



Ministry of Infrastructure
and Water Management

Peer-to-peer car sharing in the Netherlands

New insights and comparisons with other sharing concepts.

Netherlands Institute for Transport Policy Analysis | KiM

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Summary

Peer-to-peer (P2P) car sharing is a form of car sharing where individuals rent out their privately owned car through an online platform. In the Netherlands, around 7,000 cars are available for P2P car sharing. In 2022, users actively hired 5,615 of these 7,000 cars. Of all the P2P shared cars, 18% are rented at least once every two weeks, while 50% are rented at least once every two months. Vans make up 12.9% of all P2P vehicles, and just over 10% have a keyless system (can be opened without a key). These are the two most frequently rented types of vehicles. The share of electric and hybrid vehicles stands at 8.7%, in line with their share in the overall car fleet in the Netherlands. On average, P2P shared cars are slightly older than the average car in the Netherlands.

P2P car sharing is particularly economical for occasional use, such as a day trip or a holiday. If a car is needed more frequently, a subscription-based option with a business-to-consumer (B2C) provider will usually work out more economical. As more keyless P2P shared cars become available, the need for a physical handover of the key, P2P's biggest drawback, will disappear. One advantage of P2P is the wide diversity of vehicle types.

P2P users significantly tend to have an academic education, tend not to have a low income, and tend to own fewer cars than the average Dutch person. Compared to B2C shared car users, P2P users tend to be younger and are relatively less clustered in areas with high levels of urban development. Almost half of all P2P users (47%)

are between 26 and 35 years old, while less than 5% are 60 or older. Although P2P car sharers are less clustered in urban areas than people who use another form of car sharing, 53% of P2P users do actually live in the four largest cities (G4), compared to just 14% of the Dutch population.

Per person, P2P car sharers tend to use shared cars significantly less frequently than B2C car sharers. Two-thirds of customers use a shared car only once a year, while only 1% use the shared car monthly. Two-thirds of bookings are for one-day rentals, while 10% of bookings are for a rental period of half a week or more.

Based on socio-demographic characteristics, we have identified six groups of shared car users. We did not determine the number of groups and their respective profiles in advance, but obtained them from a comprehensive dataset using latent cluster analysis (a statistical technique). The groups (and their share among overall car sharers) are shown in Figure 1.

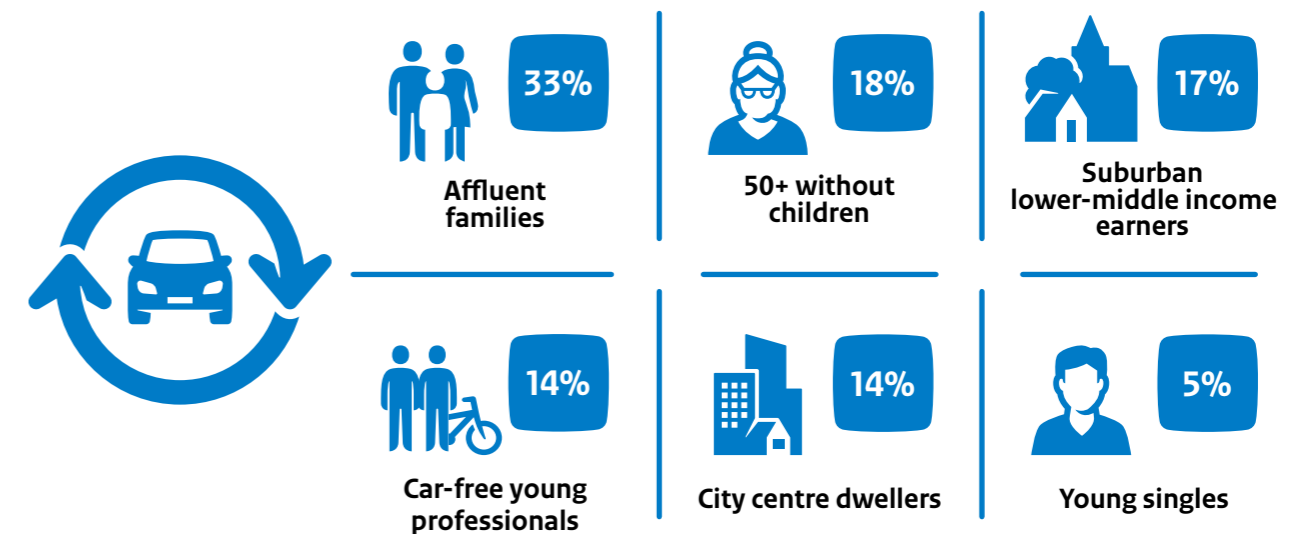


Figure 1: Groups of car sharers, and their respective shares in the Netherlands (Source: Stofberg Data, 2018)

P2P and B2C users are found in all six groups. However, P2P car sharers are more strongly represented than B2C car sharers in the suburban lower-middle income group (who tend to have a lower-middle level of education), and in the two youngest groups: the *Car-free young professionals* and the *Young singles*. The six groups are almost homogeneous in their reasons for starting car sharing. All groups do so predominantly for reasons of sustainability, followed by cost savings, but scarcely for social reasons, such as getting to know the neighbours or doing something for the neighbourhood. Once P2P users start car sharing, their car ownership goes down by an average of 30%. On average, this decline stands at 61% for B2C car sharers, and at around 63% for people who are both P2P and B2C car sharers. Most of this decline happens in the first year.

For the *50+ without children*, the number of cars declines by 0.63 cars per household, or almost two cars per three households. A strong effect of car sharing can be seen among three other groups too: from more than one-third to almost half a car per household. This concerns the *Affluent families* (the largest group): the *Suburban lower-middle income earners*, and the *City centre dwellers*.

More than half of both P2P and B2C car sharers sometimes use a shared car instead of taking public transport, while more than one-third sometimes do so instead of using their own car, walking or cycling. A shared car sometimes replaces a car borrowed from family or friends, or a rental car. The groups that most often tend to shed their cars are the same groups that tend not to use a shared car as an alternative to public transport. The *Car-free young professionals* and the *Young singles*, however, do tend to use a shared car most frequently as an alternative to public transport.





