

# Rockingham Planning Commission Metropolitan Planning Organization Safety Performance Targets & Methodology

February 19, 2019

## Background

The Federal Highway Administration (FHWA) implemented the final rule on the Highway Safety Improvement Program (HSIP) effective April 14, 2016. This regulation ([23 CFR 490](#)) requires that five safety related performance targets must be set and published annually by State DOTs by August 31<sup>st</sup> and MPOs within 180 days after the state targets are established. This target setting is intended to coordinate the efforts of the State Department of Transportation, State Office of Highway Safety, and Metropolitan Planning Organizations, as well as the specific planning efforts of the State Strategic Highway Safety Plan (SHSP), Highway Safety Plan (HSP), and the Highway Safety Improvement Program (HSIP), into measures that help to assess the safety performance of the transportation system. The federally required targets assess and report safety improvements in five ways:

1. **Number of Fatalities:** The total number of persons suffering fatal injuries in a motor vehicle crash during a calendar year.
2. **Rate of Fatalities:** The ratio of total number of fatalities to the number of vehicle miles traveled (VMT, in 100 Million VMT) in a calendar year.
3. **Number of Serious Injuries:** The total number of persons suffering at least one serious injury in a motor vehicle crash during a calendar year.
4. **Rate of Serious Injuries:** The ratio of total number of serious injuries to the number of VMT (in 100 Million VMT) in a calendar year.
5. **Number of Non-Motorized Fatalities and Non-motorized Serious Injuries:** The combined total number of non-motorized fatalities and non-motorized serious injuries involving a motor vehicle during a calendar year.

In addition, the MPOs in New Hampshire are tracking additional safety metrics that are not required by the Federal rule. To date, this includes a single measure:

1. **Motorcycle Fatalities:** The number of fatal crashes involving motorcycles

Data for the establishment of these measures is provided from three sources:

- **Fatality Analysis Reporting System (FARS):** FARS Annual Report File or Final data is utilized to provide information on fatal crashes in the state.
- **State Motor Vehicle Crash Database:** Data collected and maintained by the NH Department of Safety is utilized to determine the number of serious injury crashes in the state (currently those classified as “A” on the KABCO scale). Crashes can be aggregated at the state, region, community, or highway level.
- **Highway Performance Monitoring System (HPMS):** State Vehicle Miles of Travel (VMT) data is collected by the Department of Transportation and aggregated into a dataset for the state. VMT data can be calculated for MPO regions and individual communities.

## Target Development

States establish Highway Safety Improvement Program (HSIP) targets and report them for the upcoming calendar year in the HSIP annual report that is submitted to FHWA by August 31<sup>st</sup> each year. Targets are applicable to all public roads, regardless of functional classification or ownership. The targets established for number and rate of fatalities, and number of serious injuries must be identical to those established for the National Highway Transportation Safety Agency (NHTSA) Highway Safety Grant program in the annual Highway Safety Plan. The state has the option to also establish any number of urbanized area targets and a non-urbanized area target for the purposes of evaluating and reporting measures however those sub-state targets are not included in the significant progress determination that will be made by FHWA.

In New Hampshire, the process used to develop the required safety measures included in the annual Highway Safety Plan formed the basis for the establishment of the five FHWA mandated targets by NHDOT and the MPOs. This involved coordination and consultation between the New Hampshire Departments of Transportation and Safety, as well the four MPOs in the state. Currently available fatality, serious injury, and volume data were analyzed to establish 2007-2017 conditions in terms of total fatalities, fatality rates, total serious injuries, serious injury rates, as well as total non-motorized fatalities and serious injuries. Five year rolling averages were developed from these values and utilized to compute projected values for 2019.

## State Targets

The tables on the following pages show the data supporting the targets for the five required measures as well as a graph showing the state targets for 2019.

**Table 1: State of NH 2019 HSIP Targets**

Measure	5-Year Rolling Average			Current Trend	Desired Trend	2019 Target
	2017 Value	Previous	Current			
Number of Fatalities	102	117.6	116.4	↘	↘	<b>116.4</b>
Fatality Rate per 100 Million VMT	0.746	0.900	0.881	↘	↘	<b>0.879</b>
Number of Serious Injuries	410	499.8	457.2	↘	↘	<b>433.2</b>
Serious Injury Rate per 100 Million VMT	3.567	3.847	3.462	↘	↘	<b>3.207</b>
Non-Motorized Fatalities and Serious Injuries	54	56.4	53.4	↘	↘	<b>53.4</b>

## MPO Targets

For 2019, the MPO is agreeing to support the State of New Hampshire HSIP Targets in all five mandated areas. In doing so, the MPO is agreeing to:



- Work with the State and safety stakeholders to address areas of concern for fatalities or serious injuries within the metropolitan planning area

- Coordinate with the State and include the safety performance measures and HSIP targets for all public roads in the metropolitan area in the MTP (Metropolitan Transportation Plan)
- Integrate into the metropolitan transportation planning process, the safety goals, objectives, performance measures and targets described in other State safety transportation plans and processes such as applicable portions of the HSIP, including the SHSP
- Include a description in the TIP (Transportation Improvement Program) of the anticipated effect of the TIP toward achieving HSIP targets in the MTP, linking investment priorities in the TIP to those safety targets

### Motorcycle Fatalities

The four New Hampshire MPOs have mutually agreed to track motorcycle fatalities as a performance measure. As the State and MPO are not required to establish targets by FHWA, the state is not establishing targets in this area and so the MPO must establish its own. Based on trends seen in the FARS data (summarized in Table 2), the RPC expects the downward trend of motorcycle fatalities to continue, and sets the **2019 target for the 5-year average Motorcycle fatalities at 2.0**.

