

To what degree can carsharing substitute car ownership?

Self-reported evidence from carsharing users and the general population

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In this report, we discuss to what extent carsharing can replace traditional car ownership in the Norwegian context. Our analysis builds on two web-surveys: one among members of a carsharing service and one among the general population in the largest cities in Norway offering carsharing.

Our findings show:

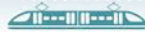
- the majority (60%) of carsharing members would not have bought a car in the absence of the carsharing service, but they also say that they would have used a rental service (65%) or another carsharing service (77%) instead.
- Among the general population, about 17% answered that they were likely or highly likely to join a carsharing service in the near future. This share was lower for those who already own a car. The average interest in renting out their cars was also quite low.

If our analysis is to be any guide to communicative policies to the general Norwegian car-owning population, it would be to focus on the convenience motive for getting car owners to consider replacing their car ownership with carsharing (eg. more practical, larger car-types choice), and the personal profit motive for getting car owners interested in renting out their cars.

In addition to discussing whether carsharing can replace traditional car ownership, we try to disentangle policy-relevant factors which seem to have the strongest effect on this replacement. By surveying both people that are already carsharing and a those from the general population, we try to investigate whether carsharing members would otherwise have owned a car. While, for non-carsharers, we ask whether they would consider switching to carsharing. Car owners are asked to what extent are they interested in renting out their cars.

This report builds on two surveys: one carried out in 2020 among members of the carsharing service Bilkollektivet (BK), and one carried out in 2017 among the general population in the largest cities in Norway that have carsharing services. Our results show that the majority (60%) of BK members would be unlikely or very unlikely to buy a car in the absence of BK.

Responders also indicate that they would be more likely to get around without a car than owning one. However, the majority also say that they would be likely or very likely to use a rental service (65%) or another carsharing service (77%) in the absence of BK, making BK



largely a substitute for other car services. These results lead to the conclusion that for a large share of their members, BK is providing increased mobility to a segment who probably would not have owned a car in the first place, but that have need for a car at least sometimes. One limitation of the study is that the question that was posed in the survey did not ask what they would have done in a scenario without access to *any* carsharing or rental services.

When investigating factors that seem to influence the self-assessed likelihood of buying a car in the absence of BK, we find a positive and statistically significant relationship with the number of children in the household, gender (male), income (median in the borough), how often they use BK and whether they own a car already. The strongest effect is found for current car owners. This may indicate that, at least in our sample, the self-assessed likelihood of getting a car in the absence of BK is higher for households that may get an additional car, than for households getting their first car, and that, for them, carsharing may be used as a substitute for the second car.

From an environmental policy perspective, the main interest in carsharing is to which extent it can replace car ownership, reduce car use and free up public space. We find that carsharing is relatively more appealing vis-a-vis car ownership for those who consider the practicality, the environmental impact, or the expanded car choice-set from carsharing to be important. However, people who put a high weight on these features may also be less likely to own a car in the first place.

Among respondents in the general population in the largest urban areas, only about 17% reported that they were likely or highly likely to join a carsharing service in the near future. This figure was even lower among car owners, who make up 69% of the sample. When asked about their willingness to replace (WTR) their car with a carsharing service, more than 50% were unlikely or highly unlikely to join a carsharing service in the near future. Similarly, we also found that the average interest in renting out (IIRO) their cars was quite low.

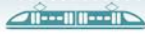
Basic demographic variables such as gender and education, do not seem to have much effect on the WTR car ownership with carsharing (only income is negatively and strongly correlated with the WTR). While women tend to be less interested in renting out their car, older and more educated respondents are more IIRO. Having access to parking and having more than one car seem to have a negative impact on both WTR and IIRO. This seems reasonable, as parking access and the number of cars owned is strongly correlated with self-assessed car dependency - which also, naturally, negatively affects WTR and IIRO.

Adding subjective variables to the regression models significantly increases its explanatory power for both assessing the WTR and the IIRO. WTR is higher for car owners who are planning to change or get rid of their car. The WTR had a significant correlation with several subjective assessments, but it had the strongest correlation with accessibility, the belief of how convenient carsharing is, and how much carsharing fits with one's "identity".

Relevant motivation for car owners' IIRO is the belief that renting out their car saves money, is social, practical and gives status. Note that the strongest correlation, explaining about 76% of the variation, is the belief that it will be economically beneficial. Relevant barriers to IIRO are unwillingness to rent out to strangers or strongly needing their car.

In conclusion, our analysis of survey data points to the fact that the convenience message has the strongest impact in getting car owners to consider switching to carsharing. While the personal profit motive is the most impactful for getting car owners' interested in renting out their cars.

Our analysis comes with a range of caveats. There is a high likelihood of having some omitted variable bias. We would have ideally liked to have data on variables, such as the respondents' distance to workplace, cabin ownership (and frequency of visits) and number of close friends



and family that are best reached by driving. While our findings may give some useful indications, the exact numbers should be interpreted with caution. Our research brings new knowledge about the carsharing sector, but there is still a need for more research in order to better understand the causal effects of increased availability of carsharing, and/or the demand effects for carsharing caused by various transport policies. We emphasize the use of register data, experimental data and more repeated survey data as promising venues of such research.

Finally, we discuss the extent to which carsharing can substitute private cars and reduce car use placing this study in perspective of the existent literature. By doing a simple back-of-the-envelope calculation we conclude that a BK shared car can replace between 4,5 to 8,9 privately owned cars. Similar estimates have been found in Rydén (2005) for Germany and Belgium. following calculation from Byggforsk (2015), we also calculate that given the expected number of avoided cars per BK member, between 2,8 m²–5,6 m² of public space can be freed up in the city, *ceteris paribus*.

More research is needed to study the impact of carsharing on vehicle kilometer travelled (VKT), as it is quite uncertain and highly dependent on the time horizon and assumptions. Similarly, the net effect on emissions is also uncertain. However, given that the shared fleet is on average newer and has lower emissions compared to the privately owned car fleet, emissions are likely to be reduced when private car are substitute by carsharing.