

Road traffic related injury severity in truck drivers: a prospective medical and technical analysis of 582 truck crashes

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Background: While cyclists and pedestrians are known to be at significant risk for severe injuries when exposed to road traffic accidents (RTA) involving trucks, little is known about RTA injury risk for truck drivers. The objective of this study is to analyze the injury severity in truck drivers following RTAs.

Methods: Our local accident research unit prospectively documented 43000 RTAs involving 582 trucks in between 1999-2008. Injury severity including the abbreviated injury scale (AIS) and the maximum abbreviated injury scale (MAIS) were analyzed. Technical parameters (e.g. delta-v, direction of impact), the location of accident, and its dependency on the road type were also taken into consideration.

Results: 77/582 (13%) truck drivers were injured compared to 82% of the crash opponents. Extremities were found to be at highest risk of injury with the lower extremities (36x) being injured most severely (10x: AIS 2 and 3). Death occurred only after collisions with other trucks, and severity of injuries increased with an increased speed limit. MAIS was higher in the crash opponents (56x $\text{MAIS} \geq 3$, figure 1) compared to the truck drivers (8x $\text{MAIS} \geq 3$, figure 2).

MAIS (Second Participant)

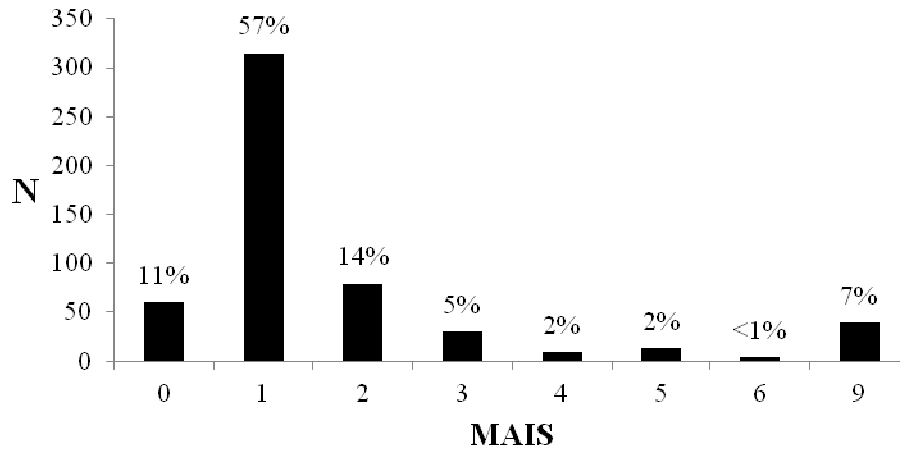


Figure 1: MAIS of crash opponents.

MAIS (Truck Driver)

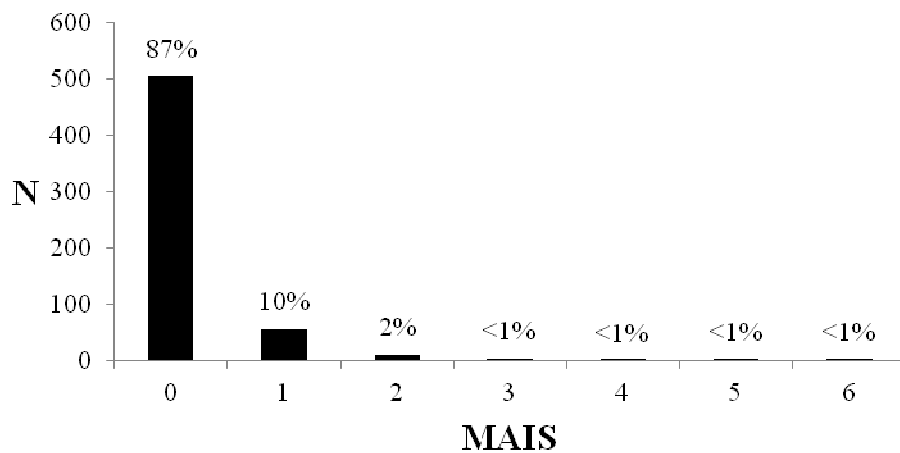


Figure 2: MAIS of truck drivers.

The mean impact velocity in rural areas was $7.74\text{km/h} \pm 10.62\text{km/h}$. The mean impact velocity on freeways was 9.29km/h compared to 4.44km/h on other rural roads ($p < 0.001$) with a higher MAIS of the truck drivers on freeways. The mean impact velocity in urban crashes was $4.60\text{km/h} \pm 7.30\text{km/h}$; this was significantly lower than rural RTAs ($p < 0.001$).

Conclusions: The safety of truck drivers is assured by their vehicles, the consequence being that the risk of becoming injured is likely to be low. However, the legs especially are at high risk for severe injuries during RTAs. This probability increases in the instance of a collision

with another truck. Nevertheless, in RTAs involving trucks and regular passenger vehicles, the other party is in higher risk of injury.

Keywords: truck, abbreviated injury scale, trauma, AIS, MAIS