

# **IMPLICATIONS OF VEHICLE ROLL DIRECTION ON OCCUPANT EJECTION AND INJURY RISK**

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## **ABSTRACT**

Vehicle roll direction and occupant position have been shown to affect occupant kinematics. Data from NASS-CDS were analyzed for risk of serious or greater injuries and ejection with respect to the position of the occupant (near side or far side). The risk of AIS 3+ injuries was higher for unrestrained occupants, for ejected occupants, for occupants involved in rollovers with higher numbers of quarter turns, and for far side occupants. Near side occupants had an increased risk of partial ejection in rollovers consisting of one complete roll or less. Occupant roll direction did not affect risk of complete ejection.

Rollover crashes account for a higher percentage of serious injuries than the number of rollover crashes alone suggests [Digges et al., 1998]. Unlike planar collisions such as frontal, side and rear-end impacts, which generally consist of a single impact with relatively well defined force directions, rollovers are chaotic events, characterized by a rotating vehicle experiencing multiple discrete impacts. Occupant kinematics and, correspondingly, injury potential