WOMEN DRIVE TOO

REALITY CHECK: SEPARATING FACT FROM FICTION

FICTION: NHTSA CURRENTLY REQUIRES FEMALE TEST DUMMIES.

FACT: This is misleading in two ways. First, what the National Highway Traffic Safety Administration (NHTSA) refers to as the **"5th Percentile Adult Female" is actually just a smaller, "mini" version of an adult male** crash test dummy (the HYBRID III model). It is not female. It is mini-male. Meanwhile, the advanced dummy, THOR-5F, takes into account the physiological differences of the female anatomy and incorporates dozens more sensors around the areas where data shows women are more likely to be injured: the legs, chest, abdomen and neck, something the HYBRID III model[1] currently in use, is incapable of. **NHTSA has yet to incorporate the lifesaving THOR-5F female crash test dummy technology**—whose development it initiated years ago—into federal motor vehicle safety standards (FMVSS) or the government's voluntary 5-star safety rating program, the New Car Assessment Program (NCAP). Additionally, these tests have never evaluated the mini-male in the driver's seat for frontal crash tests or side barrier tests.

FICTION: REQUIRING THE THOR TEST DUMMY COULD INCREASE THE RISK OF INJURY.

FACT: Using the most advanced crash test devices, Test device for Human Occupant Restraint (THOR), will save more lives and prevent more severe injuries because the THOR devices are **more biofidelic, they are more representative of an occupant in a crash,** and they are instrumented with sensors to measure not only fatal impacts but also impacts that result in severe injuries. NHTSA initiated the development of the advanced THOR devices, because the simple devices, with limited sensors developed in the 1970's, did not generate enough data for engineers to make design improvements. The THOR dummies have been extensively researched and developed over decades to provide more biofidelic (human-like) responses than older Hybrid III dummies. Unlike the Hybrid III, which lacks sensitivity in certain injury-prone areas like the chest, abdomen, and lower extremities, **THOR dummies provide improved data on real-world injury mechanisms**, particularly for female and smaller-stature occupants.

Since 2003, when early development began, substantial refinements have been made to THOR dummies, including better biofidelic responses, improved instrumentation, and calibration that aligns with modern injury criteria. By 2015 the THOR dummies had completed their rigorous development and evaluation by NHTSA, stakeholders, and research partners. Multiple global research institutions, including NHTSA and international safety organizations, have **validated THOR dummies as superior to legacy models** in predicting occupant injury.[2] [3]At that time NCAP organizations in Europe, China and Japan put the THOR-50M (the most advanced male crash test dummy) on the roadmap and started using it for tests starting in 2019.

1 https://one.nhtsa.gov/Research/Hybrid+III+5th+Percentile+Female

2 *Biomechanical Response Requirements Manual THOR 5th Percentile Female NHTSA Advanced Frontal Dummy, DOT HS 812 370, February 2017

3 Biofidelity Evaluation of the THOR and Hybrid III 50th Percentile Male Frontal Impact Anthropomorphic Test Devices Daniel Parent, Matthew Craig, Kevin Moorhouse National Highway Traffic Safety Administration

The claim that THOR dummies produce results "not indicative of real-world injury outcomes" is inaccurate. The more extensive instrumentation provides an enhanced capability to measure expected human response and predict injury.

The urgency of updating crash-test requirements stems from decades of reliance on outdated dummies that do not fully protect all vehicle occupants. **Delay in implementing improved crash-test technology risks perpetuating preventable injuries and fatalities**. The GAO report published in 2023 found that there were unjustified delays in implementing rule making on both the THOR-50M and THOR-5F.

FICTION: THE SHE DRIVES ACT DOES NOT PROVIDE FOR A TRANSITION PERIOD.

FACT: Claims that the She DRIVES Act lacks a transition period are misleading. Like all federal safety regulations, **any new testing requirements must go through a formal notice-and-comment process under the Administrative Procedure Act (APA**). This ensures stakeholders—safety experts, engineers, and the public—have input before a final rule is implemented. NHTSA has always included phased implementation schedules for regulatory changes, and any new crash-testing requirements will follow the same structured approach.

Additionally, the transition to improved crash-testing methods **is already in progress**. Researchers and safety professionals have worked with the THOR-50M (advanced male dummy) and THOR-5F (female dummy) for over a decade. While the She DRIVES Act does not specify a transition period, NHTSA's regulatory process inherently includes one. Other global safety programs, including those in Europe, China, and Japan, have already adopted THOR dummies, providing a clear precedent for the U.S. to follow. The Act's purpose is to enhance occupant protection, and its implementation will naturally allow time for integration without disrupting ongoing safety efforts.

FICTION: NEW CRASH TEST EQUIPMENT IS NOT NEEDED BECAUSE ADVANCED COMPUTER MODELING WILL SUPPORT CRASHWORTHINESS IMPROVEMENTS.

