

# REGULATING THE PEDESTRIAN SAFETY CRISIS

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*In the 2010s, the United States entered a pedestrian safety crisis that is unique among wealthy nations. Deaths of people on foot surged more than 46% that decade, outpacing the increase in all other traffic deaths by nine to one. The early 2020s have seen an intensification of this trend. These fatalities magnify racial disparities, placing Black pedestrians at a two-thirds higher risk of being killed than their white counterparts. While the pedestrian safety crisis has many causes, there is growing evidence that the enlargement of the American vehicle has played a key role. Auto companies earn higher profit margins on large vehicles, and consumers prefer their greater creature comforts. But the size, height, and weight necessary for those comforts has been shown to make these vehicles far deadlier for those who have the misfortune of being struck by them. Carmakers do not disclose these risks to the car-buying public—but even if they did, individual consumers lack appropriate incentives to internalize the social costs of the vehicles they buy. Like pollution, this negative externality presents a classic case for regulation. Yet America’s vehicle safety regulator (the National Highway Transportation Safety Administration, or NHTSA), conceived in the wake of the Ralph Nader consumer revolution of the 1960s, considers the safety of pedestrians—who are third parties rather than consumers—almost completely alien to its mission.*

*This Essay presents a different model, based on NHTSA’s own statutory mandate to protect “the public” as a whole from risks posed by motor vehicles. It argues that pedestrians are, quintessentially, a group whose well-being vehicle safety regulators should prioritize—even though when acting as pedestrians they are not consumers of the regulated product. Pedestrians are maximally exposed to dangerous vehicles, and by definition they benefit from neither vehicle comforts nor most occupant-focused safety features. They may even be endangered by some of them. NHTSA should expressly incorporate the welfare of pedestrians and other non-occupants into its mission. To that end, this Essay develops four policy actions NHTSA should undertake as part of a policy update it launched in 2022: include pedestrian safety in its marquee safety evaluation program; regulate the design of vehicles to protect people outside of them; use technology to protect pedestrians; and update its safety tests so they are more representative of common fatal pedestrian crash victims and scenarios.*

INTRODUCTION .....	195
I. THE RISING THREAT TO AMERICAN PEDESTRIANS .....	198
A. <i>The Pedestrian Safety Crisis</i> .....	198
B. <i>The Imperative of NHTSA Regulation to Protect Pedestrian Welfare</i> .....	202

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C. <i>Cost-Benefit Analysis Counsels Stronger Pedestrian Protections</i> .....	202
II. NHTSA’S INACTION ON VEHICLE DESIGN IS ENDANGERING AMERICAN LIVES.....	203
III. NHTSA’S INACTION IS CAUSING THE UNITED STATES TO FALL BEHIND .....	205
IV. FOUR POLICY RECOMMENDATIONS .....	206
A. <i>Including Pedestrians Within NHTSA’s Mandate</i> .....	207
B. <i>Regulating the Design of Vehicles to Protect People Outside of Them</i> .....	208
C. <i>Using the Best Technology Available to Protect All Road Users, Including Pedestrians</i> .....	209
D. <i>Updating Safety Tests so They Are Representative of Common Fatal Pedestrian Crash Victims and Scenarios</i> .....	211
CONCLUSION .....	212

## INTRODUCTION

In the 2010s, the United States entered a pedestrian safety crisis that is unique among wealthy nations. Deaths of people on foot struck by motor vehicles surged more than 46% during that decade, outpacing the increase in all other traffic fatalities by nine to one.<sup>1</sup> There are no signs of improvement this decade. To the contrary, and despite a pronounced decline in driving during some of the pandemic, the early years of the 2020s have proven even deadlier, with an estimated 7,342 American pedestrians killed by motorists in 2021—an increase of 54% over 2010.<sup>2</sup> These deaths are not randomly distributed; rather, they magnify racial disparities. Even after adjusting for differences in walking rates, Black pedestrians are at a two-thirds higher risk of being killed by a motorist than their white counterparts.<sup>3</sup>

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<sup>1</sup> See *infra* Part I.

<sup>2</sup> See *infra* Part I.

<sup>3</sup> See SMART GROWTH AM. & NAT’L COMPLETE STS. COAL., DANGEROUS BY DESIGN 2021, at 26–27 (2021), <https://smartgrowthamerica.org/wp-content/uploads/2021/03/Dangerous-By-Design-2021-update.pdf> [<https://perma.cc/2KTP-SHNH>] (reporting a Pedestrian Danger Index score of 89.6 for Black or African American pedestrians as against 53.5 for non-Hispanic whites); see also *id.* at 31 (explaining the methodology behind the Pedestrian Danger Index as the fatality rate normalized for walking rate). While vehicle design is the subject of this article, the level and distribution of pedestrian risk is of course also influenced by other factors, including road design and driver behavior (and the regulation thereof). See, e.g., Sara C. Bronin & Gregory H. Shill, *Rewriting Our Nation’s Deadly Traffic Manual*, 135 HARV. L. REV. F. 1, 4–9 (2021) (discussing the role of road design in public safety through an analysis of a federal road design manual); Gregory H. Shill, *Should Law Subsidize Driving?*, 95 N.Y.U. L. REV. 498, 520–24 (2020) (discussing the role of vehicle and traffic laws in pedestrian risk); Sarah Schindler, *Architectural Exclusion: Discrimination and Segregation Through Physical Design of the Built Environment*,

While the pedestrian safety crisis has many causes, there is growing evidence that the enlargement of the American vehicle has played an important role. Auto companies earn higher profit margins on large vehicles,<sup>4</sup> and consumers prefer large vehicles' greater creature comforts.<sup>5</sup> But the size, height, and weight necessary for modern vehicle amenities combines to amplify force on impact, especially for pedestrians.<sup>6</sup> The U.S. Department of Transportation has acknowledged this.<sup>7</sup> But its vehicle regulator arm, the National Highway Transportation Safety Administration (NHTSA), is consumer-oriented, and this is a problem that consumer regulation, which is based primarily on appeals to self-interest,<sup>8</sup> wasn't designed to solve.

The danger posed by vehicles for pedestrians, who are outsiders to

124 YALE L.J. 1934, 1954 (2015) (discussing the role of urban planning decisions in driving racially disparate pedestrian safety outcomes); Tara Goddard, Kimberly Barsamian Kahn & Arlie Adkins, *Racial Bias in Driver Yielding Behavior at Crosswalks*, 33 TRANSP. RSCH. PART F: TRAFFIC PSYCH. & BEHAV. 1 (2015) (reporting racial bias in driver yielding behavior in a controlled field experiment); see also Michael Lewyn, *The Criminalization of Walking*, 2017 U. ILL. L. REV. 1167, 1168–69 (discussing consequences of the law's de facto discouragement of walking).

<sup>4</sup> See, e.g., Ford Motor Co., Annual Report at 35 (Form 10-K) (Feb. 3, 2022), <https://www.sec.gov/ix?doc=/Archives/edgar/data/37996/000003799622000013/f-20211231.htm> [<https://perma.cc/3CTU-688A>] (“In general, larger vehicles tend to command higher prices and be more profitable than smaller vehicles, both across and within vehicle segments. For example, in North America, our larger, more profitable vehicles had an average contribution margin that was 118% of our total average contribution margin across all vehicles, whereas our smaller vehicles had significantly lower contribution margins.”); General Motors Co., Annual Report at 15 (Form 10-K) (Feb. 2, 2022), <https://www.sec.gov/ix?doc=/Archives/edgar/data/1467858/000146785822000034/gm-20211231.htm> [<https://perma.cc/NVP2-SHNN>] (“Our near-term profitability is dependent upon the success of our current line of full-size ICE SUVs and full-size ICE pickup trucks.”).