**Table 2: Rockingham Planning Commission Additional 2019 Safety Performance Targets**

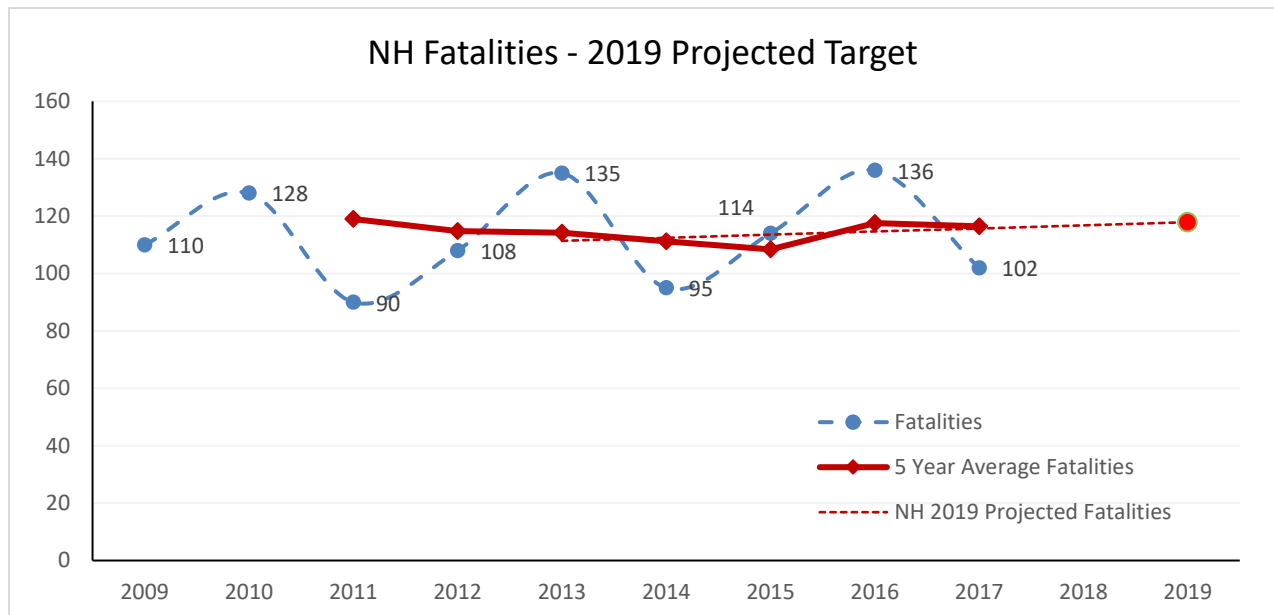
Measure	2017 Value	5-Year Rolling Average		Current Trend	Desired Trend	2019 Target
		Previous	Current			
Number of Motorcycle Fatalities	3	2.6	2.4			<b>2.0</b>

## Number of Fatalities

The Federal Fatal Analysis Reporting System (FARS) provides the data necessary for identifying the total number of traffic crash fatalities in New Hampshire and for the MPO region. Five-year rolling averages are computed to provide a better understanding of the overall data over time without discarding years with significant increases or decreases, as well as to provide a mechanism for regression to the mean for a random variable such as fatalities. For the last ten years, traffic crash fatalities in New Hampshire have hovered between 136 and 90 with substantial year to year variation while the MPO region has stayed between 9 and 20. Looking at five-year averages for both the state and the MPO region has indicated a fairly steady number of crashes on average.

**Table 3: Fatalities**

Year	Annual Crash Fatalities		5-Year Rolling Average Crash Fatalities		
	New Hampshire	MPO Region	5-Year Period	New Hampshire	MPO Region
2009	110	14			
2010	128	17			
2011	90	9			
2012	108	20			
2013	135	16	2009-2013	<b>114.2</b>	<b>15.2</b>
2014	95	10	2010-2014	<b>111.2</b>	<b>14.4</b>
2015	114	16	2011-2015	<b>108.4</b>	<b>14.2</b>
2016	136	17	2012-2016	<b>117.6</b>	<b>15.8</b>
2017	102	9	2013-2017	<b>116.4</b>	<b>13.6</b>

