PM1: SAFETY PERFORMANCE MEASURES SNHPC 2023

Southern New Hampshire Planning Commission
Metropolitan Transportation Organization
December 20, 2022

Carl Eppich — SNHPC — Principal Transportation Planner
Zachary Swick — SNHPC— Senior GIS Analyst

SNHPC

Background:
Transportation Performance Management

PM1: Safety Performance Measures

FAST Act requires DOTs to measure and report performance in the following areas:

- **Safety**
- Pavement and bridge
- System performance/ congestion
- Freight movement, and
- Congestion mitigation and air quality (CMAQ).

Background Info – Federal Legislation and Safety Performance

What are the Five Federally-required safety measures?

1. **Number of Fatalities**

The 5-year average of the total number of persons suffering fatal injuries in a motor vehicle crash during a calendar year.

2. **Rate of Fatalities**

The 5-year average of the ratio of the 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 5-year average of 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 5-year average of the ratio of the 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 5-year average of the combined total number of non-motorized fatalities and non-motorized serious injuries involving a motor vehicle during a calendar year.

Federal Legislation and State-level Safety Performance Targets

States set safety performance targets:

MPOs including SNHPC are allowed the flexibility to set their own safety targets

OR

MPOs may support the State-level performance targets

For 2023 SNHPC Recommends:

Support State Targets FOR 2023

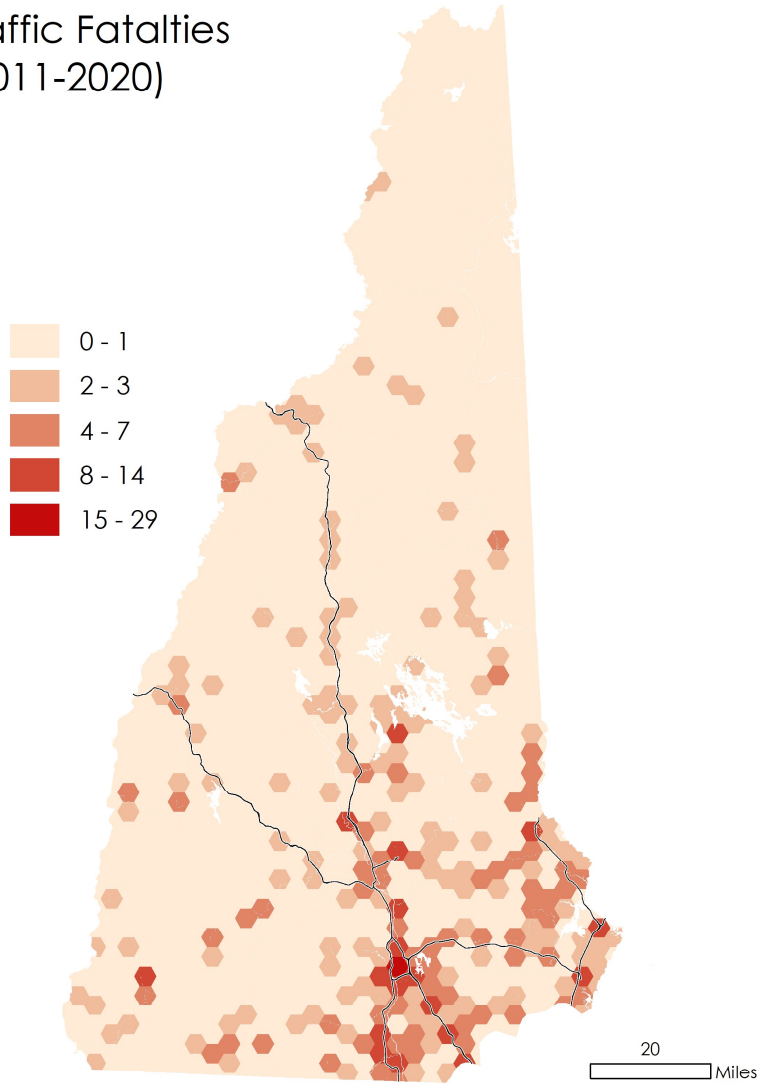
EXCEPT

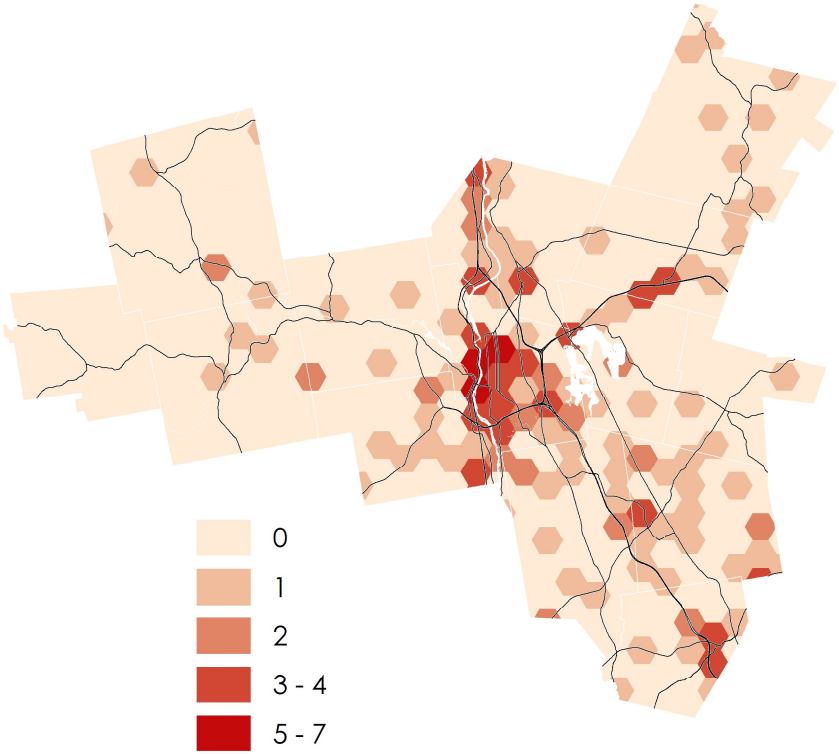
That SNHPC adopt A REGIONAL target for the Fatality Rate.

Some Context:

New Hampshire Fatality Analysis Reporting System (FARS) Analysis

Traffic Fatalties (2011-2020)





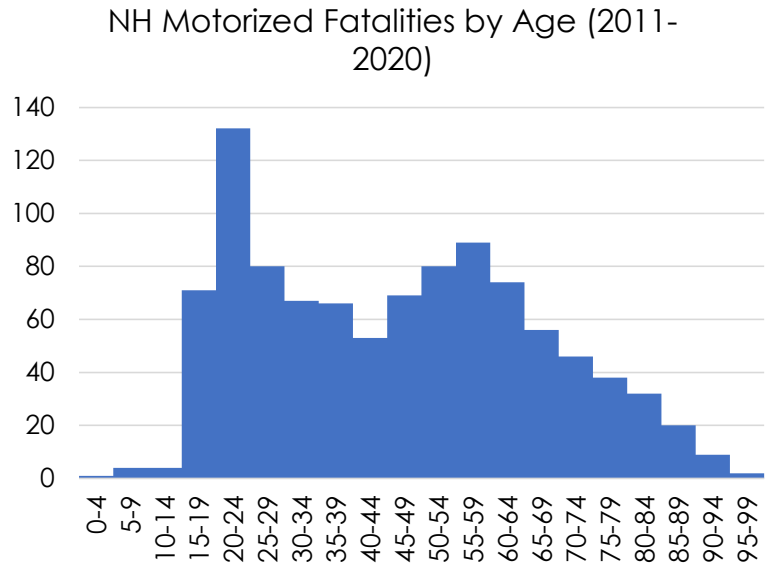
Created by SNHPC, 2022. Sources: NHDOT; NHTSA; USCB; USGS.

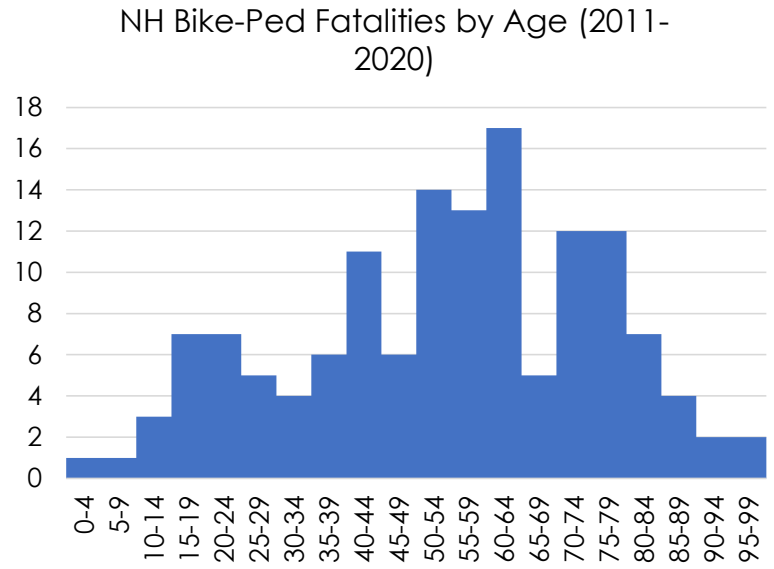
New Hampshire FARS Data (2011-2020)

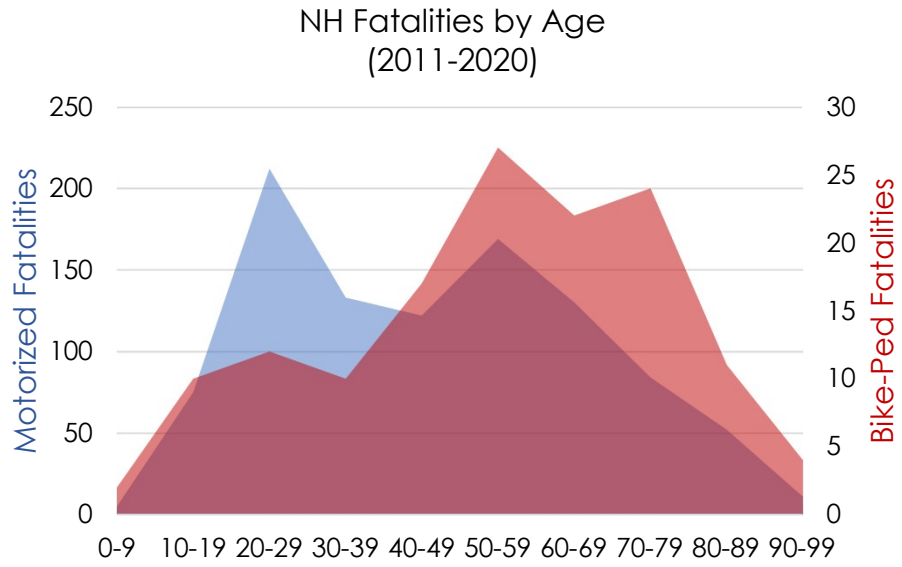
NH Motorized Fatalities (2011-2020)		
Count	993	
Age		
Average	46	
Median	46	
Minimum	4	
Maximum	97	
Standard Deviation	20	
Less than 20 Years Old	80	8%
20 to 44 Years Old	398	40%
45 to 64 Years Old	312	31%
65 Years or Older	203	20%
Sex		
Male	689	69%
Female	304	31%

