



Automotive Considerations for Pedestrian Safety

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Fundamental Aims

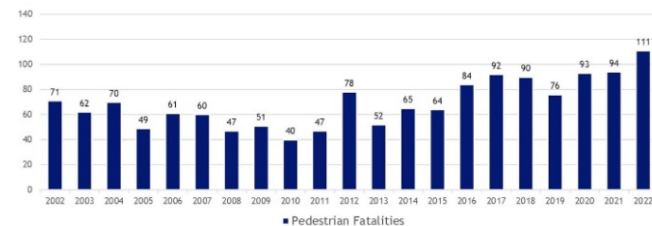


1) Prevent Crashes

2) Prevent Severe Injuries & Fatalities



Colorado Pedestrian Fatalities
2002 - 2022



Source: https://www.codot.gov/safety/traffic-safety/assets/fatal-crash-data-city-county/fatality_by_person-type_2023_20230612.pdf

Physics



What causes a crash to result in severe injury or death?

It's terribly simple. It's something we learned about in middle school. It's Newton's Second Law of Motion.

Two controllable factors:

- Speed
- Vehicle Size

$$F = ma$$

force mass acceleration

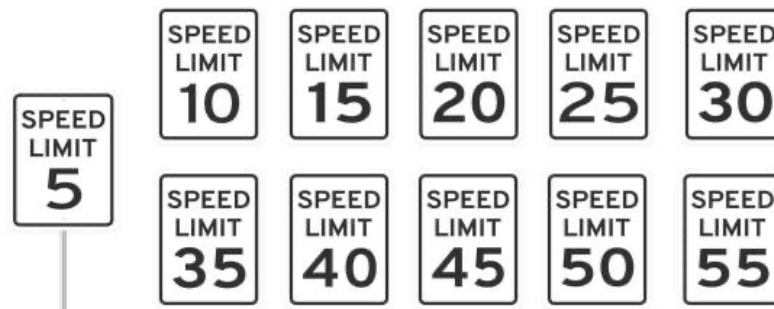
Arrows point from the labels 'force', 'mass', and 'acceleration' to the variables 'F', 'm', and 'a' respectively in the equation.



Speed



As a general matter of public health, public concern and public policy, we've all agreed to take a good, hard look at speed. It's why we're not allowed to drive 120 mph on the highway or 60 mph through a neighborhood or school zone. It's common-sense, straightforward policy. The public understands and supports this sort of thing.