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1 Availability of P2P cars in the Netherlands



P2P car sharing mostly provided by SnappCar

In early 2023, SnappCar seems to be the only large-scale provider of peer-to-peer (P2P) car sharing in the Netherlands. We define P2P car sharing as the hiring of cars - either passenger cars or vans - from one private individual to another using a platform that does not own or manage the cars. Lynk&Co (a provider of car subscriptions) also offers this type of platform for its customers, but the extent to which this sharing platform is actually used was unclear in early 2023.

The platform not only ensures that cars are findable, but also provides additional services, such as a safe payment environment, and insurance of the vehicle during the rental period. The platform may also offer other services, such as providing the technology for keyless access, in other words: opening the car without physical handover of the key. When a car sharing platform owns or manages its own fleet of cars, this is characterised as business-to-consumer (B2C) car sharing.

P2P is advantageous for occasional use and a diverse range of vehicle types

P2P shared cars are most economical when used occasionally, such as for a day trip or holiday. For more frequent use, subscribing to a B2C provider would soon work out more economical. This is demonstrated by comparing the rental costs at P2P provider SnappCar and B2C provider Greenwheels. One barrier when hiring a P2P shared car is that it is often necessary for the key to be handed over in person, while B2C shared cars can be opened by the user from an app. However, this difference is gradually disappearing as more P2P shared cars are fitted with keyless access. One advantage of P2P car sharing is the wide variety of vehicle types available.

5,615 shared cars active on SnappCar in 2022

Car owners can easily register their car as a P2P shared car. Before it is possible to actually rent this shared car, the provider must present the vehicle as being available and respond to rental enquiries. Until now, the number of P2P shared cars actually available for hire, and how often they are hired, was unknown. In 2022, SnappCar reported that it had around 7,000 cars and vans on its books that were available for

rental at that time. Data analysis shows that a total of 5,615 cars were rented at least once through SnappCar in 2022. Furthermore, several tens of thousands of cars were still registered as P2P shared cars, although these were not (or no longer) actually available to hire in 2022. For this reason, we do not count these here.

With 5,615 actively used P2P shared cars, P2P represents an important part of the Dutch car sharing market. The number of B2C shared cars, which we assume are (almost) all actively used, stood at 6,531 in 2022.

One-third of P2P shared cars are rented out at least once a month, while 20% are rented out only once a year

In 2022, one-fifth of P2P shared cars were rented out once, while almost a third were rented out between two and six times a year (see Figure 2). Half of the cars were rented out more than six times a year, and 18% of these were rented out once every two weeks or more.

P2P shared cars are used by a renter on average 18 times a year (the car's private owner may, of course, still use the car too). This is relatively modest compared to B2C shared cars that are tied to a particular location. In Amsterdam, these cars are used 0.7 times a day, and hence hundreds of times a year.

Keyless cars are popular

P2P shared cars are on average slightly older than the overall car fleet in the Netherlands; in particular, the number of new cars is lower (cars not yet older than three years). The share of electric or hybrid cars is slightly higher than the Dutch average. 13% of shared cars are vans, and about 11% are keyless (i.e. can be opened without physical handover of a key).

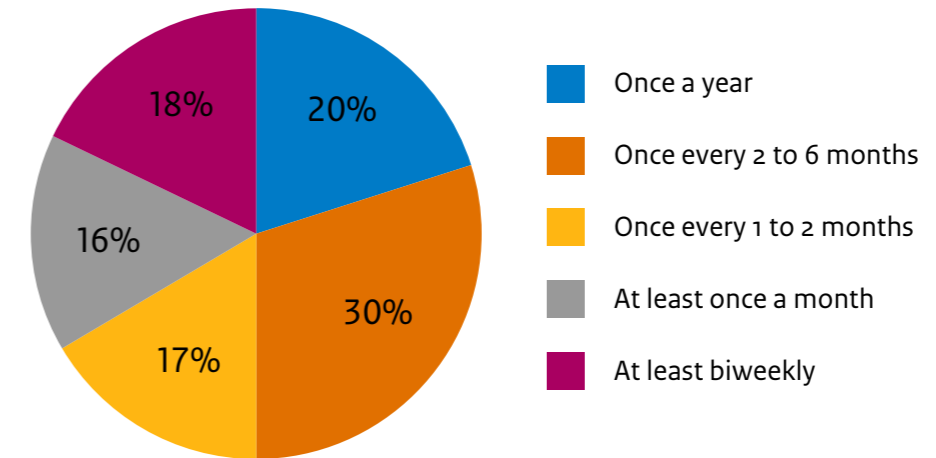


Figure 2: Active P2P shared cars by rental frequency (Source: SnappCar, 2022)

Keyless shared cars are by far the most frequently rented: almost seven times more frequently than shared cars needing a key. By contrast, non-keyless shared cars are rented on an average for longer (2.1 rental days per rental transaction as opposed to 1.5 days for keyless). These cars also tend on average to be relatively newer cars (less than ten years old) and powered by fossil fuels. See Figure 3.

