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challenges for European cities

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Mobility cultures and mobility styles

Deliverable D4.2

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SUMMARY

The aim of this deliverable is to gather further insight into the underlying social and emotional factors that amplify or mitigate an affinity to car sharing. The present deliverable partly builds on the results of the studies carried out and presented in D4.1. It is an input for the general account of the underlying sociodemographic and attitudinal factors for car sharing conversion that will be given in D 4.3.

Various methods were used in this deliverable. A cluster analysis was employed to identify mobility styles with different mobility habits and different attitudes towards environmental issues in car sharing users and non-users. Qualitative methods such as focus group discussions, a living lab and empathy interviews were used in order to gain more insights into the emotional and attitudinal drivers for private car and car sharing use.

The segmentation of current car-sharing users and non-users studied by STARS in D4.1 resulted in five different mobility styles, three styles for car-sharing users and two for non-users. The cluster analysis in D4.2 now shows how these styles differ in respect to travel behaviour, frequency of car use and attitude towards environmental issues. Mobility styles including frequent car use for daily trips are found in two of the three car sharing user groups. Only one mobility style which is centred on public transport shows a more multimodal profile.

The fact that the cluster analysis identified a car-focused green mobility style among car sharing users is particularly interesting. This group has the lowest percentage of car free households but also shows a high level of environmental awareness and concern regarding the impact of travels. This discrepancy between actual behaviour and awareness can only be found in car sharing users. This group of car sharing users might be especially open to reducing car use and changing to a more environment friendly mobility behaviour.

To better understand attitudes and emotions towards private and shared cars, focus groups were held in Germany and in Flanders, Belgium. Topics discussed in the focus groups included the unbeatable advantage of the private car, the advantages and disadvantages of car sharing and the motivation to use car sharing. The aim was to explore the practical and emotional value both users and non-users see in car sharing and the private car.

The participants of the German focus groups were recruited in inner-city urban residential areas with a high density of car sharing offers and excellent access to public transport. Thus these participants have excellent preconditions to adopt a multimodal mobility behaviour. As expected, public transport and bike are the most used options for every day trips among all participants - users as well as non-users of car sharing. Nevertheless, car ownership is still widespread among the German non-users of car sharing. Car use on the other hand is not: two thirds of participants who own a car

find car traffic nerve wrecking and use their car only on rare and planned occasions. This rare use of the private car also resembles the classic behaviour of roundtrip car sharing customers in Germany. It can be concluded that these non-users would also be targets for a car sharing. However, conversion to car sharing does not happen for two reasons: firstly, the permanent availability of the private car is experienced as a source of emotional security. Secondly, the private car is experienced as the simplest mode of transport since no planning is needed and no bookings need to be done. Present users of car sharing in the German focus groups only rarely discuss poor availability of car sharing cars and the complexity of booking as a problem. It can be concluded, that non-users overestimate the problems they would face with using car sharing.

The German focus groups also show that attitude towards environmental issues differ according to the used car sharing variant. Roundtrip car sharing users are much more sustainability-oriented while free-floating users more often seek convenience. Roundtrip users literally feel proud of doing something good when using car sharing. This same attitude is also very widespread among car sharing users in the Flanders focus groups.

In Flanders one focus group with car sharing non-users and four focus groups with car sharing users were held. As in Germany most non-users own a car. They love the flexibility the car provides and are convinced that car sharing has to be cheaper than a private car since planning and booking would add an extra complexity to their mobility. In contrast to the German non-users, non-users in Flanders still have fun when driving a car.

In the Flanders car sharing user groups one half of the participants are peer-to-peer users of a special kind: they take part in private car sharing initiatives that share the cars that some of the households own. This makes the Flanders groups a key reference for understanding peer-to-peer car sharing users better. Car sharing users in Flanders have a strong tendency to see cars as a means to an end. The most striking feature is, that more than half of users were introduced to car sharing by relatives and friends. It shows that peer-to-peer marketing is an important factor to trigger conversion to car sharing.

In Flanders a living lab was established: households owning a private car were motivated to test-use other modes for very low costs for a month. Almost all participants liked the experiment and one third got motivated to use their private car less afterwards. However, only a few participants incorporated car sharing into their mobility mix during the experiment. This was because households agreed to use the car less during the experiment but still had it available. Thus, when use cases for a car occurred, households reverted to their private car and not to a shared car. This further illustrates an insight from the non-user focus groups in Flanders and Germany: non-users view car sharing as the inferior option compared to the private car. This again raises the question how the value of a car sharing offer can be increased for owners of a private car.

30 empathy interviews with car sharing customers were carried out in Turin in order to explore the use of free-floating car sharing more deeply. The interviews show that users are on average very satisfied with the car sharing offer. Those living in one-person households are to a great extent car-free. Car sharing for them is a cheaper alternative to buying a car. Larger households and households with kids often substitute a second car they might need with car sharing. Almost all users revert to car sharing as a replacement for public transport rides or as taxi substitute, for example when going to the airport. It is interesting to notice that some suggestions given by the interviewed customers to improve the free-floating service cite features traditionally associated to roundtrip car sharing offers: longer reservation times, better tariff options to leave the town, a higher certainty of car availability near the geographical location of the customer. This again might be a hint that a better integration of services (and their value proposition) is needed to increase customer value.

The results of an expert workshop organized by ICLEI showed that in European countries outside Western Europe car sharing is most of the time identified with free-floating car sharing. This is true for the (potential) customers and sometimes also for city authorities. Since the establishment of a free-floating service is a huge investment that is only possible in big cities, the penetration of car sharing throughout these countries is low compared to countries where roundtrip services are more common (like Belgium or Germany).

Main findings of this deliverable are:

- ★ **Mobility styles:** Non-users of car sharing can be sorted in two groups. While the first group prefers the private car to car sharing, the second is open to the idea of car sharing but seems to have no practical need for it. Present car sharing users show more diverse attitudes. One of three identified mobility styles among them has a low level of car use and a high environmental awareness. Two other styles are characterized by a high rate of car ownership and high frequency of car use. Here, car sharing is an additional option to the private car – not a replacement. Focus group discussions in Germany and Belgium show that users of roundtrip and private peer-to-peer initiatives have a high concern for environmental issues and want to reduce their car ownership and frequency of car use. For them car sharing is an expression of a “lifestyle of sustainability”. Users of free-floating car sharing on the other hand seem to be more for convenience- and usability-oriented. This is also visible in the interviews with free-floating users in Turin.
- ★ **Emotional value of the private car:** Private cars represent permanent, easy and guaranteed access to mobility. They give owners a sense of security and control. From the viewpoint of non-users, this practical and emotional core value is not met by today's car sharing services, both roundtrip and free-floating. Non-users suspect that availability and convenience of use will be low with car sharing. Present users of car

sharing on the other hand are generally satisfied with their services. A core question for higher conversion rates seems to be: What is needed to ease car-owners concerns?

- ★ **Conversion to car sharing:** Observed use cases for private cars in D4.1 and in the German and Belgium focus groups resemble usage patterns of roundtrip car sharing variants. These variants can replace private cars technically. But from the viewpoint of most non-users, free-floating car sharing is more attractive. The ability of these variants to provide one-way trips and spontaneous bookings appeals to non-users intuitively. Conversion to other car sharing variants seems to be strongly connected to the presence of role models: Many participants of focus groups in Belgium started to use roundtrip and peer-to-peer variants because a close friend or relative introduced them to it. The complexity of their own mobility patterns and the complexity of car sharing services makes it difficult for non-users to figure out, if car sharing – and which variant(s) - could be a replacement for their private car.
- ★ **Fit between car sharing services and actual needs:** Present users of free-floating variants miss features like reservations in advance and the ability to do longer out-of-town trips, which can only be found in round-trip variants. Roundtrip users on the other hand are satisfied with their service but think that free-floating car sharing provides additional value regarding convenience. It can be concluded, that a good mixture and high availability of both variants (or an integrated offer) provides the highest value for most users. Furthermore, free-floating users tend to buy an own car, if they are having children. This life-phase seems to call for more reliability than the free-floating services can provide. Thus, an integrated offer may also have to highest potential to replace private car ownership in all kinds of households.
- ★ **Conversion in areas with low car sharing uptake:** In many European countries – especially in South and Eastern Europe - car sharing is identified with free-floating car sharing. This may be a problem for a general transition from car ownership to shared use of cars, since stand-alone free-floating does not cover central use cases for private cars. Thus, no full offer to replace private cars is available.

1 Segmentation of mobility styles

The following section presents analyses on the data gathered by means of a European wide online questionnaire to users and non-users of car sharing described and reported extensively in STARS deliverable 4.1 (D4.1). The aim of this section is to make a full segmentation of current and potential car sharing users. Furthermore, this will contribute to a better understanding of motives and barriers to car sharing and how these are related to different mobility styles. Underlying factors such as attitudes, norms, political orientation and environmental concern are included. Finally, the aim of this chapter is to build on the result in D4.1 in order to provide an increased understanding of behavior change within the STARS project and ultimately the field of car sharing.

1.1 Sample

The sample consists of respondents distributed across the EU-countries in the project. The details of the procedures of the data collection as well as descriptive can be found in in D4.1. The current analysis includes current users of car sharing (n = 1519) and non-users (n = 3695).

The users were mainly male (62.3%) with high income (37.5 %) and age between 30 and 39 years old. The car sharing users in the sample were mainly citizens from Italy (54.4%) and Sweden (37.2%). Italian cities included were Bari, Bologna, Brescia, Cagliari, Catania, Firenze, Genova, Milano, Modena, Napoli, Padova, Palermo, Parma, Roma, Torino, Venezia, Verona. The Swedish citizens mainly came from the three largest cities Stockholm, Gothenburg and Malmö.

A slight majority of the non-users were male (54.8%) with average age of 40-49 years. 35.6% of the non-users belonged to an above average income class. For more descriptive analysis, see D4.1.

1.2 Results

In order to identify mobility styles, a two-step cluster analysis was performed to classify car sharing users from the sample(s) regarding their **attitudes towards car sharing, their political views, their personal norms, their environmental awareness and their travel patterns**. For the full list of concepts and how they were measured see Table 19.

