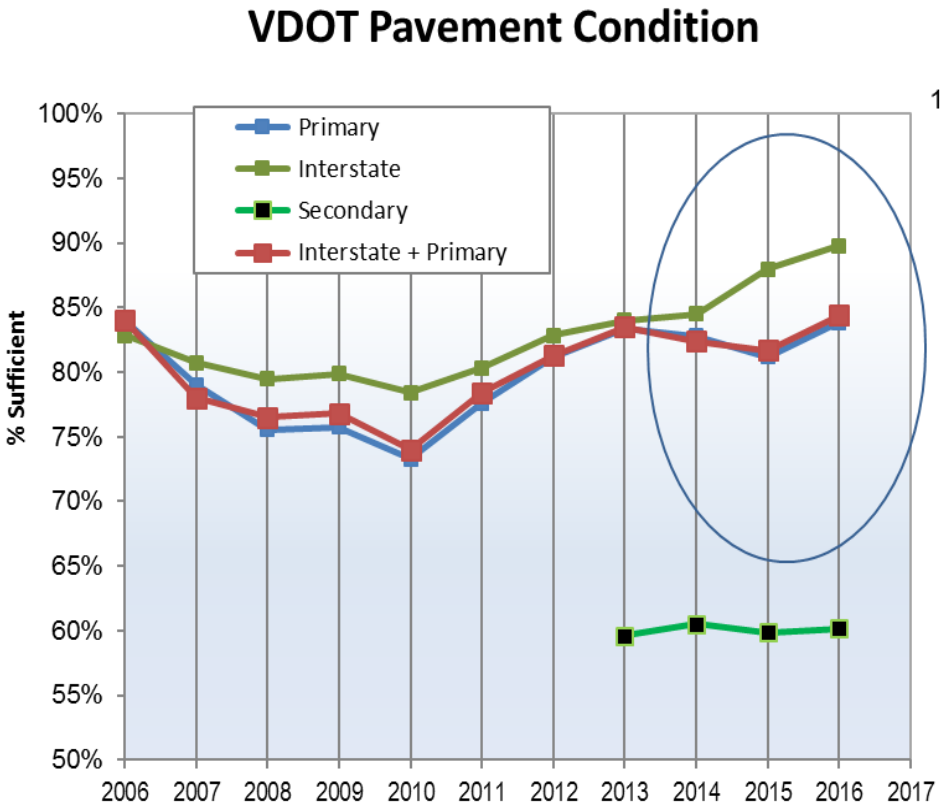
Pavements

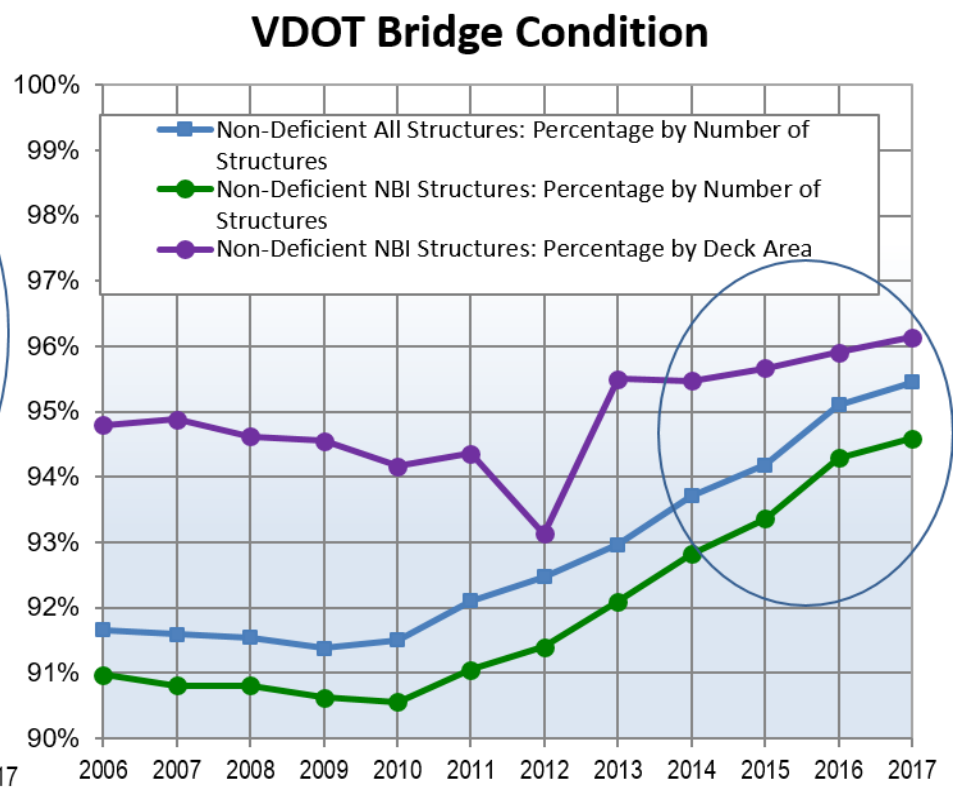
- Over ***127,000*** Lane Miles maintained by VDOT
  - National Highway System (NHS) - Over 18,700 lane miles
    - 15% of the inventory
    - VDOT maintained – Over 15,700 lane miles
    - Locality maintained – 3,000 lane miles
  - Interstate – Over 5,500 lanes miles
    - 4% of the inventory
  - Non-Interstate – Over 13,200 lanes miles

