RESEARCH REPORT

Community Car-Sharing Survey &

"Auto van de Straat" Initiative

ENVIRONMENTAL AND TRAFFIC PSYCHOLOGY

REIJKSUNIVERSITEIT GRONINGEN

ENVIRONMENTAL
PSYCHOLOGY
GRONINGEN

https://epgroningen.nl/nl/

smiles

https://www.smiles-living-lab.nl/

Author: Michelle Lohmeyer
Email: m.lohmeyer@rug.nl

SMiLES management: Carina Havenga de Poel & Berfu Ünal
Email: c.havenga.de.poel@rug.nl; a.b.unal@rug.nl

Research Team: Michelle Lohmeyer; Berfu Ünal; Lena Hölzle;
Janet Veldstra; Dick de Waard & Linda Steg

Date: 7th of June 2024

PROJECT SUMMARY

In this research, we studied why people started using community car-sharing and how they made it part of their daily travel habits. We conducted two studies. First, we carried out a survey across the Netherlands exploring the underlying motivations to join community car-sharing initiatives. Second, we followed the members of an initiative, "Auto van de Straat", to learn about people's experiences and use of shared cars.

Our survey showed that people are mainly interested in car-sharing if they consider it convenient, safe, and reliable. They also like the benefits of car-sharing for their neighbourhood, such as more green space and fewer parked cars. Additionally, signalling social status by portraying an environmentally friendly, tech-savvy, or community-minded image appeared to motivate people to join a community car-sharing initiative. Furthermore, neighbourhood improvements and social status signalling also motivate the sustainable use of shared cars.

From the "Auto van de Straat" initiative, we learned that people decide early on if they will stick with car-sharing. In addition, even if people plan to sell their own car, they do not do it quickly. Furthermore, people seem to stick to their old travel habits. People intended to use shared cars as a substitute for other modes of transport, but when they participated in car-sharing, they did not do so as often as they had intended.

Thus, to encourage car-sharing, it is important to highlight not just cost savings but also the convenience and neighbourhood improvements it brings. In fact, financial considerations do not seem to motivate car-sharing in general. Furthermore, setting up a well-organised car-sharing program is crucial, as early experiences greatly influence continued use.

INTRODUCTION

The transport sector significantly contributes to climate change, producing a large amount of greenhouse gases. Car-sharing is often considered an eco-friendly alternative to using private cars. It helps reduce traffic, air pollution, and the number of parked cars on the streets since privately owned cars remain unused for over 95% of the time.

Using shared cars can significantly lower emissions compared to owning private vehicles. However, the benefits of car-sharing depend on the context and whether it is used sustainably. For instance, shared cars might replace more environmentally friendly options such as trains and buses in cities. In rural areas, car-sharing might add more vehicles to the road network if people do not replace their vehicles with shared cars. In addition, research shows that having access to a car, whether shared or owned, can increase the environmental footprint because people tend to drive more. Therefore, it is crucial to investigate how people use shared cars and whether car-sharing is indeed a sustainable alternative to car ownership.

In rural areas, car-sharing has often failed due to challenges like the need for widespread car coverage and the lack of alternatives such as public transport. Community car-sharing schemes address some of these barriers.

Community car-sharing involves a fixed group, like neighbours or friends, sharing cars in their neighbourhood. The "Auto van de Straat" initiative is an example, where up to twenty people share two cars, using an app to manage reservations and payments.

However, what are the potential motivations for people to adopt car-sharing and sustainably use shared vehicles? To answer this question, we conducted a survey study in the Netherlands and followed the community car-sharing initiative "Auto van de Straat" (AvdS) and investigated the following motivations:

Instrumental motives: *Financial* motives such as saving costs, and other instrumental motives such as *convenience*, *reliability* and *safety*.

Symbolic motives: Wanting social status and showing others and oneself that they are eco-friendly or tech-savvy.

Environmental motives: Reducing one's ecological footprint.

