

**TARGET SETTING FOR 2019**

**SAFETY**

**PERFORMANCE MEASURES**



In accordance with 23 CFR 490.207, the national performance measures for State Departments of Transportation (DOTs) to use in managing the Highway Safety Improvement Program (HSIP) for all public road are shown below.

Performance Measures
Number of Fatalities
Rate of Fatalities (per 100 million vehicle miles traveled)
Number of Serious Injuries
Rate of Serious Injuries (per 100 million vehicle miles traveled)
Number of Non-Motorized Fatalities and Serious Injuries

**DATA SOURCES**

**Fatality Data:** Fatality Analysis Reporting System (FARS).

**Serious Injury Data:** State motor vehicle crash database. Definition for "Suspected Serious Injury (A)" from the *Model Minimum Uniform Crash Criteria* (MMUCC) 4<sup>th</sup> edition must be used by April 15, 2019.

**Number of Non-motorized Fatalities and Non-motorized Serious Injuries:** FARS and State motor vehicle crash database. Fatalities with attribution codes for pedestrian, bicyclist, other cyclist, and person on personal conveyance are included. Serious injuries are associated with pedestrians or pedalcyclists as defined in *American National Standard Manual on Classification of Motor Vehicle Traffic Accidents* (ANSI D16.1-2007).

**Volume Data:** State Vehicle Miles Traveled (VMT) data is derived from the Highway Performance Monitoring System (HPMS).

**TARGET SETTING REQUIREMENTS**

**State DOTs:**

- Must establish targets for all public roads.
- Must establish statewide annual targets by June 30<sup>th</sup> of each year and report targets by August 31<sup>st</sup> of each year in the HSIP Report.
- State DOTs shall coordinate with the State Highway Safety Office to set identical targets on three common performance measures (Number of Fatalities, Rate of Fatalities, and Number of Serious Injuries).
- State DOTs shall coordinate with MPOs when establishing targets, to the maximum extent practicable.

**Metropolitan Planning Organizations (MPOs):**

- Shall support the relevant State DOT annual target or establish their own targets within 180 days after the State DOT target is established.
- Shall report their established targets to their respective State DOT in a manner that is documented and mutually agreed upon by both parties.
- Shall report baseline condition/performance and progress toward the achievement of their targets in the system performance report in the metropolitan transportation plan.

**METHODOLOGY**

Through extensive coordination with the Arkansas Highway Safety Office, FHWA, NHTSA, all MPOs, and other stakeholders, a methodology to determine the targets was developed. This methodology is similar to the previous year's methodology.

The first step in the methodology was to calculate the moving average for the last five years. A moving average "smooths" the variation from year to year, which accounts for variation of the data. The actual data numbers shown in Attachment A. Next, an average of each value was calculated.

Performance – Moving Averages						
	2008- 2012	2009- 2013	2010- 2014	2011- 2015	2012- 2016	Average
Number of Fatalities	576	555	530	526	525*	542
Rate of Fatalities	1.731	1.667	1.583	1.557	1.528	1.613
Number of Serious Injuries	3,392	3,311	3,203	3,115	3,073	3,219
Rate of Serious Injuries	10.200	9.938	9.564	9.231	8.961	9.579
Number of Non-Motorized Fatalities and Serious Injuries	144	141	145	140	141*	142
Note: *The preliminary fatality number in FARS shows 545 for 2016, which is used for the 2012-2016 moving average calculation. The FARS data typically get adjusted prior to being finalized. As a result, the National Safety Council (NSC) data for 2016 is reviewed to determine the level of adjustment to account for potential corrections made to the FARS data later in the year. The NSC fatality number shows 560 for 2016.						

