

Summary

Kickstarting Micromobility

A Pilot Study on e-Scooters

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The e-scooter represents a new form of micromobility involving an increased sense of freedom and time saving in everyday life. During the summer of 2019, we conducted a pilot study on e-scooters among 431 people through roadside interviews and a survey in downtown Oslo. The results show that the e-scooters replace walking and public transport. This can affect both public health and the environment. Furthermore, the analysis showed that one in ten of the e-scooterists have had an accident, while almost one in five have experienced a near-miss the last time they rode an e-scooter. Nevertheless, a large majority feel safe in traffic. One in four pedestrians and cyclists feel unsafe when interacting with e-scooter riders. The parked e-scooters are a particular challenge. The future challenges of e-scooters will be to organize and regulate use and parking to improve interaction with other road users.

The use of personal e-transporters (PeTs) has exploded since 2018, as PeTs were legally defined as bicycles in the Norwegian Road Traffic Act. Dockless e-scooters have become particularly prominent in traffic and as a part of the urban landscape. The media has taken an increased interest in e-scooters and with little empirical literature available, there is a clear need for more methodical research on e-scooters. Moreover, to achieve the UNs goals of sustainable development, we need a sound knowledge base regarding the effect of e-scooters on public health, the environment and road safety. This report is intended as a pilot study on experiences with e-scooters and lays basis for further research in the field of PeTs.

As a pilot study, the report covers a broad spectrum of topics on e-scooters. To gain insight into e-scooter users and how e-scooters affect health and the environment, the first object of the study was to survey simple e-scooter user demography, user travel behaviour and the modes of transport replaced by the e-scooter.

Traffic safety and accidents have been reoccurring topics in the media. E-scooters represents a new type of micromobility and the extent of accident risk is unknown. With the current scarcity of knowledge, investigating how the use of e-scooters affects the interaction with and safety of other road users is of importance. Thus, the second objective of the study was to examine e-scooter accidents and near-misses, and the third objective to look at the interaction and perceived safety with regards to e-scooters between different road users. To get an impression of attitudes towards e-scooters, the last purpose of the study was to map whether the attitudes towards e-scooters are in accordance with the needs of everyday travel.

Methodological approach

The methodological approach involved 395 structured roadside interviews in Oslo, as well as survey data from 36 participants.

The total sample consisted of 431 participants, of whom 209 identified as female and 221 as male, in addition to one person who did not state gender. Half of the participants were younger than 30, with the largest proportion (39 percent) between the ages of 20 and 29

years. Twenty-eight percent were between 39 and 49 years old, while the remaining 22 percent were 50 years or older.

During the roadside interviews, the interviewers were instructed to approach people in locations where dockless rental e-scooters accumulate to increase their chances of interviewing e-scooter users. Thus, e-scooter users are oversampled in this study and the findings may not be representative of the general population. The same concerns the questionnaire as the participants had confirmed renting an e-scooter in a previous questionnaire. People below the age of 30 is overrepresented in the sample as well.

As a result of the sample size and composition, it is uncertain to what extent the findings can be generalized. A larger, cross-sectional sample, which also includes other types of road users such as motorists and public transport drivers, would increase the likelihood of more representative findings.

Results

Out of the 431 participants surveyed, 37 percent had previously used an e-scooter. Nearly half (44 percent) of the participants have used an e-scooter at least once a week, while 20 percent were one-time users. More men (44 percent) than women (28 percent) reported having ridden an e-scooter, and most are below the age of 30. E-scooters were reported used in several contexts, however, the two most common purposes with their last e-scooter ride was leisure (40 percent) and travel to or from work or school (29 percent).

Impact on Health and the Environment

The use of dockless e-scooters may impact our health and the environment. In our study, e-scooters replaced walking for over half of the participants. For one in four, the e-scooter replaced public transport. This may have an effect on public health, as one in three Norwegians leads a sedentary life without fulfilling the authorities' minimum recommendations for physical activity.

Knowledge on how e-scooters will affect greenhouse gas emissions from the transport system is insufficient. One study implicated e-scooters as far from environmentally friendly. However, the study concludes that emissions can be cut in half with more efficient e-scooter collection processes. Due to slight variations in the Norwegian collection processes, the findings might not be transferable to Norway. Further research is needed before we can draw conclusions on the climate impact of e-scooters.

Accidents and near-misses

Ten percent of e-scooterists have had an accident while riding an e-scooter. Mid-season, the share of e-scooter accidents is higher than the percentage of bicycle accidents, which was 3 percent in 2017. Nevertheless, fewer injuries are recorded with e-scooters per day compared to bicycles and pedestrians. This is probably due to differences in the amount of kilometers cycled or walked by e-scooterists, cyclists and pedestrians.