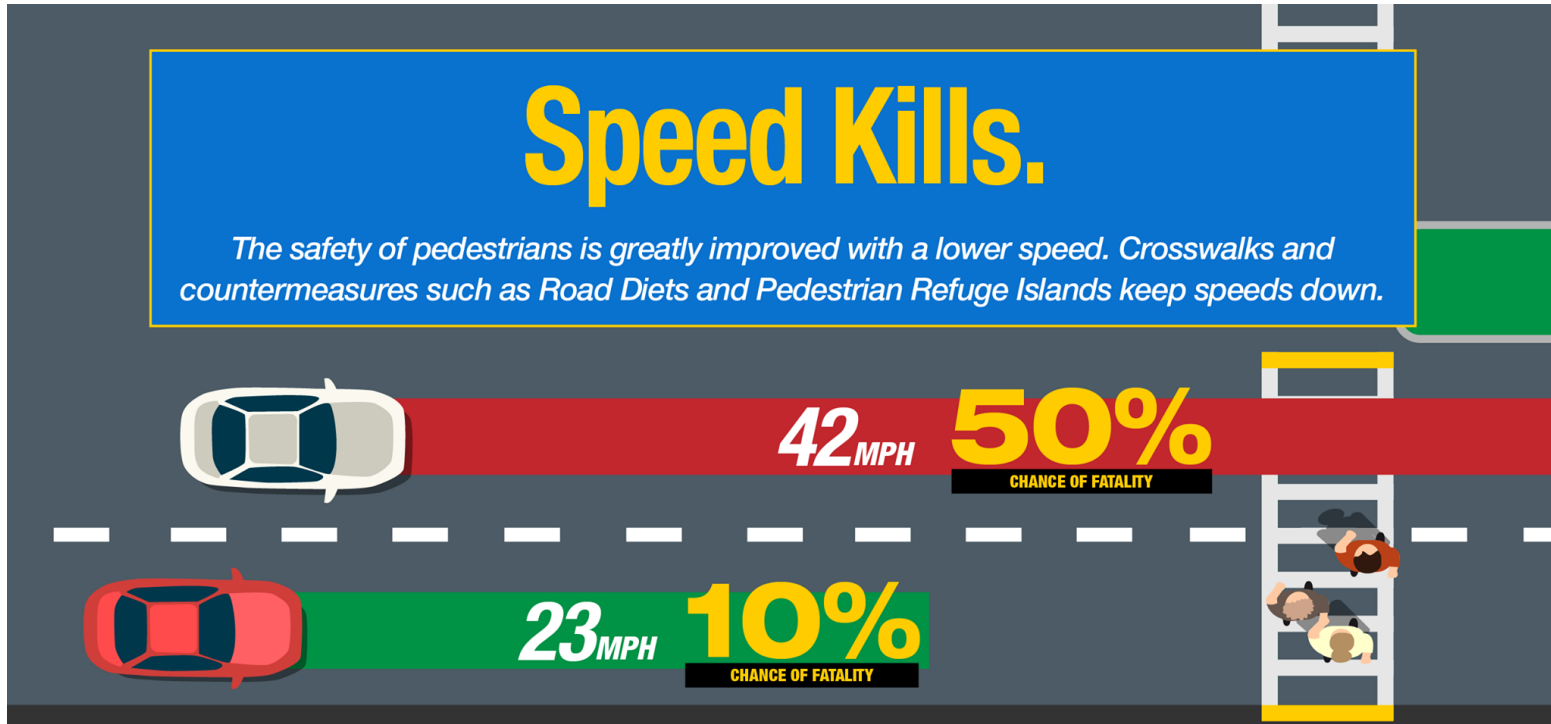


Why? Speed kills.



Speed Kills.

The safety of pedestrians is greatly improved with a lower speed. Crosswalks and countermeasures such as Road Diets and Pedestrian Refuge Islands keep speeds down.



Severe Injury:

- 10% at 16mph
- 25% at 23mph
- 50% at 31mph
- 75% at 39mph
- 90% at 46mph

Death:

- 10% at 23mph
- 25% at 32mph
- 50% at 42mph
- 75% at 50mph
- 90% at 58mph

Size kills, too.



NHTSA: “Pedestrians are 2-3 times more likely to suffer a fatality when struck by an SUV or pickup truck than when struck by a passenger car.”

IHS: Pedestrian deaths “twice as high for SUVs, nearly three times as high for vans and minivans, and nearly four times as high for pickups as they were for cars.”

AAAM: “SUVs remain disproportionately likely to injure and kill pedestrians compared with cars.”

NTSB: “Increased risk of death and severe injury for all road users from heavier curb weights.”



Bigger vehicles are popular.