Communal motives: Belonging to a community and strengthening community ties.


Neighbourhood motives: Improving one's local neighbourhood environment.

METHODOLOGY

Survey: We surveyed 292 individuals in the Netherlands to obtain their opinions. Instead of directly asking for their reasons for participating in car-sharing, we showed them a video about community car-sharing and had them rate various characteristics of it. Prior research indicates that using an indirect approach to investigate people's motivations can yield more precise results (Noppers et al., 2014; 2019). Therefore, we opted for the indirect approach and asked participants to rate community car-sharing based on the aforementioned characteristics.

The average age of the respondents was 52 years; the youngest respondents were 21 years old, and the oldest was 81 years old. Survey respondents lived in rural, urban, or suburban areas (Figure 1).

Figure 1: Living Area
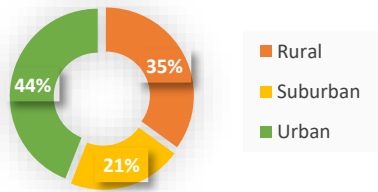
Furthermore, the people in this sample were representative of the Dutch population regarding car ownership (KiM, Netherlands Institute for Transport Policy Analysis, 2022) (Figure 2).

Figure 2: Cars per Household
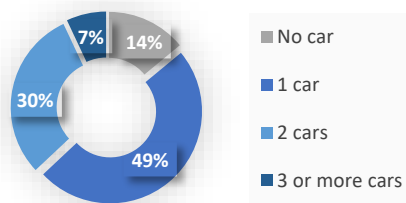
Previous experience with car-sharing is slightly higher than in the general Dutch population (KiM, Netherlands Institute for Transport Policy Analysis, 2015) (Figure 3).

Figure 3: Car-Sharing Experience
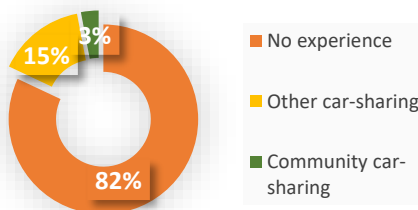
AvdS initiative: In the AvdS initiative, which took place in three suburban streets in the Netherlands, we gathered responses from participants at three different times (1: before the initiative started, 2: during the initiative, 3: after the initiative ended). Each time, we asked participants to rate the characteristics of community car-sharing (see above) and how they used the shared cars for their daily travels. We had 16 participants who completed at least 2 out of the 3 questionnaires. Our analysis was based on the responses from these 16 participants.
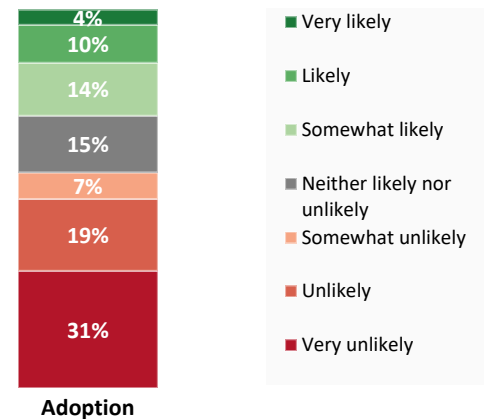
RESULTS

Adoption of Community Car-Sharing

Willingness to Participate (Survey):

Figure 4 gives an overview of people's willingness to participate in community car-sharing. In general, most people are rather unwilling to join. However, 15% also seem undecided about whether to engage in community car-sharing.

Figure 4: Willingness to Adopt Community Car-Sharing

Motivations

Motivation to Participate (Survey):

Figure 5 provides an overview of how people evaluated each of the characteristics of community car-sharing on average on a scale from 1 (low) to 7 (high). A higher average indicates that people believe community car-sharing possesses the specific characteristic more.