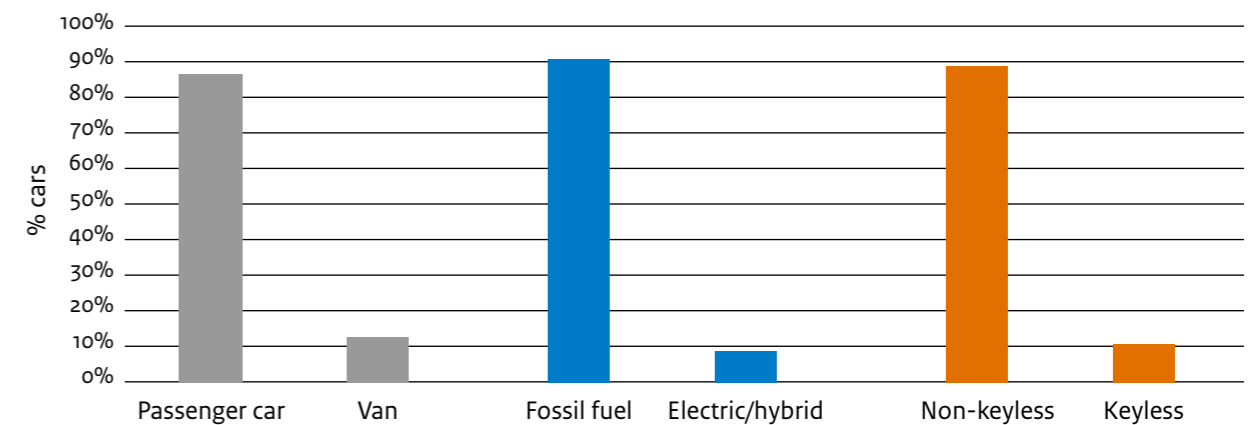
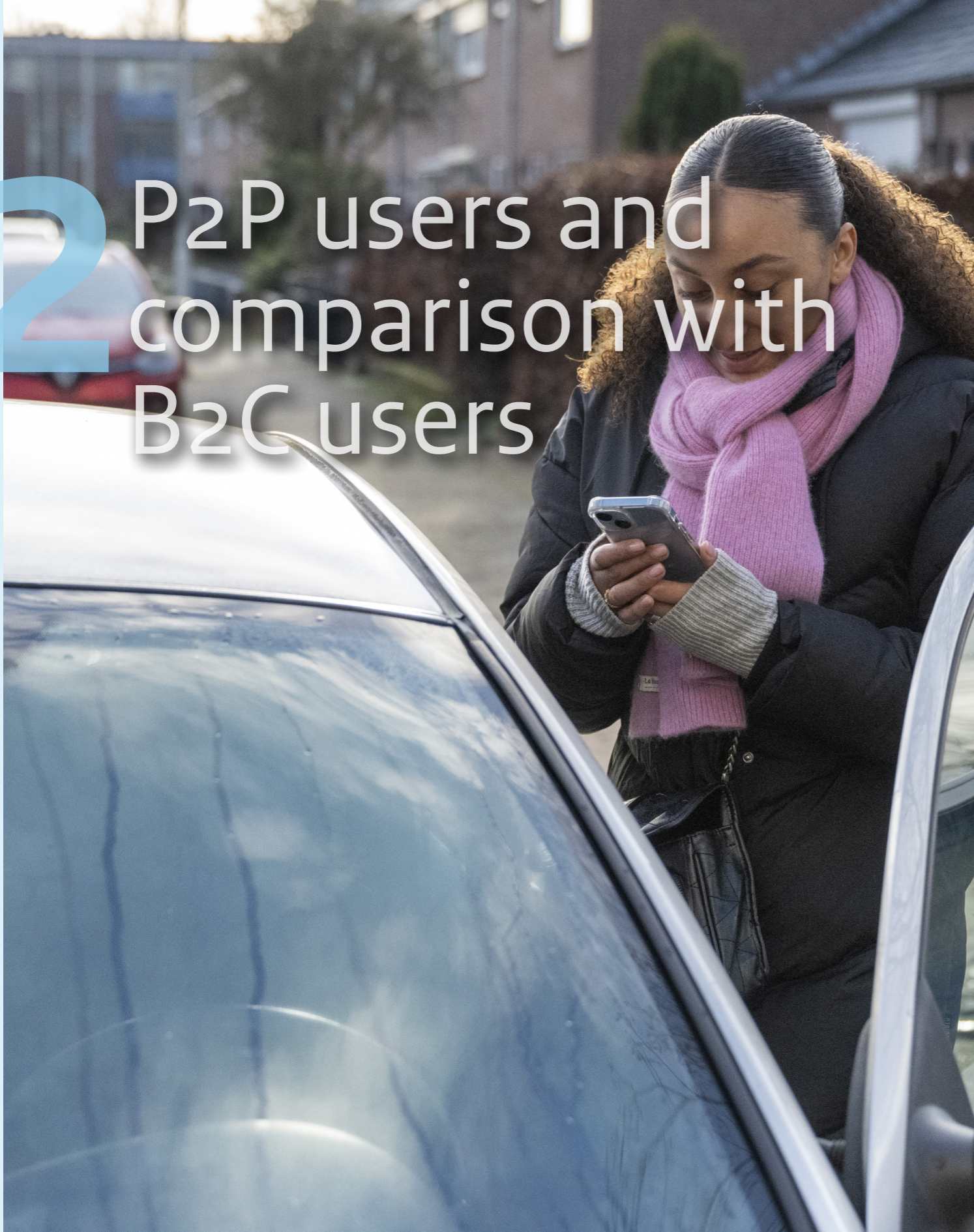


Figure 3: Share of P2P shared cars by type, access type and fuel type (Source: SnappCar, 2022).

2 P2P users and comparison with B2C users



P2P users tend to be young and live in urban areas

Almost half (47%) of P2P users are between 26 and 35 years old, while this age group makes up only 16.6% of Dutch over-18s with a driving licence (see Figure 4). This information comes from analysis of SnappCar user data from 2022. The picture is clearly one of *early adulthood* but still relatively young users. More than half of all P2P users (53%) live in the four largest cities (G4). By comparison, the G4 accounted for about 14% of the Dutch population in 2022. In particular, the large group of 26-35 year old SnappCar users tend to live in a G4 city (62%).

