Last-minute Input for 23rd IWG EDR/DSSAD

BASt, Germany

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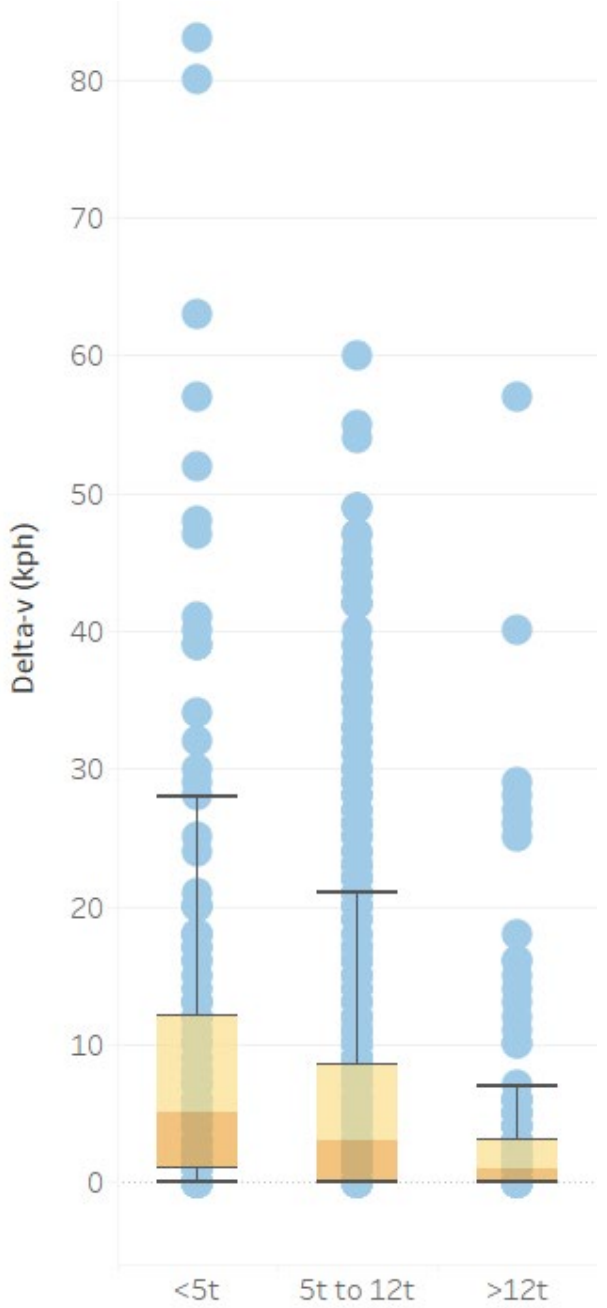
Note: this presentation shows results of an analysis that requires further checks and verification. The presentation is aimed to enable proper discussion around the „5-12t mass issue“.

GIDAS data analysis

(version December 2022)

- Accident years 2005-2022
- Vehicle classes N2 and N3
- First major collision
- All kinds of crashes
- Excl. cases with invalid/unknown values of delta-v and weight, but incl. cases with delta-v = 0

→ N = 769



Delta-v over (crash) weight groups

	<5t	5-12t	>12t
N	102	418	249
Median	5 km/h	3 km/h	2 km/h

→ The higher the weight, the lower the delta-v.

Note:

It might be considered to exclude cases with delta-v = 0. If so, this would raise the median delta-v values by around 1-2km/h.

You may also proceed with other delta-v values than the median to derive boundary conditions.

Source			delta-v km/h	delta-v m/s	time s	Deceleration m/s²
UN-R 160	M1/N1		8	2.22	0.15	14.81
Draft reg	HVEDR		8.19	2.28	0.7	3.25
SAE J2728	HVEDR / Mecanica		11.3	3.14	1	3.14
			19.5	5.42	1	5.42
Crash data	GIDAS	<5t	5	1.39	0.12	11.57
		5-12t	3	0.83	0.12	6.94
		>12t	2	0.56	0.12	4.63
Airbag deployment (derived from t0, SAE J1698)			0.8	0.22	0.02	11.11
Note: deployment of non-reversible restraint systems is more complex, this is just an average estimation						

Note: In-crash times are assumptions.

→ The higher the weight, the lower the in-crash deceleration.

→ Assuming that the requirements of UN-R 160 would be used and that non-reversible restraint systems of 5-12t vehicles use a similar deployment strategy as lighter vehicles, slight and moderate severity crashes (without e.g., airbag deployment) of vehicles of categories N2 and N3 might be not recorded in EDR as also the deceleration trigger threshold (delta-v in the crash phase is too low (cp. also median deceleration of 6.9 m/s² with 14.8 m/s²)) is not reached.

→ GIDAS results are in line with SAE J2728 values considering heavy vehicles >12t.