

HOW GENDER PREFERENCES FOR VEHICLE SIZE/CLASS INFLUENCE FATALITY OUTCOMES

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Dainius Dalmotas

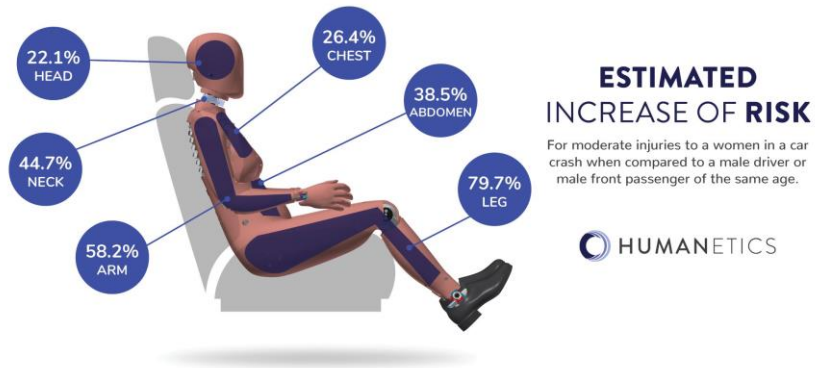
D.J. Dalmotas Consulting, Inc
Canada

Kennerly Digges

Automotive Safety Research Institute
USA

Female vs. Male Relative Injury Risk Controversy

Consumer Reports, October 2019



Source: NHTSA Injury Vulnerability and Effectiveness of Occupant Protection Technologies for Older Occupants and Women

Female drivers and right front passengers are approximately

17 percent more likely to be killed

in a car crash than a male occupant of the same age.

Sources: NHTSA and the journal Traffic Injury Prevention

Any seatbelt-wearing female vehicle occupant has

73 percent greater odds of being seriously injured

in a frontal car crash than the odds of a seatbelt-wearing male occupant being injured in the same kind and severity of crash.

Injury risks and crashworthiness benefits for females and males: Which differences are physiological?

Matthew L. Brumbelow & Jessica S. Jermakian

Objectives

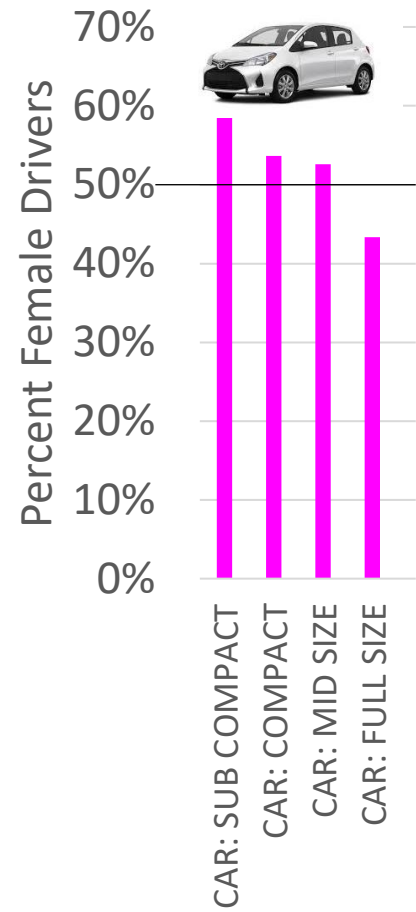
- Use **Collision Reporting Sampling System (CRSS)** 2016-2020 to determine gender preference by vehicle size and class