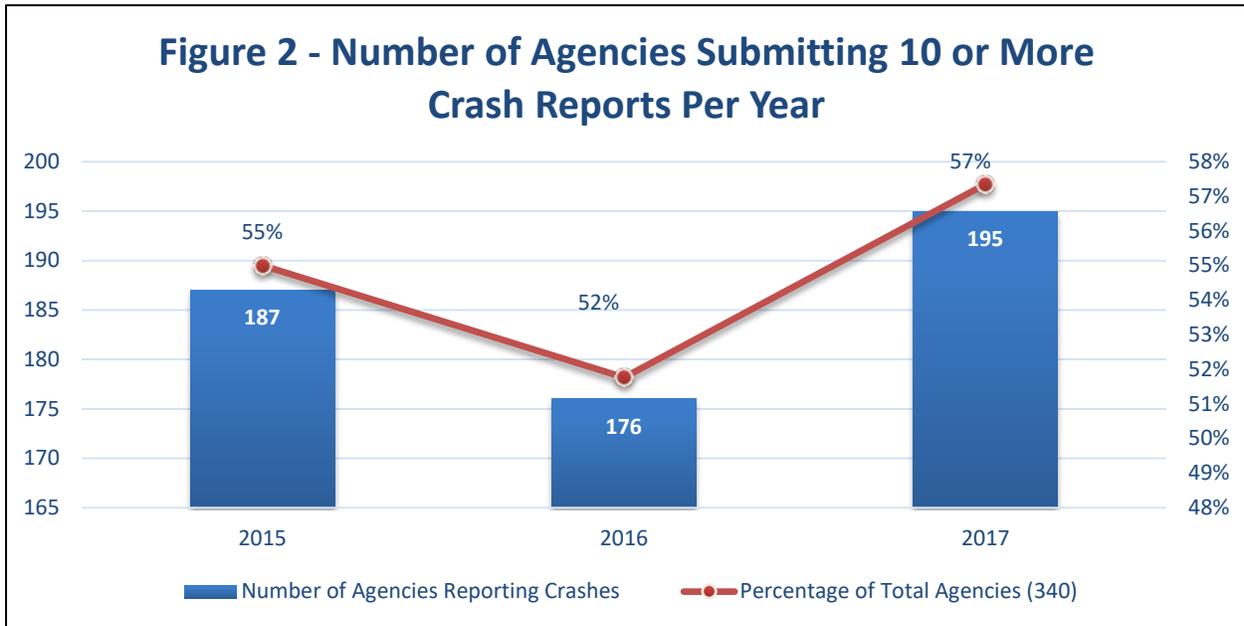
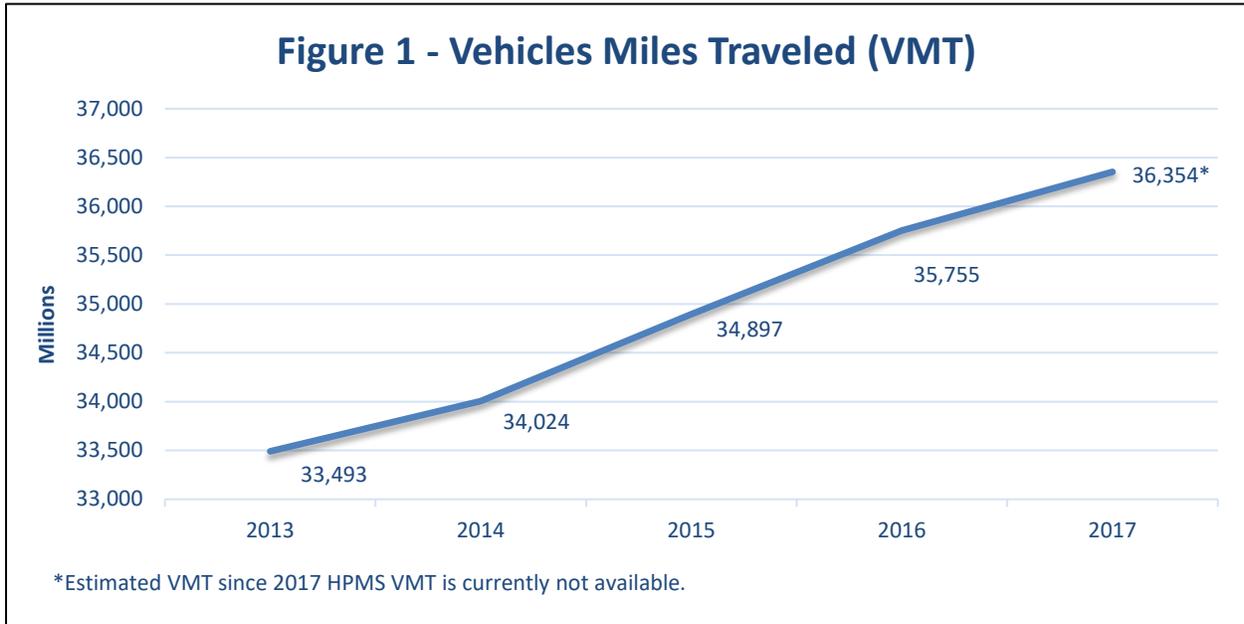
Once the average of the moving averages was calculated for each performance measure, external factors were considered to determine if and how they would impact safety performance. These **external factors** include the following:

- The recent state legalization of medical marijuana.
- The possible increase in speed limit on freeways/expressways.
- Update to the definition of Suspected Serious Injury in 2017.
- Continued increase in vehicle miles traveled (see Figure 1).

In addition to the above external factors, crash reporting is another major consideration. As shown in Figure 2, the number of crashes being captured in the database has been increasing, which impacts serious

injury crash data. Fatal crash data is not as greatly impacted because FARS reporting system. These **crash reporting factors** include the following:

- The phased rollout of the eCrash system statewide.
- Increased emphasis by the Arkansas State Police to ensure crash reporting compliance.



Note: According to the Arkansas State Police, there should be a total of 340 law enforcement agencies reporting crashes.

In addition to these identified factors, statistical analysis of the data was conducted. Although using a five-year moving average accounts for data variation, there is a need to consider additional **statistical factors** that account for variability of data. As shown in Attachment B, the variation of the non-motorized fatalities and serious injuries data is greater than the other four performance measures.

## TARGETS

Based on the methodology described above, targets for each of the five performance measures along with the factors considered are shown below.

2019 Performance Targets						
	Avg.	Application of Factors			Adjust.	Target
		External	Crash Reporting	Statistical		
Number of Fatalities	542	YES	NO	NO	+0.13%	<b>543</b>
Rate of Fatalities	1.613	YES	NO	NO	+0.13%	<b>1.615</b>
Number of Serious Injuries	3,219	YES	YES	NO	+13%	<b>3,637</b>
Rate of Serious Injuries	9.579	YES	YES	NO	+13%	<b>10.824</b>
Number of Non-Motorized Fatalities and Serious Injuries	142	YES	YES	YES	+20%	<b>170</b>

A comparison of the averages, adjustments, and targets for 2018 and 2019 is shown below. The 2018 numbers are from last year's report.

Performance Targets – Comparison						
	2018 Average	2018 Adjust.	2018 Target	2019 Average	2019 Adjust.	2019 Target
Number of Fatalities	555	--	<b>555</b>	542	+0.13%	<b>543</b>
Rate of Fatalities	1.662	--	<b>1.662</b>	1.613	+0.13%	<b>1.615</b>
Number of Serious Injuries	3,305	+5.0%	<b>3,470</b>	3,219	+13%	<b>3,637</b>
Rate of Serious Injuries	9.923	+5.0%	<b>10.419</b>	9.579	+13%	<b>10.824</b>
Number of Non-Motorized Fatalities and Serious Injuries	142	+5.0%	<b>149</b>	142	+20%	<b>170</b>

## FHWA ASSESSMENT

FHWA will conduct an assessment to determine whether states have met or made significant progress toward meeting their previous year's targets in December of each year. For 2018, the assessment will be made by comparing the actual 2014-2018 performance to the 2018 targets and the 2012-2016 baseline performance. At least four of the five targets must be either met (i.e., equal to or less than the target) or is better than the baseline performance to make significant progress. As shown in the following table, it is predicted that the Department will meet all of the targets except the number of non-motorized fatalities and serious injuries, and therefore be considered by FHWA as having "made significant progress."

