

PM1: SAFETY PERFORMANCE MEASURES SNHPC 2024

Southern New Hampshire Planning Commission
Metropolitan Planning Organization
January 23, 2024

David Tilton — SNHPC — Regional Transportation Planner
Zachary Swick — SNHPC — Senior GIS Analyst



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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.

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Some Context:

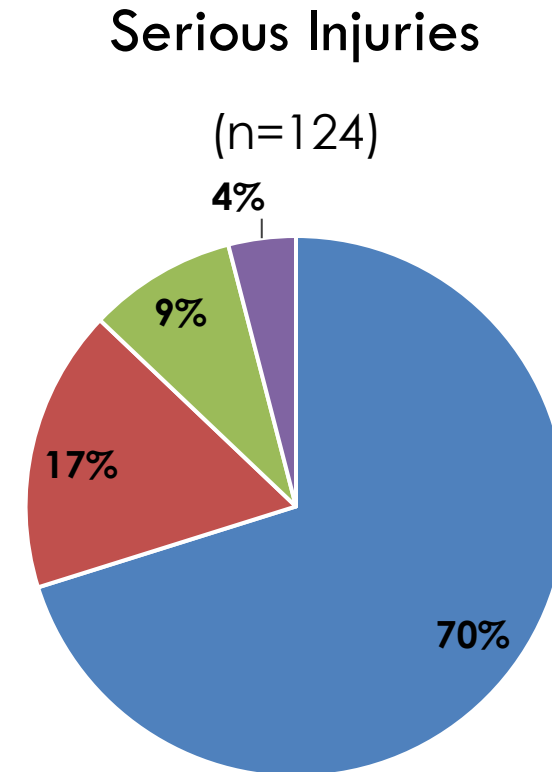
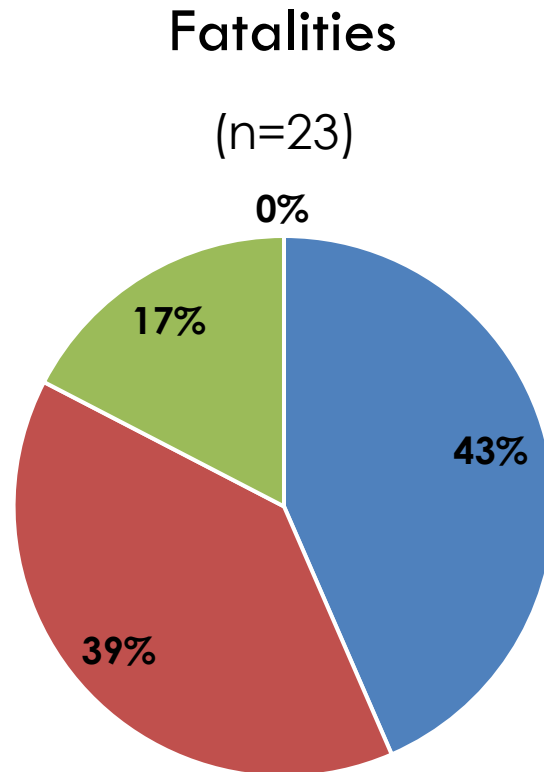
National Crash
Fatalities & an
International
Perspective

2022 SNHPC Fatalities and Serious Injuries

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

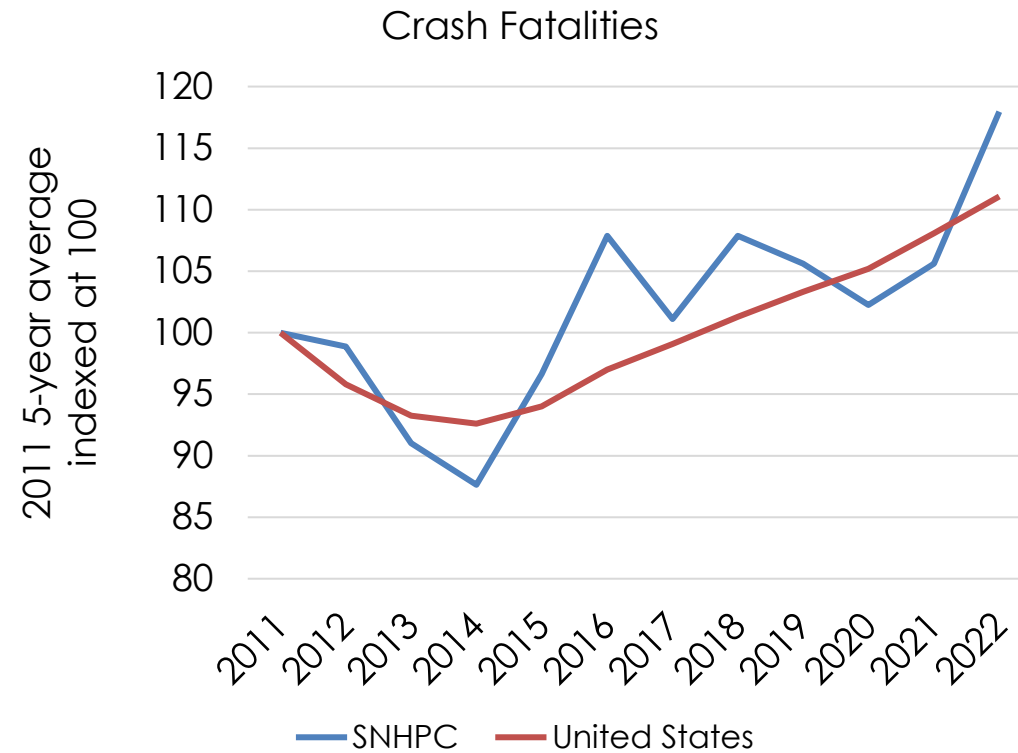
Include wage and productivity losses, medical expenses, administrative expenses, motor-vehicle damage, and employers' uninsured costs.

Sources: [Federal Reserve Bank of St. Louis](#); [National Safety Council](#).



■ Vehicle ■ Motorcycle ■ Pedestrian ■ Bicycle

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%**.

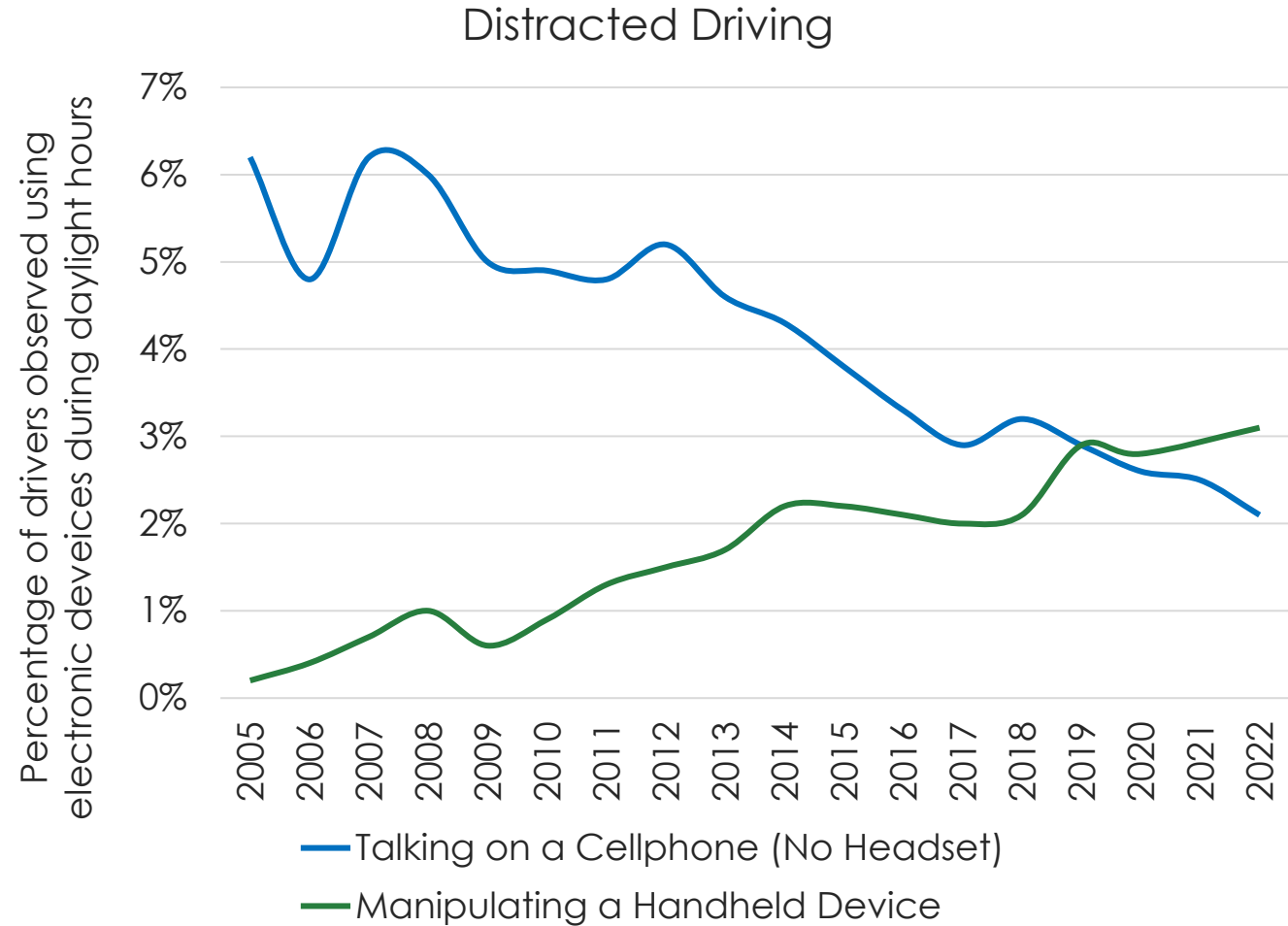


Source: National Highway Traffic Safety Administration

National Occupant Protection Use Survey (NOPUS)

The "...only nationwide probability-based observed data on driver electronic device use in the United States."

[National Highway Traffic Safety Administration](#)



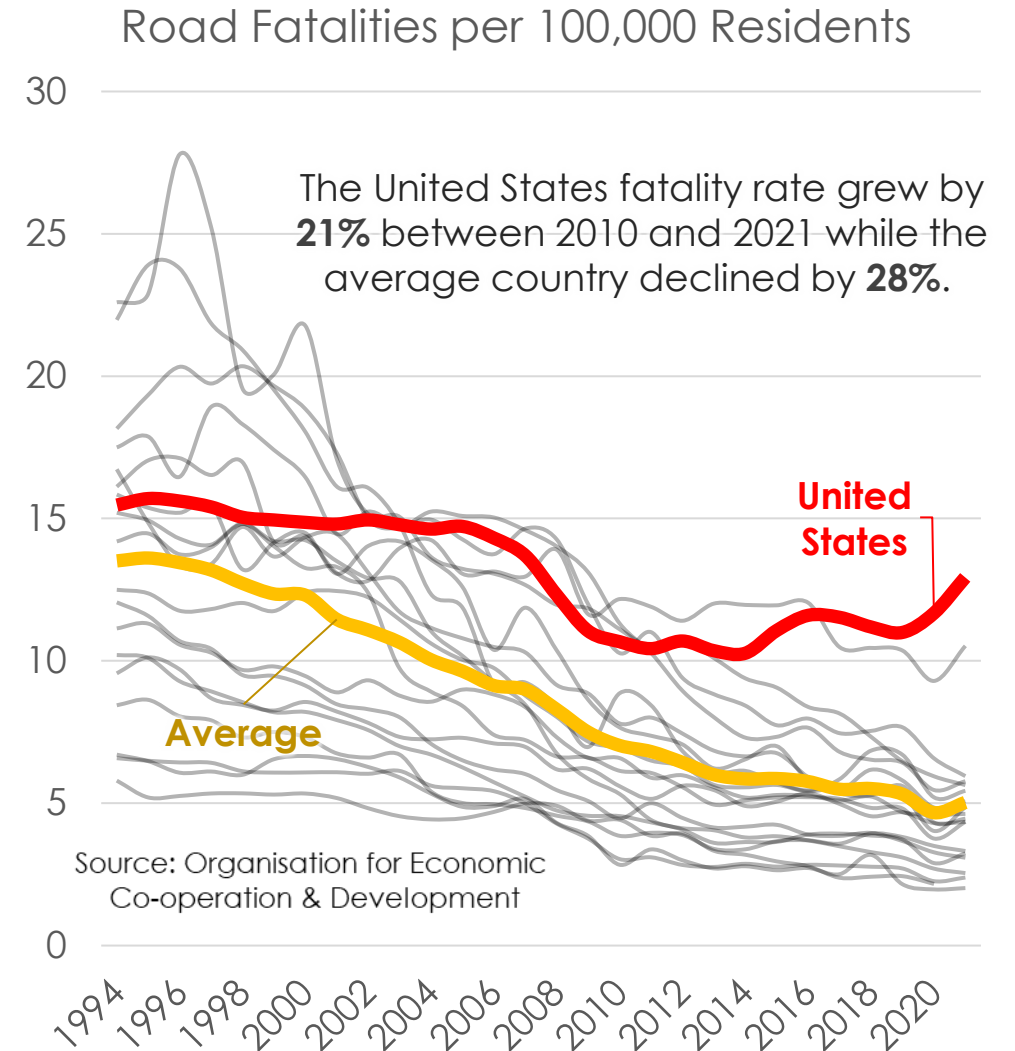
No manipulation of a handheld device data for 2021.