<sup>5</sup> Tom Voelk, *Rise of S.U.V.s: Leaving Cars in Their Dust, with No Signs of Slowing*, N.Y. TIMES (May 21, 2020), <https://www.nytimes.com/2020/05/21/business/suv-sales-best-sellers.html> [<https://perma.cc/VD5C-42PM>].

<sup>6</sup> See, e.g., Shill, *supra* note 3, at 558 (“Research shows that a pedestrian is 3.4 times as likely to be killed if struck by an SUV or other light truck than if hit by a passenger car.”); John F. Saylor, Comment, *The Road to Transportation Justice: Reframing Auto Safety in the SUV Age*, 170 U. PA. L. REV. 487, 494–95 (2022) (attributing the increase in pedestrian fatalities since 2009 to the proliferation of larger and taller light trucks).

<sup>7</sup> See U.S. DEP'T OF TRANSP., NATIONAL ROADWAY SAFETY STRATEGY 22 (2022), <https://www.transportation.gov/sites/dot.gov/files/2022-02/USDOT-National-Roadway-Safety-Strategy.pdf> [<https://perma.cc/WSV6-EX7G>] (noting a shift in the composition of new vehicle purchases “towards larger vehicles—particularly sport utility vehicles and crossovers—which recent studies have found to cause more serious injuries than passenger cars when involved in collisions with pedestrians”).

<sup>8</sup> See Saylor, *supra* note 6, at 490 (“[W]hat incentive does the consumer have to pass on an [Electronic Stability Control]-equipped light truck in favor of a sedan that offers less occupant protection for the consumer and their loved ones? The increased risk of injury or death to a random stranger seems like a worthwhile tradeoff for greater protection for one's family—a classic case of market failure.”); cf. Leonard J. Kennedy, Patricia A. McCoy & Ethan Bernstein, *The Consumer Financial Protection Bureau: Financial Regulation for the Twenty-First Century*, 97 CORNELL L. REV. 1141, 1152 (2012) (explaining that the purpose of consumer financial regulation is “to make markets in financial products and services work better for consumers”) (emphasis added).

vehicle transactions and operation, is a negative externality. Although negative externalities present the classic case for regulation,<sup>9</sup> pedestrian safety falls outside the standard conception of vehicle safety regulation. For example, in *Unsafe at Any Speed*, the foundational 1965 text of the vehicle safety movement, the consumer advocate Ralph Nader lamented that many of the direct and indirect costs of automobility do not fall on manufacturers of vehicles but rather on “users of vehicles”—which Nader argued was unfair, given that car buyers “are in no position to dictate safer automobile designs.”<sup>10</sup> But while pathbreaking at the time, even this notion—which provided the rationale for creating a federal vehicle safety regulator—fails to comprehend the interest of third parties, like pedestrians. NHTSA, born out of the traffic safety movement that Nader helped catalyze, considers pedestrian safety almost completely alien to its mission. Historically, pedestrian safety has been deemed by NHTSA, many state departments of transportation, and industry to contradict what Jerry Mashaw and David Harfst famously called the “first commandment of automobile law”: that legal rules should facilitate, not inhibit, automobile travel.<sup>11</sup>

This Essay argues that pedestrians are, quintessentially, a group whose well-being vehicle safety regulators should prioritize. This argument is based on three principles. First, the universe of people affected by vehicle design risk extends beyond the purchaser to people outside of the vehicle. Second, among the various groups so encompassed, pedestrians are maximally exposed: They lack the steel cages, seatbelts, airbags, and other protections present in every modern vehicle. And third, pedestrians possess an especially strong claim to protection from vehicles. Unlike motorists, they do not assume the risk of automobile transport by traveling in a vehicle, and by definition they do not benefit from the comforts or occupant-focused safety features of newer, larger vehicles.<sup>12</sup> While automobile buyers can be expected to take their own safety into account at time of purchase, it would be unrealistic to expect them to select a vehicle based on the safety of strangers.

In March 2022, NHTSA announced a proposed update to a marquee regulatory program it administers, the New Car Assessment Program

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<sup>9</sup> See, e.g., Lawrence J. White, *Antitrust and Financial Regulation in the Wake of Philadelphia National Bank: Complements, Not Substitutes*, 80 ANTITRUST L.J. 413, 420 (2015) (observing that “safety regulation to protect consumers . . . [has] the goal of improving the allocation of resources by addressing market failures” like “negative externalities”).

<sup>10</sup> RALPH NADER, UNSAFE AT ANY SPEED viii (1965).

<sup>11</sup> JERRY L. MASHAW & DAVID L. HARFST, THE STRUGGLE FOR AUTO SAFETY 28 (1990).

<sup>12</sup> This paradigm also places the occupants of older and smaller vehicles at greater risk. See, e.g., Shill, *supra* note 3, at 565–66 (noting that in SUV-to-car crashes, drivers of cars are more likely to die than in non-SUV car-to-car crashes).

(NCAP).<sup>13</sup> This Essay, one of the first works of legal scholarship to focus on NHTSA's failure to regulate for pedestrian safety, calls upon NHTSA to incorporate pedestrian safety into the update. Specifically, it develops four policy actions NHTSA should take in integrating pedestrian safety into NCAP: (1) include pedestrian safety in NCAP, (2) make certain changes to vehicle design criteria, (3) make certain changes to vehicle technology criteria, and (4) adjust its evaluation methods so they mimic common fatal pedestrian crash scenarios.

## I

### THE RISING THREAT TO AMERICAN PEDESTRIANS

The United States is now in its second decade of a pedestrian safety crisis. The threat to Americans on foot has rarely been graver than it is today and calls out for more forceful intervention. While responsibility for this problem is spread across dozens of entities, including federal and state departments of transportation, law enforcement, and traffic engineering bodies, NHTSA is the sole agency that can dictate universal safety standards in the U.S. market for vehicles themselves—yet it is also the only important player that has failed to even notionally prioritize the protection of pedestrians.

#### A. *The Pedestrian Safety Crisis*

Yearly pedestrian deaths have surged in the United States since 2010.<sup>14</sup> By 2019, they had increased by 46%.<sup>15</sup> During this decade, the increase in pedestrian deaths outpaced by more than nine to one the rate at which other road fatalities increased.<sup>16</sup> Figure 1 depicts this disparity.

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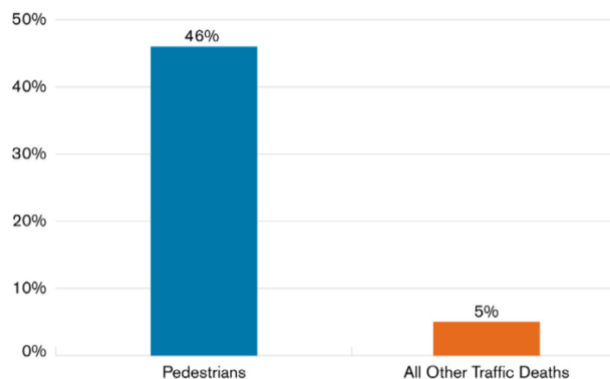
<sup>13</sup> The author filed a comment as part of this process. Gregory H. Shill, Public Comment on Request for Comments on the National Highway Traffic Safety Administration's New Car Assessment Program (May 26, 2022), <https://www.regulations.gov/comment/NHTSA-2021-0002-1594> [<https://perma.cc/S8F4-FDXW>]. As of October 2, 2022, over 16,000 comments had been received by the agency. See *New Car Assessment Program, Request for Comments*, REGULATIONS.GOV (Mar. 9, 2022), <https://www.regulations.gov/docket/NHTSA-2021-0002> [<https://perma.cc/NYX3-NLH6>] (showing that 16,155 comments had been received on Docket ID NHTSA-2021-0002 as of October 2, 2022); *New Car Assessment Program: Extension of Comment Period*, REGULATIONS.GOV (May 6, 2022), <https://www.regulations.gov/document/NHTSA-2021-0002-0482> [<https://perma.cc/NFX3-DKJX>] (showing that 2,516 comments had been received on Document ID NHTSA-2021-0002-0482 as of October 2, 2022).

