

Study on electric kick scooter accident analysis using ITARDA macro data and TUAT drive recorder data

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Electric kick scooter use has expanded rapidly in Japan following regulatory changes in 2023, accompanied by a sharp rise in accidents. Analysis of ITARDA macro data (2022–2024) shows increasing single-vehicle falls, which account for all fatal cases, and frequent right-angle collisions in multi-vehicle crashes. Luup-related incidents represent the majority of recent cases. TUAT drive-recorder near-miss data reveal recurring risky behaviors such as sidewalk riding, red-light violations, and unsafe overtaking. These findings highlight the need for improved rule compliance, rider education, and practical helmet adoption to reduce injury severity.

- Japan’s specified small e-scooters must meet structural safety standards, include speed limiters, and carry compulsory liability insurance. Helmet use is recommended but not mandatory. The Road Traffic Act defines two types: “Non-special” 20 km/h roadway type (steady green light) and “Special” 6 km/h sidewalk-permitted type (flashing green light). [Fig.1]
- Electric kick scooter accidents increased sharply after the 2023 legal revision. First-party crashes rose from 30 (2022) to 98 (2023) and 245 (2024). Second-party crashes also grew from 25 (2022) to 37 (2023) and 85 (2024). Overall accident counts in 2023 were about 2.5 times higher than in 2022, and 2024 showed a similar level of increase. [Table 1]
- All four fatal cases were single-vehicle falls, and such falls accounted for 119 cases, making them the most frequent severe accident type. There were 281 multi-vehicle crashes, including 31 serious-injury cases, with 131 crossing collisions being the most common. Collisions with pedestrians totaled 79 cases, representing about 15% of all accidents, including 3 serious-injury cases. [Fig.2]
- Typical near-miss cases from TUAT’s drive-recorder data show recurring risky e-scooter behaviors, including sidewalk-to-crosswalk riding, red-light violations, sudden lane entry, and unsafe interactions with taxis.

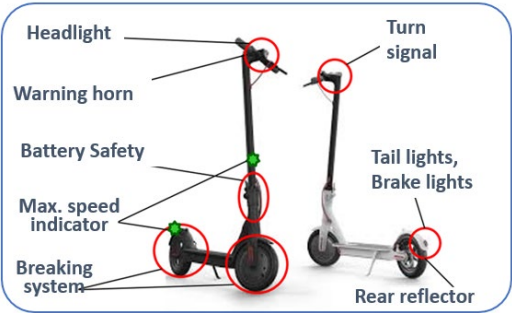


Fig.1 Structural safety standards for E-scooter (MLIT)

Table 1 E-Scooter Accident and Casualties (2022-2024)

	Accidents involving E-scooters		Casualties Involving E-scooters		
	E-scooter as Primary party	E-scooter as Secondary party	Fatal	Serious	Slight
2022	30	25	1	4	44
2023	98	37	2	8	101
2024	245	85	1	31	298

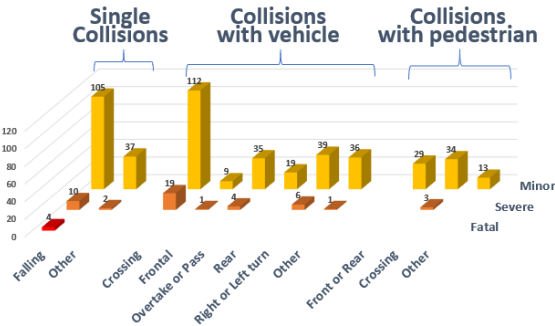


Fig.2 Number of Accidents by Type and Severity (All E-scooter)



Fig.3, 4 TUAT’s drive-recorder data