NH Bike-Ped Fatalities (2011-2020)		
Count	139	
Age		
Average	54	
Median	56	
Minimum	4	
Maximum	97	
Standard Deviation	21	
Less than 20 Years Old	12	9%
20 to 44 Years Old	33	24%
45 to 64 Years Old	50	36%
65 Years or Older	44	32%
Sex		
Male	95	68%
Female	44	32%

Source: National Highway Traffic Safety Administration

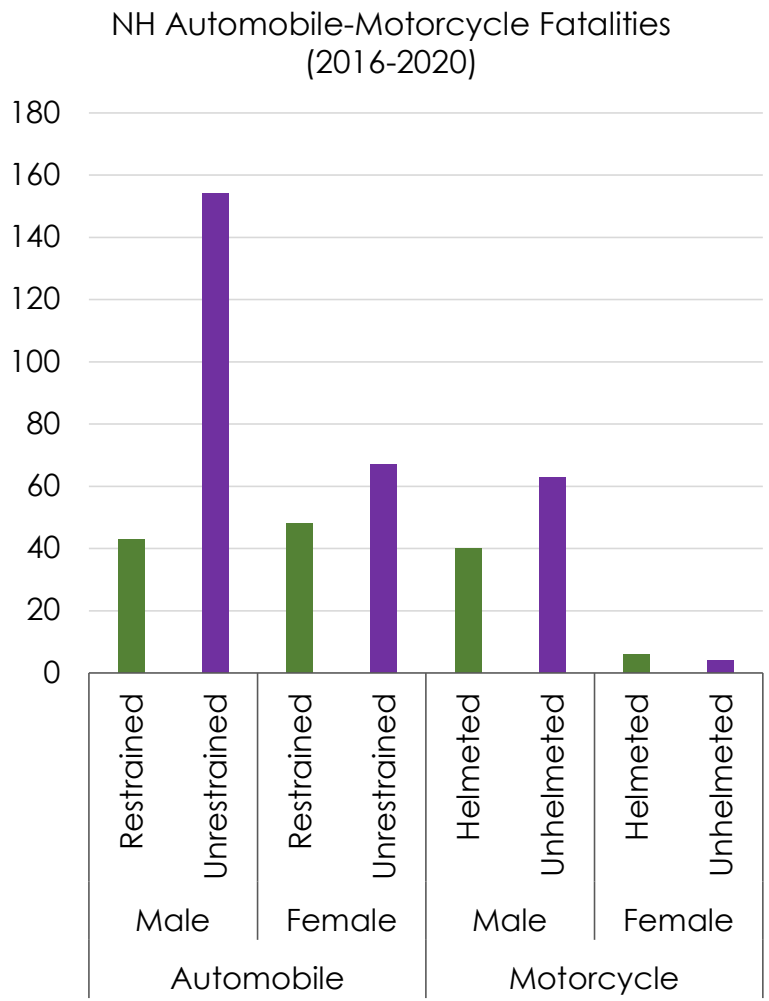






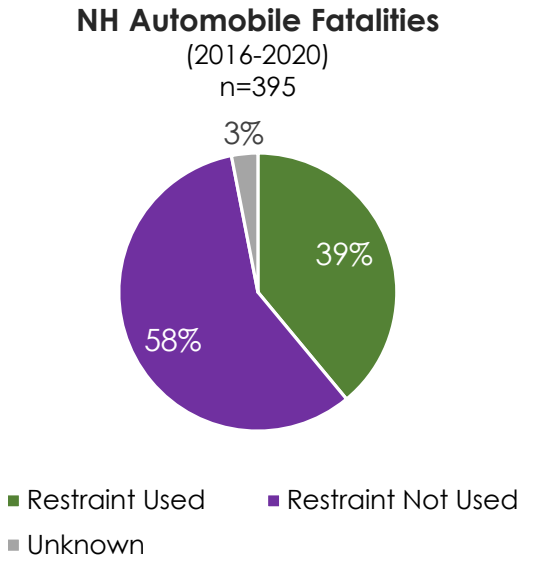
Source: National Highway Traffic Safety Administration

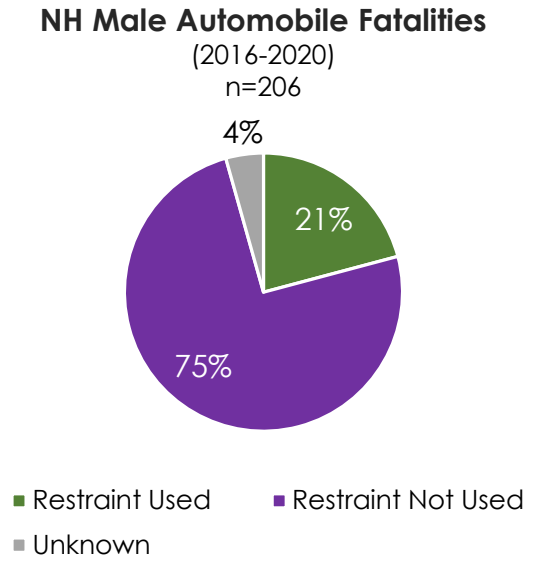
How Safety Equipment Use Differs by Gender

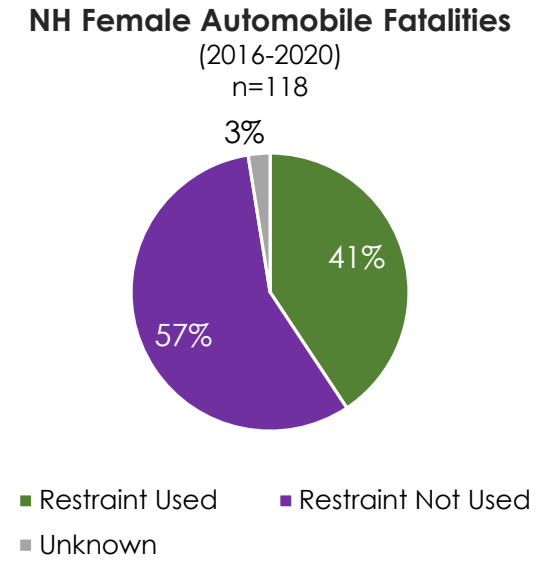


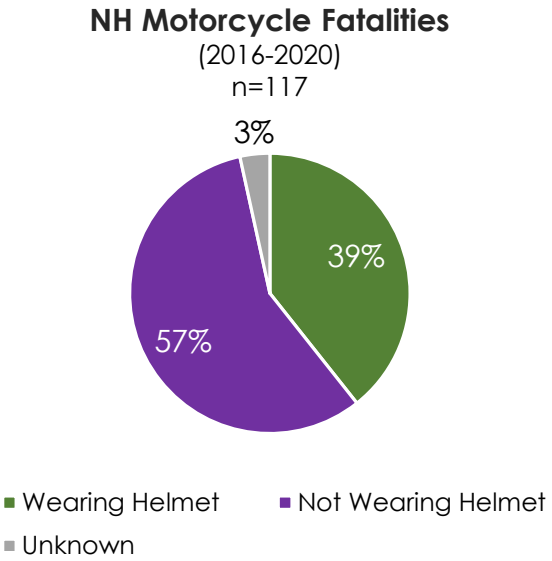
Source: National Highway Traffic Safety Administration

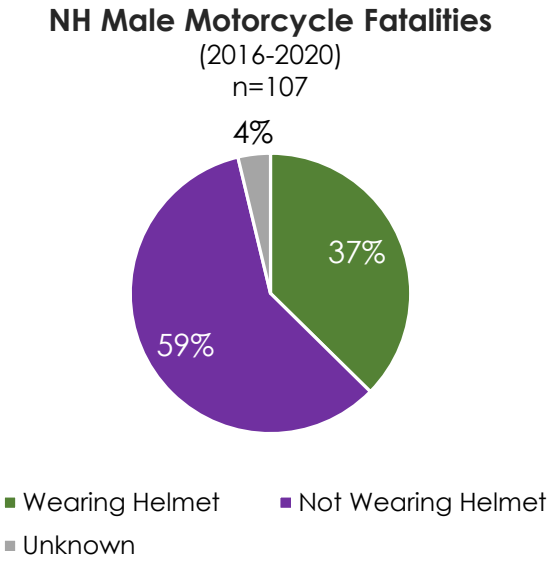
How Safety Equipment Use Differs by Gender

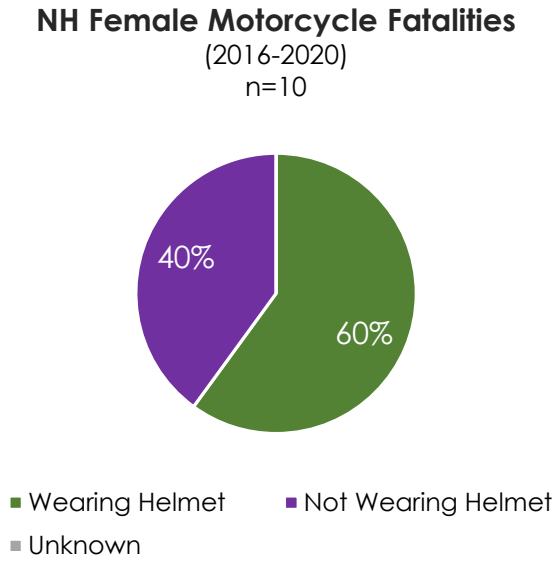












Source: National Highway Traffic Safety Administration

Some Context:

