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"How e-bikes changed the mood and mode" The Norwegian e-bike experience

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Background

There has been an increased usage of electric bikes in Norway the recent years. E-bikers are more and more commonly seen in the bicycle lane and the e-bikes are used both to cover basic transport needs and for leisure. The Norwegian Electric Vehicle Association works to promote electric mobility and has since 2013 made a big effort in introducing e-bikes into Norway. In a three-year lasting campaign, The Norwegian EV Association worked to promote e-bikes to a bigger audience. The campaign was the first big scale introduction of e-bikes in Norway, as about 30 000 people tried the e-bike for the first time. The sales of e-bikes have increased in Norway the recent years, similar to other European countries.

Summary

The last two years the Norwegian EV association has conducted a survey to learn about e-bikers in Norway. The main goal of the surveys is to gather experiences from the usage of e-bikes.
In this paper, we will look at the travel habits and the experiences of the Norwegian e-bike users. The results from the Norwegian Electric Vehicle Association's annual e-bike survey will be analysed and presented. The survey has approximately 1100 respondents, all e-bikers. We find that almost half of the e-bikers used to use a car as their main transportation on a daily basis, before they got their e-bikes. Further, the vast majority is cycling more after they got their e-bike, then they did before. The results show a huge potential for traffic reduction and improvement of the general health condition. But there are challenges that require solving. Lack of maintenance of bicycle lanes and safe parking possibilities are the main obstacles for the e-bikers.

1. Introduction

About 5 percent of the Norwegians daily travels are done by bicycle and this share has not been increasing significantly the last 20 years. E-bikes, on the other hand, are more and more commonly seen in the bicycle lane. Today there are more than 200 000 e-bikes in Norway and the numbers are increasing. Approximately 60 000 e-bikes were sold in 2018. To secure a further uptake of e-bikes in the population and in the cities, it is important to get to know more about what the e-bikers think about their new way of transport. Based on the results of a variety of questions, we try to paint a picture of who the e-bikers are and what their thoughts are about e-bikes, travel habits and modes of transport and about what kind of governance is necessary to get even more people to choose an e-bike.

2. Method

The data has been collected through a survey conducted as a digital questionnaire. The most recent survey was conducted August 2018 and got 1218 responses, all from e-bike owners. Data from the e-bike owner survey 2017 will also be used. The e-bike owner survey 2017 has more than 900 responses.

The questionnaire was shared on social media as a link in bicycle groups/forums. The survey was also advertised on social media. Background information about the total population of e-bikers in Norway is limited and it is therefore not possible to consider how the sample of respondents in the survey represent the total population. But the respondents of the 2018 survey have a geographical spread more or less according to the general population of Norway, with an overrepresentation of respondents from counties where the biggest cities are located (Oslo, Hordaland and Trøndelag). The gender distribution is quite balanced as about half of the respondents are female and half of the respondents are male. The most frequent age group of the respondents is age 40-49 years. 41 percent are 50 years old or older and 23 percent are younger than 39 years old. The sample might be skewed, with a larger proportion of the more "enthustiastic" e-bikers that participate in social media groups and that are more likely to volunteer to give a survey response regarding this subject.

3. Effects on mode and mood

The survey results indicate a change in transportation mode amongst the e-bikers, as they are leaving their cars to use the e-bike. Close to 60 percent of the respondents use the e-bike as their main transportation on a daily basis. Almost 45% of these used to drive a car on a daily basis. 37% used to drive a hybrid, petrol or diesel car. 8% used to drive an electric car. 25% used to travel by public transport.