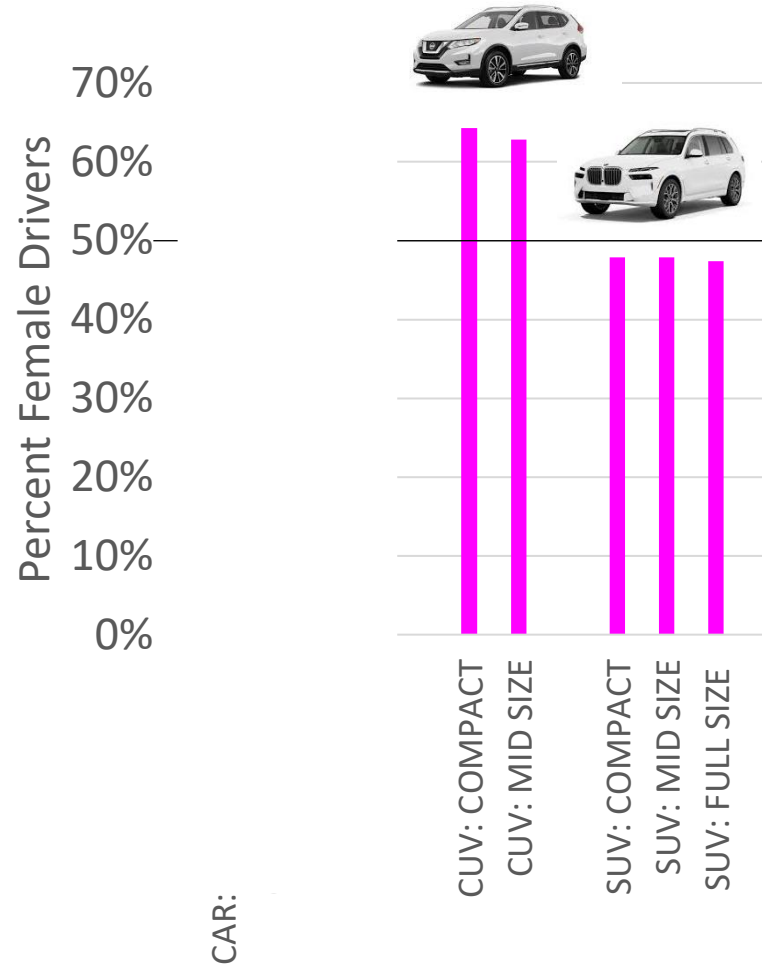
- Determine gender difference in survival rates of fatal crashes between light duty vehicles (cars, light trucks and vans)
 - Use **FARS 1993 to 2020**
 - Model year 1994 and later
 - Well defined fatal two-vehicle crashes



