PM1: SAFETY PERFORMANCE MEASURES SNHPC 2024

Southern New Hampshire Planning Commission
Technical Advisory Committee
January 18, 2024

David Tilton — SNHPC — Regional 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 2024 SNHPC Recommends:

Support State Targets FOR 2024

EXCEPT

That SNHPC adopt A REGIONAL target for the Fatality Rate.

Some Context:
National Crash Fatalities & an International Perspective

2022 SNHPC Fatalities and Serious Injuries

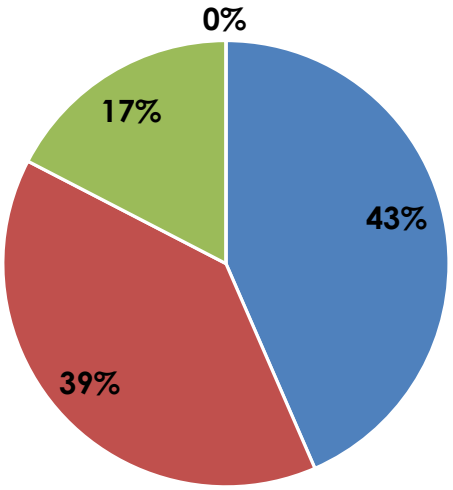
Fatal crashes cost the SNHPC Region over **$41 million** in 2022. All crashes cost over **$245 million**.

Include wage and productivity losses, medical expenses, administrative expenses, motor-vehicle damage, and employers' uninsured costs.

Sources: Federal Reserve Bank of St. Louis; National Safety Council.

Fatalities

(n=23)



Serious Injuries

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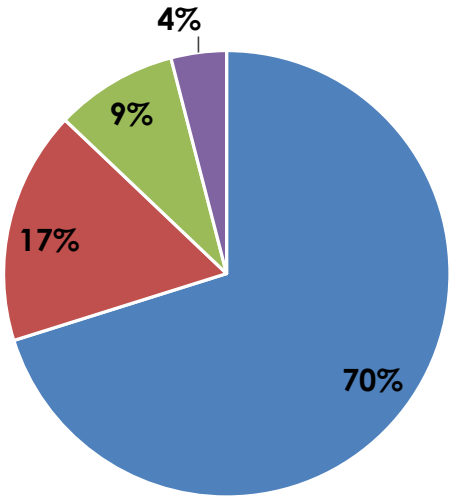

Vehicle Motorcycle Pedestrian Bicycle

Sources: New Hampshire Department of Safety; New Hampshire Department of Transportation.

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U.S.

U.S. Traffic Deaths Surged to a 16-Yea High in 2021

Nearly 43,000 people died on the road last year as traffic rebounds f early days of the pandemic

AP

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U.S. NEWS

New cars are supposed to be getting safer. So why are fatalities on the rise?

FREAKONOMICS

THE HIDDEN SIDE OF EVERYTHING

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EPISODE 548

Why Is the U.S. So Good at Killing Pedestrians?

Jul 5, 2023
By Stephen J. Dubner
Produced by Alina Kulman

Comments

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Actually, the reasons are pretty clear. The harder question is: Will we ever care enough to stop?

00:00 | 44:57

The New York Times

TheUpshot

The Exceptionally American Problem of Rising Roadway Deaths

Why other rich nations have surpassed the U.S. in protecting pedestrians, cyclists and motorists.

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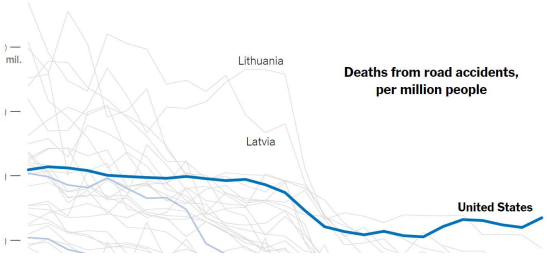

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NATIONAL

U.S. pedestrian deaths reach a 40-year high

June 26, 2023 · 5:00 AM ET

Juliana Kim

Citylab | Transportation

US Traffic Safety Is Getting Worse, While Other Countries Improve

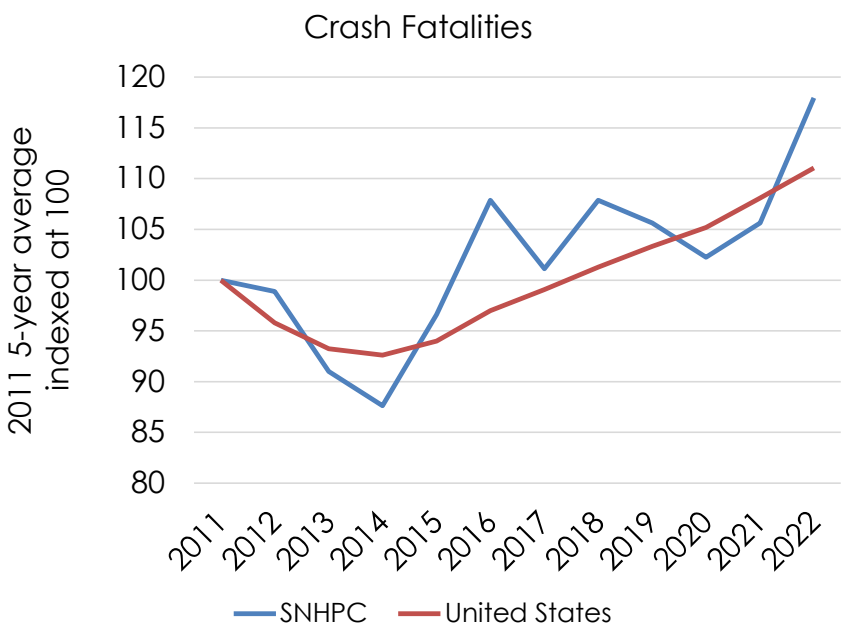
The rising rate of road deaths in the US continues to defy global trends. Here's what traffic planners in other nations could teach their American counterparts.

By David Zipper

November 3, 2022 at 9:00 AM EDT

Save

The five-year average number of fatalities in the SNHPC region has increased **35%** from a low in 2014, and the national average has increased by **20%**.

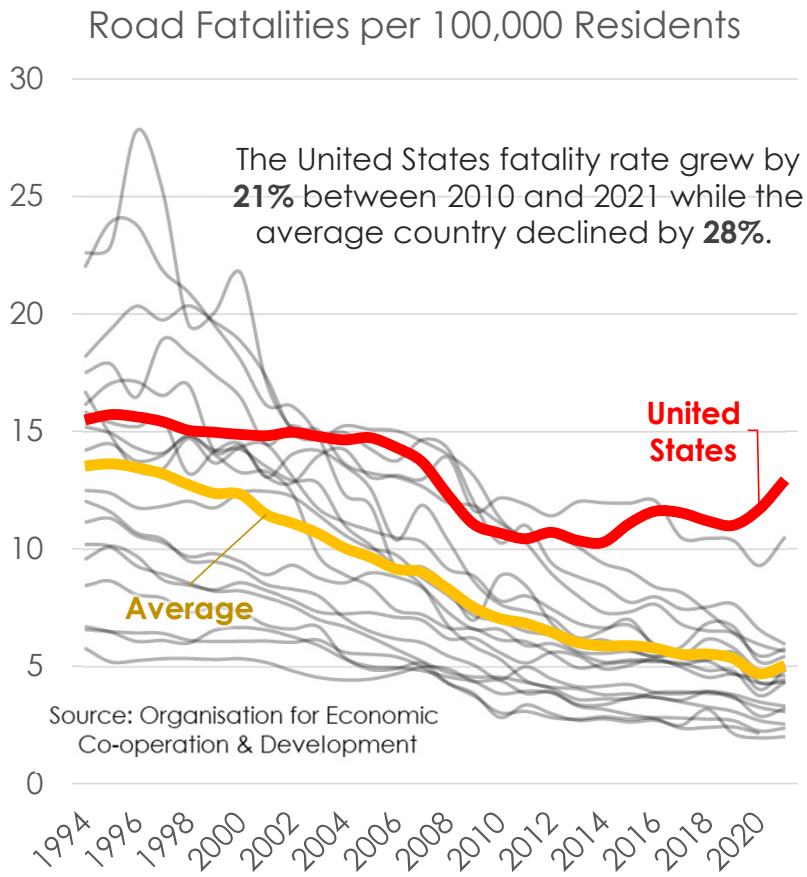


Source: National Highway Traffic Safety Administration

	Road Fatalities per 100,000 Residents						
	1995	2000	2005	2010	2015	2020	2021
Australia	10.1	8.6	7.3	5.6	5.1	4.3	4.3
Belgium	14.8	14.3	10.8	7.8	6.8	4.3	4.5
Canada	11.3	9.5	9.0	6.6	5.3	4.6	4.6
Chile	17.0	14.4	13.1	12.2	12.0	9.3	10.5
Czech Republic	15.4	14.5	12.6	7.7	7.0	4.8	5.1
France	14.9	13.3	8.4	6.1	5.2	3.8	4.3
Germany	11.6	9.1	6.5	4.5	4.2	3.3	3.1
Greece	19.3	18.9	15.1	11.3	7.3	5.5	5.8
Italy	12.4	12.4	10.0	6.9	5.6	4.0	4.9
Japan	10.1	8.2	6.3	4.6	3.8	2.7	2.6
Mexico	5.2	5.3	4.5	4.4	3.0	2.2	
Netherlands	8.6	7.3	5.0	3.9	3.7	3.5	3.3
Poland	17.9	16.5	14.3	10.3	7.7	6.6	5.9
Portugal	23.9	18.0	11.9	8.9	5.7	5.2	5.4
South Korea	22.9	21.8	13.2	11.1	9.1	5.9	5.6
Spain	14.5	14.2	10.2	5.3	3.6	2.9	3.2
Sweden	6.5	6.7	4.9	2.8	2.6	2.0	2.0
United Kingdom	6.5	6.1	5.5	3.0	2.8	2.3	2.4
United States	15.7	14.9	14.7	10.7	11.1	11.7	12.9
Average	13.6	12.3	9.6	7.0	5.9	4.7	5.0

Organisation for Economic Co-operation & Development countries with at least 10 million residents & mostly complete data.