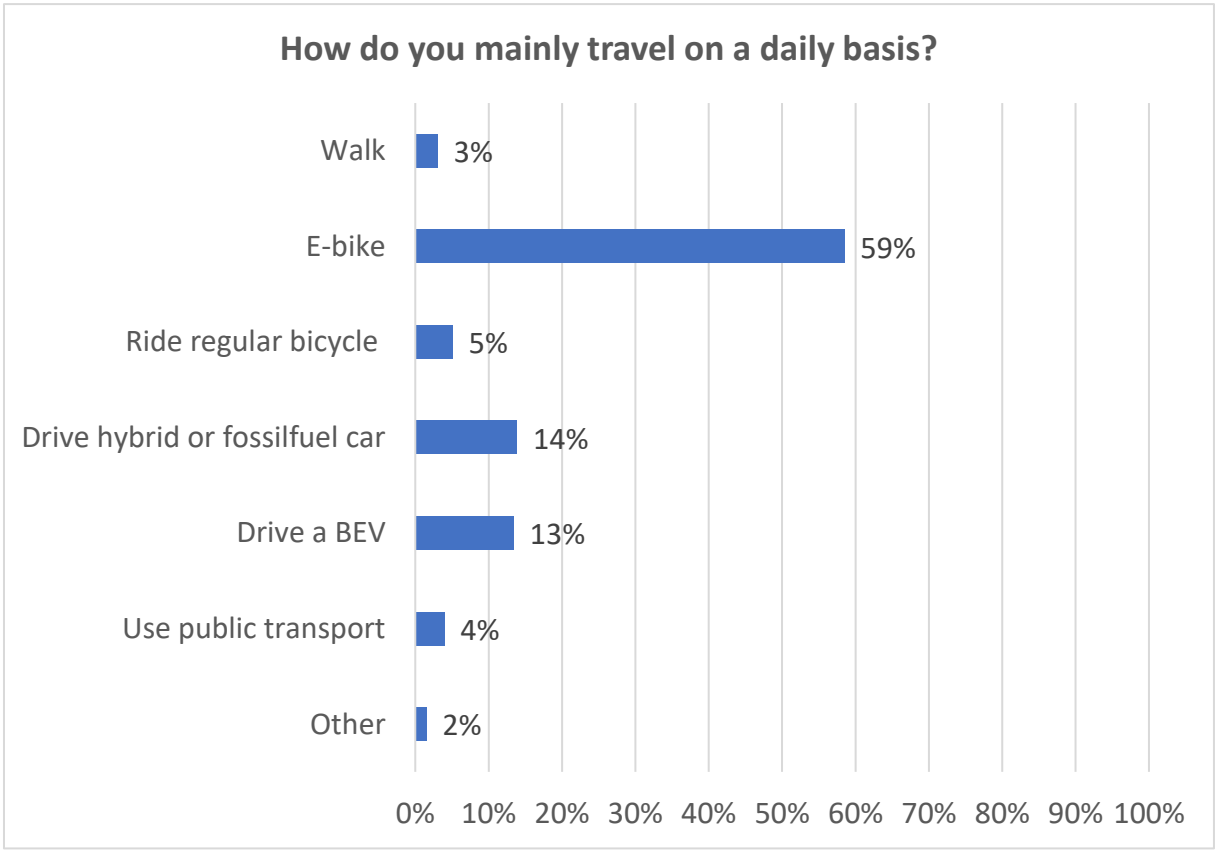

Figure 1: "How do you mainly travel on a daily basis?" N=1181

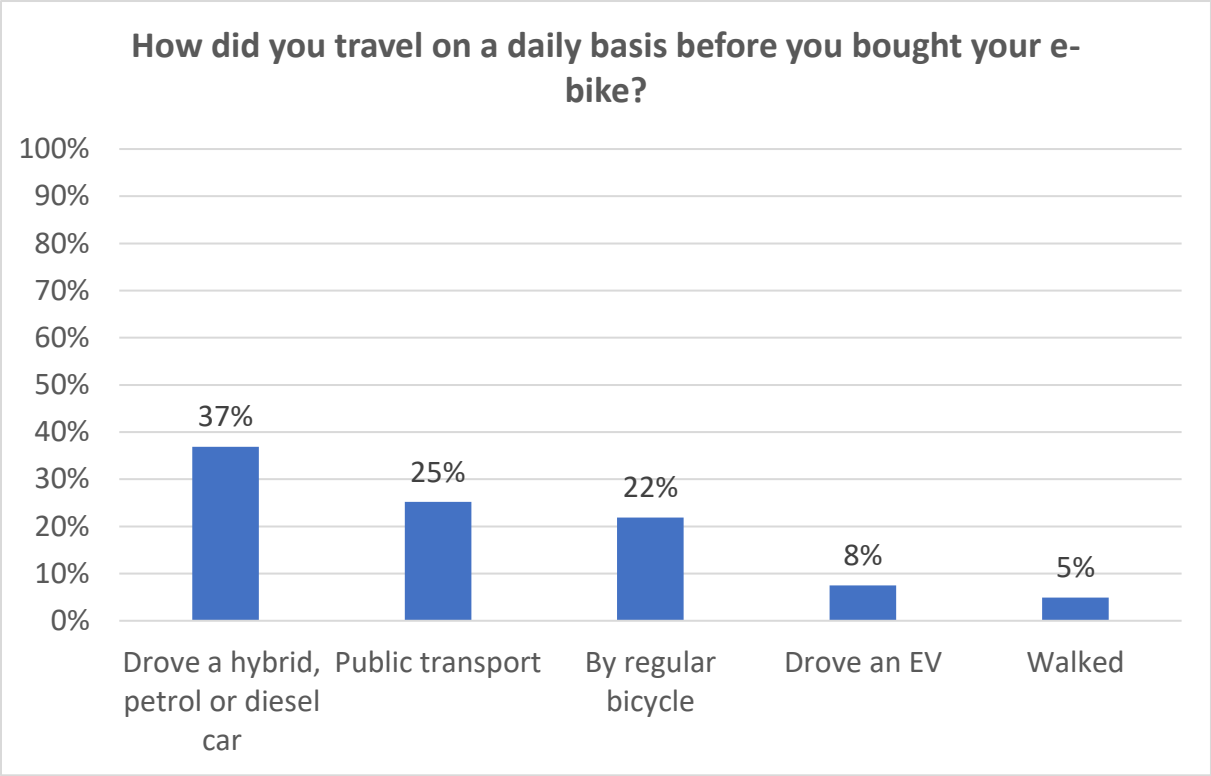

Figure 2 “How did you mainly travel on a daily basis before you bought your e-bike?” N=691

