ADVOCATES FOR HIGHWAY & AUTO SAFETY

Pedestrian Safety

The Issue:

At one time or another, everyone is a pedestrian. Pedestrians are vulnerable roads users (VRU) because they lack the safety infrastructure of vehicles and thus are at higher risk of injury and death in collisions with vehicles. Curbing speed on roadways, upgrading roadway safety infrastructure and enhancing the conspicuity of pedestrians are essential components to improving pedestrian safety. Available vehicle safety technologies that mitigate or prevent pedestrian injuries and fatalities should be required in new vehicles with safety performance standards.

The Impact:

- In 2022, 7,522 pedestrians were killed in traffic crashes in the U.S.[1] This is the highest number of pedestrians killed in a single year since 1981.[2]
- Compared to the recorded all-time low of pedestrian fatalities in 2009, pedestrian fatalities are up 83%.[3]
- While pedestrian fatalities in 2023 are estimated to decline by 2%, this is still 17% above pre-pandemic numbers.[4]
- On average in 2022, a pedestrian was killed approximately every 70 minutes.[5]
- In 2022, an estimated 67,336 pedestrians were injured in traffic crashes in the U.S., which equates to a pedestrian being injured approximately every eight minutes.[6]

The Facts:

- In 2022, pedestrian deaths accounted for 18% of all traffic fatalities.[7]
- Crashes involving pedestrians resulted in $17.6 billion in economic costs and $112.5 billion in comprehensive costs in 2019.[8] Accounting for inflation alone, this would equate to $21.6 billion in economic costs and $137.8 billion in comprehensive costs in 2024.[9]
- 85% of pedestrian fatalities occurred in an urban setting in 2022.[10]
- 75% of pedestrian fatalities occurred at locations that were not intersections in 2022.[11]
- 78% of pedestrian fatalities occurred in the dark, as opposed to during daylight, dusk, or dawn, in 2022.[12]
- In 2022, older pedestrians (age 65+) accounted for 20% of all pedestrian fatalities and 14% of all pedestrian injuries.[13] In 2022, the fatality rate for older pedestrians

was higher (2.59 per 100k population) than the combined rate for all other ages (2.19 per 100k population).[14]
- In 2022, 17% of all children (ages 14 and younger) killed in traffic crashes were pedestrians.[15]
- 88% of pedestrian fatalities occurred in single vehicle crashes in 2022, and of those 84.5% were struck by the front of the vehicle.[16]
- A AAA Foundation for Safety Study found that the risk of severe injury for a pedestrian struck by a vehicle reaches 50% at 31 miles per hour, and the average risk of death reaches 50% at 42 mph.[17]

Frontovers:

- Vehicles can be deadly to pedestrians even when not moving fast. Situations where a vehicle, moving forward slowly, strikes and injures or kills a vulnerable road user is called a "frontover."
- Many vehicles have blind zones in front of the vehicle related to the height of the hood and bumper, or while turning, that cover areas where children, those using wheelchairs and in the case of some large vehicles even smaller statured adults, might not be seen by an operator and inadvertently struck.[18]
- A number of frontover situations occur off public roads, where traditional crash data collection occurs, and as a result fatality and injury figures are likely underrepresentative.
    - According to NHTSA, on average each year nearly 450 people are killed in non-traffic crashes involving forward moving vehicles, and another 14,800 are injured.[19]

The Solutions: Technology and Roadway Safety Infrastructure

Vehicle Safety Technology and Safety Standards Can Protect Vehicle Occupants and Other Road Users

The U.S. Department of Transportation (DOT) must expeditiously advance minimum performance standards for vehicle safety technologies which can prevent or mitigate crashes and protect vehicle occupants and road users. These safety technologies should be standard, not optional, equipment in new vehicles. This action will achieve safety equity by both ensuring that the technology responds to and benefits all road users and that consumers buying new vehicles are not charged extra fees for the technology. Moreover, requiring equipment as standard can reduce the base cost of technology due to economies of scale.