The cluster analysis aims to maximize the distance of means between groups and minimize the distance of means within groups. By doing so, the cluster analysis identify homogenous groups based on the criteria established by the researcher. For this analysis, free interaction among variables was allowed in order to determine the clusters and there was no prior restriction of number of clusters. The ratio size between the largest and smallest cluster were 2.45 and the measurement of cohesion and separation was fair (average silhouette = 0.3). The selected order of relevance of the variables to predict the clusters were: Environmental awareness, Car habit, Personal norms, Green

scale for political issues, Daily travels motor based, Political affiliation, Attitudes, Active daily travels and Daily travels by public transport.

Two separate cluster analyses were conducted, one including the car sharing users and one including the non-users or potential users. Three clusters emerged from the first analysis and two from the latter. The mobility styles for users of car sharing can thus be described as follows:

- ★ *Mobility style 1 – Multi-mode and ambivalent (Multi-m Amb) (18.7%):* These car-sharing users are characterised by a medium level of habitual car use. However, a large standard deviation indicates a substantial variability within the group. In general, this style is characterised by travelling more seldom by motor based modes; once or a few times a week these users use a private car; they travel actively as well as by public transportation 1 to 3 days a week. Regarding their view of environmental issues, they have medium environmental awareness and personal norms. They would place themselves in a central political orientation and on a low green political perspective. They have less positive attitudes towards car sharing than the other mobility styles.
- ★ *Mobility style 2 – Car-focused Green (Car-f Green) (35.5%):* These car sharing users have a high level of habitual car use, and only once or a few times a week, use public transport or travel actively. Contrary to their strong car habit, they have high environmental awareness, strong personal norms to reduce the environmental impact of personal travel and rate themselves as green in relation to political issues. They have positive attitudes towards car sharing and place themselves in the middle of a left to right political scale.
- ★ *Mobility style 3 –Active P-T transit Green (A P-t Green) (45.8%):* The car sharing users in this group are more seldom owners and users of private cars. Their daily travel routines mostly include active modes or public transportation. They have strong positive attitudes towards car sharing, high environmental awareness and personal norms and are more inclined towards a green and left wing political orientation.

Mobility style:	Multi-m Amb	Car-f Green	A P-t Green	N
Car free household (%)	35.4	2.8	71.1	601
Single household (%)	21.1	12.1	26.9	307
Gender (men %)	73.9	62.9	56.9	931
Age (mean age)	30-39	30-39	30-39	1491
University degree (%)	74.6	70.1	78.4	1421

Table 1: Sociodemographic of mobility styles (users of car sharing).

The participants were asked how often they use different modes of transportation for their travels per week, (scale: (5)Daily – (4)4-6 days/week – (3)1-3 days/week – (2)Once/ a few times a

month – (1)More seldom – (0)Never). These modes were divided in three main modes: motor based modes (private car as a driver, private car as a passenger, car sharing, motorcycle/scooter and taxi), active modes (walking and cycling) and public transportation. Car use habit was measured by the number of times that participants spontaneously (without reasoning) selected the car as the preferred mode of transportation for a diversified number of activities (seeTable 1919).

Attitudes to car sharing was measured using items and ratings on Likert scales (e.g.: “*My support for implementation of car sharing in society is ...*” 1- very weak to 7- very strong), environmental awareness (e.g.: “*I believe that using the car causes many environmental problems*” 1-strongly agree to 7-strongly disagree), personal norms (e.g.: “*I would feel good if I traveled more sustainably*” 1-strongly agree to 7-strongly disagree) and political perspectives (e.g.: “*Political views are sometimes referred to as ‘left’ and ‘right’. Generally, where would you place your views on this scale?*” 1-far on the left to 7-far on the right). In Table 2, the means and standard deviations are reported for each variable.

Mobility style:	Multi-m Amb M(SD)	Car-f Green M(SD)	A P-T Green M(SD)	N
Private car use habit	2.27(2.25)	4.34(1.60)	0.53(0.95)	1519
Travels motor based (per week)	1.66(0.92)	1.92(0.85)	0.88(0.45)	1517
<i>Travels by private car(driver)</i>	2.30(1.70)	3.13(1.64)	0.73(0.93)	
<i>Travels by car sharing</i>	2.05(1.00)	2.08(1.05)	1.73(0.87)	
Travels active (per week)	3.12(1.14)	2.68(1.10)	3.64(1.00)	1517
Travels by public transport (per week)	3.15(1.38)	2.73(1.41)	3.50(1.32)	1512
Attitudes	4.92(1.13)	5.56(0.90)	6.00(0.80)	1510
Environmental awareness	3.60(1.47)	6.17(0.90)	6.63(0.65)	1507
Personal norms	3.02(1.26)	5.70(1.03)	5.62(1.40)	1508
Green political scale	3.83(1.37)	5.57(1.08)	5.88(1.00)	1508
Political affiliation	4.64(1.43)	3.53(1.35)	2.95(1.30)	1502

Table 2: Mobility styles and underlying factors (users of car sharing).

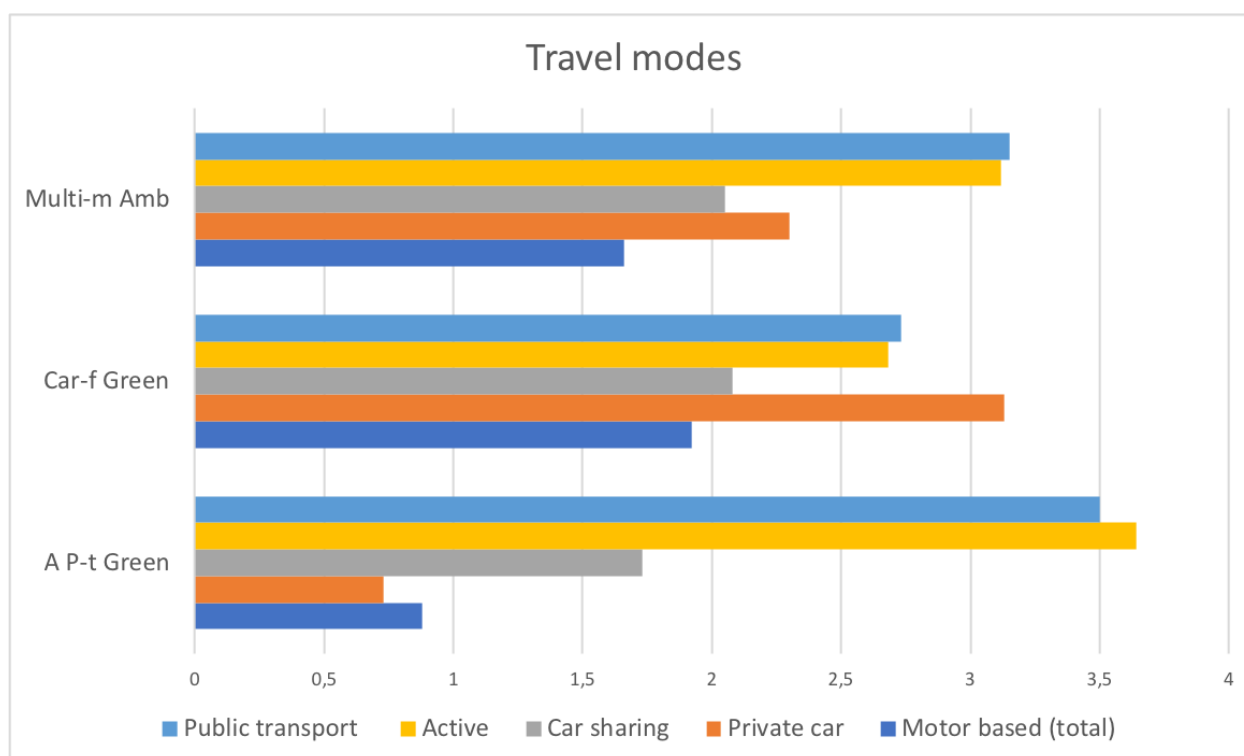


Figure 1: Daily travel modes distribution across mobility styles (users of car sharing).

While all nationalities had higher percentage on Mobility style 3, in Italy the percentage was higher in Mobility style 2.

	Multi-m Amb	Car-f Green	A P-t Green	N
Italy (% within country)	16.8	56.0	27.2	815
Sweden (% within country)	23.8	11.7	64.4	554

Table 3: Nationalities among mobility styles (users of car sharing).

In the Figure 2 one may see the distribution of mobility styles of car sharing users across the most representative cities on the sample (cities with over 200 participants). Torino has a high frequency of users under the Mobility style 2 (Car-f Green) while Gothenburg has more users under the Mobility style 3 (A P-t Green).

