

In-depth investigation of traffic accidents with medical and engineering network by ITARDA

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Institute for Traffic Accident Research and Data Analysis (ITARDA) has been conducted in-depth investigation of traffic accidents with medical and engineering network in order to obtain basic data that contribute to mitigate injuries caused by traffic accidents since 2016. This investigation is consortium by ITARDA, hospitals and vehicle manufacturers, traffic accidents in around Tokyo were investigated. Occurrence mechanism of injury due to traffic accidents was discussed by consortium members including medical professionals and engineers based on medical images and vehicle damage. In this report introduces about the in-depth investigation of traffic accidents, provides at the part of results.

In this investigation, vehicle occupant, motorcyclist, cyclist and pedestrian with Injury Severity Score (ISS) ≥ 4 were target that was admitted to the cooperate hospitals by traffic accident. Interview of the crash situation, on-site investigation, vehicles examination, obtaion of the injury information involving medical images and Abbreviated Injury Scale (AIS) code and emergency medical events from cooperate hospitals and fire departments were performed in this investigation. Moreover, the vehicle crash scenes were estimated using 3D point clouds and multibody collision simulation. This investigations were performed since consent was obtained from the person involved in the accident.

In-depth investigation has been conducted 237 cases between 2016 the 2025 May. Figure 1 showed the proportion of the traffic accidents by in this investigation. From Fig.1, propotion of the single-vehicle and multi-vehicle were 41 percent, propotion of the single-motorcycle and multi-motorcycle were 22 percent, propotion of the vehicle-bicycle was 19 percent, propotion of the vehicle-pedestrian was 17 percent. Thus, propotion of the vulnerable road users (VRU) accidents involving motorcyclist, cyclisly and pedestrian were 60 percent in this investigation.

Figure 2 showed the distribution of the injury body regions of vehicle occupant, motorcyclist, cyclist and pedestrian. From Fig.2 (a), injuries of the AIS 1, 2 were occurred in all body regions, all accidents. From Fig.2 (b), injuries of the AIS 3+ of vehicle occupants were prevalent in chest and abdomen. And injuries of the AIS 3+ of VRU were prevalent in head and chest.

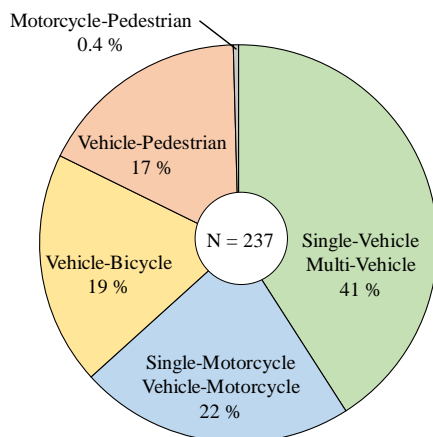
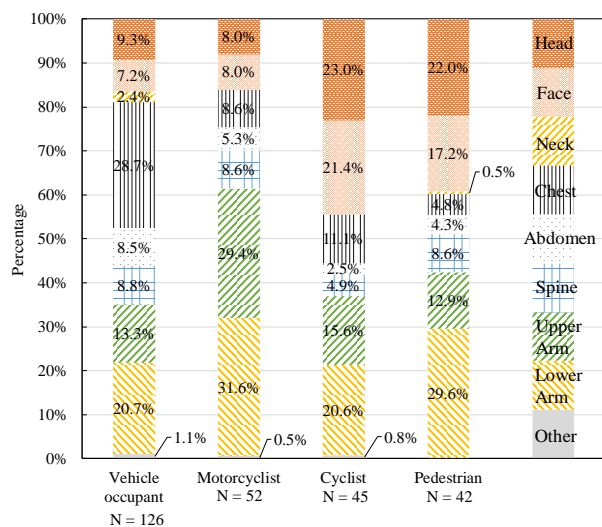
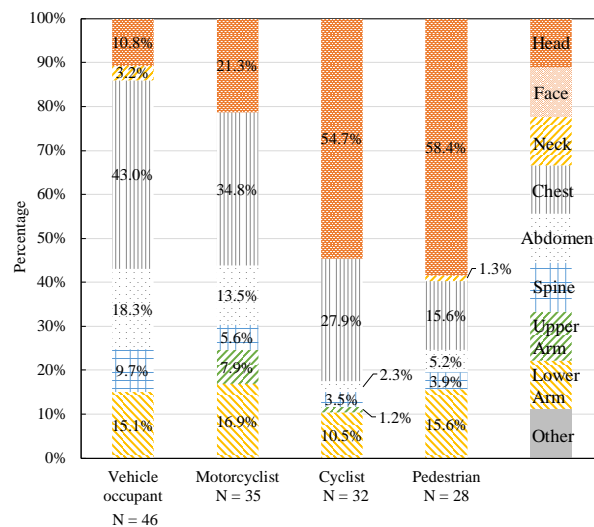


Fig.1 Proportion of the traffic accidents



(a) AIS 1, 2



(b) AIS 3+

Fig.2 Distribution of the injury body regions