Southern New Hampshire Planning Commission Fatalities & Serious Injuries

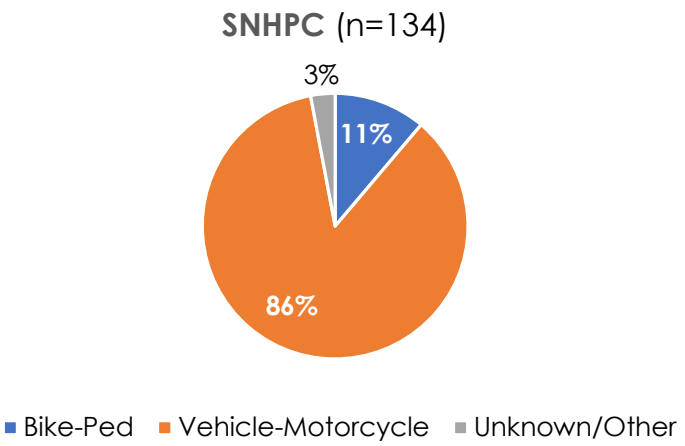
SNHPC 2021 Fatalities and Serious Injuries

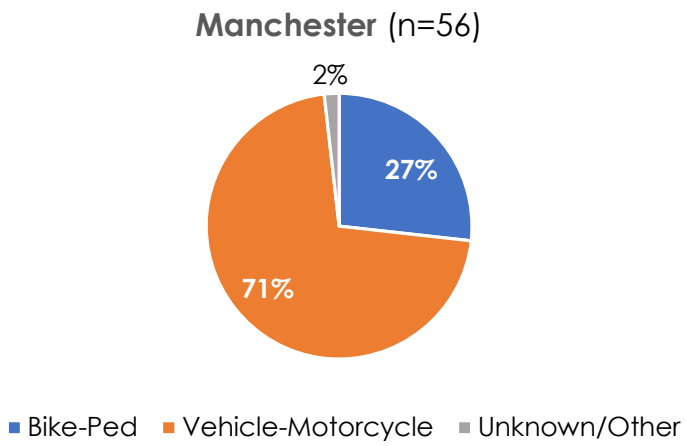
	Fatalities		Serious Injuries		Total	
Auburn	3	11%	5	5%	8	6%
Bedford	4	15%	7	7%	11	8%
Candia	1	4%	2	2%	3	2%
Chester	0	0%	0	0%	0	0%
Deerfield	0	0%	2	2%	2	1%
Derry	1	4%	18	17%	19	14%
Francestown	0	0%	0	0%	0	0%
Goffstown	0	0%	0	0%	0	0%
Hooksett	1	4%	7	7%	8	6%
Londonderry	1	4%	11	10%	12	9%
Manchester	12	44%	44	41%	56	42%
New Boston	0	0%	1	1%	1	1%
Weare	2	7%	1	1%	3	2%
Windham	2	7%	9	8%	11	8%
SNHPC	27		107		134	

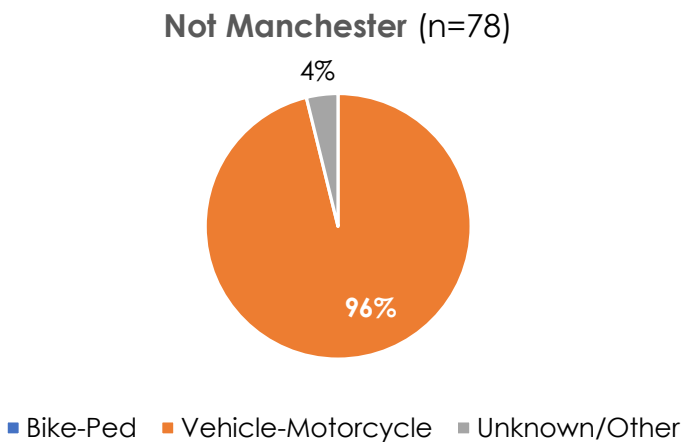
SNHPC saw more fatalities in 2021 than any other year since at least 2007.

Sources: National Highway Traffic Safety Administration; New Hampshire Department of Safety.

SNHPC 2021 Fatalities and Serious Injuries

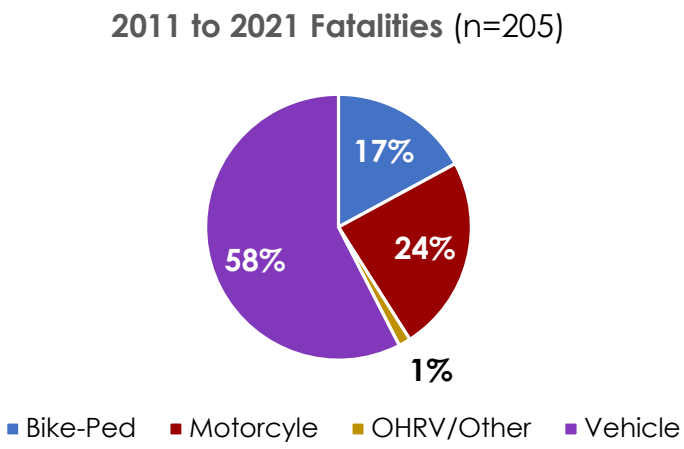


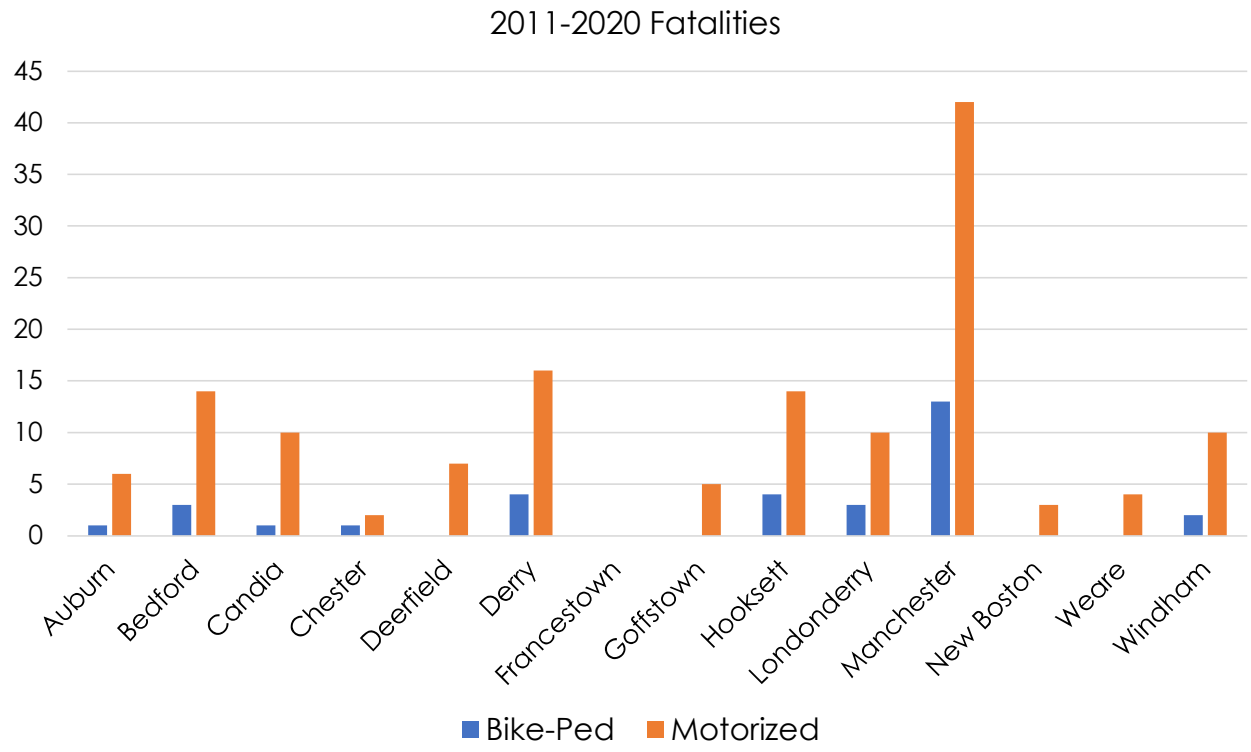




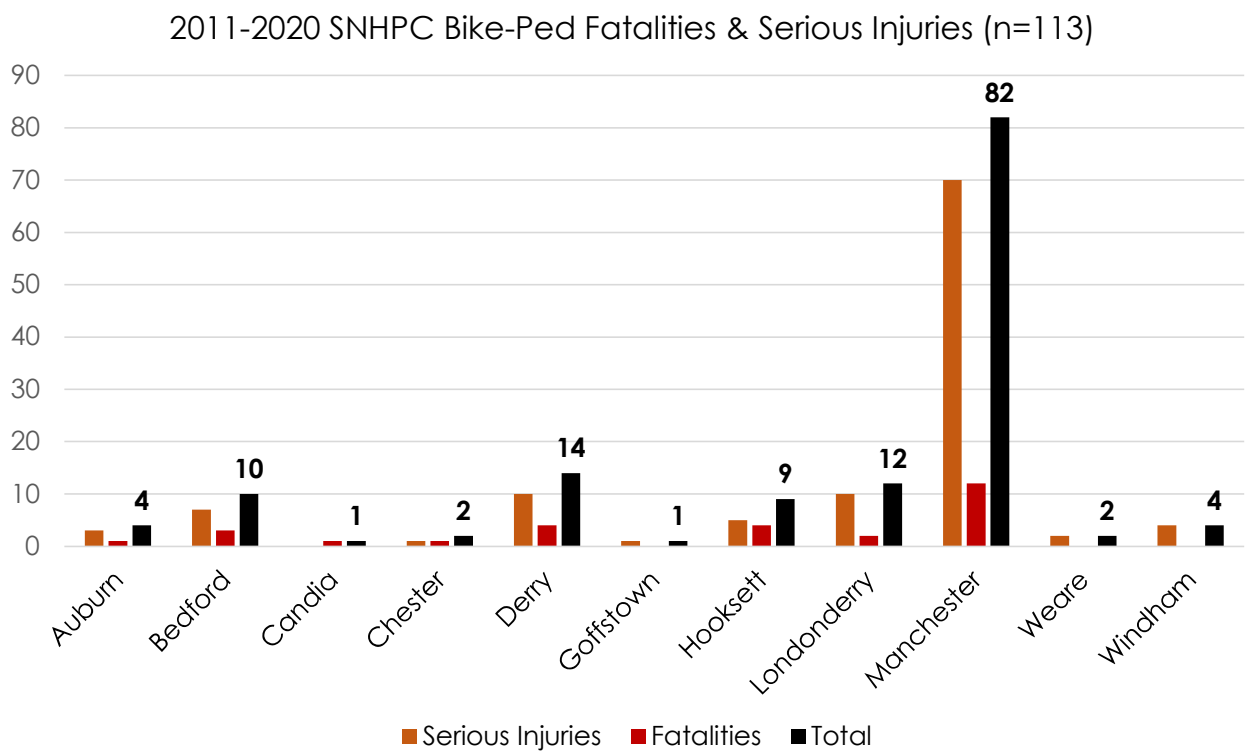
Sources: National Highway Traffic Safety Administration; New Hampshire Department of Safety.