Source: Organisation for Economic Co-operation & Development



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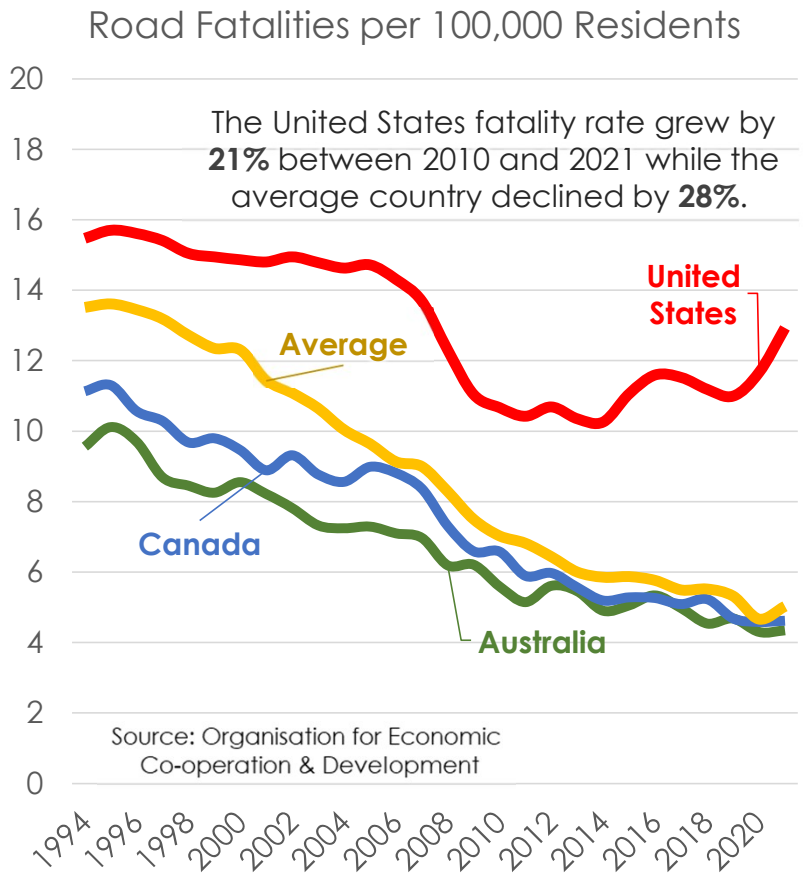
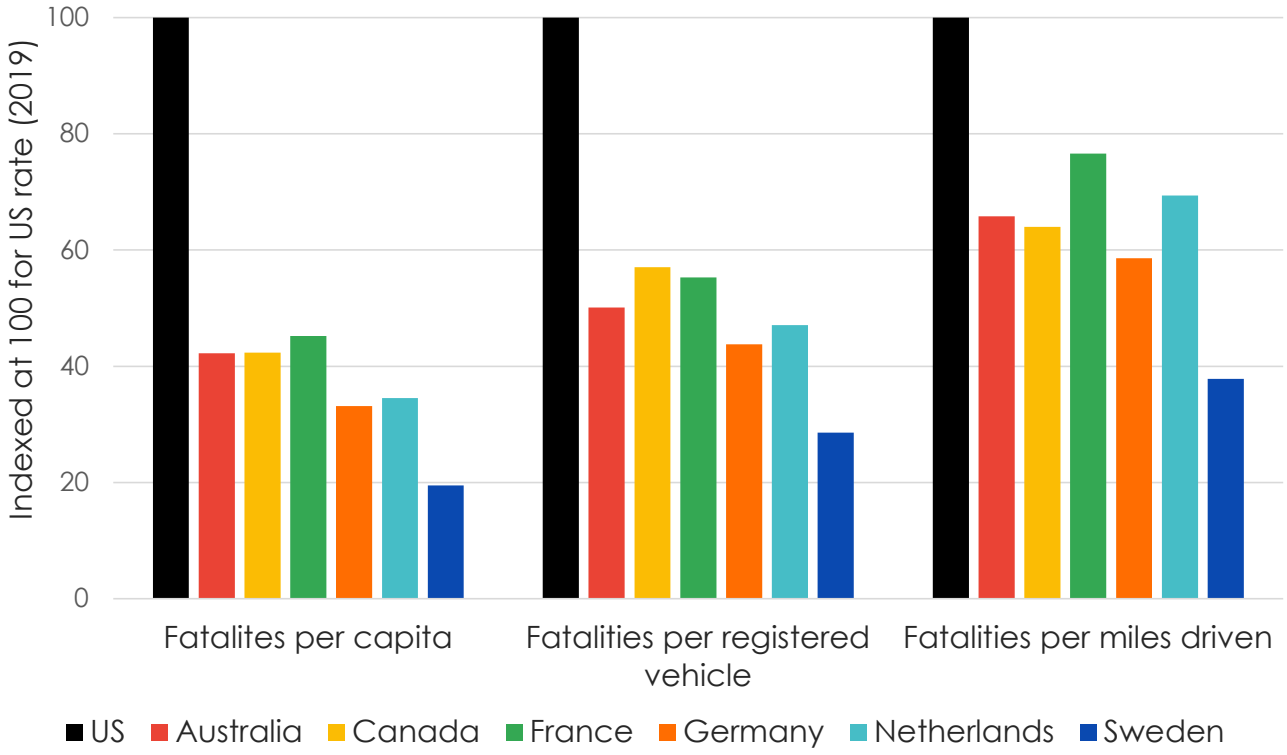
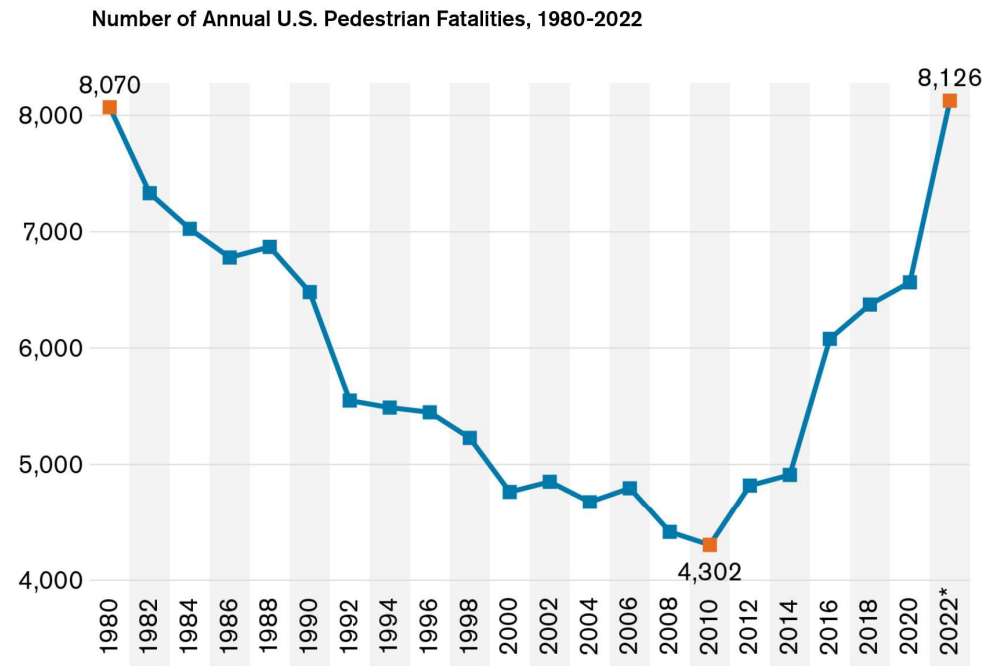




Yellman, M. & Sauber-Schatz, E. 2022. "Motor Vehicle Crash Deaths – United States and 28 Other High-Income Countries, 2015 and 2019." *Morbidity and Mortality Weekly Reports*, 71: 837-843

Between 2010 and 2021pedestrian fatalities increased more than **three times** faster than all other crash fatalities.

Governors Highway Safety Association



*Projected
Sources: FARS and GHSA analysis of SHSO data

"The crisis of pedestrian fatalities on U.S. roads cannot be solved in isolation. It is a result of decades of emphasis on motor vehicle mobility and access, at the expense of all other modes. This emphasis causes negative outcomes, including vulnerable road user deaths and serious injuries, worsening air quality, inequitable access to opportunity, and low-density, sprawling development patterns."

Federal Highway Administration, 2023, *Improving Pedestrian Safety on Urban Arterials: Learning from Australasia*

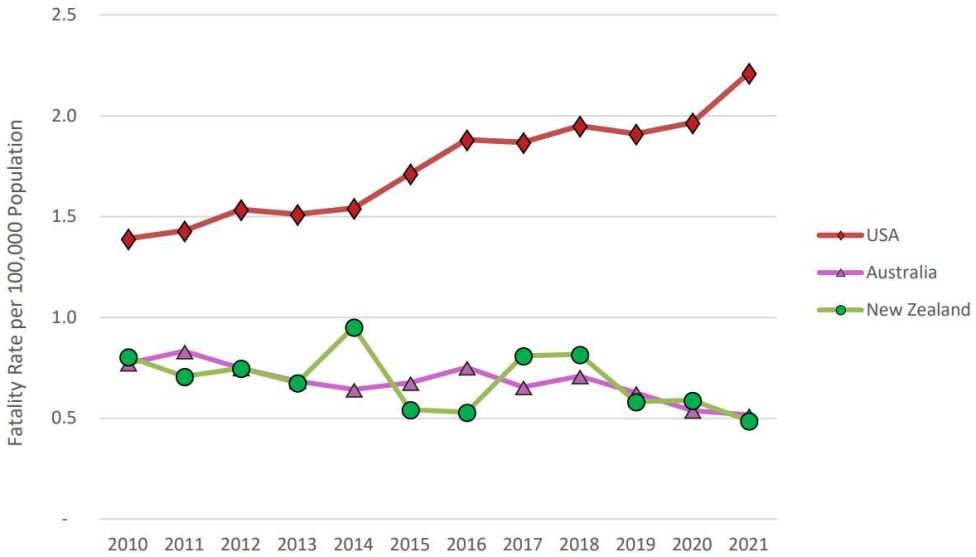
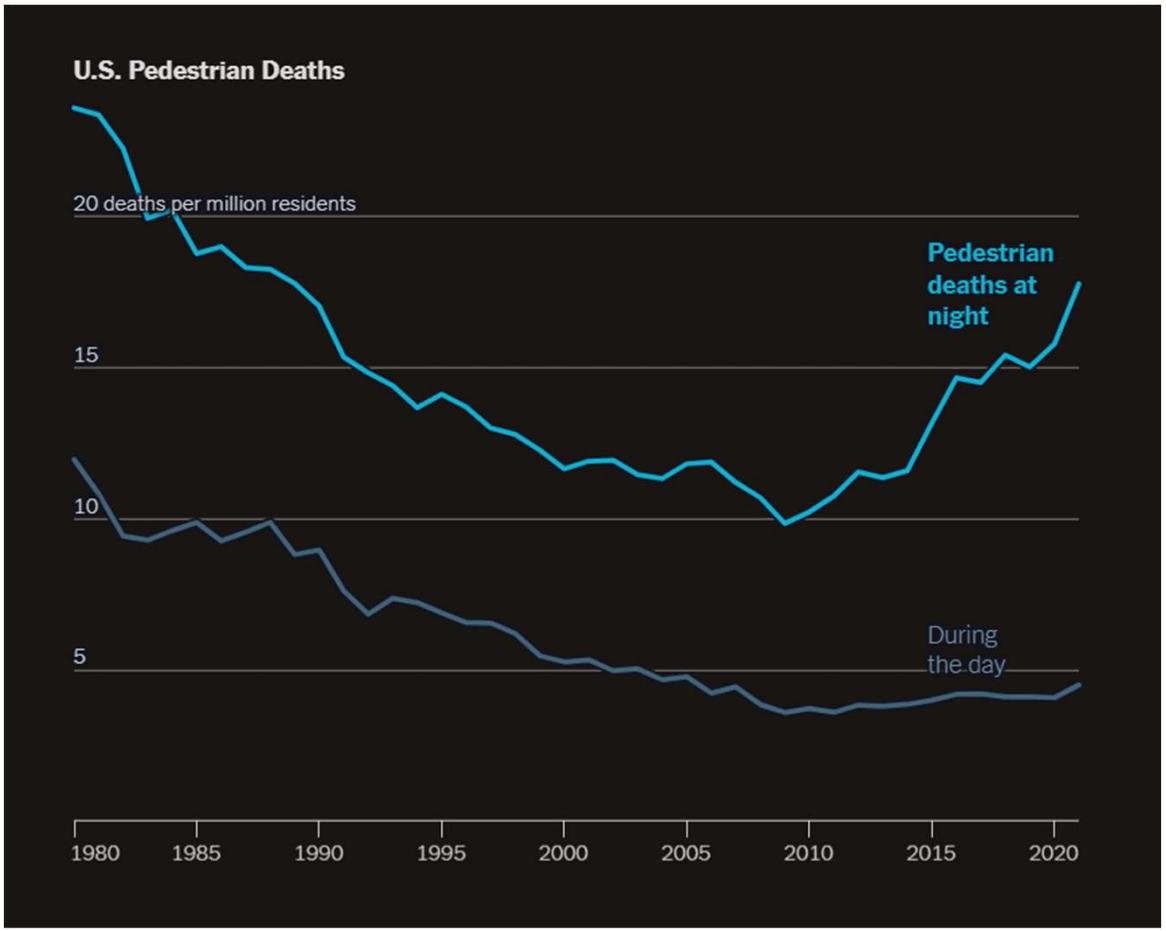
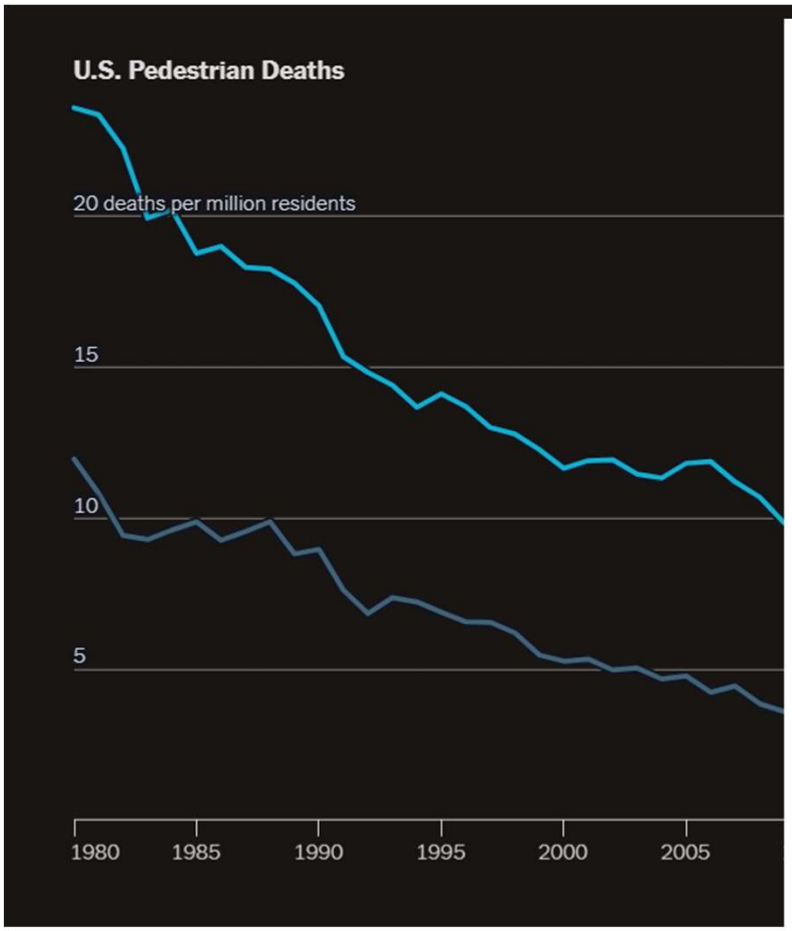
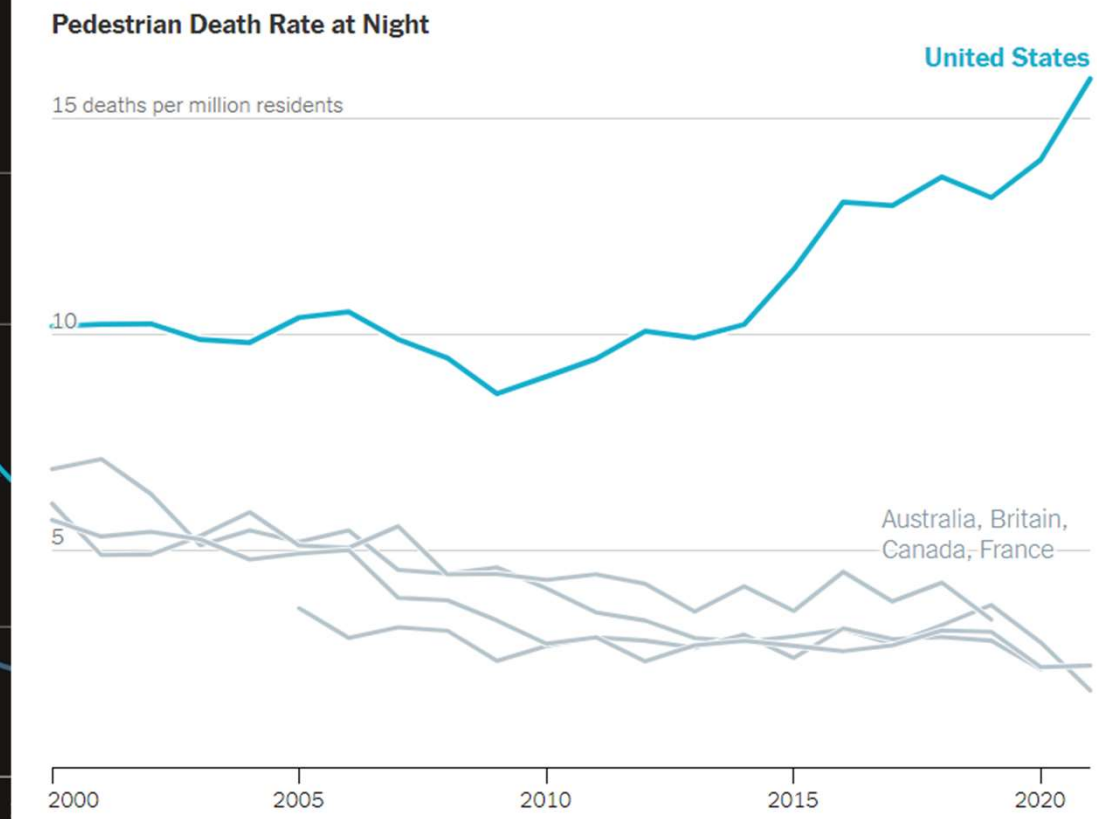


Figure 2: Pedestrian fatality rate per 100,000 population 2010 – 2021
Source: FHWA; Data: (5) (6) (7) (8) (9) (10)



Badger, Emily et al. December 11, 2023. "Why Are So Many American Pedestrians Dying at Night?" *The New York Times, The Upshot*.