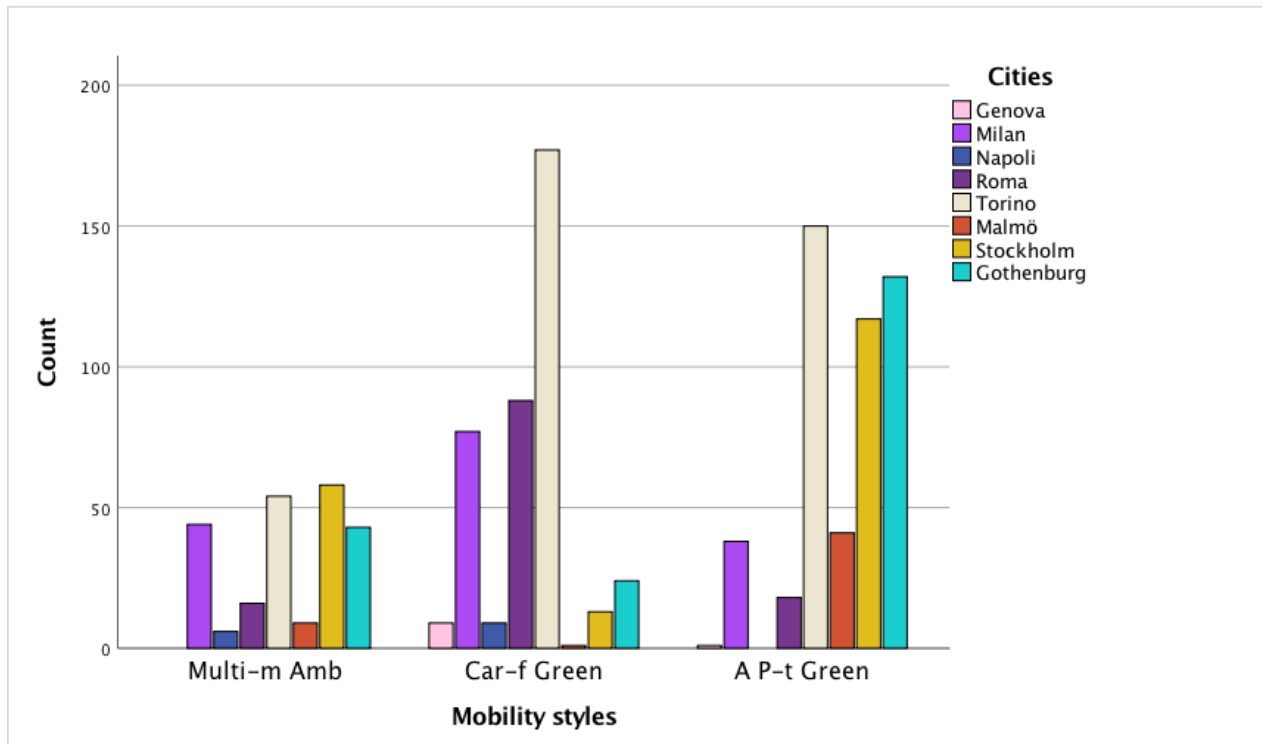


Figure 2: Mobility styles among representative cities (car sharing users).

Despite the variability of car sharing profiles previous identified in D4.1, the “Profile 1 – Free-floating car sharing systems”, “Profile 2 - Free-floating car sharing systems with pool stations” and “Profile 4 - privately owned roundtrip station based car sharing systems” are the most representative profiles (88.3%) reported by current users .

	Multi-m Amb	Car-f Green	A P-t Green	N
Free-floating (% within profile)	19.5	51.5	29.0	676
Free-floating pool stations (% within profile)	10.0	46.2	43.8	210
Privately owned roundtrip station based (% within profile)	18.8	35.3	45.9	420

Table 4: Car sharing profiles among mobility styles (users of car sharing).

For means of comparison as well as assessing potential future car sharing users, a cluster analysis was also performed with the non-users of car sharing. The same input variables and criteria previously described for the users analysis were also used in this analysis. The ratio size between the largest and smallest cluster were 1.31 and the measurement of cohesion and separation was also fair (average silhouette = 0.3). The selected order of relevance of the variables to predict the clusters were the same as for users of car sharing. For more descriptive analysis on the non-users sample, please see D4.1.

The two clusters that emerged for the non-users analysis have mobility styles with a more dichotomous characterization:

- ★ *Mobility style 4, Car-focused Ambivalent (Car-f Amb) (56.7%)*: This group has strong car habits. They use a car for their daily travel 1 to 3 times a week. They have a rather large share of travel by public transport and active travel modes mobility style. Their attitudes towards car sharing services are the lowest of all groups, they have also the second lowest environmental awareness and the weakest personal norms. They do not see themselves as green on a very green to not at all green political scale and they would consider themselves in a central political affiliation on a right to left wing scale.
- ★ *Mobility style 5, Car-flexible Green (Car-flex Green) (43.3%)*: This group has weaker car habits and use the car less for their daily travels than the Car-f Amb group. Overall this group travels less with all modes compared to the other non-user group. The motor based travels are less frequent than the other mobility style and their travels by public transport are less frequent. They are more positive to car sharing services, they have very high environmental awareness and strong personal norms to reduce the negative impact of their travels on the natural environment. Politically, they can be characterized as more green and as having a more left wing affiliation.

Mobility style	Car-f Amb M(SD)	Car-flex Green M(SD)	N
Private car use habit	4.58(1.82)	2.92(2.08)	3695
Travels motor based (per week)	1.37(0.61)	0.95(0.53)	3688
<i>Travels by private car(driver)</i>	3.37(1.68)	2.05(1.74)	
Travels active (per week)	2.18(1.13)	2.88(1.05)	3691
Travels by public transport (per week)	1.99(1.38)	3.11(1.46)	3682
Attitudes	3.70(1.19)	4.92(1.09)	3672
Environmental awareness	4.16(1.64)	6.41(0.80)	3671
Personal norms	3.46(1.53)	5.38(1.50)	3671
Green political scale	3.89(1.50)	5.63(1.10)	3674
Political affiliation	4.48(1.35)	2.99(1.35)	3667

Table 5: Mobility styles and underlying factors (non-users of car sharing).

In Figure 3 is possible to identify the distribution of mode choices of non-users along their week travels. People from the mobility style 4 (Car-f Amb) not only have a higher frequency of motor based travels but also a higher demand for travels if compared to the mobility style 5 (Car-flex Green).

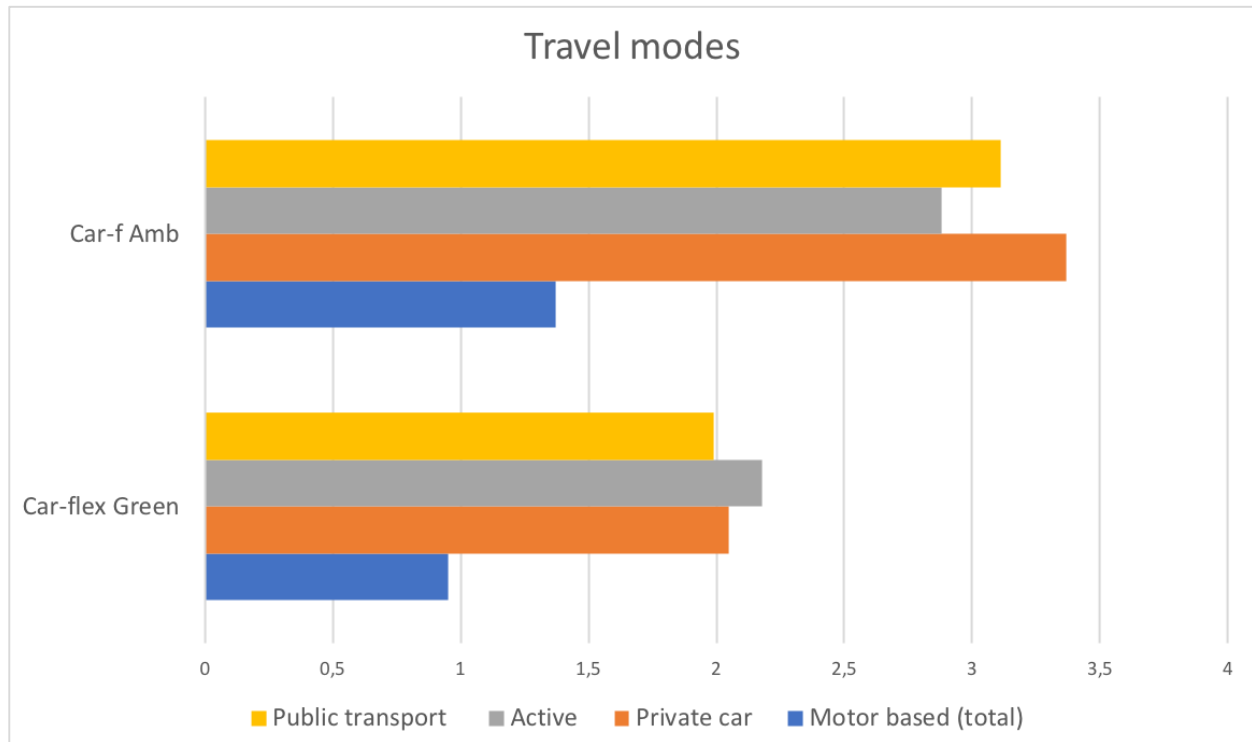


Figure 3: Daily travel modes distribution across mobility styles (non-users of car sharing).

In the Figure 4 one may see a fairly similar distribution of mobility styles of non-users within cities. However, while the city of Gothenburg had higher frequency of respondents in the Mobility style 4 (Car-f Amb), in the Mobility style 5 (Car-flex Green) the most representative city was Stockholm.

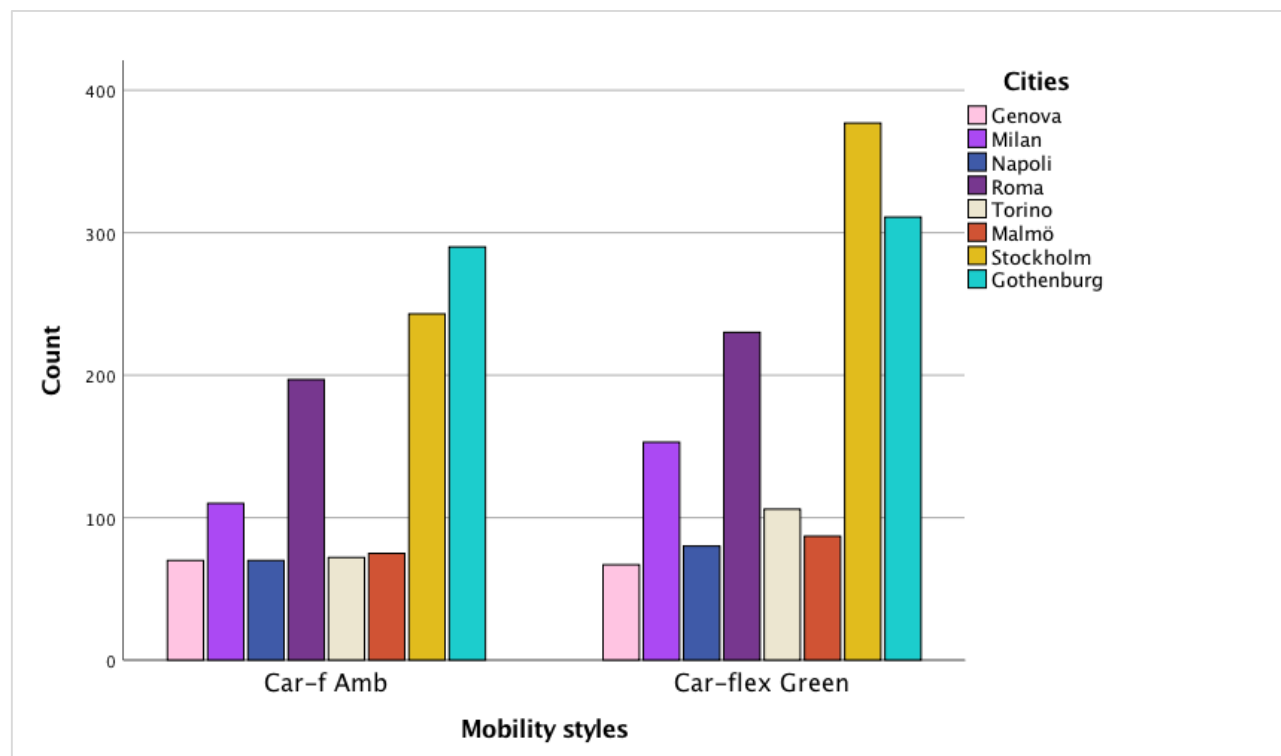


Figure 4: Mobility styles among representative cities (non-users of car sharing).

