

Configurations of underreported cyclist-motorised vehicle and single cyclist collisions: Analysis of a self-reported survey

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Lower severity cycling collisions, and single cyclist collisions (or single bicycle crashes) are significantly underreported in police statistics, introducing biases into the types of collisions that are available for analysis. Furthermore, many lower severity collisions do not appear in other collision data sources (e.g. hospital and insurance data). This in turn affects priorities for cyclist safety and puts an underemphasis on certain collision types. Due to an absence of data, little is known of the configurations of unreported collisions. In this paper, data from a recent self-reporting survey of cycling collisions in Ireland is used to provide details of cyclist collisions with motorised vehicles and single cyclist collisions, with the inclusion of unreported collision types. Pre-crash scenarios and impact configurations for cyclist collisions with bonnet-type vehicles, and collision factors and fall types for single cyclist collisions are coded. Injury patterns and police underreporting levels are compared, and representative collision scenarios are identified.

This study highlights the relative importance of collisions resulting from the cyclist and vehicle travelling in the same direction, specifically, nearside-hook, vehicle lane changing, and overtaking manoeuvres are emphasised. Furthermore, cases involving the cyclist struck from the side by vehicle fronts comprise a smaller share than previous studies, specifically side to side impacts, impacts between the front of the cyclist/bicycle and the side of the vehicle, and impacts with open(ing) doors emerge as important impact configurations with the inclusion of self-reported collisions. For single cyclist collisions, the importance of loss of traction of the tyres due to a slippery road conditions and interactions with tram tracks and kerbs are emphasised. Fall types differ between single cyclist collision scenarios and are related to differences in injury severity.

These findings add to existing knowledge for fatal and higher severity collisions, demonstrating that cyclist safety priorities change with inclusion of underreported, and lower severity collisions. The findings are particularly relevant to road infrastructural planners, as well as in the fields of injury biomechanics, and automated vehicle safety (ADAS). Representative scenarios for collisions with bonnet-type vehicles and single cyclist collisions have been identified, allowing for their future inclusion in development of collision and injury prevention strategies. The dataset generated in this study is available from the authors on reasonable request.