Bridges

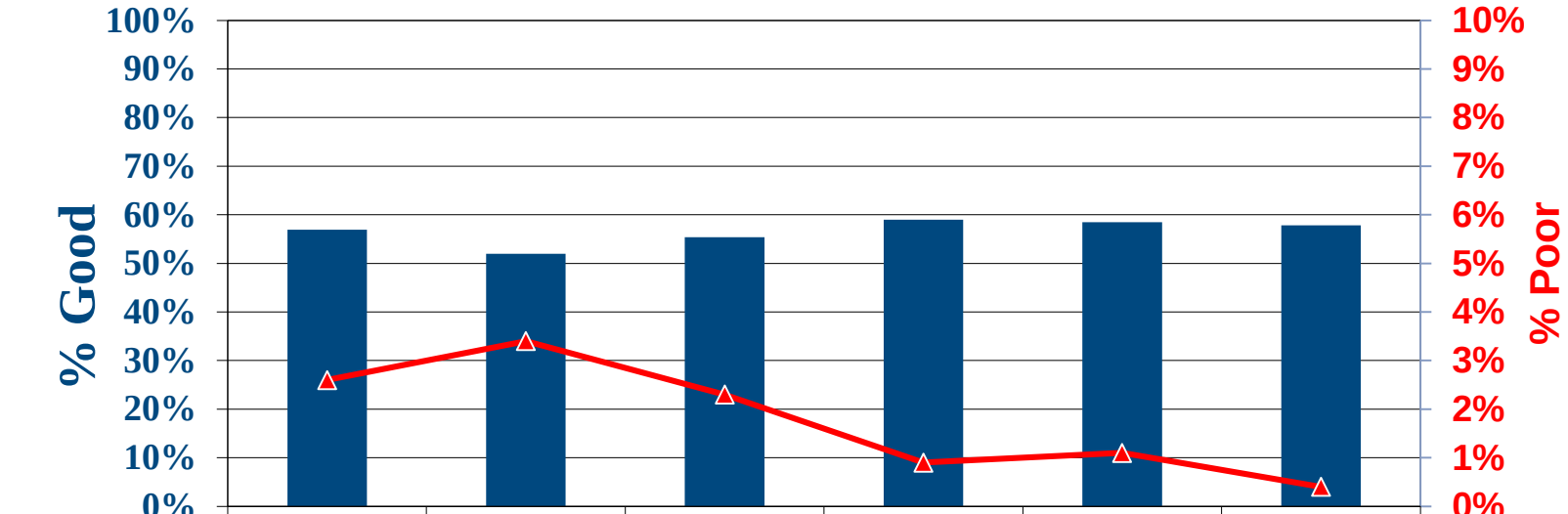
- Over ***21,000*** Bridges in the Commonwealth
  - VDOT maintained – over 19,400
    - 92% of the inventory
  - Locality maintained – over 1,600
    - 8% of the inventory
  - National Bridge Inventory (NBI) – over 13,500
    - 64% of the inventory
  - NBI on NHS – Over 3,700
    - 18% of the inventory

VDOT Historical Pavement and Bridge Condition Measures



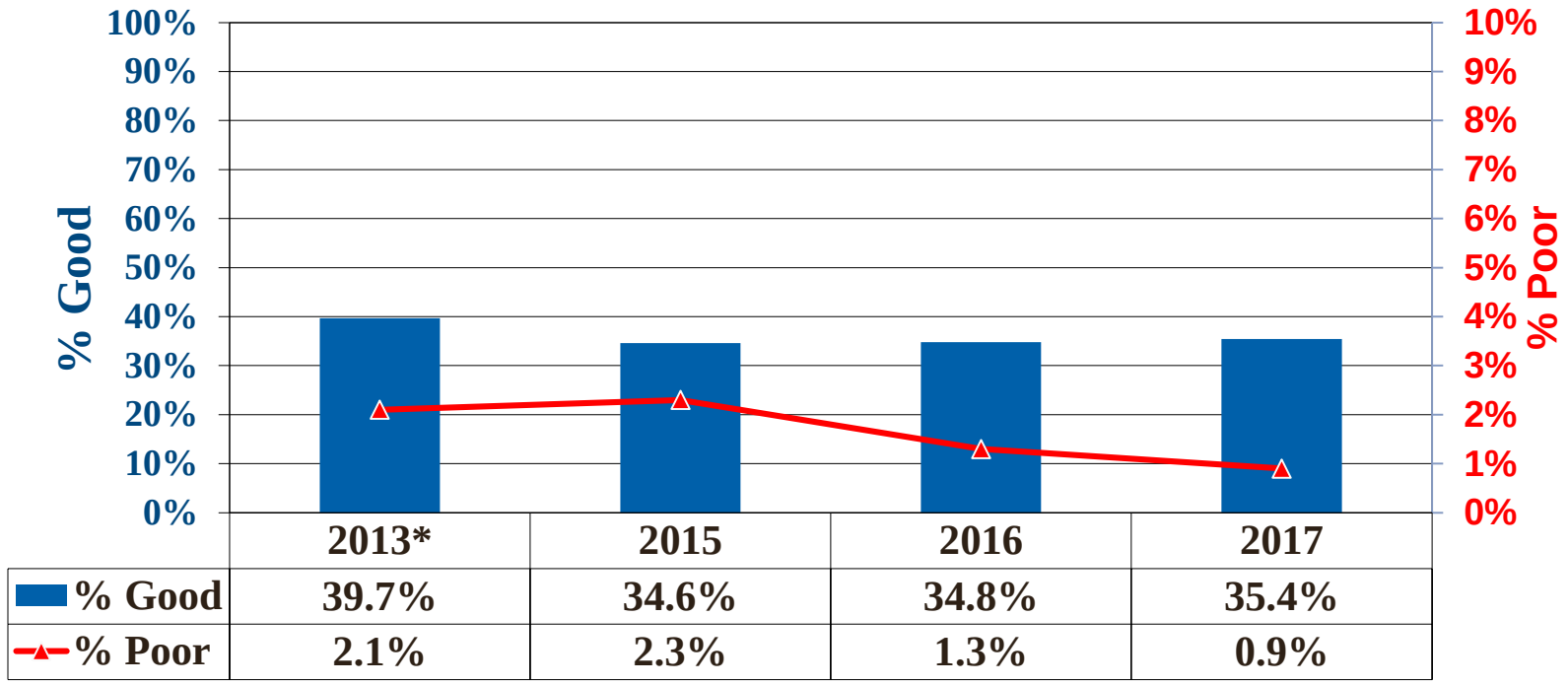


Federal Pavement Baseline
Interstate



	2012	2013	2014	2015	2016	2017
% Good	56.9%	52.0%	55.4%	59.0%	58.5%	57.8%
% Poor	2.6%	3.4%	2.3%	0.9%	1.1%	0.4%