1.3 Summary

The clusters of both current car-sharing users and non-users studied by STARS in D4.1 resulted in a segmentation into five different mobility styles. Three styles for the car-sharing users and two for the non-users was obtained. When analysed separately from the other modes, motor based, travels by private car had higher means on Mobility styles 1 (Multi-m Amb) and 2 (Car-focused Green). This result indicate that only in Mobility style 3 (Active Public-transit Green), the users had diversified the motor based travels while in the other groups, the users still rely on the private car for their daily travels. Only Active Public-transit Green mobility style entailed a higher frequency of car sharing use than private car use.

The Car-focused Green mobility style is particularly interesting: while they are private car users, with the least percentage of car free households, they also have high levels of environmental awareness and concern regarding the impact of travels in the environment. This disparity between norms and beliefs did not show up for non-users of car sharing. Non-users where mainly divided in two homogenous mobility styles with high and low environmental concerns and very similar daily travel modes distribution. The comparison between the Mobility style 2 (Car-f Green) and non-users shows the possible impact of car sharing on people's travel behaviour and bringing more complexity to their decision making.

Regarding the regular travel along the week, the mobility styles among non-users do not differ to a great extent. However, the comparisons of mobility styles of non-users with users shows that the non-user Car-focused Ambivalent mobility style has the highest level of private car use and the smallest level of public transportation use across all mobility styles. The results furthermore show that Profile 1 (Free floating) car sharing users from Italy have the highest percentage of Mobility style 2 (Car-f Green), while in Sweden and users of car-sharing belonging to Profile 2 (Free floating with pool stations), has the highest percentage of Mobility style 3 (A P-t Green).

Since some operators are more representative in specific countries and due to the correlation between countries and operators, it is not possible to identify if nationality or car sharing profile is the most relevant aspect responsible for the mobility styles. Future research should control for this relationship in order to identify the extent that specific car sharing operators can influence pattern of travel behaviour.

The unbalanced samples across countries is a limitation for an overall generalization of these results. Most of the cities covered by this study were in Italy and Sweden. Therefore, some unaccounted variables may have had influence on attitudinal reports, such as previous cultural mobility styles or preferences. As an attempt to bring more evidence of validity for the 5 mobility

styles, in the next deliverable of this WP4, the mobility styles will serve as input for further analyses of the drivers of shared mobility.

2 Focus Groups in Germany

2.1 Description of sample and method

From 18th to 21st of June six focus groups were held in the cities of Stuttgart, Frankfurt am Main and Cologne. In each city one focus group was directed to users of car sharing, the other was directed to non-users. A total of 54 persons attended the focus groups, 20 women and 34 men. The age of participants ranged from 20 to 60 years. Only the oldest age-group (above 60) was underrepresented in the groups. Users of car sharing were on average slightly younger than non-users. All participants live in the areas of examination of the bcs case study of task 4.1. The educational level of the participants was as high as in the case study: Only 7 of the 54 participants held a main- or middle-school degree as their highest educational qualification. All others finished high school or university.

To participate in a focus group, car sharing-users had to be registered to at least one car sharing operator and should have used it at least once during the last three months. To participate in a non-user group it was required that participants could be potential users of car sharing. So, they had to own a driving licence.

The participants were recruited via the bcs online survey for task 4.1 and via telephone acquisition from a call centre. Respondents in the survey were screened with the help of the survey results. The call centre contacted households in the areas of examination of task 4.1 randomly and carried out a short screening interview to find appropriate participants. A total of 462 car sharing users and 117 non-users expressed their interest to join a focus group. A sample of car sharing users was derived from this group by first sorting respondents into groups according to the city they live in and the car sharing variants they use (free-floating, roundtrip, combined, peer-to-peer). Within these groups, participants were given a random number. 14 respondents with a random number closest to 1 were chosen for each focus group. A 50/50 distribution of gender and a balanced distribution of age was then ensured by replacing certain respondents with others by hand. The non-user sample was created by first sorting respondents into two groups (with a car in household, without a car in household) and then following the same sorting procedure.

Focus groups in all three cities took place in an inner-city interviewing lab. All focus groups were moderated by a professional facilitator. A manual with guideline questions for the moderator had been created by bcs beforehand (see appendix). A bcs staff member followed the focus group discussions from behind a one-way mirror. All participants actively agreed to this setting. Both, the facilitator and the bcs staff member, wrote a report for each focus group.

To understand the results of the focus group discussions, it is critical to keep in mind that all participants come from inner city residential areas with an above average population density and an

urban, multi-use structure (with housing, shopping and workplaces all in the same quarter). The districts are characterized by diverse mobility options. Besides car sharing, there are bus, tram and subway stations which are accessible to residents at a short distance. The offer is partially complemented by bike- and scooter-sharing. In the urban quarters there is a high competition for street space. This is true for both, parking and flowing traffic. Concerning the car sharing offer, the areas under study represent the optimal existing situation today. These conditions are "urban" in a strong sense and shape the views expressed in the focus groups in many ways.

2.2 Non-users

2.2.1 Use of the private car

Almost all non-users own a private car. Only two people do not have a car. Both of these non-owners state that they have a strong conviction that car use causes damage to the environment. Although car-ownership is very widespread among non-users only one third of them uses the car every day – mostly for going to work. A second third of non-users names public transport as their main mode for everyday use and another third places the bicycle first. In the last two groups the opinion is mainstream, that going to work by car would be too stressful because of rush hour traffic jams and the search for a place to park: "On my way to work it is 95 percent public transport. The car is only for leisure activities."

A majority of non-users have a car only for irregular planned activities like bulk shopping, transports, visiting relatives that live in other towns, going outside town on weekends or to go on holiday. The car is nearly never used for short trips inside the city. For these distances bike, walking and public transport are viewed more suitable. Non-users almost never use their car to go to restaurants and bars in the evening because they want to have the chance to drink some alcohol.

The patterns of car use among non-users reflect the inner-city character of the areas they live in. Findings in the STARS focus group concerning car use are in line with a previous study on car use in an inner city area in Berlin.¹ In this study also two thirds of interviewees did only use the car seldom for longer irregular activities.

It is notable that two thirds of car owners in the focus groups use their car in a way that would be the classic scenario for car sharing use. It can be concluded that these two thirds might be target groups for measures that trigger car sharing conversion.

¹ Schuppan, Kettner, Delatte (2014). Urban multimodal travel behaviour: towards mobility without a private car. Berlin 2014.

Car-owners, who do nearly every trip by car are rare in the focus groups and their views are sometimes met with a shake of the head by others: "I go to work by car, I do the shopping by car, I do almost everything by car."

2.2.2 Emotional attitude towards the private car

Only very few non-users think that they have an emotional attachment to their car. Most state things like this: "For me it is an object of utility, not more. It should function."²

Some older non-users think back to their first car and what they experienced with it or recall that it had its own name. But this slightly romantic attitude is not transferred to the present car.

Most non-users - regardless of how often they use the car - share the opinion that today driving a car is not fun anymore: "In the past it was fun, even long-distance drives were fun, but today driving is just getting on my nerves. The traffic situation, the way other drivers behave and above all: The constant search for parking spots."

The rational attitude towards the car slightly changes, if non-users are asked to draw a comparison between the car and public transport. In this perspective, most non-users see the car as a personal and private space which they enjoy. In the car, non-users experience private and relaxing moments: "A coffee, my favourite music and I can even sing along if I want."

In this perspective it is also stressed that all personal belongings can be stored inside the car, for example to go to the gym after work. The car is then described as an extension of home.

2.2.3 Advantages and disadvantages of the private car

The unbeatable advantage of owning a car is its permanent availability: The car is always waiting for its owner. The owner does not need to plan for its use. Thus, to own a car means to reduce complexity and therefore to provide convenience. This often has a more emotional component too. Then the availability of the private car also represents freedom, self-determination and a sense of being in control: "I really like that it is there all the time. I want to be able to decide to go from A to B this minute and then just do it."

This advantage of a car is agreed on by almost all car owners. Some state that "freedom" might be a relative thing when keeping in mind that there are traffic jams and you must search for parking spots. But no non-user group discusses, whether these problems may outweigh the advantage of permanent availability of the private car.

In the focus groups, public transport with its tickets, timetables and running hours is often used as a counter-example to the cars kind of availability: "If I do not own the car to be independent from

² The participants were not asked if they own used cars or new cars. This might make a difference when it comes to emotional attachment.

public transport I do not know why I own it at all. In public transport trouble begins with buying the correct ticket. It's like you need a high school diploma just for that."