Trips to and from work are the most common type of trips amongst the e-bikers. 75 % use their e-bike for this purpose. More than half of the respondents use the e-bike for shopping, running errands and doing leisure trips. The act of e-biking leads to a more e-biking and the vast majority (89 percent) are cycling more now than before they got their e-bike. Nearly half of the respondents (47%) are using the e-bike all year round, also during the winter. These results have remained stable from the survey of 2017 to 2018. The share of winter e-bikers can be considered quite high when comparing to other sources on winter cycling [1]. The e-bike changes the mode of transport.

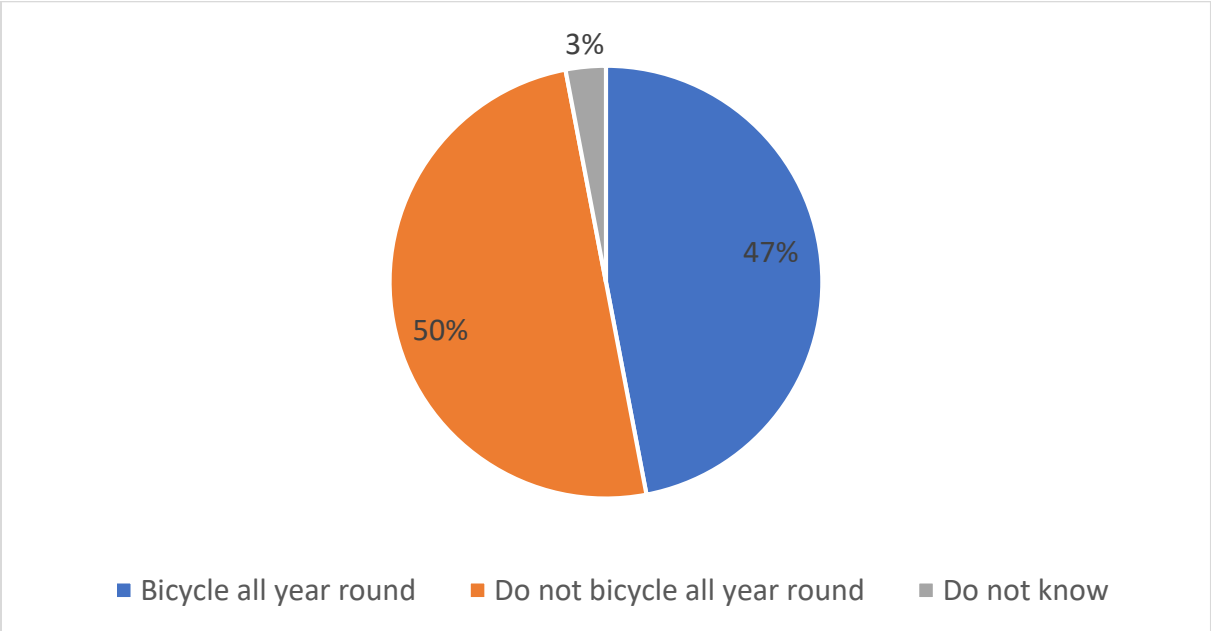

Figure 3. What seasons do you use the e-bike? N=842

Research finds that using an e-bike has positive effects on the mood of the e-bikers [2]. The results from our survey support these findings as respondents experience positive effects on mood and health by driving the e-bike. 94 % say travelling the e-bike puts them in a good mood. 83% experience a better health condition from the e-bike. The e-bike makes cycling as an activity or mode of transport available for new user groups. 80 % say the e-bike makes it possible for them to use a bicycle. This could indicate that users with limitations like health challenges or tight schedules are given the opportunity to cycle more than they initially would. 75% say they save money on transport. The good experiences and benefits are spreading fast and more than 75% of the respondents say they have inspired others to buy an e-bike as well. When asked how satisfied the respondents are with being an e-biker, close to all respondents show great satisfaction with their e-bikes. 98 % say they are satisfied or very satisfied with being an e-biker.