SNHPC Fatalities (2011 to 2021)





Sources: National Highway Traffic Safety Administration; New Hampshire Department of Safety.

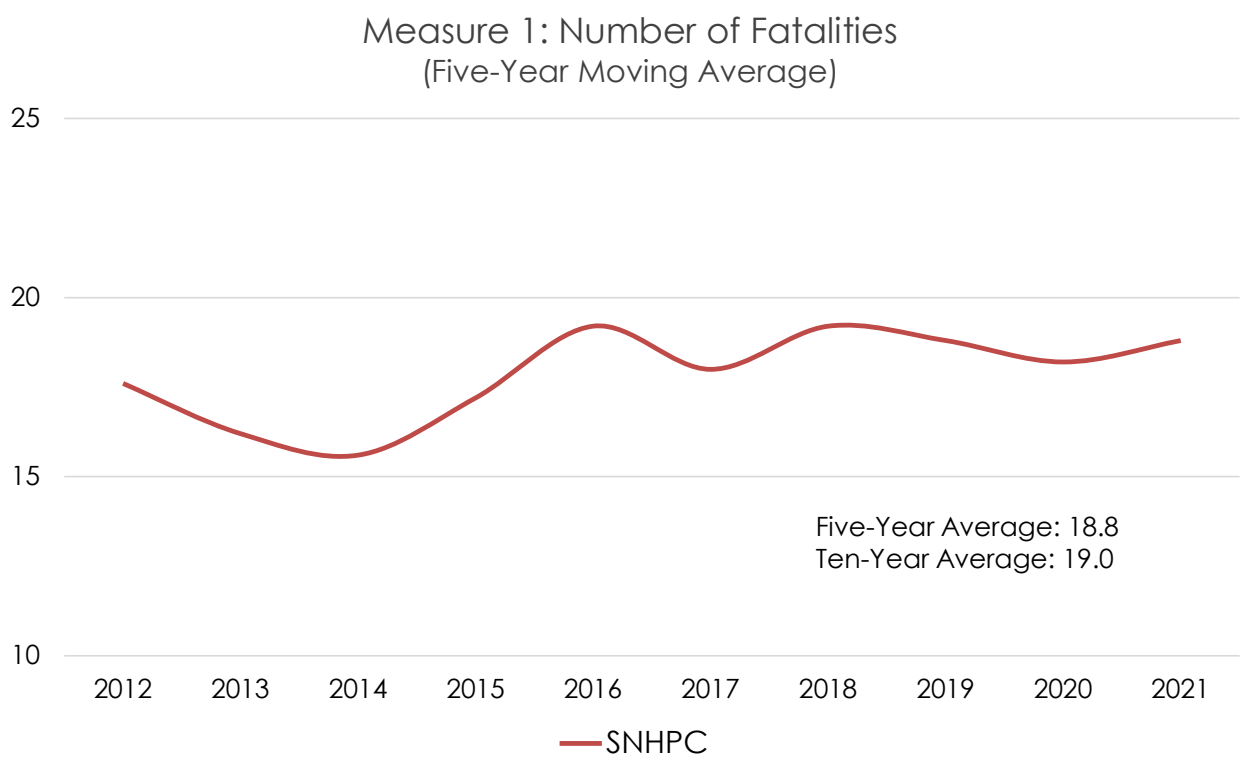


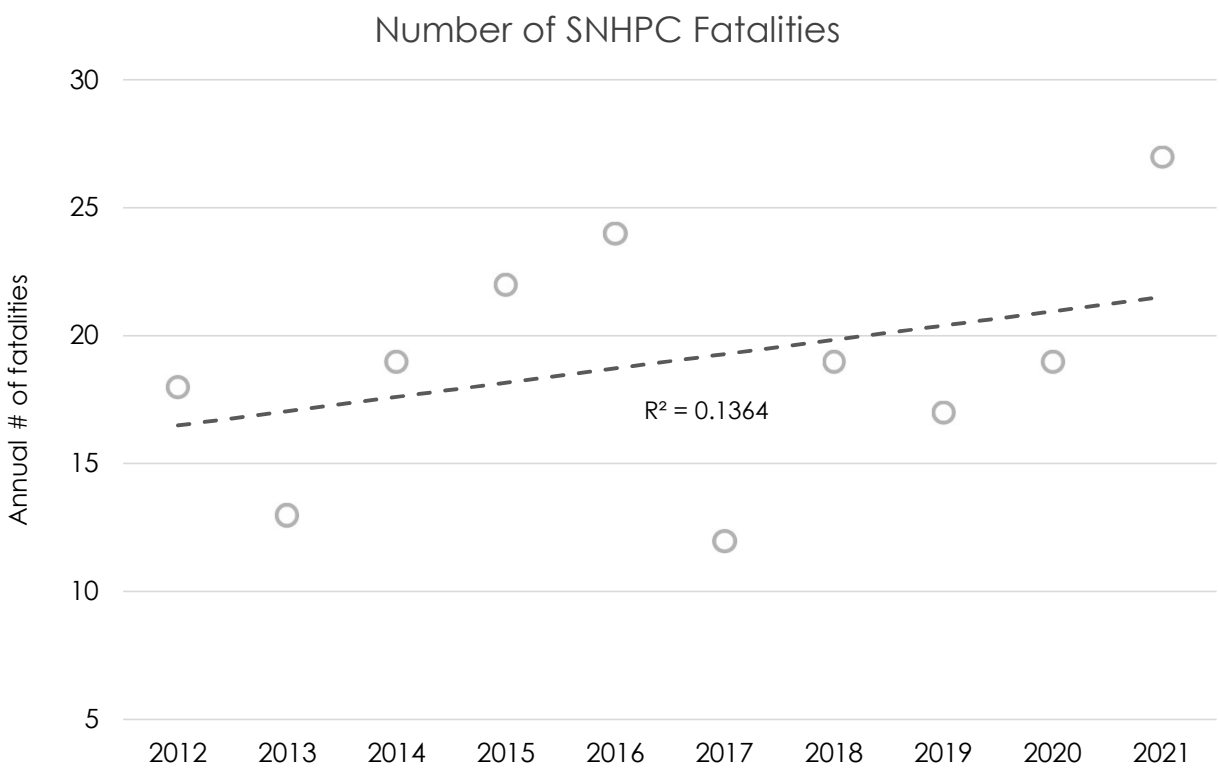
2011-2020 Bike-Ped Fatalities & Serious Injuries

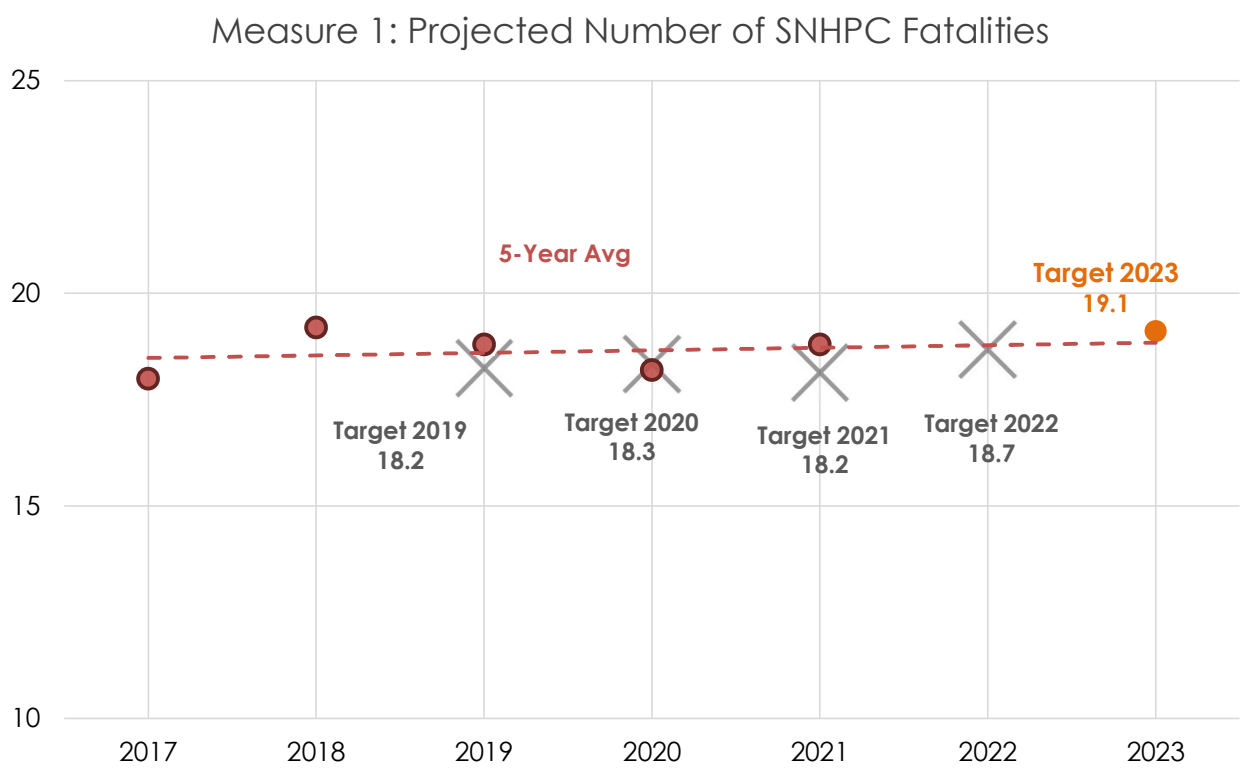
	Total per 10,000 Residents
SNHPC	4.94
Manchester	7.09
Towns >10K	3.77
Towns <10K	2.44