Advanced Driver Assistance Systems (ADAS):

- According to the AAA Foundation for Traffic Safety, equipping all cars, pickup trucks, vans, minivans and SUVs with forward collision warning (FCW)/automatic emergency braking (AEB) which respond to pedestrians/bicyclists as well as vehicles could prevent 1.9 million crashes, nearly 900,000 injuries, and more than 4,700 deaths annually.[20]
- The Infrastructure Investment and Jobs Act (IIJA, Pub. L. 117-58) directs the U.S. DOT to issue Final Rules on minimum performance standards and requirements for

ADAS technologies including AEB, FCW, lane departure warning (LDW) and lane keeping assist (LKA).[21]

- In May 2024, U.S. DOT issued a Final Rule to require passenger vehicles be equipped with AEB that detect pedestrians.[22] NHTSA estimates that this action will save 362 lives and mitigate over 24,000 injuries annually. It is estimated to result in yearly cost benefit of between $5.8-$7.2 billion.[23] In July 2023, DOT issued a NPRM to require heavy vehicles weighing over 10,000 pounds to be equipped with AEB.[24]

Vulnerable road user impact protection:

- In September of 2024, the NHTSA published an NPRM to specify vehicle performance standards to mitigate the risk of serious to fatal injuries in contacts between pedestrians and vehicle hood components in the case of a vulnerable road user collision.[25]
- NHTSA research on pedestrian crashes has identified head and lower extremities as frequent locations of serious injuries in pedestrian crashes.[26]
- In May 2023, NHTSA published a Request for Comments (RFC) on a proposal to update the New Car Assessment Program (NCAP) to include information about crashworthiness pedestrian protection.[27]
  - NHTSA estimates that taking such action will result in 476 lives saved and 32,907 injuries prevented annually.[28]
- Consumers in the U.S. are continuing to purchase pickup trucks and SUVs, with these vehicles accounting for 79.3% of new vehicle sales in 2023.[29] The Insurance Institute for Highway Safety (IIHS) has found evidence suggesting that SUVs are more lethal to pedestrians.[30]

Speed Curbing Technology:

- Speed assistance systems, such as intelligent speed assistance (ISA), can provide information to drivers about present speed limits, warn drivers when a vehicle speed is above the limit, prevent a vehicle from exceeding the speed limit, or maintain a set speed.[31] Rating this technology in new vehicles as part of an improved NCAP, as is already done in Europe, could incentivize automakers to equip more U.S. models with speed assistance systems. ISA is now required on all new vehicles sold in Europe as of July 2024.[32]

Adaptive Driving Beam Headlights:

- With 78% of pedestrian fatalities occurring in the dark,[33] improvements to vehicle lighting would afford drivers additional time to identify and respond accordingly to pedestrians in the roadway.
- Adaptive driving beam (ADB) headlights are a lighting technology which uses headlight beam modification to increase illumination of the road while avoiding glare to other traffic.
- In 2022, the NHTSA published a Final Rule allowing but not requiring, nor identifying a safety standard for, ADB systems on passenger vehicles.[34]
- Research conducted for the U.S. DOT in 2014 concluded that ADB could potentially reduce nighttime crashes by 6.7%.[35]

Road Safety Infrastructure Improvements and the Safe System Approach[36]

The Safe System Approach (SSA) assumes that humans will make mistakes and that we must anticipate this and make accommodations to account for limited human injury tolerances through five elements: Safe Vehicles, Safe Road Users, Safe Roads, Safe Speed and Post-Crash Care. By improving the design and operation of roadways to accommodate all road users safely, the SSA seeks to avoid conflicts between road users (drivers of vehicles, motorcycle riders, pedestrians, bicyclists, micromobility riders, wheelchair users and others) and minimize impact forces when they do occur to prevent fatalities and serious injuries.