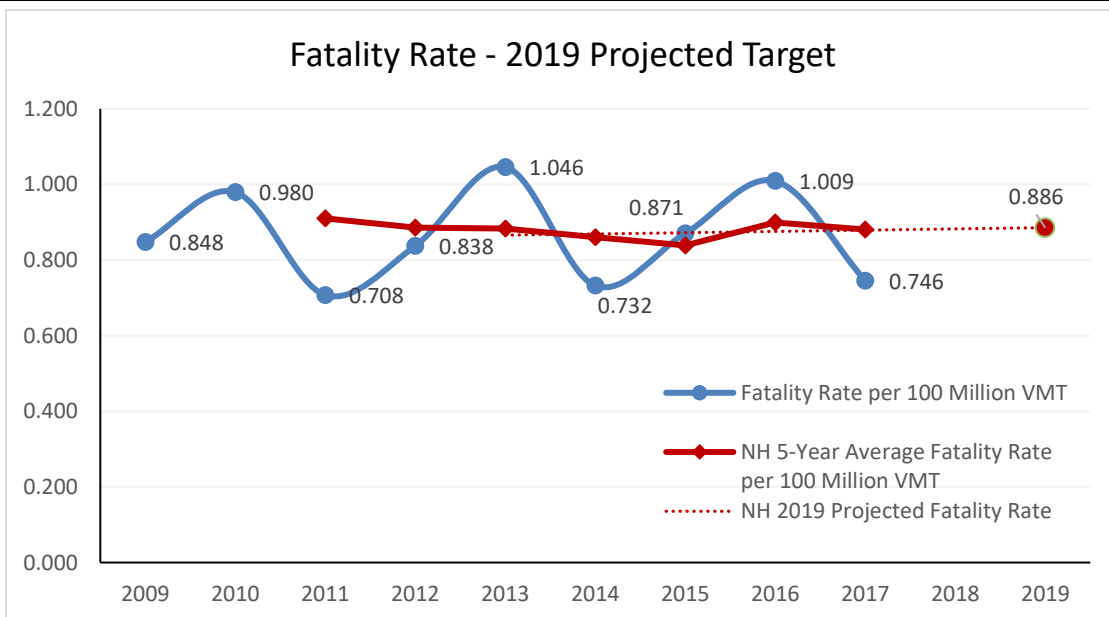


## Rate of Fatalities

The Federal Fatal Analysis Reporting System (FARS) maintained by the National Highway Traffic Safety Administration (NHTSA) provides the data necessary for identifying the total number of traffic crash fatalities in New Hampshire and the MPO region specifically. This information is combined with data from the Highway Performance Monitoring System (HPMS) which provides annual Vehicle Miles of Travel (VMT) at the State and community level. Combining the total number of fatalities in a particular year with the aggregated volume of travel in the state during that same year provides a fatality rate per 100 Million VMT. This data is further aggregated into 5-year averages to reduce the impacts of the high variability in the number of fatalities from year to year and to provide some indicators of longer-term trends. While the MPO five-year average fatality rates are substantially lower than the Statewide rate, both have remained relatively steady for each of the last five periods.

**Table 4: Fatality Rates**

Year	100 Million Vehicle Miles of Travel (VMT)		Fatality Rate per 100 Million VMT		5-Year Period	5-Year Average Fatality Rates per 100 Million VMT	
	New Hampshire	MPO Region	New Hampshire	MPO Region		New Hampshire	MPO Region
2009	129.75	22.19	0.848	0.631			
2010	130.65	22.34	0.980	0.761			
2011	127.20	21.75	0.708	0.414			
2012	128.94	22.05	0.838	0.907			
2013	129.03	23.48	1.046	0.681	2009-2013	<b>0.884</b>	<b>0.679</b>
2014	129.70	21.66	0.732	0.462	2010-2014	<b>0.861</b>	<b>0.645</b>
2015	130.94	21.61	0.871	0.741	2011-2015	<b>0.839</b>	<b>0.641</b>
2016	134.76	23.04	1.009	0.738	2012-2016	<b>0.899</b>	<b>0.706</b>
2017	136.81	23.39	0.746	0.385	2013-2017	<b>0.881</b>	<b>0.601</b>