<sup>14</sup> GOVERNORS HWY. SAFETY ASS'N, PEDESTRIAN TRAFFIC FATALITIES BY STATE: 2020 PRELIMINARY DATA 3–6 (2021), <https://www.ghsa.org/sites/default/files/2021-03/Ped%20Spotlight%202021%20FINAL%203.23.21.pdf> [<https://perma.cc/3BLY-XRC3>].

<sup>15</sup> *Id.* at 5.

<sup>16</sup> *Id.* at 6 (finding a 5% increase in all other traffic deaths from 2010 to 2019).

FIGURE 1: PERCENTAGE INCREASE IN NUMBER OF TRAFFIC DEATHS (U.S.)  
2010–19<sup>17</sup>



The most recent data show that these trends have worsened since the onset of COVID-19. Some attributed this to the decline in vehicle miles traveled brought about by the pandemic;<sup>18</sup> roads were emptier, which made it easier to engage in reckless behaviors like speeding.<sup>19</sup> Pedestrian deaths

<sup>17</sup> *Id.* There are reasons to believe these figures understate both pedestrian and car-occupant fatalities, as they come from NHTSA’s Fatality Analysis Reporting System (FARS), which because of its scope and methodology provides a narrower estimate of traffic deaths than, for example, that of the National Safety Council (NSC). See *Comparison of NSC and NHTSA Estimates*, NAT’L SAFETY COUNCIL INJURY FACTS, <https://injuryfacts.nsc.org/motor-vehicle/overview/comparison-of-nsc-and-nhtsa-estimates> [<https://perma.cc/R2JC-4Q4P>] (discussing methodological differences). FARS estimates of traffic deaths are consistently below NSC estimates; in 2020, for example, NSC showed 9% more deaths. *Id.*

<sup>18</sup> Press Release, Fed. Hwy. Admin., U.S. Dep’t of Transp., U.S. Driving Last Year Was Lowest in Two Decades, New Data Show (Feb. 25, 2021), <https://highways.dot.gov/newsroom/us-driving-last-year-was-lowest-two-decades-new-data-show> [<https://perma.cc/MFJ5-4YC5>] (reporting a 13.2% reduction in vehicle miles traveled in 2020 versus 2019).

<sup>19</sup> See, e.g., BUREAU OF TRANSP. STATS., U.S. DEP’T OF TRANSP., TRANSP. STATS. ANN. REP. 2021, at 3-2 (2021), [https://www.bts.dot.gov/sites/bts.dot.gov/files/2022-01/TSAR\\_FULL%20BOOK-12-31-2021.pdf](https://www.bts.dot.gov/sites/bts.dot.gov/files/2022-01/TSAR_FULL%20BOOK-12-31-2021.pdf) [<https://perma.cc/YX8W-6DYA>] (“The main behaviors that drove this increase [in deaths per vehicle miles of travel in 2020] are impaired driving, speeding, and failure to wear a seat belt.”); Camille Furst, *Car Crash Deaths Have Risen Since Covid-19 Pandemic Started*, WALL ST. J. (Mar. 2, 2022), <https://www.wsj.com/articles/car-crash-deaths-have-risen-since-covid-19-pandemic-started-11646263416> [<https://perma.cc/PP6X-TKUK>] (describing attribution of increase in fatality rate to drivers being more reckless in emptier roads).

jumped 3.9% in 2020<sup>20</sup> and a *further* 13% in 2021,<sup>21</sup> for a total increase of 54% since 2010. But by 2021, vehicle miles traveled had rebounded to pre-pandemic levels,<sup>22</sup> showing the limitations of the “empty roads” theory of surging traffic deaths.

The immense increase in U.S. pedestrian danger since 2010 cannot be explained by increases in either vehicle miles traveled (which rose less than 10% during the 2010s) or population (up 6.14% in the same period).<sup>23</sup> Nor can it be dismissed as part of a global trend; in fact, this change is a global outlier: The dismal state of U.S. pedestrian safety contrasts sharply with the sharp reduction in pedestrian deaths achieved by peer nations during a comparable window.<sup>24</sup> As depicted in Figure 2, American pedestrians are in increasing jeopardy while citizens of other countries are enjoying greater security.

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<sup>20</sup> TIMOTHY STEWART, NAT'L HWY. TRAFFIC SAFETY ADMIN., U.S. DEP'T OF TRANSP., DOT HS 813 266, OVERVIEW OF MOTOR VEHICLE CRASHES IN 2020, at 7 (2022), <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813266> [<https://perma.cc/Y4NY-NP8K>].

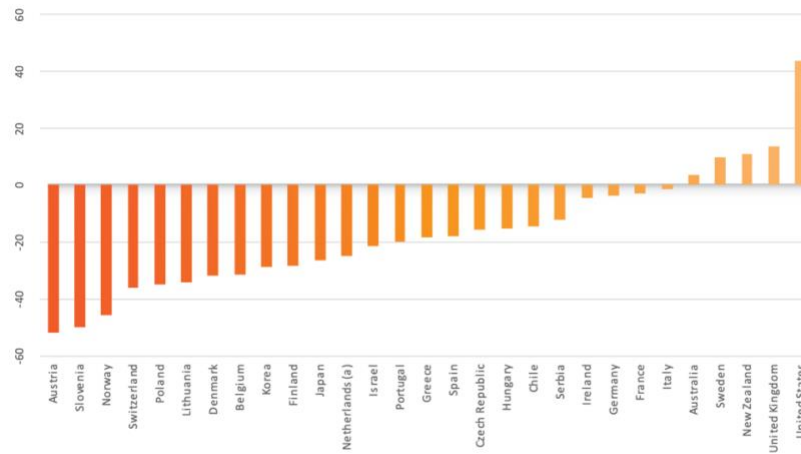
<sup>21</sup> Press Release, Nat'l Hwy. Traffic Safety Admin., U.S. Dep't of Transp., Newly Released Estimates Show Traffic Fatalities Reached a 16-Year High in 2021 (May 17, 2022), <https://www.nhtsa.gov/press-releases/early-estimate-2021-traffic-fatalities> [<https://perma.cc/3HR2-9XXL>] [hereinafter NHTSA Press Release].

<sup>22</sup> David A. Lieb, *Passenger Vehicle Travel Rebounding to Pre-Pandemic Levels*, ASSOCIATED PRESS (Mar. 29, 2021), <https://apnews.com/article/pandemics-transportation-health-coronavirus-pandemic-economy-8dde31223a9873c1337779a418f91579> (addressing passenger vehicle travel levels) [<https://perma.cc/R5SW-FDJN>].

<sup>23</sup> Nat'l Hwy. Traffic Safety Admin., U.S. Dep't of Transp., *National Statistics*, TRAFFIC SAFETY FACTS ANN. REP. TABLES (June 2022), <https://cdan.nhtsa.gov/tsftables/National%20Statistics.pdf> [<https://perma.cc/7VM4-AEHB>] [hereinafter NHTSA, *National Statistics*]. These percentages were computed using the data provided in the table by finding the percent change between the years 2010 and 2019 for the respective quantities. *Id.*

<sup>24</sup> See INT'L TRANSP. F., OECD, ROAD SAFETY ANNUAL REPORT 2020, at 25 (2020), [https://www.itf-oecd.org/sites/default/files/docs/irtad-road-safety-annual-report-2020\\_0.pdf](https://www.itf-oecd.org/sites/default/files/docs/irtad-road-safety-annual-report-2020_0.pdf) [<https://perma.cc/2LN3-N7WQ>] (noting a 20% reduction in pedestrian deaths among peer nations between 2010 and 2018, inclusive, while pedestrian fatalities in the United States rose by 46% during a nearly identical period (2010–19)); see also Emily Badger & Alicia Parlapiano, *The Exceptionally American Problem of Rising Roadway Deaths*, N.Y. TIMES (Nov. 27, 2022), <https://www.nytimes.com/2022/11/27/upshot/road-deaths-pedestrians-cyclists.html> [<https://perma.cc/RC9D-5UBC>] (“Americans die in rising numbers even when they drive less. They die in rising numbers even as roads around the world grow safer. . . . And the recent rise in fatalities has been particularly pronounced among those the government classifies as most vulnerable—cyclists, motorcyclists, pedestrians.”).