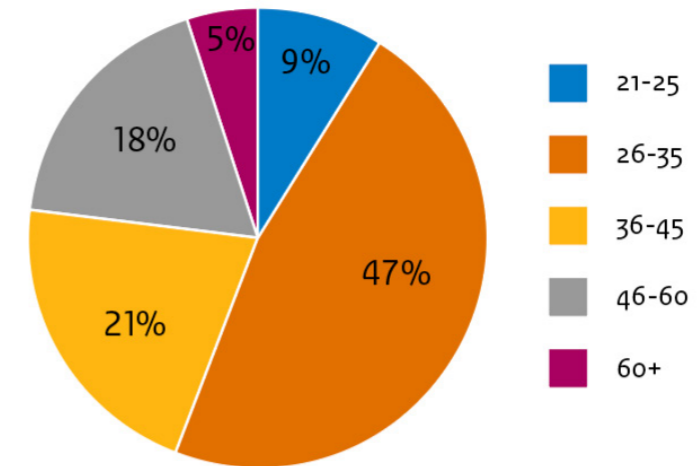


Figure 4: Active P2P users by age (Source: SnappCar, 2022)



P2P use is mostly occasional

Active P2P users in 2022 made an average of almost two rental transactions per year. Two-thirds of customers use a P2P shared car once a year, while only 5% of customers do so more than five times a year, and a tiny 1% do so more than once a month (see Figure 5). This share is significantly lower than is the case with B2C car sharing. In a previous publication, the Netherlands Institute for Transport Policy Analysis (KiM) reported that about half of B2C car sharers use a shared car five times a year or more, while 10% used one more than 30 times a year.

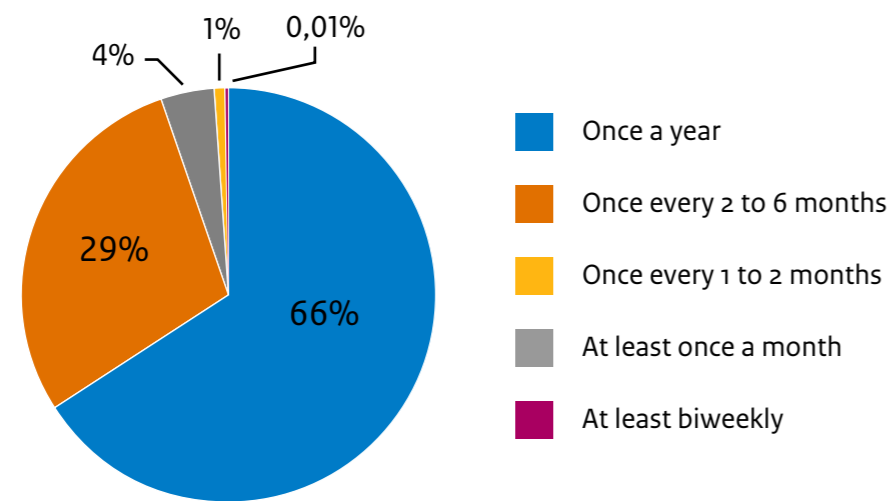


Figure 5: Share of users by activity level (Source: SnappCar, 2022)

P2P partly used for long rental periods

About two-thirds of P2P users hire a car for half a day to one day, while 22% rent one for two or three days, and 10% for half a week or longer. By comparison, B2C shared cars tied to a fixed location in Amsterdam are rented for an average of 3.5 to 6 hours.

P2P users are younger and less city-based than B2C users

In 2018, the under-35s were over-represented in P2P car sharing compared to the overall Dutch population with a driving licence, while the 50+ *without children* were strongly under-represented. In B2C car sharing, the under-35s are under-represented, while the share of 50+ is in line with their share in the overall Dutch population in possession of a driving licence. People who use both P2P and B2C car sharing are most similar to P2P car sharers in terms of age distribution.

While only around 20% of the total population live in areas with high levels of urban development, more than 60% of shared car users live in these areas. For users of both P2P and B2C, this figure increases to over 75%. Of the various car sharing services, P2P has the largest proportion of users living in areas with low or zero levels of urban development, although they are still a minority at 7%, even though one-third of the Dutch population live in these non-urban areas.

Single people without children are clearly over-represented among car sharers. Both P2P and B2C shared car users are twice as likely to be single compared to the average Dutch person with a driving licence. Households with children are slightly under-represented, but still make up about one-third of car sharers. The various groups of car sharers differ little in terms of household composition.



P2P users are higher earners than the average, but earn less than B2C users

Figure 6 shows that P2P users are more likely than B2C users to have an income below €1,500 a month, and less likely to have an income above €3,500 a month. They mostly tend to fall in the middle income category. People who are both P2P and B2C users tend to have the highest income profiles. Furthermore, the figure shows that there are significantly fewer low incomes than the Dutch average in all categories of shared car users in the study.*

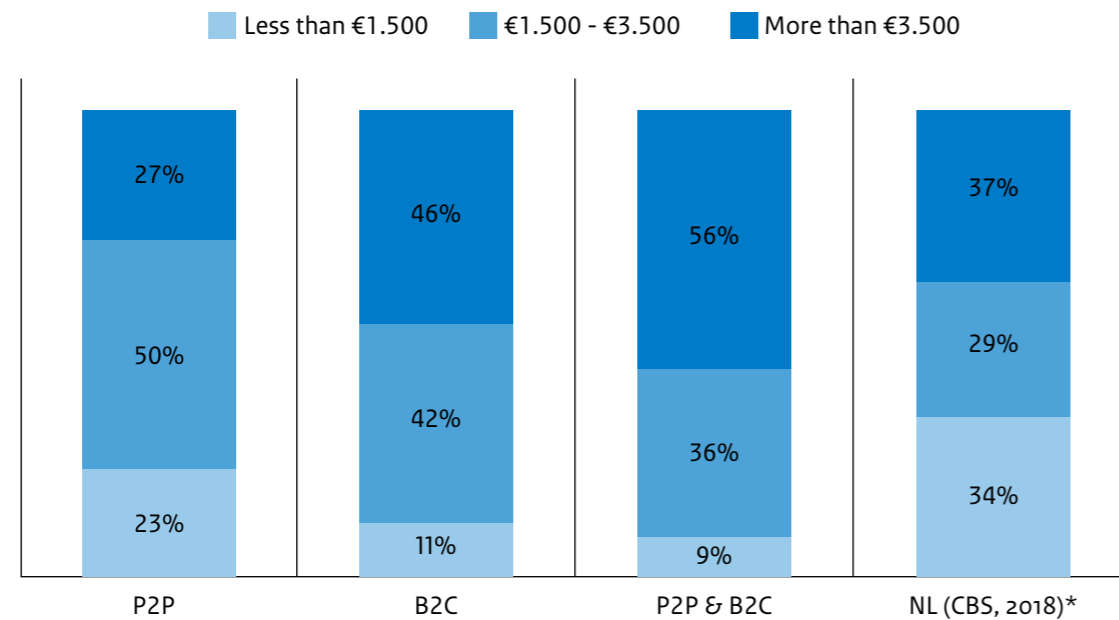


Figure 6: Monthly personal income of P2P, B2C and P2P+B2C users compared to the Dutch population as a whole (Source: Stofberg Data, 2018 and Statistics Netherlands, 2018)

*The Statistics Netherlands categories for gross monthly income do not exactly match the categories for car sharers.