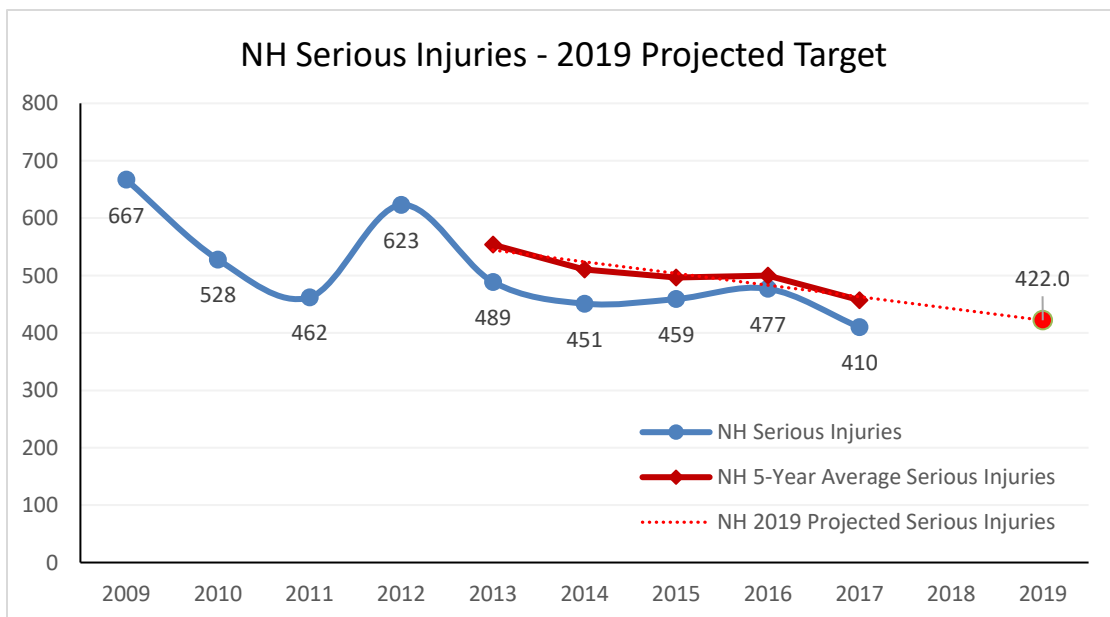


## Serious Injuries

Serious injuries are defined currently as those that are designated as “A” or “4 Incapacitating” on the crash report form used by the New Hampshire Department of Safety (State of New Hampshire Uniform Police Traffic Crash Report, 2007). This includes injuries that involve severe lacerations, broken or distorted limbs, skull fracture, crushed chest, internal injuries, unconscious when taken from the accident scene, or unable to leave the accident scene without assistance. The State Crash Records database maintained by the New Hampshire Department of Safety provides the data necessary for identifying the total number of serious injuries from traffic crashes in New Hampshire and the MPO region specifically. Data can be analyzed at the state, regional, municipal, or corridor level. This data shows substantial variation from year to year but indicates overall declines in serious injuries from motor vehicle crashes at both the State and MPO level. The five-year averages show this trend as well.

**Table 5: Serious Injuries**

Year	New Hampshire Serious Injuries	MPO Region Serious Injuries	5-Year Period	5-Year Rolling Average Serious Injuries	
				New Hampshire	MPO Region
2009	667	105			
2010	528	110			
2011	462	105			
2012	623	119			
2013	489	142	2009-2013	<b>553.8</b>	<b>116.2</b>
2014	451	84	2010-2014	<b>510.6</b>	<b>112</b>
2015	459	87	2011-2015	<b>496.8</b>	<b>107.4</b>
2016	477	92	2012-2016	<b>499.8</b>	<b>104.8</b>
2017	410	32	2013-2017	<b>457.2</b>	<b>87.4</b>