FACT: While advanced computer modeling is a valuable tool in crashworthiness research, **it cannot replace the need for physical crash testing with updated crash test dummies**. Computer simulations can provide insights into crash dynamics and help refine designs, but they must be physically validated against real-world crash data to ensure accuracy. Relying solely on virtual modeling introduces a significant risk, as even the most sophisticated algorithms can fail to capture the complexities of real-world human biomechanics. Physical crash testing remains essential for verifying that safety systems perform as expected across diverse body types and impact scenarios. Without real-world validation, there is a danger that safety improvements could be based on incomplete or incorrect assumptions rather than proven performance.

Moreover, simulation models are not infallible, and simulated tests can be manipulated, either intentionally or unintentionally, to produce desired outcomes that do not align with actual crash conditions. Unlike physical crash test dummies, which provide measurable, repeatable, and independently verifiable data, **simulation results can vary widely depending on the assumptions and parameters** set by those conducting the analysis. While computer modeling can supplement physical testing, it should never be relied upon as the sole method for evaluating vehicle safety.

FICTION: WOMEN BENEFIT FROM RECENT SAFETY ADVANCEMENTS IN CARS. DATA HAS SHOWN THAT USING THE 5TH PERCENTILE ADULT FEMALE CRASH TEST DUMMY (HYBRID III) IN SOME SEATED POSITIONS HAS IMPROVED CAR SAFETY FOR WOMEN AND SIGNIFICANTLY REDUCES GENDER DISPARITIES.

FACT: Recent safety advancements have benefited both men and women, yet the high disparity in risk continues. In fact, NHTSA's own data show that between **1975-2019, fatality risk for men fell at nearly twice the**

rate as that for women.[4][5] In 2018 more than 8,500 women were killed in car crashes. A majority (61%) of those fatalities included women who were in the driver's seat. Recent studies differ in certain conclusions about new vehicles safety, but they all align around the fact that women are still substantially more at risk of injury to the abdomen and leg injuries.[6] An IIHS study, found that women were still more than 2½ times as likely to suffer moderate leg injuries and about 70 percent more likely than men to suffer serious leg injuries. There is a lost opportunity to reduce deaths and injuries because **NHTSA has not mandated that the most up-to-date female crash test dummy** be consistently tested in the driver's seat or in the front passenger seat in either FMVSS or NCAP tests. The data shows that giving women the same number and type of crash tests, and the same high quality of crash testing equipment, can save lives and help close this gap.

FICTION: IT IS TOO EXPENSIVE TO ADOPT AN UP-TO-DATE MODEL OF FEMALE CRASH TEST DUMMIES INTO NCAP SAFETY STANDARDS.

FACT: Implementing an up-to-date model would increase the cost of a new vehicle by **less than a dollar**—an incredibly small price to pay for lives saved. According to a model on vehicle costs developed by Bain Consulting, total Research and Development is estimated to account for about 6% of the cost of a car. Of that amount, safety testing accounts for 0.73% of Research and Development, and the cost of crash test dummies accounts for about 5.3% of that R+D safety testing. The resulting cost of additional crash test equipment should be less than a dollar. **In fact, it is more costly to NOT to solve this problem.** In 2018 the economic impact of 466,643 preventable injuries to women in car crashes comes out to $12.8 billion per year and the cost associated with preventable deaths comes out to $2.25 billion per year. Investing in female crash test dummies is not only affordable, but also essential. The cost of inaction—both in human lives and economic impact—is far greater.

FICTION: WOMEN CHOOSE THE WRONG CARS. WOMEN DRIVE SMALLER VEHICLES, WHICH ARE LESS SAFE.

FACT: This myth is likely based on a study from the Insurance Institute for Highway Safety (IIHS), which shows the issue is bigger than choosing the "right" cars.[7] IIHS found **that in frontal crashes, women were three times as likely to experience a moderate injury** (such as a broken bone or concussion), and twice as likely to suffer a serious injury (such as a collapsed lung or traumatic brain injury). The study proposed that one explanation of the higher injury rate could be vehicle choice: men and women crashed in minivans and SUVs in about equal proportions, but around 70% of women crashed in cars, compared with about 60% of men. And more than 20% of men crashed in pickups, compared with less than 5% of women. Researchers also found that in two-vehicle front-to-rear and front-to-side crashes, men are more likely to be driving the striking vehicle. Bottom line, **regardless of vehicle type, both men and women should be tested equally** using the same standards and advanced crash test equipment to ensure safety for everyone on the road.