For non-users the two main disadvantage of car ownership are high costs and the inconvenience of being responsible for keeping the car functional: "Every time I get a bill at the petrol station or from a repair shop I almost faint." *"As soon as there is a damage, it gets a time consuming thing."*

The costs of petrol and for repairs are top of mind in all groups. Discussions have to go on for a certain amount of time before non-users begin to talk about the fixed costs of a car like insurance, technical certification (TÜV) or taxes. These costs - although they are objectively high - seem not to be top of mind.

Environmental issues are almost never mentioned as disadvantages of a car. When asked directly, many non-users agree, that fewer cars and less car traffic in the areas where they live would mean a higher quality of life. Many non-users also agree that the car they own is standing around most of the time. But, non-users generally assume, that the specific use cases they have for their private car could not be covered by other transport options. They usually doubt that car sharing would be a viable alternative.

2.2.4 Knowledge about car sharing

Non-users are astonishingly well informed about car sharing. Almost all participants know the basic patterns of usage and that apps and chip cards are used to book and open the cars on a self-service basis. A lot of non-users also have car sharing users in their social surrounding. Some have already accompanied car sharing users for rides with a shared car. The high level of knowledge and the relatively high number of participants that personally know car sharing users clearly reflects, that these non-users live in inner-city areas with a high density of car sharing offers.

Some non-users can also explain the differences between roundtrip and free-floating car sharing. But most non-users tend to think of free-floating car sharing when speaking about car sharing in general. This is indicated by the examples they use to describe the advantages and disadvantages of car sharing. Only very few non-users know what peer-to-peer car sharing is and almost no one knows ride sharing or counts it as a form of car sharing.³

In all non-users focus groups one point stands clearly out: Despite having information on what car sharing is, non-users are rarely informed about the price of car sharing. Many suspect, that car sharing might be too expensive if used often. Most non-users are not aware that there might be

³ This may be very country-specific, since most operators of peer-to-peer platforms report, that their growth is significantly slow in Germany and is much faster in other European countries like France and Spain. A high number of peer-to-peer users is also found in the Flanders focus groups.

price differences between different car sharing offers and most participants have not actively tried to get information on prices. Among the few who did, car sharing tariffs are in almost all cases criticised for being much too complex. Understanding which car sharing offer might be suitable for oneself is considered a task “just for experts” and some non-users call for an internet platform to compare tariffs or an app to track their own car use and match it with different car sharing offers. Tariffs without a basic fee are considered to be more customer friendly in general.

Non-users are very ambivalent about the environmental impact of car sharing. On the one hand they know that in general car sharing is considered to be more environmentally friendly than private car ownership. On the other hand, there are strong doubts if this is true. Non-users doubt strongly that car sharing changes mobility behaviour. Therefore many non-users ask why it should be more sustainable to drive in a shared car than in the own private car. Many non-users think that sustainability is brought about by using electric cars in car sharing – not by car sharing itself. Further discussion leads to further arguments against car sharing: It might replace the use of public transport or bike, it is not available outside big towns anyway, it causes young users to drive fast and threaten others.

The ability of car sharing to reduce the number of cars on the streets is less doubted. Non-users generally agree that car sharing can reduce space consumption and is more efficient than private car ownership.

2.2.5 Advantages and disadvantages of car sharing

Most non-users in the focus groups think that car sharing can reduce the inconveniences of owning a car, because the operator does all the car service and is responsible for repairs. Many are also aware that car sharing fleets consist of different car models. This is also rated an advantage.

The dominance of the free-floating variant in the heads of non-users gets visible, when they talk about one-way rides as a big advantage of car sharing. This feature is interesting for most non-users. The same dominance is also visible, when non-users discuss the disadvantages of car sharing: The small size of the operational area and the fact that cars cannot go to operational areas in other towns are criticised the most.

Non-users who are aware of the different car sharing variants rate the dedicated parking space of a roundtrip car its biggest advantage. The opportunity to choose different car sizes, from small car to transporter, is also rated a plus. The obligation to bring the car back to its parking space is named as a clearest disadvantage of the roundtrip variant. Only very few non-users state, that this obligation also exists for their private car.

Disadvantages that are seen with all variants are:

- ★ The additional planning that is needed to find and book a car. In comparison the own car is viewed more convenient and more reliable.
- ★ The additional obligations connected to shared use of a car: You have to empty and clean the car after use, the car might be dirty if other users didn't do that.
- ★ The general uncertainty what will happen in case of damage to the car or technical problems (caused by others and by oneself).

2.2.6 Willingness to use car sharing

The general openness of non-users to use car sharing is astonishing. At the end of the focus groups many say that they might try out car sharing within the next months. But non-users do mainly consider car sharing as an addition to the private car. Many can instantly imagine using car sharing for a one-way drive to a restaurant or to the airport in replacement for a taxi. Many can also imagine using car sharing when their private car is in repair, when public transport broke down or just to test-drive an electric car. No non-user actively mentions that he or she would abandon a private car for car sharing. However, when the discussion is directed to this topic, many non-users think that the moment when their present car needs to be replaced by a new one would be ideal to test car sharing as a substitute.

The biggest risk non-users see with car sharing is a lack of availability. Most non-users think that replacing the private car with car sharing will mean a reduction of car availability. Non-users also state that there will be a loss of convenience because the shared car needs to be booked in advance which means more planning ahead is needed. Therefore many non-users think, that car sharing has to be cheaper than a private car to compensate for this disadvantage: "It should be cheaper since I do not have a car available at all time."

A further requirement to test-use car sharing is transparency of costs. Non-users usually do not exactly know what their own car costs per month but want to be sure that car sharing is cheaper. Therefore they ask for simple tariffs and an app or internet portal where the actual car use can be matched with different car sharing offers. Many also think that there should be package prices or flat rates for heavy users and that high frequency of use should lead to discounts.

2.2.7 The future of car sharing

Most non-users think that car sharing will grow in the future. Only a few see it as a hype. Most think that among younger people car sharing – and not car ownership – will become a common practice.

A lot of non-users see a connection between car sharing and autonomous cars: With AV technology car sharing and taxi businesses will melt together forming a whole new system of how cars are used. But since many non-users doubt the potential of car sharing to produce behavioural

change, this will in their view not lead to a significant reduction of car use. The reduction of cars and a fundamental change in the urban mobility system is considered to be a task of city authorities and city planners:

“If we are not permitted to enter the city with our cars any more we will have to look for alternatives. That’s when car sharing will become an option for many people. But it will be an option among others.”

2.3 Car sharing users

2.3.1 Use of car sharing

Most car sharing users registered with more than one car sharing provider. This reflects the good availability of all providers in the inner-city areas the participants live in. Parallel use of providers of the same variant is especially popular among free-floating users. They increase car availability by registering with all free-floating providers and see the different offers as interchangeable. Roundtrip users in the focus groups are in most cases just registered to one roundtrip service, but the parallel use of roundtrip and free-floating services is also quite popular. The roundtrip users in the focus groups tend to be more familiar with the whole range of different car sharing variants than the free-floating users.

Roundtrip users generally use this service for longer and planned trips like bulk shopping, trips out of town, short vacations or to visit relatives in another town. Roundtrip users are very satisfied with the availability of the cars and the costs. Most of them state that the service is cheaper than a private car and almost all have no private car in their household. This stands in sharp contrast to the anxieties of non-users in respect to the costs and availability of car sharing.

Roundtrip users show a high awareness of their mobility behaviour. Most of them think that public transport or bike should be used if possible to travel most sustainable. Cars only come into play when there is no other option, or if the convenience of other modes would be too low. Within this general framework car sharing use has become natural for roundtrip users.

Parallel users of roundtrip and free-floating services view the two variants as fundamentally different: While roundtrip car sharing is their “backbone” offer that replaces the private car, free-floating is employed to do additional spontaneous inner-city rides.

Free-floating only users show a different attitude towards their service. Most of them consider the prices to be high but do not care much, because they only do very short rides. Free-floating users do not consider car sharing a replacement for a private car. Those free-floating users who own a private car only use it as a self-driving taxi. Going to the airport is the most common example given. Those who do not own a private car have generally no need for a car and see free-floating as an

addition to public transport or bike. The decision to use car sharing is often done spontaneously according to availability of cars and the estimated waiting time for a train or a bus. These users also describe free-floating as a positive kind of luxury that they grant to themselves from time to time.

When asked about the frequency of use it turns out that both groups - roundtrip and free-floating users - use their service 4 to 5 times a month. Compared to the survey results in task 4.1 this shows that attendants of the focus groups are heavy users of car sharing. According to D4.1 a monthly use of car sharing was most common among car sharing users in the German case study. While roundtrip users mostly do longer trips, the use of free-floating is restricted to very short inner-city rides in order to avoid high costs.

2.3.2 Emotional attitude towards car sharing

Emotions towards car sharing seem to differ between users of roundtrip and free-floating services. Among roundtrip users it is common to be proud of using a car sharing service and living a car-free life. This is because roundtrip-users strongly believe that cars cause environmental problems and reduce the quality of life in cities. Therefore roundtrip users think, that they represent the more sustainable and advanced form of urban mobility. Car sharing and a car-free live is even a topic for party conversation: "It is something special and I get a little kick out of the fact that I do something good."

Roundtrip users also view car sharing as cleverer than car ownership because of the lower costs and the fact that they need not care for repairs and car service. Thus car sharing is not only more sustainable – it is also the more rational choice compared to car ownership.

Users of free-floating car sharing are also aware that car sharing is viewed as the "future of urban mobility" and that it is a more sustainable form of car use. But their emotional attitude towards the service is more often characterized by statements about convenience, how easy the service can be used and that it is clever to have this mobility option available.

Concerning the impact of car sharing on urban mobility, users of the roundtrip and the free-floating variant show conflicting opinions. Users of both variants assume that their variant has a positive impact and leads to less car ownership and car use. Roundtrip users often challenge this view for the free-floating variant. As the discussion goes on, many free-floating users "admit" that they sometimes substitute public transport with car sharing. Nevertheless, many free-floating users are convinced that their variant is the more advanced, more modern one and that free-floating made car sharing acceptable for a wider audience.