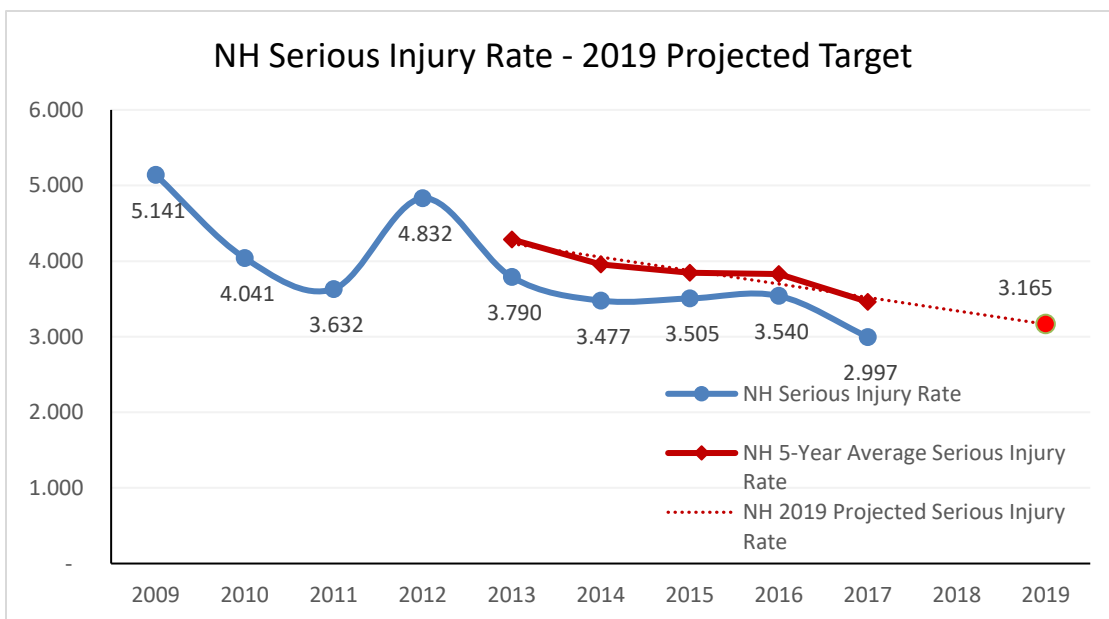


## Rate of Serious Injuries

The Rate of Serious Injuries is calculated by applying an estimate of annual travel in the state to the serious injury totals for the same year. The State Crash Records database maintained by the New Hampshire Department of Safety provides the data necessary for identifying the total number of serious injuries from traffic crashes in New Hampshire and the MPO region specifically. This information is combined with data from the Highway Performance Monitoring System (HPMS) which provides annual Vehicle Miles of Travel (VMT) at the State and community level to produce a rate of serious injuries per 100 Million VMT. This value is further aggregated into five-year averages to identify longer-term trends and reduce the impacts of the variability of the data. Similar to the numbers of serious injuries, the rate has shown a declining trend over the last ten years and for each of the last five five-year average periods at both the state and regional level.

**Table 6: Serious Injury Rate**

Year	100 Million Vehicle Miles of Travel (VMT)		Serious Injury Rate per 100 Million VMT		5-Year Period	5-Year Average Fatality Rates per 100 Million VMT	
	New Hampshire	MPO Region	New Hampshire	MPO Region		New Hampshire	MPO Region
2009	129.75	22.19	5.141	4.732			
2010	130.65	22.34	4.041	4.924			
2011	127.20	21.75	3.632	4.827			
2012	128.94	22.05	4.832	5.397			
2013	129.03	23.48	3.790	6.047	2009-2013	<b>4.287</b>	<b>5.185</b>
2014	129.70	21.66	3.477	3.878	2010-2014	<b>3.954</b>	<b>5.015</b>
2015	130.94	21.61	3.505	4.027	2011-2015	<b>3.847</b>	<b>4.835</b>
2016	134.76	23.04	3.540	3.992	2012-2016	<b>3.829</b>	<b>4.668</b>
2017	136.81	23.39	2.997	1.368	2013-2017	<b>3.462</b>	<b>3.862</b>

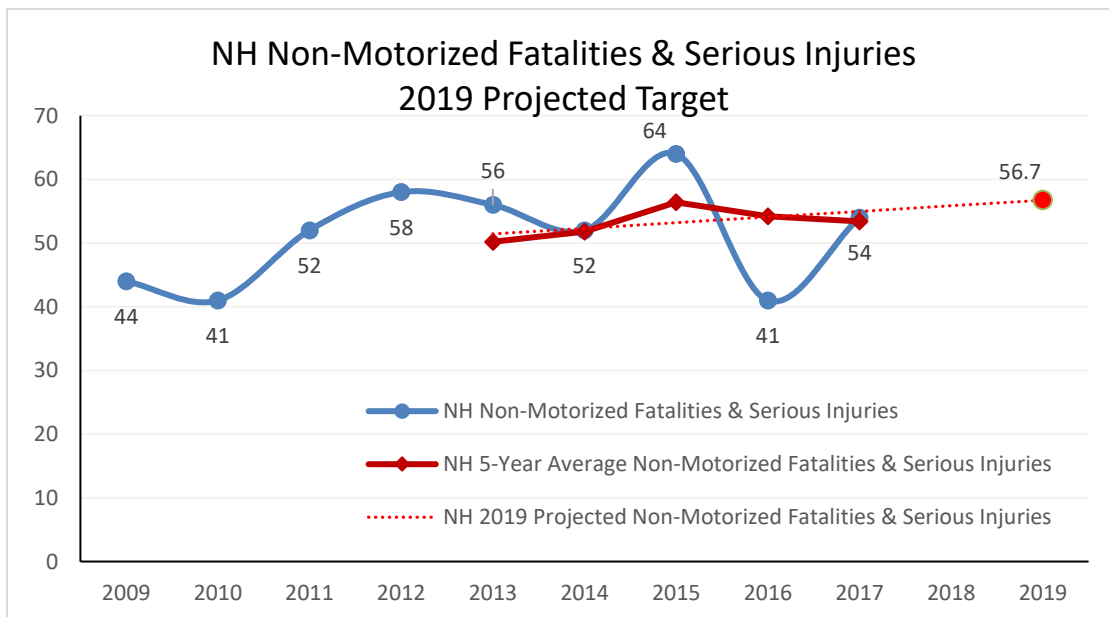


## Non-motorized Fatalities and Serious Injuries

This performance measure utilizes data from both NHTSA’s FARS database and the State Crash Records Database which is maintained by the New Hampshire Department of Safety. Each dataset is queried for non-motorized vehicle crashes and the results are tabulated below. This data can be analyzed at the state, regional, municipal, or corridor level. It is difficult to establish rates for these types of crashes as we do not know the overall volume of bicycle and pedestrian travel. At both the state and MPO level, the five-year average non-motorized fatalities and serious injuries has stayed consistently higher than the initial 2009-2013 period.

