NRPC
NASHUA REGIONAL PLANNING COMMISSION

Nashua Regional Planning Commission FY 2022 Safety Performance Targets

Background

On March 15th, 2016 the Federal Highway Administration (FHWA) published the final rule on the Highway Safety Improvement Program (HSIP). The rule required State Departments of Transportation to set targets for Safety Performance by August 31st, 2017 for calendar year 2018, and Metropolitan Planning Organizations (MPOs) to set regional targets 180 days after that. The NRPC, in its role as MPO for the Nashua Area, initially adopted statewide targets for 2018 on December 20, 2017. The Safety Targets are re-set each year and must be approved by the MPO by the end of February for submission to NHDOT. In 2019 the MPO transitioned to the adoption of regional targets developed from crash data for the NRPC area.

The targets deal with five safety measures:

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.

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 31st 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 2007-2020 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 2022 values.

The Nashua MPO establishes Regional Safety Targets in all five mandated areas. The presentation of data that supports the regional targets does include statewide crash totals and rates for comparison purposes. The Nashua MPO TTAC voted at its February 13, 2019 meeting to use the five-year moving average as the future target where the trend would show a higher number/rate of accidents. The rationale is that we should not accept increasing rates of accidents in the future; the goal should be to at least cap the target at the average of recent year. Where a downward trend exists, the future target is set as continuation of that trend, resulting in a target lower than the five-year moving average. This methodology was endorsed by the MPO Policy Committee when the 2019 targets were adopted.

NRPC Target Summary

The table below presents five-year moving averages for each safety targe. A best fit of data is calculated in Excel for the 2011-2020 period for each safety measure and a trendline projection from 2020 to 2022 is calculated. Where the extended trend to 2022 falls below the current five-year moving average, it is selected as the performance target. Otherwise, the 2020 moving average is selected as the target. The Nashua MPO Policy Committee adopted FY 2022 Safety Targets at its December 15, 2021 meeting.

	5-Year Moving Averages Used for Establishing Trends										2022	2022
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Trend	Target
Fatality Total	11.2	10.2	10.8	12.6	12.4	12.6	12.6	11.8	11.8	11.2	**12.3**	**11.2**
Fatality Rate	0.689	0.635	0.674	0.786	0.774	0.779	0.771	0.711	0.701	0.674	**0.735**	**0.674**
Serious Injury Total	74.2	75.6	73.2	69.4	68.2	68.6	63.6	59.6	59.4	56.2	**54.8**	**54.8**
Serious Injury Rate	4.59	4.71	4.57	4.34	4.26	4.23	3.88	3.59	3.54	3.40	**3.27**	**3.27**
Non-Motorized Fatal + Serious Injuries	6.2	5.4	6.8	7.2	8.2	7.8	8.6	7.4	7.8	6.8	**8.2**	**6.8**

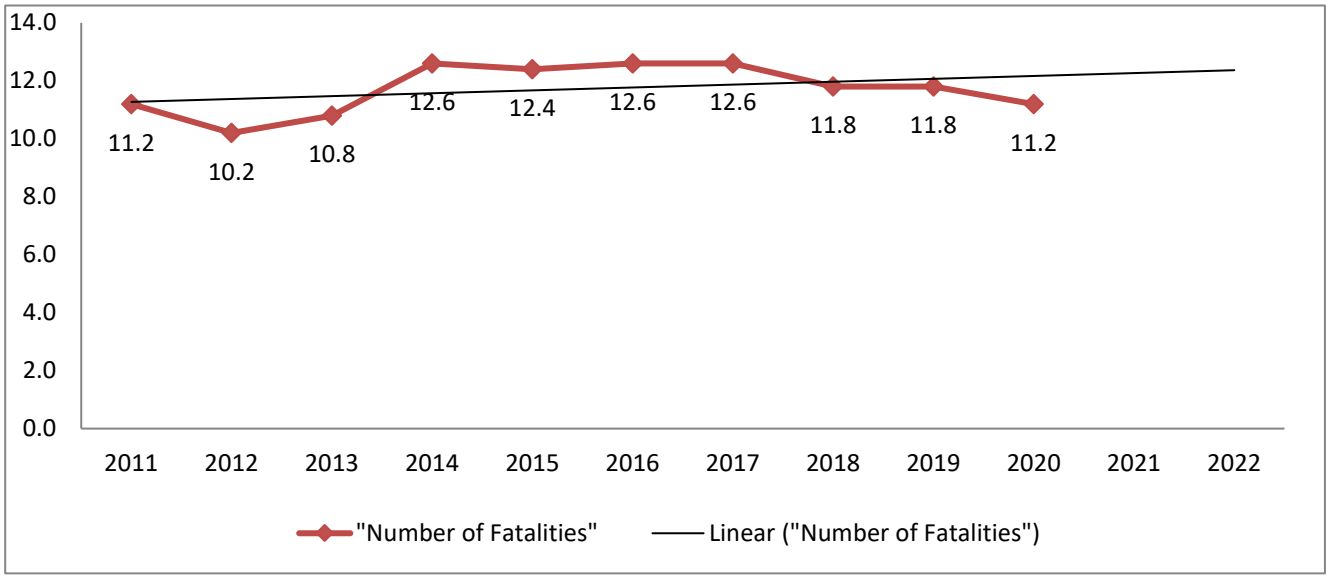
NRPC Target Detail and Statewide Comparison