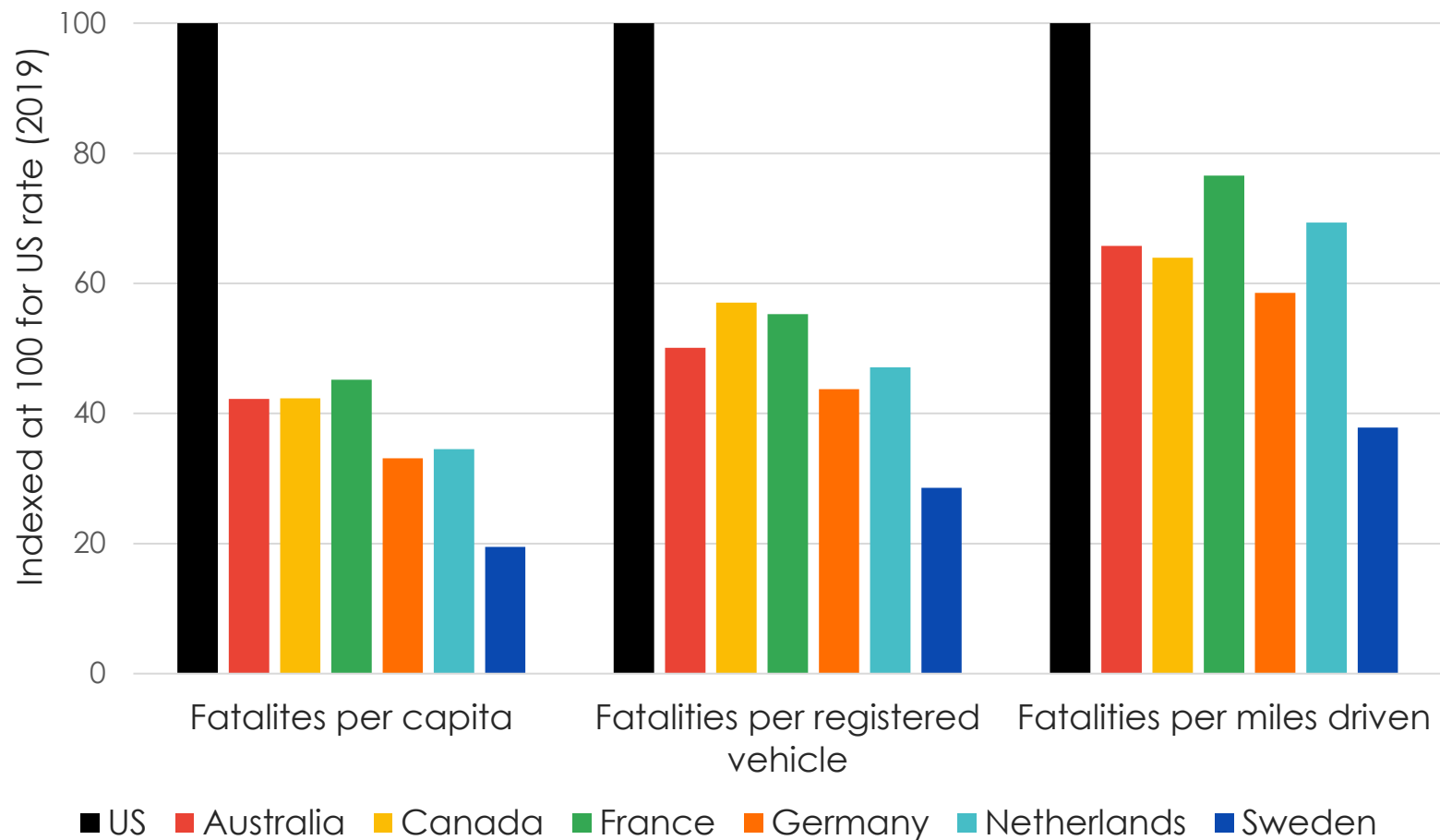
Sources: [National Highway Traffic Safety Administration](#); [National Safety Council](#).

	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](#)

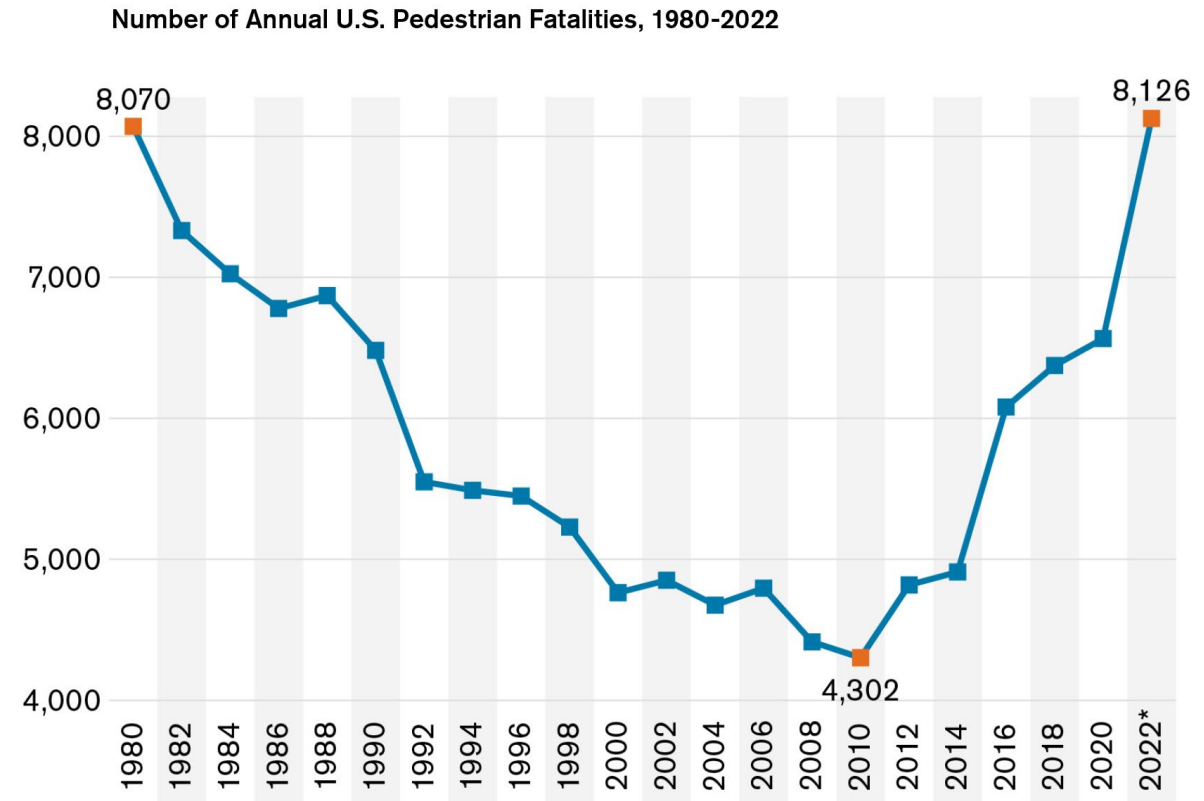




[Yellman, M. & Sauber-Schatz, E. 2022. "Motor Vehicle Crash Deaths – United States and 28 Other High-Income Countries, 2015 and 2019." *Morbidity and Mortality Weekly Reports*, 71: 837-843](#)

Between 2010 and 2021 pedestrian 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](#)

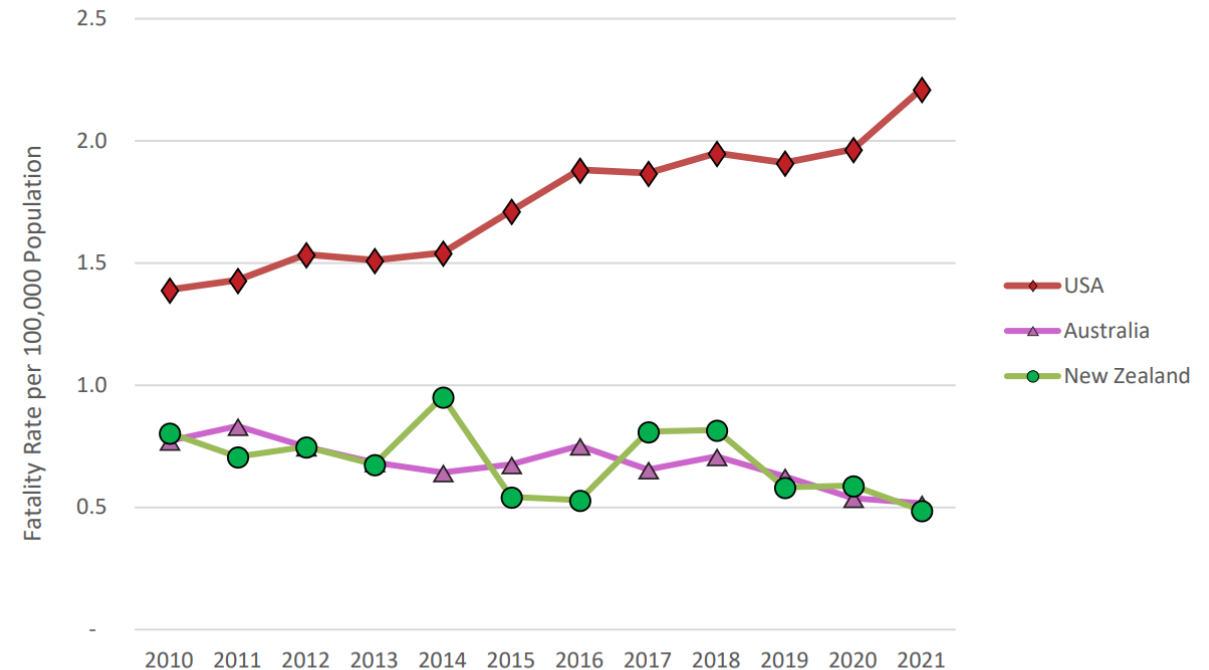
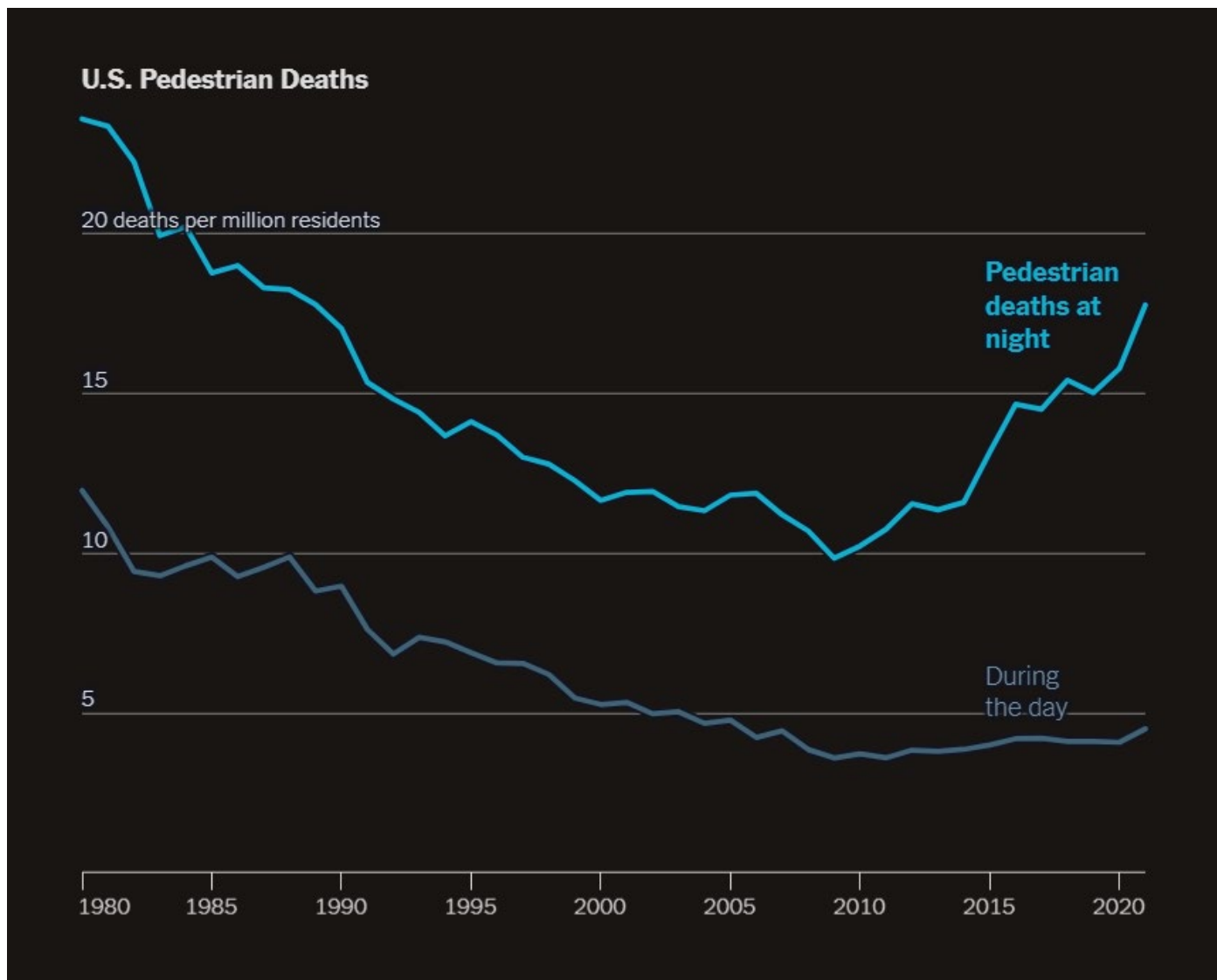