Estimated Performance Assessment						
	2014-2018 Average	2018 Targets	2012-2016 Baseline	Meets Target?	Better than Baseline?	Met or Made Significant Progress?
Number of Fatalities	513.2 <sup>1</sup>	555	528 <sup>3</sup>	Yes	Yes	<b>YES</b> (4 out of 5 targets met or made significant progress)
Rate of Fatalities	1.439 <sup>1</sup>	1.662	1.528 <sup>3</sup>	Yes	Yes	
Number of Serious Injuries	2,943.6 <sup>2</sup>	3,470	3,073	Yes	Yes	
Rate of Serious Injuries	8.310 <sup>2</sup>	10.419	8.961	Yes	Yes	
Number of Non-Motorized Fatalities and Serious Injuries	156.2 <sup>2</sup>	149	141	No	No	
Notes: <sup>1</sup> Value is based on the actual fatality numbers for 2014 and 2015, the preliminary NSC numbers for 2016 and 2017, and an assumed number for 2018. <i>Example: Number of Fatalities = (470+550+560+493+493)/5=513.2</i> <sup>2</sup> Value is based on the actual serious injury numbers for 2014-2016, the preliminary number for 2017, and an assumed number for 2018. <i>Example: Number of Serious Injuries = (3,154+2,888+3,032+2,822+2,822)/5=2,943.6</i> <sup>3</sup> Value is calculated assuming the final 2016 fatality number will resemble the preliminary NSC number, which is 560.						

6/7/2018

For 2019, FHWA will conduct a similar assessment in December 2020 using the five-year average of 2015-2019 and a baseline of 2013-2017. To get an idea of the performance that needs to be achieved in order to meet the 2019 performance targets, the analysis shown below was conducted. These values are also shown in Attachment C.

- Average annual total number of fatalities for 2018 and 2019: **556** or less
- Average total rate of fatalities for 2018 and 2019: **1.810** or less
- Average annual total number of serious injuries for 2018 and 2019: **4,723** or less
- Average total rate of serious injuries for 2018 and 2019: **14.801** or less
- Average annual total non-motorized fatality/serious injuries for 2018 and 2019: **200** or less

## ATTACHMENT A

Year	Number of Fatalities	Rate of Fatalities	Number of Serious Injuries	Rate of Serious Injuries	Number of Non-Motorized Fatalities and Serious Injuries
2008	600	1.809	3,471	10.466	163
2009	596	1.798	3,693	11.139	123
2010	571	1.704	3,331	9.942	138
2011	551	1.672	3,239	9.829	149
2012	560	1.671	3,226	9.624	147
2013	498	1.487	3,066 <sup>4</sup>	9.154 <sup>4</sup>	149
2014	470	1.381	3,154	9.270	141
2015	550	1.576	2,888 <sup>4</sup>	8.276 <sup>4</sup>	112
2016	545 <sup>1</sup>	1.524 <sup>1</sup>	3,032	8.480	154
2017	493 <sup>2</sup>	1.356 <sup>2,3</sup>	2,822 <sup>5</sup>	7.763 <sup>3,5</sup>	187 <sup>5</sup>

## Notes:

<sup>1</sup>Preliminary 2016 FARS number. The NSC fatality number is 560 for 2016.

<sup>2</sup>Preliminary 2017 FARS number is not available as of 6/4/2018. The preliminary NSC fatality number is 493 for 2017.

<sup>3</sup>Calculation is based on the estimated VMT since 2017 HPMS VMT is currently not available.

<sup>4</sup>Value is different than the value shown in last year's safety target setting report due to a correction made to the crash database. The 2013 serious injury number was changed from 3,070 to 3,066; the 2015 serious injury number was changed from 3,594 to 2,888 (as of 6/4/2018).

<sup>5</sup>Value is based on the preliminary 2017 crash database as of 6/4/2018.