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. A significantly lower fatality total in 2020 reduced the 5-year average to 11.2. This establishes the 2022 safety target for this measure, as the long-term trend produces a fatality five-year average of 12.3 in 2022.

	State of NH		NRPC Region	
Year	Fatalities	5-year Average	Fatalities	5-year Average
2007	129	n/a	17	N/A
2008	138	n/a	13	N/A
2009	110	n/a	4	N/A
2010	128	n/a	13	N/A
2011	90	119.0	9	11.2
2012	108	114.8	12	10.2
2013	135	114.2	16	10.8
2014	95	111.2	13	12.6
2015	114	108.4	12	12.4
2016	136	117.6	10	12.6
2017	102	116.4	12	12.6
2018	147	118.8	12	11.8
2019	101	120.0	13	11.8
2020	104	118.0	9	11.2

NUMBER OF FATALITIES & TRENDLINE, NRPC REGION

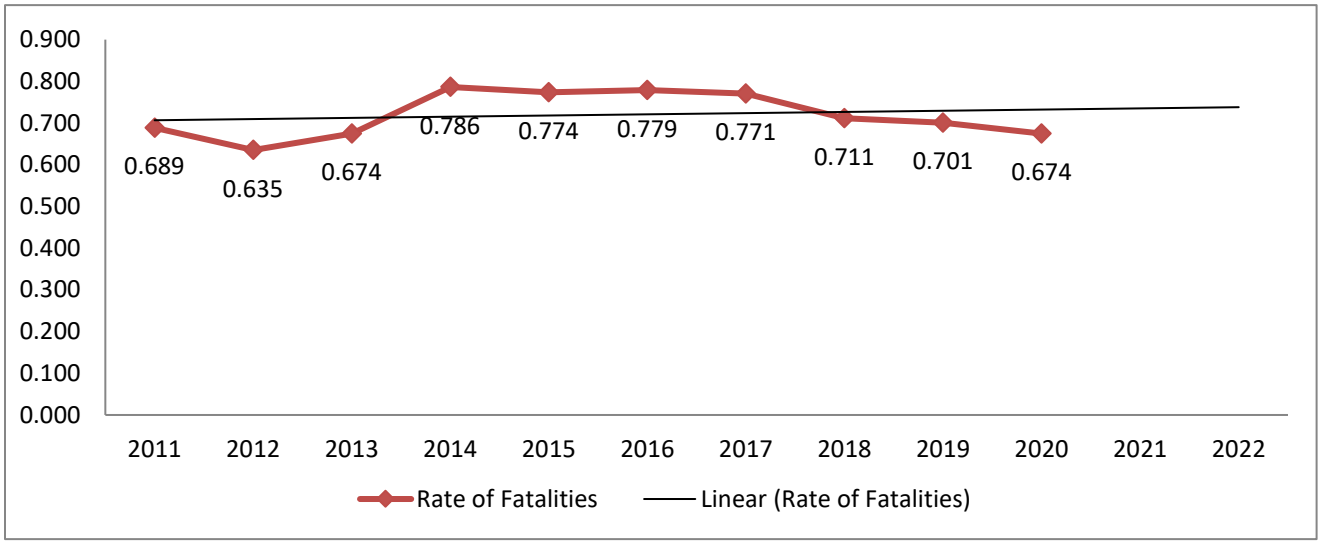


Rate of Fatalities

FARS data 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 develop the next safety target. 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 then aggregated into 5-year moving averages. This average declined for the sixth straight year to 0.674 fatalities per 100M VMT. The trendline to 2022 is higher at .735, therefore the former rate is selected as the performance target.