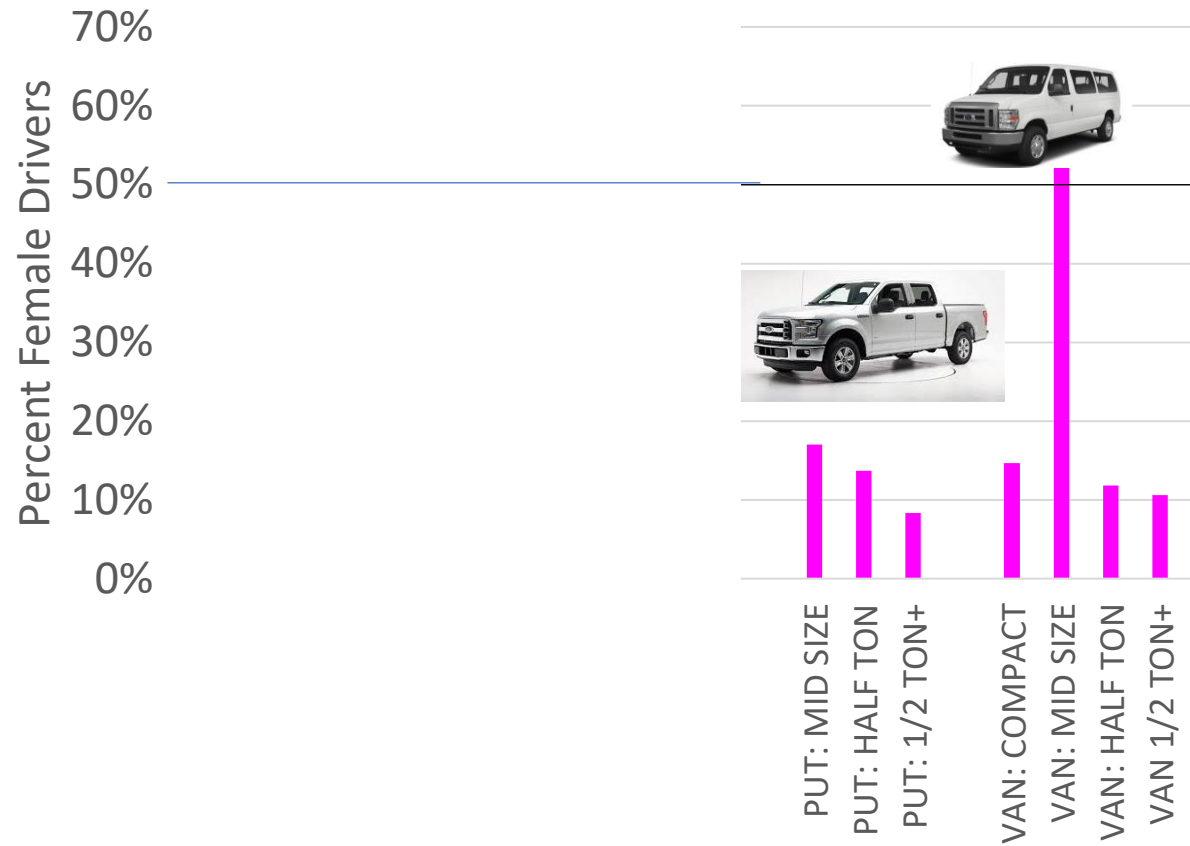
Female Representation in Well-defined 2 Vehicle Crashes by Vehicle Size/Classification