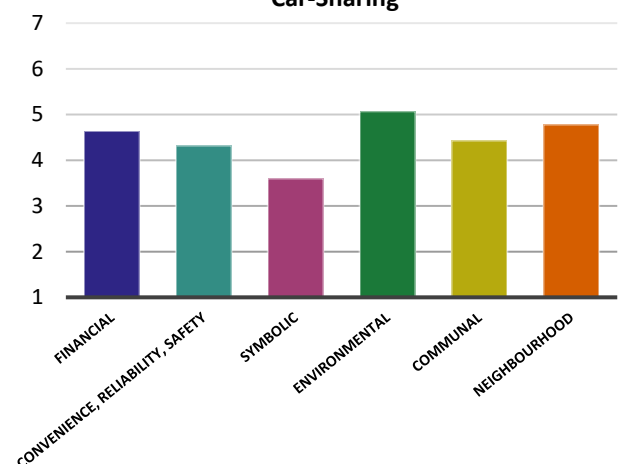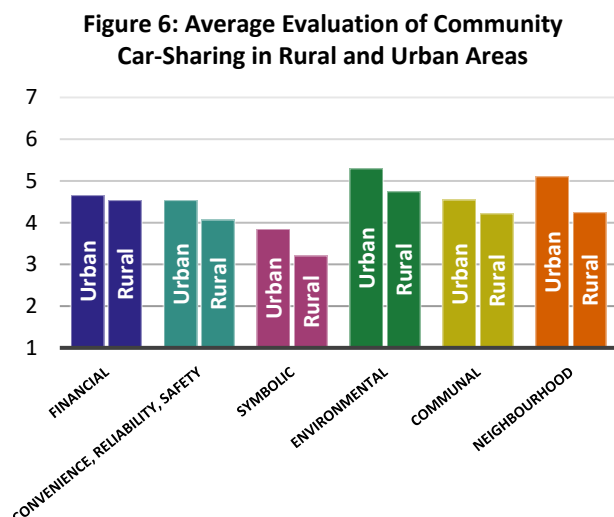**Figure 5: Average Evaluation of Community Car-Sharing**

Figure 6 plots the rating differences depending on whether people live in rural or urban areas. People in rural areas generally rated the characteristics of community car-sharing lower than those in urban areas.

Figure 6: Average Evaluation of Community Car-Sharing in Rural and Urban Areas

The statistical analysis suggests that people are mainly interested in joining community car-sharing when they see the practical benefits of car-sharing. Thus, people are primarily interested in community car-sharing if they find it convenient, safe, and reliable. Additionally, individuals are particularly motivated to participate in community car-sharing when they can showcase a desired self-image to themselves and others, such as demonstrating social status by promoting an eco-friendly image or displaying technological proficiency. Lastly, people appear motivated to embrace community car-sharing when they recognise the added advantages for their local neighbourhood, such as few parked cars in their street.

We did not find evidence in the data indicating that people were motivated by environmental reasons. Overall, people acknowledged that car-sharing is an environmentally friendly option, as the average evaluation of the environmental attributes suggests (Average=5.00; on a scale from 1 (low) to 7 (high)). Moreover, based on the comments left in the survey, it seems that people are aware of the environmental benefits but find other reasons more important why they choose not to participate in car-sharing. For example, one

participant wrote: *'Car sharing conflicts with the main purpose of owning your own car: the freedom to be impulsively mobile. I understand the environmental benefits, but organising car sharing well, scheduling it, negotiating if two need the car at the same time or want to go on holiday, driving damage where the culprit is 'in the graveyard', I see more disadvantages than advantages. [...]'.*

Additionally, people were not motivated by financial considerations. Similarly, we saw in the open comments in the survey that even if people recognised that they could save money with community car-sharing, they provided other reasons for their reluctance to participate in car-sharing. For example, one participant wrote: *'Car sharing could be an option, but is not a priority, it can save costs (considerably). Car-sharing requires planning your travels. Own car is always there. Own car is like home with own stuff in it. Shared cars are not. My own car is not in my way and is paid for'.*