	State of NH		NRPC Region	
Year	Rate of Fatalities	5-year Average	Rate of Fatalities	5-year Average
2007	0.958	n/a	1.019	N/A
2008	1.058	n/a	0.804	N/A
2009	0.848	n/a	0.249	N/A
2010	0.980	n/a	0.802	N/A
2011	0.708	0.910	0.571	0.689
2012	0.838	0.886	0.751	0.635
2013	1.046	0.884	1.000	0.674
2014	0.732	0.861	0.808	0.786
2015	0.871	0.839	0.739	0.774
2016	1.009	0.899	0.598	0.779
2017	0.746	0.881	0.707	0.771
2018	1.067	0.885	0.702	0.711
2019	0.729	0.884	0.757	0.701
2020	0.870	0.884	0.607	0.674

FATALITIES RATES PER VMT & TRENDLINE, NRPC REGION

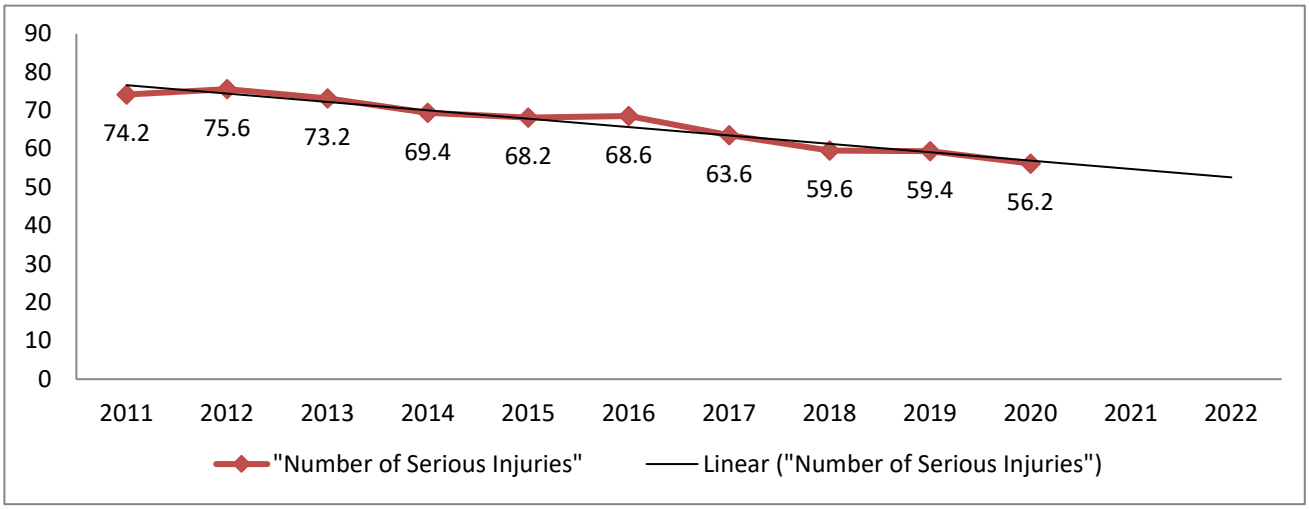


Number of Serious Injuries Serious injuries include those that involve severe lacerations, broken or distorted limbs, skull fracture, crushed chest, internal injuries, unconscious when taken from the accident scene, or unable to leave the accident scene without assistance.

The NRPC region five-year average for serious injuries continued to decline for the fourth straight year, with the moving average falling from 68.6 in 2016 to 56.2 in 2020. The long-term downward trend extrapolates to 54.8 in 2022, which establishes the safety target for that year.