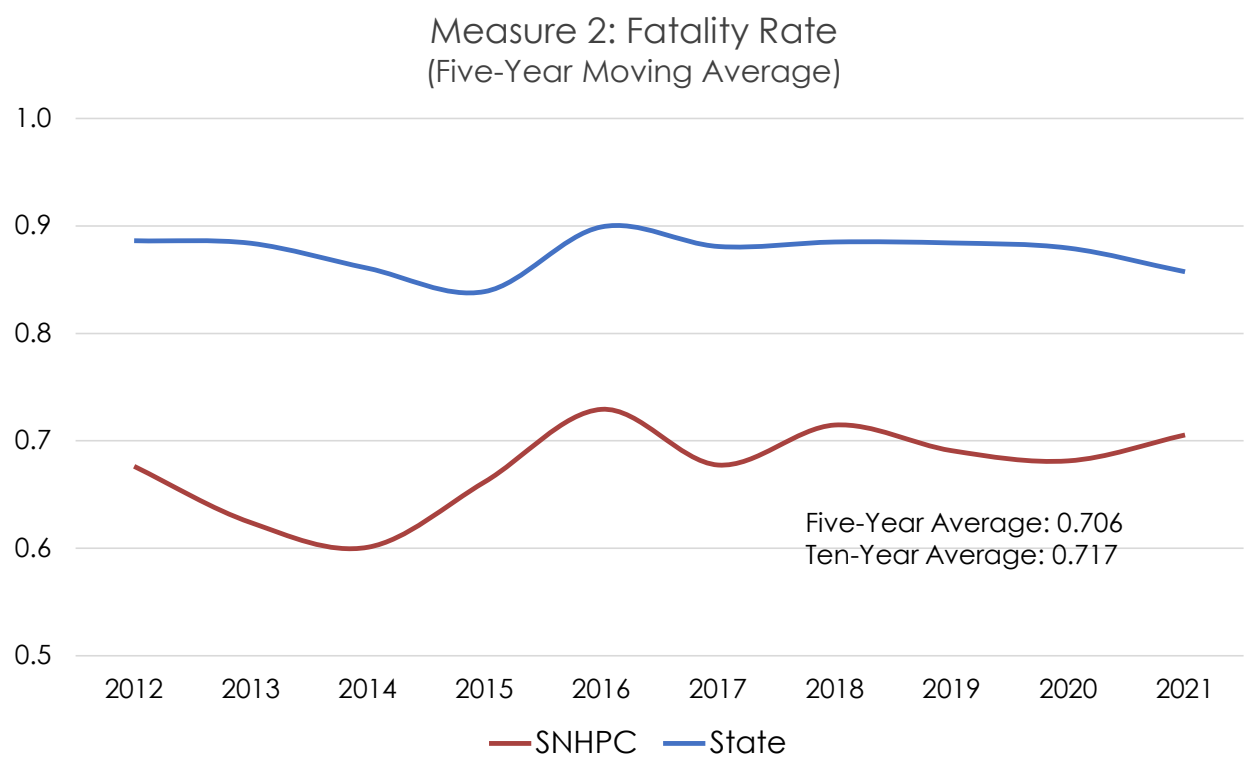
Sources: National Highway Traffic Safety Administration; New Hampshire Department of Safety; New Hampshire Department of Transportation; United States Census Bureau.

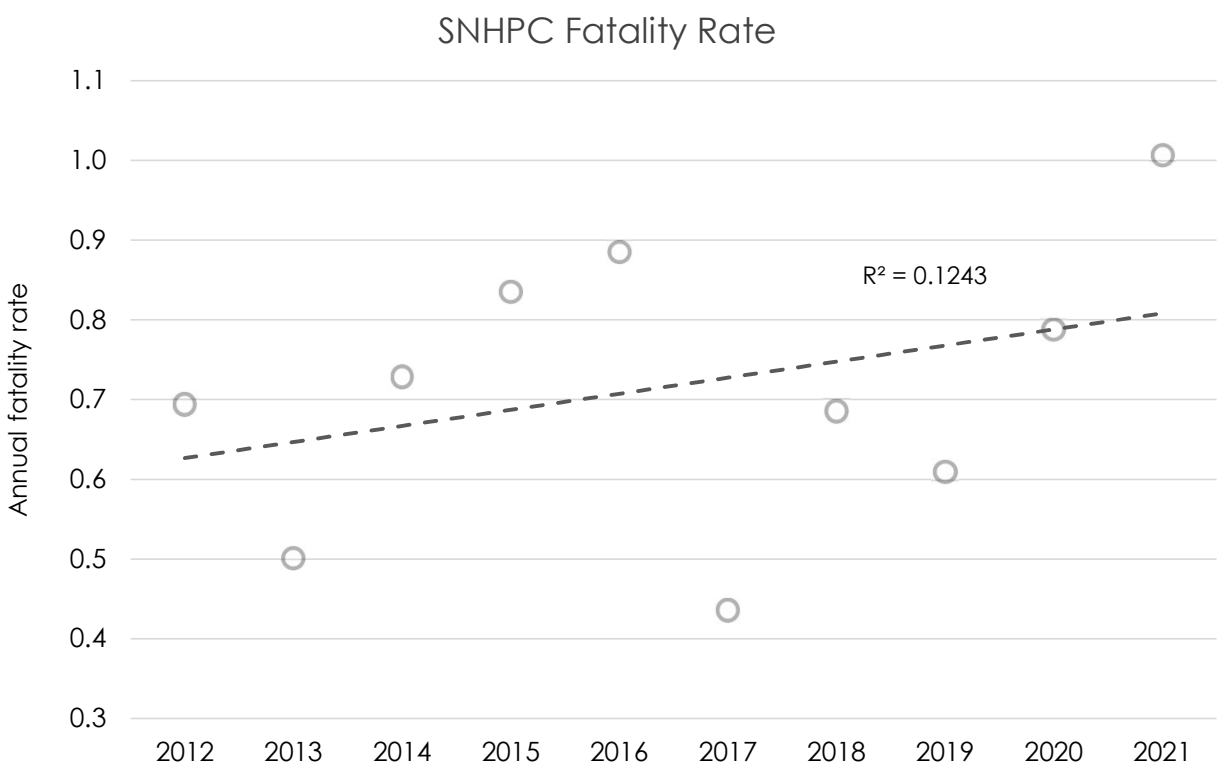
SNHPC Safety Performance Measures (PM1) 2023

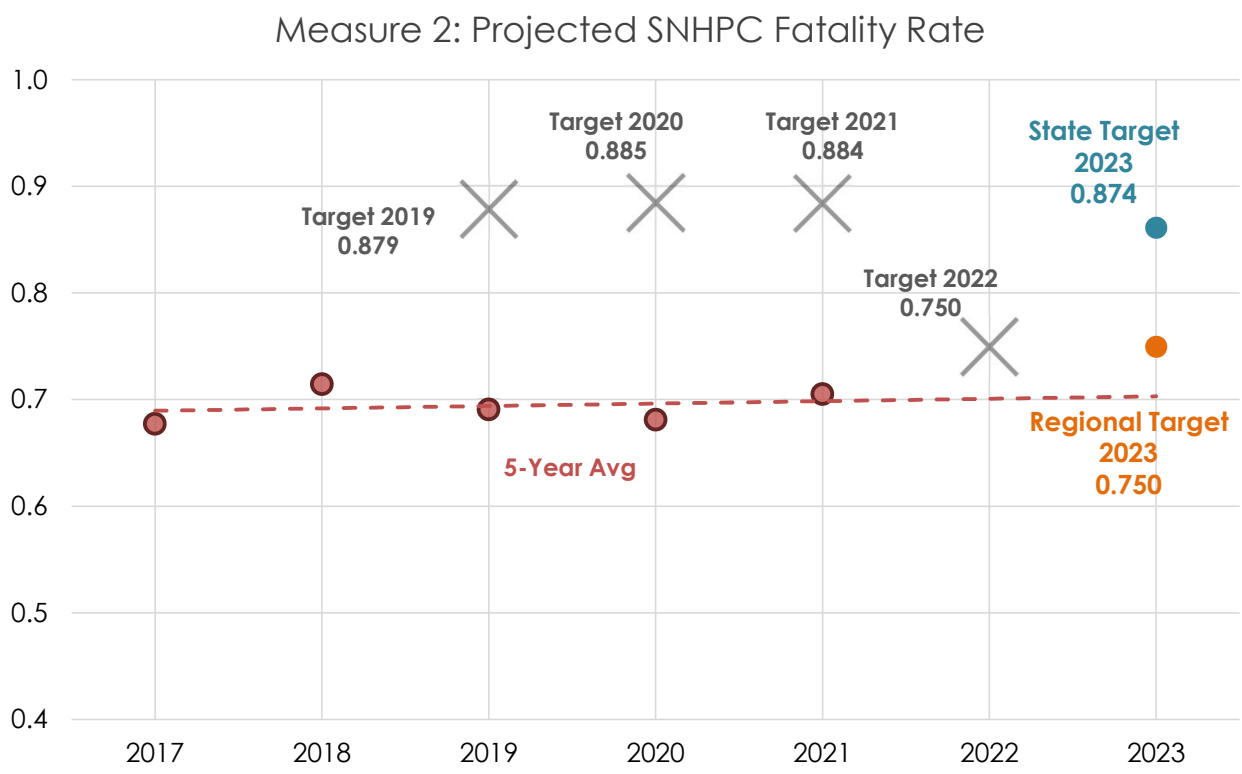

Measure 1: Number of Fatalities
(Five-Year Moving Average)
25
20
15
10
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Five-Year Average: 18.8
Ten-Year Average: 19.0
SNHPC