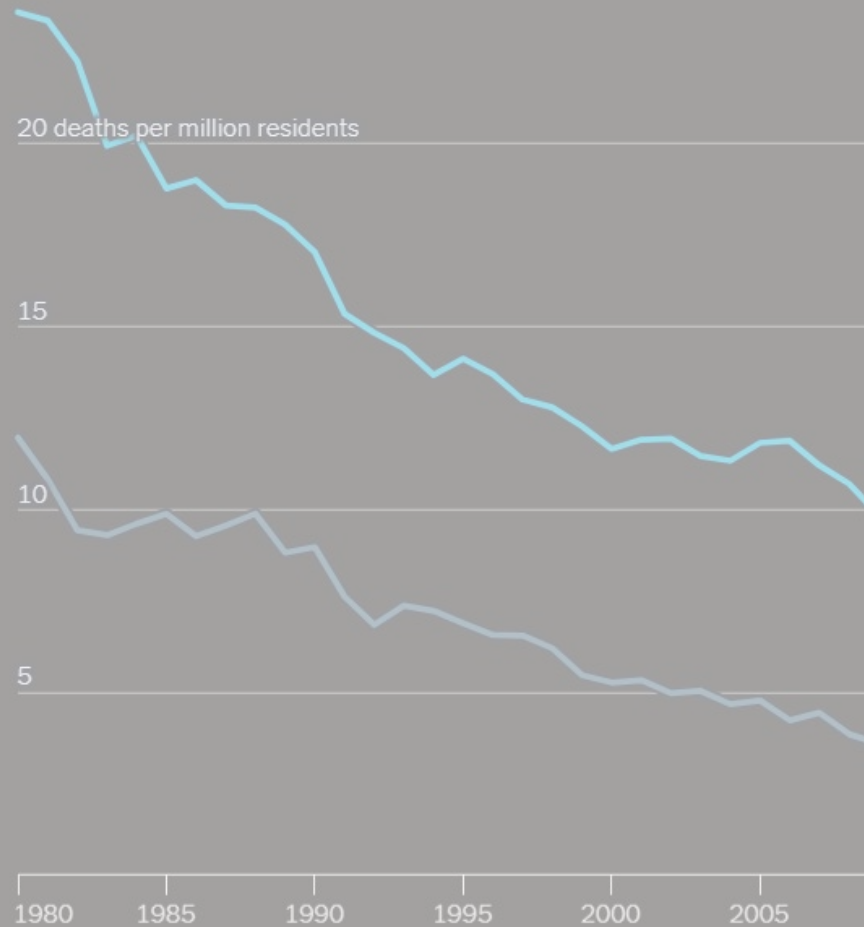
Figure 2: Pedestrian fatality rate per 100,000 population 2010 – 2021

Source: FHWA; Data: (5) (6) (7) (8) (9) (10)

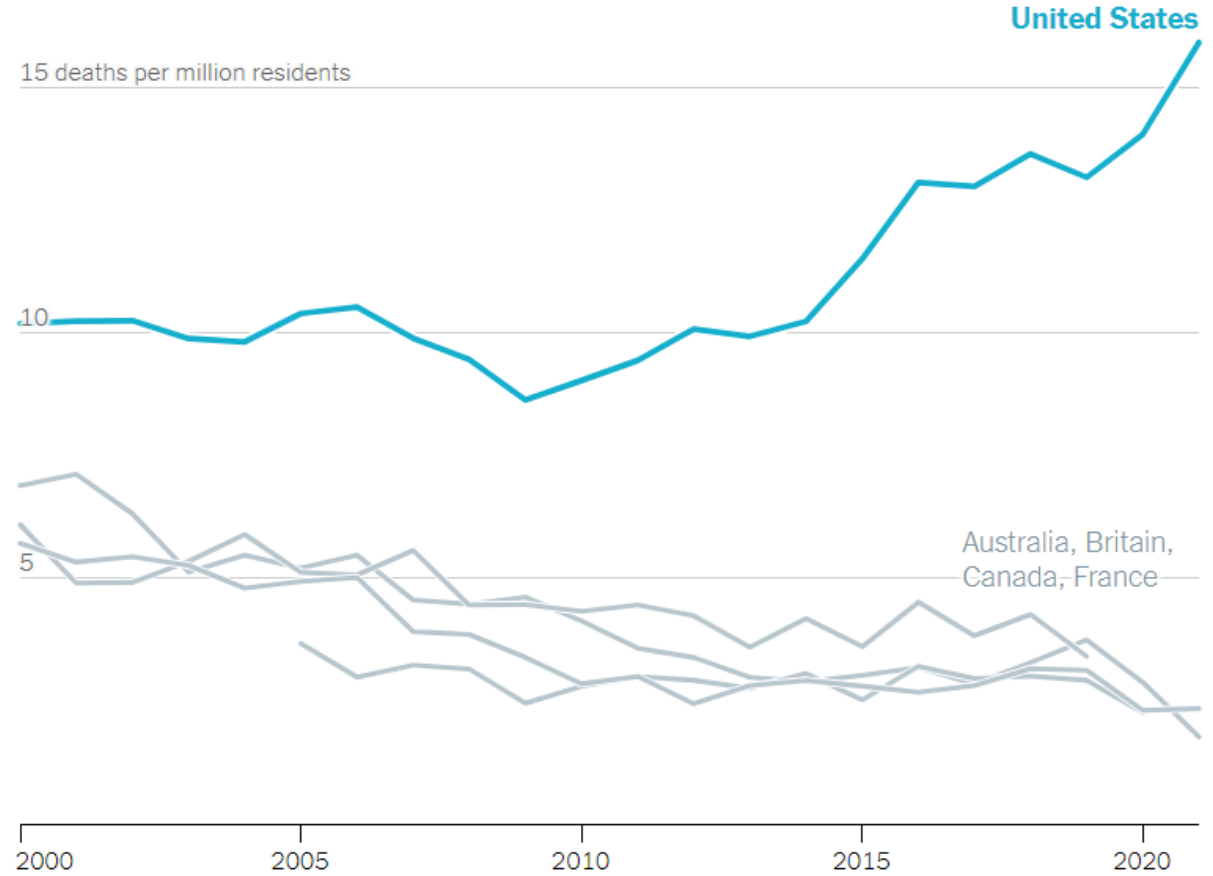


[Badger, Emily et al. December 11, 2023. "Why Are So Many American Pedestrians Dying at Night?" *The New York Times*, *The Upshot*.](#)

U.S. Pedestrian Deaths



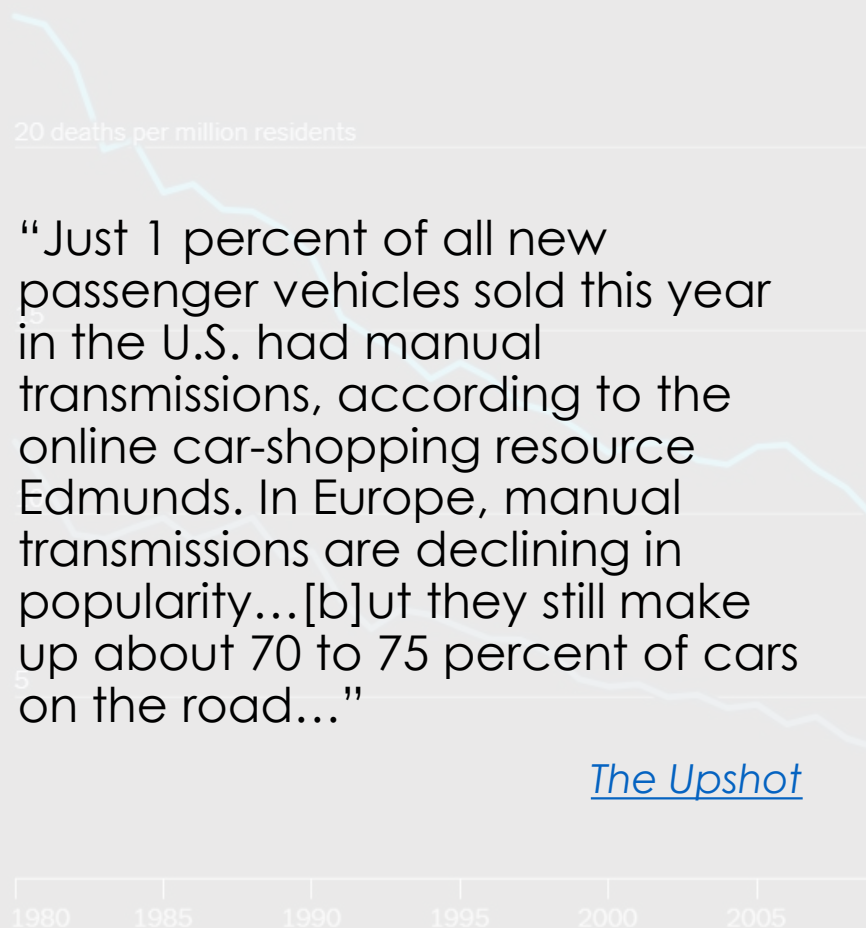
Pedestrian Death Rate at Night



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.

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

U.S. Pedestrian Deaths



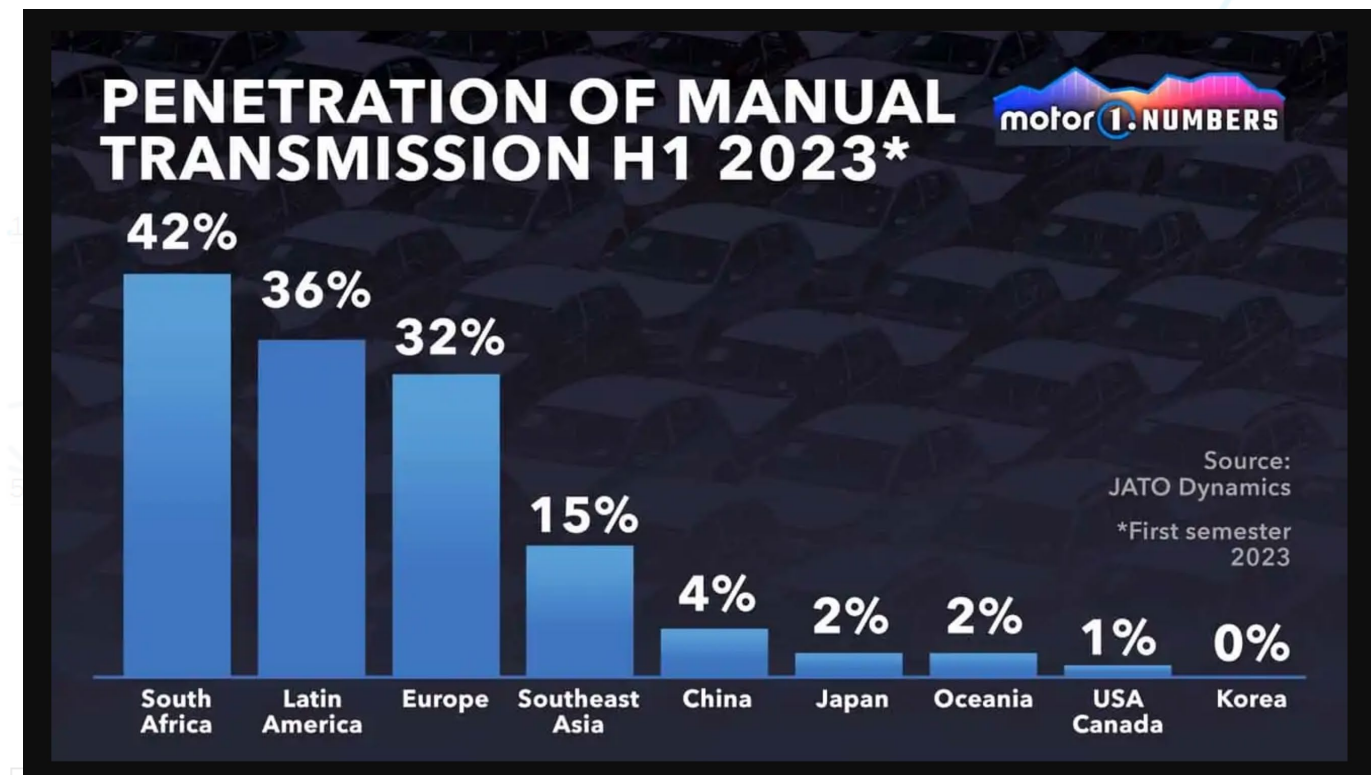
“Just 1 percent of all new passenger vehicles sold this year in the U.S. had manual transmissions, according to the online car-shopping resource Edmunds. In Europe, manual transmissions are declining in popularity...[b]ut they still make up about 70 to 75 percent of cars on the road...”