Shared car users often have a third-level education

The large majority of P2P users have a higher professional education (HBO) or an academic education (WO). In B2C car sharing, however, the proportion of people with an academic education is still higher (Figure 7). Compared to the Dutch average (adults with a driving licence), it is clear that car sharers are much more likely to have had a third-level education (higher professional or academic). In other words, people with a vocational educational background are highly under-represented among car sharers, but least under-represented among P2P car sharers in relative terms.

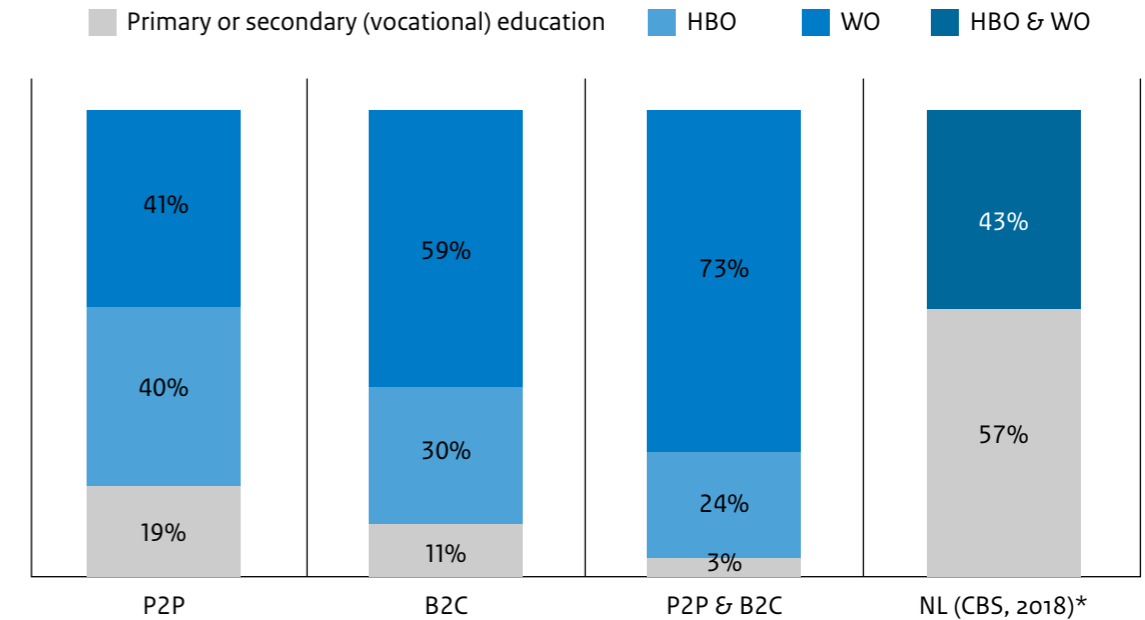


Figure 7: Educational level of P2P+B2C users and the Dutch average (aged over 18 with a driving licence; Source: Stofberg Data, 2018 and Statistics Netherlands, 2018)

Car ownership when starting car sharing lowest among P2P users

When starting with car sharing, B2C car sharers tend to own one car, while P2P users and the mixed P2P+B2C group are both slightly more likely not to own a car (see Figure 8). Compared to the average Dutch household (data from 2018), all groups of car sharers tend to own far fewer cars. More than half of car sharers do not have a car when they start car sharing, while just over a quarter of Dutch households do not own a car. What's more, just over a quarter of Dutch households own two cars or more, a number that is relatively rare among people when starting car sharing (less than one-tenth in all categories). If we compare this with Dutch people with a driving licence, the difference becomes even more extreme. Among this group, it is even less common not to have a car, and around 40% of households own two or more cars.

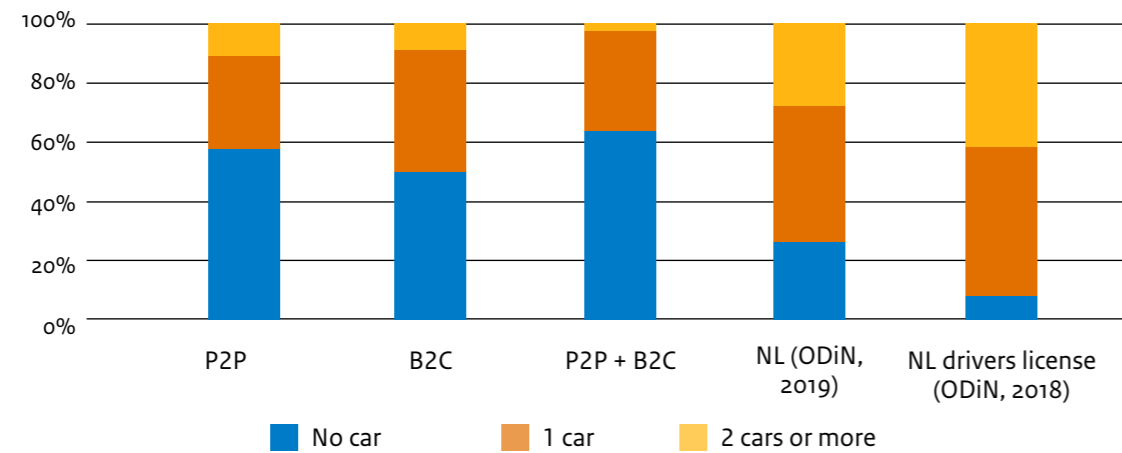


Figure 8: Car ownership per household when starting car sharing, by type of shared car (Source: Stofberg Data, 2018, ODiN 2019, Statistics Netherlands, 2018)



3 Groups of car sharers and their reasons for sharing

Based on socio-demographic characteristics, we have identified six groups of shared car users (see Figure 9). We then looked at how P2P and B2C users are distributed among these groups. We obtained the number of groups and their profiles using a statistical technique (latent cluster analysis) derived from a comprehensive data set of shared car users collected in 2018; it was therefore not determined by us in advance.