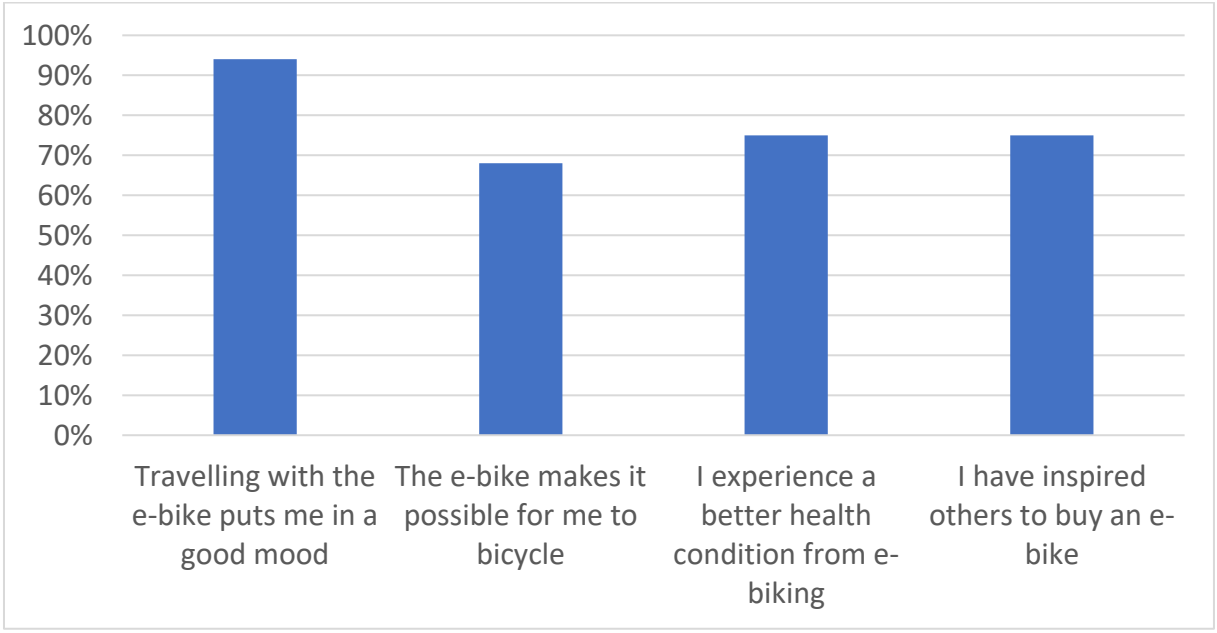

Figure 3. Share who agrees or strongly agrees with the following statements. N = 1107

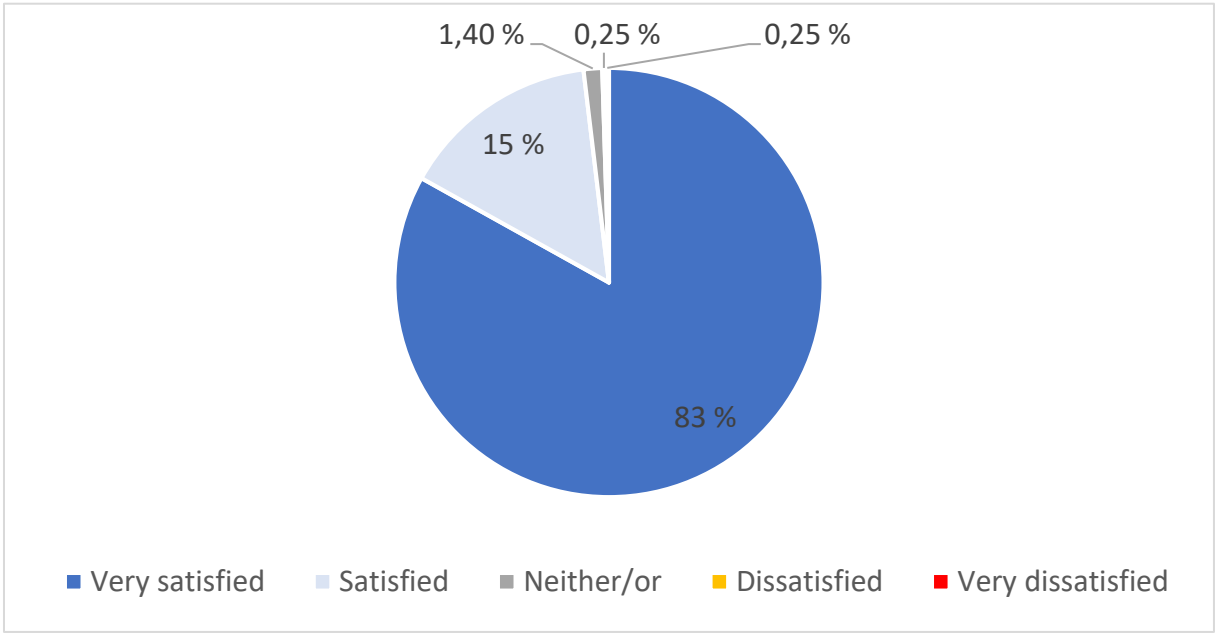

Figure 4: How satisfied are you with being an e-biker? N= 1218

Results from our surveys suggest that if you are an e-biker you are more likely to choose an EV as your next purchase and vice versa. It is possible that the choice of e-biking increases the probability of choosing other electric transportation means. 30% of the respondents own a battery electric vehicle in the household. This is a large share when considering that 7% of the total car fleet in Norway is electric. 57 % say that their next purchase of transportation means is most likely to be an e-bike, EV or another electric vehicle. Further, the results from the Norwegian EV Associations' member survey show that 18% of the battery electric vehicle owners have an e-bike.