[The Upshot](#)

Pedestrian Death Rate at Night

15 deaths per million residents

United States

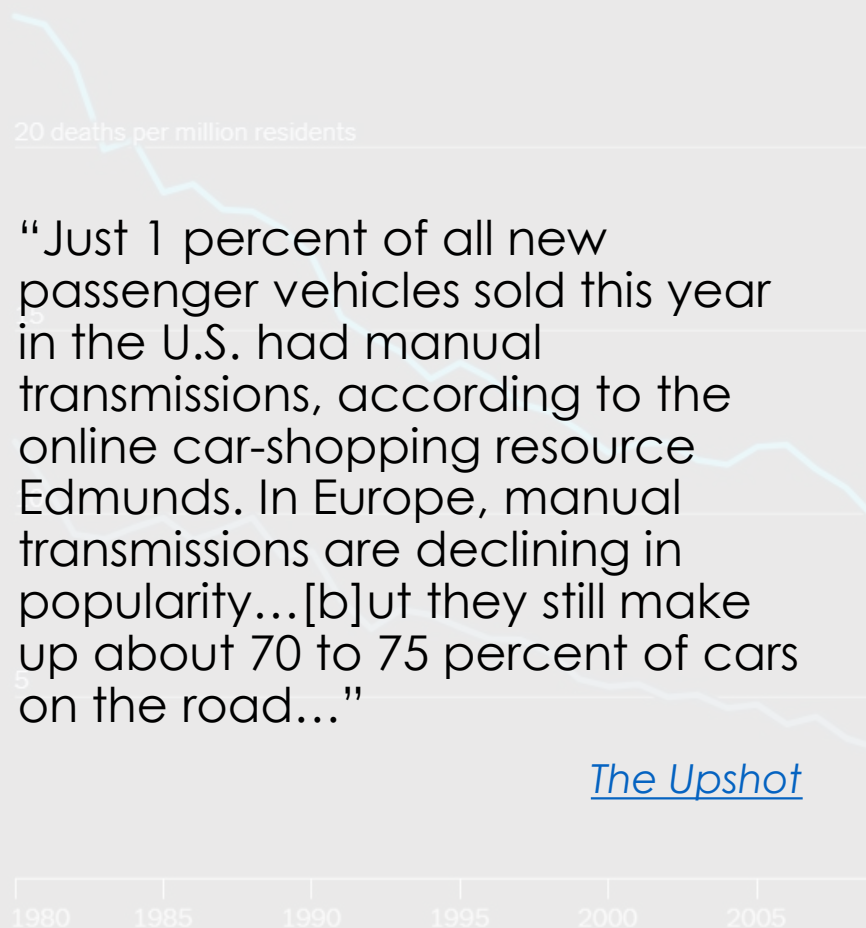


Sources: JATO Dynamics; [Motor1.com](#).

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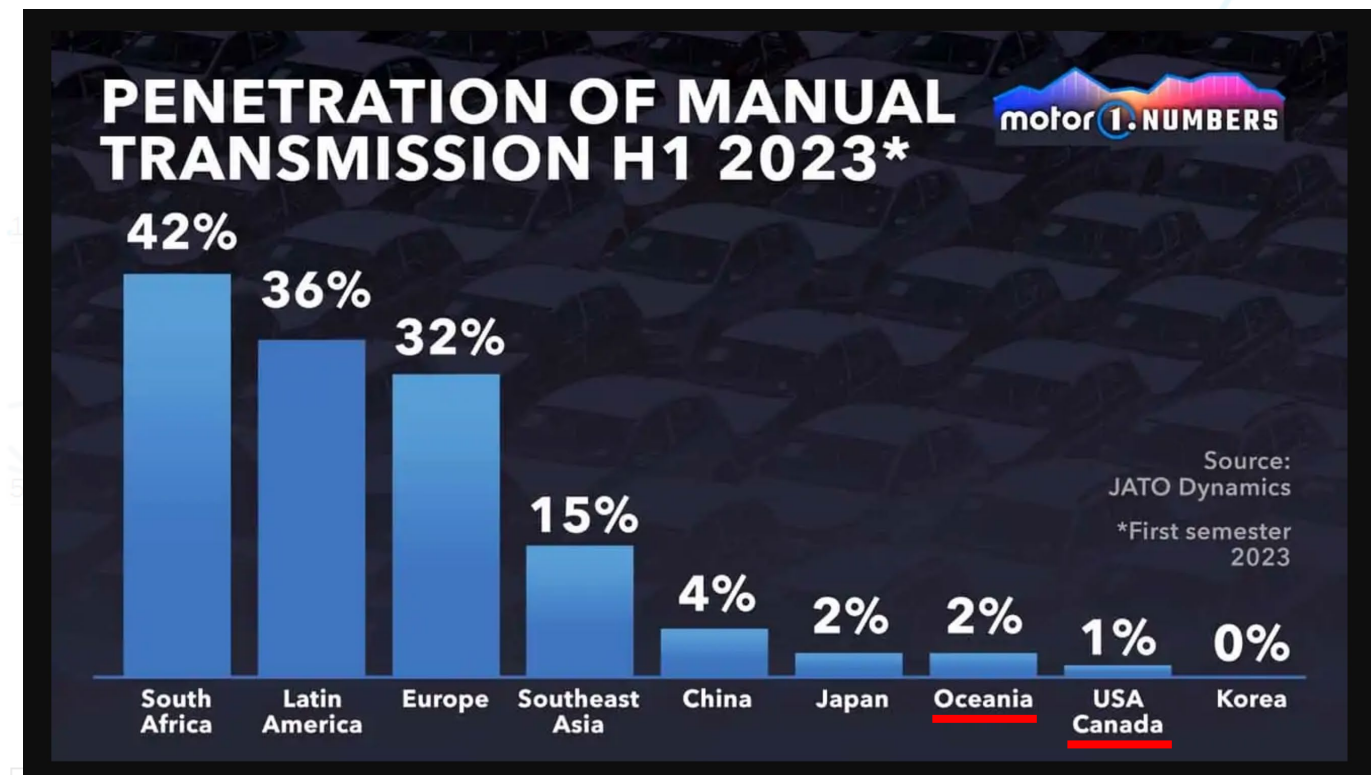
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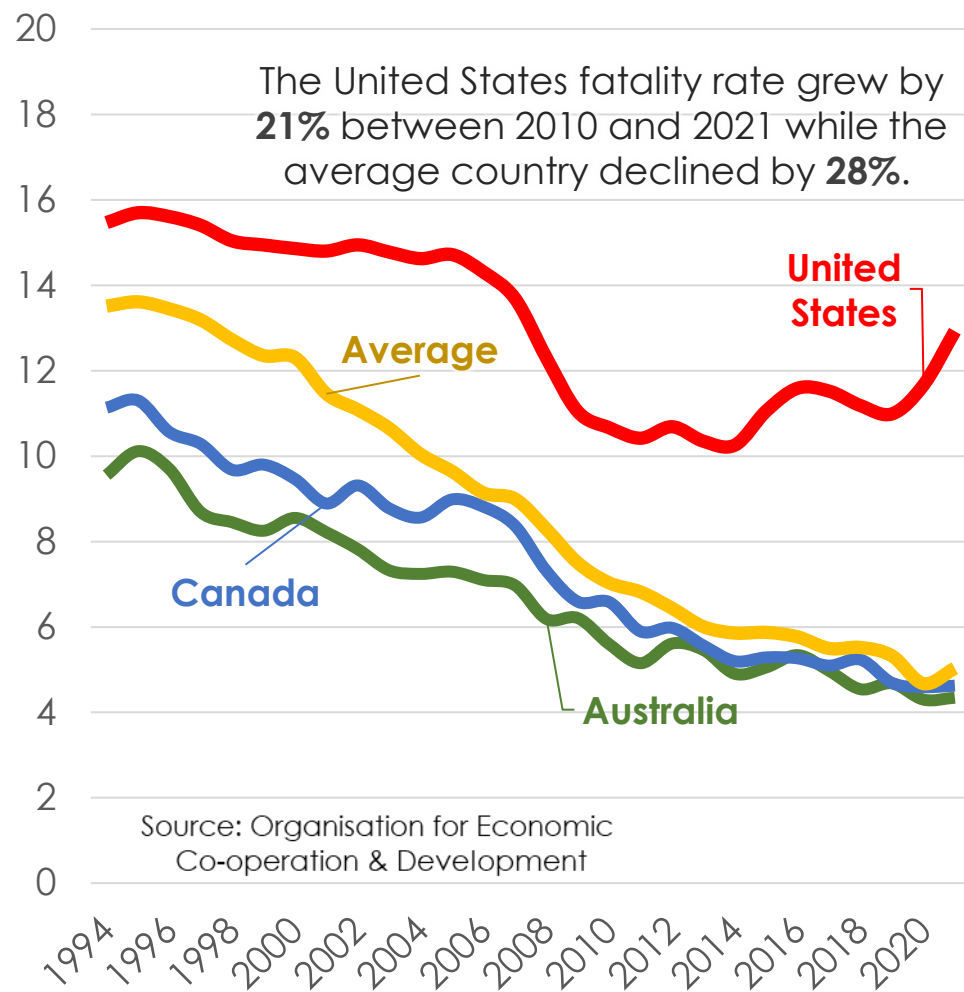


Sources: JATO Dynamics; [Motor1.com](#).

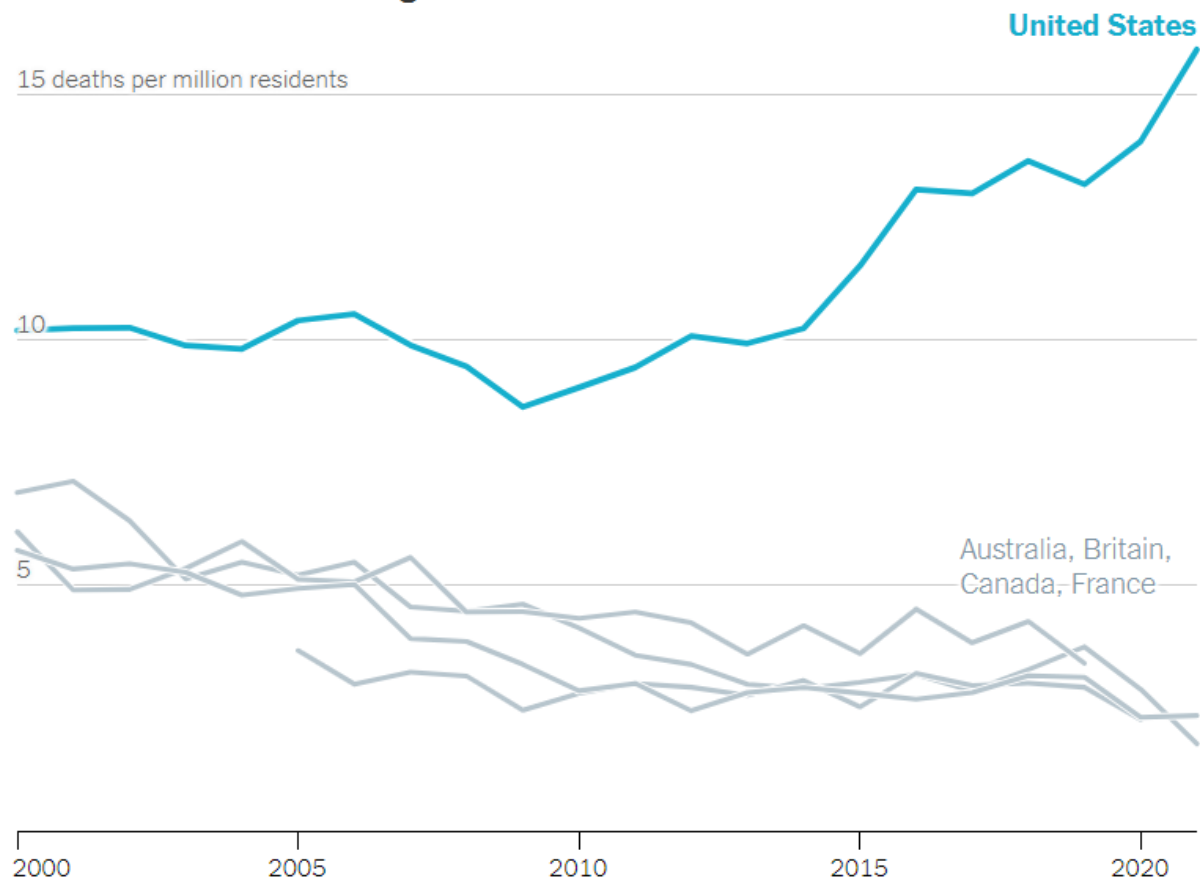
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Road Fatalities per 100,000 Residents