Furthermore, communal motivations were also not predictive of people's participation in community car sharing. In the open comments of the survey study, many people voiced concerns about the community aspect as they do not wish to jeopardise good relationships or are concerned that others will not behave responsibly. For example, one participant wrote: *'In the past I have shared a car with friends who lived in the same street. That went well, but you had to be careful not to spoil the good relations. Being angry at a company has less consequences for personal relationships (in the neighbourhood)'.*

In Figure 7, we depicted the strength of the importance of various motives for adopting community car-sharing. Convenience, reliability and safety can be deemed highly important, while symbolic and neighbourhood motivations can be considered moderately important. Communal, environmental, and financial motivations did not significantly predict people's intention to adopt community car-sharing; thus, the strength of the importance is very low to none. The strength of the motives changed slightly when we compared

rural and urban residents. Namely, communal motives seem to be predictive in the urban setting. However, the strength of this motivation appears to be low.

Figure 7: Importance of Motives to Adopt Community Car-Sharing
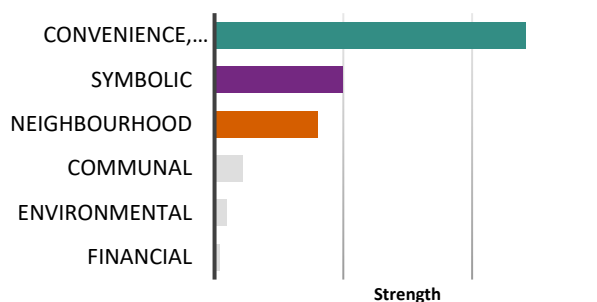
Motivations Over Time (AvdS):

Over time, people's evaluations of community car-sharing remain the same, except for the decline in financial evaluations. In Figure 8, we showed the average score for each evaluation of community car-sharing at the three different times and the average evaluation score given by the survey participants. The further the line is to the outside (line 7), the higher the evaluation of the characteristic.

**Figure 8: Average Evaluation of Community Car-Sharing Over Time**
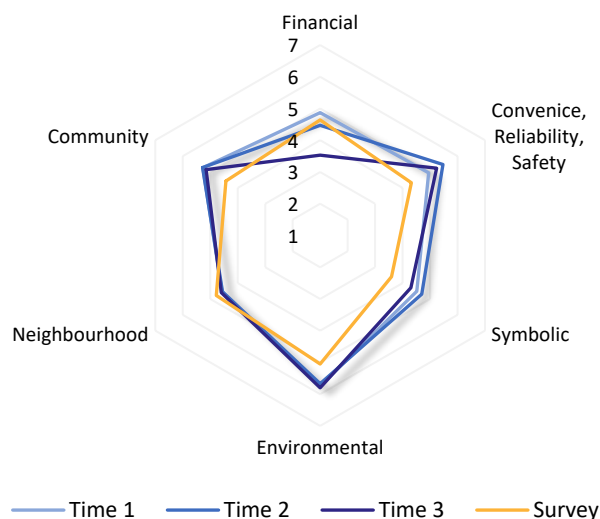
Sustainable Use of Community Car-Sharing

Motivation for Sustainable Use (Survey):

People seem particularly motivated to use community car-sharing sustainably because of the benefits for their local neighbourhood and the opportunity to signal social status. The other motivations did not significantly predict people's intention to use community car-sharing sustainably. In Figure 9, we depicted the importance of the motives to use community car-sharing sustainably. Symbolic and neighbourhood motivations are of medium importance, while communal, environmental, financial, and convenience motivations are of very low to no importance.

