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Title **From car to E-bike?**

Track General Papers

Director Mark Wardman

Abstract

The Norwegian National Transport Plan requires the future increase in traffic to be accommodated by public transport, (electric) cycle and walking. It emphasizes the promotion of cycling by investments in cycling infrastructure and facilities. Environmental concerns and health benefits of cycling are the main arguments for this plan. The share of short trips in Norway, which are undertaken using bicycle as the main mode of transport, is much lower than in other European countries. Cold, wet, and long winters and hilliness of urban areas are potential reasons for the low share of cyclist in Norway. Core cyclist in the Norwegian urban areas are often dominant. Electric-cycle (E-bike) can potentially increase the cycle mode share in urban areas in Norway.

A range of factors has contributed to the emergence of electric cycles (E-bikes) with satisfactory range and improved performance. While E-bikes have been present in urban areas in China for quite a while, E-bikes recently has become popular in Europe. More E-bikes than ordinary bike are sold in some European countries (references). While E-bikes were originally targeted at the cyclists of high age, the market is expanding to other segments of the population. Those with longer commuting distances increasingly use E-bikes to travel to work. However, the market for E-bikes in Norway is in its infancy. Meanwhile, the potential market for E-bike can be quite large. It better meets the Norwegian climate and topography than an ordinary bike for most part of the population. This paper reports the results from the project InnoBike, financed by TRANSNOVA with aims at promoting new clean transport technologies and increased use of climate friendly means of transport. One of the aims of the project is to evaluate the potential demand for E-bikes and measures to increase market shares of E-bikes in Norwegian urban areas.

To measure the demand for E-bike, a stated preference (SP) study was developed. The SP study comprise of a vehicle type choice experiment among ordinary bike and E-bike, a mode choice experiment among car, public transport and E-bike, and two route choice experiment for E-bikes that focus on the valuation of parking facilities for E-bike, cycle paths and shower and changing facilities at work.

The vehicle type choice experiment includes the price for E-bike, the battery recharging time, the battery range, the battery life time and the battery replacement costs, whereas for an ordinary bike only the price is included. Furthermore, an outside alternative is included that represent not buying a bike. The mode choice experiment includes parking type and costs, car travel time and costs car parking costs, whereas the attributes for public transport are in-vehicle time, costs, walk and wait time and number of transfers. Common attributes in each choice set are weather type, hilliness and type of bicycle lane. The route choice uses a similar configuration where we pay special attention to weather and hilliness and cycle infrastructure variables. To enhance realism, the levels of the attributes are pivoted around reference trips of the respondents.

In the first part of the questionnaire, the respondents report their travel behaviour to work and school (for students and employed), their use of different modes of transport in their daily activities, in addition to a set of

questions that explores respondents habits, attitudes and values. The SP experiments are followed by questions related to the socio-economic, demographic and locational variables. The data was first analysed using a factor analysis to identify different classes of travellers. Latent class models are applied to the four SP data in the study. We expect to finish the analysis of the data by the end of June.

Respondents were recruited from an e-mail database and the survey was conducted on internet. Net respondents were about 2400 with a response rate of about 23%.

The results of the study will help to identify the key driving forces behind the adaptation of E-bikes and may be used for evaluating the policies such as subsidies for the purchase of E-bikes.

The paper presents the design of the study, the estimation results and a discussion of the results in relation to policies to promote E-bikes.