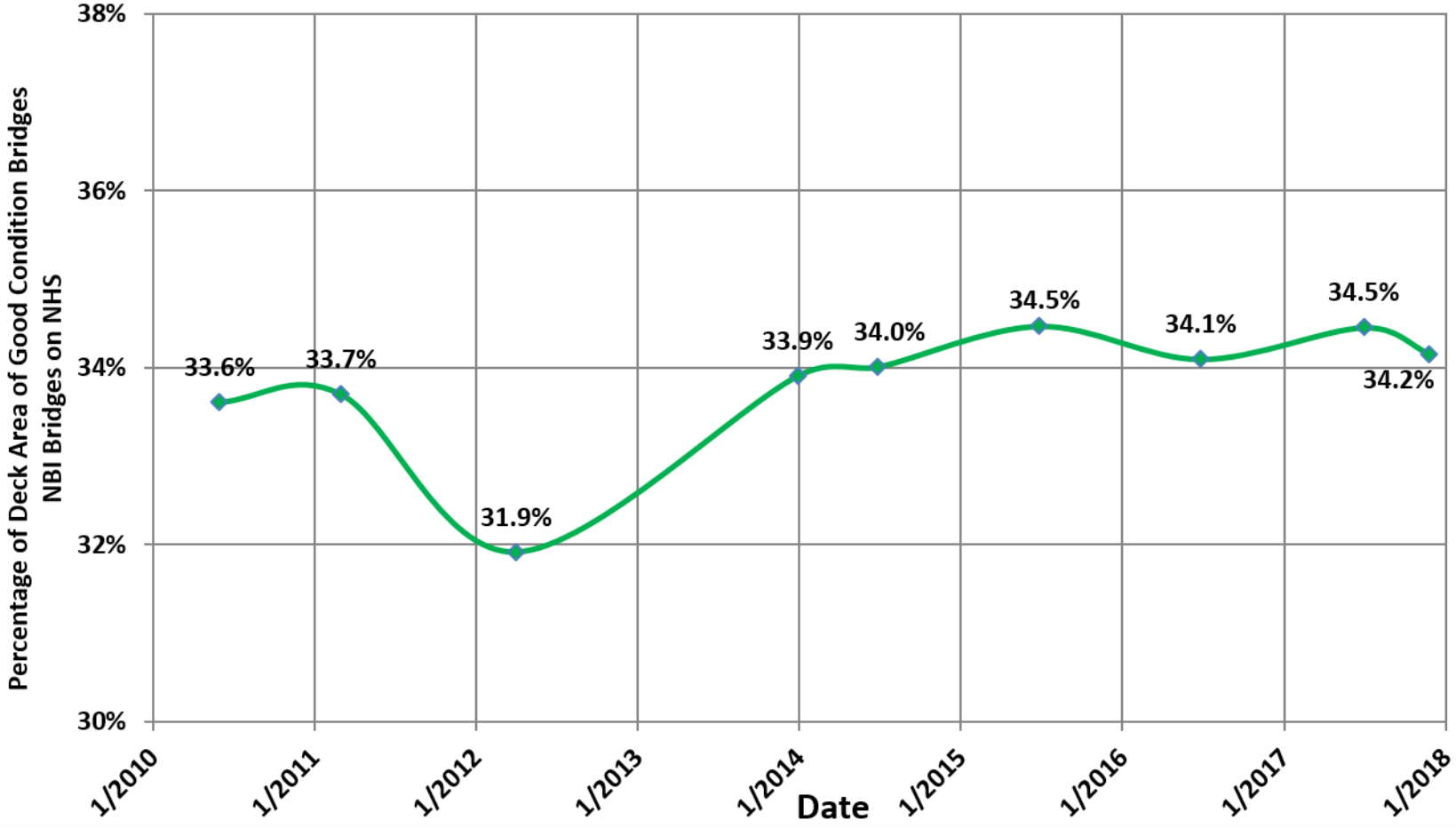
Federal Pavement Baseline
Non-Interstate NHS



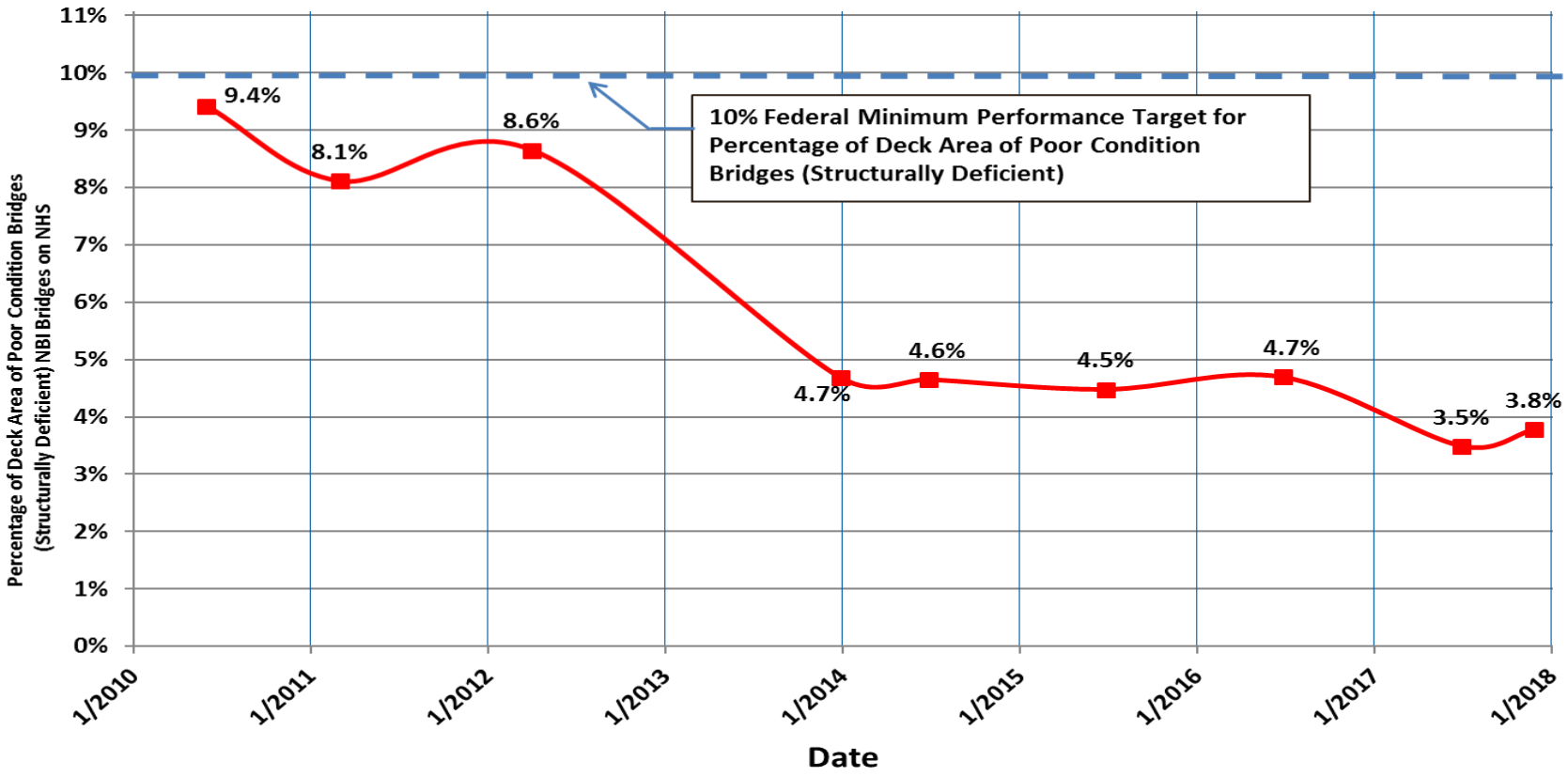
	2013*	2015	2016	2017
% Good	39.7%	34.6%	34.8%	35.4%
% Poor	2.1%	2.3%	1.3%	0.9%

