

Side Guards on Heavy Trucks

Abstract:

Recently, media attention has been focussed on a recommendation from the Office of the Chief Coroner of Ontario that side guards should be installed on heavy trucks in order to protect pedestrians; however, other research suggests that this safety issue may be somewhat more complex.

Résumé:

L'attention des médias a été récemment focalisée sur une recommandation du Bureau du coroner en chef de l'Ontario que des protections latérales devraient être installées sur les camions lourds afin de protéger les piétons. Cependant, d'autres recherches suggèrent que ce problème de sécurité peut être un peu plus complexe.

A number of the recommendations intended to promote pedestrian safety that resulted from a review of pedestrian fatalities by the Office of the Chief Coroner of Ontario have been discussed in another article in this newsletter (See: Coroner's report on pedestrian deaths in Ontario offers sobering statistics.) One other recommendation that gained considerable media attention was the following:

“Transport Canada should make side-guards mandatory on heavy trucks in Canada. In addition, consideration should be given to requiring additional equipment (such as blind spot mirrors and blind spot warning signs) to make pedestrians more visible to trucks and decrease the chance of a collision, especially during right-hand turns.”



European Heavy Truck Equipped with a Side Guard
(Image courtesy of [Lloyd Alter](#))

The media, and others, have seized on the first part of this recommendation and have called for regulators to require the installation of side guards on all heavy trucks. Given that the coroner's report indicates that half of the heavy truck-pedestrian fatalities involved the pedestrian coming into contact with the side of the truck, and subsequently being either pinned or run over by the rear wheels, the recommendation may seem to have considerable merit. This position would also seem to be supported by the inclusion of a quote from a National Research Council (NRC) report [1] that in the European Union, "...deaths and serious injuries... have been reduced since the introduction of side guards."

However, while the authors of the NRC report do indeed indicate a reduction in pedestrian fatalities following the mandating of truck side guards, they go on to state that: "...it is not clear if this reduction is entirely related to side guards or if side guards are but one of the contributing factors." Furthermore, their report includes the statement that: "It is not clear if side guards will reduce deaths and serious injury or if the guards will simply alter the mode of death and serious injury." There is, therefore, some question over the efficacy of side guards as an appropriate countermeasure.

Furthermore, the Chief Coroner's contains no details as to the specific nature of the collisions between the fatally-injured pedestrians and the sides of heavy trucks. In general, the greatest portion of fatal crashes involved pedestrians crossing the road, either at a mid-block location (31%) or at an intersection without the right of way (11%), and where vehicles were going straight ahead. While not stated, it is likely that in such circumstances the first impact was with the front of the vehicle. This is consistent with national crash data where 45-50% of heavy truck-pedestrian fatalities and injuries in urban locations result from first contact with the front of the truck. These statistics indicate that a sizeable portion of the pedestrian fatality problem is not amenable to a solution based exclusively on heavy-truck side guards.

For vehicle-pedestrian fatalities in general, some 14% are noted in the coroner's report as occurring as a vehicle was in the process of turning, either to the right or left, where the pedestrian had the right of way. While not identified in the report, it seems likely that fatal collisions involving such turning manoeuvres, especially right turns, will occur with heavy trucks. One of the report's conclusions is that the cause of some crashes "...may be decreased visibility of pedestrians to drivers of trucks...". This resulted in the second part of the coroner's recommendation for the use of blind-spot detection systems. Technological advances in the use of digital cameras, image processing, and hazard detection systems, as alternatives to conventional side mirrors, may well prove to be an effective aid to drivers in these circumstances.

¹ Patten JD and Tabra CV; [Side Guards for Trucks and Trailers, Phase 1: Background Investigation](#); National Research Council Canada; Report No. CSTT-HVC-TR-158; 2010

The above considerations suggest that the implementation of heavy truck-pedestrian safety countermeasures is somewhat more complex than simply requiring side guards. These systems have limited applicability to the collision population, will not be appropriate for all heavy-duty vehicle configurations, and have associated cost and weight penalties.

Furthermore, even in side-contact situations where guards might be expected to provide benefits this may not prove to be the case. The coroner's report highlights the fact that 12% of the fatally-injured pedestrians were struck by a heavy truck and 9% by a public transit vehicle. However, the NRC report notes that: "City buses have lower built-in side skirting than sideguards found on most trailers yet there are still incidences of pedestrians and passengers being killed as they slip and fall under the wheels of moving city buses".

The studies to date have been hampered by a lack of detailed information as to the specific nature of the collision events involving vulnerable road users and heavy-duty vehicles. Thus it would appear prudent to further consider this safety issue with a more finely-grained dataset developed through an in-depth investigation process. While truck side guards might not be the ultimate countermeasure, there are clearly issues of inattention and awareness on the part of both drivers and vulnerable road users that need to be addressed, and vehicle-based technologies that may play a useful role in reducing the incidence of these tragic events.

Alan German
Road Safety Research