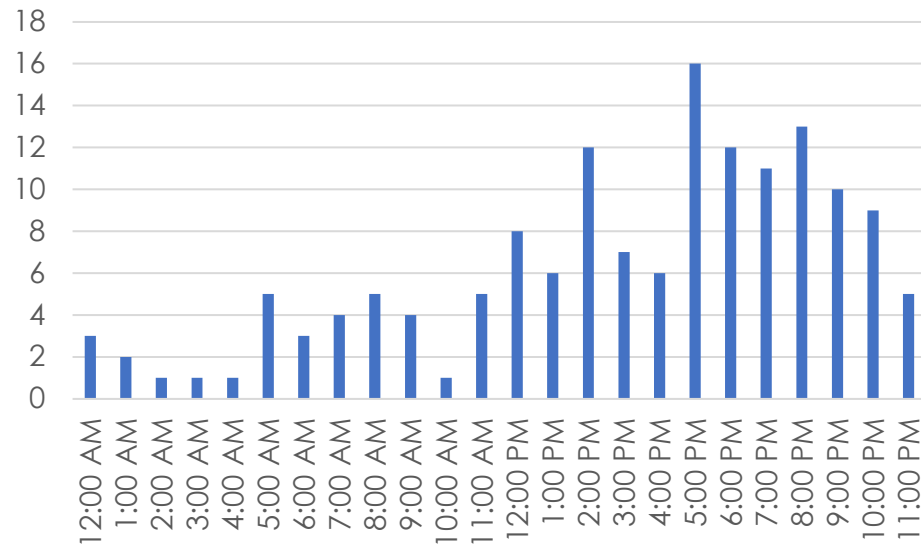
Pedestrian Death Rate at Night



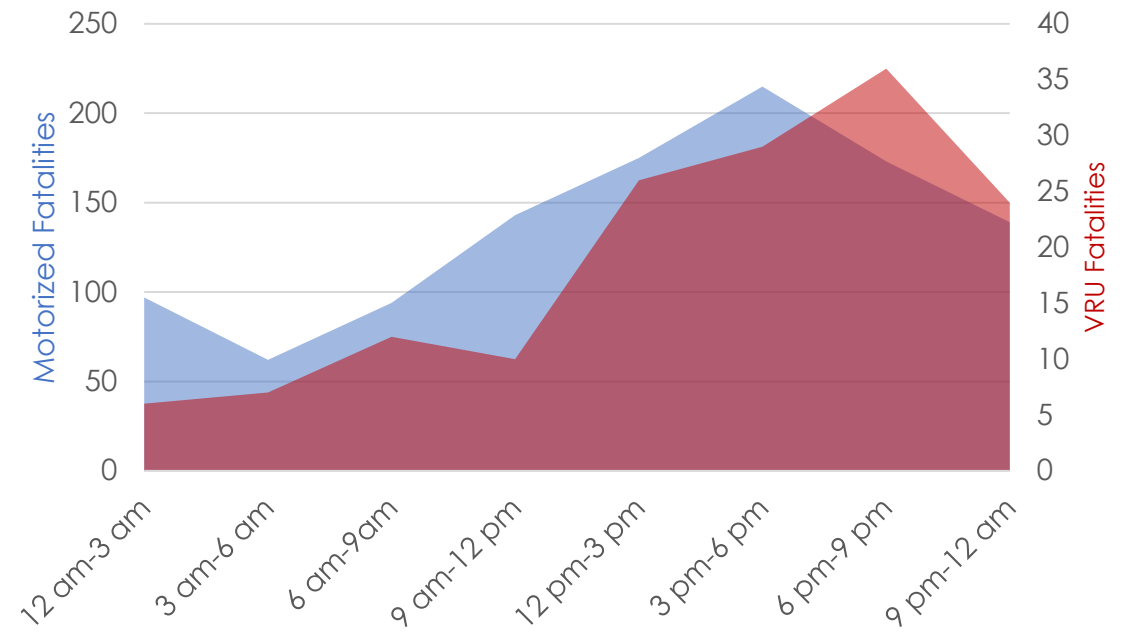
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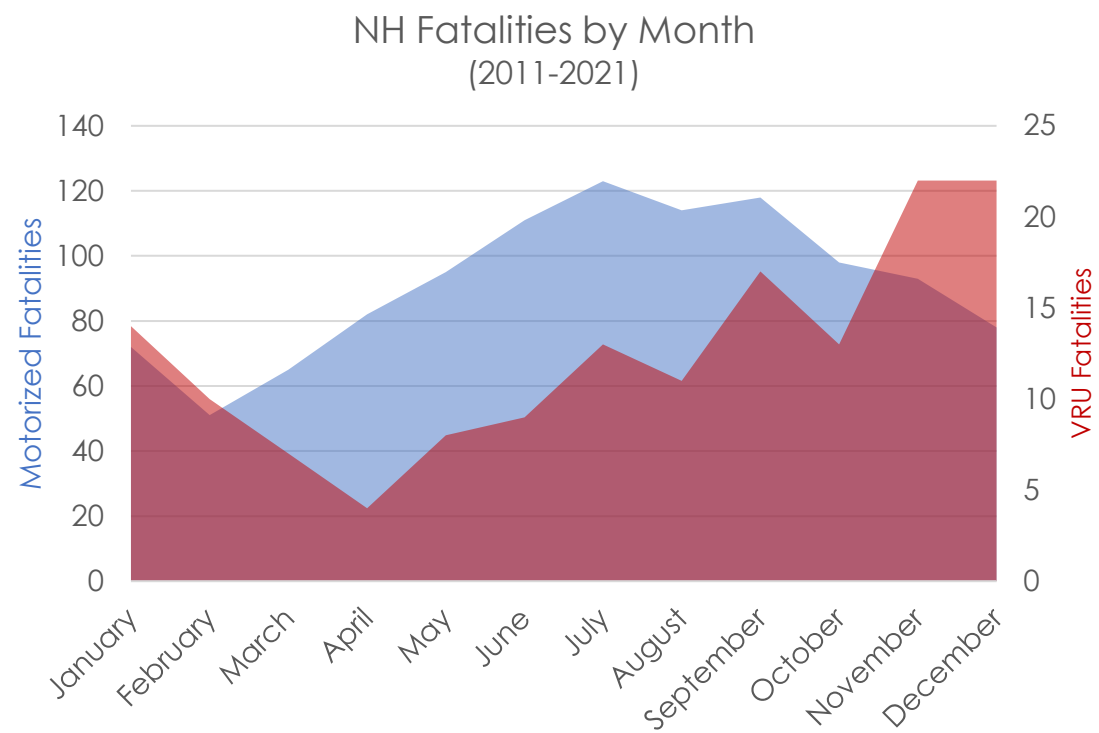
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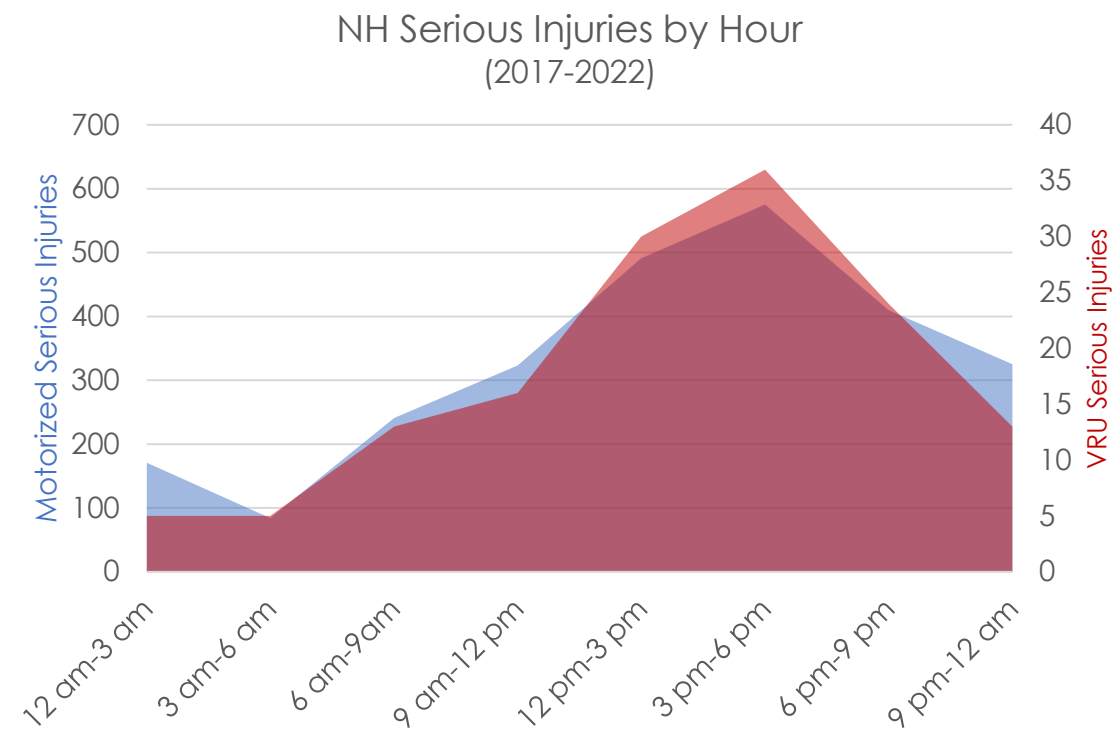
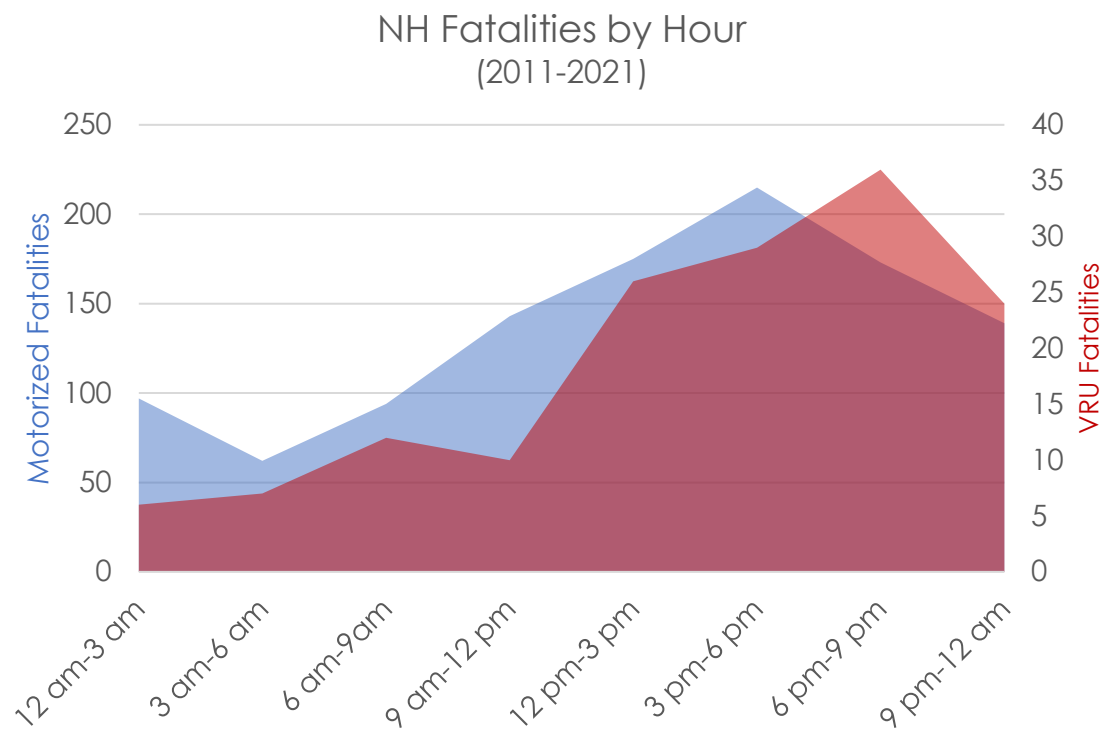
NH Vulnerable Roadway User (VRU)
Fatalities by Hour
(2011-2021)
n=150