To allow for comparison between countries, nighttime is defined as 7 p.m. to 7 a.m. local time. Source: New York Times analysis of government fatality data in the U.S., Australia, Britain, Canada and France.

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U.S. Pedestrian Deaths

20 deaths per million residents

"Just 1 percent of all new passenger vehicles sold this year in the U.S. had manual transmissions, according to the online car-shopping resource Edmunds. In Europe, manual transmissions are declining in popularity…[b]ut they still make up about 70 to 75 percent of cars on the road…"

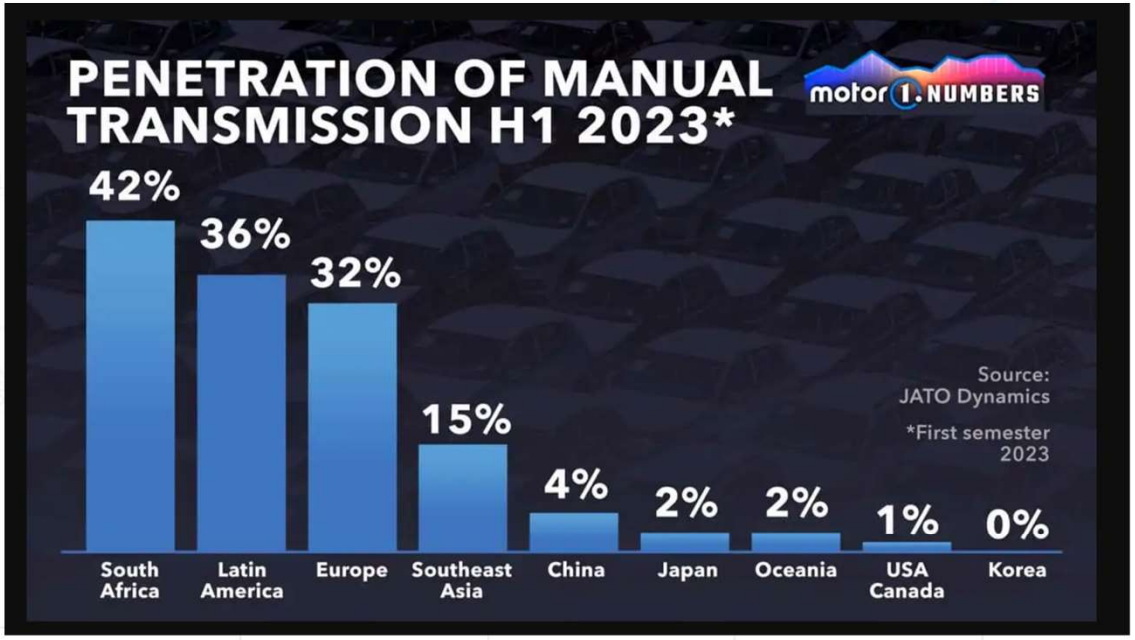
The Upshot

1980 1985 1990 1995 2000 2005

Pedestrian Death Rate at Night

United States

15 deaths per million residents



Sources: JATO Dynamics; Motor1.com.

2000 2005 2010

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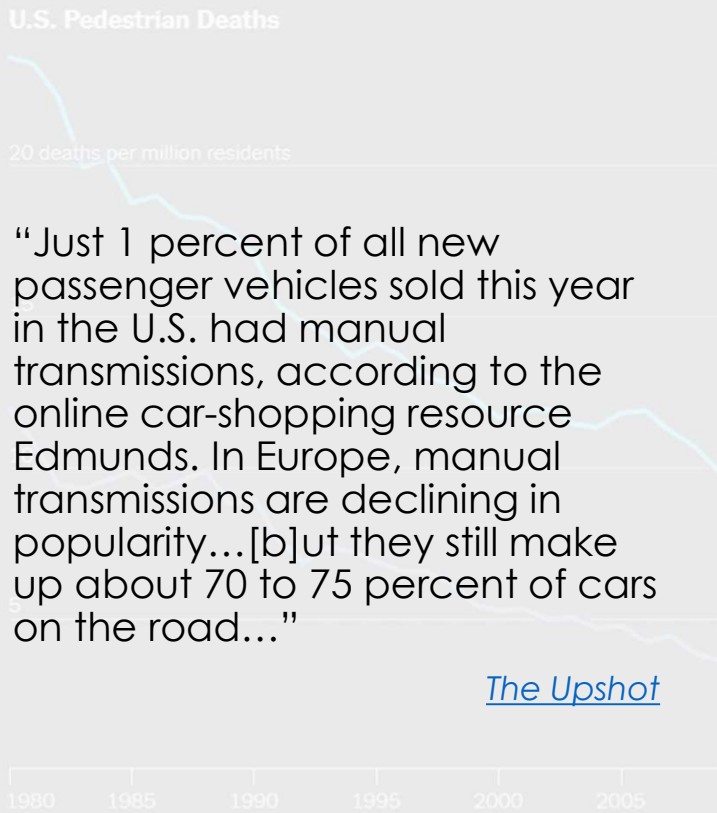

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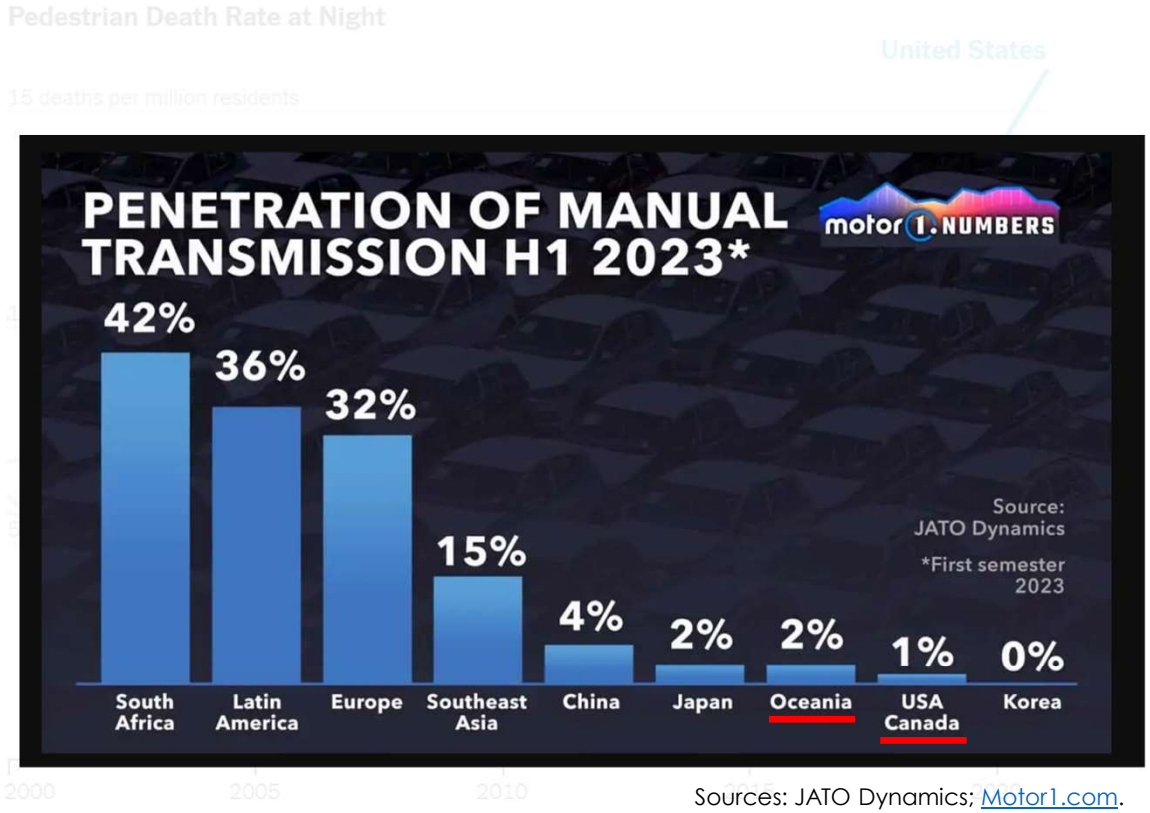

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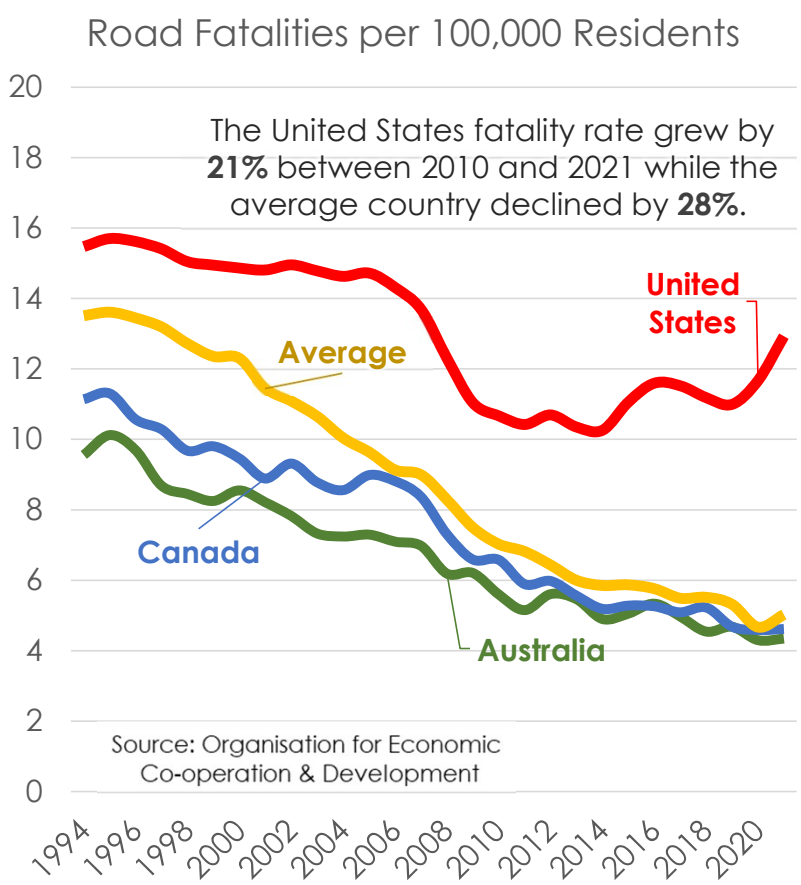