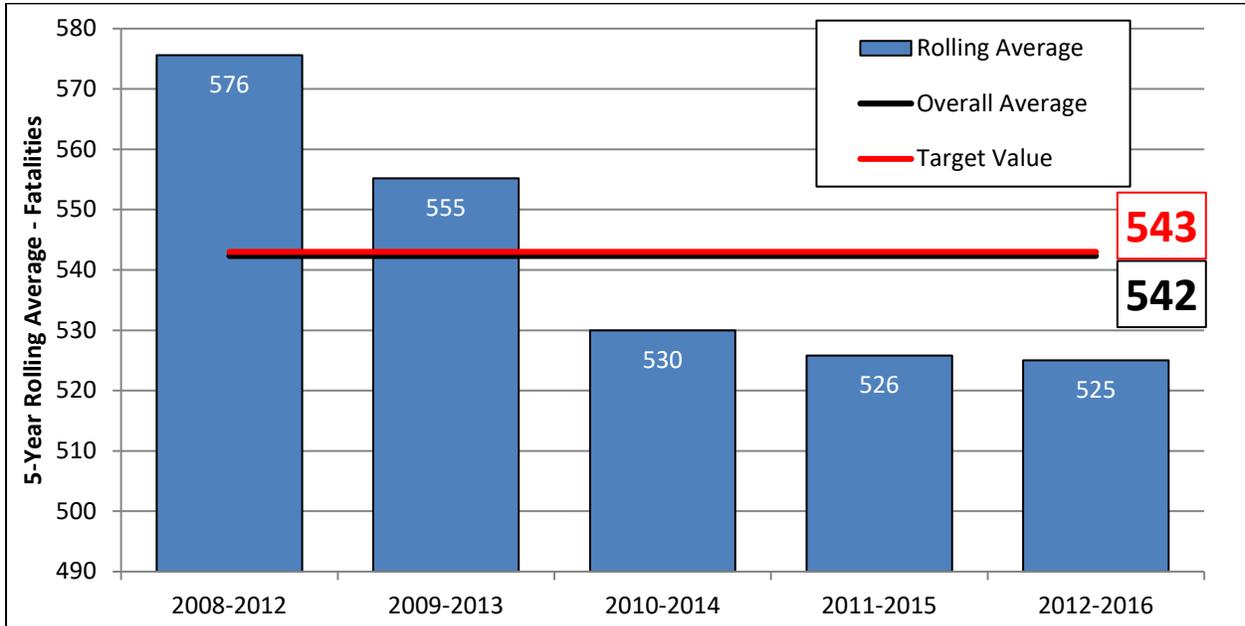
## ATTACHMENT B

## Data Variability Analysis

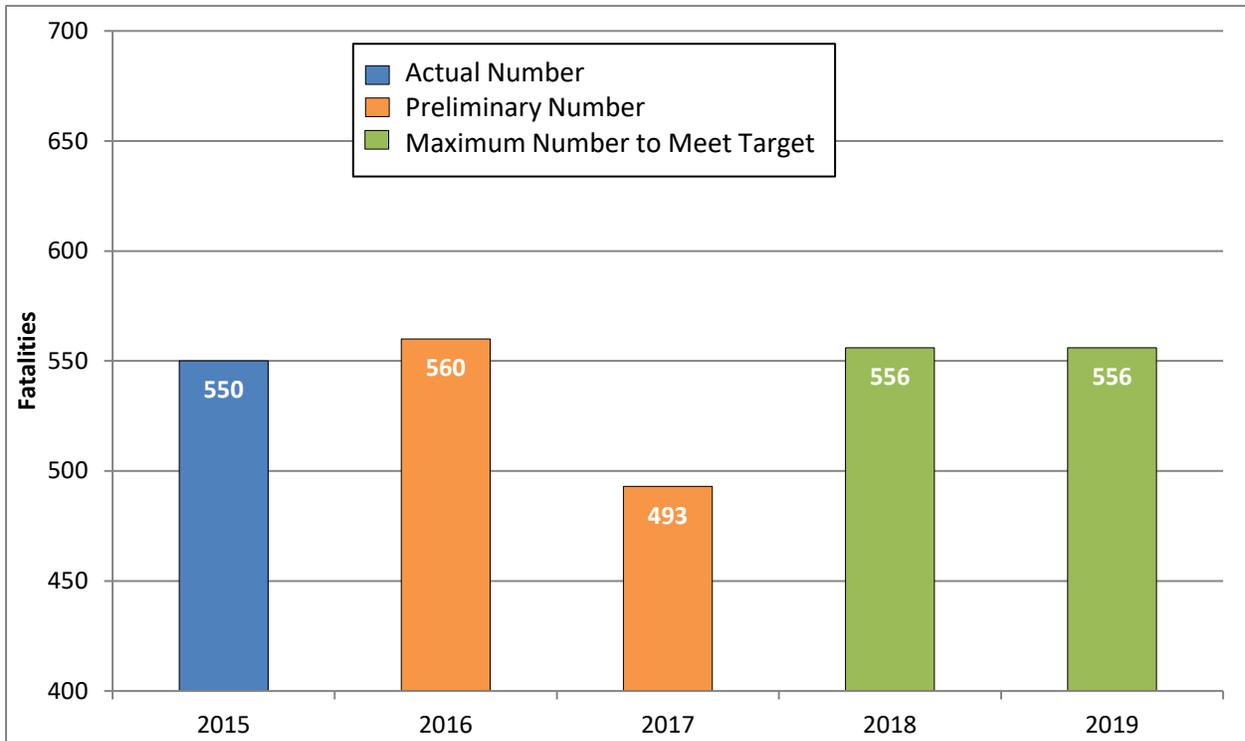
<b>Number of Fatalities</b>			
2012	560	Mean Standard Deviation Coefficient of Variation	525 35 0.07
2013	498		
2014	470		
2015	550		
2016	545		
<b>Rate of Fatalities</b>			
2012	1.671	Mean Standard Deviation Coefficient of Variation	1.528 0.096 0.06
2013	1.487		
2014	1.381		
2015	1.576		
2016	1.524		
<b>Number of Serious Injuries</b>			
2012	3,226	Mean Standard Deviation Coefficient of Variation	3,073 115 0.04
2013	3,066		
2014	3,154		
2015	2,888		
2016	3,032		
<b>Rate of Serious Injuries</b>			
2012	9.624	Mean Standard Deviation Coefficient of Variation	8.961 0.505 0.06
2013	9.154		
2014	9.270		
2015	8.276		
2016	8.480		
<b>Number of Non-Motorized Fatalities and Serious Injuries</b>			
2012	147	Mean Standard Deviation Coefficient of Variation	141 15 0.11
2013	149		
2014	141		
2015	112		
2016	154		

