NEW YORK CITY DOT Department of Transportation

Ydanis Rodriguez, Commissioner

Docket No. NHTSA-2021-0002
Response for Request for Comments
New Car Assessment Program

As a city in its ninth year of a groundbreaking Vision Zero initiative, we are heartened by NHTSA's proposed reforms to the New Car Assessment Program. Our Vision Zero philosophy asserts that serious crashes are preventable and that through engineering, enforcement, and education, we can eliminate deaths and serious injuries in traffic. For several years New York City hit record lows for overall and pedestrian fatalities. However, despite our extensive engineering work and embrace of best practices in street design, there are factors in serious crashes that we as a city cannot control. The design of vehicles is perhaps the most salient of these. Over the last decade, the increasing prevalence of large and heavy SUVs, crossovers, and light trucks, with higher grills than sedans and significant blind spots, has been a significant driver of pedestrian and cyclist deaths in New York City and around the country. With its demonstrated ability to spur changes in vehicle design, NCAP has the potential to meaningfully advance USDOT's National Roadway Safety Strategy by spotlighting the danger these design choices create.

Using a Safe Systems approach, safer vehicles will be a central to preventing deaths and serious injuries on the nation's roadways. We applaud you for proposing many important changes to NCAP. At the same time, we have continuing concerns about the risks posed by larger vehicles to pedestrians and cyclists. We believe strongly that safety ratings must reflect the protection not only of vehicle occupants, but also of other road users. We also encourage NHTSA to develop a safety rating system for medium- and heavy-duty vehicles, recognizing the role that vehicle design plays in the hazards these trucks pose to the traveling public.

As part of our Vision Zero initiative, the City has launched a Safe Fleet Transition Plan (SFTP) to focus on safe design of the City's approximately 31,000 cars and trucks. The NYC Department of Citywide Administrative Services (DCAS) partners with USDOT Volpe on this effort, and we are proud of this collaboration to harness our agencies' expertise to save lives. We hope that meaningful updates to NCAP will impel automakers to improve and standardize many of the safety features the city is looking for in its new vehicles.

Pedestrian Automatic Emergency Braking

The addition of blind spot detection, blind spot intervention, lane keeping support, and pedestrian automatic emergency braking (PAEB) to NHTSA's recommended ADAS technologies, and the proposed raising of standards for existing recommended ADAS technologies in NCAP, emphasizes the importance of these features. In the case of PAEB, this recommendation represents an admirable shift in focus to the safety of people outside vehicles, and the most vulnerable road users, at a time when pedestrian fatalities nationwide have increased. We would like to register our support for the proposed PAEB test speed changes (p.68-71). New York

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City's citywide speed limit is 25 mph, but our automated speed enforcement cameras, which in most instances are triggered when a vehicle is traveling 36 mph or faster, still issued more than 4.3 million violations in 2021 – and that excludes weekend and overnight hours, when State law prohibits their usage. Pedestrians in urban environments like ours are significantly exposed to vehicles traveling in excess of the 40 kph/24.9 mph specified in the 2019 PAEB test procedure. In this context, knowing that, as quoted on p.69, "Pedestrian AEB was associated with a 32 percent reduction in the odds of a pedestrian crash on roads with speed limits of 25 mph or less and a 34 percent reduction on roads with 30-35 mph speed limits,"[1] we believe a wider adoption of PAEB, encouraged by NCAP, would save pedestrian lives in New York City and our peer cities. United States Government Accountability Office interviews with representatives of automakers found that the Insurance Institute for Highway Safety's decisions to test pedestrian crash avoidance systems in 2018 and 2019 led the manufacturers to include them in order to earn the IIHS Top Safety Pick Award.[2] A similar requirement within NCAP would presumably further encourage the adoption of these technologies as standard. As part of our SFTP, NYC requires these in City owned vehicles wherever available. However, there are still many gaps in availability.

Likewise, while PAEB systems are known to lose performance quality in dark conditions, the real-world circumstances of fatal pedestrian crashes require systems to perform reliably during overnight hours. If, as found in NHTSA's testing (p. 73-74), some vehicles were in fact able to repeatedly avoid colliding with pedestrian mannequins with only their lower beams in operation, then it has been established this is indeed possible, and therefore the five-star achievement threshold must be this high standard of performance.

On that note, in order to prevent misunderstandings of what PAEB can or cannot do, it is important that NCAP materials communicate to consumers that PAEB has not been proven effective while turning (p.79). In recent years, approximately one-quarter of pedestrian deaths in New York City have involved a vehicle failing to yield on a turn, making it one of the most common factors in these fatalities. If PAEB systems are not yet capable of preventing these crashes to the same extent as they can when the vehicle is traveling straight, then the public must be informed, lest consumers develop a false sense of security.

