

Youth and electric scooters

A survey on mobility patterns and accident conditions in nine Norwegian municipalities

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- Electric scooters replace walking and the use of public transport, but nonetheless contributes to increased activity outside the home, and less time spent playing computer games.
- 15 percent have experienced accidents with e-scooters, most of which are single accidents.
- Not wearing helmet, riding with more than one person on the e-scooter and riding in speeds exceeding walking speed on sidewalks are the most common types of risk behavior.
- Riding under the influence of alcohol is uncommon among those between 13-15 years but increases with age.
- Girls, and those between 16 and 17, have the highest risk of accidents.

Background

In few years, electric scooters have radically changed the traffic environment in cities and suburban areas in Norway. The easily accessible means of transport makes it easy to travel across urban and sub-urban areas, and has become particularly popular with young people.

To date, electric scooter research has mainly revolved around adult users. Consequently, we know little about use of electric scooters or risk factors for this user segment. This report is, as far as we know, the first survey of electric scooter use among young people in Norway. The report seeks to answer the following questions:

- How much of young people's daily mobility is carried out on an electric scooter?
- To what extent does the use of electric scooters replace walking and cycling?
- What is the accident situation among adolescents, compared to adults?
- How do young people assess the risk of injuring themselves or others on an electric scooter?

- How common are different types of risk behavior among young people (not wearing helmet, two people on a scooter, high speed on the pavement)?

In the report, we also examine whether background variables such as gender and place of residence explain potential differences. To answer these questions, we conducted a survey among young people in nine Norwegian municipalities. The municipalities that have been surveyed are not intended to be representative of Norway as a whole, but have been selected on the basis of municipalities that wished to participate and co-finance the data collection.

Method

Two recruitment methods were utilized to recruit participants for the survey:

- Random sampling through the population register
- Targeted sampling through social media

The target audience for the survey was young people between the ages of 13 and 22 who live in the following municipalities: Kongsvinger, Lørenskog, Oslo, Asker, Bærum, Stavanger, Horten, Fredrikstad and Drammen. Data collection was carried out October through November 2021. A total of 3619 people answered the survey. Among these, 688 people are in the ages 13-15 years and 2931 are in the ages 16-22 years. Of the respondents, 1388 were recruited through population register extracts, and 2231 were recruited through open links on social media.

The response rate among those who were sampled from the population register was 19.2%. The response rate for those who have responded on social media is not possible to calculate.


Results

Travel habits and active mobility

A large share of young people have access to an electric scooter, either because they own their own, they can borrow, or by having the opportunity to rent e-scooters where they live. The majority of young people have used electric scooters, but only a few respondents can be characterized as frequent users.

It is clear that electric scooters are used for a number of different activities and purposes. Many people use electric scooters to travel to/from school, to/from social activities / friends and as a source of entertainment. As with adult users, electric scooters among young people also seem to largely replace walking and travel by public transport.

Those who use an electric scooter on a regular basis, report walking and cycling less. Increased use of electric scooters thus affects young people's active mobility in a negative way. At the same time, a large portion of the respondents report being driven by car to various activities to a lesser extent than before as a result of electric scooter use. Furthermore, the analyses indicate that the use of an electric scooter also contributes to increased activity outside the home and less computer gaming. Overall, findings



indicate that the use of an electric scooter does not unequivocally have negative consequences in terms of physical activity and public health, but that it also contributes positively to young people's activity level.

Accidents and risk factors

Similarly to previous surveys with adult respondents, we find that there are generally few people who wear a helmet when riding an electric scooter. However, helmet use seems to be somewhat more widespread among respondents between 13-15 years than those who are older.

15 per cent of the sample have had accidents with electric scooters, and most accidents are single-vehicle accidents. This corresponds with results from the Oslo Emergency Medical Service (Bjerkan, Engebretsen, & Steinbakk, 2021) and studies based on self-reported accidents on electric scooters (Fearnley, Karlsen, & Bjørnskau, 2022; Karlsen & Fyhri, 2021). In other words, it indicates that young people have similar types of accidents as adults.

Regarding behavioral causes of accidents, riding several people on one scooter, riding at high speeds, and various forms of inattention are reported as the most prevalent causes of accidents. Seven percent of those who have had an accident state that the accident was due to alcohol. With regard to risk behavior, riding an electric scooter without a helmet, riding with more than one person on the electric scooter, and passing pedestrians at speeds higher than 6 km/h are the most common forms. Riding an electric scooter under the influence of alcohol seems to increase with age. There are relatively few people aged 13-15 (7 per cent) who state that they have ridden an electric scooter while under the influence of alcohol, but the tendency is increasing the older the respondents are. For 18 and 19 year olds, the proportion is 34 per cent and for the age group 20-22, the proportion is 42 per cent. The numbers correspond with findings from previous studies (Berge, 2019; Fearnley, Berge, & Johnsson, 2020; Fearnley et al., 2022; Karlsen & Fyhri, 2021).

The majority of the respondents consider it unlikely that they will injure themselves on an electric scooter, or injure others. However, there are some differences between boys and girls, and between age groups. Boys tend to consider the probability of injuring others and themselves as lower than girls and are less worried about injuring themselves or others when using an electric scooter. Those who are older, tend to consider the risk of injuring themselves or others as higher than those who are younger.

When we take into account exposure, that is, how frequently they use an electric scooter, we see that those between 16 and 17 years have the highest, and those between 13 and 15 years the lowest risk among the age groups. This also applies to accidents with mild injuries and accidents that require medical examination from a doctor. Furthermore, we find that girls have a higher risk than boys, which is in contrast to previous research on adults' accident risk on electric scooters and on young people's risk on bicycles. There is some uncertainty associated with this finding, and it is somewhat unclear whether the entire difference can be explained by general risk



behavior and risk understanding. There is therefore a need to explore these connections better.

In a multivariate analysis, we find that those who use electric scooters often, those who ride under the influence of alcohol or drugs, and those who break rules when they ride electric scooters, are more likely to have accidents.