## ATTACHMENT C

### HSIP 2019 Target – Number of Fatalities



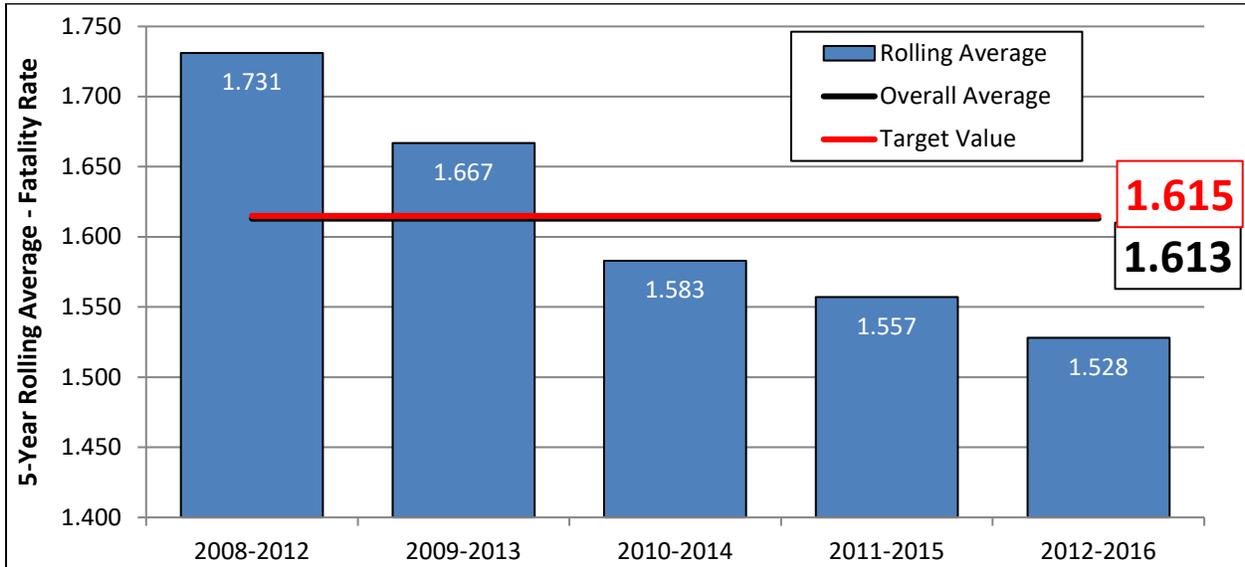
### Maximum Numbers to Meet Target – Number of Fatalities



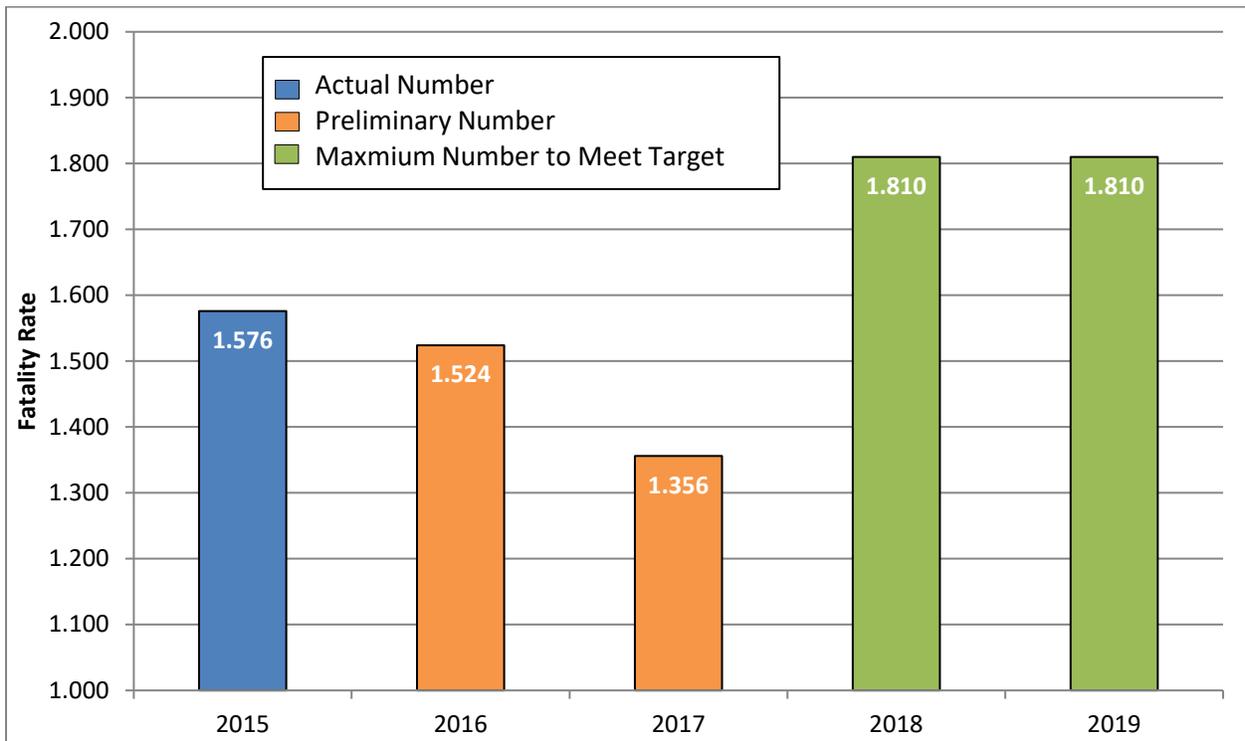
Note:

Maximum numbers are determined based on the actual fatality numbers for 2014 and 2015, and the preliminary NSC numbers for 2016 and 2017.