Blind Spot Detection and Pedestrians

Warnings to drivers about the presence of another individual in their blind spot have largely been limited to the detection of other motor vehicles in lane change or merging scenarios, not to

[1] Cicchino, J. B (2022, February), Effects of automatic emergency braking systems on pedestrian crash risk, Insurance Institute for Highway Safety, https://www.iihs.org/api/datastoredocument/bibliography/2243

[2] United States Government Accountability Office, Report to the Ranking Member, Committee on Environment and Public Works, U.S. Senate. *Pedestrian Safety: NHTSA Needs to Decide Whether to Include Pedestrian Safety Tests in Its New Car Assessment Program.* April 2020. https://www.gao.gov/assets/710/706348.pdf

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pedestrians or cyclists. This technology is meant to function in highway scenarios where the principle other vehicle is located to the side and rear of the subject vehicle. This is not the same "blind spot" situation typically seen in serious city crashes, such as on a turn where a driver's view of a pedestrian in a crosswalk may be obscured by an A-pillar. We encourage NHTSA to develop performance standards for forward blind spot protection of vulnerable road users in order to hasten the development of this technology.

Harmonization with Euro NCAP

We concur with proposals to harmonize with Euro NCAP whenever possible, as Euro NCAP has demonstrated a rigor of testing, a stringency in standards, and a concern for the safety of pedestrians and cyclists that has gone beyond our NCAP in the United States. In general, we support testing systems like automatic emergency braking at the fastest speeds practical and feasible in order to best simulate the real-world conditions in which serious crashes take place. On that note, we urge NHTSA to hold testing settings to high standards, e.g. testing the middle or next latest alert setting for Forward Collision Warning (p. 90); this eliminates "grade inflation" and helps consumers make more meaningfully informed choices while also holding manufacturers to account for their claims that the technology will work in situations where a consumer would reasonably believe it would.

We urge NHTSA to adopt Euro NCAP's testing procedures regarding impact to pedestrian adult and child heads, adult upper legs, and adult lower legs. In these tests, held at 40 kph using specialized mannequins of the body part, impact sites are assessed and the vehicle's protection is rated as good, adequate, marginal, weak, or poor.[3] This testing reflects real-world crash impacts and incentivizes vehicle design features that reduce harm to vulnerable road users, like lower and more sloping hoods.

Communicating ADAS Ratings to Consumers

New York City supports the concept of a clear and separate rating system for ADAS technologies which in turn contributes to a portion of a vehicle's overall NCAP star rating. Having a rating system helps to normalize the adoption of ADAS technologies as normal and expected. If consumers interpret ADAS as essential, then they will demand the technologies as standard. A "medal" or points-based system as described on pages 143-144 would clearly show that the information being provided is separate from the overall crashworthiness rating; however, this would not preclude also using ADAS effectiveness information as a component of the overall star total. Again, we urge high standards to prevent grade inflation. It is important to reserve the top awards for systems that meet 100 percent of the most demanding criteria.

[3] See https://www.euroncap.com/en/vehicle-safety/the-ratings-explained/vulnerable-road-user-vru-protection/head-impact/

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Likewise, the ADAS rating system adopted by NHTSA should only award top ratings to models in which these safety options are available in all trim packages. This would help to normalize safety technologies as integral parts of a vehicle, rather than as special high-end additions, and better reflect the safety of the vehicle trims most consumers actually purchase.

Driver Monitoring Systems

For some common behaviors associated with fatal crashes, particularly alcohol-impaired driving, there are no street engineering solutions. New York City therefore eagerly awaits the development of better driver behavior monitoring technologies. Our current State ignition interlock requirements for DWI offenders have admirable intentions, but are frequently circumvented when the offender simply drives another person's car. We urge NHTSA to continue research into alcohol detection systems that could be applied universally by default, without the need for a DWI conviction or the installation of after-market equipment.

Intelligent Speed Assistance

Throughout the years of our Vision Zero initiative, we have found that speed management is possibly the most effective tool we have to address serious injuries and deaths across all modes of transportation. We agree with NHTSA that traffic fatality statistics likely underreport speeding (p. 176), and that the consequences of speeding are catastrophic for both our city and the nation as a whole. Intelligent Speed Assistance (ISA) systems offer a means of reducing the toll of speeding. New York City's Department of Citywide Administrative Services (DCAS), having worked extensively with USDOT's Volpe Center on fleet safety, is exploring an ISA pilot program on non-emergency vehicles through a retrofit initiative in 2022. DCAS will also receive new electric vehicle models with partial ISA in 2022.

With the European Union's General Vehicle Safety Regulation 2019/2144 coming into effect in July 2022, requiring ISA as mandatory for new models of vehicles introduced to the market, the United States currently lags far behind in its use of this technology. The technology is ready, and we hope that NCAP can help support the availability of ISA on American models of new vehicles.

SUV and Light Truck Design – An Unaddressed Crisis

While advances in driver assistance technology are important, there is no substitute for the direct vision of an attentive driver. Too often, the physical design features of a vehicle interrupt sight lines and lead to crashes which could have been prevented. In 2021, 46 percent of pedestrian fatalities in New York City involved SUVs, vans, and pick-up trucks, compared to 22 percent that involved smaller passenger vehicles, a ratio roughly in line with their relative market share in the United States. The heavier weights and higher fronts of these vehicles, as well as their tendency to limit visibility of pedestrians to drivers and to strike victims at the torso or pelvis level rather than at the legs, contribute to worse outcomes. We are concerned that the proposed changes to NCAP do not address this growing problem.

