

Study comparing of crash risk of EU and US motor-vehicles indicates differences in performance

September 25 2015

An international research study examined the hypotheses that vehicles meeting EU safety standards perform similarly to US-regulated vehicles in the US driving environment, and vice versa. The methodology is innovative and "first of its kind", and the study indicates differences in performance between EU and US motor-vehicles.

The study is the first side-by-side comparison of predicted risk for EU-regulated and US-regulated vehicles. It was conducted collaboratively by The University of Michigan Transportation Research Institute (Umtri), US, and Safer Vehicle and Traffic Safety Centre at Chalmers University of Technology, Sweden, in association with Centre Européen d'Etudes de Sécurité et d'Analyse des Risques (Ceesar), France, and Transport Research Laboratory (TRL), United Kingdom.

The research question of investigating safety performance was motivated by the ongoing negotiations between the EU and the US concerning the Transatlantic Trade and Investment Partnership (TTIP) agreement.

One potential barrier to trade is the differing safety standards testing and requirements for vehicles sold in the EU and the US. Testing the same make/model under both regimens is an expensive process, and negotiation of common standards may be difficult and time-consuming. However, if vehicles are shown to provide similar real-world safety protection to the occupants, then vehicles that meet EU regulations could

potentially be recognized for sale in the US, and vehicles that meet US regulations could potentially be recognized for sale in the EU.

Therefore, a study investigating the question of essentially equivalent safety performance was sponsored by the Auto Alliance in the US. Independent experts from Umtri and Safer, two leading transportation research organizations, carried out the study.

To compare risks, the researchers analysed a number of US and EU crash data sources. The results suggest that when controlling for differences in environment and exposure, vehicles meeting EU standards offer reduced risk of serious injury in frontal/side crashes and have driver-side mirrors that reduce risk in lane-change crashes better, while vehicles meeting US standards provide a lower risk of injury in rollovers and have headlamps that make pedestrians more conspicuous. More precisely, the project results support the following conclusions:

- The EU and US injury risk models are different for both front/side crashes and rollovers.
- Though the range of estimates is wide, overall risk across both the US and the EU front-side crash population (given the selection criteria for this study,) is likely lower for EU vehicles. Risk differences in front/side crashes are largest for near-side crashes, middle occupant ages (31-70), unbelted occupants, and higher crash severities (measured in terms of the change of velocity in the crash).
- Overall risk across both EU and US rollover crash populations is lower for US vehicles. In rollovers, risk differences were highest for unbelted occupants and ejected occupants.
- US ratio of pedestrian fatalities in dark vs. light is estimated to be lower than in the EU. One possible explanation for this is that headlamps in US vehicles may illuminate pedestrians better than those in EU vehicles.

- EU ratio of driver-side lane changes compared to passenger-side lane changes, based on data from only two EU countries, is lower than in the US. One possible explanation for this is that driver-side mirrors in EU vehicles reduce risk in lane-change crashes better than those in US vehicles.

Further work should be done to replicate the results, identify artifacts that may have influenced the patterns seen, and/or find evidence for mechanisms linking the results to [vehicle](#) design differences that result from regulatory differences. Both unexpected and expected results should be looked at closely to identify those that can be replicated and those that may be influenced by unforeseen data or population factors rather than regulatory differences.

Finally, in this project, the use of crash data in various contexts has been demonstrated, and at the same time, gaps in data availability have been identified. Future reproductions and extensions of this study would greatly benefit from the availability of harmonized accident data. Hence, further data collection and data harmonization efforts are encouraged.

Provided by Chalmers University of Technology

Citation: Study comparing of crash risk of EU and US motor-vehicles indicates differences in performance (2015, September 25) retrieved 26 April 2024 from <https://phys.org/news/2015-09-eu-motor-vehicles-differences.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.