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# *The Vehicle Safety Standard Bias: How Male-Based Crash Testing Leaves Female Drivers in the Backseat*

Julia Vanella

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## VEHICLE SAFETY STANDARDS ARE NOT NEUTRAL

Vehicles today are required to pass various safety standard crash tests that use dummies representing human beings, including men, women and children to assess how safe the vehicle is for passengers. Although the majority of people killed in auto accidents are male, research suggests that women “are actually at greater risk of death or injury when a crash occurs” (Barry 2019), according to the National Highway Transit Safety Administration (NHTSA) and the Federal Highway Administration (FHWA). While men are more likely to participate in risky driving behaviors, NHTSA found that a female driver or front passenger who wears a seatbelt is about 17% more likely to be killed in a crash than a male counterpart (Barry 2019). Compared to men, women have a higher risk of injury to all major regions of the body: head (22.1%), chest (25.4%), neck (44.7%) and leg (79.9%) (National Highway Traffic Safety Administration 2013). A 2019 study from the University of Virginia estimates that a woman is 73% more likely to be injured in a frontal vehicle accident than their male counterpart (Samarrai).

A key reason for this disparity is the design and use of female dummies in crash tests. The incorporation of female dummies in crash testing is fairly new to the industry, and the pace of their adoption has been sluggish. The NHTSA did not include a female dummy in its testing until 2003, despite requests from regulators in 1980 and from car manufacturers in 1996 (Barry 2019). Today, crash testing ratings are provided by both the NHTSA, which also regulates crash test standards, and the Insurance Institute for Highway Safety (IIHS), an independent organization funded by insurance companies. Neither organization runs tests with the female dummy in the driver’s seat; they either place the female dummy in the passenger seat or exclude it from the crash test entirely (Barry 2019). Moreover, the female dummy is not an accurate representation of the female body. Designed to represent the “smallest 5th percentile of the female population” (“Inclusive Crash Test Dummies”), it is just a scaled down version of the dummy representing the 50th percentile of the male

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population. One researcher suggested it more accurately represents a 12 or 13-year-old than an adult woman (Putka 2021).

Using a dummy that does not accurately reflect women's bodies can be dangerous for female drivers and passengers. When vehicle safety standards do not equitably consider both women's and men's safety in test crashes, women face a greater risk of serious injuries or death on the road.

### *A NEW KIND OF DUMMY*

Crash test dummy manufacturer Humanetics works with the NHTSA to design more human-like dummies that more accurately reflect typical human bodies ("Anthropomorphic Test Devices (ATD)"). The company's newest and most biologically accurate male dummy, the THOR model, was developed with funding from the NHTSA ("THOR 50th Percentile Male" 2016). Humanetics' newest female dummy, THOR-5F, accurately represents the female body, such as improvements to the weight and shape of the dummy's abdomen, arms, legs, sternum, pelvic bone, spine, neck, head and shoulders ("THOR-5F The New Generation" 2022), and includes more advanced technology to simulate injuries and collect data on how these dummies move during test crashes (Lowery 2022).

While some automakers purchase these newer dummies for their own crash tests, the testing regulators, NHTSA and IIHS, continue to use older versions in their crash tests. The IIHS Vehicle Research Center Vice President Raul Arbelaez stated that the IIHS does not use the THOR model because it "breaks too often and we don't always get the measures we want" (Lowery 2022). He also said that the cost of repair and maintenance of these newer models is unfeasible for IIHS. According to Chris O'Connor, CEO and president of Humanetics, political will is a big contributing factor to the adoption of these dummies: auto manufacturers and regulators are often reluctant to adopt new practices, and only change them when forced to do so (Putka 2021). For example, although the NHTSA proposed replacing the Hybrid III with the THOR dummy in 2015 and announced the inclusion of THOR-50M in the Code of Federal Regulations by September 2020, no such actions have taken place (Brown 2020).

### *PROMISING BIPARTISAN LEGISLATION*

The NHTSA has the authority to implement and enforce regulations regarding the use of female crash test dummies in their testing but has yet to make any changes to its rules despite the introduction of the THOR-5F model and the higher vehicular injury rates for women. The NHTSA could improve their crash testing standards for female drivers through the required use of the THOR-5F dummies in the driver's seat. This would assure female drivers that cars released into the market have been tested with dummies that best represent them and that their needs have been considered in vehicle safety designs.

In 2021, Reps. Gus Bilirakis and Kathy Castor, and Eleanor Holmes Norton filed legislation aimed at improving the federal government's current vehicle safety standards and, in particular, its crash test dummies standards ("Norton, Bilirakis, and Castor" 2021). The legislation would require a Government Accountability Office (GAO) study of current federal safety regulations and their impact on all drivers and passengers ("Norton, Bilirakis, and Castor" 2021). It would also require a GAO evaluation of the NHTSA's current regulations and its "failure to use crash test dummies that represent the driving public, especially women, while assessing vehicle safety through its 5-star safety rating program" ("Norton, Bilirakis, and Castor" 2021). The bill has been introduced in the House and the Subcommittee on Consumer Protection and Commerce but has not made forward progress since (US House 2021). As the issue continues to be brought to light through legislation, there is hope that with more time, funding and research, legislators will implement and enforce laws to protect all drivers, regardless of gender.

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