4. What are the challenges?

Survey results show that e-bikers share the same challenges as regular cyclists. A recent study of cyclists in Norway concluded that safe infrastructure is necessary to increase bicycle use, and this has proven to be an important factor for the e-bikers as well [1]. The main challenges for the e-bike owners are lack of safe parking and infrastructure. 35% have chosen not to use their e-bike due to lack of safe destination parking. 27% have chosen not to use their e-bike, even though they really needed it, due to lack of road maintenance (sweeping, shovelling snow, etc.) on bicycle lanes. 20% say they have chosen not to use their bike even though they needed it due to a lack of bicycle lanes. As shown in fig. 5 a lack of (or lack of coherent) bicycle lanes and lack of safe parking are the most frequent answers when the respondents are asked about the three biggest challenges for e-bikes. Prejudice against or little knowledge about e-bikes is the third most frequent answer. 20% say a lack of public charging facilities are a challenge. The view on charging as a challenge might depend on how the e-bike is used.

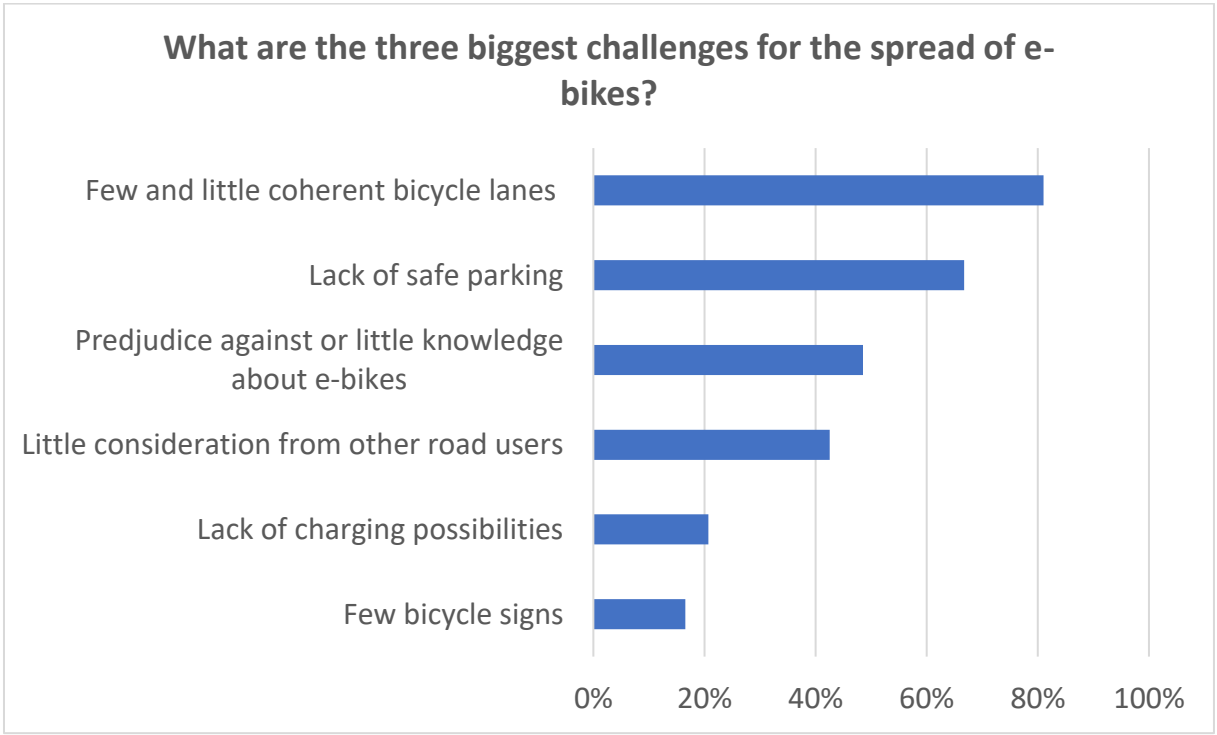

Figure 5. "What are the three biggest challenges for the spread of e-bikes?" N=1107

Fig. 6 shows that even though the e-bike in large part replaced the bigger vehicles, there are certain transport needs that cannot be solved by the e-bike. 39 % have chosen not to use their e-bike, even though they needed it, because the transport need could not be solved by the e-bike alone. Another debated challenge for the e-bikes is the question of road safety. 27 % say they have experienced a lot of dangerous situations when riding the e-bike. 46 % say they have not experienced a lot of dangerous situations. These results, together with the high share of respondents who see the lack of bicycle lanes as a challenge, show

that safe infrastructure is a solution to be considered. It is likely that this is an important solution for cyclists in general (not just e-bikers) and that an improvement in the building and maintenance of bicycle lanes will benefit all cyclists. Seeing as e-bikers mainly are previous users of cars and public transport it is possible that the challenge is even bigger amongst the new e-bikers, due to a general lack of experience as a cyclist.

