

## **Pedelec user study: Safety insights into an emerging vehicle**

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The aim of this study is to understand the real-world use of both bicycles and Pedelecs in order to contribute to an increased road safety of both vehicle types. Due to a lack of in-depth information in the user research thus far, a quantitative user study was conducted (survey details: period June/ July 2020, countries GER, CH, NL, FR, UK and USA; participants: N = 3026, Ø age 44.07 years, 49.6 % female, bicycle or Pedelec owner).

The survey results indicate that Pedelecs compared to bicycles are used more for everyday purposes (+20 % commuting and errands), more frequently (+50 %), and more for traveling longer distances (+60 %). The riders try to compensate for their higher accident exposure by increasing their visibility in road traffic (e.g. light-reflecting vests +9 %) and by wearing a helmet (+9 %). Most accidents occur in urban areas (70 %) and at intersections (29 %), which motivates the improvement of traffic and bicycle infrastructure. Car- and truck-side systems such as turning assistants, reverse driving assistance, and dismounting warning systems can effectively mitigate potential conflicts as well. Single bicycle accidents occur second most frequently after passenger car accidents. In comparison, single Pedelec accidents are 13% less frequent, but accidents involving other vulnerable road users are more frequent. Therefore, the infrastructure should be adapted to the increasingly multimodal use and anti-lock braking systems (ABS) should be used to achieve short braking distances. In 18 % of the cases, the injured cyclists and Pedelec riders did not receive direct medical help, which can be reduced by eCall systems.

If these challenges regarding road safety are solved, the user study shows that both bicycles and Pedelecs can be established even more strongly as a sustainable and safe means of transport in the mobility mix of the future.