Nearly one in five e-scooterists (18 percent) experienced a near-miss last time they rode an e-scooter. 36 percent of cyclists and 28 percent of pedestrians interviewed in downtown Oslo have experienced a near-miss with an e-scooterist during the past month. The

reported causes of the near-misses for e-scooterists are evenly distributed to infrastructure, such as uneven roads, and interaction with other road users.

The causal explanation of accidents and safety critical events such as near-misses is complex. Dockless e-scooters is a new phenomenon and the riders lack experience when interacting with other road users. Moreover, they lack experience with how this interaction is affected by the e-scooter's characteristics and limitations. If e-scooters replace walking and public transport, this new type of micromobility can lead to an increased number of inexperienced road users. A report from the United States shows a descending trend in injuries in accordance with e-scooter experience (Austin Public Health, 2019). The same might be likely for other road users – there will be a transitional period while gaining sufficient experience with the new type of micromobility e-scooters represent. In the transitional period, there is a need for new infrastructure, accommodating an increasing number of vulnerable road users. In our interviews, several pedestrians commented on how they need a clear distinction between cycling and pedestrian pathways. Moreover, we need proper regulations and infrastructure adjustments to relocate the parked e-scooters from the sidewalks: More bicycle lanes, with a width accommodating the increased number of e-scooter riders and cyclists, incentive based parking of rental e-scooters and regulated street parking might be feasible solutions. However, this study did not evaluate the effects of regulations on e-scooter usage. With further research, other viable solutions could be explored.

Safety and interaction between road users

Despite a fair amount of accidents and near-misses with e-scooters, a large share of the participants in our study reported that the interaction between e-scooter and other road users works well. Almost half of the pedestrians (46 percent) and 41 percent of cyclists said they feel safe in their interactions with e-scooter riders. One in four, however, have felt unsafe in these interactions.

E-scooter riders who found the interaction with other road users particularly demanding, highlighted pedestrians as the most challenging road users, followed by motorists and cyclists. This may be related to exposure – the most common road users in downtown areas in Oslo are pedestrians, cyclists and motorists. Nevertheless, seven in ten e-scooterists reported the interaction with other road users as smooth.

Cyclists and pedestrians did not agree to the same extent, although about half of the cyclists and pedestrians also reported a smooth interaction with e-scooter riders. One in five cyclists and pedestrians, however, described their e-scooter interaction as annoying. Like depicted in media, more people were annoyed by the parked e-scooters than the riders themselves: Roughly four in ten among both pedestrians and cyclists are irritated by parked dockless e-scooters. E-scooters add more complexity to downtown traffic, and it makes sense that an extra element such as e-scooters can be perceived as a nuisance. The annoyance may be a result of e-scooters still being an unfamiliar phenomenon, causing the parked e-scooters to appear as littering, but it may also be attributed to the lack of regulations. In our interviews, we received several comments demanding regulations, especially to where the e-scooters are parked and limitations to the amount of rental e-scooters. In the scope of this project, we have not investigated the effect of regulatory measures, however, this is recommended for further studies.

E-scooters in everyday life

The use of e-scooters is associated with increased freedom and saving of time in everyday life, which might be the cause of their popularity. We investigated the importance of different conditions describing everyday travel in order to compare them with attitudes towards e-scooters. The use of e-scooters as a part of daily travels serves a need for freedom and time savings.

As a means of transport, the e-scooter involves an increased sense of freedom. Several rental companies and a fair amount of rental e-scooters increase the availability. Rides can be started and stopped freely within the geo-fenced areas. E-scooters are also flexible, lightweight and take up less space than an ordinary bicycle. With high availability, usability and zero to little wait time, the use of e-scooters on everyday travels can be time saving.

The need for comfort on daily travels is somewhat lower than the need for freedom and time saving. E-scooters are sensitive to uneven roads and pavements and require sustained attention while riding, which does not involve a lot of comfort. Neither do the use of e-scooter involve a lot of exercise. In this study, exercise on daily travels were deemed as least important, in comparison to the other needs.

Conclusion

As a new type of micromobility, the e-scooter entails an unique set of beneficial features and a few challenges. The e-scooter is a flexible mode of transportation, which excites many and infuriates some. On everyday trips, e-scooters may lead to time saving and an increased sense of freedom. The combination of availability and flexibility may be the reason as to why e-scooters have become so popular. However, there is still little present knowledge about the effect of e-scooters on public health, the environment and traffic safety. The challenges ahead will most likely be with regards to organization, adjustment of infrastructure and regulation of e-scooters in a way that ensures its popularity, while also taking into account the new knowledge about the effects on public health, the environment and traffic safety. This report is a contribution to increased knowledge about e-scooters and helps build the foundation for further research in this field.