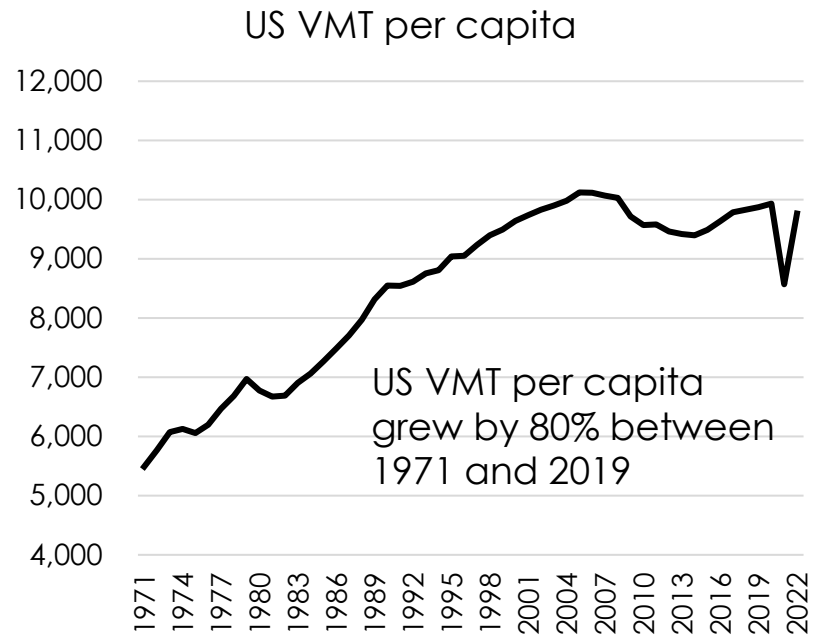


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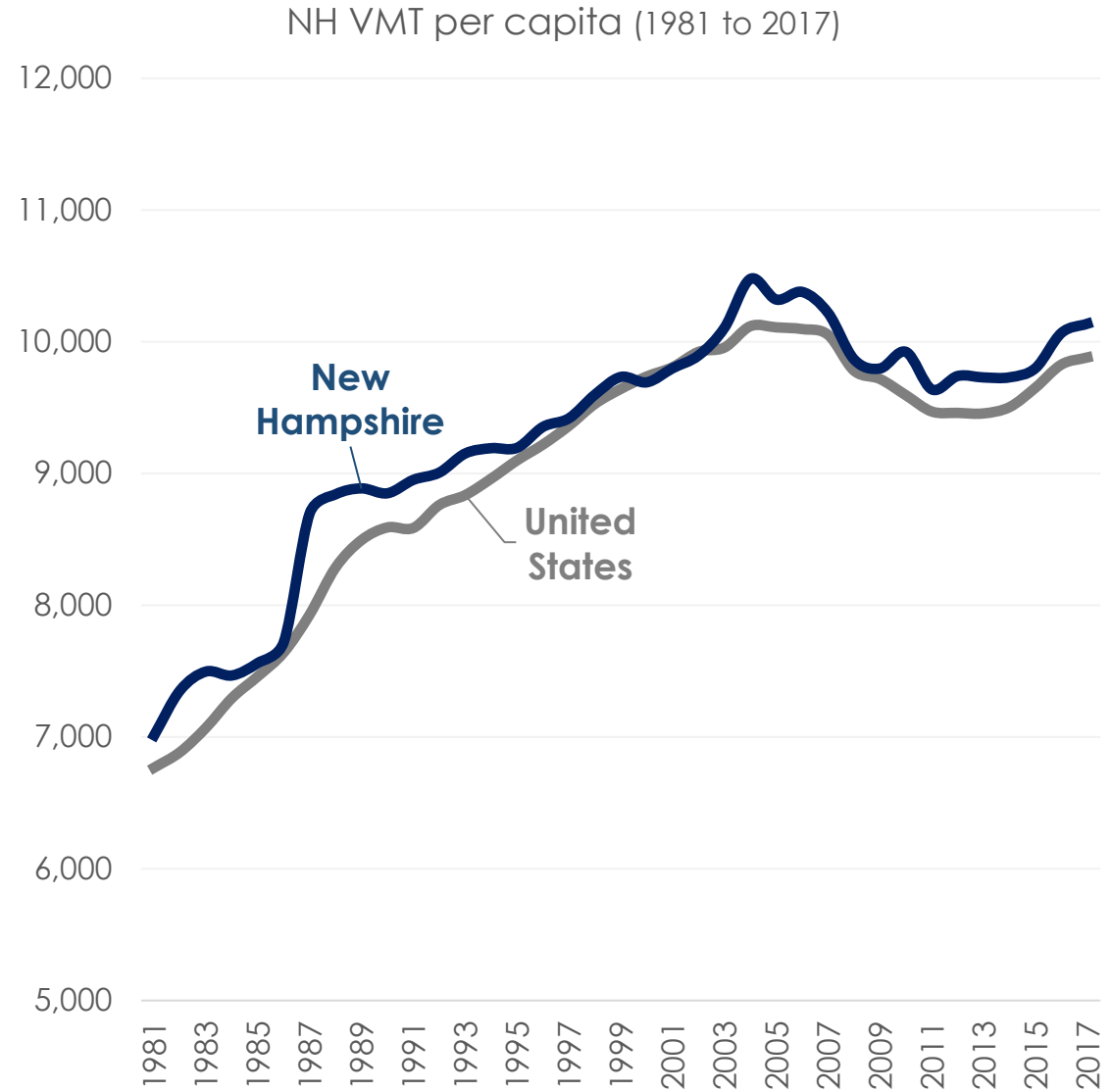




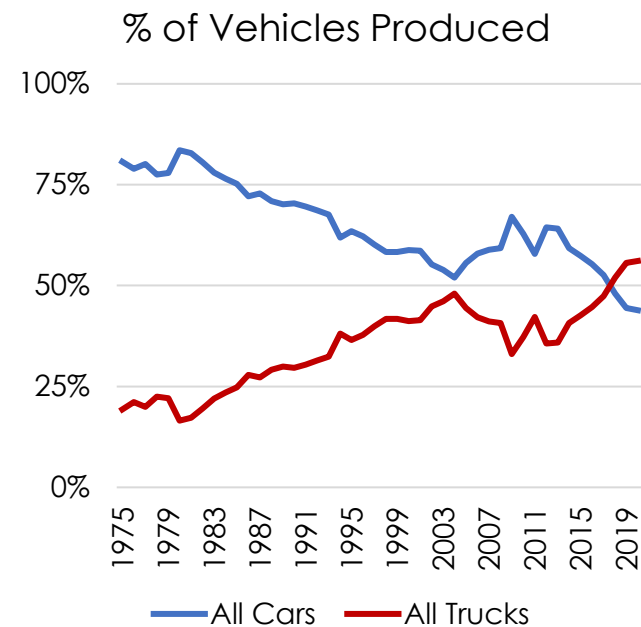
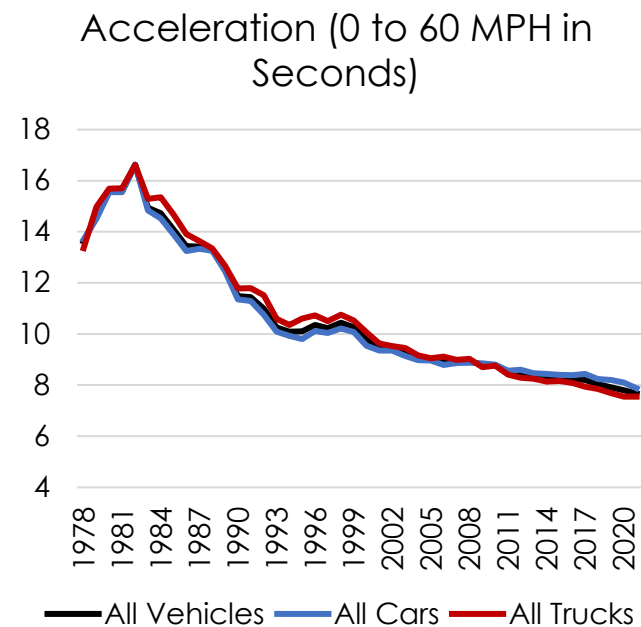
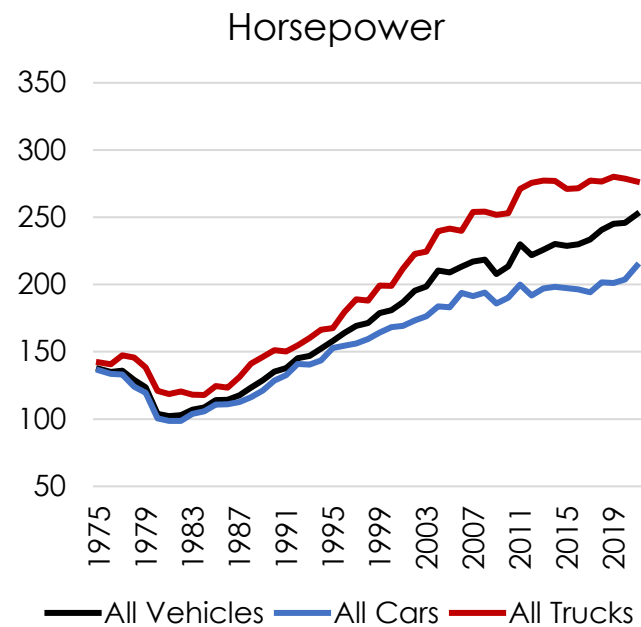
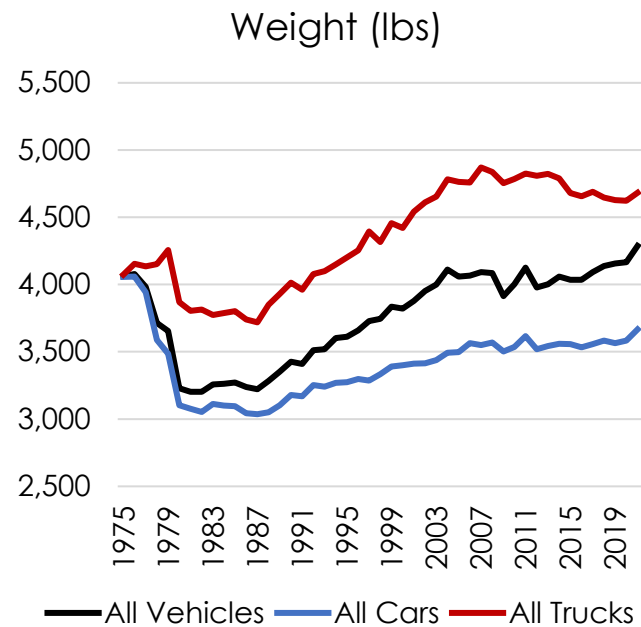




Sources: [Federal Highway Administration](#); [Federal Reserve Bank of St. Louis](#); [US Bureau of Economic Analysis](#); [US Department of Energy](#).



Source: [Eno Center for Transportation](#)



Weight (lbs)

5,500

Horsepower

350



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

[Source: Will Chase/Axios](#)

1978 1981 1984 1987 1990 1993 1996 1999 2002 2005 2008 2011 2014 2017 2020
— All Vehicles — All Cars — All Trucks

1975 1979 1983 1987 1991 1995 1999 2003 2007 2011 2015 2019
— All Cars — All Trucks

Source: [US Environmental Protection Agency](#)



“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

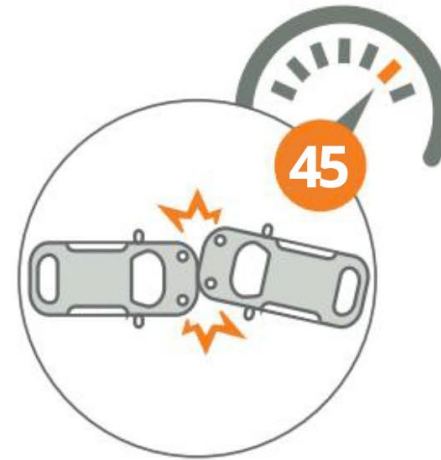
Survivable Speeds



Risk of crash with
vulnerable road users



Risk of crash
at intersections



Risk of
head-on crash

[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			

[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



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.

[National Association of City Transportation Officials](#)

Sources: [Manchester Information](#); [Manchester Ink Link](#); [New Hampshire Union Leader](#).

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NATION ROUSED AGAINST MOTOR KILLINGS

THE need for vigorous nation-wide action to promote street and highway safety has prompted Secretary Hoover to call a conference of representatives of the various agencies interested in checking the steady increase in vehicular accidents. The conference will be held in Washington on Dec. 19. It will treat the subject from seven angles, including statistics, traffic control, construction and engineering, city planning and zoning, insurance, education and the motor vehicle and public relations.

THE horrors of war appear to be less appalling than the horrors of peace. The automobile looms up as a far more destructive piece of mechanism than the machine gun. The reckless motorist deals more death than the artilleryman. The man in the street seems less safe than the man in the trench.

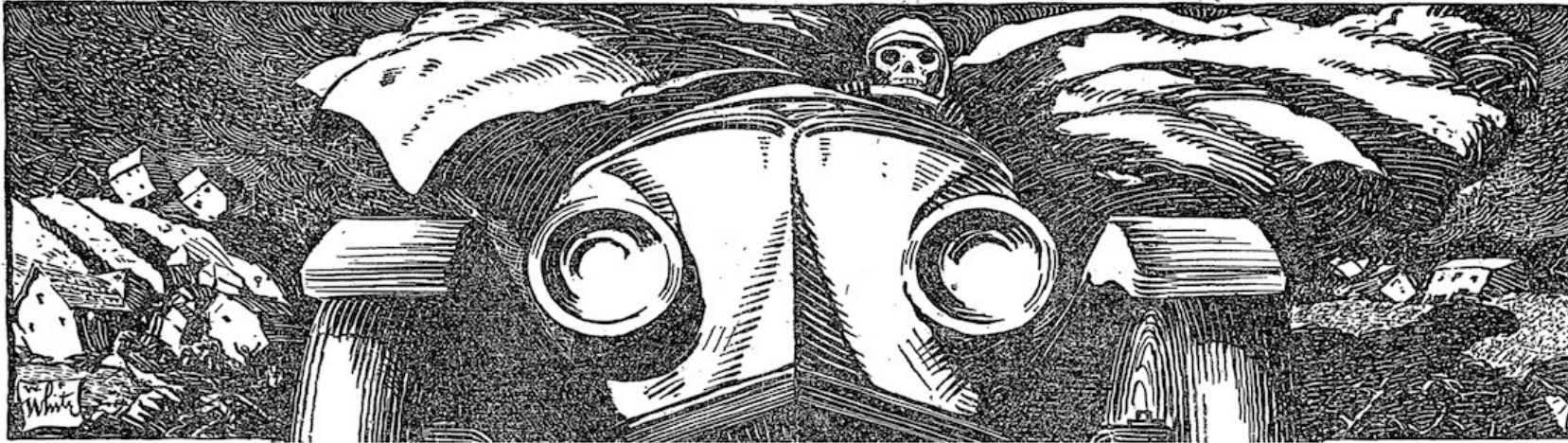
Fifty thousand of our men were killed in action or died of wounds in the nineteen months of this country's participation in the World War. This is at the rate of 2,600 fatalities a month—a modest average when compared with the startling toll of 7,000 lives destroyed monthly by accidents in the United States.