* All NHS routes were not surveyed

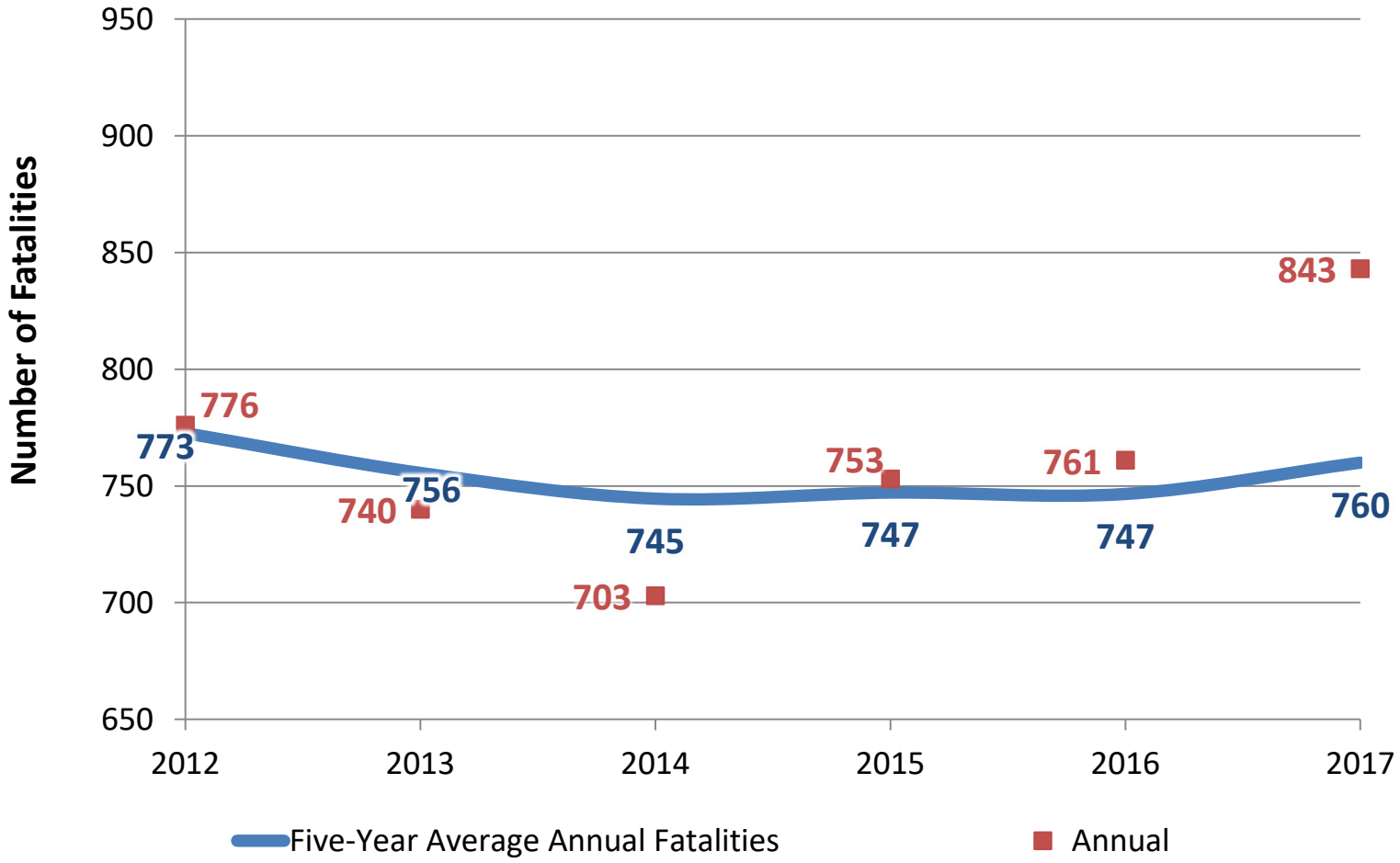
Virginia NBI Bridges on the NHS
Federal Bridge Baseline



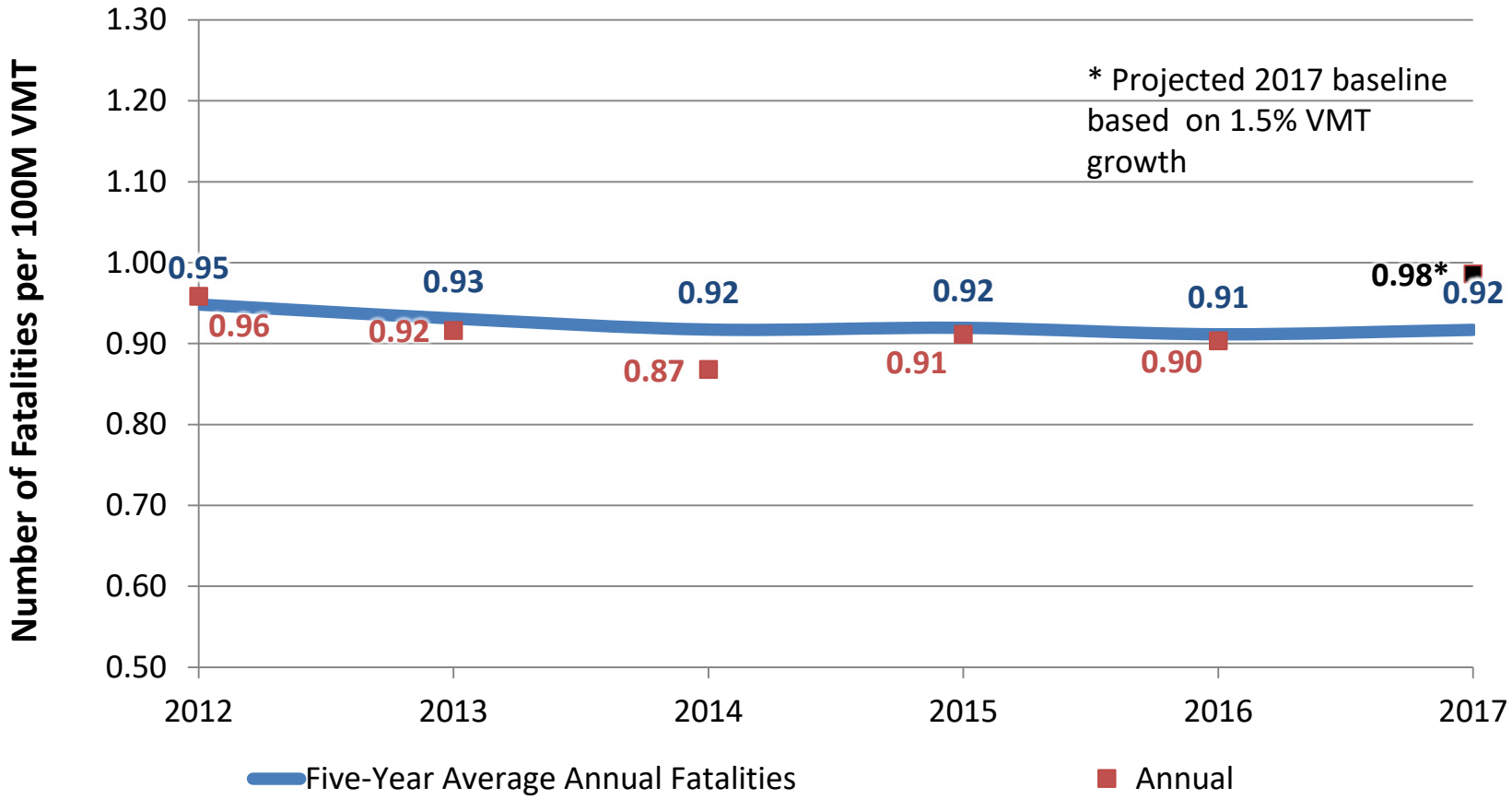
Virginia NBI Bridges on the NHS
Federal Bridge Baseline