The role of the private car as a status symbol seems to be nearly over among car sharing users of all kinds and their peer-groups. Older users still recall that it has been a problem to use car sharing for visiting customers or that friends and family members were sorry for them because they had no

own car. But nearly all users agree that these times are over: Car sharing has a positive image in their peer-groups and car sharing use is considered avant-garde. Users of all variants think that this change in image was caused by the emergence of free-floating services and their new modernity and coolness.

Although car sharing is no longer viewed as inferior to car ownership, many users are still aware that cars in themselves represent a status. The fact that some free-floating services like BMWs DriveNow offer a range of technically advanced and “cool” cars is acknowledged by users of all variants. And they have perceived that DriveNow’s former competitor Car2Go recently adopted a similar fleet policy. Roundtrip users are more likely to discuss this critically, while free-floating users find this attractive and reassuring.

2.3.3 Advantages and disadvantages of car sharing

Users of roundtrip car sharing name the possibility to reserve a car days and weeks in advance as the biggest advantage of this variant. This gives them planning security. The low prices, the wide range of different car sizes and the fact that every car has its own parking space are also often mentioned as advantages. Roundtrip users in the focus groups are usually very satisfied with the availability and accessibility of the cars. Almost everyone has more than one roundtrip station within walking distance of his home.

Being able to plan ahead also means one has to plan. Roundtrip users admit that this variant forces them to make up their mind, when exactly they will need a car and anticipate the length of their trips in advance. This increases complexity – especially when compared to a private car, but also compared to the free-floating variant. Most users state that they book a roundtrip car longer than they will actually need it to be more relaxed when travelling. Since booked time is cheap in roundtrip car sharing and service operators usually allow cancellations of unused booking time, roundtrip users seem to be okay with the disadvantage. They stress however, that one has to get familiar with the car sharing system at the beginning and learn how to use it properly. This is also stated in respect to prices: Most roundtrip users find the tariffs of their services confusing and complex. Only after they saw the actual costs of their trips for some months they became sure that car sharing was really cheaper than a private car. This is interesting because it confirms the impression of non-users that car sharing tariffs are not easy to understand and costs can hardly be calculated before entering the service. This might be one of the highest thresholds that prevents non-users from entering the service.

Users of free-floating car sharing see the possibility to do open-end bookings and the ability to drive one-way as clear advantages. On the other hand, lack of availability is mentioned a lot as a disadvantage. Also, free-floating users think that the restriction to an operational area is a disadvantage of this variant.

Free –floating users are significantly indifferent to pricing: Most of them vaguely think that the prices of this variant are high. But they do not care much because they use the service for convenience reasons only or in replacement for a taxi which would have cost more.

2.4 Value maps

In the focus groups standardized questions were asked to better understand the way users and non-users of car sharing think about the pros and cons for car sharing. The gathered answers can be shown in a so called “value map”. Value maps are visual presentations of the advantages and disadvantages target groups see in one product compared to the product they use today. In the value maps roundtrip and free-floating car sharing are compared from the viewpoint of the respective users. Car sharing in general is compared to the private car from the viewpoint of non-users of car sharing.

2.4.1 Non-users: Car sharing from the non-users perspective

The first value map compares the private car to car sharing from the car owners’ perspective. The biggest advantage of the private car are permanent, guaranteed availability and –as a result – self determination and control over ones own mobility. All this non-users do not find in a car sharing offer. It can be concluded, that car sharing is not directly competing with the owned car from the perspective of car owners. Furthermore, the availability of car sharing cars is much in doubt and therefor the emotional benefit the car has, is not seen in car sharing. Perhaps some kind of “mobility guarantee” in car sharing services would be needed to address the high demand for permanent availability and subjective security in the non-user target groups. The gap might also be closed by extensive (peer-to-peer) marketing since the survey of task 4.1 showed, that present car sharing customers are relatively satisfied with the actual availability of car sharing cars and it might be a good idea to communicate this experience to non-users.

Non-users have a high demand for a low level of complexity and planning. This is best met by free-floating car sharing with its spontaneous open-end bookings. But it turned out in the task 4.1 survey and is stated in the focus groups again that this car sharing variant gets low rates for car availability by its users. It can be concluded that neither free-floating nor roundtrip car sharing offers can compete with the private car in this respect by now.

When it comes to the disadvantages of the private car, car sharing seems to solve the biggest problems non-users see. Non-users already know that car maintenance becomes the responsibility of the car sharing provider. But non-users do not attribute a problem-solving capacity to car sharing, when it comes to urban congestion problems.

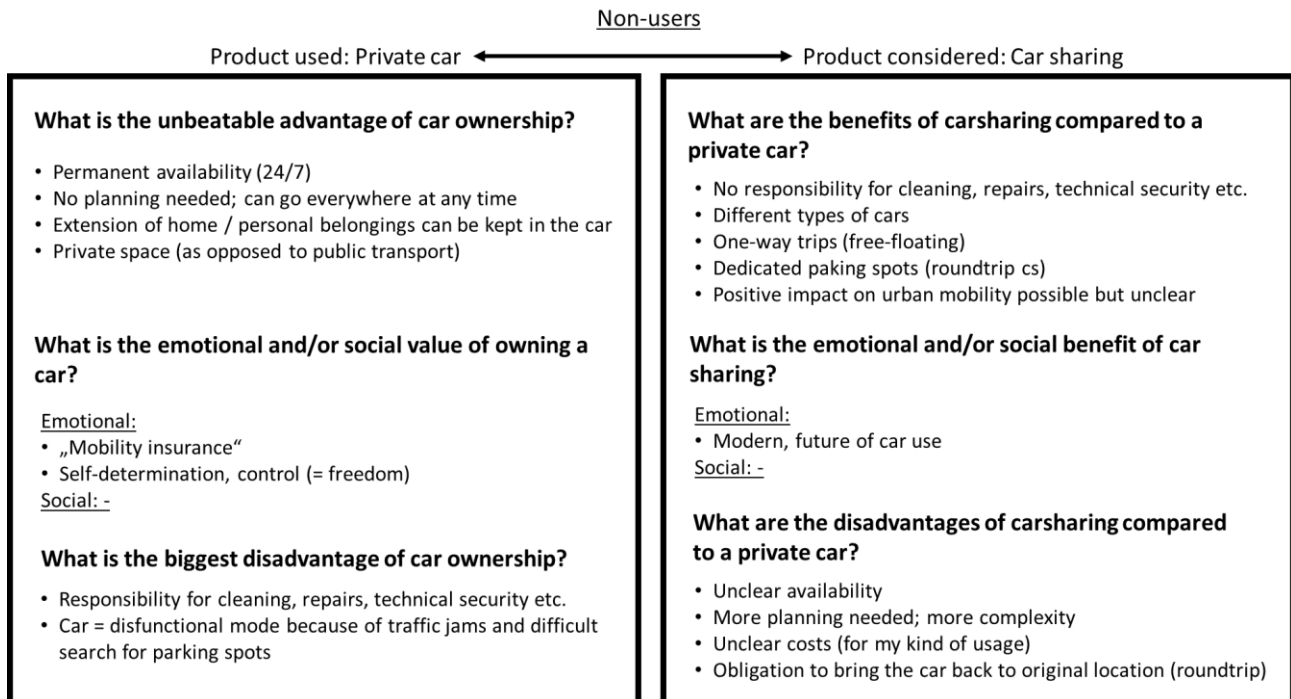


Figure 5: Value map non-users - car sharing from the non-users perspective

2.4.2 Users: Free-floating car sharing from the perspective of roundtrip users

The comparison of free-floating and roundtrip from the perspective of roundtrip users shows that free-floating is liked because it allows one-way trips and for the general open-end bookings which reduce the need to plan ahead.

The core of emotional attachment to roundtrip car sharing among focus group attendants is the services image as one pillar of a sustainable urban transport together with public transport and bike. This emotion stands in sharp contrast to emotions towards free-floating which is considered modern but its sustainability is often questioned by roundtrip users.

In general roundtrip users seem to consider free-floating an additional car sharing product that completes their roundtrip use. Roundtrip operators should nevertheless see clearly that their services are often considered less modern or technically advanced. This might become a problem in the long run.

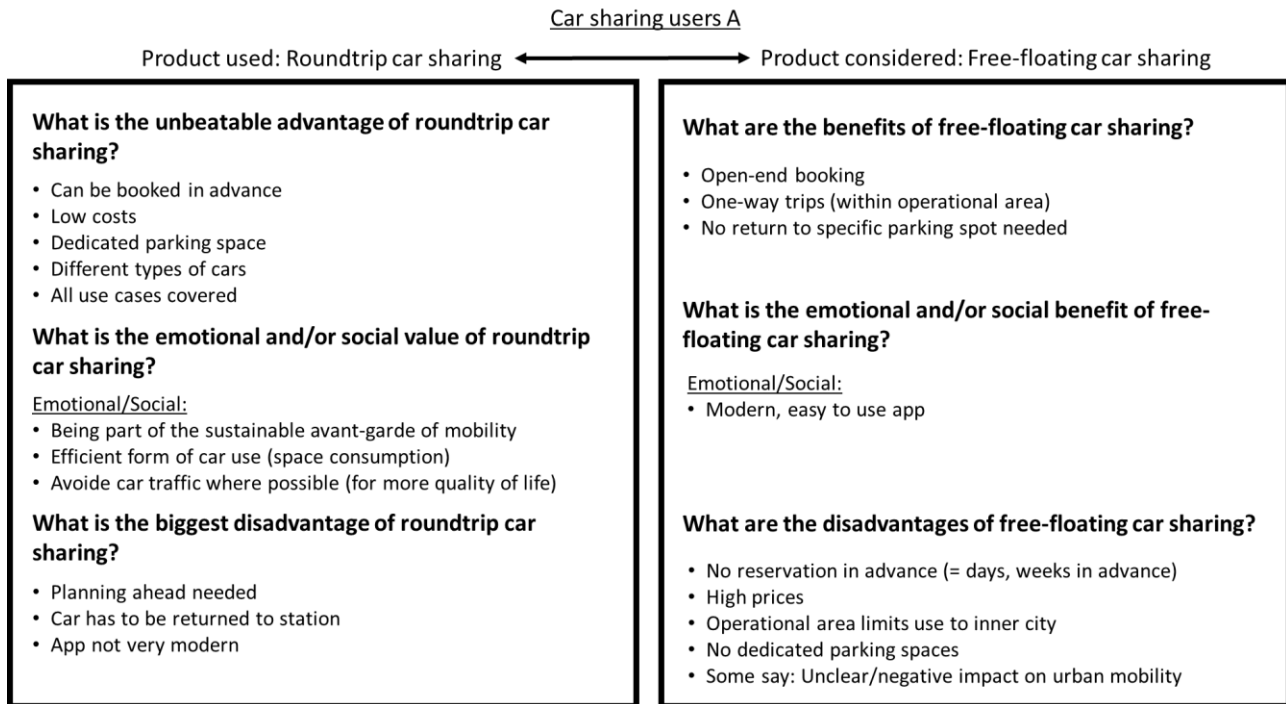


Figure 6: Value map users A - free-floating from the perspective of roundtrip users

2.4.3 Users: Free-floating vs. roundtrip car sharing

For the value map we only consider users of free-floating car sharing who do not use roundtrip in parallel. These users see the ability to do one-way trips with a car as an advantage of free-floating. Accordingly, many have problems to see the advantage of roundtrip systems at all. Some free-floating users respond positively to the fact that roundtrip cars can be used to do out-of-town trips. Only a minority considers the lower prices a plus because most free-floating users are significantly indifferent to pricing. They consider themselves clever for having found this option and those users without a car see it as a luxury treat they grant to themselves from time to time. But no-one feels dependent on the service.