The greatest single lethal factor is the automobile. It left a shambles in its wake as it coursed through 1923. It accounted for 16,452 victims. According to the tragic auto mishaps recorded in the first nine months of this year there will be an increase of more than 2,000 for 1924. At the beginning of October approximately 14,000 motor deaths had already been reported.

A conference called by Secretary Hoover for next month will concentrate its deliberations upon street and highway accidents. A Committee on Statistics was appointed by Mr. Hoover to supply the conference with a clearly defined picture of the public accident situation. This committee is placing particular emphasis upon the annual report of the United States Census Bureau on mortality statistics, which revealed that 22,621 persons died in vehicular mishaps in 1923, an increase of almost 2,500 over 1922.

While the number killed in automobile accidents last year was given as 16,452, the motor car was also concerned in other highway fatalities. The Census Bureau charges each accident to the heaviest vehicle involved. A collision between a train and an automobile is classified as a train accident. When street cars collide with machines, the street cars are blamed upon the records. There were 2,268 deaths in train grade crossing accidents in 1923. Many of the 2,006 who

Secretary Hoover's Conference Will Suggest Many Ways to Check The Alarming Increase of Automobile Fatalities.—Studying Huge Problem



roads become insignificant by comparison with those caused by automobiles.

The huge economic loss caused by street and highway accidents is set forth in a preliminary report prepared by the Committee on Statistics appointed by Secretary Hoover. On this subject the report says in part:

"The economic loss due to these approximately 700,000 accidents in which personal injuries occur can probably never be known. Several estimates have been made. The most conservative is based upon the usual liability of \$5,000 per life and average of \$175 for each personal injury.

"These two items, applied to 22,000 fatalities and 678,000 non-fatal injuries, respectively, give an approximate total of \$232,000,000. Add to this an average actual property damage of \$50 due to all accidents involving either personal injury or property damage (conservatively estimated at 1,000,000), there results a total estimated loss of nearly \$200,000,000 annually.

"In these estimates no account is



asserting them in the actual use of the highway in the presence of superior force in the shape of the omnipresent motor car?

"It is usually only when in court at the post-mortem of an accident or of his own bodily post-mortem from such accident that the pedestrian is, so to speak, allowed to enjoy his legal rights! Most of us prefer not to fall victims as the price of such recourse.

"Some time ago General O'Ryan was quoted as saying that 'most of us are still addicted to habits on the street which were suitable to the life of a generation ago when all vehicles were horse drawn. The modern street calls for an entirely new set of habits and for a kind of alertness and precaution which we did not even dream of twenty years ago.' He recommends that the pedestrian familiarize himself with the rules of the road and traffic regulations as well as the problems of the motor vehicle driver.

Pedestrian Like a Rabbit.

the streets and roads. Assuredly, that would be a privileged class who would steer such monsters. In reality, the automobile drivers are a privileged class right now.

"Under present conditions there is a deadly competition between pedestrian and motorist for the use of those strips of territory we call street. A conflict deadly to the wayfarer, with the victory to the motorist.

"Frankly, it is largely a matter of viewpoint, this motor problem, and the same individual it affords is much altered from his other side behind the wheel. As both must use the highway and as two bodies cannot occupy the same space at once, when the twain meet, as they so often do, what is the solution?

"Manifestly, the alibi cannot go on. The mangle and crushing cannot continue. Human life is for relief. The troubled mother who sends her little child off to school or out to play, the faltering aged person who tremulously attempts a crossing must have some surcease of their anxiety. Conversely, the conscientious operator who, with tense nerves sees the fool dart out into his very path from some unexpected direction is entitled to some regard.

"As it stands, the motorist has won his contest for the use of the streets over the foot passengers, despite the present efforts of police, courts and motor vehicle authorities to regulate him and his kind. The motorist has inspired fear and the sort of respect that brute force inspires.

"If we have failed adequately to regulate motorists shall we succeed any better in attempts to regulate pedestrians? It is well enough to condemn the 'jaywalker,' if by that term we mean the reckless individual who is bent on getting there, whether on or off a crosswalk, without looking or governing his movements. But if we mean the average and the under-average in intelligence and alertness of our population who do not use the best judgment because they cannot and who, exasperated by the never heeding, never ending train of automobiles that oftentimes roll ceaselessly toward them, eating up the highway so fast as to upset all calculations of time and space, try to thread their way through if they are to cross at all, then I disagree emphatically.

As to Regulating Jaywalkers.

"Any regulating of the pedestrian is to be done with caution. His constitutional rights still exist on paper, at least. To place in the hands of any single official such as the Police Commissioner of this or any other city the unrestrained power to promulgate codes for his conduct is a questionable expedient, no matter how well meaning that official may

New York Times, November 23, 1924

"Sacrifices to the Modern Moloch"

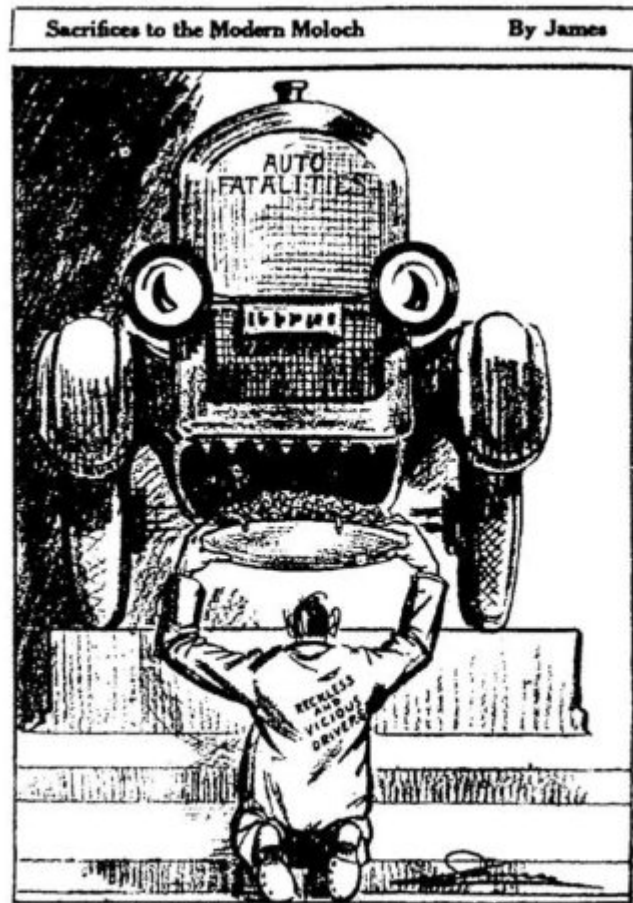


Figure 1.3

Cartoon by "James," *St. Louis Star*, November 6, 1923, p. 14.

"In cities with populations exceeding 25,000, pedestrians accounted for more than two-thirds of the dead in 1925. In larger cities, the proportions were still higher....In [1928] 8,246 pedestrians were struck by motor vehicles in Philadelphia, about half were under age 16."

Peter Norton. 2011. *Fighting Traffic*.
Cambridge, Massachusetts Institute of
Technology Press, pp. 21, 24.

“Sacrifices to the Modern Moloch”

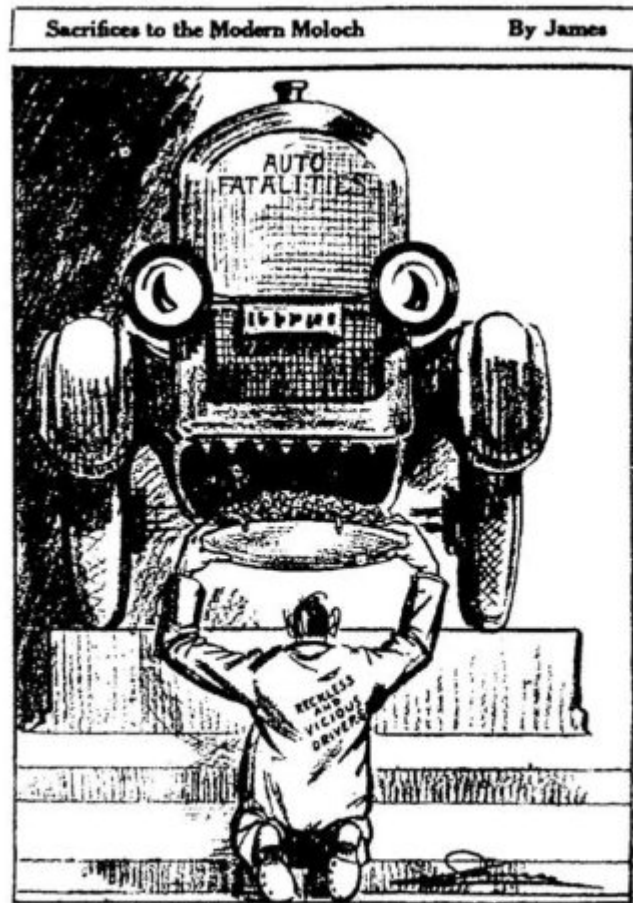
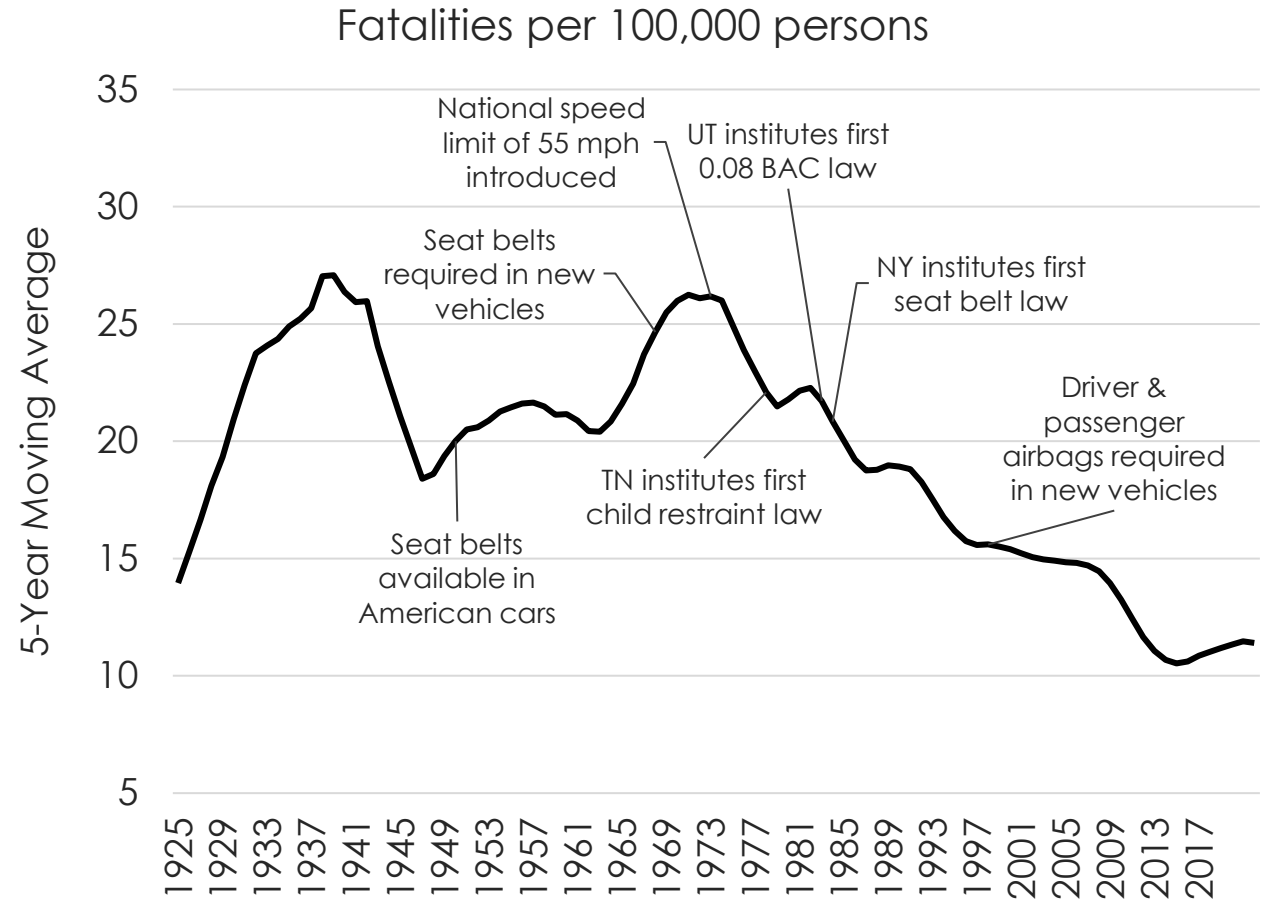