**Table 7: Non-Motorized Fatalities & Serious Injuries**

Year	New Hampshire Non-Motorized Crashes			MPO Region Non-Motorized Crashes			5-Year Rolling Average Non-Motorized Fatalities & Serious Injuries		
	Fatalities	Serious Injuries	Total	Fatalities	Serious Injuries	Total	5-Year Period	New Hampshire	MPO Region
2009	10	34	44	1	7	8			
2010	9	32	41	0	5	5			
2011	10	42	52	1	4	5			
2012	10	48	58	3	11	14			
2013	20	36	56	5	9	14	2009-2013	<b>50.2</b>	<b>9.2</b>
2014	16	36	52	0	9	9	2010-2014	<b>51.8</b>	<b>9.4</b>
2015	14	50	64	2	10	12	2011-2015	<b>56.4</b>	<b>10.8</b>
2016	21	26	41	1	10	11	2012-2016	<b>54.2</b>	<b>12.0</b>
2017	15	39	54	0	4	4	2013-2017	<b>53.4</b>	<b>10.0</b>



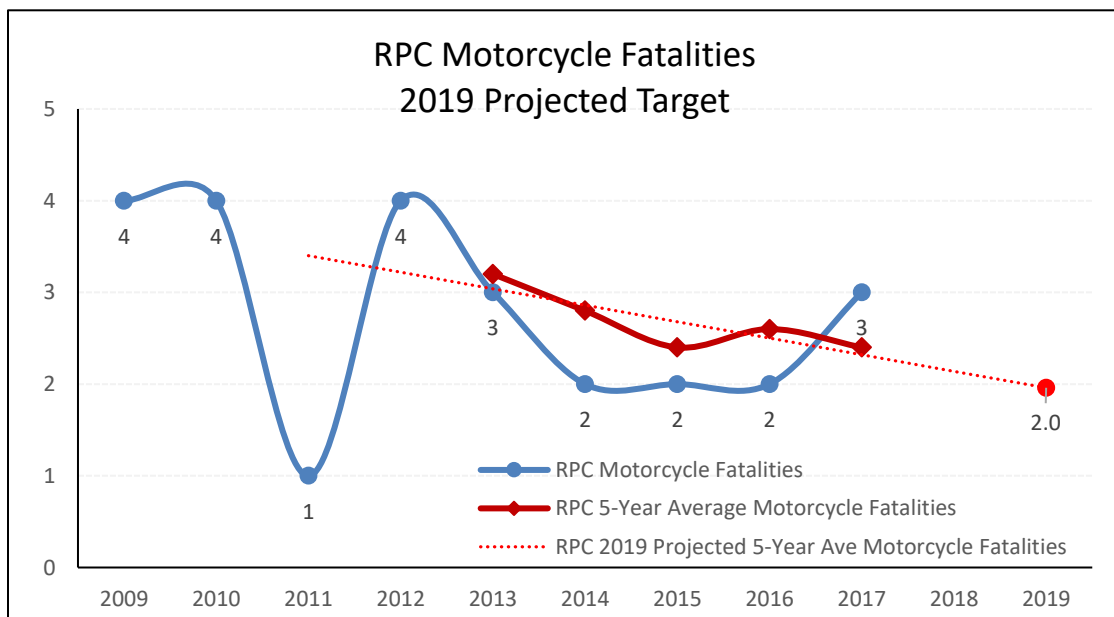


## Motorcycle Fatalities

The Federal Fatal Analysis Reporting System (FARS) provides the data necessary for identifying the total number of motorcycle crash fatalities in New Hampshire and for the MPO region. Five-year rolling averages are computed to provide a better understanding of the overall data over time without discarding years with significant increases or decreases, as well as to provide a mechanism for regression to the mean for a random variable such as fatalities. Overall, motorcycle fatalities have been generally declining in New Hampshire and have stayed consistently at 2-3 within the MPO region for the last five years. This is reflected in the five-year average number of fatalities which has steadily declined.

**Table 8: Motorcycle Fatalities**

Year	Annual Motorcycle Crash Fatalities		5-Year Rolling Average Crash Fatalities		
	New Hampshire	MPO Region	5-Year Period	New Hampshire	MPO Region
2009	21	4			
2010	28	4			
2011	14	1			
2012	29	4			
2013	24	3	2009-2013	<b>23.20</b>	<b>3.20</b>
2014	17	2	2010-2014	<b>22.40</b>	<b>2.80</b>
2015	26	2	2011-2015	<b>22.00</b>	<b>2.40</b>
2016	18	2	2012-2016	<b>22.80</b>	<b>2.60</b>
2017	15	3	2013-2017	<b>20.00</b>	<b>2.40</b>

