

Summary

Miniscenario: Increased use of e-bikes

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E-bikes are becoming increasingly popular. Will the increased speed and the increased weight of the bike lead to more accidents among cyclists? And what happens when new groups with little cycling experience start cycling? International research does not provide a clear picture, although the majority of studies indicate that there is no particularly high risk of accidents. Figures from a survey among 6237 cyclists in Norway show no increased risk compared to regular bicycles, although there are some more accidents due to manoeuvring problems with e-bikes.

Background

In recent years, sales of e-bikes have increased significantly, and is expected to increase further in the coming years. E-bikes have proven to be an effective means to attract new cyclists.

The question that then emerges is what will happen to the risk of cyclists when there are more e-bikes around? Do e-bikes have higher risk than conventional bicycles? Are they more often involved in speed or mount/dismount related accidents? Are inexperienced cyclists or older women more accident prone with e-bikes?

The current report is commissioned as a deliverable to the Norwegian Public Road Authorities' BEST research program (Better Safety in Traffic). The main purpose of the report is to outline a scenario about the future risk in accidents given that more e-bikes will enter into traffic. To achieve this aim we assess whether the international trends in research about safety for e-bikes can be transferred to Norway and give an indication of what will happen to the risk of cyclists when there are more e-bikes in the market. In particular, we investigate (a) if e-bikes have an increased risk of accidents and (b) whether this possible risk increase may be due to other factors than the e-bike itself.

The first part of the report is a literature study. We assess differences in legislation, norms regarding safety measures such as helmet use and other factors that may affect the risk situation. The second part of the report is an analysis of data from two surveys conducted in the summer of 2017. The first was a general survey of 6237 people in nine Norwegian cities about cycling and bicycle accidents. The second was a follow-up survey among 390 respondents who in the first survey had reported that they had been in an accident with a bicycle.

Experiences from other countries

The few studies that have taken into account differences in exposure do not find any increased risk for e-bikes, and several of the case-control studies that have been done have not found any risk difference. Further, there is little evidence that e-bikes are involved in more serious accidents. Some studies have indicated that e-bikes travel faster than usual

bicycles. This is partially confirmed in a recent analysis of bicycle trips from 600 users over six weeks in Oslo.

It is hard to conclude from the literature if any groups are more prone to accidents with e-bikes. One study indicated that the only group with a significant increase in risk was older women, but it is unclear what is the mechanism behind this. Are older women particularly vulnerable for purely physiological reasons, or is the increased risk really an expression of the increased risk deriving from people with missing cycling experience suddenly starting to use a bicycle? In a Danish study, it was found that older cyclists more often reported that they had difficulty balancing the e-bike due to its high weight than younger cyclists, but it is hard to know if this could help explain a possible risk increase among elderly (female) cyclists.

Results from questionnaire survey

In our study, we found no higher risk for e-bikes than conventional bicycles. Off-road bikes are at higher risk than e-bikes and “classic bicycles” (city bikes) had lower risk. There were no age or gender differences in accident risk. However, among those who had been in an accident, men were more likely to have had an accident with a conventional bicycles and women were more likely to have had an accident with an e-bike. Especially older women were overrepresented among e-bike accidents. We also found support for an increased risk among inexperienced cyclists, and an insignificant tendency for e-bike users to have more balance-related accidents. There were no differences in speed as self-reported accident cause. Challenges with measures of exposure and cause-effect direction of measures of safety precautions are discussed.