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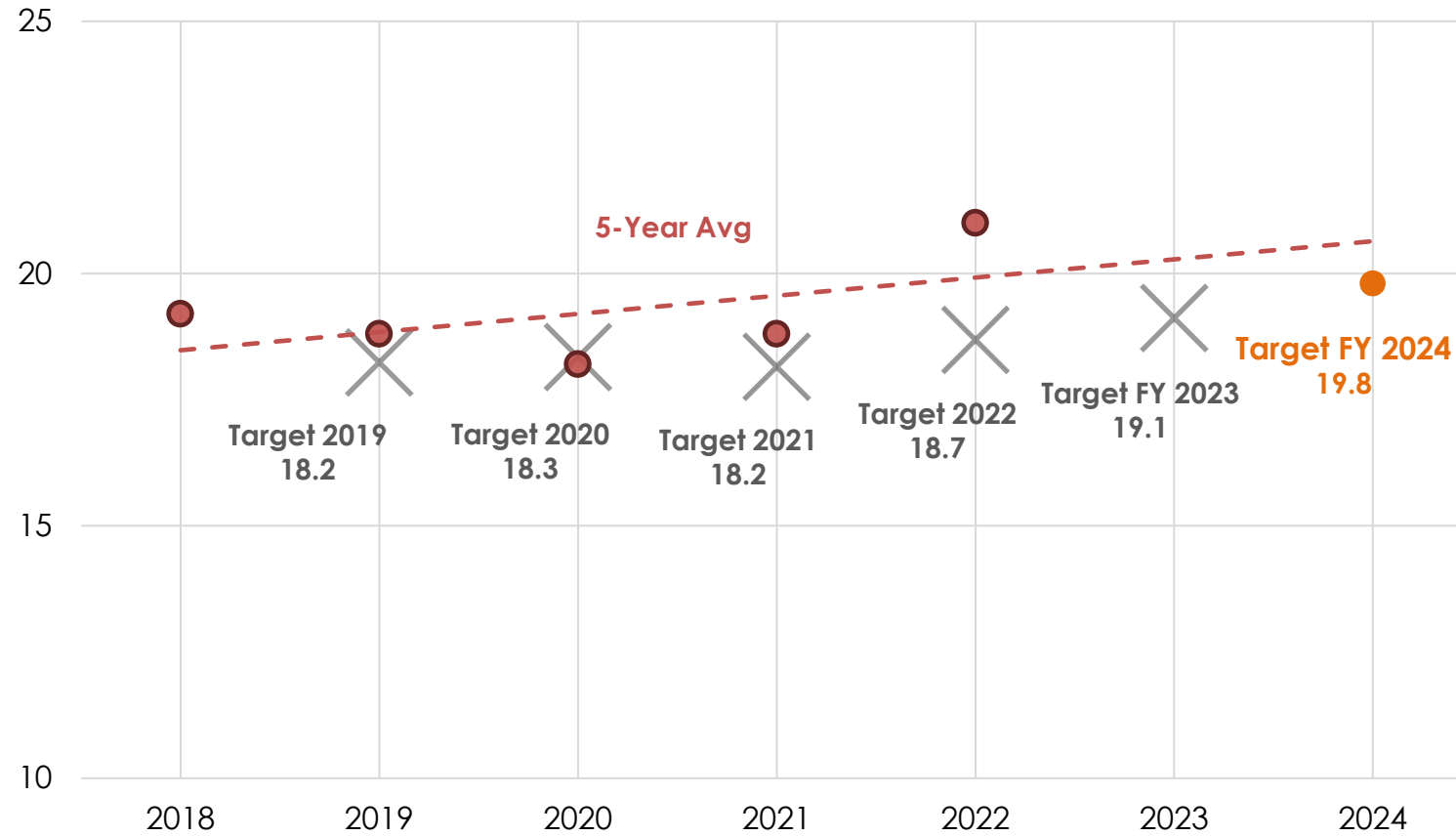
[Peter Norton](#); 99% Invisible



[National Highway Traffic Safety Administration](#); US Census Bureau.

SNHPC Safety Performance Measures (PM1) 2024

Measure 1: Projected Number of SNHPC Fatalities



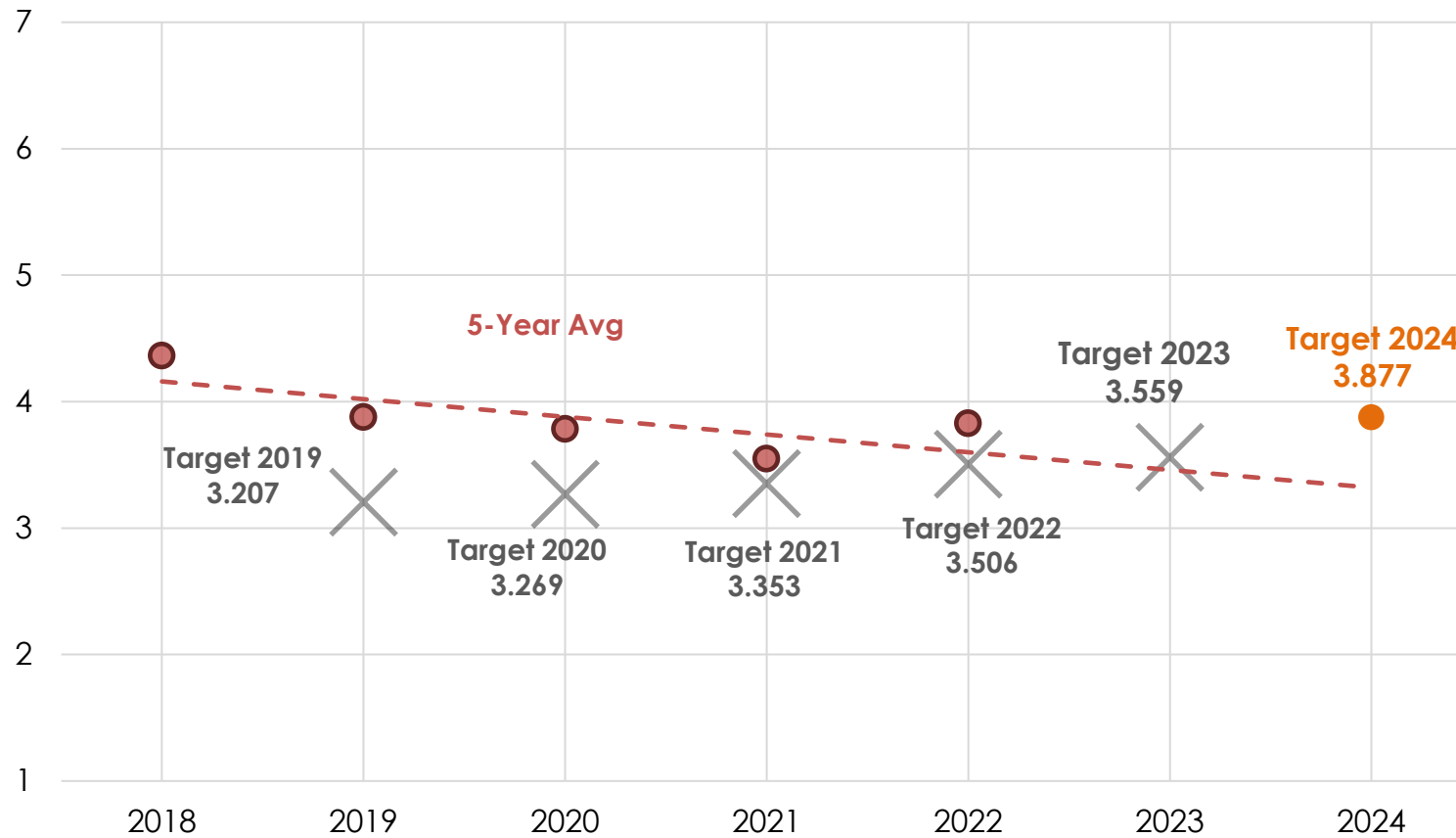
Measure 2: Projected SNHPC Fatality Rate



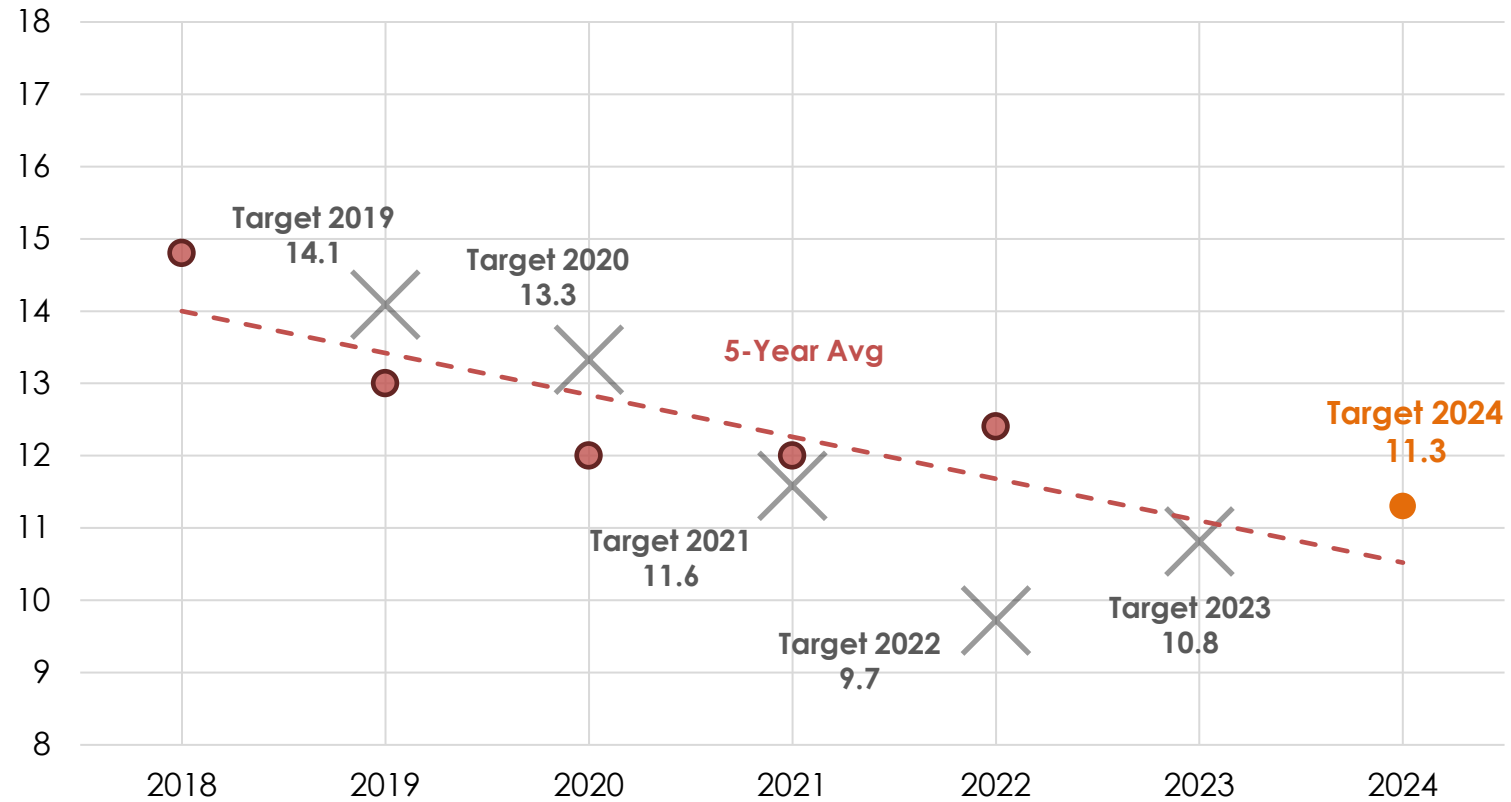
Measure 3: Projected Number of SNHPC Serious Injuries



Measure 4: Projected SNHPC Serious Injury Rate



Measure 5: Projected Number Non-motorized
Fatalities and Serious Injuries



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
Number of Fatalities
Fatality Rate per 100 Million VMT
Number of Serious Injuries
Serious Injury Rate per 100 Million VMT
Non-Motorized Fatalities and Serious Injuries

State Target SNHPC Target

2024		Action
120.0	19.8	Support State Target
0.919	0.795	Regional Target
509.6	105.0	Support State Target
3.877	11.300	Support State Target
39.4	11.3	Support State Target

David Tilton
Regional
Transportation
Planner
dtilton@snhpc.org

Zachary Swick
Senior GIS Analyst
zswick@gmail.com

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

Questions?