Figure 9: Importance of Motives to Use Community Car-Sharing Sustainably
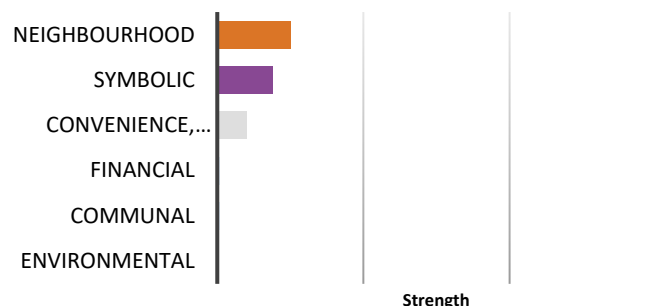
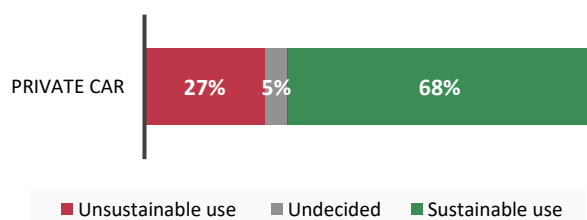## Integration of Shared Cars (Survey):

We researched whether people would use shared cars for trips they used to take by public transportation or bike to see if shared cars are being used sustainably in people's daily travel routines. In Figure 10, we showed how likely people thought they would replace public transport and biking with a shared car if they joined a car-sharing service. Most people said they would continue using the bike and public transportation almost as much as before.

Figure 10: Sustainable Use of Alternative Modes of Transport
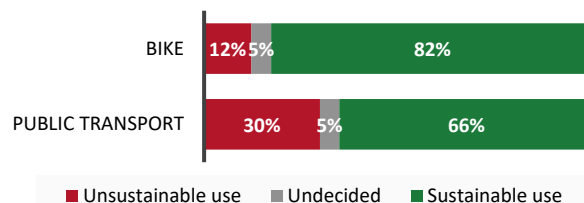
Similarly, we asked people if they would replace trips made with their privately owned cars, as shown in Figure 11. The majority of people said they would likely do so.

Figure 11: Sustainable Use of Private Car

PRIVATE CAR	27%	5%	68%

■ Unsustainable use ■ Undecided ■ Sustainable use

Integration of Shared Cars (AvdS):

For the first-time measurement of AvdS, we also asked participants about their intentions on how they want to incorporate the shared cars into their daily travels. At times 2 and 3, we asked people how they ended up using the shared car in reality. Figure 12 plots people's intentions at time 1 (horizontal lines) and in the survey participants' intentions (diamond) compared to the actual behaviours at times 2 and 3 (bars) of AvdS participants. Overall, it seems that people had higher intentions to use the shared cars to replace all other modes of transport but did not do it once they had the shared car available. This means that people are likely to stick to their travel routines for all modes of transport they previously used.

Figure 12: Integration of Shared Cars into Daily Travel

■ Time 2 (Behaviour) ■ Time 3 (Behaviour)
◆ Time 1 (Intention) — Survey (Intention)
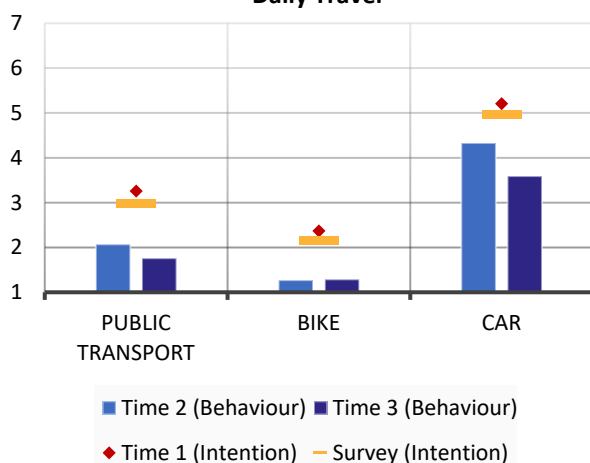
Car Ownership (Survey):

Research shows that individuals tend to drive more when they have access to more vehicles, whether shared or owned. Therefore, for car-

sharing to be a sustainable option, it is recommended that individuals sell at least one of their privately owned cars. In Figure 13, we displayed people's plans to either dispose of or purchase a new car if they were to participate in community car-sharing. Around half of the people are open to selling their cars. In contrast, the other half are not interested in selling. Most people are not thinking about purchasing a new car. However, about a quarter of them would still be open to buying a new car even if they were part of a car-sharing program.