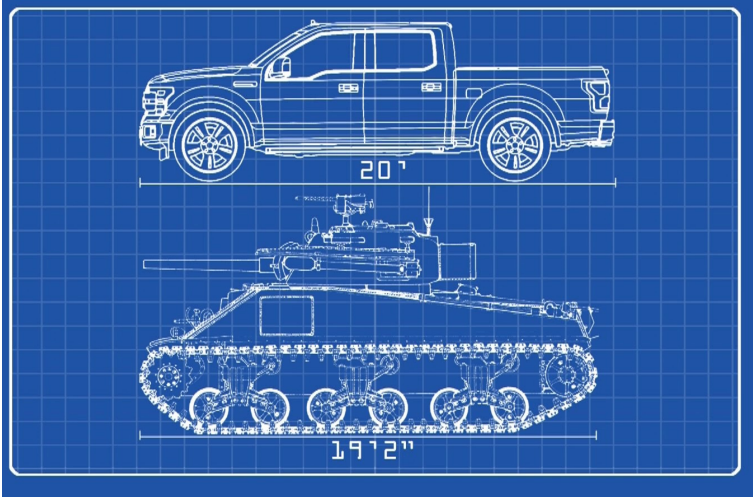
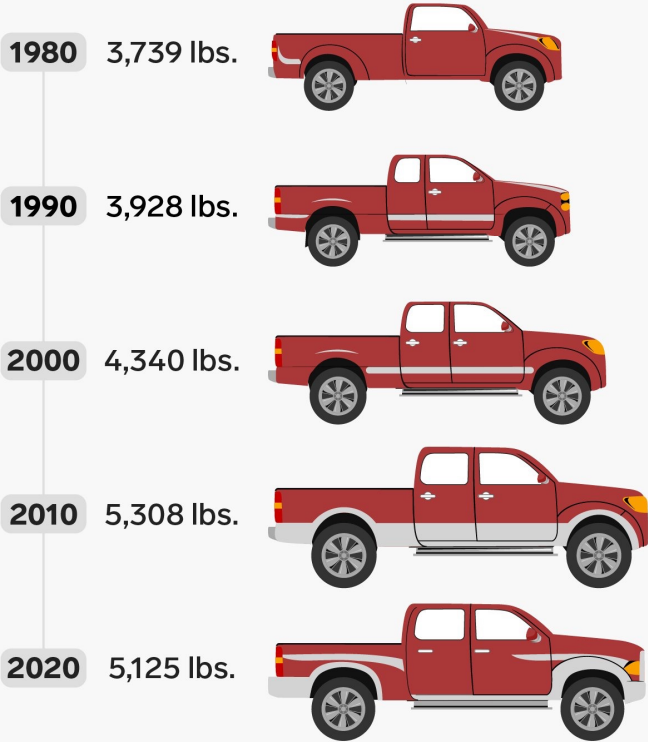
As a function of consumer choice, production trends, and vehicle electrification and related incentives, the U.S. automotive market now largely produces heavy vehicles.

- JD Power: “Over 80 percent of new vehicle sales in the U.S. are SUVs and trucks.”
- Most major OEMs are phasing out traditional sedans in favor of crossovers, SUVs, and trucks.
- IIHS: Electric vehicles are heavier by dint of their battery packs. The electric GMC Hummer weighs roughly 9,000 pounds. Its battery pack *alone* weighs 2,900 pounds – about the same weight as a Honda Civic.

Bigger vehicles are getting bigger



The evolution of the pickup truck



Colorado's Top Cars



Per 2022 vehicle registration data from the Colorado DMV:

1. Ford F-150 - 94,783 registrations – **4,021 to 5,740lbs**
2. Chevrolet Silverado - 75,375 registrations – **4,400 to 5,620lbs**
3. Subaru Outback - 55,936 registrations – **3,637 to 3,937lbs**
4. Toyota Tacoma – 53,529 registrations – **3,915 to 4,550lbs**
5. Jeep Grand Cherokee - 52,550 registrations – **4,238 to 4,784lbs**
6. Toyota 4Runner - 51,927 registrations – **4,805 to 6,300lbs**
7. Subaru Forester – 51,430 registrations – **3,454 to 3,620lbs**
8. Toyota Rav4 - 43,156 registrations – **3,370 to 3,655lbs**
9. Honda CR-V – 41,960 registrations – **3,337 to 3,569lbs**
10. GMC Sierra – 41,129 registrations – **4,430 to 7,059lbs**

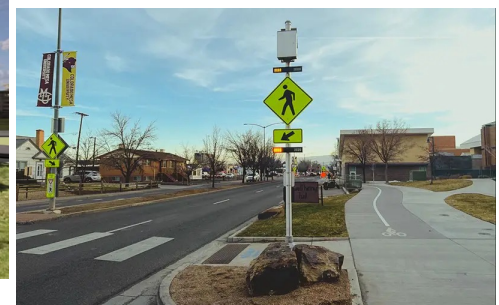
What can we do?



Amid skyrocketing pedestrian fatalities & rising average vehicle curb weight, what can we do to make people safer?

- **Technology?** Per AAA, detection systems don't work.
- **Speed Limits?** Lowering speed limits is a start, but most fatalities aren't caused by folks who *obey* speed limits.
- **Size & Weight Restrictions?** No way. Impossible to do at the state level, fundamentally anti-consumer choice, and flies in the face of broader Colorado electrification goals.

What's left? Infrastructure





**Reach out! We want to help.
It's what we've done since 1922.**

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