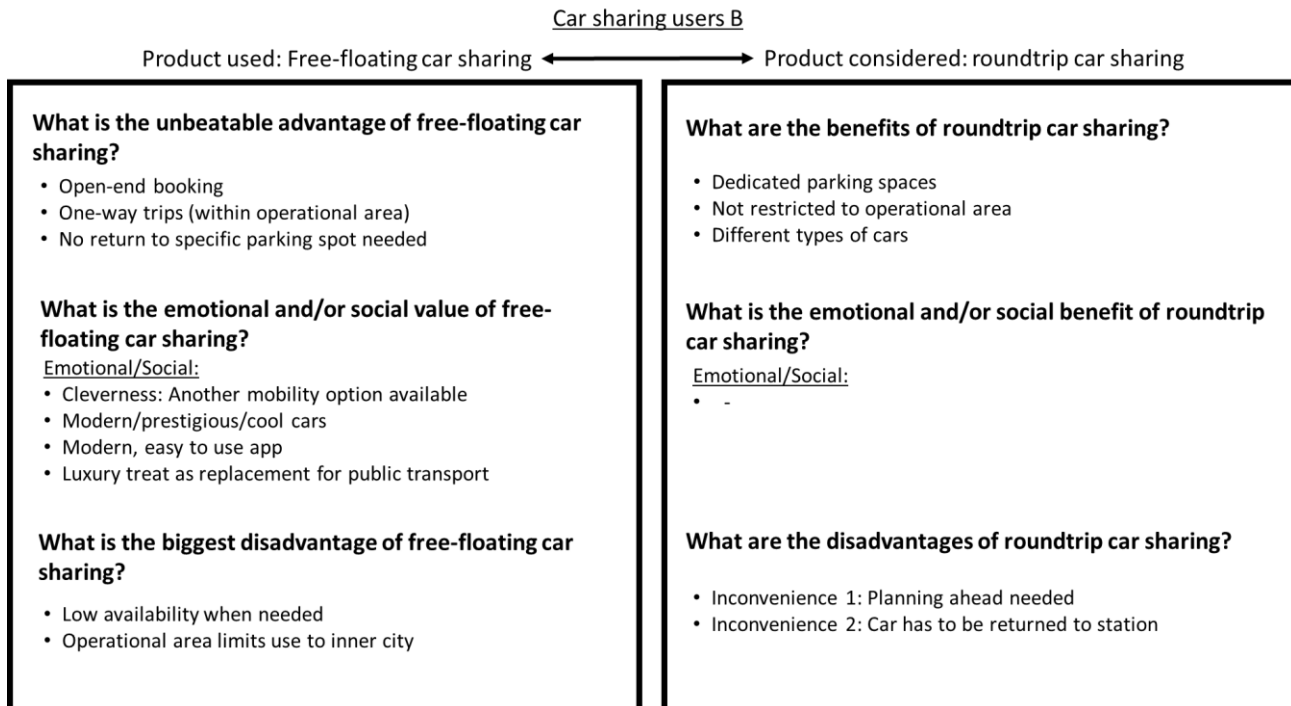


Figure 7: Value map users B – roundtrip from the perspective of free-floating users

3 Focus Groups in Flanders

During the month of June 2018 four focus groups took place in four leading car sharing cities in Flanders, the northern region in Belgium. In Ghent, Antwerp, Mechelen and Leuven participants gathered to discuss their experiences with car sharing. Different channels were used to communicate about the focus groups. Via the newsletter of Autodelen.net, which is the network for car sharing in Flanders and one of the STARS-partners, the call reached a wide audience of people interested in car sharing. Furthermore, advertising was also made via Facebook. A good number of car sharing organisations were prepared to spread the message and also made publicity (on Facebook) for the focus groups.

In addition, also one focus group with non-car sharers has been organised in Ghent. People were invited via the newsletter of Autodelen.net and via advertising on social media. The results of this focus group will be discussed in the last chapter of this section.

A total of 19 persons attended the focus groups, including 11 women and 8 men. The age of the participants ranged from 24 to 78 years, with an average of 43 years. Only two out of 19 participants don't hold a high school or university degree, which makes the focus groups consisted of highly educated persons.

3.1 Focus groups with car sharers

3.1.1 Profile of the participants

More than half of the participants have experience with private car sharing in closed decentralised community groups, both as users or owners of a shared car. Since this particular form of private car sharing represents an important part of the car sharing landscape in Flanders, and Autodelen.net can contact a lot of these car sharers directly, it is not surprising that a majority of the participants has a link with private car sharing in closed community groups. For more insights on this specific group of car sharing organisations, see also deliverable 2.1 of the STARS project and the textbox below.

Private car sharing in closed decentralised community groups, often also called car sharing among neighbours, can be distinguished from peer-to-peer (P2P) car sharing. The former system has a cost-based business model which means no profit will be made between the participants, whereas P2P car sharing organisations allow car owners to ask the price they want for the usage of their car. Another distinguishing element is the juridical foundation. In a peer-to-peer car sharing system a user has to sign a contract with the owner every time before the actual use of a car. In the case of the so-called car sharing among neighbours, a contract needs to be signed only one time (at the beginning of the relationship).

Almost half of the participants do not own a car. The others do have an (co-)own(ed) car, but share it or often make use of an extra shared car. Half of the participants are active car sharers for already more than five years, one even has experience for over 15 years. The other half consists of more recent adaptors. Some have taken their first steps towards car sharing only a couple of months ago. One third of the respondents has one or more children in their household. The others live alone or together with a partner.

It is striking that almost all participating car sharers do trips by bike every day. They use public transport on average between one and three days a week and fall back on a shared car only several times a month. It's not appropriate to draw general conclusions from this limited sample, but our findings confirm the results from earlier research among car sharers in Europe.

We managed to attract diverse profiles for the focus groups, ranging from a young guy being member of three different car sharing organisations, to a married women exploring car sharing just for now, to a single mother being member of a car sharing organisation for already more than 15 years, to an elderly man in love with electrical cars which he can now test at an acceptable price due to a car sharing scheme.

3.1.2 Thematic discussions

During the focus groups different statements, concepts and issues were discussed among the attendees. To preserve uniformity, the topics are as similar as possible to those discussed in the German focus groups.

3.1.2.1 Relation to a car and to driving

Among experienced car sharers there is a quite unanimous feeling about driving a car. Almost all of them consider driving a car as a means to an end, and try to avoid it as much as possible. Public transport and trips by bike or on foot are preferred above driving a (shared) car. Although some participants indicate they like to drive an (electric) car, all participants agree that the greatly increased traffic on the road ensures that car traffic is no longer pleasant.

Especially the members of private car sharing groups question the use of cars in an urban environment. It should be noted here the size of the cities where these participants live. Antwerp and Ghent have the highest number of inhabitants, respectively almost 525,000 and 260,000, whereas Leuven and Mechelen are home to 100,000 and 90,000 residents respectively. The fact these aren't metropolises, can have an impact on the mobility visions of the participants.

3.1.2.2 Unique selling point of a car

We asked the participants what they would miss the most if all cars would vanish from one day to another. A number of answers are regularly quoted. Respondents would find it hard to transport something big or to go to a recycling centre. Also visiting family members who live (too) far away

would be a problem. Furthermore, it would be more difficult to go on a camping holiday or to do renovations to your home yourself. One attendee would miss a car in rainy weather. One respondent summarized it very well: “you can get almost anywhere without a car, but it is often very cumbersome and time consuming”.

Almost half of the respondents do not own a car, but would miss the use of a car for some trips. For that reason, a shared car seems an ideal solution for them in those situations.

3.1.2.3 *Becoming a car sharer*

It is very interesting to find out why an individual started car sharing. This can help us to understand the motivations of (potential) customers. Also the way car sharers gathered information before starting with a car sharing system is relevant.

The reasons differ quite a bit. Some of them never owned a car and didn't want to buy one the moment they needed a car. Others switched from car owner to car user when their car broke down or when they found out their car is not used that much. One respondent needed an alternative for his second car that was just discarded and was tired of parking problems in his city. Car sharing offered him a perfect solution for both issues.

An interesting last example shows that sometimes a coincidence can lead to an important decision. One respondent received an email from a neighbour who needed a car only two days a week and asked if she could use the car from one of the neighbours. The respondent started a private car sharing group with his neighbour and more than ten years later he is still sharing his own car, now with a few families from the neighbourhood.

More than half of the attendees first came into contact with car sharing via experienced car sharers in their family or among their friends. An introduction by relatives seems to be the most common way getting informed. Quite some respondents found information about car sharing in the information magazine of their local authority or attended an information meeting organised by the local government. One respondent came into contact with a car sharing organisation in a shopping centre.