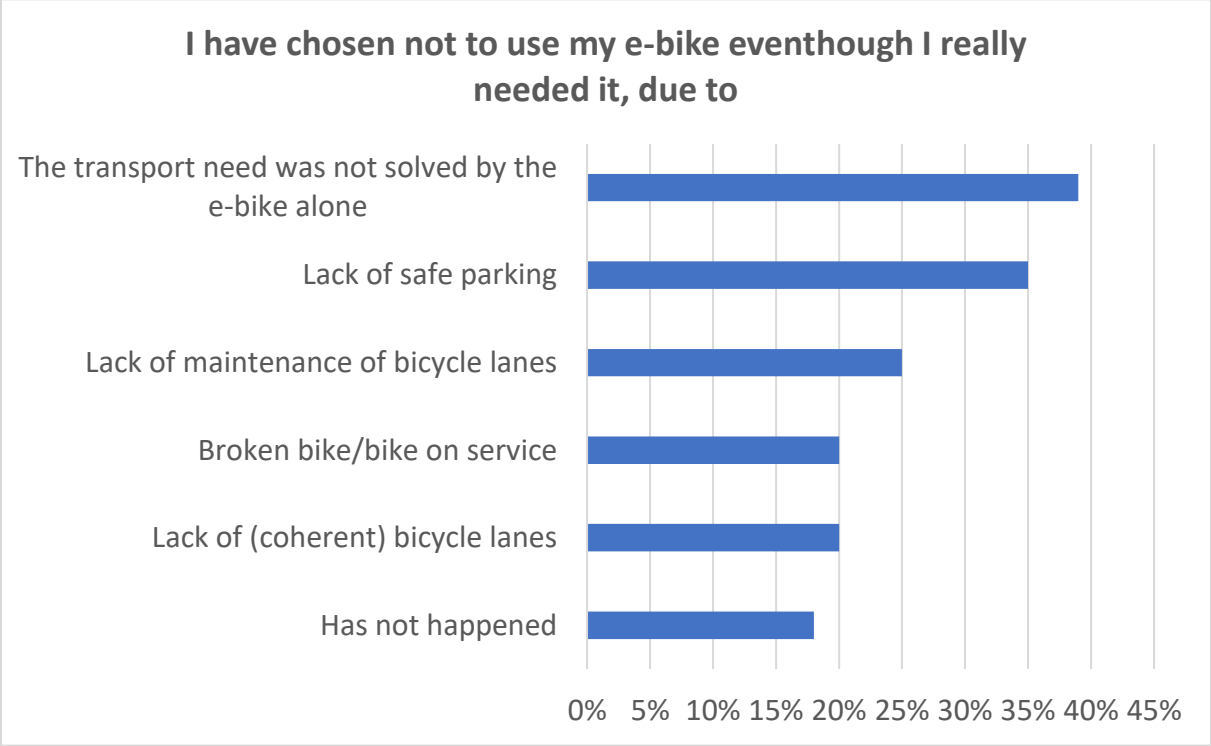

Figure 6. “I have chosen not to use my e-bike even though I really needed it, due to” N=1107

5. Differences between user groups

The results show that the experienced e-bikers that have driven an e-bike for many years have a more have a higher share who use the e-bike during winter. The share of respondents who use the e-bike to and from work is quite similar between the groups, but a somewhat higher share of those who have driven an e-bike for many years use the biker for leisure, shopping and errands.

Another finding is the difference of usage between men and women. A higher share of women use their e-bike as the main transportation on a daily basis. 67 % of the female respondents use their e-bike as their main daily transportation and 54 % of the male respondents use their e-bike as their main daily transportation. Both genders use the e-bike to and from work, school/kindergarten and activities, but a higher share of the female respondents use the e-bike for errands and shopping. A higher share of the male respondents use their e-bike for leisure trips. 54 % of the male respondents are using their e-bike during all year round and 42 % of the female respondents do the same. The higher share of male cycling all year round could explain or be explained the finding that the male respondents buy more costly e-bikes. The results indicate a higher satisfaction with being an e-biker amongst the female respondents. 90% of the female respondents are very satisfied with being an e-biker. 78% of the male respondents say the same thing. Further, there is a higher share amongst the female respondents who highly agree that driving a bicycle puts them in a good mood.

