

Evaluation of free public transport

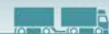
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We find that the use of public transportation in Stavanger has increased as a result of the introduction of free public transportation for residents in Stavanger. Furthermore, we observe some decrease in the use of cars and bicycles, but the effects on cars and bicycles are somewhat more uncertain.

Several cities worldwide have implemented free public transportation. Studies suggest that free public transportation increases the use of public transportation. A key question, however, is whether free public transportation also contributes to reducing car use, which is often a key argument for implementing such a policy. Experiences so far indicate that the increased public transportation use is primarily due to reduced walking and cycling, rather than a significant shift from car use. However, comparing the effects between cities can be challenging, as the impact of free public transportation is likely context-dependent. For example, there may be more people using free public transportation in urban areas where public transportation is already competitive.

This project analyzes travel behavioral effects of free public transportation for residents of Stavanger municipality. We evaluate the effect on travel behavior resulting from free public transportation in two ways: 1) by studying the change in the total number of boardings in public transportation in Stavanger municipality compared to the rest of Rogaland county, using automatic passenger counts on buses operated by Kolumbus, and 2) by studying the changes in travel habits on public transportation, in cars, and on bicycles through surveys. The survey was distributed before and after the introduction of free public transportation to residents of Stavanger (who can use free public transportation) and to residents of other areas (control group). The APC (Automatic Passenger Counting) figures include boardings on bus trips in Rogaland from January 1, 2022, to the end of October 2023. We have compared the number of boardings in Stavanger with the rest of Rogaland before and after the introduction of free public transportation. The rest of Rogaland is included as a control group to capture other changes in factors affecting public transportation use. We find an 10,8 % increase per day in the number of boardings in Stavanger compared to the rest of Rogaland after the introduction of free public transportation. In these analyses, we have used panel data with fixed effects at the municipality level.

When using APC data, it is impossible to distinguish whether passengers are residents of Stavanger. We have therefore also launched surveys that compare travel behavior before and after the introduction of free public transportation. In June 2023 and September 2023, we sent



surveys to residents in Rogaland county and Drammen. The same group of respondents answered the surveys in both June and September. Drammen is regarded as a control region, being unaffected by free public transportation, but with initially similar travel behavior to the Stavanger region. The main challenges with applying the surveys are sampling biases (the selection of participants is not random).

Based on the surveys, we find an increase in the number of public transportation trips among residents of Stavanger compared to Drammen, estimated at approximately 40% on the last two weekdays. When comparing residents of Stavanger with the rest of Rogaland, we find an increase of approximately 30%. We also find a decrease in car use, but the estimates are more uncertain. When comparing residents of Stavanger and Drammen, we find a 6% non-significant decrease in car use. When comparing Stavanger and the rest of Rogaland, we find a 17% significant decrease. We find no significant changes in bicycle usage.

APC data (boardings on public transport) and survey data (number of trips) are not entirely comparable, as they measure different aspects of travel behavior. APC data are based on all boardings, while survey data are based on a sample of respondents. As mentioned in Gregersen et al. (2023), it is not random who chooses to participate in surveys. It is therefore reasonable to assume that there may be selection biases in the sample. However, the advantage of surveys is that they can follow the same individual both before and after the introduction of free public transportation, thus accounting for individual-specific factors.

Based on APC and survey data, we conclude that there is an increase in the number of public transportation trips due to free public transportation. This is also in line with expectations based on studies from other cities in other countries. We also find some decrease in car usage, but the effects are more uncertain.