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4 Insurance Institute for Highway Safety. (2022) "Fatality Facts 2020: Males and Females" [Analysis of data from the U.S. Department of Transportation's Fatality Analysis Reporting System (FARS)] Site: https://www.iihs.org/topics/fatality-statistics/detail/males-and-females

5 https://www-fars.nhtsa.dot.gov/Main/index.aspx

6 13. Insurance Institute for Highway Safety. (2021) "Vehicle choice, crash differences help explain greater injury risks for women"https://www.iihs.org/news/detail/vehicle-choice-crash-differences-help-explain-greater-injury-risks-for-women

7 Matthew L. Brumbelow & Jessica S. Jermakian (2021): Injury risks and crashworthiness benefits for females and males: Which differences are physiological?, Traffic Injury Prevention, DOI: 10.1080/15389588.2021.2004312

FICTION: THERE IS NOT ENOUGH RESEARCH TO UNDERSTAND WHETHER WOMEN ARE AT AN INCREASED RISK OF INJURIES AND FATALITIES IN CAR CRASHES.

FACT: Numerous studies from both Europe and the U.S. have shown that women are more likely to be injured or fatally harmed in vehicle crashes compared to men in comparable crashes.[8][9][10][11] A University of Virginia study from 2019 found that women are 73% more likely than men to be severely injured and 17%-18.5% more likely than their male counterparts to be killed in comparable crashes.[12] **Every American deserves protection on the road**, yet current crash test safety standards fail to account for key differences between male and female bodies—putting women at greater risk. According to NHTSA data, an estimated 1,300 women lose their lives each year in crashes they might have survived if safety testing properly accounted for them. While advancements in vehicle safety have reduced overall road fatalities, the benefits have not been the same for everyone, **with road deaths falling for men at almost twice the rate than for women**, underscoring the urgent need to update safety standards to better protect all drivers and passengers.

FICTION: MORE RESEARCH NEEDS TO BE DONE TO FIND THE RIGHT SOLUTION.

FACT: NHTSA has spent the past 20 years developing a solution, and the necessary technology already exists. The solution is twofold:

1. **Mandate the use of crash test dummies that accurately represent female anatomy; and**
2. **Require equal crash testing standards for female and male occupants, including the same number and type of tests.**[13][14]

A well-researched, fully vetted female crash test dummy—the THOR-5F—is already available. Considered the '5G' of crash testing, the THOR generation of dummies represents a significant technological advancement. The THOR-5F, specifically designed to reflect female anatomy, **passed NHTSA's biofidelity tests in 2020 and is already in use worldwide**. Both Europe and China have incorporated the THOR-5F into their regulatory roadmaps, yet the U.S. lags behind. Despite these advancements, current U.S. testing protocols fail to provide equal representation. In NHTSA's NCAP ratings program, female dummies are not used in driver's seat frontal and side barrier crash tests. This omission has life-threatening consequences. Each year, thousands of women die in crashes that more equitable testing standards could have helped prevent. **It's time for NHTSA to act.**

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8 Dipan Bose, Maria Segui-Gomez, ScD, Jeff R. Crandall, "Vulnerability of Female Drivers Involved in Motor Vehicle Crashes: An Analysis of US Population at Risk", American Journal of Public Health 101, no. 12 (December 1, 2011): pp. 2368-2373.

9 Kahane, C. J. (2013, May). Injury vulnerability and effectiveness of occupant protection technologies for older occupants and women. (Report No. DOT HS 811 766). Washington, DC:National Highway Traffic Safety Administration.

10 Siegmund GP, Heinrichs BE, Wheeler JB. The influence of head restraint and occupant factors on peak head/neck kinematics in low-speed rear-end collisions. Accid Anal Prev. 1999 Jul;31(4):393-407. doi: 10.1016/s0001-4575(98)00077-3. PMID: 10384232.

11 Cullen P, Möller H, Woodward M, Senserrick T, Boufous S, Rogers K, Brown J, Ivers R. Are there sex differences in crash and crash-related injury between men and women? A 13-year cohort study of young drivers in Australia. SSM Popul Health. 2021 May 12;14:100816. doi: 10.1016/j.ssmph.2021.100816. PMID: 34041353; PMCID: PMC8141461.

12 Jason Forman, Gerald S. Poplin, C. Greg Shaw, Timothy L. McMurry, Kristin Schmidt, Joseph Ash & Cecilia Sunnevang (2019) Automobile injury trends in the contemporary fleet: Belted occupants in frontal collisions, Traffic Injury Prevention, 20:6, 607-612, DOI: 10.1080/15389588.2019.163082.

13 Linder A, Svedberg W. Review of average sized male and female occupant models in European regulatory safety assessment tests and European laws: Gaps and bridging suggestions. Accid Anal Prev. 2019 Jun;127:156-162. doi: 10.1016/j.aap.2019.02.030. Epub 2019 Mar 16. PMID: 30884388.

14 Inclusive crash test dummies: Rethinking standards and reference models. Stanford University – Gendered Innovations. (2021). Site: http://genderedinnovations.stanford.edu/case-studies/crash.html#tabs-1