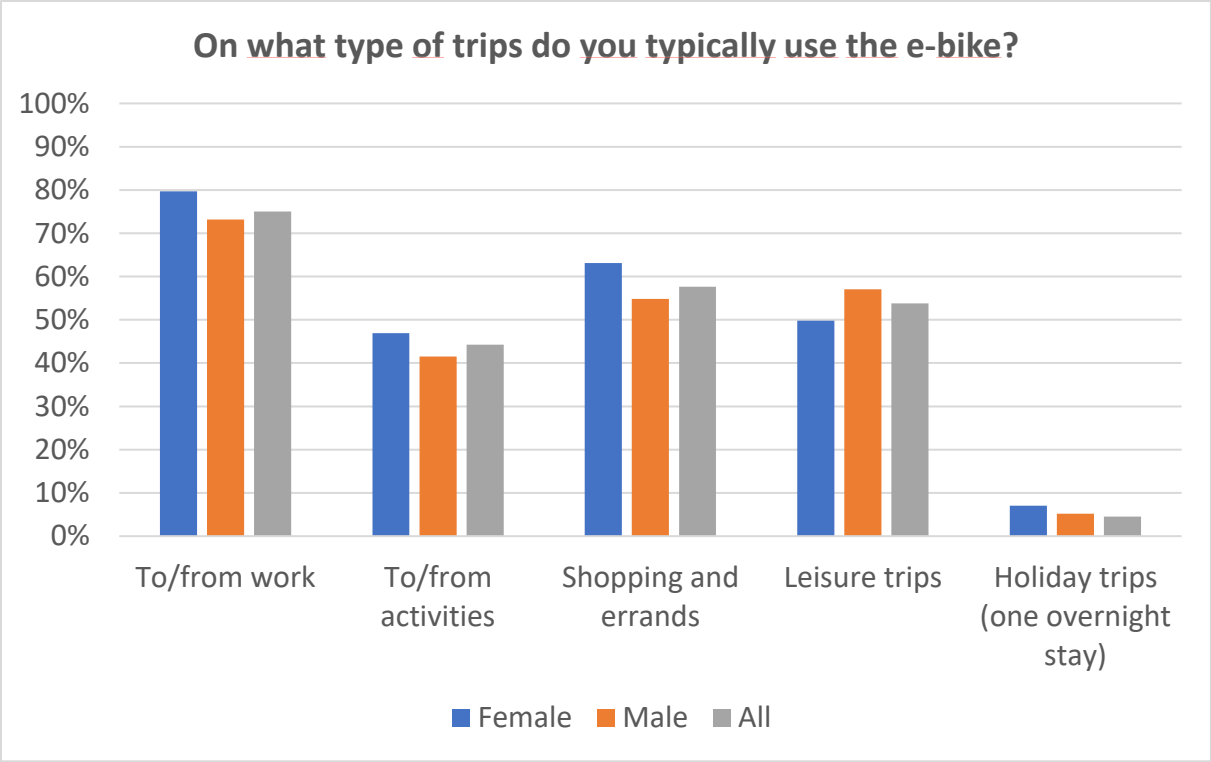

Figure 7. On what type of trips do you typically use the e-bike?

When categorizing the respondents based on the price of their e-bike, we find that those who paid the most for their e-bikes have a more extensive use of the e-bike. The share of respondents who use the e-bike as the main transportation on a daily basis increases with the price of the e-bike. Those who have a more expensive e-bike are more satisfied with being an e-biker. 74% of those who paid less than 1000 euros for their e-bike are very satisfied with being an e-biker. 86% of those who paid 4000 euros or more say the same thing. As shown in fig. 8, the usage of the e-bikes also differs between these groups as those who paid more for their e-bike have a higher share of all year cyclists. Only 24% of those who paid less than 1000 euros use their bike throughout the whole year and 72% of those who spent 4000 euros or more on their bike say the same thing. The group of respondents who spend the most on their e-bike seem to be more enthusiastic, with a higher share who say the e-bike puts them in a good mood, in better shape and a higher share being very satisfied as an e-biker.