### HSIP 2019 Target - Fatality Rate



### Maximum Numbers to Meet Target - Fatality Rate

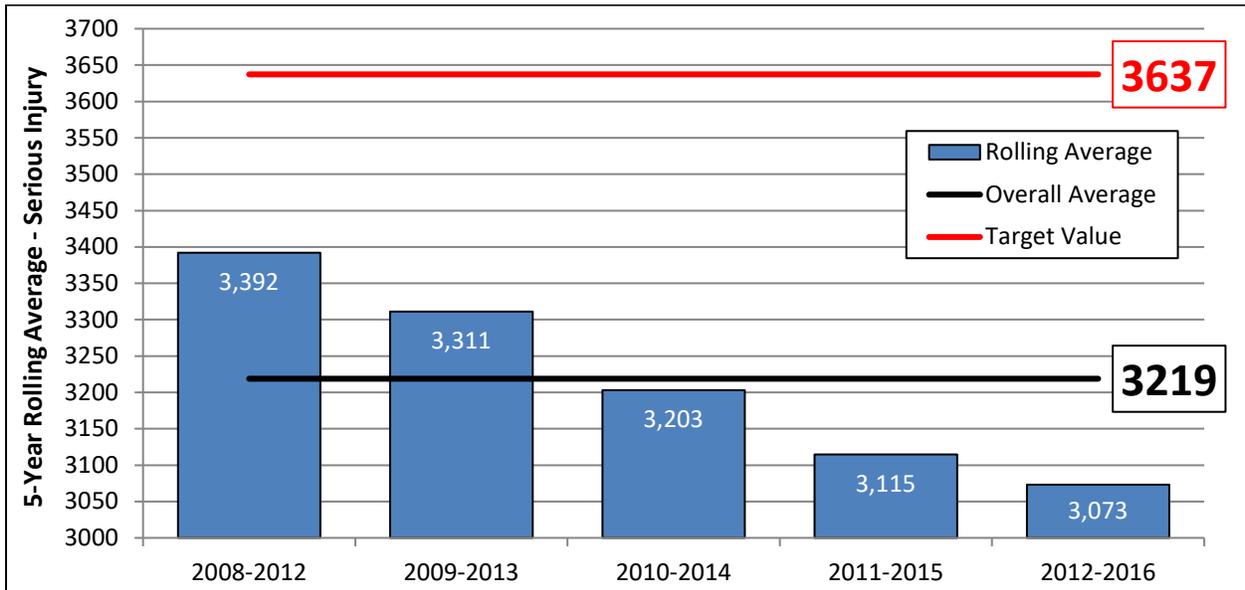


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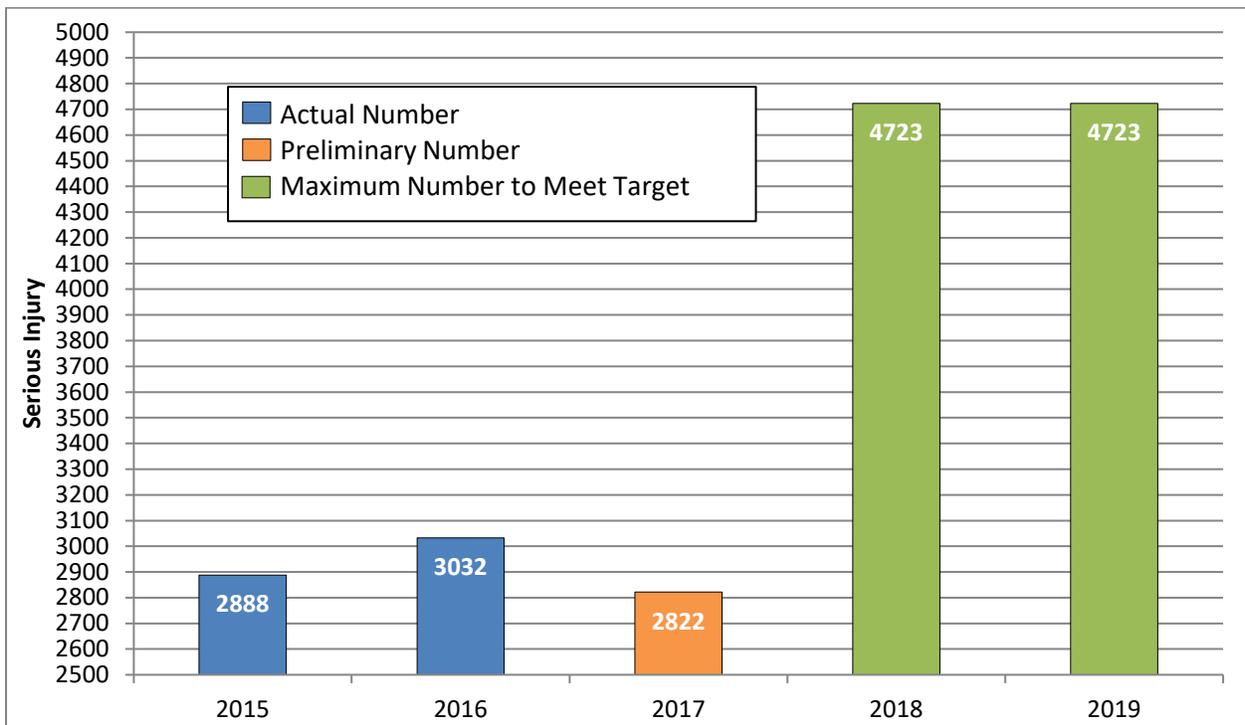
Maximum rates are determined based on:

- The actual fatality numbers for 2014 and 2015, and the preliminary NSC numbers for 2016 and 2017.
- The actual FHWA HPMS VMTs for 2014-2016 and the Department's VMT estimation for 2017.
- VMTs for 2018 and 2019 are assumed the same as 2017.