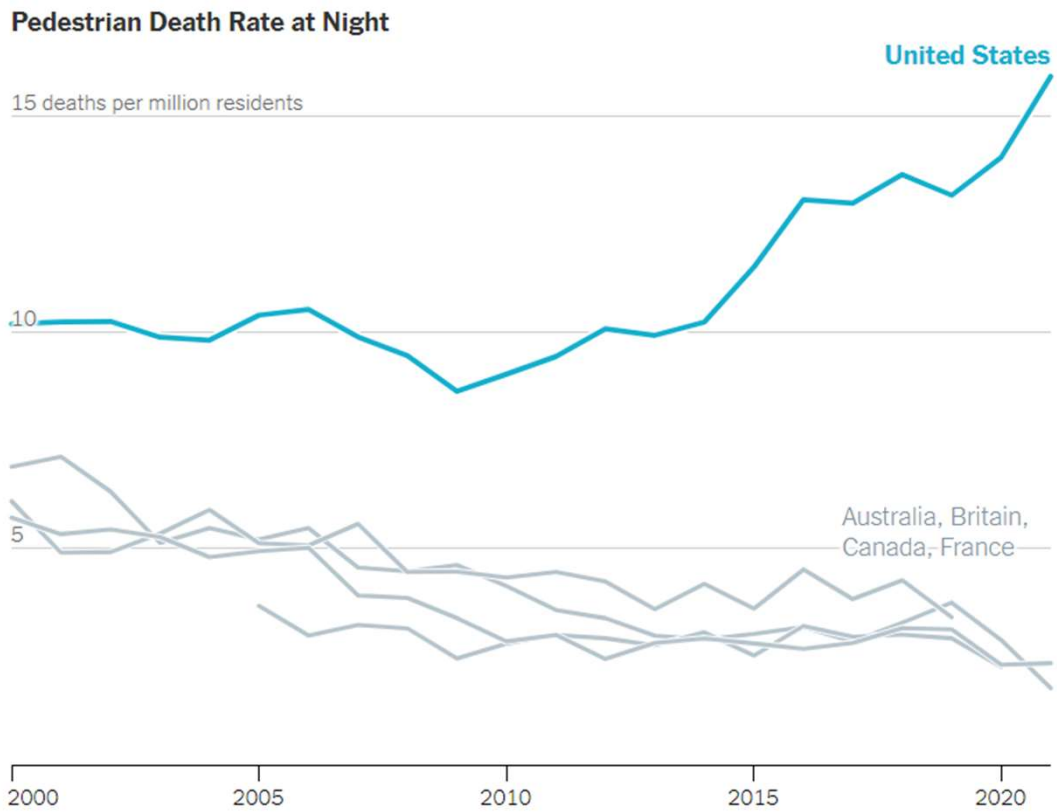

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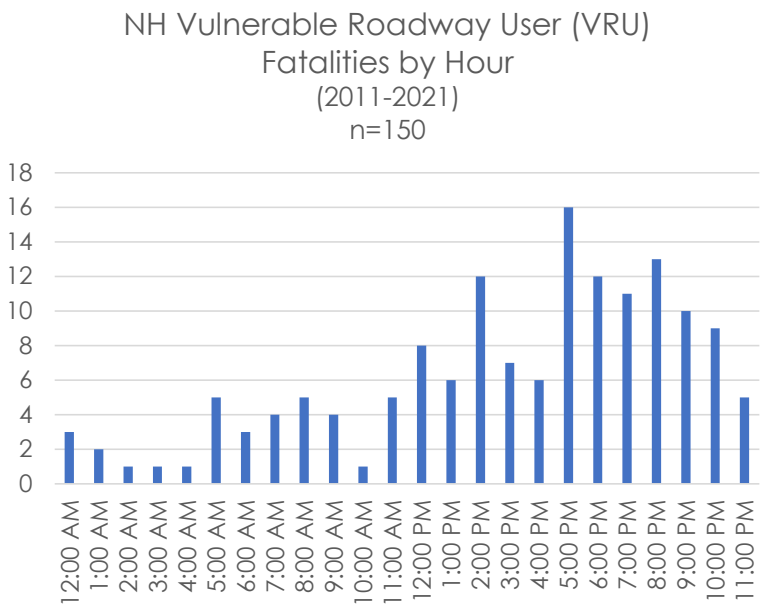
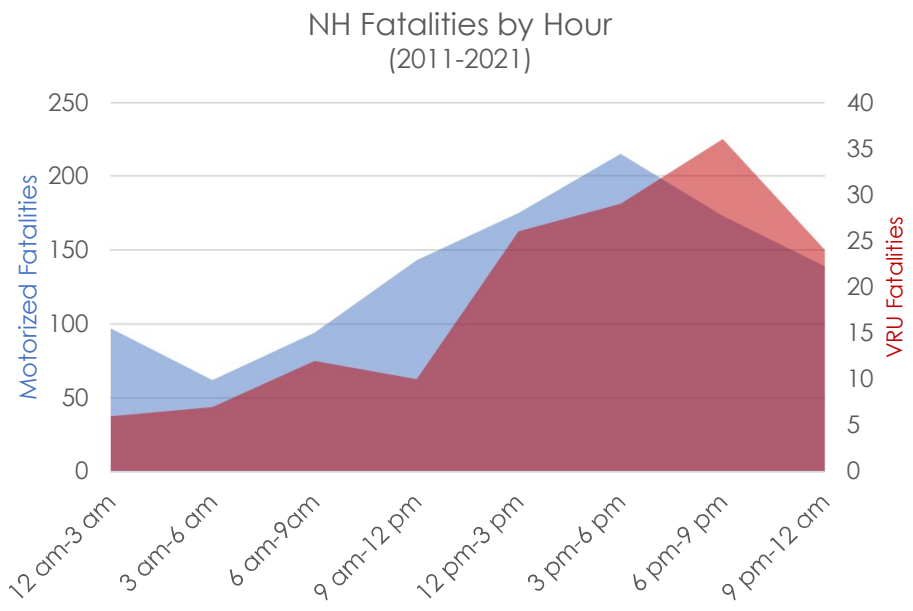
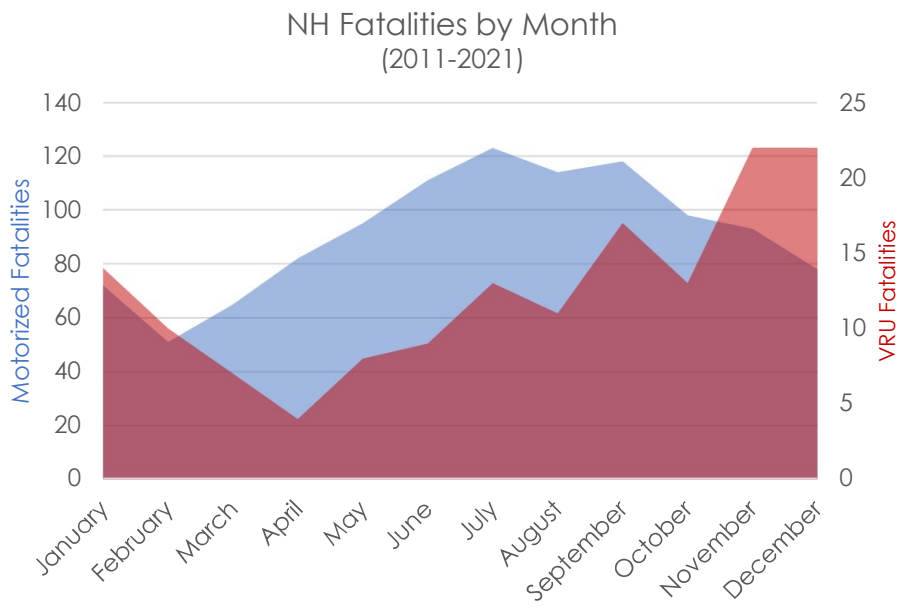




Source: National Highway Traffic Safety Administration



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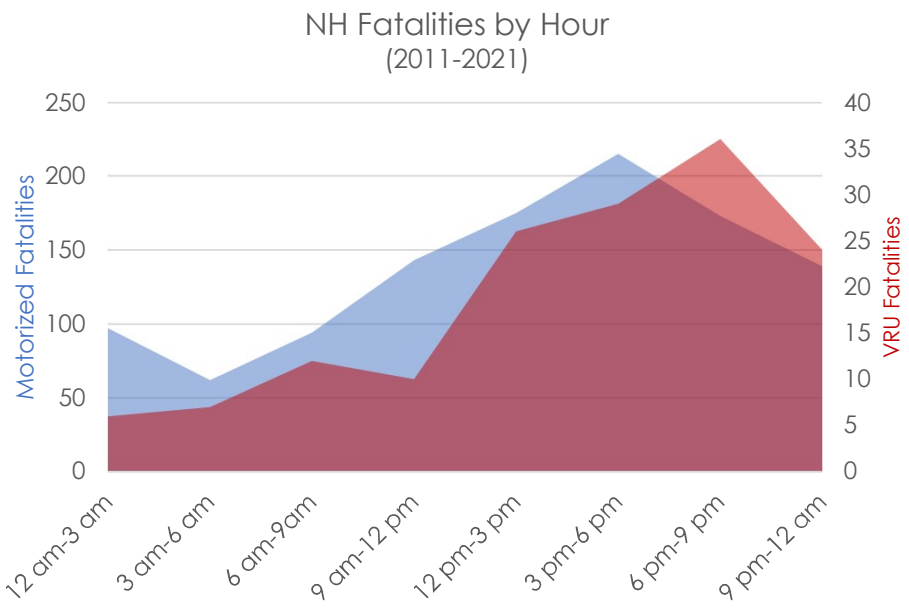
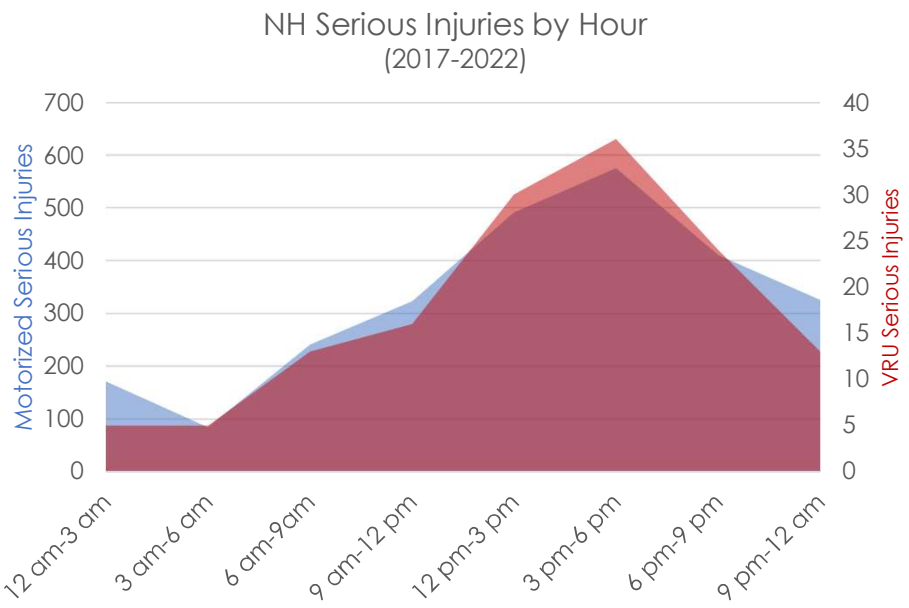
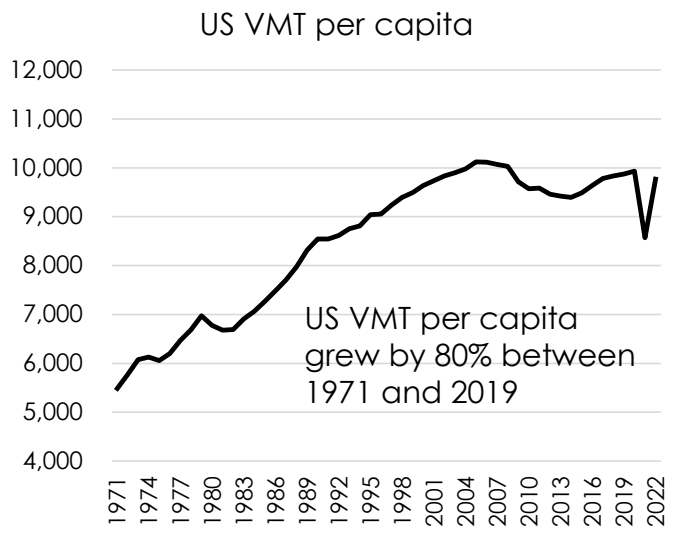
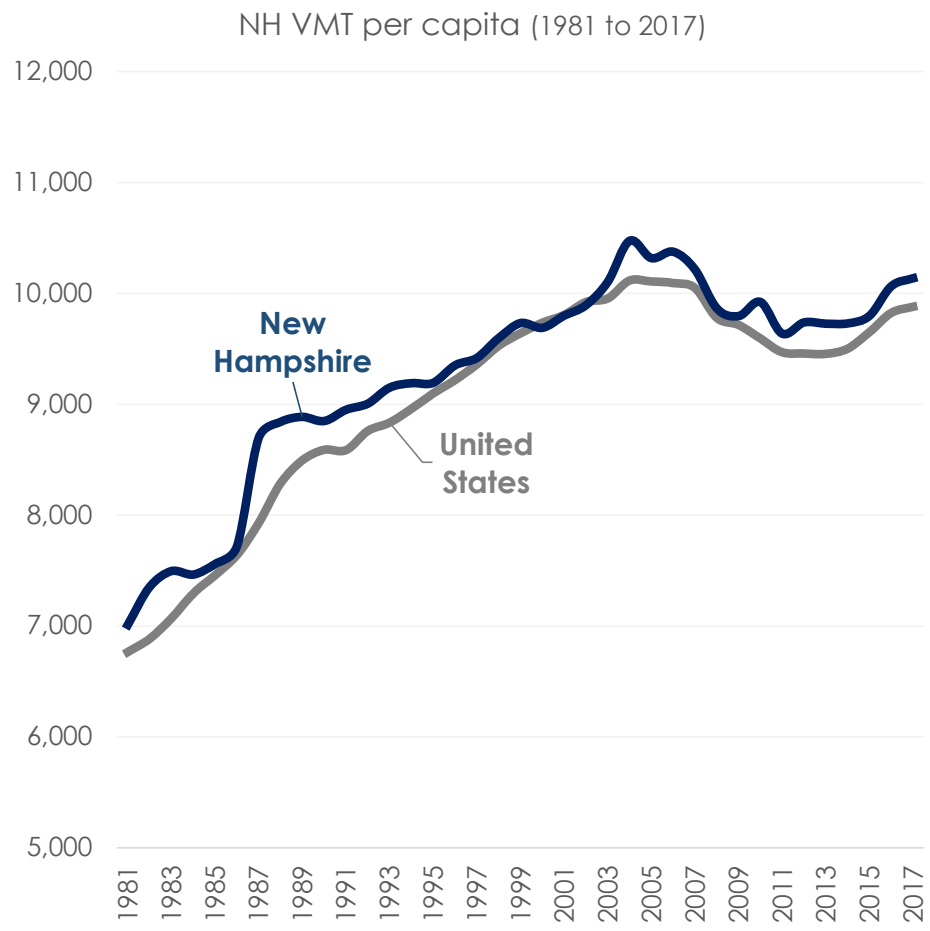