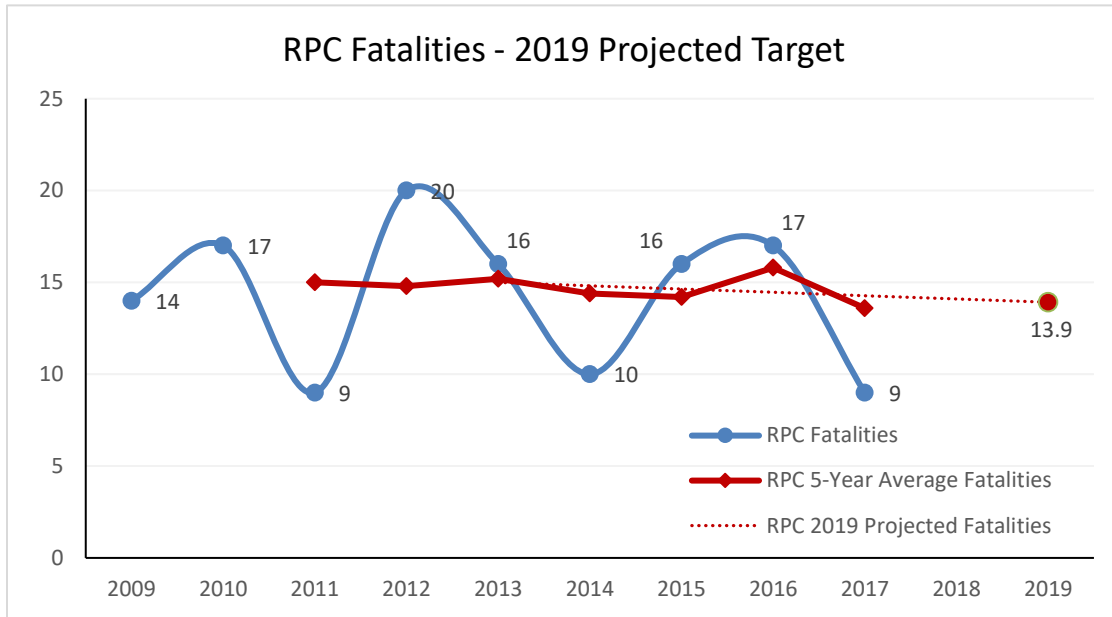


## Appendix A: RPC Region Data Charts

This appendix includes the RPC region chart equivalents to the five included for the State of New Hampshire in the text of the report covering Fatalities, Fatality Rate, Serious Injuries, Serious Injury Rate, and Non-motorized Fatalities and Serious Injuries.

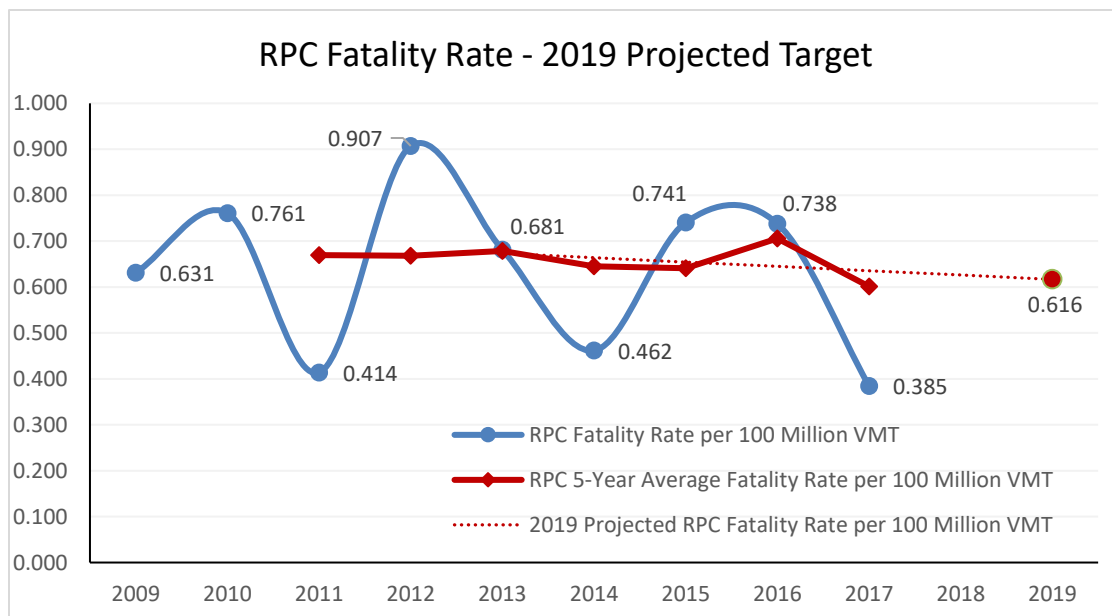
### RPC Fatalities

Fatalities were substantially lower in the RPC region for 2017 with a nearly 50% decrease from 17 to 9 deaths from year to year. The five-year average trend in fatalities continues to decline as well.



