Effectiveness of electronic stability control on single-vehicle accidents

Objective: This study aims at evaluating the effectiveness of electronic stability control (ESC) on single-vehicle injury accidents while controlling for a number of confounders influencing the accident risk. Methods: Using police-registered injury accidents from 2004 to 2011 in Denmark with cars manufactured in the period 1998 to 2011 and the principle of induced exposure, 2 measures of the effectiveness of ESC were calculated: The crude odds ratio and the adjusted odds ratio, the latter by means of logistic regression. The logistic regression controlled for a number of confounding factors, of which the following were significant. For the driver: Age, gender, driving experience, valid driving license, and seat belt use. For the vehicle: Year of registration, weight, and ESC. For the accident surroundings: Visibility, light, and location. Finally, for the road: Speed limit, surface, and section characteristics. Results: The present study calculated the crude odds ratio for ESC-equipped cars of getting in a single-vehicle injury accident as 0.40 (95% confidence interval [CI], 0.34-0.47) and the adjusted odds ratio as 0.69 (95% CI, 0.54-0.88). No difference was found in the effectiveness of ESC across the injury severity categories (slight, severe, and fatal). Conclusions: In line with previous results, this study concludes that ESC reduces the risk for single-vehicle injury accidents by 31% when controlling for various confounding factors related to the driver, the car, and the accident surroundings. Furthermore, it is concluded that it is important to control for human factors (at a minimum age and gender) in analyses where evaluations of this type are performed.

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