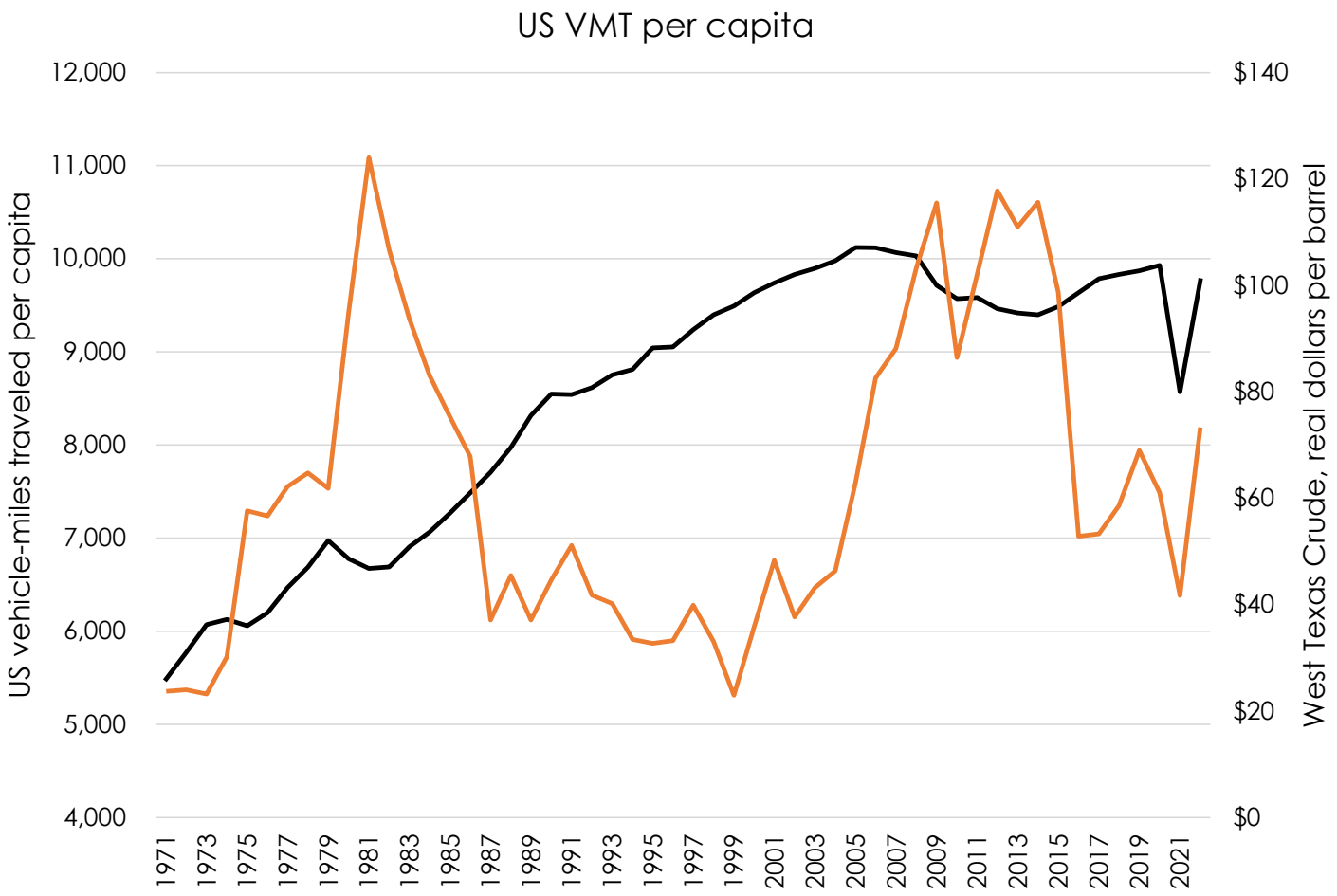
Sources: National Highway Traffic Safety Administration; New Hampshire Department of Safety; New Hampshire Department of Transportation.



Sources: Federal Highway Administration; Federal Reserve Bank of St. Louis; US Bureau of Economic Analysis; US Department of Energy.



Source: Eno Center for Transportation



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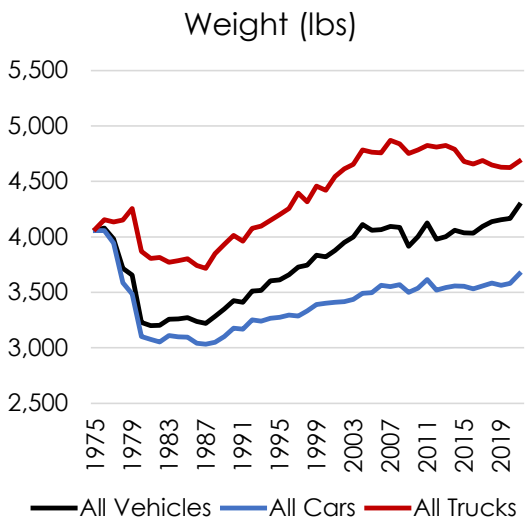
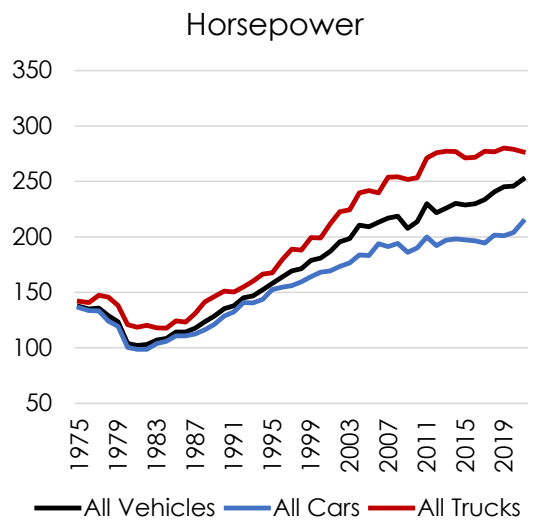
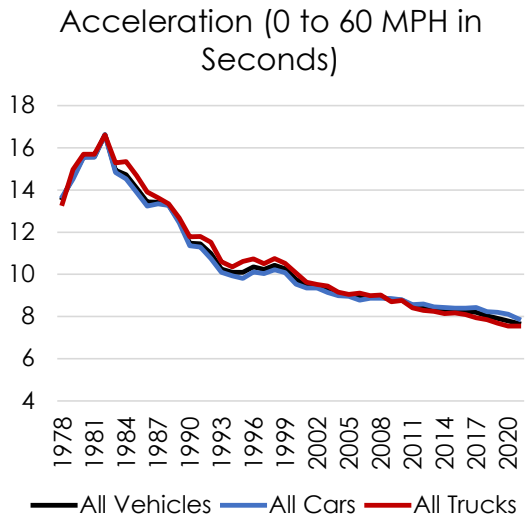
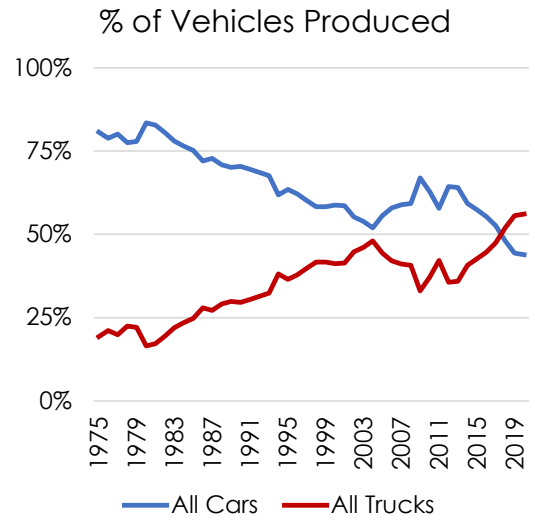
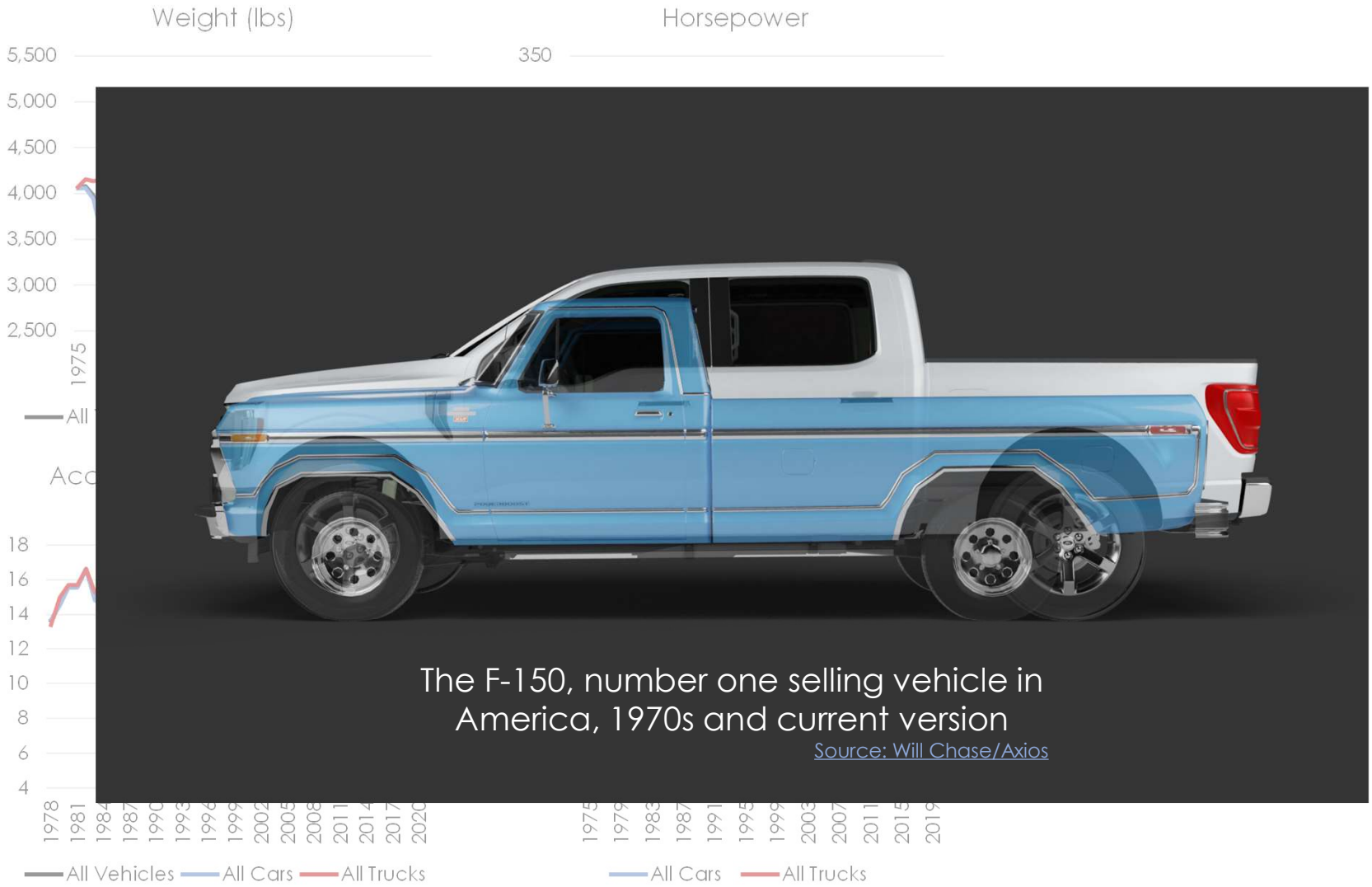








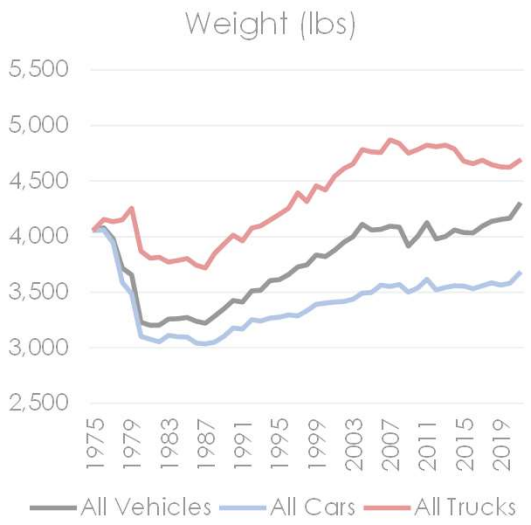
Source: US Environmental Protection Agency