	State of NH		NRPC Region	
Year	Serious Injuries	5-yr Ave	Serious Injuries	5-year Average
2007	N/A	N/A	71	N/A
2008	N/A	N/A	77	N/A
2009	667	N/A	74	N/A
2010	528	N/A	70	N/A
2011	462	552.3	79	74.2
2012	623	570.0	78	75.6
2013	489	553.8	65	73.2
2014	451	510.6	55	69.4
2015	459	496.8	64	68.2
2016	477	499.8	81	68.6
2017	410	457.2	53	63.6
2018	451	449.6	45	59.6
2019	485	456.4	54	59.4
2020	512	467.0	48	56.2

NUMBER OF SERIOUS INJURIES & TRENDLINE, NRPC REGION



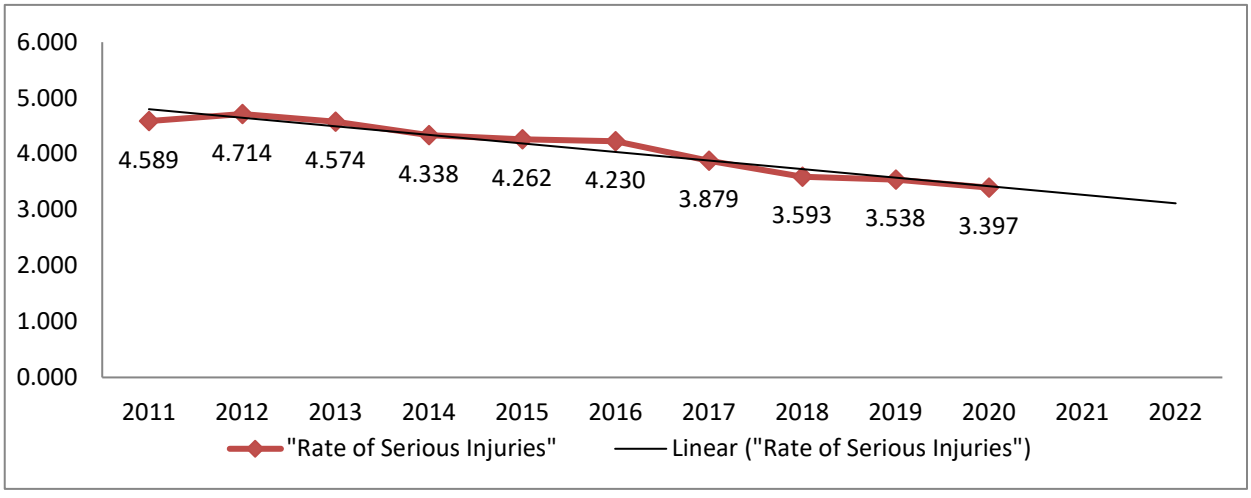
Rate of Serious Injuries

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. As was done for fatality rates, serious injury crash data is combined with HPMS data 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.

The trendline projection for 2022 is 3.27, which is lower than the current moving average of 3.40, and therefore is selected at the future target.

	State of NH		NRPC Region	
Year	Rate of Serious Injures	5-yr Ave	Rate of Serious Injures	5-year Average
2007	N/A	N/A	4.254	N/A
2008	N/A	N/A	4.762	N/A
2009	N/A	N/A	4.599	N/A
2010	N/A	N/A	4.321	N/A
2011	3.632	N/A	5.009	4.589
2012	4.832	N/A	4.878	4.714
2013	3.790	4.085	4.063	4.574
2014	3.477	3.933	3.420	4.338
2015	3.505	3.847	3.942	4.262
2016	3.540	3.829	4.847	4.230
2017	2.997	3.462	3.124	3.879
2018	3.270	3.358	2.634	3.593
2019	3.500	3.362	3.143	3.538
2020	4.285	3.518	3.236	3.397

SERIOUS INJURY RATES PER VMT & TRENDLINE, NRPC REGION



Number of 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.

This category results in a lower average of incidents than fatal crashes for most years and tends to show more variability. A declining average has been sustained for three years in a row, bringing the current average of 6.8 to its lowest point since 2013. This establishes the 2022 target, as the extended trend rises to 8.2.

	State of NH		NRPC Region	
Year	Non-Motorized Fatalities & Serious Injuries	5-yr Ave	Non-Motorized Fatalities & Serious Injuries	5-year Average
2007		N/A	12	N/A
2008		N/A	2	N/A
2009		N/A	4	N/A
2010		N/A	5	N/A
2011	52	52.0	8	6.2
2012	58	55.0	8	5.4
2013	56	55.3	9	6.8
2014	52	54.5	6	7.2
2015	64	56.4	10	8.2
2016	41	54.2	6	7.8
2017	62	55.0	12	8.6
2018	39	51.6	3	7.4
2019	37	48.6	8	7.8
2020	34	42.6	5	6.8

NUMBER OF NON-MOTORIZED FATAL/SERIOUS INJURIES & TRENDLINE, NRPC REGION