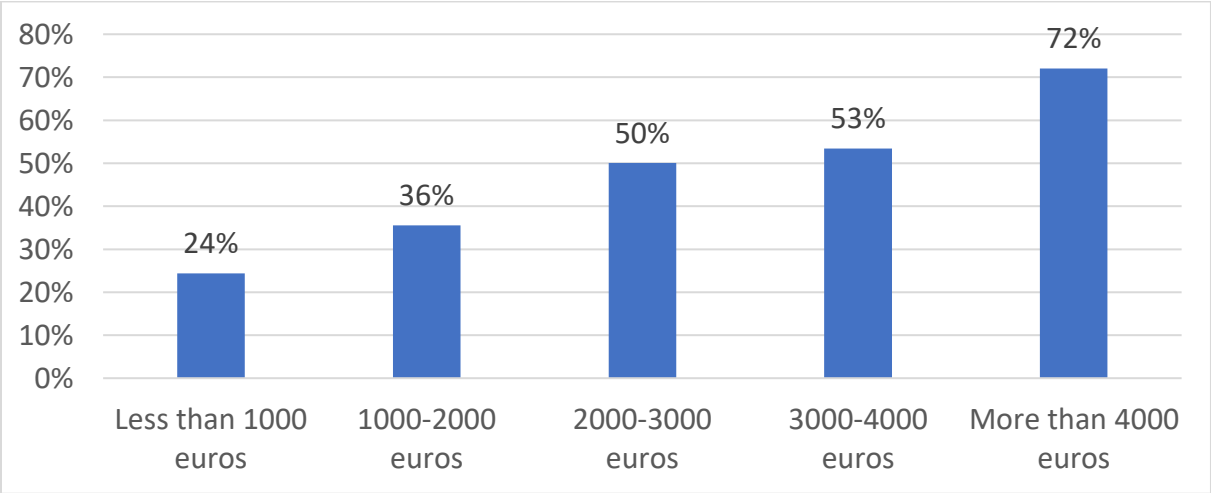

Figure 8. Percentage share who e-bike all year round categorized by the cost of their e-bike N=1066

6. The future of e-bikes

The results from our data collection show that e-bikes are important for recruiting new groups in to cycling as a mode of transport. The results show a great satisfaction amongst these groups when using the e-bike. E-bike sales have been increasing a lot throughout Norway and Europe the last seven year. But how to secure a further uptake of electric bikes? There is no doubt that bicycle lanes and safe parking are amongst the most important issues to be solved for the e-bikers. Luckily, an investment in bicycle infrastructure will not only benefit the e-bikers, but all cyclists in general. But there is reason the believe that the e-bikers will benefit more from increased safe parking facilities, due to the price of the e-bikes. 60% of the respondents from our survey say indoor parking is the best parking solution. 44% prefer a locked room for bicycles and 16% prefer a bicycle box (one for each bike).

Different cities and country have used economic incentives in different ways to generate e-bike sales. Results from our survey show that a small share of e-bikers in Norway has received this kind of subvention. Only 2 % of the respondents had all or parts of the costs of their e-bike covered through a public grant. There has been a regular political discussion of subvention to promote e-bikes. The results from our survey show the respondents have a split opinion regarding this matter. 38 % of the respondents say it is not a public task to subsidize e-bikes. 32 % say the opposite. 28 % are undecided on this matter. Respondents show that willingness to pay for a quality e-bike is quite high, as 70% say they are willing to pay a lot for a decent e-bike.

Our survey results show that there is a great satisfaction amongst the e-bikers today. It should be said that the first group of e-bikers could be a group of enthusiastic “early adopters” and that this could contribute to the high levels of satisfaction amongst the e-bikers. This only underlines the importance of focusing on the challenges brought up by the e-bikers themselves, like infrastructure and parking. Seeing as these are needs of both the e-bikers and the cyclists in general, one can achieve great benefits for mobility, health and city space by improving these facilities. In situations where public spending is limited, there is reason to believe that a focus on improving infrastructure rather subvention, will achieve greater benefits for a larger group.

7. Conclusion

E-bikes have great potential to replace bigger and more polluting vehicles and can therefore play a key part in the development of greener and smarter cities. As former car users, the e-bikers are a supplement to, not a replacement of, the original cyclists. E-bikes can be seen as a tool to increase bicycle market share. The users of e-bikes are satisfied with their bikes and are experiencing positive benefits for health and increased activity. E-bike users are more inclined to use their bike throughout the whole year, rather than only during the dry and hot season, which again will increase bicycle share throughout the whole year. The e-bikers are more prone to use other electric mobility. The e-bikers see the same challenges as other cyclists, namely a lack of infrastructure and safe parking.

9. References

[1] E.B. Lunke et.al**.** *Cycling in Oslo, Bergen, Stavanger and Trondheim*. ISSN 2535-5104**,** TØI report 1667/2018.

[2] A. Fyhri, H.B. Sundfør. *Elsykkel - hvem vil kjøpe dem, og hvilken effekt har de?* ISSN 0808-1190, TØI rapport 1325/2014.

Ms. Hulda Tronstad works as a Senior Adviser at the Norwegian Electric Vehicle Association, where she is responsible for projects and issues related to electric bikes, light electric vehicles and electric cars. She is the former project manager for the biggest Norwegian project concerning electric bikes. She also works closely with the electric bike market and policy development. She is much used as a speaker and in debates in media. Tronstad has several years works as head of information. She worked in the Norwegians Cyclists association (Member of ECF – European Cyclists federation) for five years