FIGURE 2: PERCENTAGE CHANGE IN THE NUMBER OF PEDESTRIANS KILLED, 2010–18<sup>25</sup>



Iceland and Luxembourg is not shown because numbers are too small to provide meaningful analysis.  
 (a) Real data (actual numbers instead of reported numbers by the police).

In addition to presenting a public health tragedy in their own right, pedestrian deaths also aggravate racial injustice. Black people and Native Americans in particular are far likelier than white people to be killed while walking.<sup>26</sup> There are a number of explanations for this disparity, including the fact that street infrastructure in Black neighborhoods and Native reservations tends to be less safe than in white areas—for example, the roads are higher-speed and have fewer calming measures and safe pedestrian crossings.<sup>27</sup> Driver behavior, including differences in yielding behavior

<sup>25</sup> INT'L TRANSP. F., *supra* note 24, at 26.

<sup>26</sup> See SMART GROWTH AM. & NAT'L COMPLETE STS. COAL., *supra* note 3, at 26–27 (showing that Black and Native pedestrians are disproportionately represented in pedestrian fatalities). Notably, these statistics control for differences in walking rates to reduce the confounding influence of differences in transportation behavior by race. See *id.* at 31.

<sup>27</sup> See ANGIE SCHMITT, RIGHT OF WAY: RACE, CLASS, AND THE SILENT EPIDEMIC OF PEDESTRIAN DEATHS IN AMERICA 36 (2020) (finding that Black neighborhoods are passed over for infrastructure improvements); see also *id.* at 38 (describing Native tribal lands as typically located in rural areas without sidewalks or crosswalks). Since 2015, a racial gap has also emerged in road mortality overall (not merely among pedestrians), with Black Americans at greater and growing risk as compared with whites. See Aaron Chalfin & Maxim N. Massenkoff, *A New Racial Disparity in Traffic Fatalities* 1–3 (Nat'l Bureau of Econ. Rsch., Working Paper No. 30636, 2022), <https://www.nber.org/papers/w30636> (examining the data and a variety of possible explanations).



based on the race of the pedestrian,<sup>28</sup> may also account for some of this gap. Because Black and Native people make up a disproportionately large share of pedestrian deaths,<sup>29</sup> these populations are desperately in need of—and stand to benefit disproportionately from—pedestrian safety interventions.

### B. *The Imperative of NHTSA Regulation to Protect Pedestrian Welfare*

Even as pedestrian deaths have soared, for those inside the vehicle, fatality rates have remained relatively stable.<sup>30</sup> Deaths of vehicle occupants increased by 2.2% in the 2010s, or about a third of the rate of population growth (and an even smaller share of the increase in vehicle miles traveled).<sup>31</sup> These figures show that innovations in vehicle and traffic safety are increasing safety—just not for pedestrians. In fact, they are consistent with a classic Peltzman channel<sup>32</sup> of risk compensation: Safety gains to motorists may be coming at the expense of people outside the vehicle because the increased sense of safety is inspiring riskier driver behavior.<sup>33</sup>

On a few occasions, NHTSA has considered regulating for the benefit of pedestrians. But it appears to have adopted only a single regulation intended to mitigate vehicle impacts on pedestrians: a rule prohibiting “protruding wheel nuts and hubcaps that could injure pedestrians and cyclists.”<sup>34</sup> It later rescinded even this modest rule.<sup>35</sup> By regulating only for the safety of vehicle occupants, without regard to—and indeed in some cases in derogation of—the safety of others, NHTSA made this tradeoff zero-sum. It is ultimately a regulatory failure, not a consumer one.

### C. *Cost-Benefit Analysis Counsels Stronger Pedestrian Protections*

Pedestrian deaths are a negative externality of automobile

<sup>28</sup> See Goddard et al., *supra* note 3, at 2.

<sup>29</sup> See SMART GROWTH AM. & NAT’L COMPLETE STS. COAL., *supra* note 3, at 27 (reporting relative pedestrian danger index scores for the 2010–2019 period of 89.6 for Black Americans and 111.5 for American Indian or Alaska Natives).

<sup>30</sup> See NHTSA, *National Statistics*, *supra* note 23 (reporting an increase in the number of crash-related fatalities from 2010 to 2019 of 2.2% for vehicle occupants and 45.8% for pedestrians); see also NHTSA Press Release, *supra* note 21 (reporting a 13% increase in pedestrian fatalities from 2020 to 2021).

<sup>31</sup> See NHTSA, *National Statistics*, *supra* note 23 (reporting an increase in population of 6.1% and an increase in vehicle miles travelled of 9.9% in the 2010s).

<sup>32</sup> See Sam Peltzman, *The Effects of Automobile Safety Regulation*, 83 J. POL. ECON. 677, 677 (1975) (“There is some evidence that [auto safety] regulation may have increased the share of [the traffic death] toll borne by pedestrians and increased the total number of accidents.”).

<sup>33</sup> Shill, *supra* note 3, at 563–65 (arguing that occupant-focused safety regulation may increase risk to pedestrians).

<sup>34</sup> Saylor, *supra* note 6, at 504 (describing that rule as “the only safety standard ever directly addressed to pedestrian impact protection”).

<sup>35</sup> *Id.*; see Federal Motor Vehicle Safety Standards; Wheel Nuts, Wheel Discs, and Hub Caps, 61 Fed. Reg. 20,171, 20,172 (May 6, 1996) (codified at 49 C.F.R. pt. 571).

transportation. There were 7,342 such deaths in 2021.<sup>36</sup> The U.S. Department of Transportation (USDOT), NHTSA's parent agency, has determined the value of a statistical life to be \$11.8 million for purposes of cost-benefit analysis in 2021.<sup>37</sup> Using USDOT's own metric, therefore, pedestrian deaths cost the United States over \$86 billion in 2021 alone. This scale suggests that the agency has considerable latitude to regulate for pedestrian safety: Orthodox cost-benefit analysis would justify substantial new regulations that enhance pedestrian safety.<sup>38</sup>

## II

### NHTSA'S INACTION ON VEHICLE DESIGN IS ENDANGERING AMERICAN LIVES

Vehicle design innovation has the potential to improve safety for everyone. The way it has been conceived, however, pits one group—vehicle occupants—against others: pedestrians, motorcyclists, occupants of small vehicles, and so on. Specifically, the choice of a consumer protection model by NHTSA has the potential to make a given five-star-rated vehicle safer for buyers, but it cannot protect those placed in harm's way by that same vehicle.

Vehicle safety is an example of a domain where innovation has benefited vehicle occupants without regard—and plausibly at some cost—to pedestrian safety.<sup>39</sup> Some of that innovation is driven by regulation, namely the mandates and incentives created by NHTSA and their unintended consequences. NCAP and the updates recently proposed to it should go further to correct this.

NHTSA regulations barely address vehicle weight and height (and usually do so indirectly). Yet both dimensions play a critical role in pedestrian safety and road safety in general and merit stronger rules.

Average vehicle weight has increased dramatically. In the 1981 model

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<sup>36</sup> Dan Zukowski, *Traffic Fatalities Hit 16-Year High in 2021, with Pedestrian Deaths Up 13%*, SMART CITIES DIVE (May 18, 2022), <https://www.smartcitiesdive.com/news/traffic-pedestrian-deaths-soar-2021/623913> [https://perma.cc/3UR6-Z327] (reporting an NHTSA estimate of pedestrian deaths in 2021).