Infrastructure improvements consistent with the SSA to limit conflicts include:

Curbing speed:

- This can be accomplished by reducing speed limits, employing automated enforcement to augment traditional enforcement, adding speed humps, using real-time speed feedback signs, performing road diets and installing roundabouts.

Prioritizing infrastructure to promote safety:

- This includes changes such as adding lighting and adjusting sight lines, leading intervals, pedestrian hybrid beacons, curb extensions, accessible sidewalks, rumble strips, protected intersections, separated bike lanes, and road separations that consider all users.

Localities can advance these and other infrastructure improvements systemically by requiring their adoption as appropriate in all road design and maintenance projects.

The IIJA includes multiple provisions that advance the SSA including expanded funding for safety infrastructure upgrades. It also provides support and guidance for localities planning to apply for such, permits use of certain federal funds for automated enforcement programs in school and work zones, directs requirements for vehicle safety improvements including crash avoidance technologies, and ensures funds are used to improve vulnerable road user safety.

October 2024

---

1 Traffic Safety Facts: 2022 Data, Pedestrians, NHTSA, Jul. 2024, DOT HS 813 590, available at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813590.

2 Traffic Safety Facts: 2022 Data, Pedestrians, NHTSA, Jul. 2024, DOT HS 813 590, available at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813590.

3 Traffic Safety Facts: 2022 Data, Pedestrians, NHTSA, Jul. 2024, DOT HS 813 590, available at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813590; and Traffic Safety Facts 2021: A Compilation of Motor Vehicle Traffic Crash Data, NHTSA, Dec. 2023, DOT HS 813 527, available at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813527.

4 Traffic Safety Facts: Crash Stats, Early Estimates of Motor Vehicle Traffic Fatalities and Fatality Rate by Sub-Categories in 2023, NHTSA, May 2024, DOT HS 813 581, available at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813581; and Traffic Safety Facts 2021: A Compilation of Motor Vehicle Traffic Crash Data, NHTSA, Dec. 2023, DOT HS 813 527, available at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813527.

5 Traffic Safety Facts: 2022 Data, Pedestrians, NHTSA, Jul. 2024, DOT HS 813 590, available at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813590.

6 Traffic Safety Facts: 2022 Data, Pedestrians, NHTSA, Jul. 2024, DOT HS 813 590, available at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813590.

7 Traffic Safety Facts: 2022 Data, Pedestrians, NHTSA, Jul. 2024, DOT HS 813 590, available at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813590.

[8] The Economic and Societal Impact of Motor Vehicle Crashes, 2019 (Revised), NHTSA, Feb. 2023, DOT HS 813 403. Available at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813403.

[9] CPI Inflation Calculator, Bureau Of Labor Statistics, accessed on Oct. 7, 2024. Available at https://data.bls.gov/cgi-bin/cpicalc.pl.

[10] Traffic Safety Facts: 2022 Data, Pedestrians, NHTSA, Jul. 2024, DOT HS 813 590, available at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813590.

[11] Traffic Safety Facts: 2022 Data, Pedestrians, NHTSA, Jul. 2024, DOT HS 813 590, available at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813590.

[12] Traffic Safety Facts: 2022 Data, Pedestrians, NHTSA, Jul. 2024, DOT HS 813 590, available at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813590.

[13] Traffic Safety Facts: 2022 Data, Pedestrians, NHTSA, Jul. 2024, DOT HS 813 590, available at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813590.

[14] Traffic Safety Facts: 2022 Data, Pedestrians, NHTSA, Jul. 2024, DOT HS 813 590, available at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813590.

[15] Traffic Safety Facts: 2022 Data, Pedestrians, NHTSA, Jul. 2024, DOT HS 813 590, available at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813590.

[16] Traffic Safety Facts: 2022 Data, Pedestrians, NHTSA, Jul. 2024, DOT HS 813 590, available at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813590.