Six groups of car sharers in the Netherlands

The largest group of shared car users is affluent families; this group makes up one-third of all car sharers. Furthermore, there are four groups that each make up 14-18% of respondents, and one smaller group representing around 5% of car sharers. These groups vary in age, income, household composition and, to a lesser extent, level of urban development and car ownership. Two groups consist of relatively young urbanites who tend not to own a car: car-free young professionals and young singles. The group of the *50+ without children* consists of people in a later phase of life. Their average age is 63 years, and their households include virtually no children living at home. Before they started car sharing, they tended to own the most cars compared to the other groups.

The suburban lower-middle income group tends to be relatively older, and tends to have a vocational education background and a low income level. However, this group is still well above the Dutch average in terms of their general level of education. Of all the groups, this group tends to live in areas of least urban development, with a share almost equal to the Dutch average.

City centre dwellers are so called because they live in the city centre districts of the biggest cities. These are academically educated high earners who tend to live in areas with by far the highest levels of urban development.

P2P especially popular among suburban lower-middle income earners and young adults

The groups of P2P and B2C car sharers are not entirely discrete, as their characteristics do overlap. In each of the six groups we have identified, both P2P and B2C users occur in substantial numbers. What we see is a clear clustering of P2P car sharers in three groups: the suburban lower-middle incomes, and the two youngest groups: young singles and car-free young professionals. P2P car sharers are least common among the *50+ without children* and the *City centre dwellers*.

Shared car users differ in characteristics but not in reasons for sharing

It turns out that the six groups are not that different from each other when it comes to their reasons for car sharing. All groups state their main reason for car sharing as being sustainability, followed by cost savings. No single group stated social aspects (such as helping neighbours or getting to know new people) as a reason to engage in car sharing.

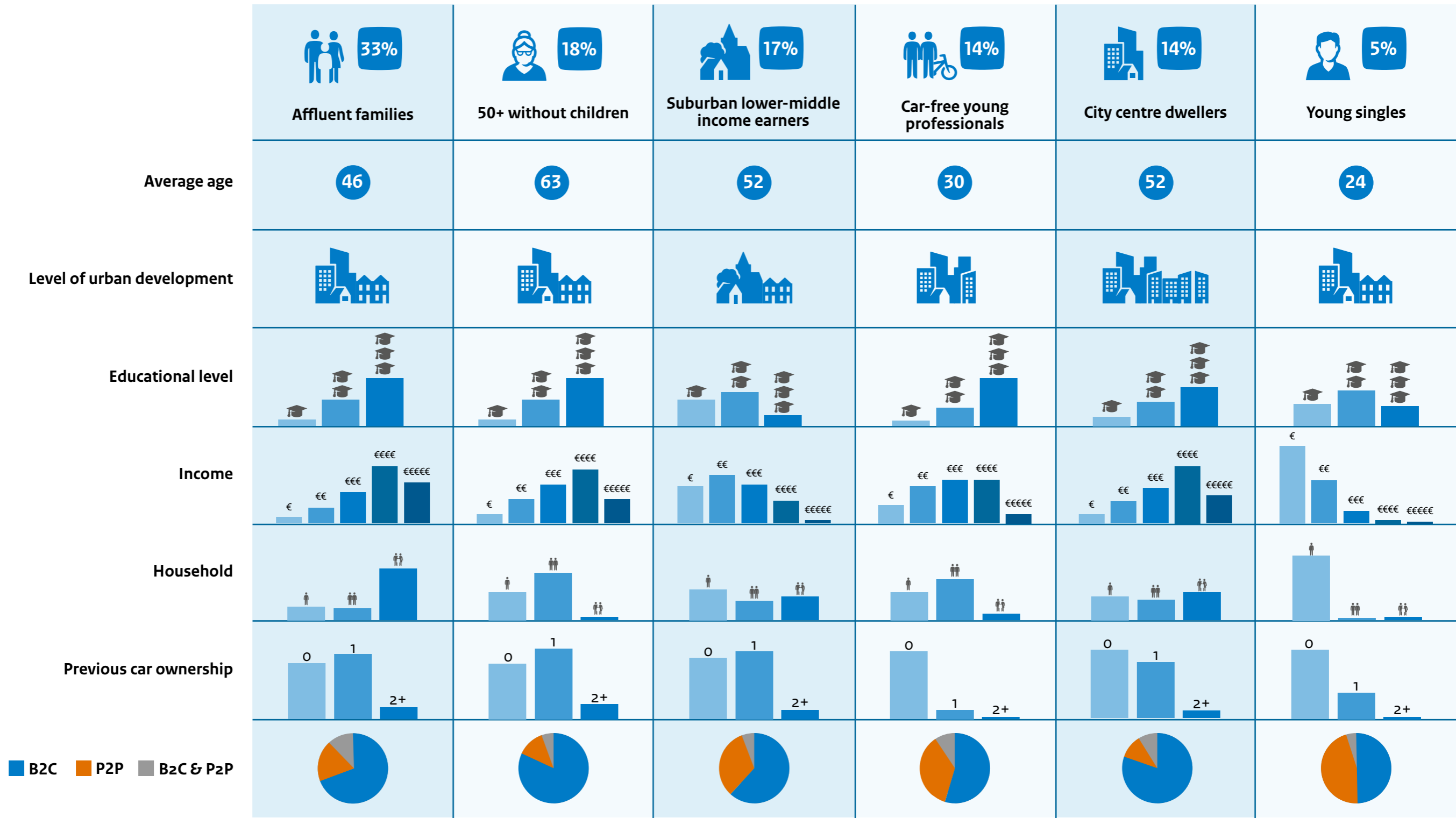


Figure 9: Groups of characteristics of car sharers in the Netherlands (Source: Stofberg Data, 2018)