<sup>37</sup> *Departmental Guidance on Valuation of a Statistical Life in Economic Analysis*, U.S. DEPT OF TRANSP., <https://www.transportation.gov/office-policy/transportation-policy/revision-departmental-guidance-on-valuation-of-a-statistical-life-in-economic-analysis> [https://perma.cc/7CJH-9UA7].

<sup>38</sup> See Exec. Order No. 12866, 58 Fed. Reg. 51,735, 51,736 (Oct. 4, 1993) (“[An agency] shall design its regulations in the most cost-effective manner to achieve the regulatory objective.”).

<sup>39</sup> See Sara C. Bronin, *Rules of the Road: The Struggle for Safety & the Unmet Promise of Federalism*, 106 IOWA L. REV. 2153, 2156 (2021) (arguing that vehicle design, notably of larger cars, protects occupants while hurting pedestrians); Shill, *supra* note 3, at 557–58, 563–66 (finding that U.S. vehicle design regulation and de facto legal subsidies to larger vehicles prioritize occupant safety regulation, increasing risk to pedestrians and occupants of smaller vehicles).

year, vehicles sold in the United States weighed 3,200 pounds on average.<sup>40</sup> By the 2019 model year, the average vehicle weighed 4,156 pounds, an increase of approximately 30%.<sup>41</sup> During the same period, vehicles also became far taller.<sup>42</sup> NHTSA, unlike its European counterparts (see Part III, *infra*), has failed to respond to these changes.

NHTSA's decision not to act has left pedestrians at the mercy of heavier and taller vehicles. This experiment in regulatory abstention has produced grim results: In the absence of effective countermeasures, heavier vehicles are likelier to kill those outside of them, and vehicles that have higher front ends are more likely to cause a collided non-occupant to be thrown under the car rather than over it.<sup>43</sup> A vehicle with a higher bumper is also more likely to cause more serious injury to critical parts of the body—the torso and internal organs rather than the legs, for example.<sup>44</sup> This danger is amplified for collisions with children. A higher bumper is more likely to strike a child in the head.<sup>45</sup> Children are also vulnerable to the front-end blind spot problem that characterizes taller vehicles.<sup>46</sup> And light trucks, like pickups, SUVs, and vans, “are substantially more likely than cars to hit pedestrians when making turns.”<sup>47</sup> These heavier, taller vehicles appear to play an important role in the pedestrian safety crisis.<sup>48</sup> It is not hyperbole to observe that, left by NHTSA to its own devices, the invisible hand is pushing large numbers of pedestrians to their demise.

NHTSA proposed in 2015 to incorporate pedestrian crash avoidance

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<sup>40</sup> U.S. ENV'T PROT. AGENCY, EPA-420-R-21-003, THE 2020 EPA AUTOMOTIVE TRENDS REPORT: GREENHOUSE GAS EMISSIONS, FUEL ECONOMY, AND TECHNOLOGY SINCE 1975, at 18 (2021), <https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P1010U68.pdf> [<https://perma.cc/6LAG-YMNK>].

<sup>41</sup> *Id.*

<sup>42</sup> See Saylor, *supra* note 6, at 494 (describing the increase in market share of light trucks, which are taller than passenger cars).

<sup>43</sup> See Shill, *supra* note 3, at 566.

<sup>44</sup> See SCHMITT, *supra* note 27, at 84; see also Shill, *supra* note 3, at 566 (finding that in accidents involving SUVs, which have higher bumpers, a body of a pedestrian is more likely to go under, rather than over, the vehicle).

<sup>45</sup> SCHMITT, *supra* note 27, at 85 (noting that the NHTSA estimates that children are almost four times as likely to die being struck by an SUV than a car).

<sup>46</sup> See *id.* at 82 (describing the increase in child fatalities from frontover collisions).

<sup>47</sup> Ins. Inst. for Highway Safety, *SUVs, Other Large Vehicles Often Hit Pedestrians While Turning*, IIHS HLDI (Mar. 17, 2022), <https://www.iihs.org/news/detail/suvs-other-large-vehicles-often-hit-pedestrians-while-turning> [<https://perma.cc/V35C-TXV8>]; accord Wen Hu & Jessica B. Cicchino, *Relationship of Pedestrian Crash Types and Passenger Vehicle Types*, J. SAFETY RSCH. 392 (2022).

<sup>48</sup> For example, between 2010 and 2019, there was a 69% increase in pedestrian deaths caused by traffic collisions involving an SUV, as opposed to a 46% increase in pedestrian deaths in collisions involving passenger cars. GOVERNORS HWY. SAFETY ASS'N, *supra* note 14, at 4. However, during this period SUVs gained market share, complicating attempts at apples-to-apples comparisons. See *id.*

and protection in its safety standards,<sup>49</sup> but that effort languished.<sup>50</sup> Currently, Federal Motor Vehicle Safety Standards<sup>51</sup> regulate vehicle design for the benefit of pedestrians in only minor ways,<sup>52</sup> leaving unaddressed the growing threat pedestrians face from increasingly tall, heavy vehicles.

Of course, pedestrians are not the only ones placed at risk by NHTSA inaction. A recent study of NHTSA policy concluded that NHTSA had failed since the 1970s to meaningfully regulate for the benefit of either pedestrians or occupants of smaller vehicles, such as compact cars or sedans.<sup>53</sup> Far from being a new or transitory problem, NHTSA's failures on pedestrian safety have a long history as well as—when understood as a failure to account for the welfare of third parties—implications for other motorists.<sup>54</sup> The agency's NCAP review provides a good opportunity to begin necessary reforms.

### III

#### NHTSA'S INACTION IS CAUSING THE UNITED STATES TO FALL BEHIND

Over the past decade, the European Union (EU) has outperformed the United States significantly on pedestrian safety. Between 2010 and 2018, while U.S. pedestrian deaths surged, the number of EU pedestrians killed annually dropped by 19%.<sup>55</sup> This improvement was generated by choices across a number of policy domains, including the regulation of vehicles.

In 2009, the EU adopted the Pedestrian Safety Regulation, requiring vehicle manufacturers to include pedestrian-focused safety technology in new vehicles.<sup>56</sup> This technology includes front bumpers and brake assist systems that are designed with pedestrians in mind, “to reduce the number

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<sup>49</sup> New Car Assessment Program, 80 Fed. Reg. 78,522 (Dec. 16, 2015) (requesting comments); *see also id.* at 78,566–70 (providing for various pedestrian-facing safety measures, including pedestrian crash avoidance systems).

<sup>50</sup> *See Saylor, supra* note 6, at 504–08 (discussing NHTSA's halting efforts to regulate vehicles for pedestrian safety).

<sup>51</sup> 49 C.F.R. pt. 571 (2021).

<sup>52</sup> *See, e.g., id.* § 571.111, paras. S5.2.2, S5.3 (2021) (stating that side mirrors must not have sharp edges that could harm pedestrians).

<sup>53</sup> *See Saylor, supra* note 6, at 504–11.

<sup>54</sup> *See, e.g., id.*; Jerry L. Mashaw & David L. Harfst, *From Command and Control to Collaboration and Deference: The Transportation of Auto Safety Regulation*, 34 *YALE J. ON REGUL.* 167, 273–74 (2017) (noting that crashworthiness technology such as the airbag, which took thirty years to adopt, does little to protect users of the road other than vehicle occupants); MASHAW & HARFST, *supra* note 11, at 230 (arguing that NHTSA has avoided promulgating rules for pedestrian protection as part of a larger effort to minimize backlash).

<sup>55</sup> DOVILÉ ADMINAITÉ-FODOR & GRAZIELLA JOST, EUR. TRANSP. SAFETY COUNCIL, *HOW SAFE IS WALKING AND CYCLING IN EUROPE?* 12 (2020), [https://etsc.eu/wp-content/uploads/PIN-Flash-38\\_FINAL.pdf](https://etsc.eu/wp-content/uploads/PIN-Flash-38_FINAL.pdf) [<https://perma.cc/84NG-5DA7>].