[17] Impact Speed and a Pedestrian's Risk of Severe Injury or Death, AAA Foundation for Safety, Sep. 2011, Available at https://nacto.org/wp-content/uploads/2017/11/2011PedestrianRiskVsSpeed.pdf.

[18] Blindzones Graphic, Kids and Car Safety, https://www.kidsandcars.org/frontovers/facts.

[19] Non-Traffic Surveillance: Fatality and Injury Statistics in Non-Traffic Crashes in 2021, NHTSA, Apr. 2024, DOT HS 813 539.

[20] Benson, A., Tefft, B.C., Svancara, A.M. & Horrey, W.J., September 2018. Potential Reduction in Crashes, Injuries and Deaths from Large-Scale Deployment of Advanced Driver Assistance Systems (Research Brief). Washington, D.C.: AAA Foundation for Traffic Safety, Available at: https://aaafoundation.org/potential-reduction-in-crashes-injuries-and-deaths-from-large-scale-deployment-of-advanced-driver-assistance-systems/.

[21] Infrastructure Investment and Jobs Act (IIJA, Pub. L. 117-58), November 15, 2021, Sections 24208 and 23010, available at: https://www.govinfo.gov/content/pkg/PLAW-117publ58/pdf/PLAW-117publ58.pdf.

[22] 89 FR 39686 (May 9, 2024); available at https://www.govinfo.gov/content/pkg/FR-2024-05-09/pdf/2024-09054.pdf .

[23] 89 FR 39686 (May 9, 2024); available at https://www.regulations.gov/document/NHTSA-2023-0021-1065.

[24] 88 FR 43174 (Jul. 6, 2023); available at https://www.regulations.gov/document/NHTSA-2023-0023-0001.

[25] Federal Motor Vehicle Safety Standards; Pedestrian head Protection, Global Technical Regulation No. 9; Incorporation by Reference, 89 FR 76922, Sep. 19, 2024, available at https://www.regulations.gov/document/NHTSA-2024-0057-0001

[26] Final Report – The Pedestrian Crash Data Study, NHTSA, ESV 17 Paper No. 248, available at https://www-nrd.nhtsa.dot.gov/pdf/esv/esv17/proceed/00105.pdf

[27] New Car Assessment Program, Request for Comments, NHTSA, 88 FR 34366,May 26, 2023, available at https://www.regulations.gov/document/NHTSA-2023-0020-0001.

[28] *Id.* at 34374

[29] USA – Automotive Sales Volume, 2023, Marklines.com, last accessed Apr. 19, 2024 at https://www.marklines.com/en/statistics/flash_sales/automotive-sales-in-usa-by-month-2023.

[30] New Study Suggests Today's SUVs Are More Lethal To Pedestrians Than Cars, IIHS, Jun. 2020, available at https://www.iihs.org/news/detail/new-study-suggests-todays-suvs-are-more-lethal-to-pedestrians-than-cars.

[31] European New Car Assessment Programs: Speed assistance systems, available at https://www.euroncap.com/en/vehicle-safety/the-ratings-explained/safety-assist/speed-assistance/

[32] EU Regulation 2019/2144, available at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R2144

[33] Traffic Safety Facts: 2022 Data, Pedestrians, NHTSA, Jul. 2024, DOT HS 813 590, available at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813590.

[34] Federal Motor Vehicle Safety Standards: Lamps, Reflective Devices, and Associated Equipment, Adaptive Driving beam headlights, Final Rule, 87 FR 9916, Feb. 22, 2022, available at https://www.regulations.gov/document/NHTSA-2022-0013-0001.

[35] Visual performance and Safety Benefits of Adaptive Driving Beam headlighting Systems, Lighting Research Center, May. 2014.

[36] "Recommendations of the Safe System Consortium," Johns Hopkins University Center for Injury Research and Prevention, May 2021. Available here: https://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-injury-research-and-policy/our-impact/documents/recommendations-of-the-safe-_system-consortium.pdf.