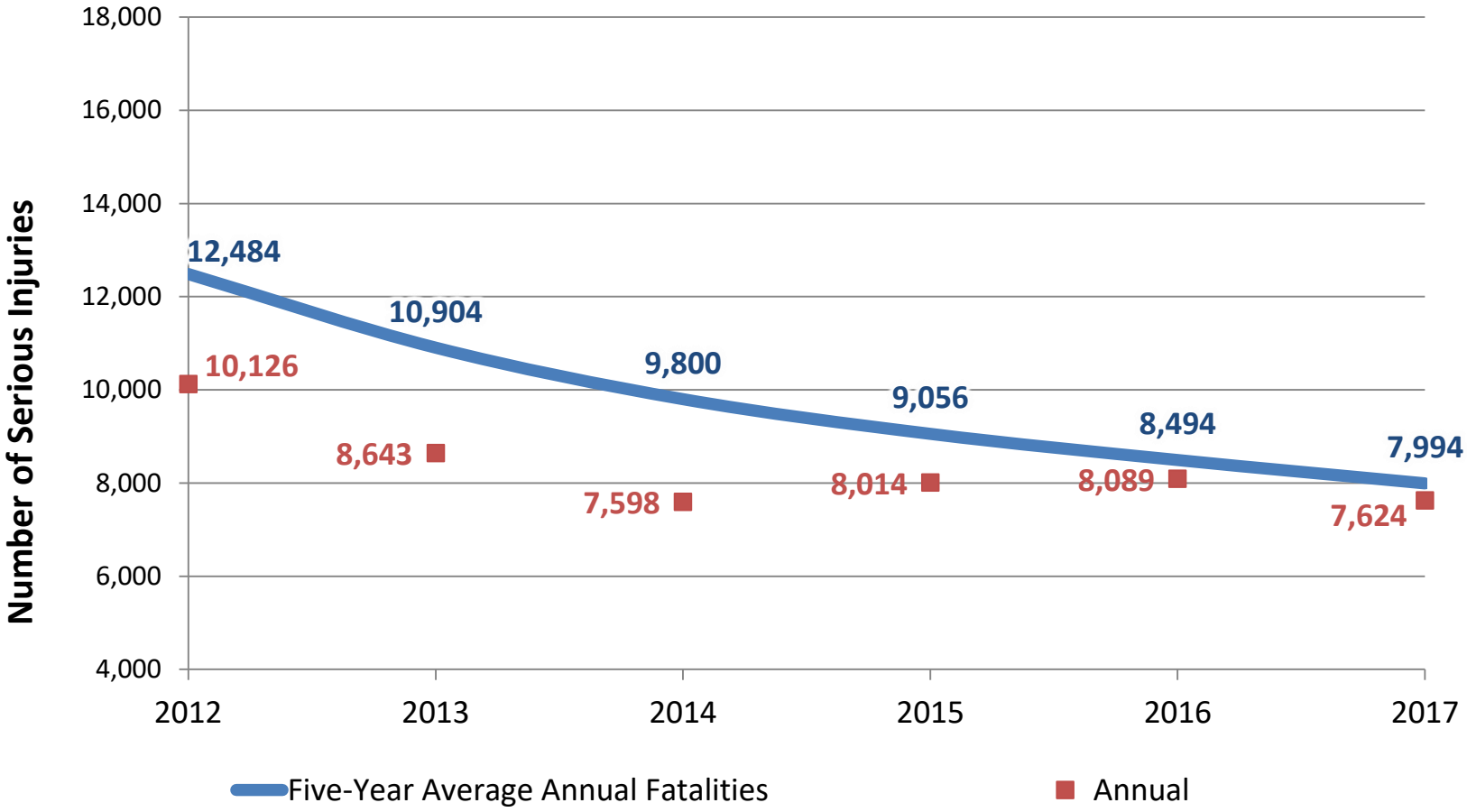
Fatalities


Number of Fatalities
950
900
850
800
750
700
650
2012
2013
2014
2015
2016
2017
776
773
740
756
703
745
753
747
761
747
843
760
Five-Year Average Annual Fatalities
Annual