Figure 13: Car Ownership

SELL CAR	47%	5%	48%
BUY CAR	25%	8%	67%

■ Not sell/Buy new ■ Undecided ■ Sell/Not buy new
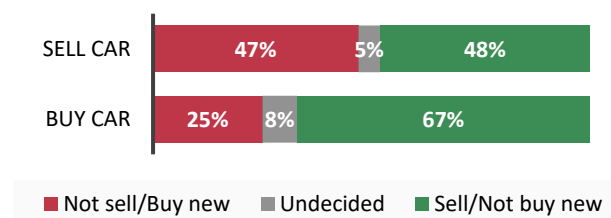
Car Ownership (AvdS):

When we followed the participants from AvdS, we asked them whether they intended to sell a car during their participation in AvdS. After the initiative ended, we asked again if they had sold a privately owned car. In Figure 14, we plotted the intentions people had to sell a private car (left side of the Figure) and whether or not they sold it or still intended to do so but have not sold the car yet (right side of the Figure). Overall, it appears that most people need more time to sell their cars, as the majority indicated that they had not sold their car but were still considering doing so in the future.

Figure 14: Car Shedding
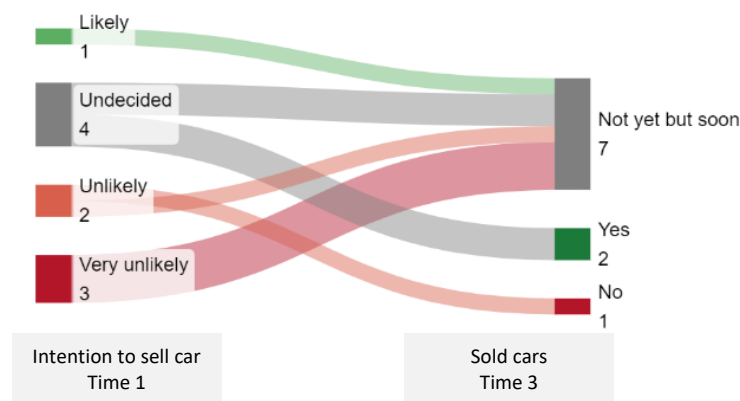
Continuing with Car-Sharing (AvdS):

During the middle of AvdS, we asked participants if they planned to continue participating after the trial period ended. Then, at the end of the trial period, we asked them again if they were continuing with AvdS. We found that only those who were at least 80% confident that they would continue at the midpoint of the initiative actually continued at the end.

Limitations

Our study provides important information about community car-sharing, but there are some limitations to consider. Firstly, the number of people who took part in the Auto van de Straat research is very small, so any trends in the data should be interpreted with caution.

Although the survey sample is large enough for a robust statistical analysis, it might not represent the entire Dutch population.

Furthermore, the survey data is based on intention measures, meaning that we did not measure actual behaviour. The literature suggests an intention-behaviour gap, indicating that although people may have high intentions, they do not necessarily follow up by engaging in the behaviour.

Additionally, the data from both studies is based on self-report, meaning that it relies on what people remember about their past actions. People might not remember accurately what they did in the past, thus introducing inaccuracies in the data.

Our findings still offer novel insights into the main motivating factors for community car-sharing, which could be used to stimulate people in the process of setting up initiatives. Replications of our study with larger samples and by focusing on actual behaviour rather than self-reported behaviour would be useful.

CONCLUSIONS

Our study on community car-sharing uncovered several key findings.

