

## Factors contributing to pedelec crashes in the Netherlands

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### ABSTRACT

Although a steady decline in bicyclist fatality rates can be seen, the number of seriously injured bicyclists has been increasing in the Netherlands in last 10 years [1]. About one third of bicycle accidents in which no motorized vehicle was involved happened on a pedelec [2]. Research should indicate whether the increasing number of injuries can be explained by individual factors, infrastructure factors, or vehicle factors. The objective of this study was to categorize contributing factors of pedelec crashes based on results of previous studies in the Netherlands. We used a framework of multilevel sociocultural and technical environment of road traffic [3]. A literature search was conducted to retrieve Dutch research studies that aimed for insight into ownership of a pedelec and/or the safety of pedelecs. Of 12 reviewed research studies, 5 papers were chosen based on sample size, methodology, and studied factors. Contributory factors were grouped into three traffic components: (1) cyclist (individual user characteristics, skills, risky behaviour at intersections, overtaking, speeding), (2) infrastructure (width of bicycle paths, design of intersections), and (3) bicycle (higher weight, higher acceleration, higher centre of gravity, silent running compared to moped, braking from high speed). Comparing travel behaviour of bicyclists using conventional bicycles and pedelecs, more trips are taken and longer distances are travelled on pedelecs. Cyclists admitted to hospital were involved in falls from a bicycle that occurred while (dis)mounting, braking, or turning at an intersection. Based on the current state of the art, the following pedelec research priorities are defined: registration of pedelec accidents as a separate category in crash reports, examining modal shifts and their impact on road safety, investigating the mechanical stability of pedelecs, improving the pedelec-handling skills among older persons, investigating commuters' risk-taking behaviour, and the motivations for buying a pedelec (comfort and/or speed gain).

**Keywords:** pedelec, electric bicycle, accident related factors, road safety, cycling.

### REFERENCES

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