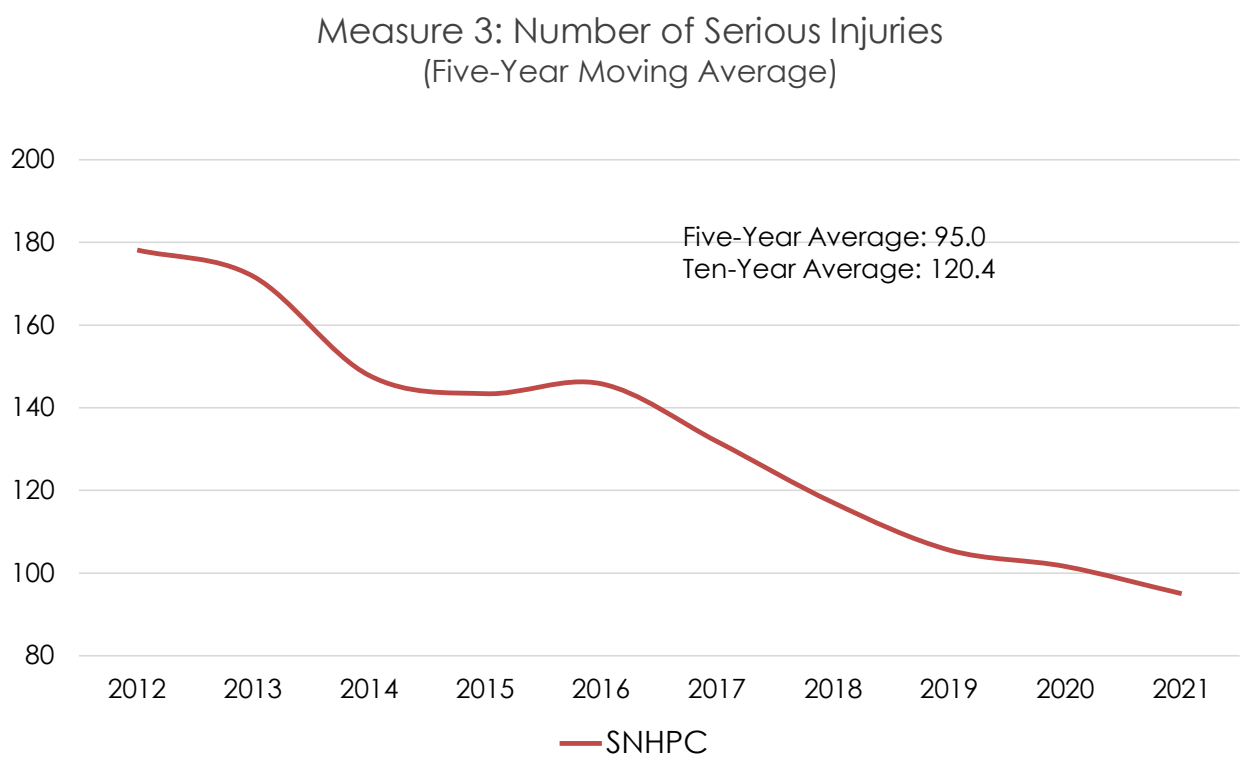

Number of SNHPC Fatalities
Annual # of fatalities
30
25
20
15
10
5
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
R² = 0.1364

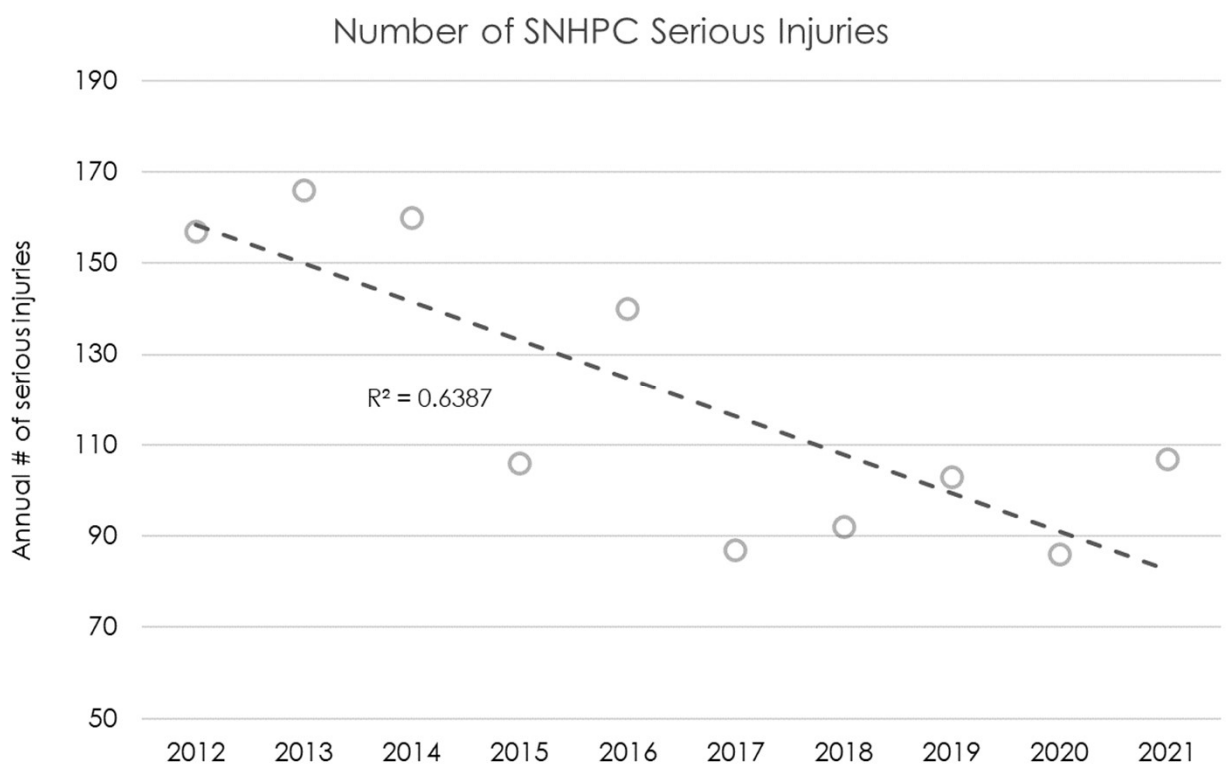

Measure 1: Projected Number of SNHPC Fatalities
25
20
15
10
2017
2018
2019
2020
2021
2022
2023
5-Year Avg
Target 2023
19.1
Target 2019
18.2
Target 2020
18.3
Target 2021
18.2
Target 2022
18.7

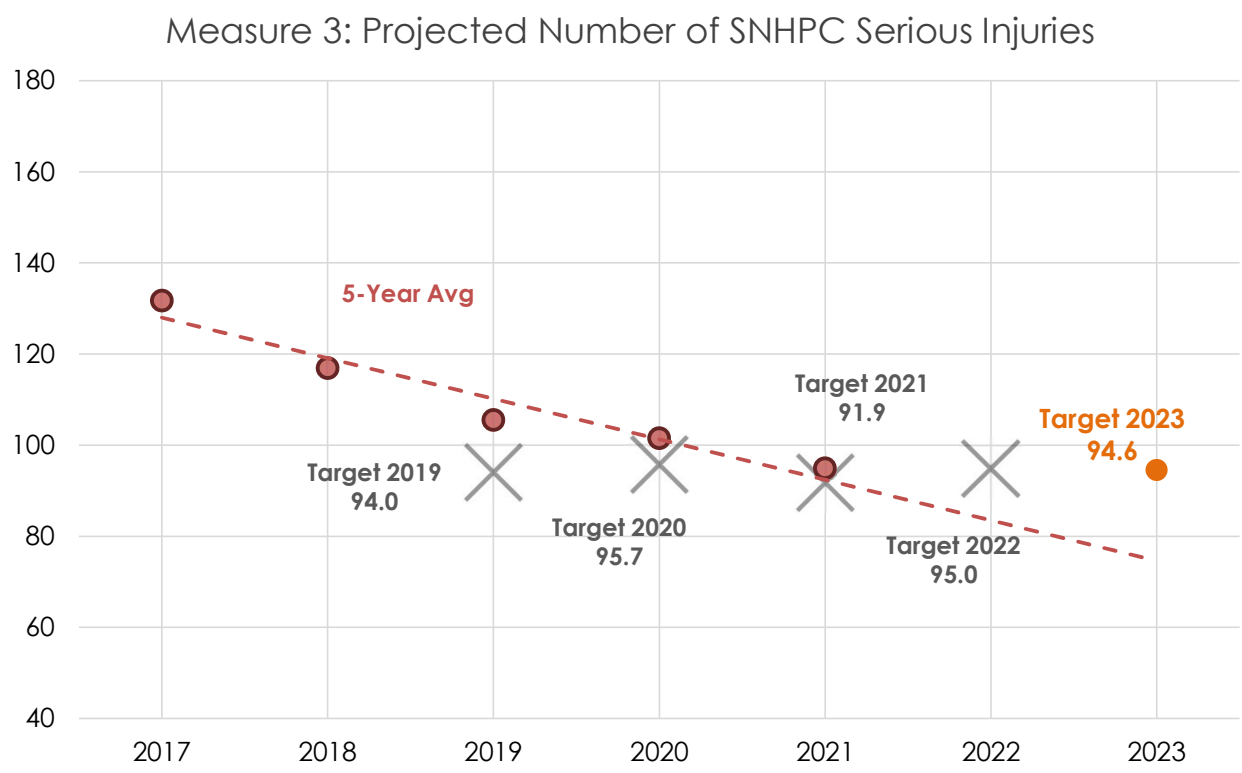

Measure 2: Fatality Rate
(Five-Year Moving Average)
1.0
0.9
0.8
0.7
0.6
0.5
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Five-Year Average: 0.706
Ten-Year Average: 0.717
SNHPC
State

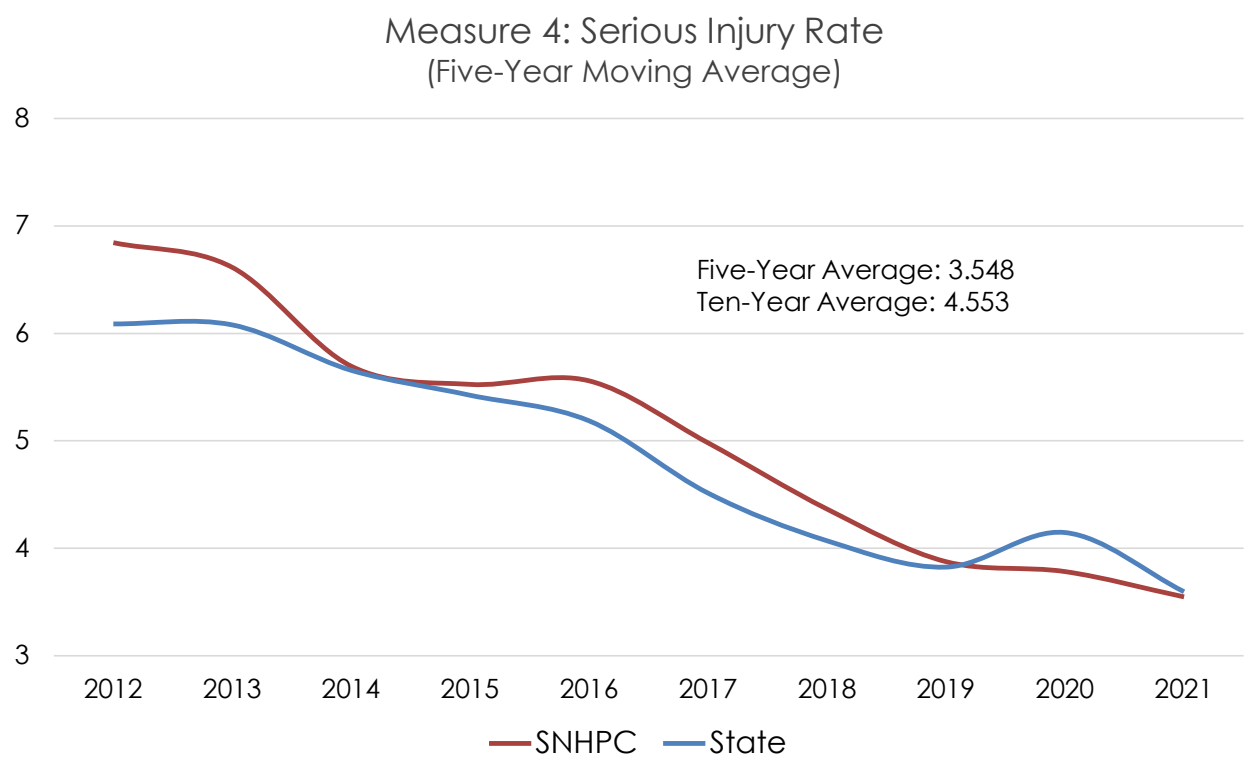

SNHPC Fatality Rate
Annual fatality rate
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
R² = 0.1243