The primary motivation for people to join community car-sharing is its convenience, reliability and safety. Additionally, people are driven by the desire to show themselves and others who they are, such as environmentally conscious or tech-savvy. Moreover, car-sharing positively affects local neighbourhoods by reducing the number of parked cars, thus creating more space for leisure activities and green areas, which also motivates people to participate.

The opportunity to express one's identity and the local neighbourhood benefits drives adoption and promotes the sustainable use of community car-sharing. However, contrary to popular belief, factors like financial savings, environmental benefits, and community involvement do not seem to influence people's decision to participate in community car-sharing or use it sustainably. Furthermore, the perceived financial benefits tend to diminish over time as people continue to use community car-sharing, while other aspects remain constant. Although motivations do not vary significantly between rural and urban areas, rural residents generally see fewer benefits in car-sharing compared to urban residents.

Despite many intending to replace some public transport and bike trips with a shared vehicle, people often do not follow through with using a shared car for these trips, opting to stick with their original mode of transport. This is similar to the use of private cars, as people intended to replace private car trips with shared vehicles but did not do so as frequently as initially planned. This suggests that people may struggle to alter their travel habits even after signing up for a shared car initiative.

Car-sharing is sustainable when people drive less, and this is more likely when they sell their privately owned cars. Our research indicated that the intention to sell a car was relatively low

initially, and most people did not go through with selling their car. However, they did express an intention to sell their car in the future, suggesting that people might need time to transition from private car ownership to shared mobility. Therefore, continuous usage by people is crucial. One aspect that motivates people to keep using car-sharing is positive experiences early on, as individuals typically decide quickly whether they will continue with car-sharing or not.

From the open-ended questions in the survey, we drew another insightful finding. People seem to be uncertain about how community car-sharing functions. Many questions were raised about practical issues such as insurance and maintenance, as well as organisational aspects within the group, including responsibilities and availability. These uncertainties could also act as barriers to people's participation in community car-sharing.

RECOMMENDATION

For community car-sharing initiatives to be successful, they should be carefully set up and run smoothly, as early impressions significantly influence whether people continue with car-sharing. Moreover, providing clear and comprehensive information on how to use or set up a community car-sharing initiative may be crucial in reducing uncertainties that seem to be a barrier for people to engage in car-sharing. This is especially important for self-organised schemes, where guidance on insurance, availability organisation, and maintenance responsibilities can help people lower the barrier to forming a car-sharing initiative. However, the scientific literature emphasises that pure information campaigns are usually insufficient to promote a behaviour.

Thus, when promoting car-sharing, it is also beneficial to focus on motivational factors. Convenience benefits, rather than financial aspects, are the primary motivation for adopting car-sharing. Additionally, highlighting the positive impact a car-sharing initiative can have on the local neighbourhood, such as reducing parked cars on the street, can further motivate

participation. Our findings also suggest that people may be motivated by the opportunity to signal their identity through car-sharing. However, caution is advised when emphasising aspects such as benefits for social status, as some literature suggests that explicitly mentioning these benefits might backfire. More research is needed to determine how to effectively operationalise this motivation in advertising car-sharing.

References

KiM, Netherlands Institute for Transport Policy Analysis. (2022). *The widespread car ownership in the Netherlands.*

KiM, Netherlands Institute for Transport Policy Analysis & Ministry of Infrastructure and the Environment. (2015). *Car-sharing in the Netherlands.*

Noppers, E. H., Keizer, K., Bolderdijk, J. W., & Steg, L. (2014). The adoption of sustainable innovations: Driven by symbolic and environmental motives. *Global Environmental Change, 25,* 52-62*.* http://doi.org/10.1016/j.gloenvcha.2014.01.012

Noppers, E., Keizer, K., Milovanovic, M., & Steg, L. (2019). The role of adoption norms and perceived product attributes in the adoption of Dutch electric vehicles and smart energy systems.*Energy Research & Social Science, 57,* 101237. https://doi.org/10.1016/j.erss.2019.101237