

Cluster analysis of seriously injured occupants in motor vehicle crashes

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Abstract-

Permanent monitoring of real-world crashes is important to identify injury patterns and injury mechanisms that still occur in the field despite existing regulations and consumer testing programs. This study investigates current injury patterns at the MAIS 3+ level in the accident environment without limiting the impact direction. The approach consisted of applying unsupervised clustering algorithms to NASS-CDS crash data in order to classify seriously injured, belted occupants into clusters based on injured body regions, biomechanical characteristics and crash severity. Injury patterns in each cluster were analyzed and associated with other characteristics of the crash, such as the collision configuration. The groups of seriously injured occupants found in this research contain a large amount of information and research possibilities. The resulting clusters represent new opportunities for vehicle safety, which have been highlighted in this study.

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Citation:

Suárez del Fueyo, R.; Junge, M.; López-Valdés, F.J.; Gabler, H.C.; Woerner, L.; Hiermaier, S. "Cluster analysis of seriously injured occupants in motor vehicle crashes", Accident Analysis & Prevention, vol.151, pp.105787-1-105787-12, March, 2021.