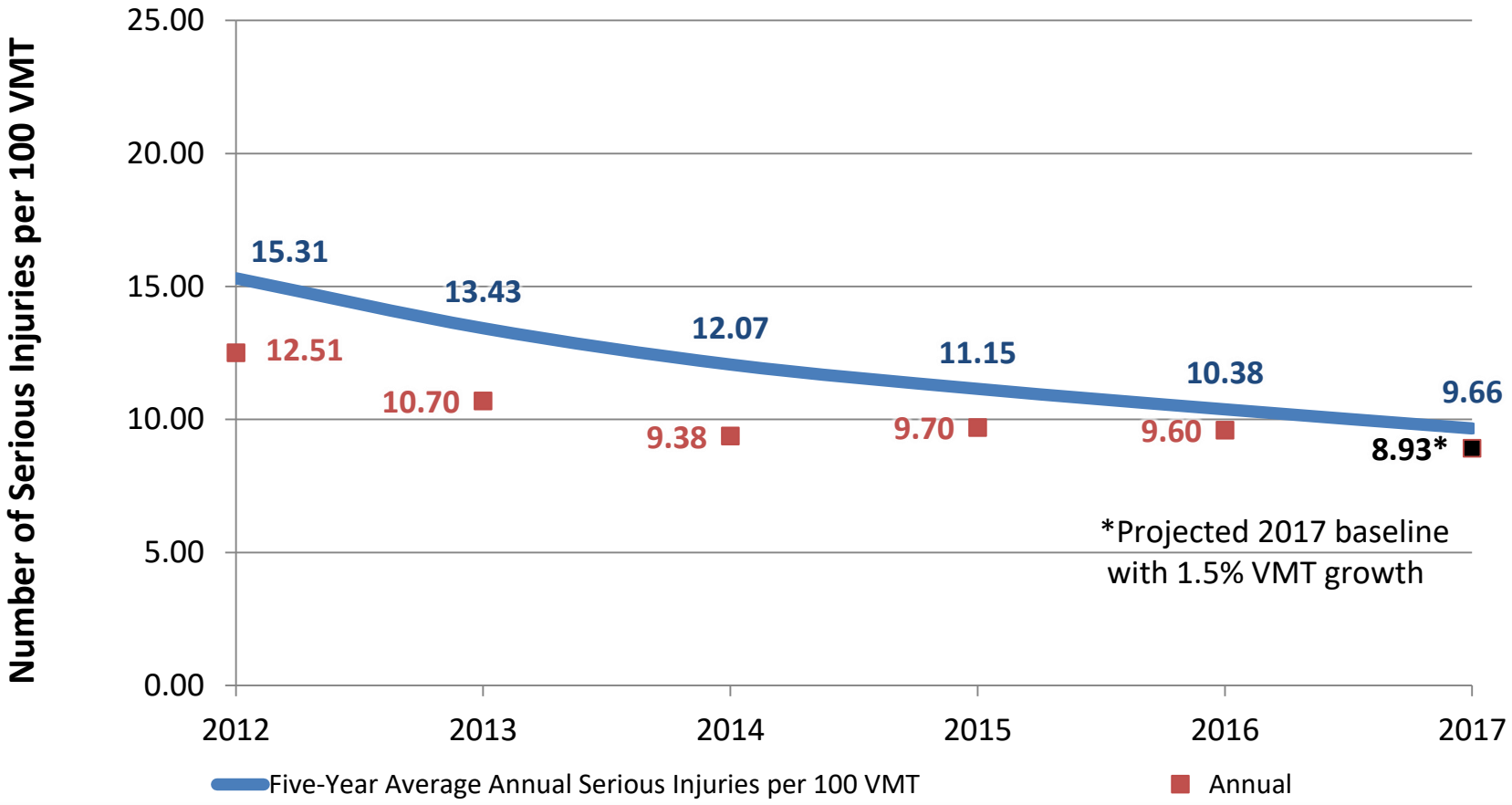
Fatalities per 100M VMT



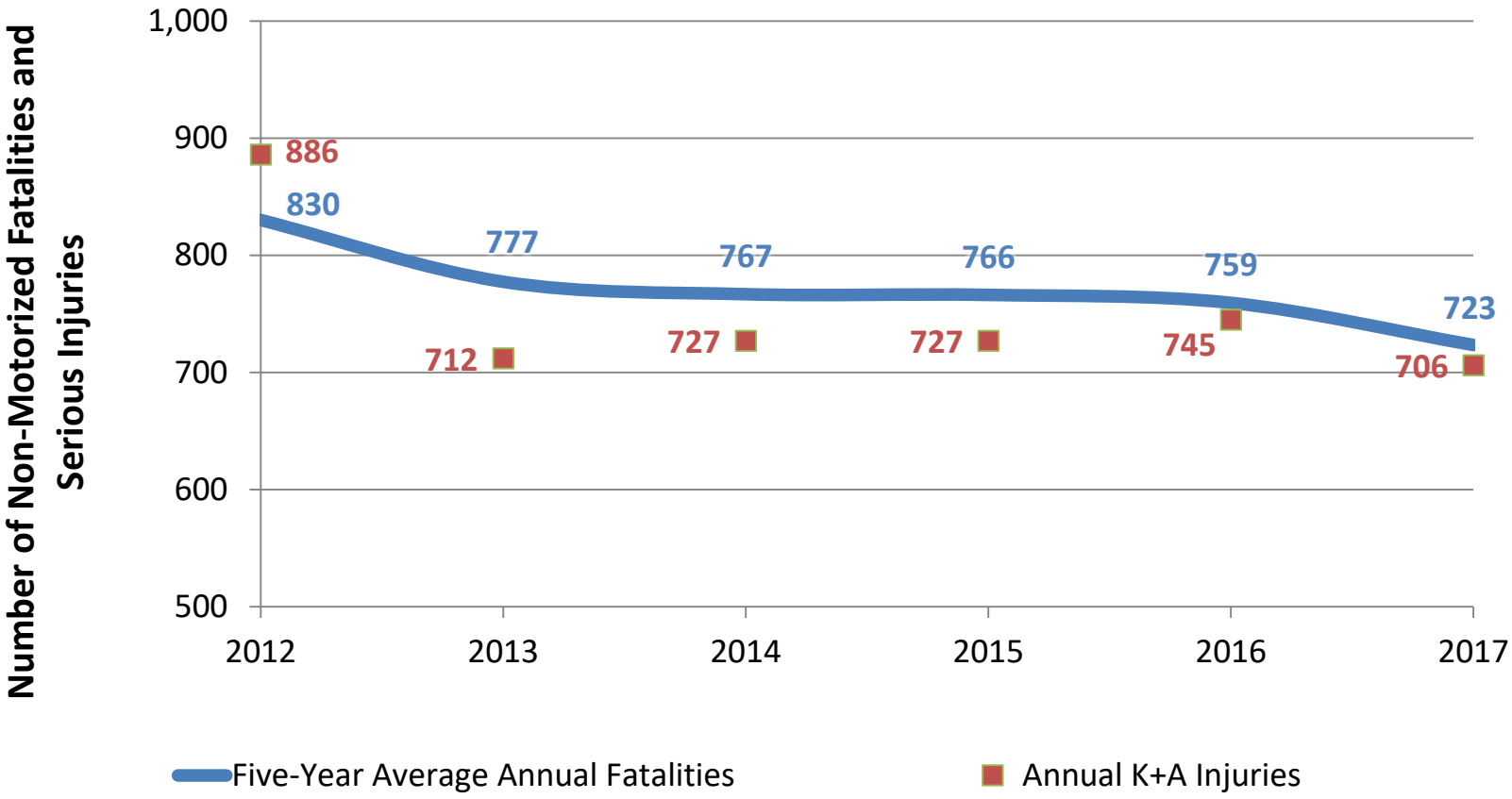
Serious Injuries



Serious Injuries per 100M VMT



Bicycle and Pedestrian Fatalities and Serious Injuries Trends



