

ABSTRACT

Islam, Samantha. Ph.D., Purdue University, May, 2005. The effect of aging and gender on accident severity: An empirical assessment. Major Professor: Fred L. Mannering.

This research presents disaggregate level analysis of driver injury severity for single-vehicle accidents involving passenger cars. Separate multinomial logit models are estimated for male and female drivers belonging to young, middle-age and older age groups. The models, conditioned on there being an accident, predict the probability of three injury outcomes: property damage only, non-fatal injury, and fatal injury. Statistical tests are performed to justify the estimation of separate gender-specific models for each age group.

The results show notable differences in injury severity among drivers of different age groups and gender. For example, young male drivers have a higher probability of being injured (fatal and non-fatal) compared to young female drivers when they carry passengers. Driving newer cars increases probability of a fatal injury for young male drivers, whereas driving newer cars increases probability of a property damage only accident for young female drivers. The probability of being fatally injured increases for young female drivers if they have single-vehicle accident in a rural area, on asphaltic-surfaced roads, after dark, or under fog/smoke/smog conditions, but the probability of a non-fatal injury decreases for young male drivers under these conditions. Middle-aged female drivers have an increased probability of a fatal injury if driving while drunk or ill, whereas middle-aged male drivers have an increased probability of a non-fatal injury under such conditions. Drivers falling asleep, intersection related accidents and carrying passengers result in a higher probability of fatalities for middle-aged male drivers, but increase probability of non-fatal injuries for middle-aged female drivers. Middle-aged and older female drivers have a higher probability of being fatally injured compared to middle-aged and older male drivers when they strike a pole or tree. On curved roads, older female drivers have higher probability of being fatally injured in a single-vehicle accident compared to an increased probability of a non-fatal injury for older male drivers in such accidents.

This research identifies significant differences in injury severities between male and female drivers of different age groups which can be attributed to potential physiological and behavioral differences among the drivers. Based on the findings, this research reinforces the need for incorporating age-specific and gender specific strategies in design features and policy issues that would reduce accident related injuries and fatalities.