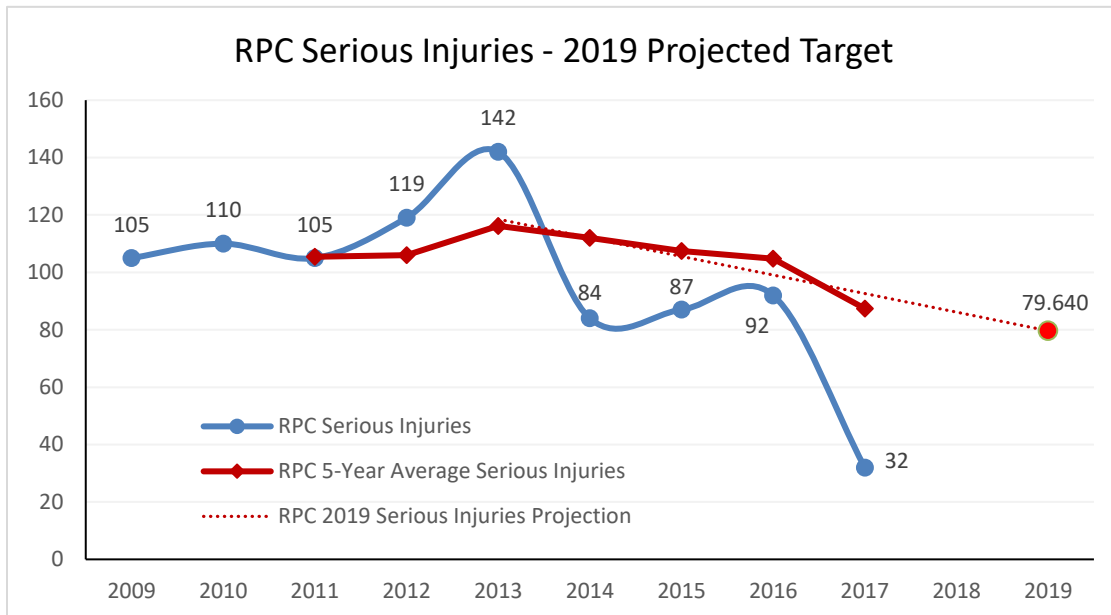
### RPC Fatality Rate

Similar to the number of fatalities, the rate of fatalities per 100 million Vehicle Miles of Travel (VMT) decreased substantially from 2016 to 2017 and continues the trend of a declining rate in the region.



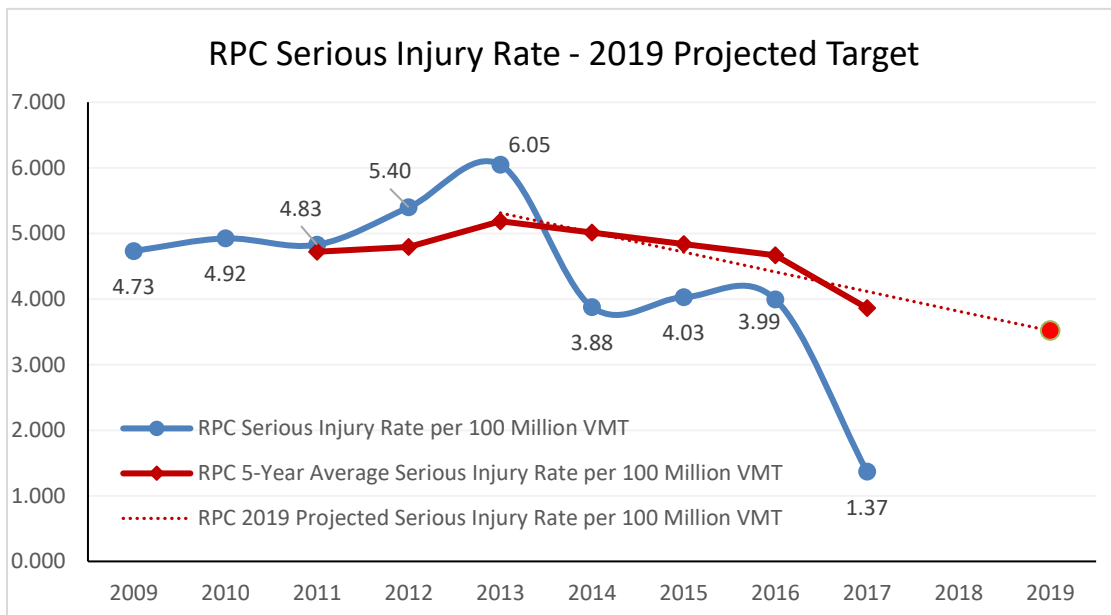
### Serious Injuries

The number of serious injuries from motor vehicle crashes was down 65% in the region from 92 in 2016 to 32 in 2017. This continues the longer term trend experienced in the region of declining numbers of serious injury crashes and injuries.



### Serious Injury Rate

The rate of serious injuries from motor vehicle crashes also declined substantially in 2017 dropping from nearly 4 per 100 million VMT to 1.37 per 100 million VMT. The long term trends based on 5-year averages continues to show a decreasing rate of serious injury crashes.



### Non-Motorized Fatalities & Serious Injuries

Regionally, non-motorized fatalities and serious injuries decreased 60% from 2016 to 2017 from 10 to 4. Unlike the other measures however, the longer-term trends identified using 5-year averages show a projected increase in fatal and serious injury crashes involving bicyclists and pedestrians.