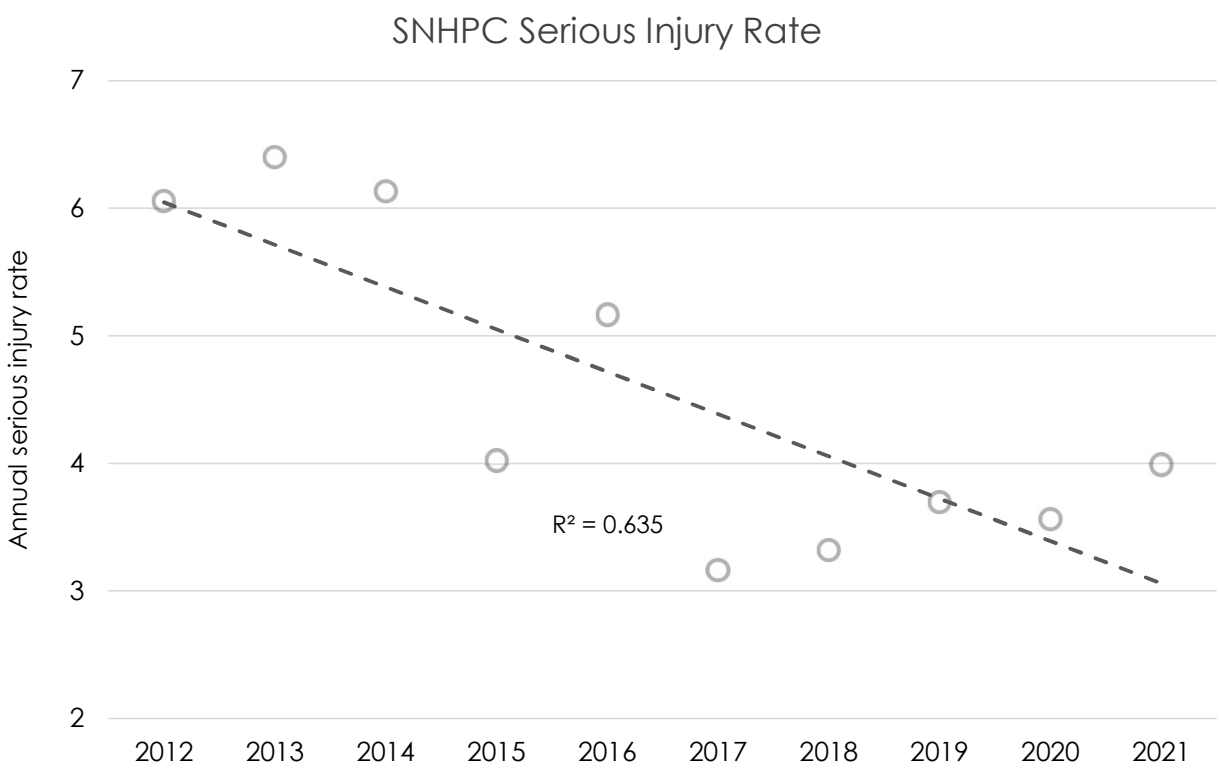

Measure 2: Projected SNHPC Fatality Rate
1.0
0.9
0.8
0.7
0.6
0.5
0.4
2017
2018
2019
2020
2021
2022
2023
Target 2019
0.879
Target 2020
0.885
Target 2021
0.884
Target 2022
0.750
State Target
2023
0.874
Regional Target
2023
0.750
5-Year Avg

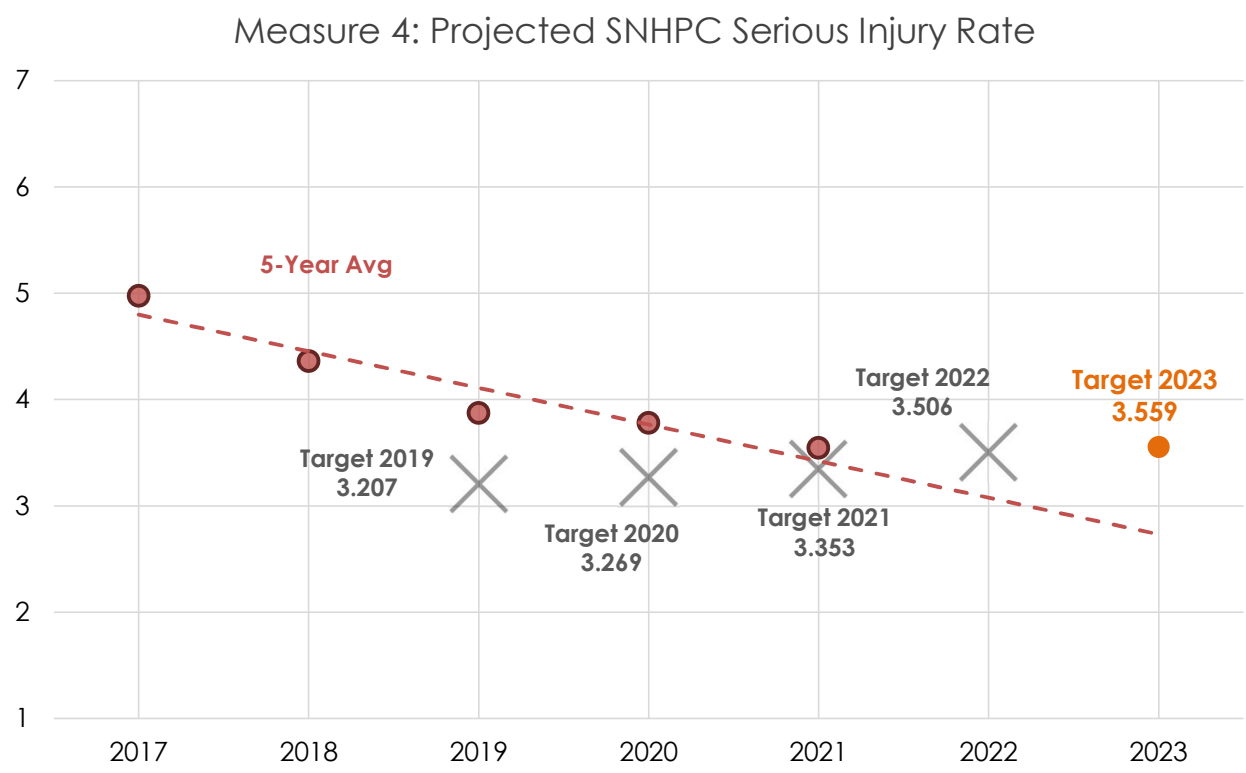

Measure 3: Number of Serious Injuries
(Five-Year Moving Average)
200
180
160
140
120
100
80
Five-Year Average: 95.0
Ten-Year Average: 120.4
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
SNHPC

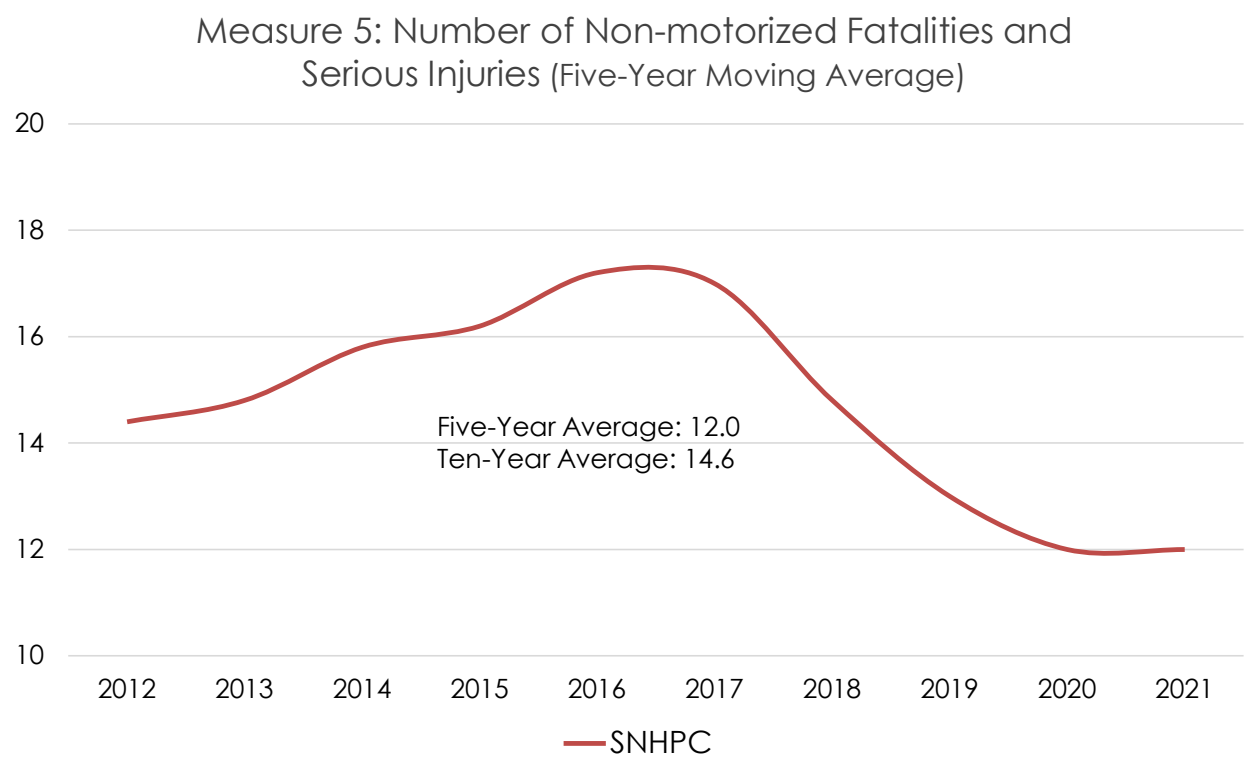

Number of SNHPC Serious Injuries
Annual # of serious injuries
190
170
150
130
110
90
70
50
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
R² = 0.6387