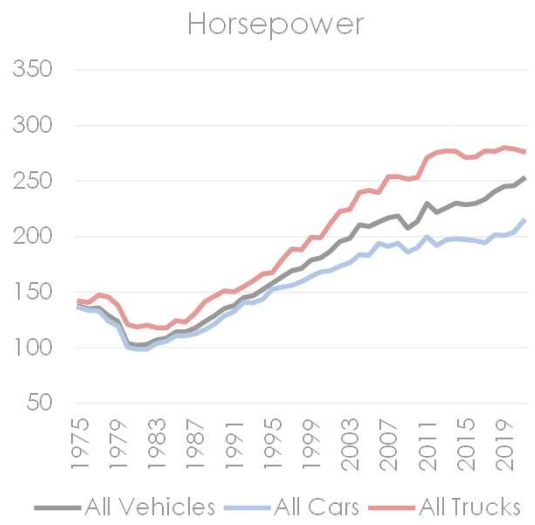


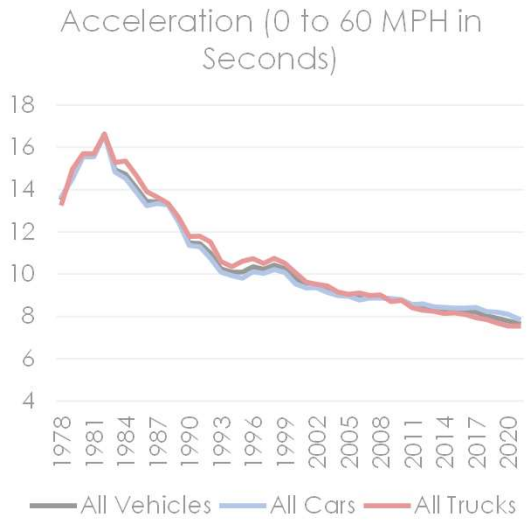
The F-150, number one selling vehicle in America, 1970s and current version

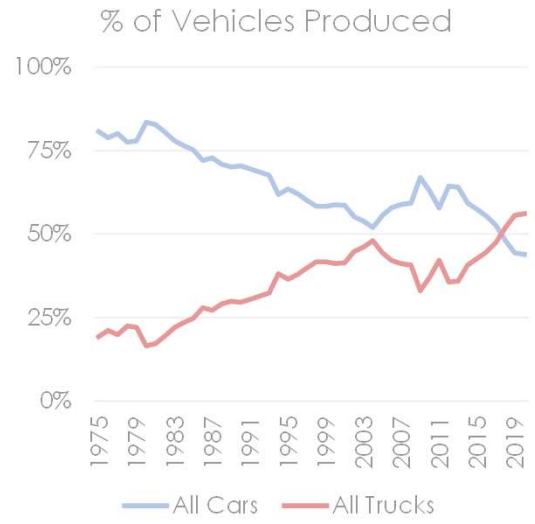
Source: Will Chase/Axios

Source: US Environmental Protection Agency









Source: US Environmental Protection Agency

- In crashes involving two vehicles, a vehicle that is a **1,000 pounds** heavier is **40-50%** more likely to kill the occupant of the other.
  - The Review of Economic Studies
- An occupant in a car is **1.6 times** more likely to die in a crash if the other vehicle is a pickup truck vs. another type of vehicle.
  - Consumer Reports
- The fatality rate for pedestrians hit by an SUV or pickup is **2 to 3 times** higher than that for passenger cars.
  - National Highway Traffic Safety Administration

"Evidence of the effectiveness of the Safe System approach can be seen both in the outcomes of nations and cities that have pursued this strategy and in the tools and methods used to achieve this success."

John Hopkins University's Center for Injury Research & Policy

Principles

- Death and Serious Injuries are Unacceptable
- Humans Make Mistakes
- Humans Are Vulnerable
- Responsibility is Shared
- Safety is Proactive
- Redundancy is Crucial

Survivable Speeds

New Zealand Transport Agency

A pedestrian hit by a car going 35 mph is **5 times** as likely to die as one hit by a car going 20 mph.

National Association of City Transportation Officials

Survivable Speeds

Manchester, NH 2017-2022			
Parking Lots		**Bridge St**	
Bike-Ped Crashes	% Fatal or Serious Injury	Bike-Ped Crashes	% Fatal or Serious Injury
10	0%	11	46%

National Highway Traffic Safety Administration; New Hampshire Department of Safety; New Hampshire Department of Transportation

A pedestrian hit by a car going 35 mph is **5 times** as likely to die as one hit by a car going 20 mph.

National Association of City Transportation Officials

Source: Google Maps

On December 20, 2023, at 8:25 pm a man was struck at the intersection of Chestnut St and Bridge St by a Honda Civic. He was taken to a local hospital with life threatening injuries. He died two days later. The posted speed limit for both streets is 30 mph. At this time, the driver of the car has not been charged.

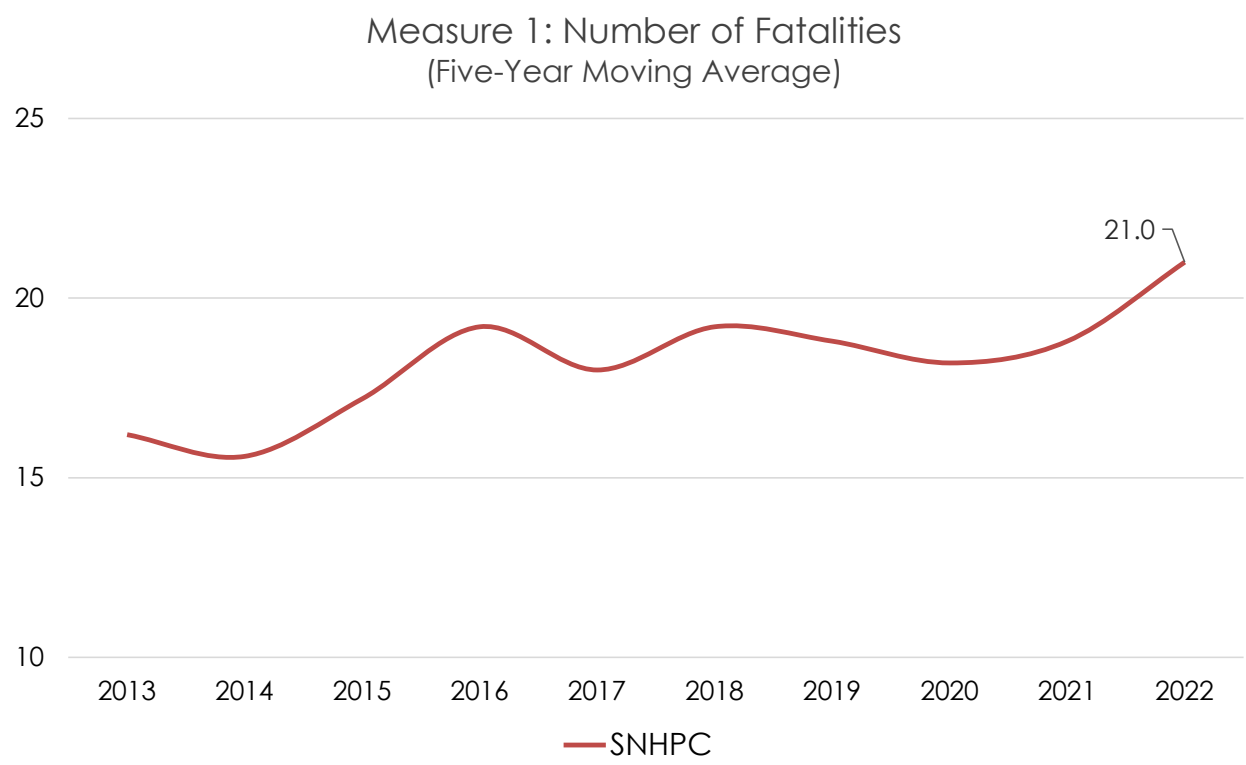
Sources: Manchester Information; Manchester Ink Link; New Hampshire Union Leader.

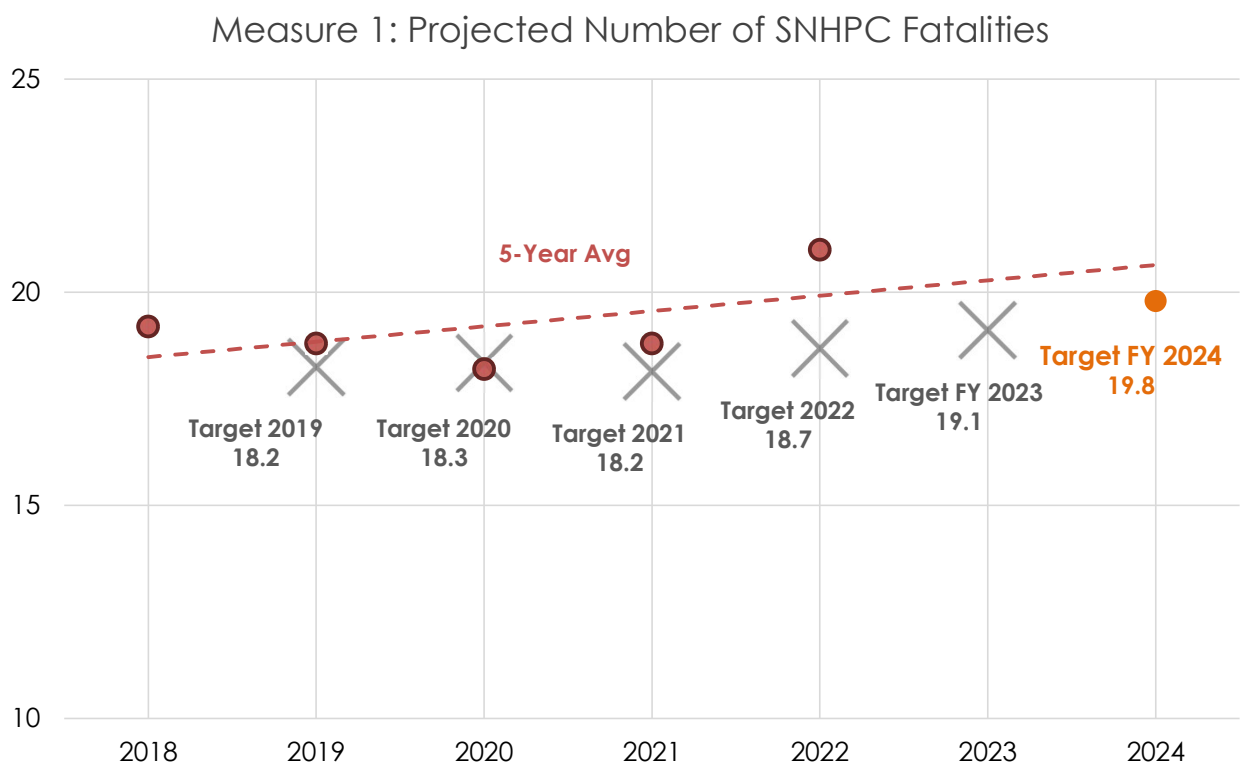
Source: Google Maps

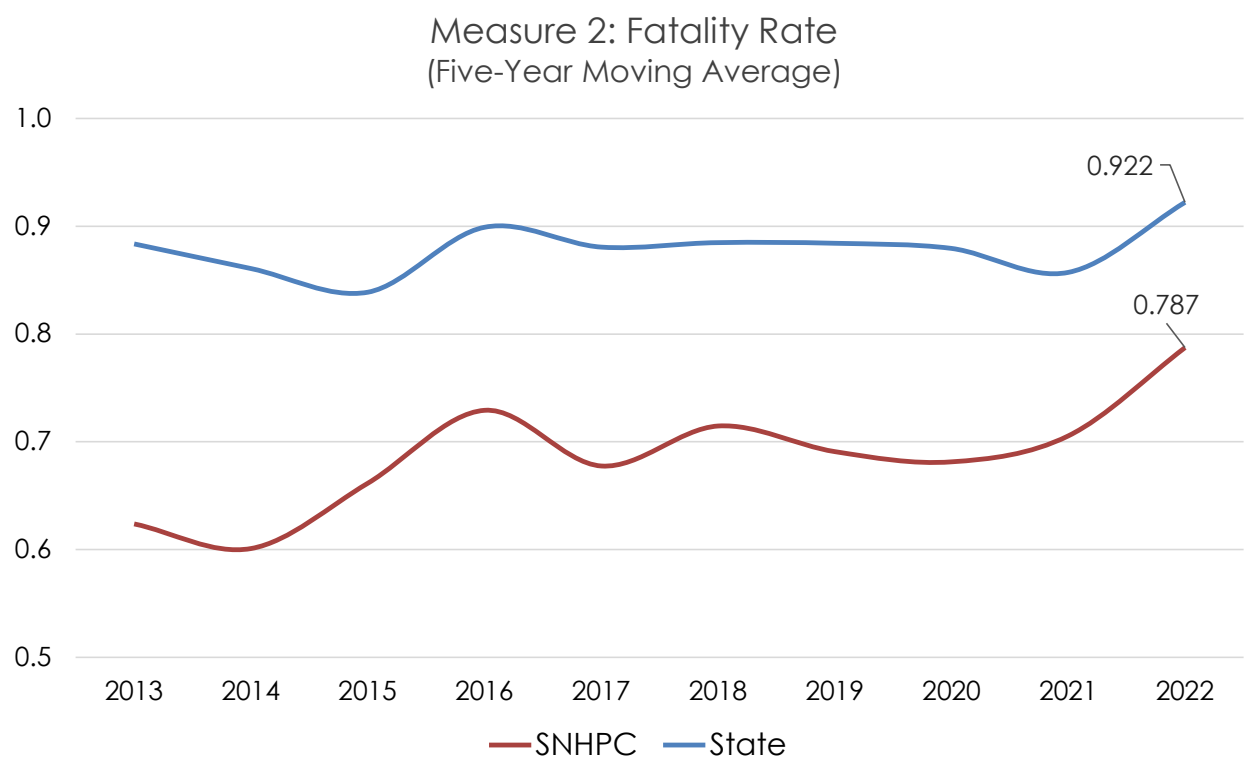
On December 20, 2023, at 8:25 pm a man was struck at the intersection of Chestnut St and Bridge St by a Honda Civic. He was taken to a local hospital with life threatening injuries. He died two days later. The posted speed limit for both streets is 30 mph. At this time, the driver of the car has not been charged.