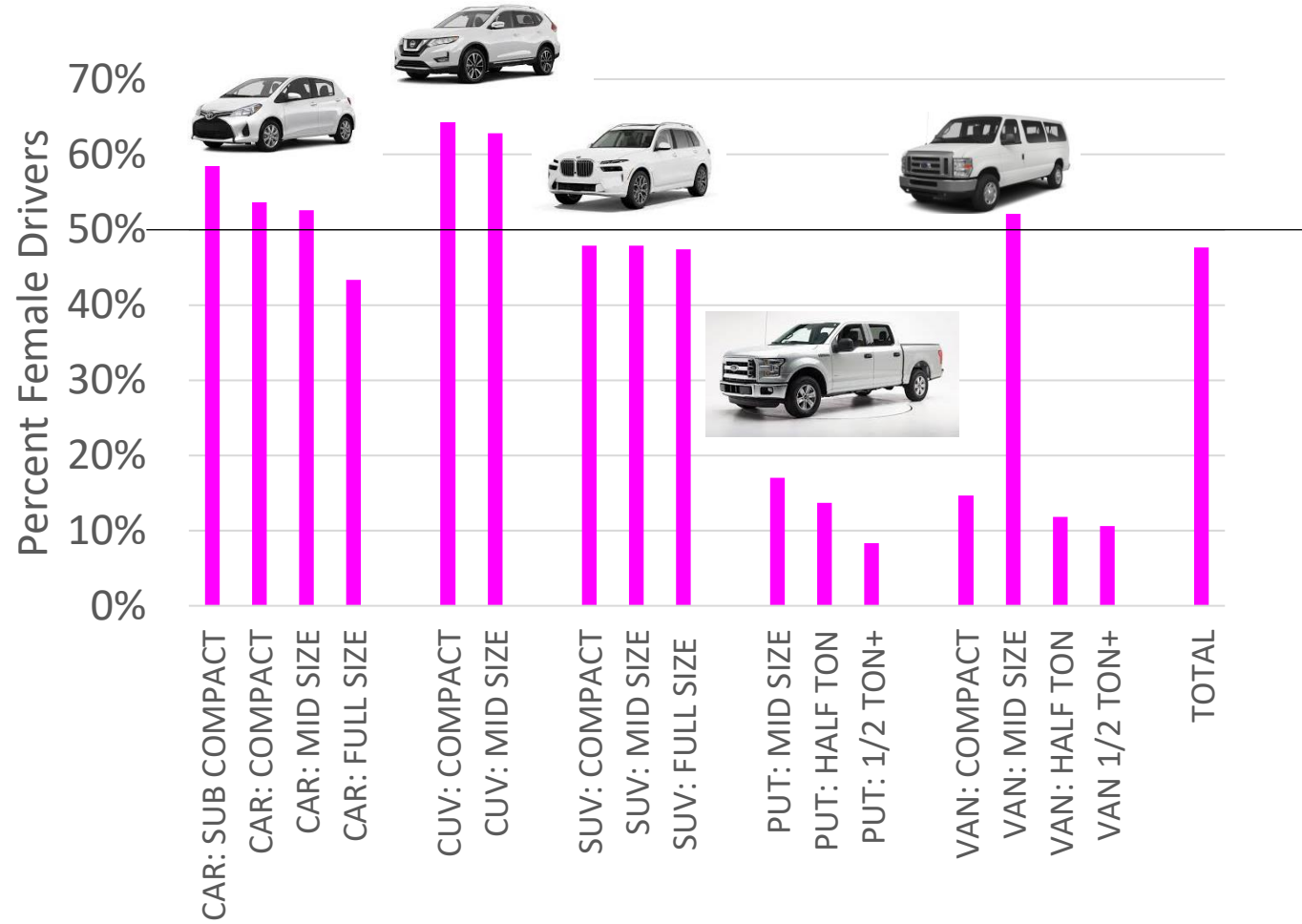
Female Representation in Well-defined 2 Vehicle Crashes by Vehicle Size/Classification