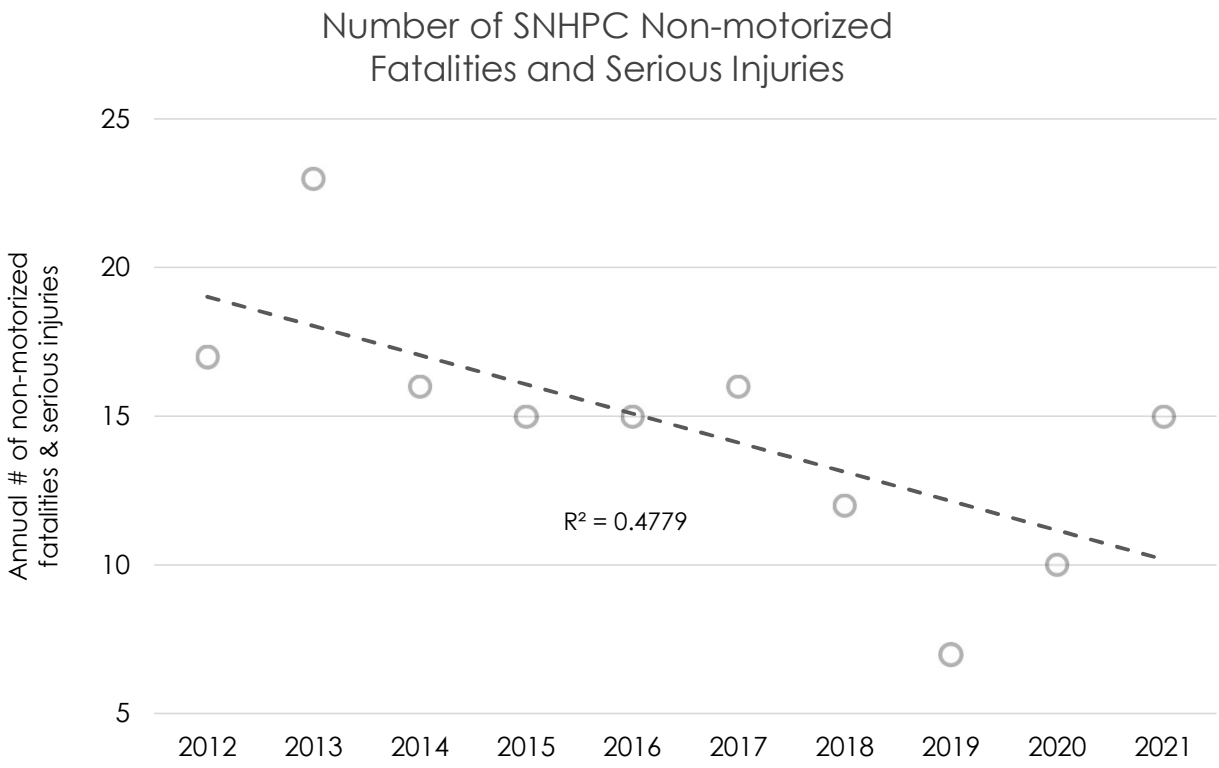

Measure 3: Projected Number of SNHPC Serious Injuries
180
160
140
120
100
80
60
40
2017
2018
2019
2020
2021
2022
2023
5-Year Avg
Target 2019
94.0
Target 2020
95.7
Target 2021
91.9
Target 2022
95.0
Target 2023
94.6

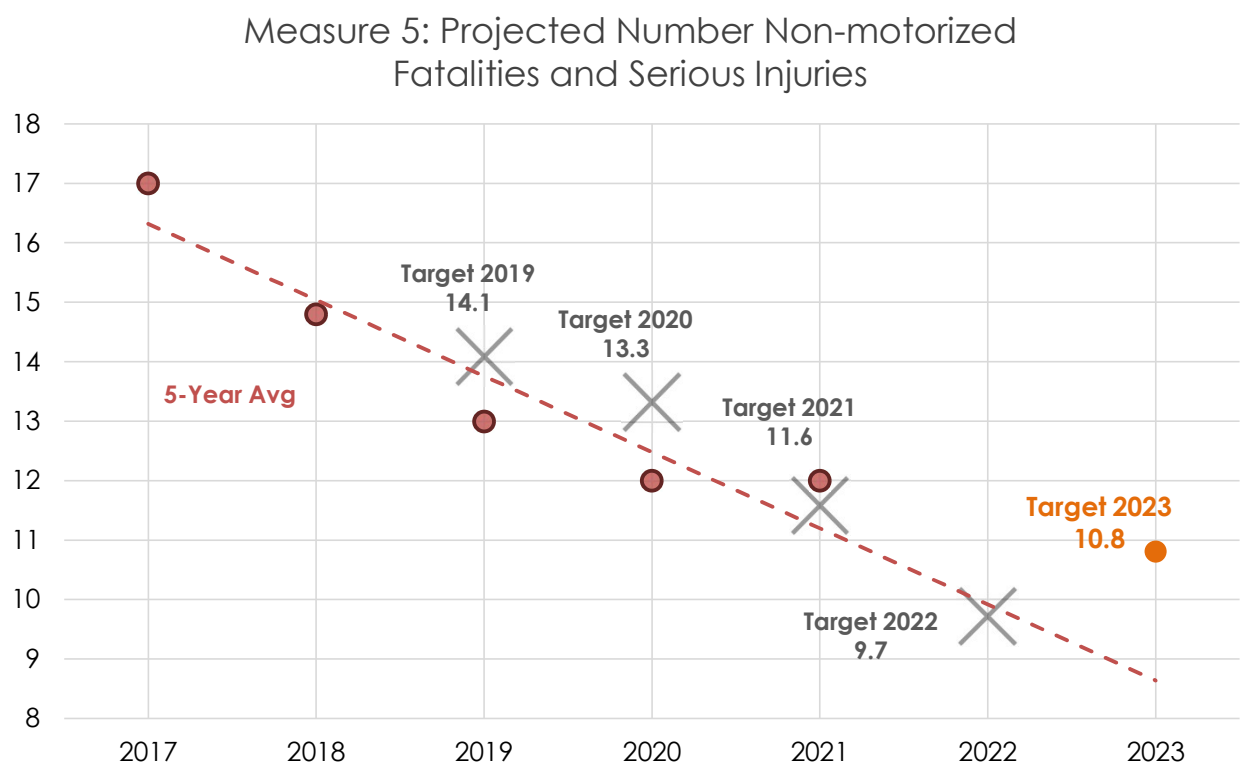

Measure 4: Serious Injury Rate
(Five-Year Moving Average)
8
7
6
5
4
3
Five-Year Average: 3.548
Ten-Year Average: 4.553
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
SNHPC
State


SNHPC Serious Injury Rate
Annual serious injury rate
7
6
5
4
3
2
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
R² = 0.635


Measure 4: Projected SNHPC Serious Injury Rate
7
6
5
4
3
2
1
5-Year Avg
Target 2019
3.207
Target 2020
3.269
Target 2021
3.353
Target 2022
3.506
Target 2023
3.559
2017
2018
2019
2020
2021
2022
2023


Measure 5: Number of Non-motorized Fatalities and Serious Injuries (Five-Year Moving Average)
20
18
16
14
12
10
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Five-Year Average: 12.0
Ten-Year Average: 14.6
SNHPC


Number of SNHPC Non-motorized Fatalities and Serious Injuries
Annual # of non-motorized fatalities & serious injuries
25
20
15
10
5
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
R² = 0.4779


Measure 5: Projected Number Non-motorized Fatalities and Serious Injuries
18
17
16
15
14
13
12
11
10
9
8
2017
2018
2019
2020
2021
2022
2023
5-Year Avg
Target 2019
14.1
Target 2020
13.3
Target 2021
11.6
Target 2022
9.7
Target 2023
10.8

State-level 2023 Safety Performance Targets

Safety Measures	State Five-Year Rolling Average		Trends		State Target
	2016-2020	2017-2021	Recent	Desired	2023 Target
Number of Fatalities	118.0	114.4	↓	↓	115.2
Fatality Rate per 100 Million VMT	0.879	0.857	↓	↓	0.861
Number of Serious Injuries	509.6	472.2	↓	↓	472.7
Serious Injury Rate per 100 Million VMT	4.146	3.596	↓	↓	3.559
Non-Motorized Fatalities and Serious Injuries	48.6	42.8	↓	↓	33.2

2023 Proposed SNHPC Regional Safety Performance Targets

Safety Measures	SNHPC Five-Year Rolling Averages		Trends		State Target	SNHPC Recommended Target
	2016-2020	2017-2021	Recent	Desired	2023	
Number of Fatalities	18.2	18.8	↑	↓	115.2	**Support State Target** (approx. 19 regionally)
Fatality Rate per 100 Million VMT	0.681	0.706	↑	↓	0.861	***Adopt Regional Target:* 0.750**
Number of Serious Injuries	101.6	95.0	↓	↓	472.7	**Support State Target** (approx. 95 regionally)
Serious Injury Rate per 100 Million VMT	3.784	3.548	↓	↓	3.559	**Support State Target**
Non-Motorized Fatalities and Serious Injuries	12.0	12.0	–	↓	33.2	**Support State Target** (approx. 11 regionally)

SNHPC 2023 Safety Performance Targets (Proposed)

Safety Measures	2023 State Target	2023 SNHPC Target	Action
Number of Fatalities	115.2	19.1	Support State Target
Fatality Rate per 100 Million VMT	0.861	0.750	Regional Target
Number of Serious Injuries	472.7	94.6	Support State Target
Serious Injury Rate per 100 Million VMT	3.559	3.559	Support State Target
Non-Motorized Fatalities and Serious Injuries	33.2	10.8	Support State Target

Carl Eppich
Principal
Transportation
Planner
ceppich@snhpc.org

Zachary Swick
Senior GIS Analyst
zswick@snhpc.org

438 Dubuque St
Manchester, NH
03102
(603)669-4664

Questions?

SNHPC