<sup>56</sup> NIKOLINA ŠAJN, EUR. PARLIAMENTARY RSCH. SERV., *GENERAL SAFETY OF VEHICLES AND PROTECTION OF VULNERABLE ROAD USERS* 3 (2020), [https://www.europarl.europa.eu/RegData/etudes/BRIE/2018/625192/EPRS\\_BRI\(2018\)625192\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2018/625192/EPRS_BRI(2018)625192_EN.pdf) [<https://perma.cc/6UDY-7N2R>].

and severity of their injuries.”<sup>57</sup> In 2019, the EU augmented the Pedestrian Safety Regulation with new rules requiring manufacturers to further modernize their products for pedestrian safety.<sup>58</sup> The new rules include requirements for automated speed regulation, automatic emergency braking (AEB), and vulnerable road user detection, among others.<sup>59</sup> Down the line, the regulations will also require new vehicles to be equipped with driver drowsiness and attention warning systems as well as driver distraction warning systems.<sup>60</sup> The EU is far from the only non-U.S. entity taking pedestrian safety seriously. By 2015, forty-four countries around the world had adopted a safety standard for pedestrians.<sup>61</sup> As noted above, NHTSA abandoned that effort in the United States.

At this time, there are no comparable rules in effect safeguarding U.S. pedestrians. While there have been some indications of renewed energy at NHTSA since the 2021 leadership transition, NHTSA’s permanent administrator announced he would be leaving the job just three months after he was confirmed.<sup>62</sup> The absence of effective action at the agency has left Americans far more exposed to the dangers of the road than our peers, and the long life of vehicles—the average age of a vehicle on the road in the United States is now about twelve years<sup>63</sup>—means any future changes can only achieve scale after a considerable lag.<sup>64</sup> Meanwhile, with the EU regulation now over a dozen years old, citizens there are already reaping increasing returns on safety.

#### IV

#### FOUR POLICY RECOMMENDATIONS

NHTSA first considered pedestrian safety regulations in the 1970s, but took no action.<sup>65</sup> Hundreds of thousands of American pedestrians have been

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<sup>57</sup> *Id.*

<sup>58</sup> ADMINAITÉ-FODOR & JOST, *supra* note 55, at 47.

<sup>59</sup> *Id.*

<sup>60</sup> ŠAJN, *supra* note 56, at 9.

<sup>61</sup> Shill, *supra* note 3, at 563 (citing WORLD HEALTH ORG., GLOBAL STATUS REPORT ON ROAD SAFETY 2015, at 49 (2015)).

<sup>62</sup> Lora Kolodny, *Transportation Department Is Losing Top Auto Safety Regulator After a Few Months on the Job*, CNBC (Aug. 12, 2022, 3:16 PM), <https://www.cnbc.com/2022/08/12/nhtsa-head-cliff-is-leaving-to-run-california-air-resources-board.html> [<https://perma.cc/E4TU-KUTV>].

<sup>63</sup> Mike Colias, *Americans Are Keeping Their Cars Longer, as Vehicle Age Hits 12 Years*, WALL ST. J. (June 14, 2021, 11:27 AM), <https://www.wsj.com/articles/average-u-s-vehicle-age-hits-record-12-years-11623680640> [<https://perma.cc/KZE6-VFRK>].

<sup>64</sup> Facilitating upgrades to existing cars would, of course, address the gap inherent in adopting safety rules that apply only to new cars.

<sup>65</sup> Saylor, *supra* note 6, at 504–06 (describing NHTSA’s effort in the 1970s to promulgate rules protecting pedestrians from exterior-protrusion and head-impact injuries, and the judicial challenges and agency actions that led to an abandonment of that effort).

killed since that time.<sup>66</sup> Updates to NCAP and further action by NHTSA should do more than merely revive or update the incremental suggestions in the 2015 proposal that would have left the focus of NCAP unchanged. Instead, NHTSA should adopt four types of changes: changes to the universe of people for whose benefit it regulates, to vehicle design criteria, to vehicle technology criteria, and to NHTSA's own evaluation methods.

A. *Including Pedestrians Within NHTSA's Mandate*

NHTSA should expressly integrate pedestrian welfare into its rules and assign it a high priority. There are legal, fairness, and economic dimensions to this principle. The legal case is simple: The Motor Vehicle Safety Act of 1966 (MVSA), which NHTSA administers, defines “motor vehicle safety” as measures that “protect[] *the public* against unreasonable risk.”<sup>67</sup> That broad ambit self-evidently includes people outside the vehicle; as John Saylor has put it, “Crucially, the MVSA unequivocally tasks NHTSA with the safety of *the public*, both occupants and non-occupants alike.”<sup>68</sup>

Embedded in the concept of fairness is reciprocity, which finds expression in the tort concept of assumption of risk. Someone playing baseball in a park generally cannot recover for being hit by an errant pitch, because errant pitches are foreseeable risks that players assume. Other users of the park may also be barred from recovering for errant pitches, in part because even though they are not playing the game, they are taking the benefits that come with using the park. By definition, however, pedestrians cannot benefit from vehicle traffic.<sup>69</sup> It would be perverse to argue that they benefit from measures that are designed to safeguard only vehicle occupants: Not only are those measures not undertaken for their benefit, but there is some evidence that they increase harm to pedestrians.<sup>70</sup> And unlike the parkgoer, they do not take a benefit as a common participant. The banal activity of walking out of doors should not be deemed an assumption of the risk of being struck by a vehicle—especially when the risk of vehicle conflicts is (unlike the risk of being struck by a baseball) a primary inhibitor of the activity to begin with.

Markets cannot be expected to incorporate unpriced externalities, and the market for new vehicles is no different. Yes, many people engaged in the

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<sup>66</sup> See *Fatality Facts 2020: Pedestrians*, INS. INST. FOR HWY. SAFETY (May 2022), <https://www.iihs.org/topics/fatality-statistics/detail/pedestrians#yearly-snapshot> [<https://perma.cc/KBX7-5R2S>].

<sup>67</sup> 49 U.S.C. § 30102(a)(9) (emphasis added).

<sup>68</sup> Saylor, *supra* note 6, at 498.

<sup>69</sup> As members of society, pedestrians of course do reap some indirect benefits from the activity that vehicle safety enables—fast car traffic—but they do not benefit *qua* pedestrians, and therefore cannot be said to assume the risk.

<sup>70</sup> See Peltzman, *supra* note 32, at 677 (concluding that auto safety regulation focused on automobile design may have increased the share of the highway death toll borne by pedestrians).

activity of walking also own cars. But NHTSA protects their welfare only qua motor vehicle occupants, i.e., when they are in a car. When they are walking, the agency leaves them unprotected. This has created a failure the market is unlikely to correct. It consists partly of an information problem: buyers do not know how dangerous their new cars are to pedestrians, and altruistic buyers might change their behavior if they did.<sup>71</sup> It also creates a classic externality problem: buyers face minimal incentives to reduce risks to pedestrians and other third parties.<sup>72</sup> NHTSA regulations should consider the impact of vehicles on the individuals outside of them, especially vulnerable people like pedestrians.