### HSIP 2019 Target - Number of Serious Injuries

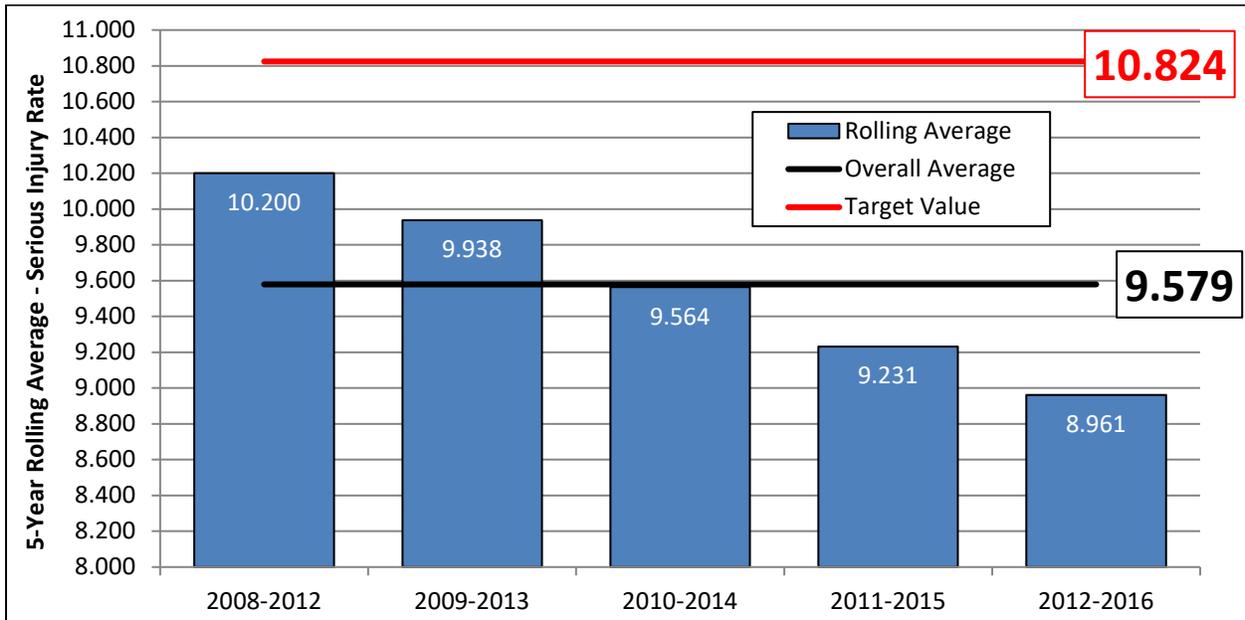


### Maximum Numbers to Meet Target – Number of Serious Injuries

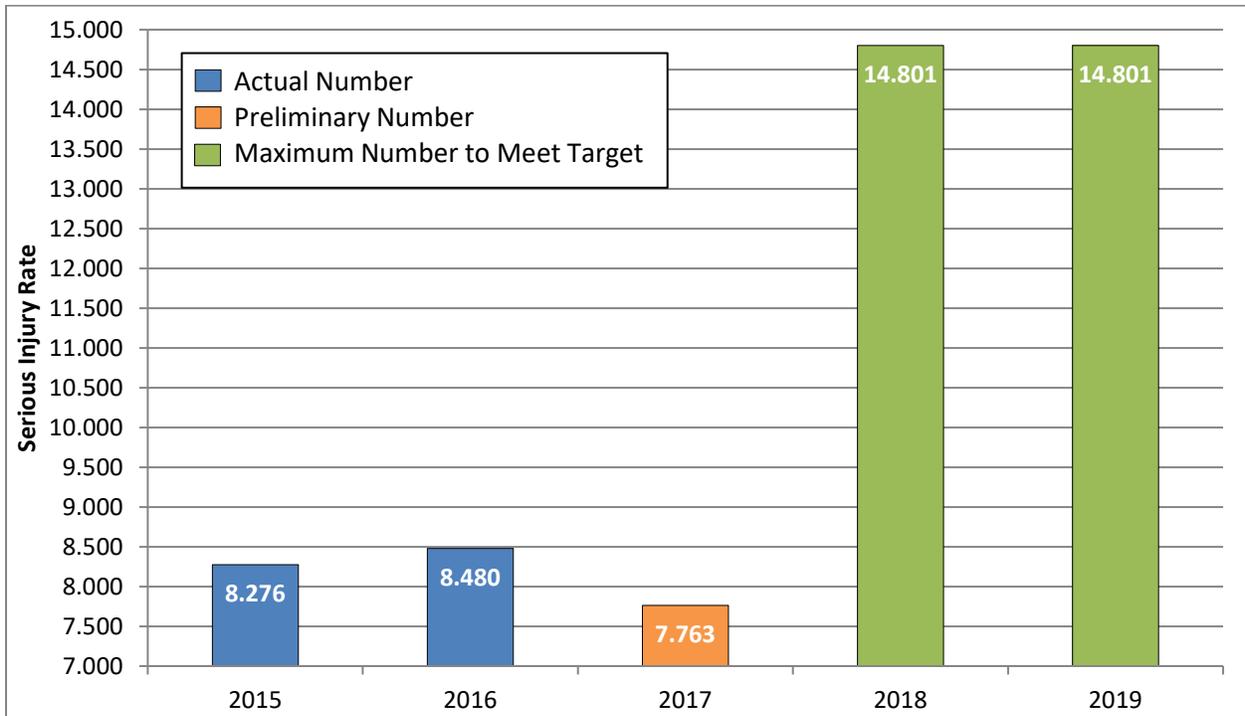


Note:  
Maximum numbers are determined based on the actual serious injury numbers for 2014-2016, and the preliminary number for 2017.

