



July 25, 2023

Sophie Shulman
Deputy Administrator
National Highway Traffic Safety
Administration
U.S. Department of Transportation
1200 New Jersey Avenue SE
West Building Ground Floor, Room W12-140
Washington, DC 20590-0001

**Re: Request for Comment: New Car
Assessment Program Docket No.
NHTSA-2023-0020**

Dear Deputy Administrator Shulman,

Applied Intuition ("Applied") welcomes the opportunity to respond to the National Highway Traffic Safety Administration's ("NHTSA") request for comment ("RFC") on a proposal to update the New Car Assessment Program ("NCAP"). As a company focused on improving vehicle safety through technology solutions, Applied supports NHTSA's decision to update NCAP to provide important safety information to consumers regarding the ability of vehicles to protect pedestrians.

Applied Intuition's mission is to accelerate the world's adoption of safe and intelligent vehicle technologies. The company provides software solutions to safely develop, test, and deploy autonomous systems, verify and validate the performance of vehicle safety systems, and test compliance with national and international standards. Applied-owned Mechanical Simulation's CarSim software has been used for decades by original equipment manufacturers ("OEMs"), part suppliers, research labs, and government agencies to evaluate and model vehicles for safety performance.¹ In the autonomy space, 17 of the top 20 global automotive OEMs rely on Applied's solutions to develop, test, and deploy autonomous systems at scale.

¹ Mechanical Simulation, CarSim Customers, CarSim, <https://www.carsim.com/company/customers/carsim.php> (last visited July 19, 2023).

NHTSA seeks comment on the level of detail that should be required for self-reported testing data. Specifically, the RFC asks, “[s]hould manufacturers be allowed to submit predicted head and leg response data, or only actual physical test results?”² As NHTSA moves to adopt many of the pedestrian protection test devices and pedestrian crashworthiness assessment methods from Euro NCAP, Applied recommends that NHTSA direct the submission of both physical and predicted test results. This would allow the agency and OEMs to better evaluate vehicle safety and performance by using modeling and simulation technologies in complement to physical testing. Physics-based simulation software can augment real-world tests by producing a virtual environment to allow continuous validation of the performance of a vehicle’s safety systems in a secure setting. Additionally, AI-empowered simulation software enables evaluation of vehicle performance and safety systems in virtual scenarios that would otherwise be difficult, costly, or dangerous to replicate in real-world testing.

Applied Intuition has significant experience with the use of simulation and modeling to evaluate vehicle performance and safety. CarSim software has been used to create several Euro NCAP-related data sets focused on the assessment of automatic emergency braking (“AEB”) vulnerable road user (“VRU”) systems within the Euro NCAP Pedestrian AEB Assessment. The CarSim software can replicate specific testing setup details specified in the Euro NCAP VRU AEB reference documents, including vehicle and pedestrian target placement (along with pedestrian target size and shape), vehicle speed, and scoring for each test run. Using this design, CarSim is able to measure the speed and locations of pedestrian impacts. OEMs can utilize CarSim to better understand how their AEB systems may perform during physical Euro NCAP testing.

In addition, simulation software products, like those developed by Applied, are valuable tools for evaluating the performance of vehicles to protect pedestrians. These products can be used as part of the self-reporting process for OEMs – both to generate the data to be reported, and to help NHTSA verify and validate that data as it prepares NCAP results. Applied software is currently used to verify and validate the performance of advanced driver assistance systems (“ADAS”) under existing Euro NCAP³, and could be applied for similar testing under NHTSA’s proposed NCAP additions. Applied’s software can provide digital versions of pre-defined Euro NCAP tests, extract relevant metrics from real-world test track data to complement simulation testing, and score an ADAS system’s performance based on Euro NCAP metrics. Thus, Applied’s software offers OEMs and others the ability to combine simulation and physical testing to better evaluate vehicle performance.

² New Car Assessment Program, 88 Fed. Reg. 34366, 34388 (May 26, 2023).

³Euro NCAP, Applied Intuition, <https://www.appliedintuition.com/use-cases/euro-ncap#workflow> (last visited July 19, 2023).

Given the maturity and sophistication of modeling and simulation software, NHTSA should direct the use of predicted data as part of the NCAP self-reporting structure.

Applied Intuition appreciates the opportunity to provide comments on NHTSA's proposed updates to NCAP. We look forward to continued engagement with NHTSA to provide subject matter expertise on the benefits and opportunities around the use of modeling and simulation to evaluate vehicle safety.

Sincerely,
Sunmin Kim
Director of Public Policy, Applied Intuition