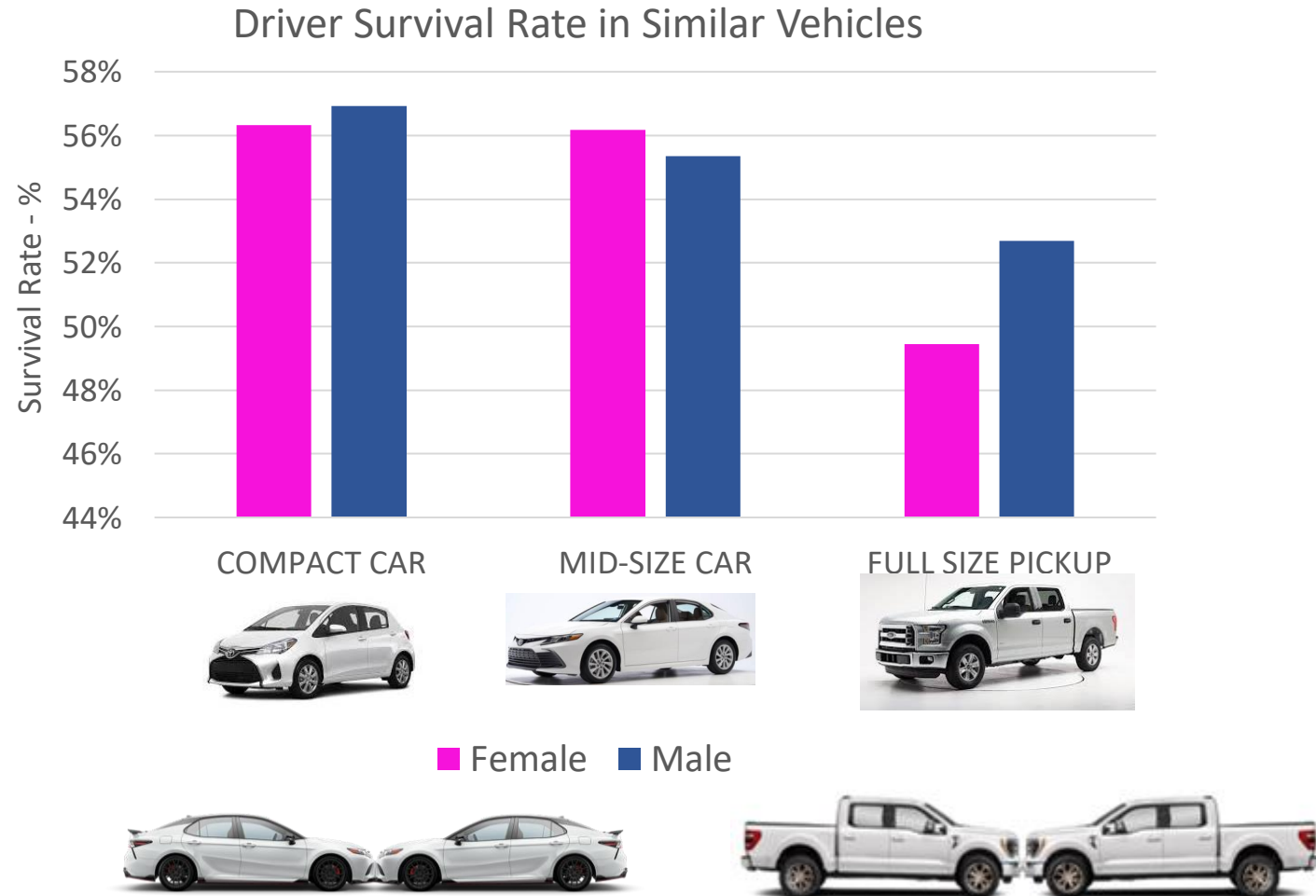
Female Representation in Well-defined 2 Vehicle Crashes by Vehicle Size/Classification