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A vehicle that can receive the highest possible rating for protection of occupants may in fact pose a disproportionately high risk to vulnerable road users outside the vehicle. The Insurance Institute for Highway Safety has noted that SUVs cause more severe injuries to pedestrians than do sedans, and found that this difference increases with speed.[4] IIHS also found that turning SUVs, vans, and pickups pose particular danger to pedestrians, likely due to blind spots created by A-pillars, long front ends, and high ride positions.[5] Critically, pedestrian fatalities involving SUVs increased 81 percent from 2009 to 2016, more than for any other type of vehicle. The concurrent growth in popularity of SUVs and in pedestrian deaths is no coincidence.

NCAP ratings should clearly reflect that larger models of passenger vehicles pose greater risks to pedestrians. We urge NHTSA to conduct a comprehensive review of SUV and light truck design and make explicit recommendations for safer designs, including lower and more sloping hoods, energy-absorbing structures, and external airbags.

Medium and Heavy-Duty Trucks

We understand that the purpose of NCAP is to assist consumers with passenger vehicle purchasing decisions and encourage safety improvements for these specific vehicles – those up to 10,000 pounds, including sedans, SUVs, vans, and Class 1 and 2 light-duty trucks. However, the American road ecosystem is a diverse one, and the individuals who procure heavier-duty trucks would also benefit from the safety improvements NCAP is meant to communicate and support for passenger vehicles. We encourage NHTSA to create a safety rating system for medium- and heavy-duty trucks, which would nudge manufacturers to standardize more features that protect vehicle occupants and other road users.

In particular, we believe the adoption of a direct vision standard for heavy truck cabs would encourage greater manufacturer availability and faster adoption of significant safety improvements. The use of peep and teardrop windows, sloped-hood cabs, cab-over engine designs, and high vision cabs can prevent a common type of fatal pedestrian crash in urban settings where truck drivers cannot see pedestrians crossing in close proximity to them. This is particularly hazardous to children, the elderly, and shorter adults. Long truck fronts, relatively small windows, and obstructed vision from add-ons such as insect shields block visibility of vulnerable road users and increase hazard. In a University of Leeds/Arup study commissioned by Transport for London, researchers concluded that truck drivers in low-entry cabs, with direct sight of pedestrians and cyclists in front and to the side, are involved in 40% fewer collisions than drivers operating traditional cabs.[6] When the professional truck drivers were required to

[4] https://www.iihs.org/news/detail/new-study-suggests-todays-suvs-are-more-lethal-to-pedestrians-than-cars
[5] https://www.iihs.org/news/detail/suvs-other-large-vehicles-often-hit-pedestrians-while-turning
[6] Transport for London (2016). Direct Vision vs Indirect Vision: A study exploring the potential improvements to road safety through expanding the HGV cab field of vision. http://content.tfl.gov.uk/road-safety-benefits-of-direct-vs-indirect-vision-in-hgv-cabs-technical.pdf

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perform a mental task while operating, more than half of the drivers in traditional cabs struck pedestrians, compared to only about 12% of high vision cab drivers.

High-vision cabs allow drivers to better see adjacent roadway, pedestrians, cyclists, and other road users with their naked eyes. This minimizes the cognitive load required to process multiple inputs while driving, reduces new blind spots created by the installation of mirrors, and facilitates eye contact with other road users to communicate awareness and intent through facial or hand signals. NHTSA recommends that pedestrians and bicyclists make eye contact with drivers to help ensure that they have been seen, and research has found that eye contact with drivers can significantly reduce drivers' speed approaching a crosswalk.[7] However, this is only possible if the vehicle cab design permits eye contact. In addition, because heavy trucks are less maneuverable and require a longer stopping time and distance than smaller vehicles, vision improvements that shorten driver reaction times become even more important for crash prevention. While indirect vision improvements, such as mirrors and camera systems, can improve safety, they are no substitute for direct vision: the London study found that truck operators stop for a pedestrian about 50 percent faster through direct vision than when using indirect vision.[8]

In New York City, we are again using our purchasing power as a reflection of our safety values, procuring direct vision trucks for part of our Department of Sanitation waste collection trucks. As part of our Safe Fleet Transition Plan, we have designated high vision truck cabs as a Tier 1 priority, as we believe this will encourage the increased availability and feasibility of high-vision truck cabs. An adoption of such a standard by NHTSA would be exponentially more impactful in incentivizing safer trucks.

Finally, the innovation and development of ADAS safety features for trucks is as important as it is for passenger vehicles. Intelligent speed assistance, driver alerts, surround cameras, and automatic braking technologies also apply to heavy-duty vehicles, but need to be promoted, standardized, and made widely available. We hope that NHTSA, in creating a safety rating system for heavy trucks, could promote these technologies in the same way as it has for NCAP.

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[7] Zeheng Ren, Xiaobei Jiang, Wuhong Wang (2016). Analysis of the Influence of Pedestrians' Eye Contact on Drivers' Comfort Boundary During the Crossing Conflict. *Procedia Engineering*, vol. 137, 399-406
[8] Transport for London (2016) ibid.

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