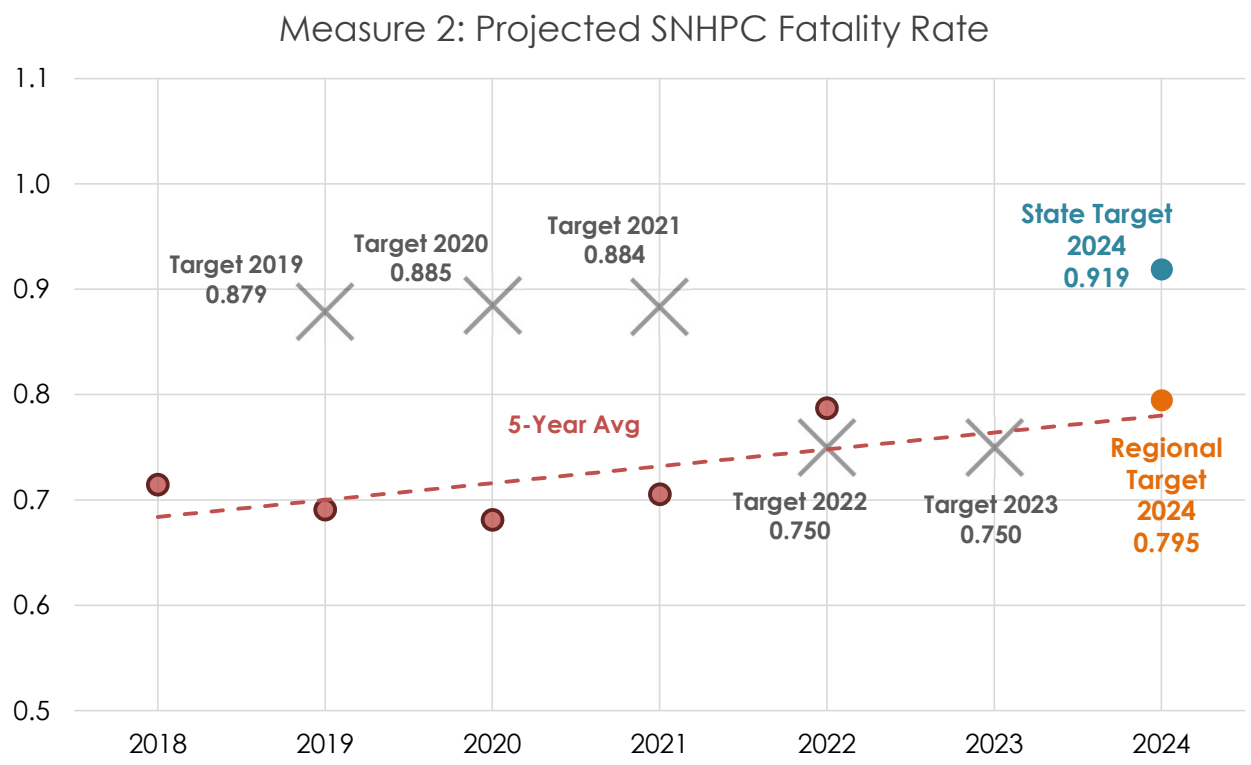
Sources: Manchester Information; Manchester Ink Link; New Hampshire Union Leader.

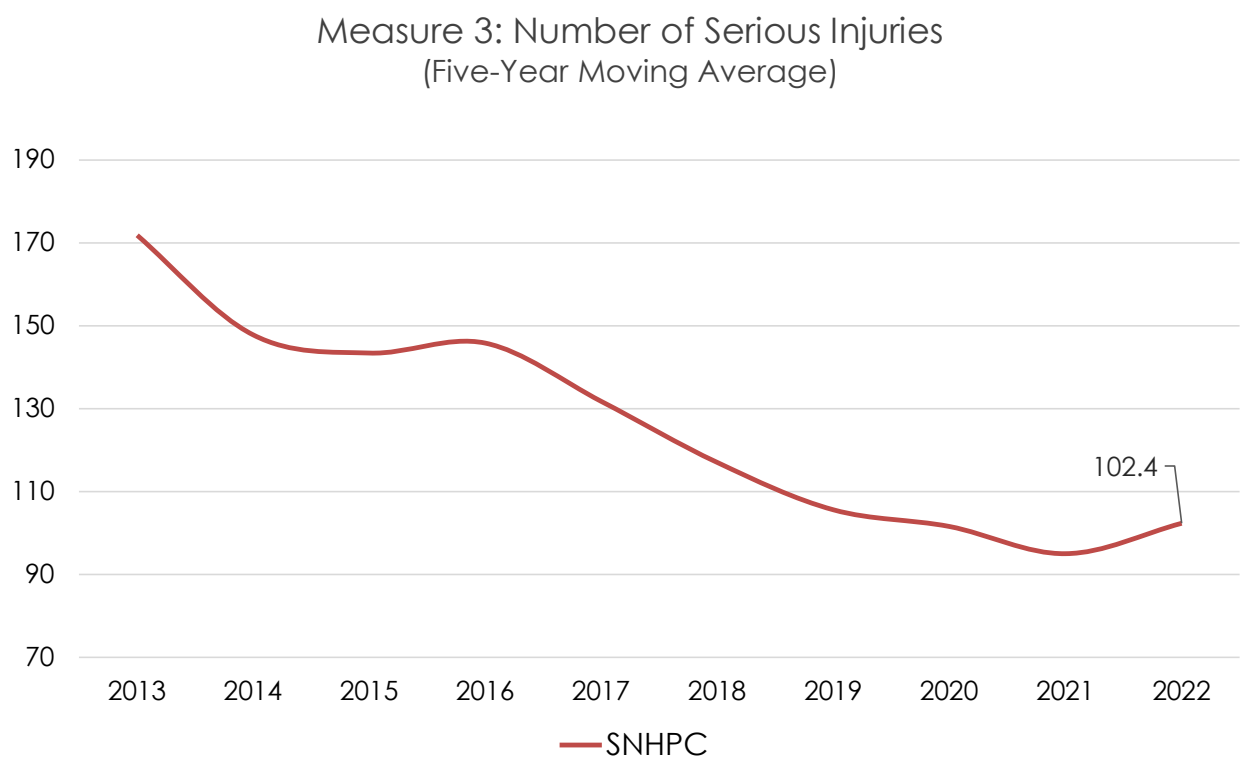
SNHPC Safety Performance Measures (PM1) 2024

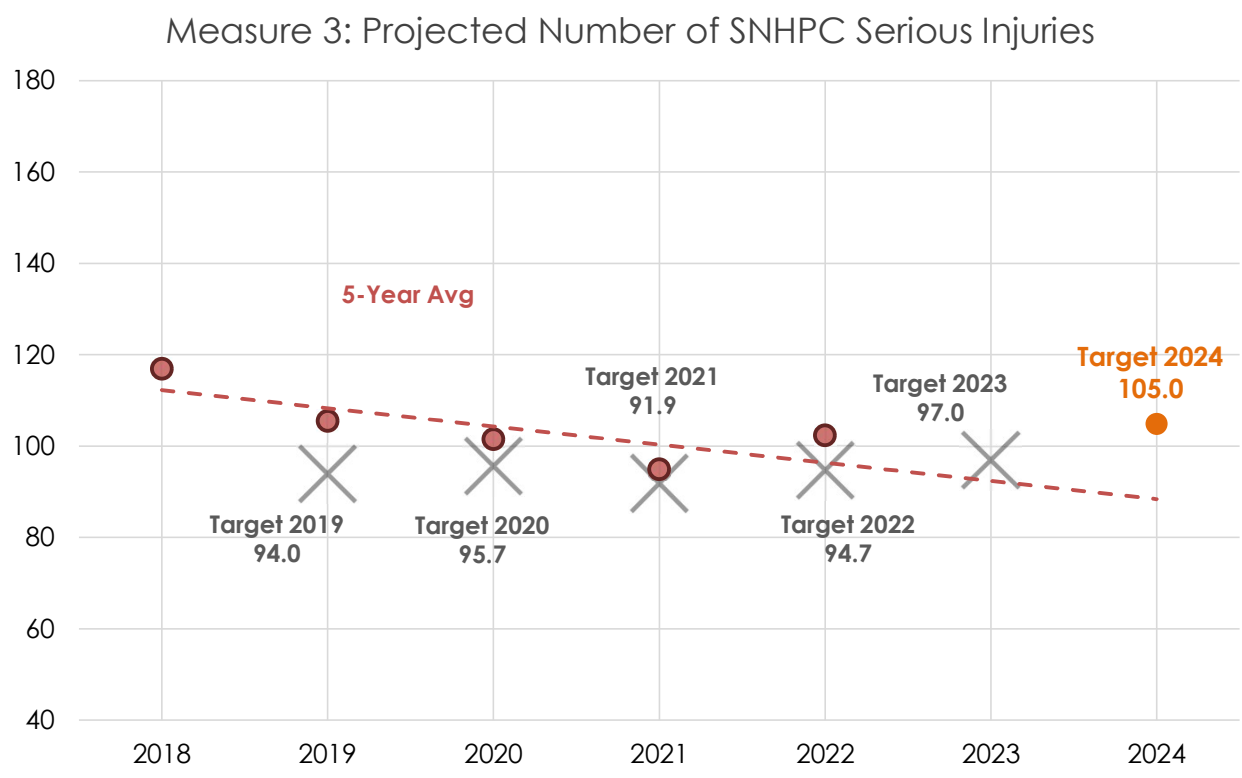

Measure 1: Number of Fatalities
(Five-Year Moving Average)
25
20
15
10
21.0
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
SNHPC

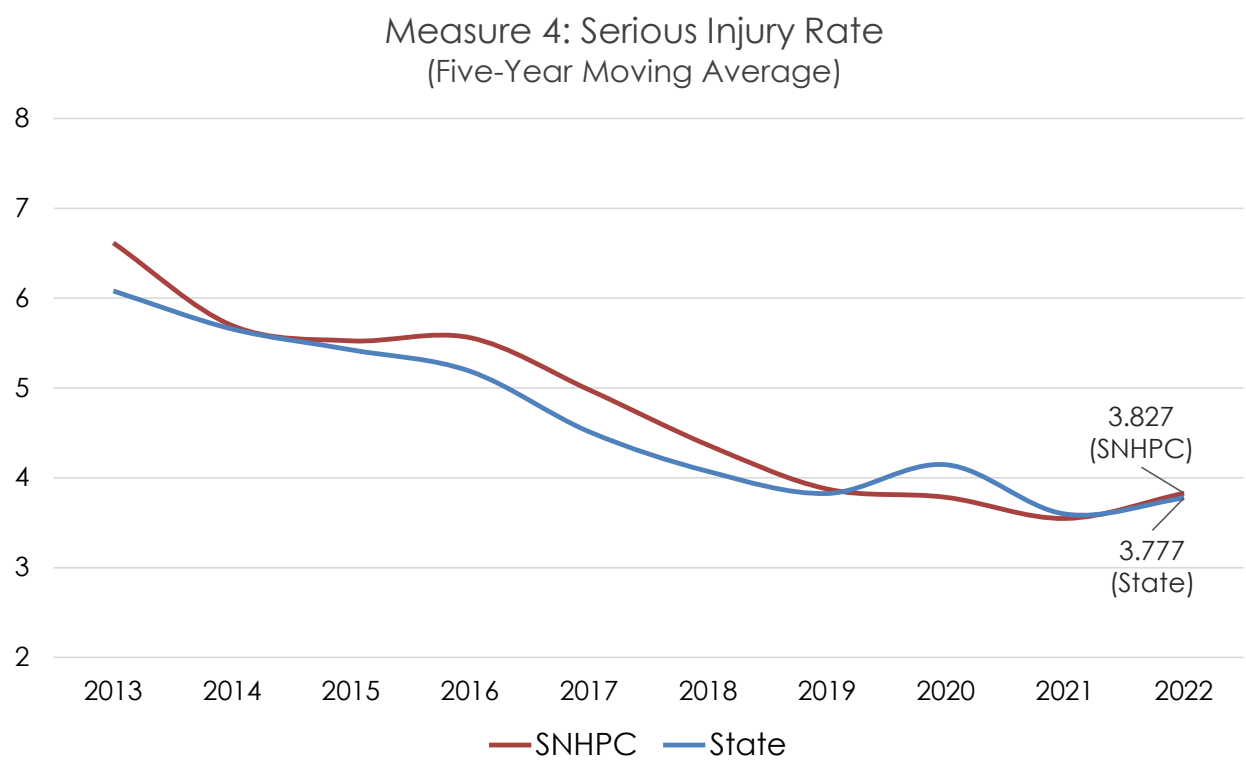

Measure 1: Projected Number of SNHPC Fatalities
25
20
15
10
2018
2019
2020
2021
2022
2023
2024
5-Year Avg
Target 2019
18.2
Target 2020
18.3
Target 2021
18.2
Target 2022
18.7
Target FY 2023
19.1
Target FY 2024
19.8