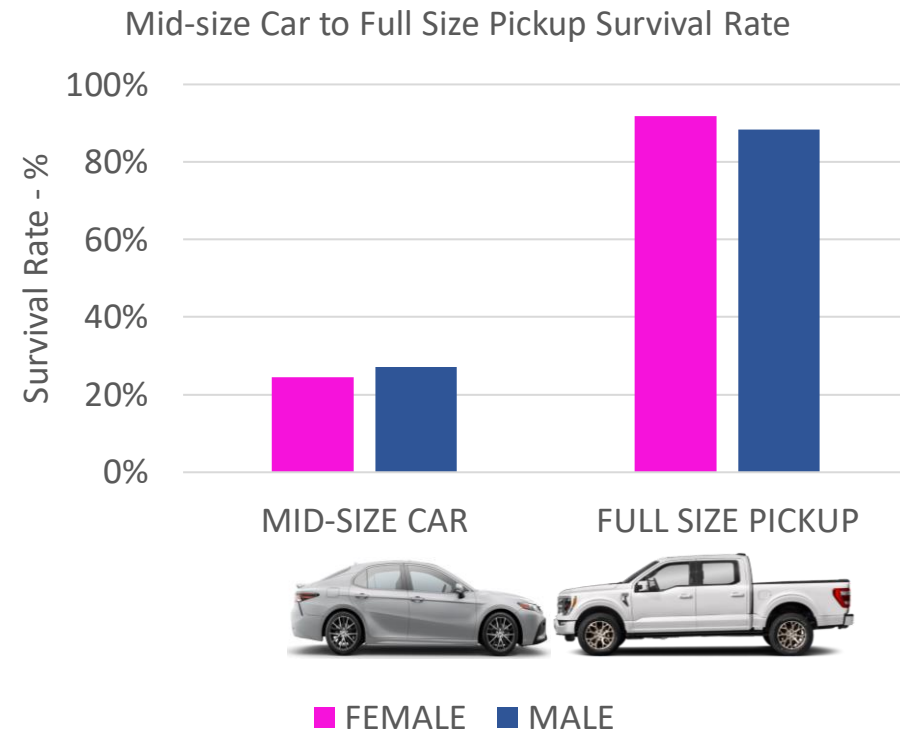
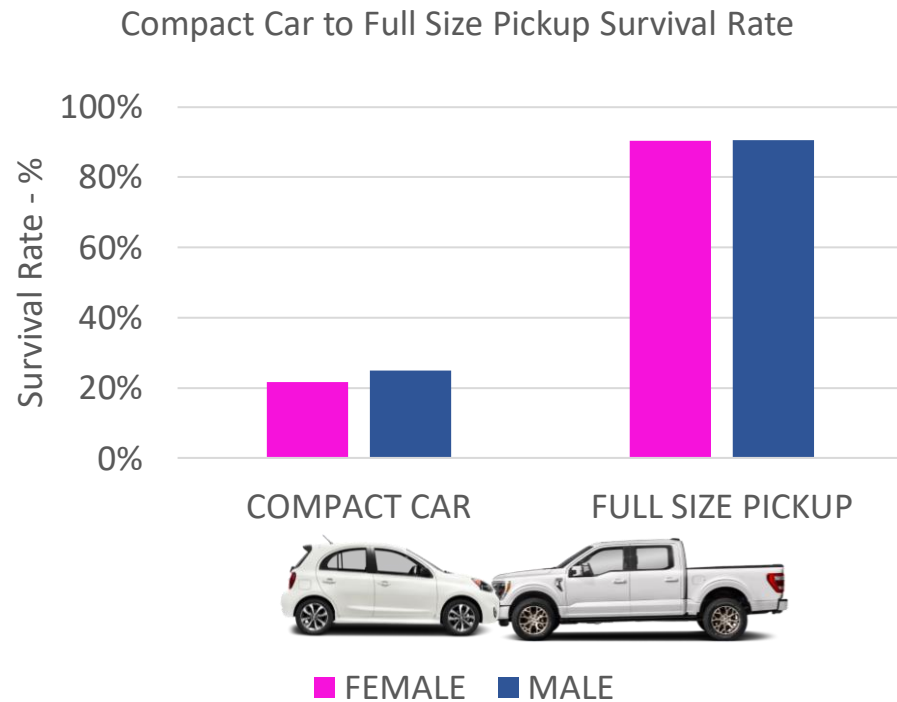
Female Representation in Well-defined 2 Vehicle Crashes by Vehicle Size/Classification