*B. Regulating the Design of Vehicles to Protect People Outside of Them*

NHTSA should incorporate commonsense safety protections for pedestrians like those adopted by dozens of our peer nations, including rules affecting the design of vehicles. NHTSA's European counterpart, for example, assesses vehicles for "how well they protect those vulnerable road users—pedestrians and cyclists—with whom they might collide."<sup>73</sup> It does this across multiple types of collision, including head impact, upper leg impact, and lower leg impact, and it specifically evaluates the efficacy of automatic emergency braking to avoid pedestrians and cyclists.<sup>74</sup> Adopting these tests will likely require some changes in the design and manufacture of vehicles sold in the United States, but, again, the European case provides a model. The use of protective materials, like hoods that crumple upon impact, as well as attention to the height and weight of vehicles would help mitigate risk to pedestrians and other third parties. Some of these solutions may involve advanced technology, such as pedestrian airbags<sup>75</sup> or front-facing cameras coupled with automatic emergency braking. But such technologies will add considerable expense to the vehicle. Manufacturers should also have the opportunity to show that lower-cost changes, perhaps to the height of the front end or bumper of their vehicle, make their vehicles at least as safe. And generally, regulations should explicitly address pedestrian safety impacts of

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<sup>71</sup> NCAP should address this informational gap. See Part IV.C, *infra*.

<sup>72</sup> See, e.g., Shill, *supra* note 3, at 556–77 (discussing the creation of inadequate or perverse incentives around safe driving across different fields of law, including environmental, vehicle design, insurance, tax, tort, contract, and criminal law).

<sup>73</sup> *Vulnerable Road User (VRU) Protection*, EUR. NEW CAR ASSESSMENT PROGRAMME, <https://www.euroncap.com/en/vehicle-safety/the-ratings-explained/vulnerable-road-user-vru-protection> [<https://perma.cc/63ZT-E758>] [hereinafter EURO NCAP].

<sup>74</sup> *Id.*

<sup>75</sup> See Press Release, Volvo Cars, Volvo Car Corporation's Pedestrian Airbag: Here's How It Works (May 23, 2012), <https://www.media.volvocars.com/global/en-gb/media/pressreleases/43844> [<https://perma.cc/LA73-9KCK>] (explaining functions and features of a pedestrian airbag).

NHTSA's own weight, ride height, bumper height, and bumper design requirements—requirements that were established primarily for the benefit of car occupants, not pedestrians.

*C. Using the Best Technology Available to Protect All Road Users, Including Pedestrians*

NHTSA should toughen its rules regarding AEB and intelligent speed assistance (ISA). The Insurance Institute for Highway Safety (IIHS) recently began evaluating the effectiveness of AEB systems that recognize pedestrians.<sup>76</sup> While this step suggests that the safety of third parties may be growing in salience to vehicle purchasers, the rapid increase in pedestrian fatalities calls for a commensurately swift and effective regulatory response. In its new NCAP program, NHTSA should add clear protections to strengthen its proposed rules and prior negotiated agreements concerning AEB<sup>77</sup>—to at least the level of the European NCAP program.<sup>78</sup> As noted, the orientation of NCAP is towards the consumer; adding regulations intended to protect third parties to a regime designed for a different purpose has its limitations, but doing so would at least enable conscientious consumer choice and disclosure of information likely to be important to the public.

To be effective, these AEB protections should take into account common fatal pedestrian crash characteristics. These characteristics include the most dangerous conditions and the most vulnerable populations. For example, 76% of all fatal pedestrian collisions occur during “dark” light conditions and a further 4% at dusk or dawn, meaning four out of five of these collisions occur outside of daylight.<sup>79</sup> The surge in pedestrian deaths

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<sup>76</sup> *About Our Tests*, INS. INST. FOR HWY. SAFETY, <https://www.iihs.org/ratings/about-our-tests> [<https://perma.cc/Y8CU-RJ7B>]. These tests used by the IIHS include three basic scenarios: an adult walking across the road perpendicular to the vehicle, a child walking across the road perpendicular to the vehicle, and an adult walking parallel, in the same direction, to the vehicle on the edge of the roadway. *Id.* The perpendicular tests are performed at 12 and 25 mph and the parallel test is performed at 25 and 37 mph. *Id.*

<sup>77</sup> *See, e.g., Light Vehicle Automatic Emergency Braking (AEB) with Pedestrian AEB*, RIN 2127-AM37, OFF. OF INFO. & REGUL. AFFS. (Spring 2021), <https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202104&RIN=2127-AM37> [<https://perma.cc/38EM-EC7H>] (noting NHTSA's intent to seek comment on AEB standards for newly manufactured light vehicles); *10 Automakers Fulfill Automatic Emergency Braking Pledge Ahead of Schedule*, INS. INST. FOR HWY. SAFETY (Dec. 17, 2020), <https://www.iihs.org/news/detail/10-automakers-fulfill-automatic-emergency-braking-pledge-ahead-of-schedule> [<https://perma.cc/FU9H-ZZQ9>] (describing NHTSA's 2015 brokering of a commitment between twenty manufacturers to equip 95% of their newly produced vehicles with AEB).

<sup>78</sup> *See* EURO NCAP, *supra* note 73.

<sup>79</sup> NAT'L CTR. FOR STAT. & ANALYSIS, NAT'L HWY. TRAFFIC SAFETY ADMIN., U.S. DEP'T OF TRANSP., DOT HS 813 079, TRAFFIC SAFETY FACTS: 2019 DATA 6 (2021),



during the 2010s largely occurred in dark conditions: Between 2010 and 2019, pedestrian fatalities overall rose by 54%, more than three times the rate of daytime deaths alone (up 16%).<sup>80</sup> The safety goals of the NCAP revision cannot be achieved without including nighttime trials that test AEB's ability to protect pedestrians under common fatal crash conditions. For example, the NCAP tests should include tests designed with no outside light sources other than the test vehicle's headlights. This will better replicate a common road characteristic: Pedestrians are often killed walking on roads without streetlights.<sup>81</sup> Rulemaking on the basis of tests conducted in controlled settings is not sufficient. Instead, NHTSA should take account of real-world conditions in corridors and circumstances that generate a disproportionate share of pedestrian deaths.<sup>82</sup>

In addition, NHTSA should require intelligent speed assistance on cars sold in the United States. There are different formulations of ISA; the EU will soon require that cars sold in the EU come equipped with a version that sounds an alarm when the vehicle has exceeded a certain threshold of speed.<sup>83</sup> The EU's mandated ISA can be overridden by the driver.<sup>84</sup> NHTSA has historically been sensitive to political considerations. This sensitivity is not misplaced: The role of physical infrastructure and street design in pedestrian safety outcomes has gained increasing appreciation in recent decades,<sup>85</sup> but safety enhancements are often stalled by legal, political, and

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<https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813079> [https://perma.cc/9K8J-Z7KV] (data for 2019).

<sup>80</sup> GOVERNORS HWY. SAFETY ASS'N, *supra* note 14, at 4.

<sup>81</sup> SCHMITT, *supra* note 27, at 37 (“Missing safety features like streetlights can be a life-or-death matter for pedestrians, 75 percent of whom are killed at night.”).

<sup>82</sup> See, e.g., Robert J. Schneider, Rebecca L. Sanders, Frank R. Proulx & Hamideh Moayyed, *United States Fatal Pedestrian Crash Hot Spot Locations and Characteristics*, 14 J. TRANSP. & LAND USE 1 (2021), <https://jtlu.org/index.php/jtlu/article/view/1825> [https://perma.cc/53KL-79PG] (documenting and analyzing areas on the U.S. roadway network that generate disproportionately high numbers of pedestrian deaths, and identifying characteristics common to those areas).

<sup>83</sup> See *Intelligent Speed Assistance (ISA)*, EUR. TRANSP. SAFETY COUNCIL, <https://etsc.eu/intelligent-speed-assistance-isa> [https://perma.cc/TY26-6Y3A]; *Briefing: Intelligent Speed Assistance (ISA)*, EUR. TRANSP. SAFETY COUNCIL (Sept. 27, 2017), <https://etsc.eu/briefing-intelligent-speed-assistance-isa> [https://perma.cc/L2U4-C6T6].

<sup>84</sup> *Intelligent Speed Assistance (ISA)*, *supra* note 83.