4 Changes in car ownership and mode choice

P2P leads to a lower decline in car ownership than B2C

Car ownership declines by an average of 30% among users of P2P shared cars from the moment they start car sharing. For B2C car sharers, the decline averages 61%, while for those using both P2P and B2C it averages around 63%. The greatest decline in car ownership takes place in the first year. Users of B2C car sharing sometimes get rid of their car after as many as three years of car sharing, while the picture flattens out earlier for users of P2P car sharing. However, the estimated decline in car ownership is uncertain, and is more likely to constitute a lower limit than an upper limit. This is because we know when someone buys or sells a car, but not when someone decides not to shed their car.

50+ show the strongest decline in car ownership, in marked contrast to young groups

The decline in car ownership varies greatly by group (groups with many P2P users are shown in blue in Figure 10). The strongest decline is seen in the group of the 50+ without children. They start out with a relatively large number of cars, and then divest them in large numbers once they start car sharing. P2P car sharing is relatively rare among this group. A strong decline in car ownership can also be seen in three other groups: the *Affluent families*, *Suburban lower-middle income earners*, and the *City centre dwellers*. Each of these groups starts car sharing with a relatively high level of

car ownership. P2P car sharers are relatively strongly represented in the *Suburban lower-middle income earners*. This means that this group accounts for a large share of the car ownership decline as a result of car sharing. In the two young groups, the *Car-free young professionals* and the *Young singles*, no decline or increase in car ownership is discernible on average. They start out with low levels of car ownership, and they tend to hold onto any car they have. P2P car sharers are most strongly represented in both groups relatively speaking.

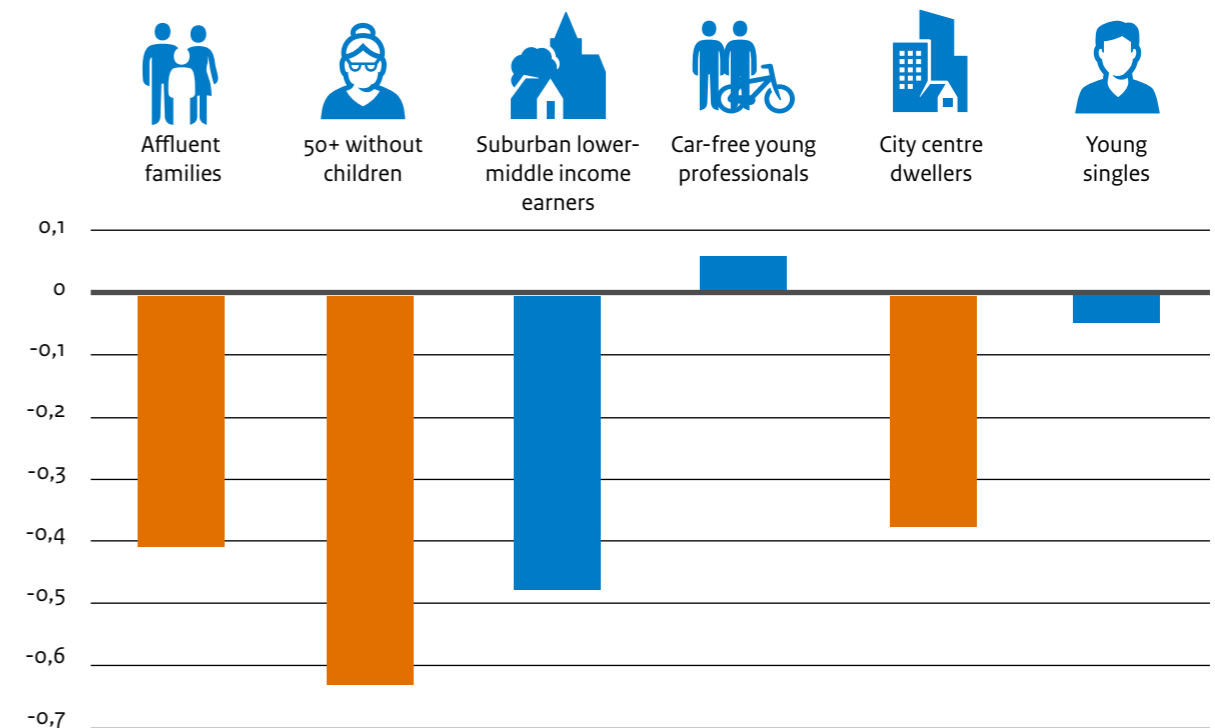


Figure 10: Degree of decline in car ownership by group (Source: Stofberg Data, 2018)

Shared cars are seen as an alternative to owning your own car, but also to public transport

More than one-third of all car sharers use a shared car instead of a privately owned car, and more than half sometimes use a shared car for a journey previously made using public transport. This applies to both P2P and B2C car sharers. What we do not know is how many people would not have made the journey before having access to a shared car.

We have mapped out which modes of transport people replaced with a shared car (see Table 1). What we do not know is how often respondents would have used these alternative modes of transport if they did not use a shared car. This means that we cannot estimate the extent to which the use of a shared car leads to a decline in the use of the other modes of transport.

The *Car-free young professionals* and the *Young singles* tend mostly to use a shared car as a replacement for public transport, and rarely as a replacement for their own car. Among the other groups, a shared car is often used as an alternative to a privately owned car.







