




Suitability of UN R160 EDR triggers for 8–12 tonnes vehicles

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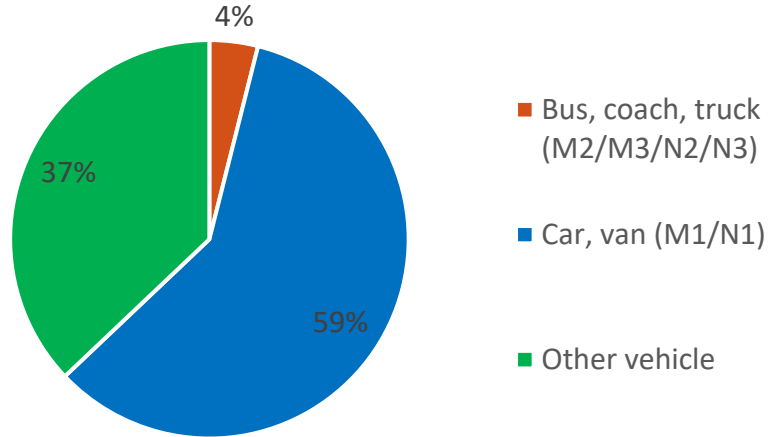
- IWG discussion on suitability of UN R160 triggers for vehicles with gross vehicle weight of 8–12 tonnes
- AAPC provided FARS collision data analysis (EDR-DSSAD-IWG-24-02) and concluded that:
 - “the most relevant crash conditions would be a rollover event”
 - “there is no one single situation that can be reviewed [to judge suitability of triggers]”
- TRL performed collision data analysis to contrast these conclusions with British accidentology

Analysis method

- Method:
 - Great Britain national collision data (STATS19), years 2018–2022
 - Fatal and serious collisions
 - Filtered for Vehicles of Interest (VoI):
 - M- or N-category vehicles with gross vehicle weight of 8–12 tonnes
- Key differences to AAPC method
 - Collision data from Great Britain, not USA
 - Includes also serious collisions, not only fatal
 - Includes also collisions where the fatal or serious injury occurred in the other vehicle
 - Focuses specifically on vehicles in relevant mass range, not including heavier trucks/buses
- Research questions:
 - RQ1: What are the main collision opponents of VOIs: Light or heavy vehicles?
 - RQ2: What is the main impact direction of first impact?
 - RQ3: How frequent are rollovers in VOIs compared to lighter vehicles?

RQ1: What are the main collision opponents of VOIs: Light or heavy vehicles?

- Extract of: *two-vehicle fatal/serious collisions involving at least one Vehicle of Interest (Vol); n=178*
- Collision opponent of Vol:

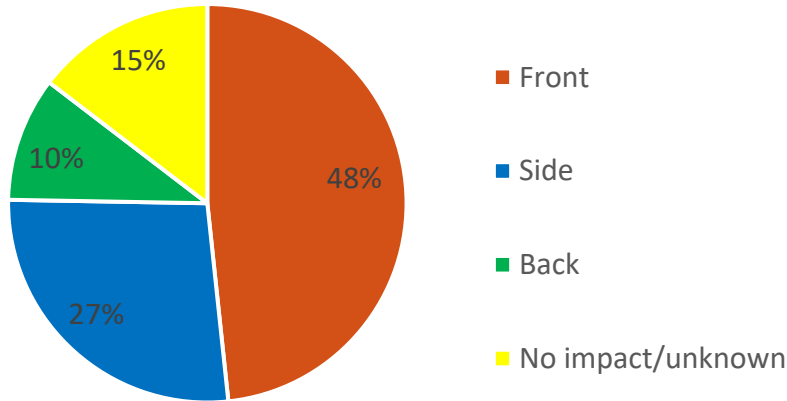


Vol's collision opponent	Nr of KSI collisions
Car	92
Van	14
(Mini)bus/coach	2
Truck 3.5–7.5 t	0
Truck ≥ 7.5 t	5
Motorcycle	22
Pedal cycle	36
Other	7
Total	178

- Result: Large majority of Vol collisions occur against light vehicles; risk of deceleration trigger not activating

RQ2: What is the main impact direction of first impact?

- Extract of: *two-vehicle fatal/serious collisions involving at least one Vehicle of Interest (Vol); n=178*
- First point of impact of Vol:

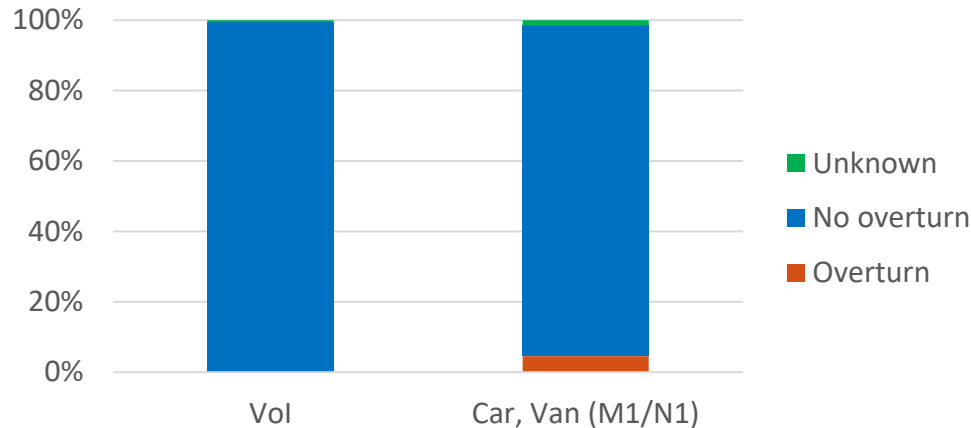


Vol's first point of impact	Nr of KSI collisions
Front	86
Offside	24
Nearside	24
Back	18
No impact	24
Unknown	2
Total	178

- Result: Three quarters of Vol collisions are frontal or side impacts, indicating that longitudinal and lateral deceleration triggers are relevant

RQ3: How frequent are rollovers in VOIs compared to lighter vehicles?

- Extract of: *all vehicles involved in fatal/serious collisions (single vehicle/two-vehicle/multi-vehicle; with/without Vol involvement); n=226,889*
- Proportion of vehicles overturning:



Overturning	Nr of Vols	Nr of cars	Nr of vans
Unknown	2	2,181	231
Did not overturn	365	135,857	12,692
Overturned	1	6,705	481
Total	368	144,743	13,404

- Result: Rollovers are very rare in Vol collisions (less frequent than for vehicles in UN R160 scope); stark difference to FARS findings which included large and heavy trucks

Conclusions

- Most fatal/serious collisions of 8–12 tonnes vehicles occur against vehicles lighter than 3.5 tonnes. Standard configuration of deceleration trigger may not be suitable to capture these, therefore equivalence should be demonstrated.
- Front and side impacts are dominant factor in fatal/serious collisions of 8–12 tonnes vehicles, not rollovers. Deceleration trigger is important for these collisions.



Thank you

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