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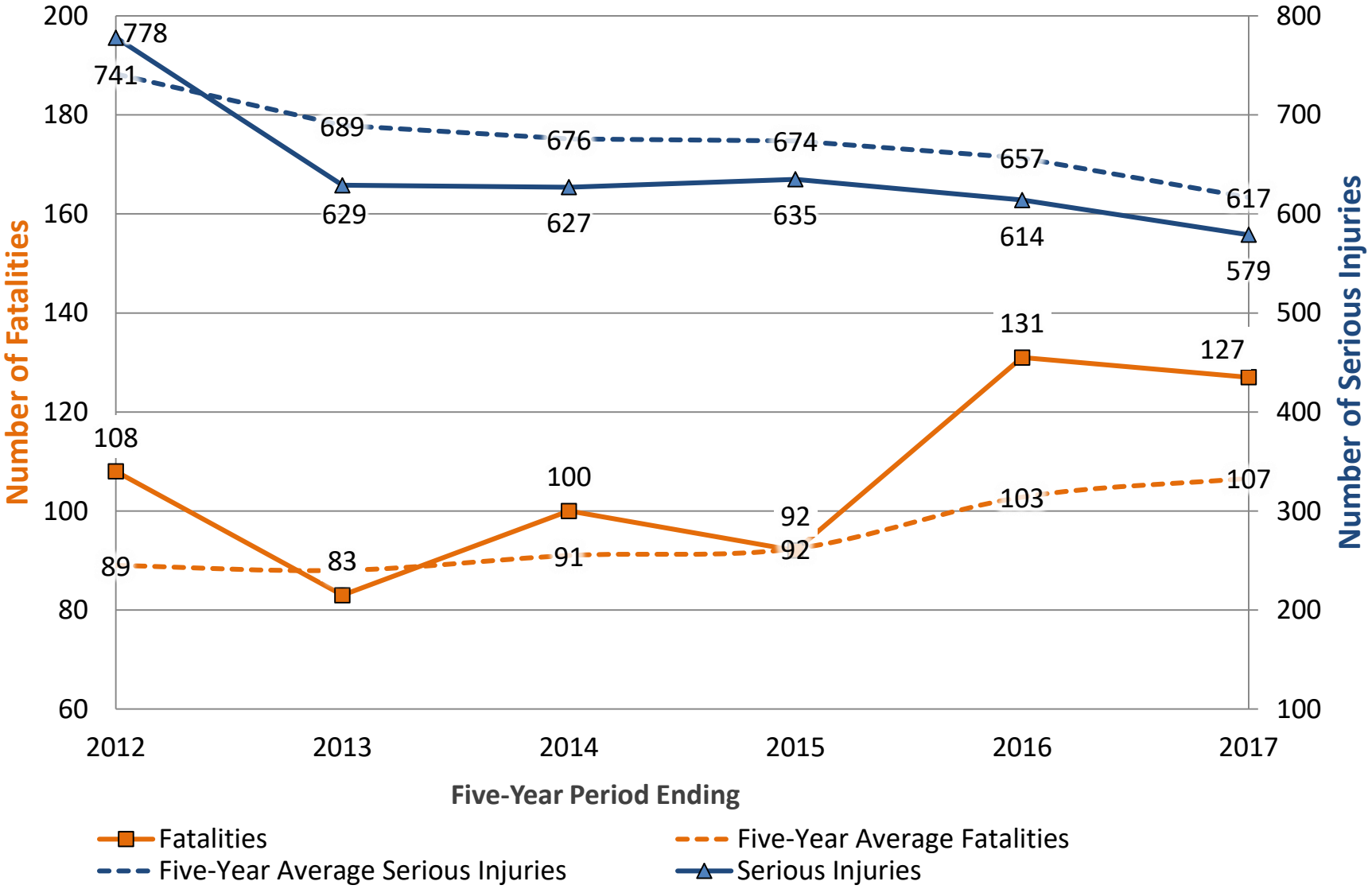
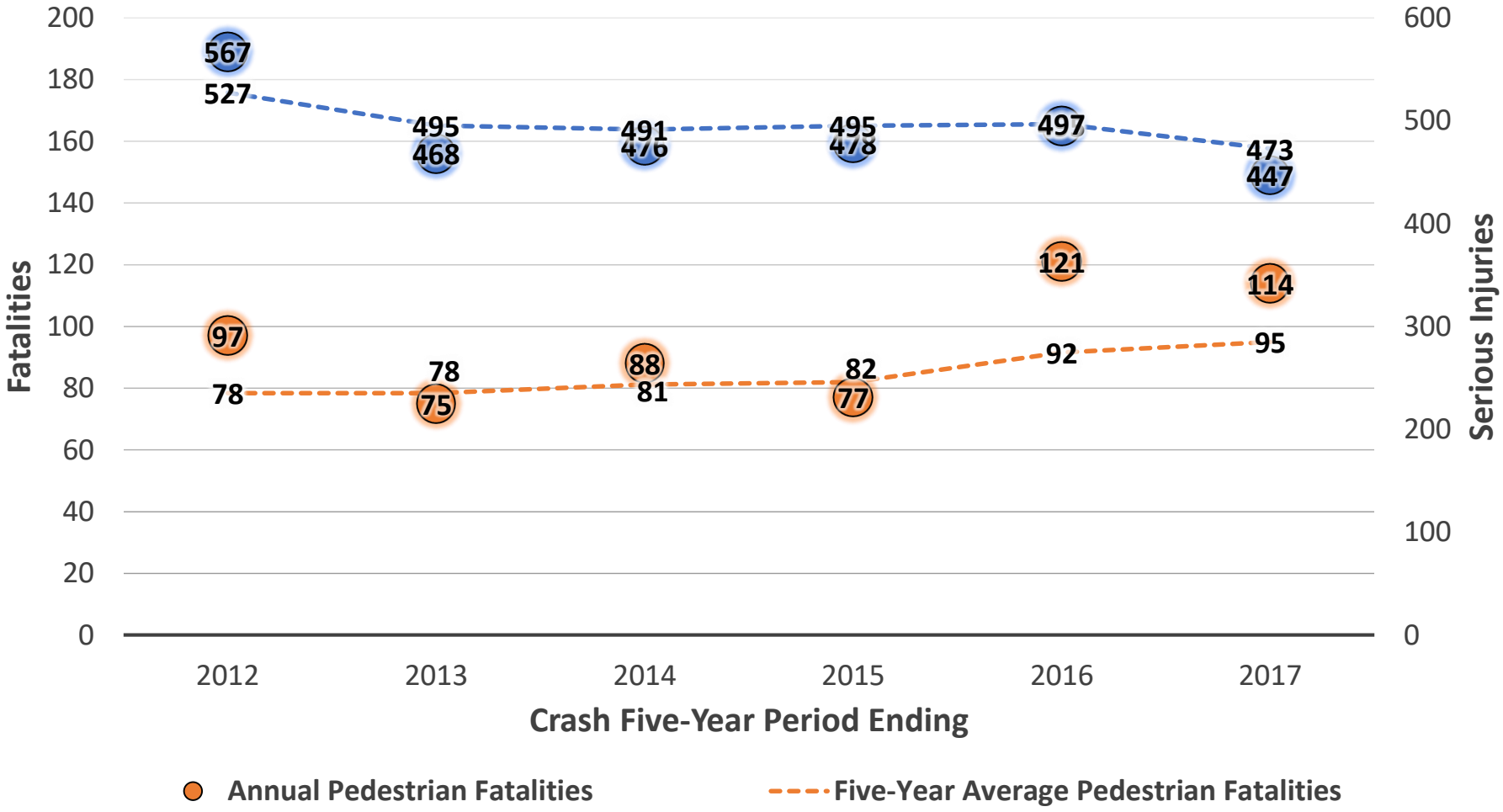
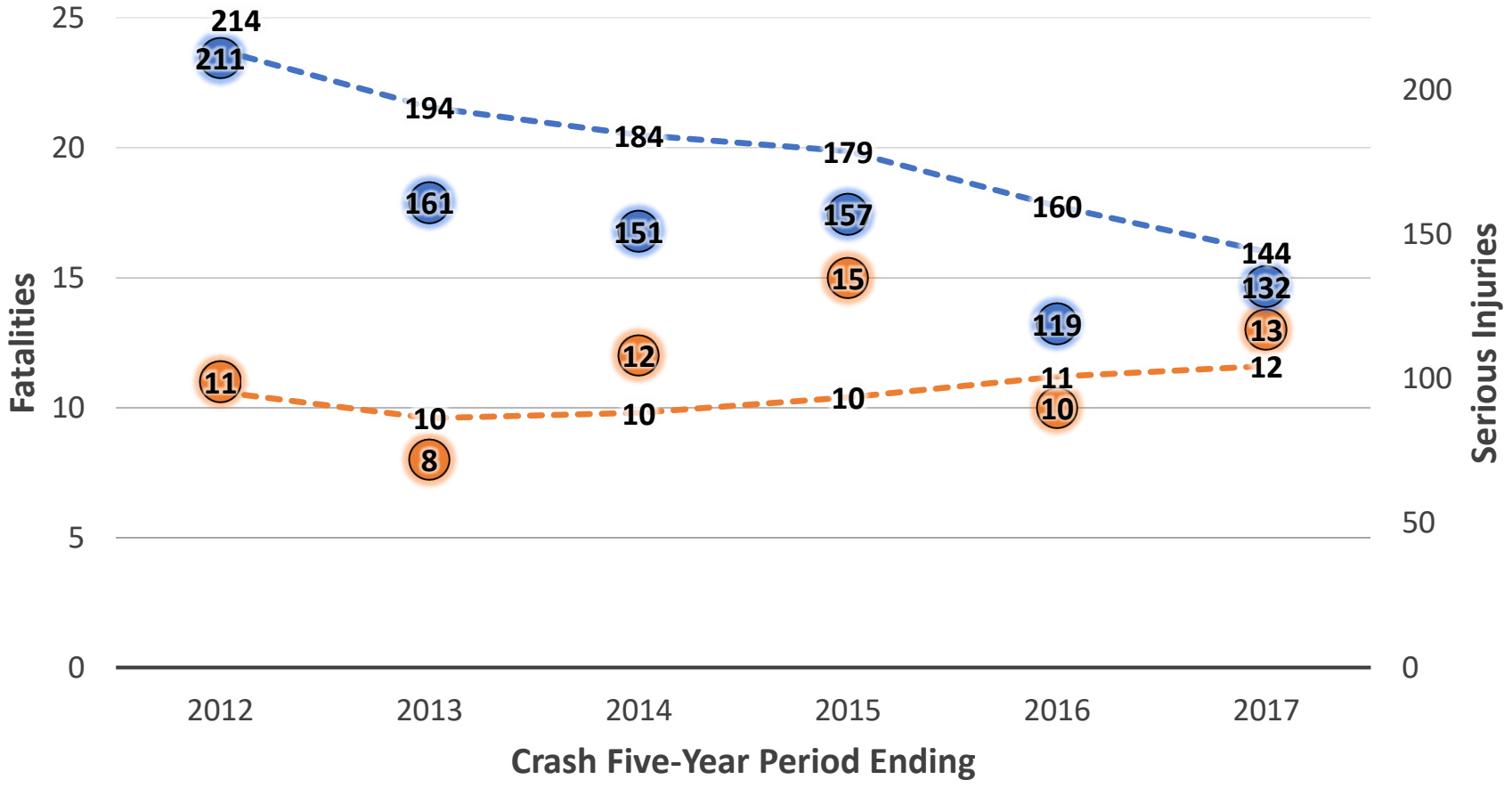