### HSIP 2019 Target - Serious Injury Rate



### Maximum Numbers to Meet Target - Serious Injury Rate

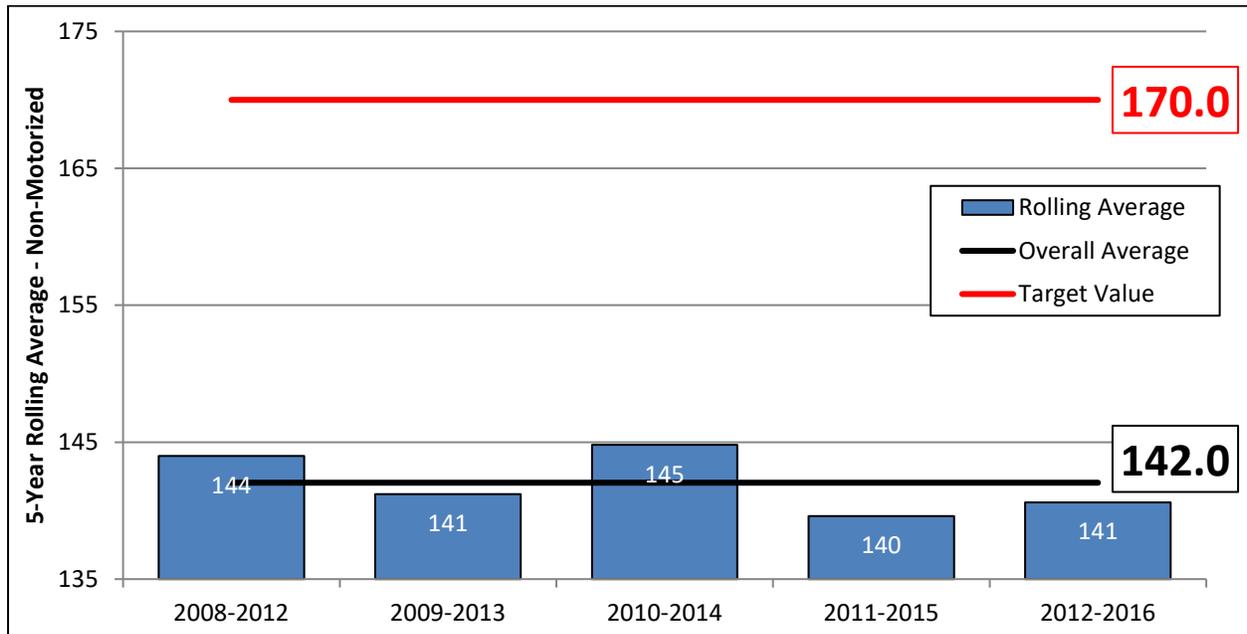


Notes:

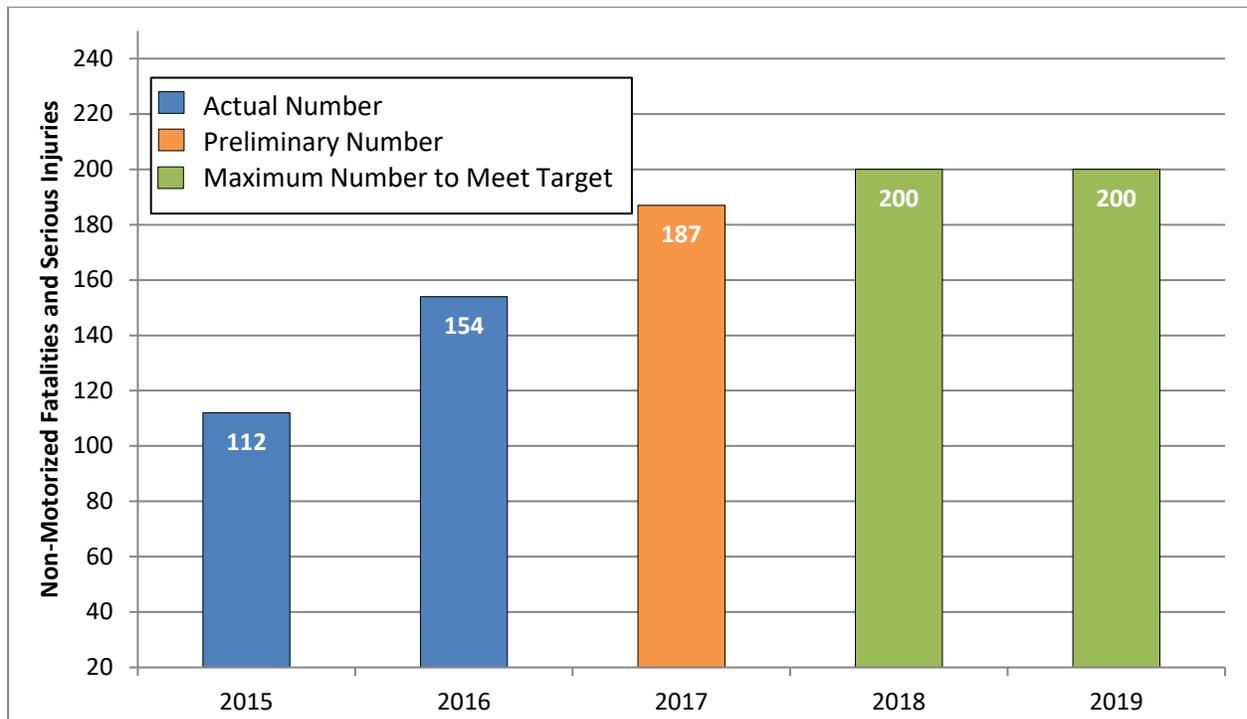
Maximum rates are determined based on:

- The actual serious injury numbers for 2014-2016, and the preliminary number for 2017.
- The actual FHWA HPMS VMTs for 2014-2016 and the Department's VMT estimation for 2017.
- VMTs for 2018 and 2019 are assumed the same as 2017.

### HSIP 2019 Target - Number of Non-Motorized Fatalities and Serious Injuries



### Maximum Numbers to Meet Target – Number of Non-Motorized Fatal and Serious Injuries



Note:  
Maximum numbers are determined based on the actual serious injury numbers for 2014-2016, and the preliminary number for 2017.