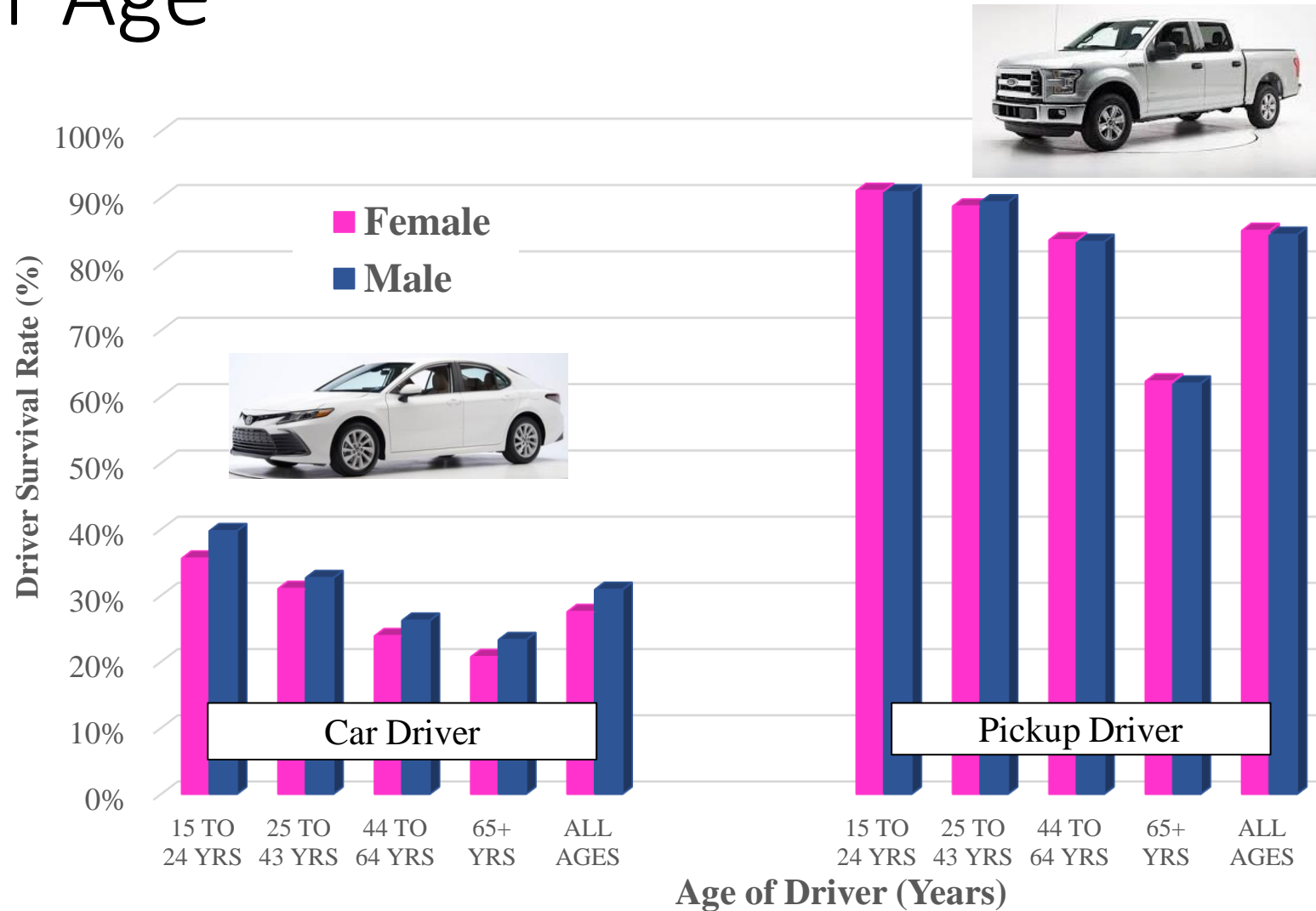
Survival Rate in Fatal Crashes of Similar Vehicles



Survival Rate for Pickup to Car Fatal Crashes



Survival Rate Car to Pickup Fatal Crashes by Driver Age



Conclusions

- Based on 2017-2020 CRSS data, for two-vehicle crashes:
 - drivers of **pickups** and **larger vans** are more likely to be **males (85 -90%)**
 - drivers of **smaller cars** and **crossover utility vehicles** more likely to be **female (55 -65%)**.
- For FARS crashes of similar size vehicles, the male/female survival rate was almost identical, in crashes between two:
(1) compact cars, (2) mid-size cars.
- In two vehicle crashes, the survival rate in car-to-pickup collisions was much higher for drivers of pickups (85%) than for drivers of cars (less than 30%).



SURVIVAL 30% 85%



Conclusions

- In the calculation of injury risk metrics by gender, it is essential to control for both the class/size of the vehicle occupied and class/size of the impacting vehicle to properly account for the vehicle preference differences between females and males.
- Female and male survival rates in fatal two-vehicle are strongly influenced by occupant age.
- Countermeasures aimed at reducing vehicle aggressiveness would benefit female crash safety.

