Institute of Transport Economics
Norwegian Centre for Transport Research

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Summary

Bicycle infrastructure and bicycle demand

Literature review and development of a simple spreadsheet model

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- Cycle infrastructure does affect the level of cycling, among other things by affecting the perceived comfort and safety for cyclists.
- Based on the results of a literature review, we have developed a simple spreadsheet model that calculates the expected demand effect of n kilometers of new cycling infrastructure, based on information about simple contextual conditions of the measure.
- One can expect from 5 to 30 cent increased cycle demand in the area of influence of a new cycle path.
- The results show that it is difficult to give a general measure of the expected cycle demand of new cycling infrastructure, as this is highly context-dependent
- Type of infrastructure, how the new infrastructure is located in relation to central travel flows and the type of area in which it is built have the greatest significance for the expected demand. A cycle expressway in a dense area generates higher demand than a cycle lane in a smaller town.

There is a stated goal in the Norwegian National Transport Plan that the modal share for cycling in Norway shall increase to eight percent, from the current four percent. Several studies point out that infrastructure does affect the level of cycling, among other things by affecting the perceived comfort and safety for cyclists.

Yet, there is little empirical evidence on how many more cyclists can be expected by improving the cycling infrastructure. This depends on a number of factors, including demographic conditions and other characteristics of the area in which the new infrastructure is built, how good alternative transport options are, as well as the quality of the already existing cycling infrastructure.

In this project, we have conducted a literature review of bicycle infrastructure and bicycle demand. Based on the results from this literature review we have developed a simple spreadsheet model for calculating the expected bicycle demand as a result of n kilometers of new bicycling infrastructure. The model is based on a very simple approach to generalized travel cost, and takes into account several simple contextual

conditions of the new cycle infrastructure - such as type of infrastructure, how it is positioned in relation to the travel flows in the area, the density of the area etc.

According to a study from Copenhagen, a ten percent decrease in generalized travel cost corresponds to a 13 percent increase in the number of cycling trips. According to a similar study from Stockholm, a ten percent decrease in generalized travel costs corresponds to seven percent more bicycle trips. The potential for increased cycling is often greatest in larger urban areas. When creating a model that will embrace the whole of Norway, we have chosen a lower elasticity than what we find in the largest urban areas in the Nordics.

There is increasing evidence that the short-run demand response accounts for only a part of the total demand effect. In the longer run, people are able to respond to a change by e.g., changing location of their job or residence, changing their car ownership status, etc. Studies indicates that long-run effects are of the order of 1,5 to 3 times the effect within a year.

In the model, we have used a general short-run effect of -0.5, and a long-run effect which is 1,5 times higher (i.e. -0.8). These GK elasticities are average values that are adjusted with various assumptions in the model.

Using the model to estimate the effect of n kilometer new cycle infrastructure under different conditions, the results shows that one can expect from 30 percent to less than 5 percent increased cycle demand in the area of the new cycle infrastructure. The results show that it is difficult to give a general measure of the expected cycle demand of new cycling infrastructure, as this is highly context-dependent. Type of infrastructure, how the new infrastructure is located in relation to central travel flows, and the type of area in which it is built, have the greatest significance for the expected demand. A cycle expressway in a dense area generates higher demand than a cycle lane in a smaller town.

In order to strengthen the effect of cycling measures and to change the competitive relationship between cycling and cars in the favor of cycling, policy packages that also include car-restrictive measures have the greatest effect.