The objectives of this study were (1) to estimate the effectiveness of seatbelts and driver airbags for mitigating medium- and heavy-truck driver injuries, and (2) to discuss the implication of these estimates with respect to truck-driving conditions in the U.S. and China. U.S. data showed that fatal or serious injuries of truck drivers are caused mainly by rollover, collision with a light vehicle or another truck, or collision with fixed objects. Rollover crashes account for most serious injuries, and pose the highest injury risk per crash. By controlling for the difference in crash-type distributions between trucks and light vehicles, seatbelts were estimated to be about 58% effective in reducing truck-driver injuries—comparable to the value for light vehicles. Airbags’ effectiveness was calculated to be about 6% for unbelted truck drivers and 4% for belted truck drivers—lower than that for light vehicles, primarily because of the higher proportion of rollover injuries sustained by truck drivers.

The main relevant difference between truck-driving conditions in the U.S. and China is the seatbelt-use rate of truck drivers: greater than 70% in the U.S., but likely less than 10% in China. This difference would likely reduce the true effectiveness of seatbelts. Therefore, it is important to encourage Chinese truck drivers to wear seatbelts, because the effectiveness of seatbelts at high use rates is much greater than that for airbags. In addition, the lower truck traveling speeds in China would likely result in a lower percentage of truck rollover crashes than in the U.S. Consequently, the effectiveness of both seatbelts and airbags in reducing truck driver injuries may be slightly higher in China than in the U.S.