Pedestrian Fatalities and Serious Injuries Trends



Bicycle Fatalities and Serious Injuries Trends



Next Steps

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

Performance Measures and Targets

- Understand how the system is working
- Determine whether current investments and strategies are working
  - Evaluate the short- and long-term effectiveness of various treatments
  - Inform future project development
- Pro-actively consider trade-offs between investment strategies
  - SMART SCALE factor weighting

Performance Measures and Targets

- Identify and examine trends
  - Where have performance levels maintained?
  - Where has performance declined?
  - Where has performance improved?
- Evaluate trends to draw parallels between similar areas and identify potential strategies
- Identify areas where performance can be addressed or maintained through policies
  - Proactive – access management
  - Reactive – variable speed limits

Performance Measures and Targets

Route 29 North in Charlottesville is a learning experience

Performance measures can help identify similar learning experiences

Travel Time Reliability Measure 2016 & 2017

Virginia MPOs	LOTTR – Reliable Percentage INTERSTATE	
	2016	2017
Bristol MPO	100	100
Central Virginia MPO		N/A
Charlottesville-Albemarle MPO	100	100
Danville MPO		N/A
Fredericksburg Area MPO	49.9	53.1
Hampton Roads Transportation Planning Organization	84.1	85.7
Harrisonburg-Rockingham MPO	100	100
Kingsport MTPO		N/A
National Capital Region Transportation Planning Board	59.2	56.1
New River Valley MPO	100	100
Richmond Area MPO	94.9	94.3
Roanoke Valley MPO	100	100
Staunton-Augusta-Waynesboro MPO	100	100
Tri Cities Area MPO	100	100
Winchester-Frederick County MPO	100	100
Non-MPO	100	100
Grand Total	83.2	82.3

- Calculated internally by VDOT staff with INRIX NPMRDS
- PMT used 1.54 vehicle occupancy factors from 2009 as 2017 numbers are not yet available