

Typology of bicycle crashes based on a survey of injured cyclists from a road trauma registry; does behavior impact the configuration of crashes?

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ABSTRACT

In many major cities, bicycle use increases and cycling safety becomes a critical issue. Most of the existing studies are based on police data that lack both single bicycle crashes and cyclist victims. In France, an estimation based on a road trauma registry states that cyclists are 8 times more likely to be injured per hour spend on the road than car drivers. To give a full picture of cyclists' collisions and falls as well as to understand how cyclists behaviors interact with other accident factors, we surveyed all injured cyclists in 2009-2011 identified in a medical database of road victims in a French department (around Lyon). Using classification methods we build a typology of 17 configurations of cycling collisions and falls: 7 on utilitarian trips, 3 on leisure rides and 7 on sport practice. A Multiple Correspondence Analysis (MCA) is also presented for the typology consistency and more results on road users behaviors are highlighted by projecting supplementary variables. Exogenous factors such as "bad weather" (13%) or "riding at night" (14%), road type such as "cycling infrastructure" (16%) or "intersection" (25%) and cyclist's behaviors such as "alcohol" consumption (5%) or "speed" (25%) are discriminatory variables that interact in many crash configurations. This study shows how road user behaviors are involved at each step of the accident factor chain leading to a collision or a fall. Based on the results' discussion, the article comes up with some recommendation for authorities in order to improve cyclist safety [1, 2].

Keywords: collisions and falls, typology, survey, medical registry, classification, MCA.

REFERENCES

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