



## **Injury-severity analysis of intercity bus crashes in Ghana: A random parameters multinomial logit with heterogeneity in means and variances approach**

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**Background:** Travel by bus is an efficient, cost-effective, safe and preferred means of intercity transport in many advanced countries. On the contrary, there is huge public sentiment about the safety records of intercity buses in low- and middle-income countries given the increasing bus-involved road traffic crashes and high fatality rates.

**Aim:** This study sought to model the injury severity of intercity bus transport in Ghana using the random parameters multinomial logit with heterogeneity in means and variances modelling technique to account for unobserved heterogeneity in the dataset.

**Methods:** The dataset involves crash data from the 575 km long Accra-Kumasi-Sunyani-Gonokrom highway in Ghana. Four discrete crash outcome categories were considered in this study: fatal injury, hospitalized injury, minor injury, and no injury.

**Results:** The study observed that crashes involving pedestrians, unlicensed drivers, and drivers and passengers aged more than 60 years have a higher probability of sustaining fatal injuries. Also, speeding, wrong overtaking, careless driving and inexperienced drivers were associated with fatal injury outcomes on the highway. The incidence of intercity bus transport crashes involving larger buses and minibuses were also found to more likely result in fatalities. The probability of hospitalized injury increased for crashes that occurred in a village setting.

**Conclusion:** Given these findings, the study proposed improvement of the road infrastructure, enforcing seatbelt availability and use in intercity buses, increased enforcement of the traffic rules and regulations to deter driver recklessness and speeding as well as improving the luminance of the highways. Additionally, apps that have features for customers to rate intercity bus operators, the quality of services provided, and also have the option to report reckless driving activities can be developed to promote safe and inclusive public transport in the country.