<sup>85</sup> See, e.g., SMART GROWTH AM. & NAT'L COMPLETE STS. COAL., *DANGEROUS BY DESIGN* 2022, at 6 (2022), <https://smartgrowthamerica.org/wp-content/uploads/2022/07/Dangerous-By-Design-2022-v3.pdf> [https://perma.cc/899J-6HSR] (“Roadway design has a strong impact on how people drive . . .”); Bronin & Shill, *supra* note 3, at 3 (discussing high volume of public comments submitted regarding proposed revision to the Federal Highway Administration Manual); Bronin, *supra* note 39, at 2164–67 (discussing the role of street design, including geometric, fire code, and speed and traffic standards, in increasing pedestrian risk); Schindler, *supra* note 3, at 1943 (“[M]any scholars of planning and urban design have addressed the idea that architecture can regulate behavior . . .”). See generally NAT'L ASS'N OF CITY TRANSP. OFFS., *URBAN STREET DESIGN GUIDE* (2013) (collecting and depicting best practices of street design to enhance safety in built-up areas).

fiscal challenges,<sup>86</sup> including at NHTSA. The agency can and should require the same minimally invasive form of ISA that the EU settled on.

*D. Updating Safety Tests so They Are Representative of Common Fatal Pedestrian Crash Victims and Scenarios*

NCAP tests should modernize the use of crash-test mannequins so they better represent the range of Americans who are endangered by car crashes. This would benefit all road users, but especially pedestrians, who are most exposed to the harm of impact. The tested mannequins and conditions should not merely assume an adult of average size and walking speed, as this under-protects the most vulnerable segments of our population, who die in car crashes (especially as pedestrians) at a far higher rate. For example, seniors, who number in the tens of millions, are more likely to move at a slower pace and less likely to recover from injuries sustained in a collision.<sup>87</sup> Those over sixty-five years old are 35% more likely to be killed as pedestrians.<sup>88</sup> Wheelchair users are also at greatly elevated risk of death from motor vehicles. As pedestrians, they have a 36% higher chance of being killed by motorists than the overall population, and for male wheelchair users aged fifty to sixty-four, the figure is 75%.<sup>89</sup> Thus, NHTSA testing criteria should also include a mannequin in a wheelchair—and AEB tests should be rated on their ability to recognize such road users.

NHTSA should also test pedestrian safety technology with female and child-sized mannequins. Women are more likely to die or be injured in car crashes, in part because the crash test dummies that are used to model crash impacts are male.<sup>90</sup> And, motor vehicle crashes are one of the leading causes

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<sup>86</sup> See, e.g., Noah M. Kazis, *Transportation, Land Use, and the Sources of Hyper-Localism*, 106 IOWA L. REV. 2339, 2353–56, 2358–60 (2021) (recounting, for example, the stymieing effect in various U.S. cities of staunch and demographically unrepresentative opposition to proposed projects with potential safety benefits, which is voiced at public hearings and meetings); Shill, *supra* note 3, at 500–76 (detailing obstacles to safety across multiple areas of law that privilege motorists); *id.* at 533–35 (detailing political obstacles such as lack of prosecution of motorists involved in crashes that injure or kill pedestrians); *id.* at 536–38 (detailing fiscal obstacles including a shift in the incidence of roadway costs from drivers to the general taxpayer and persistently inadequate funding of public transportation). See generally MASHAW & HARFST, *supra* note 11, at 225–28, 230 (detailing political and legal obstacles to NHTSA rulemaking that incentivize the agency’s use of the recall as its preferred regulatory technique).

<sup>87</sup> U.S. CENSUS BUREAU, AMERICAN COMMUNITY SURVEY DP05 ACS DEMOGRAPHIC AND HOUSING ESTIMATES (2021), <https://data.census.gov/cedsci/table> [<https://perma.cc/ZYJ8-Z8LQ>]; SCHMITT, *supra* note 27, at 4.

<sup>88</sup> SCHMITT, *supra* note 27, at 40 (comparing death rate of pedestrians over sixty-five to those who are in their twenties).

<sup>89</sup> Shill, *supra* note 3, at 526.

<sup>90</sup> Susan Molinari & Beth Brooke, Opinion, *Women Are More Likely to Die or Be Injured in Car Crashes. There’s a Simple Reason Why.*, WASH. POST (Dec. 21, 2021), <https://www.washingtonpost.com/opinions/2021/12/21/female-crash-test-dummies-nhtsa>

of death for children.<sup>91</sup> Children are particularly vulnerable to vehicle collision, and the front blind spots that are common on large, high-riding vehicles place children at even higher risk. A recent test found that a driver of a Cadillac Escalade could not see a dozen schoolchildren sitting in a line in front of the vehicle, and other large vehicles performed only a little less poorly.<sup>92</sup> Thus, it is not enough that AEB detects children (though it should); NCAP testing procedures should also test the other types of pedestrian safety technology mentioned above against a mannequin representing a child. In conducting these tests, NHTSA should not assume that children—whose brains are still forming—will use the same judgment or possess the same perceptual capacity as adults. There is good evidence that children under fourteen in particular behave differently around cars than adults do.<sup>93</sup> NCAP and related NHTSA regulations should respond to real-world limitations and hazards like these.

#### CONCLUSION

Improving safety for all road users is essential, yet in NCAP—both its current form and the proposed update—NHTSA fails to move beyond its historically narrow focus on car occupants. Ironically, this choice betrays NHTSA’s own statutory mission to “protect[] *the public* against unreasonable risk.”<sup>94</sup> NHTSA should move to conform its practices to its mandate by redefining its evaluation of vehicle safety to account for the well-being of the people vehicles endanger most: pedestrians and other vulnerable users of the roadway.

Though widening the aperture in this way would increase the number and nature of beneficiaries of vehicle safety regulation, it would not require major changes to the actual work that NHTSA does or the expertise it uses

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[<https://perma.cc/VF8P-JKMS>] (noting that female victims are 17% more likely to die because “[e]ven the ‘female’ dummies the government requires in tests are just smaller versions of male dummies”).

<sup>91</sup> Rebecca M. Cunningham, Maureen A. Walton & Patrick M. Carter, *The Major Causes of Death in Children and Adolescents in the United States*, 379 *NEW ENG. J. MED.* 2468, 2468 (2018) (“Motor vehicle crashes were the leading cause of death for children and adolescents . . .”).

<sup>92</sup> Bob Segall, *13 Investigates: Millions of Vehicles Have Unexpected, Dangerous Front Blind Zone*, 13 *WTHR* (Apr. 29, 2019, 3:45 AM), <https://www.wthr.com/article/news/investigations/13-investigates/13-investigates-millions-vehicles-have-unexpected-dangerous-front-blind-zone/531-9521c471-3bc1-4b55-b860-3363f0954b3b> [<https://perma.cc/RGU8-BUL2>] (describing the results of an experiment identifying and measuring front blind spot hazards of various SUV, minivan, and pickup truck models).

<sup>93</sup> See, e.g., Elizabeth E. O’Neal, Yuanyuan Jiang, Lucas J. Franzen, Pooya Rahimian, Junghum Paul Yon, Joseph K. Kearney & Jodie M. Plumert, *Changes in Perception–Action Tuning over Long Time Scales: How Children and Adults Perceive and Act on Dynamic Affordances When Crossing Roads*, 44 *J. EXPERIMENTAL PSYCH.: HUM. PERCEPTION & PERFORMANCE* 18 (2018) (showing that children do not perceive danger from moving traffic in the same way that adults do; i.e., children inaccurately believe they can cross a street safely).

<sup>94</sup> 49 U.S.C. § 30102(a)(9) (emphasis added).

to carry it out. The agency has the capacity to leverage the best evidence and technology to safeguard pedestrians, and should use it. In fact, because the economic cost of pedestrian deaths is so high and the amount NHTSA has spent or required industry to spend in mitigating it is so low,<sup>95</sup> the agency has an unusually wide berth to adopt new safety rules that protect pedestrian welfare.

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<sup>95</sup> See *supra* notes 34–38, 49–52 and accompanying text.