	 Affluent families	 50+ without children	 Suburban lower-middle income earners	 Car-free young professionals	 City centre dwellers	 Young singles
Share of group replacing its own car	49%	57%	49%	2%	39%	18%
Share of group replacing public transport	59%	53%	50%	90%	58%	80%

Table 1: Substitution of a privately owned car and public transport by car sharer group (Source: Stofberg Data, 2018)



5 Conclusions



Active P2P car fleet almost as large as B2C fleet

In this study, we mapped out the characteristics of P2P car sharing in the Netherlands, with B2C car sharing as a comparison group. We concluded that there were 5,615 actively used P2P shared cars in the Netherlands in 2022. This means that the fleet of actively used P2P shared cars is almost as large as the B2C fleet. Furthermore, several tens of thousands of cars are still registered with a P2P sharing platform, but were not (or no longer) actually available to hire.

The P2P shared car fleet is highly diverse when it comes to vehicle characteristics. This can be an attractive proposition for users of P2P car sharing. On average, P2P shared cars are slightly older than the overall car fleet in the Netherlands. The share of electric or hybrid vehicles is in line with the Dutch average at 8.7%.

P2P mostly used for occasional journeys and holidays, while keyless cars are more like B2C

P2P shared cars are an economical option for occasional journeys and holidays. However, the cost structure and the need for physical handover of the key make them less suited to frequent short trips. On average, they tend to be rented out less frequently than B2C shared cars. 11% of P2P shared cars can be opened without a physical key (keyless), and these therefore resemble B2C shared cars. It therefore makes sense that these cars tend to be hired most frequently. Vans (13% of the fleet) also tend to be rented out relatively often. Two-thirds of P2P users hire a shared car once a year, while 1% use it monthly. Two-thirds of bookings are for one day. This suggests that P2P shared cars are mainly used for one-off activities, such as moving house, day trips or special errands. Furthermore, bookings of half a week or more, e.g. holidays or business trips, are fairly common (10%) in P2P car sharing.

P2P car sharers tend to live in urban areas, have an academic educational background, and often have higher incomes

P2P car sharers are, on average, more likely to have an academic educational background, live in areas with higher levels of urban development, and are less likely to have a low income than the average Dutch person. Compared to B2C users, people on low incomes living in areas with a lower level of urban development tend to use a P2P shared car more often.

Personal characteristics of car sharers differ, but reasons for car sharing do not

We can identify six groups of car sharers based on socio-demographic characteristics. P2P and B2C users are not entirely discrete; their characteristics occur in all six groups. However, P2P car sharers are over-represented among the suburban lower-middle income earners (who tend to have a relatively lower level of education), and among the two youngest groups: the *Car-free young professionals* and the *Young singles*. The six groups are almost homogeneous in their reasons for starting car sharing. All groups do this predominantly for sustainability reasons, followed by cost savings, but rarely for reasons of inclusiveness.

If P2P users get rid of their own cars, B2C users do so even more

Renters of P2P shared cars are recording levels of car ownership that decline by an average of 30% from the moment they start car sharing. However, the decline in car ownership is twice as high among B2C car sharers and people who use both P2P and B2C car sharing. The two youngest groups, where P2P car sharing is most popular, are also the groups that tend not to get rid of their cars. Among them are relatively many users who tend to use car sharing as an alternative to public transport. The other group with a lot of P2P car sharers, the *Suburban lower-middle income earners*, do dispose of a relatively large number of cars, and includes more people who use a shared car as an alternative to a privately owned car than as an alternative to public transport. The *50+ without children*, who regularly use B2C shared cars, report the strongest decline in car ownership, namely by almost two cars for every three households.

Policy implications

P2P car sharing represents a significant proportion of the fleet of actively shared cars in the Netherlands. Users of P2P shared cars substantially reduce their car ownership. However, the frequency of use of shared cars and the change in car ownership are at a lower level than is the case for B2C car sharing. When designing policies aimed at encouraging car sharing, it is therefore worthwhile to take account of the potential that P2P holds and the unique characteristics of this form of car sharing compared to other car sharing concepts.

Car sharers can be divided into six clearly distinguishable groups based on their personal characteristics. The six groups are almost homogeneous in their reasons for starting car sharing: when deciding to start car sharing, all groups consider sustainability and cost savings to be the primary considerations.

The changes in car ownership and the choice of modes of transport that take place when people start car sharing will vary depending on the group. Assuming that at least some of the potential future car sharers have similar characteristics to the current cohort of users in the study, this may give cause to address these groups in a targeted manner. Furthermore, the personal characteristics (such as income or having children) of the six groups, and of P2P and B2C users in general, may offer relevant levers for targeting a communication strategy or other policy instrument to specific groups. It will be less important to differentiate messages concerning the reasons for starting car sharing, because the various groups are largely homogeneous in this respect. However, the extent to which potential future users may be similar to current users is impossible to say based on our study of the available data. Similarly, any judgements on the nature or effectiveness of policy instruments lie beyond the scope of this study.

Accountability

Method

This study relies on various data sources. SnappCar has shared data on the numbers and characteristics of the vehicles that it shares through its platform, as well on as the characteristics of their users and rental transactions. We have analysed this data using descriptive statistics. We made a cost comparison between SnappCar and Greenwheels based on publicly available information. We have estimated the user's costs for four hypothetical usage patterns.

We compared the characteristics of P2P users and station-based B2C users through a descriptive analysis of a dataset collected by Dr Nicole Stofberg in late 2018. We then divided these shared car users into groups using latent cluster analysis. Using factor analysis, we compiled three variables that represent different motives for car sharing. For each group, we then compare the scores on these motive variables.

We also calculated changes in car ownership and choices of modes of transport for all respondents together, and separately by group, since they started car sharing. It is important to note here that we have not been able to determine the extent to which these changes are caused by the access to and use of shared cars. It is possible that other factors in addition to car sharing also played a role in the decision by a user to shed their car.

Literature citations, the description of our methods used and limitations in the analyses are described in the background report accompanying this brochure.

Background Report

For more information about the method and results, please refer to the background report, which can be downloaded from the website www.kimnet.nl.

Witte, J.J., en Kolkowski, L. (2023). *Peer to peer autodelen in Nederland: nieuwe inzichten en vergelijking met andere deelconcepten*. Achtergrondrapport [Background report, in Dutch] The Hague: Netherlands Institute for Transport Policy Analysis (KiM).

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