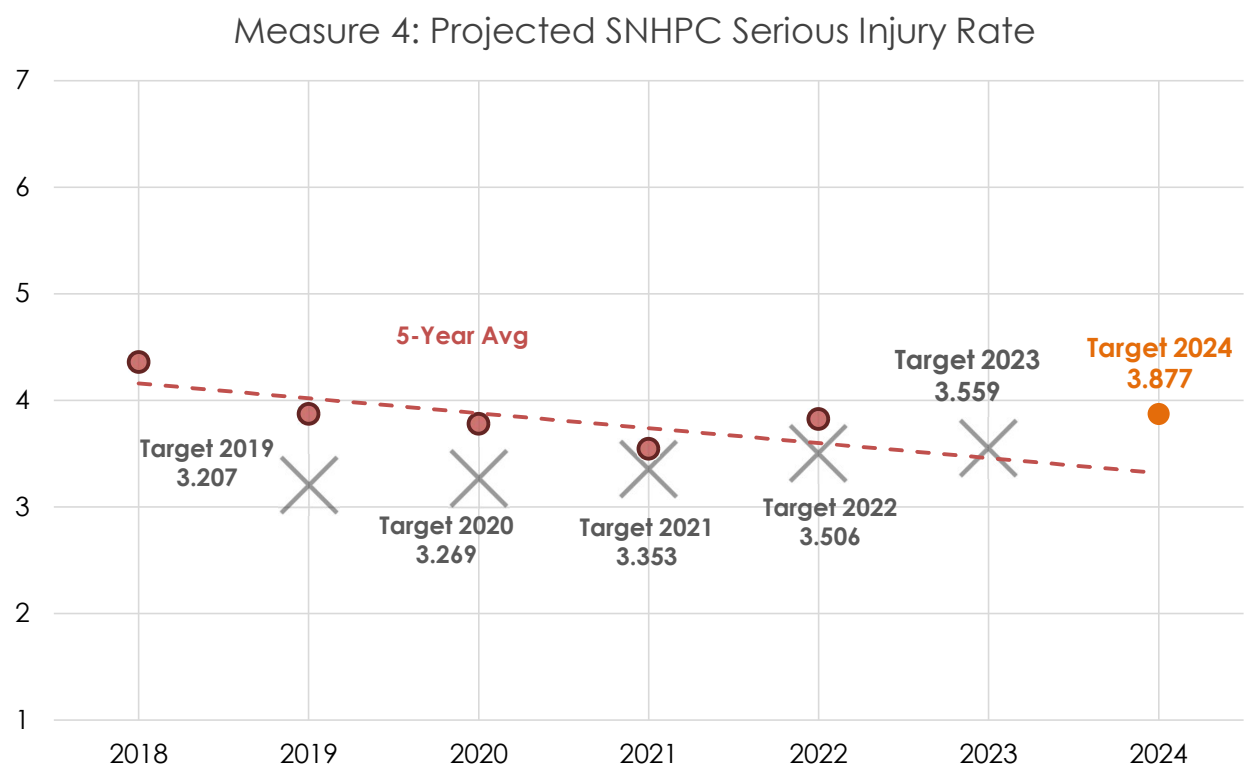

Measure 2: Fatality Rate
(Five-Year Moving Average)
1.0
0.9
0.8
0.7
0.6
0.5
0.922
0.787
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
SNHPC
State

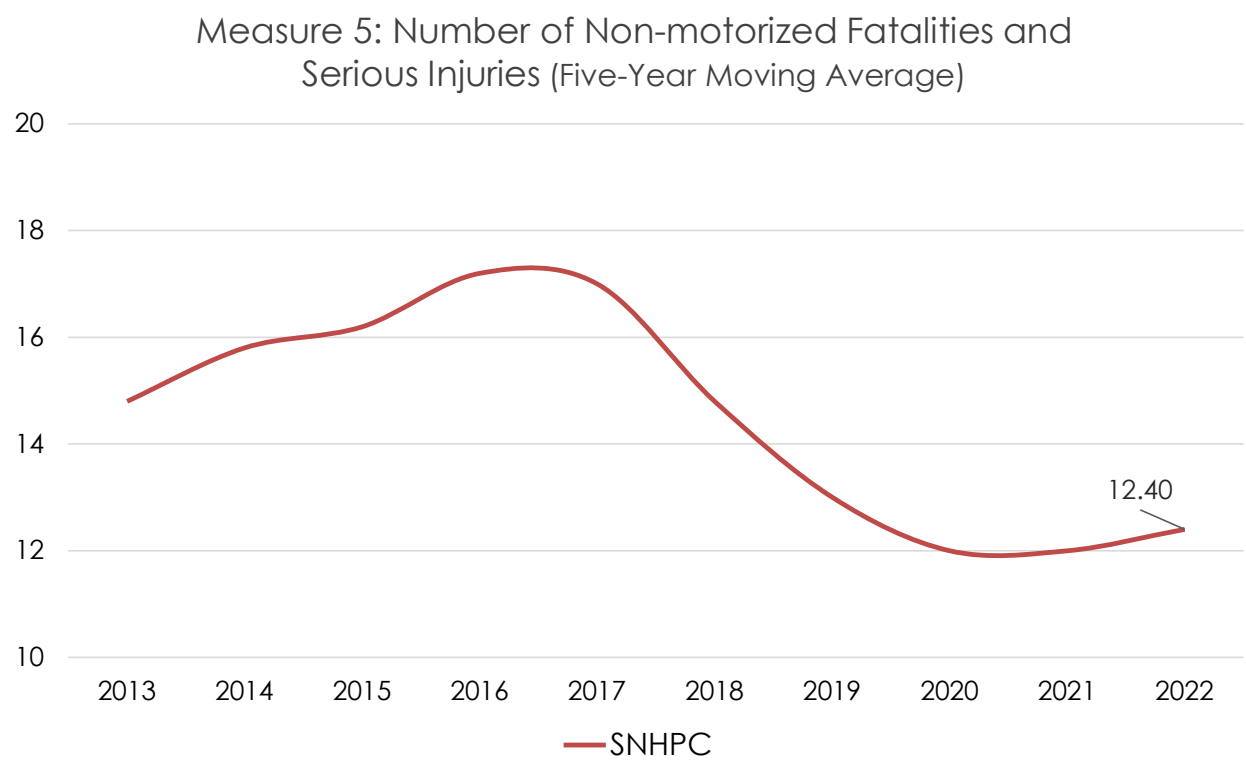

Measure 2: Projected SNHPC Fatality Rate
1.1
1.0
0.9
0.8
0.7
0.6
0.5
2018
2019
2020
2021
2022
2023
2024
Target 2019
0.879
Target 2020
0.885
Target 2021
0.884
Target 2022
0.750
Target 2023
0.750
State Target
2024
0.919
Regional
Target
2024
0.795
5-Year Avg

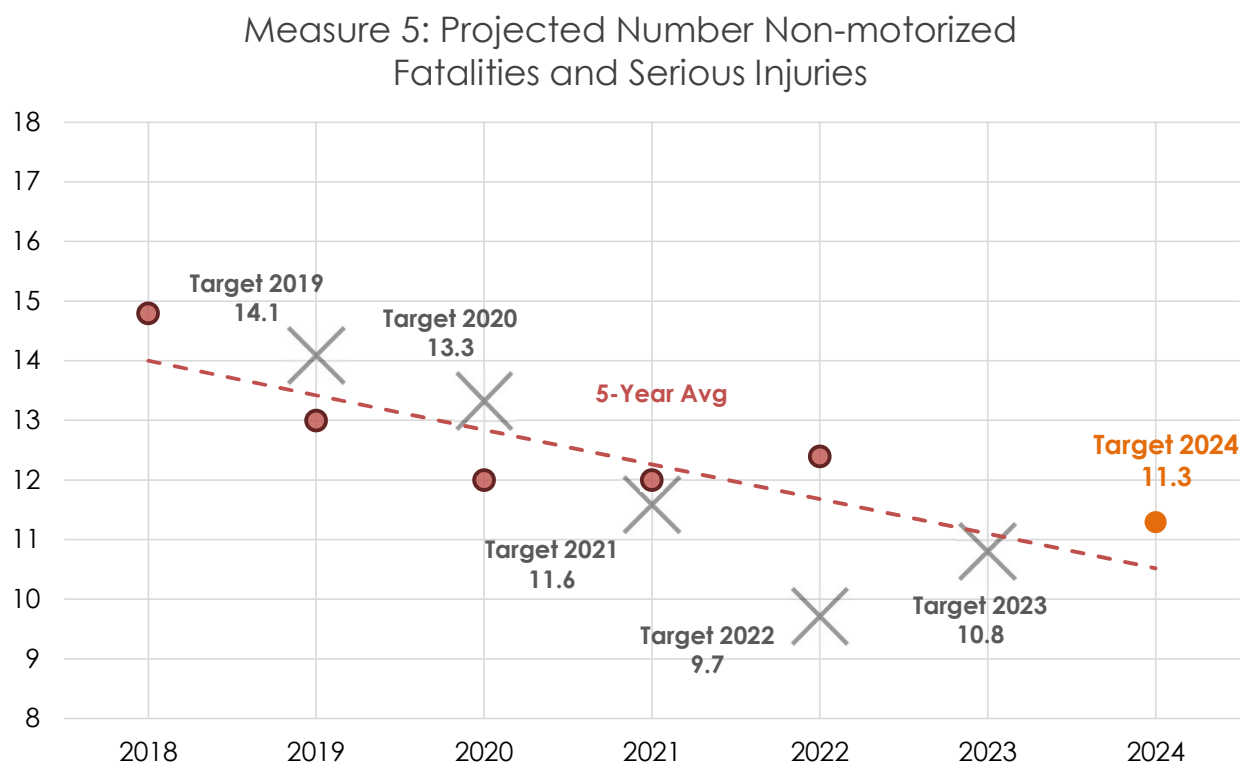

Measure 3: Number of Serious Injuries
(Five-Year Moving Average)
190
170
150
130
110
90
70
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
102.4
SNHPC


Measure 3: Projected Number of SNHPC Serious Injuries
180
160
140
120
100
80
60
40
2018
2019
2020
2021
2022
2023
2024
5-Year Avg
Target 2019
94.0
Target 2020
95.7
Target 2021
91.9
Target 2022
94.7
Target 2023
97.0
Target 2024
105.0


Measure 4: Serious Injury Rate
(Five-Year Moving Average)
8
7
6
5
4
3
2
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
3.827
(SNHPC)
3.777
(State)
SNHPC
State


Measure 4: Projected SNHPC Serious Injury Rate
7
6
5
4
3
2
1
2018
2019
2020
2021
2022
2023
2024
5-Year Avg
Target 2019
3.207
Target 2020
3.269
Target 2021
3.353
Target 2022
3.506
Target 2023
3.559
Target 2024
3.877


Measure 5: Number of Non-motorized Fatalities and Serious Injuries (Five-Year Moving Average)
20
18
16
14
12
10
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
12.40
SNHPC


Measure 5: Projected Number Non-motorized Fatalities and Serious Injuries
18
17
16
15
14
13
12
11
10
9
8
2018
2019
2020
2021
2022
2023
2024
Target 2019
14.1
Target 2020
13.3
5-Year Avg
Target 2021
11.6
Target 2022
9.7
Target 2023
10.8
Target 2024
11.3

State-level 2024 Safety Performance Targets

Safety Measures	State Five-Year Rolling Average		Trends		State Target
	2017-2021	2018-2022	Recent	Desired	2024 Target
Number of Fatalities	114.4	123.2	↑	↓	120.0
Fatality Rate per 100 Million VMT	0.857	0.922	↑	↓	0.919
Number of Serious Injuries	472.2	515.0	↑	↓	509.6
Serious Injury Rate per 100 Million VMT	3.596	3.777	↑	↓	3.877
Non-Motorized Fatalities and Serious Injuries	42.8	41.8	↓	↓	39.4

2024 Proposed SNHPC Regional Safety Performance Targets

Safety Measures	SNHPC Five-Year Rolling Averages		Trends		State Target	SNHPC Recommended Target
	2017-2021	2018-2022	Recent	Desired	2024	
Number of Fatalities	18.8	21.0	↑	↓	120.0	**Support State Target** (approx. 20 regionally)
Fatality Rate per 100 Million VMT	0.706	0.787	↑	↓	0.919	***Adopt Regional Target: 0.795***
Number of Serious Injuries	95.0	102.4	↑	↓	509.6	**Support State Target** (approx. 105 regionally)
Serious Injury Rate per 100 Million VMT	3.548	3.827	↑	↓	3.877	**Support State Target**
Non-Motorized Fatalities and Serious Injuries	12.0	12.4	↑	↓	39.4	**Support State Target** (approx. 11 regionally)

What's our track record?

		2019	2020	2021	2022
Fatalities	Target	18.2	18.3	18.2	18.7
	Actual	18.8	18.2	18.8	21.0
Fatality Rate	Target	0.879	0.885	0.884	0.750
	Actual	0.691	0.681	0.706	0.7874
Serious Injuries	Target	94.0	95.7	91.9	94.7
	Actual	105.6	101.6	95.0	102.4
Serious Injury Rate	Target	3.207	3.269	3.353	3.506
	Actual	3.876	3.784	3.548	3.8274
Bike-Ped Fatalities & Serious Injury Rate	Target	14.1	13.3	11.6	9.7
	Actual	13.0	12.0	12.0	12.40

Absolute Difference

	2019	2020	2021	2022
Fatalities	0.6	0.1	0.6	2.3
Fatality Rate	0.188	0.204	0.178	0.037
Serious Injuries	11.6	5.9	3.1	7.7
Serious Injury Rate	0.669	0.515	0.195	0.321
Bike-Ped Fatalities & Serious Injury Rate	1.1	1.3	0.4	2.7

Relative Difference

	2019	2020	2021	2022
Fatalities	3.1%	0.8%	3.6%	12.3%
Fatality Rate	27.2%	29.9%	25.3%	4.8%
Serious Injuries	10.9%	5.8%	3.3%	7.5%
Serious Injury Rate	17.3%	13.6%	5.5%	8.4%
Bike-Ped Fatalities & Serious Injury Rate	8.4%	11.1%	3.5%	21.8%

SNHPC 2024 Safety Performance Targets (Proposed)

Safety Measures	2024 State Target	2024 SNHPC Target	Action
Number of Fatalities	120.0	19.8	Support State Target
Fatality Rate per 100 Million VMT	0.919	0.795	Regional Target
Number of Serious Injuries	509.6	105.0	Support State Target
Serious Injury Rate per 100 Million VMT	3.877	11.300	Support State Target
Non-Motorized Fatalities and Serious Injuries	39.4	11.3	Support State Target

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Questions?

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