3.1.2.4 *(Dis)advantages of car sharing*

When asked about the advantages of car sharing, the respondents agree quite unanimously on a number of things. They like the fact they deal more consciously with car use and that they, save space and thus provide more liveable cities. At first sight, the benefits for society seem to be an important issue for car sharers. However, the cost-saving aspect of car sharing was also discussed several times. Especially respondents being active in a private car sharing group are convinced that car sharing is cheaper than owning a car.

Another important advantage is the 'lack of hustle'. Participants mentioned for instance they don't have to search for a parking spot. Also, the fact local governments provide free parking permits and/or parking spaces is stated as a big advantage. Finally, the variety of vehicles has also been mentioned strongly by several people.

The fact car sharers have to make arrangements and have to plan their trips, is one of the disadvantages coming forward most. Among private car sharers also the fact that they need to look for a special (car sharing) insurance can be an issue. Finally, the potential discussions between the user(s) and the owner of a private shared car about damage, reservations or a key swap were also mentioned as one of the disadvantages of private car sharing.

We also asked the respondents to describe what they feel when they share a car. Which emotions come up? The answer was very univocal: car sharers are proud about their 'engagement'. They feel less guilty about driving a car since they use it less often and share it with others. Those who use cars from a car sharing provider with an own fleet or that are member of a private car sharing group with several available cars, are happy to have so many different cars to their disposal. They experience this as a major advantage over owning a car. Some of them feel 'the need' to share the idea among friends and family. Those who use electrical shared cars are even more proud due to the CO₂ that is being saved.

3.1.2.5 Differences between types of car sharing

One of the key parts of the focus groups concerns the comparison between the different categories of car sharing. The car sharers attending the focus groups got questions about their views on different types of car sharing. We measured their attitudes towards roundtrip, free floating and private car sharing.

Roundtrip car sharing

The attendees of the focus groups point out three main advantages of roundtrip car sharing. Since more than half of the participants have experience with private car sharing, the first advantage of roundtrip car sharing is mainly concerned with unburdening of car related issues. The fact that it is easy to become a member and you don't need to look after the shared car in terms of maintenance, seems to be a large advantage. Secondly, roundtrip car sharing services, have the ability to run businesses in different cities. This allows their customers to open shared cars in different places with only one subscription. Something that is (currently) not possible with private car sharing in closed communities.

In addition, respondents like the fact that some roundtrip car sharing services offer different types of cars at their customers. This enables them to use the right kind of car for every type of trip.

It is striking that some private car sharers think that there are already enough cars driving around to share. Companies who purchase their own cars to share are, in their opinion, not necessary. Should these participants lose their current shared private car(s), they would again opt for private car sharing. Others also see the advantages of car sharing services with an own fleet and think it is good several types of car sharing are active side by side. After all, they are complementary.

Free-floating car sharing

Since there is only one Flemish city (Antwerp) with a free-floating car sharing scheme, most attendees had no experience with free floating car sharing or were not familiar with the system. The moderators explained to every focus group how free floating systems work, in order to be able to gather information from these participants too.

It is striking that quite some respondents have a pretty negative picture of free floating car sharing. Most think it would not work in the smaller cities they live in. The fact these cars have not access to guaranteed parking places, in contrast to roundtrip cars, would cause them stress. Some of them question the fact that all these new cars have to be standing somewhere in the city. Doom scenarios such as the free-floating bike sharing schemes in some Asian cities pop up. In addition, some also wonder why such types of shared cars are needed in an urban agglomeration, whereas bike and public transport are better options. Those who know the system but did not use a free-floating service before think it is expensive and therefore not suitable for long journeys. At last, one respondent thinks the relocation of the free-floating cars must be a high cost, compared to roundtrip car sharing.

We can ask ourselves whether this negative view on free-floating car sharing is motivated by inexperience and ignorance, or rather by an ideological vision on car sharing. Further research will have to provide an answer to this.

Non-users of free-floating systems do admit there are some unique advantages about this type of car sharing too. First, it can be useful to leave a shared car (very) close to your home, which is not always possible with a roundtrip car. Furthermore, respondents think these relatively new free-floating services can attract a new target audience for car sharing. At last, some of them would find it interesting to use free-floating cars between cities and not within one city.

The ones with experience in free-floating car sharing are more positive about the service. They like the user-friendly application to find, book and open a shared car. In addition, the fact these cars are never far away and can be left very close to home after use is also perceived as positive.

Private car sharing in closed community groups

When participants were asked to name an advantage of private car sharing in closed community groups, the personal aspect comes forward the most. Car sharers like the fact that in this

kind of car sharing system it is possible to contact the owner of the shared car and make arrangements in a more flexible way. For some attendees the less anonymous approach and the contact with neighbours is the reason why they started with private car sharing. Not unimportant, participants are convinced private car sharing is often cheaper than other forms of car sharing. Because the time-aspect (mostly) has no role in the pricing within private car sharing groups, they can offer cheaper rides than roundtrip or free floating organisation.

Roundtrip and especially free floating car sharing services are active in urban areas most of the times, resulting in a sub-offer of shared cars in rural areas. Here, private car sharing groups can offer an important solution, according to some of the attendees. In suburban and more rural regions, a privately shared car is often the nearest option for users to find shared mobility.

As stated before, the discussants think private car sharers have to deal with more car-related concerns since the shared car is still privately owned and the maintenance is a responsibility of the owner (and user(s)). It's also harder to start with private car sharing since issues about insurance need to be solved first and arrangements about reservations and key swap need to be made in the group. Another disadvantage that was stated several times is the lack of a mobile application for car sharers within a private group.

The biggest challenge for private car sharing is the fact that this form of car sharing is very less known among citizens. It's hard for organisations or groups to attract new users because of a lack of publicity resources. The participants of the focus groups are convinced that extra publicity from (local) government could boost the popularity of (private) car sharing.

3.1.2.6 Future of car sharing

Opinions are somewhat divided, but the majority of the attendees are convinced that car sharing is not a hype of the moment. It's here to stay and still has a lot of growth potential. The mobility problems, which are increasing as we speak, will make the sense of urgency even stronger. The current relative unfamiliarity of the concept also means many opportunities remain unused.

The final question presented to the participants was about the changes that are necessary to boost car sharing. Some of them think car sharing is not visible enough at this moment. Local authorities could ensure dedicated parking lots are better indicated or private shared cars get a sticker. As already mentioned, awareness of car sharing must also increase. According to the participants there are huge opportunities to attract people who own two or more cars but are not aware of the possibilities of car sharing yet. The first car of a household is usually used too much to share or to get rid of, but a second or third car is often less used and thereby very suitable to share.

Furthermore, the fact companies in Belgium are still fiscally 'encouraged' to reimburse their employees in the form of a salary car is a thorn in the eye of many car sharers. After all, these salary

cars can hardly be shared since most of them are leased, and the owners of these cars are not encouraged to think about their mobility since they do not have to pay for the ownership and use of the car themselves.

At last, participants see salvation in the coming of one or more Mobility as a Service (MaaS) systems, bringing together different car sharing services and other (shared) mobility solutions. It can be very useful to have access to different car sharing systems with one account and it could be attractive for new potential customers. A MaaS-system can also be interesting for the attendees who think that sometimes there is too little supply or availability of shared cars.

3.2 Focus groups with non-car sharers

3.2.1 Profile of the participants

In addition to the four focus groups with car shares, also one focus group with non-car sharers was organised. It took place in Ghent, where all participants live. None of the participants are member of a car sharing organisation or have any experience with car sharing in the past. They all have at least one car in their household, almost half of them owns more than one car.

The car and bicycle use of these people looks quite different from participants in the other focus groups. Whereas almost all car sharers do trips by bike every day, non-car sharers opt for a bicycle trip on average a few times a week. Also, the use of public transport is lower among non-car sharers. They use public transport modes on average a couple of times a month. The use of the car finally, is a lot higher. Non-car sharers do trips by car on average several days a week.

3.2.2 Thematic discussions

3.2.2.1 *Owning and using a car*

Although participants of this non-car sharing focus group were not selected on the basis of their possible car ownership, all of them have at least one car in their household. Since they have no experience with car sharing and all are owning a car, we are interested in their opinion on the unbeatable advantages of owning a car. The word coming up most was flexibility. The participants like the fact they are not obliged to schedule their journeys in advance. They feel having the freedom to leave at any moment. For some their car is also a perfect storage unit. It is possible to leave personal belongings in the car for a longer period, which gives them a comfortable feeling. Others would find it annoying to adopt to a new car or to change settings of their own car every once in a while.

Although the majority of the participants are convinced of owning a car, they also see a number of important drawbacks associated with this situation. The financial aspect is most often mentioned. Car owners have to pay for the purchase and maintenance of the car, for an insurance, for (a) resident

parking card(s) ... The costs are pretty high. Some also have the feeling that it is getting harder to find a place to park your car. This makes it unpleasant to own a car.

There are several reasons why the participants like to use a car, but all can be summarized under the heading of ease of use. According to the attendees driving a car is generally easier, more flexible, less time consuming and more certain than other mobility modes. Conversely, less is chosen for the car when one has to go to a big city or goes out for a drink. For these trips public transport or bikes are better solutions, according to the participants.

When we gauge the feelings the participants experience while driving, we notice that two thirds indicate that they like driving a car. In opposition to the car sharing user focus groups, these people generally don't see driving as a means to an end. We also asked them what they would miss the most when all cars would be vanished. It is noticeable that non-car sharers quote about the same things as car sharers. They would miss to visit friends and family who live in hard-to-reach places, would struggle to transport heavy or large loads or would have to stop visiting concerts because public transport does not work at night.

3.2.2.2 Knowledge about car sharing

In Ghent nine car sharing organisations are active. We were curious how many of these providers were known among the participants. Cambio, the operator that has the longest history in Flanders and offers roundtrip roundtrip car sharing, was known to everyone. Eight out of ten were also familiar with Partago, an electric car sharing cooperative which offers roundtrip homezone based car sharing. So far, the well-known operators. Dégage and Cozycar, two not-for-profit organisations supporting private car sharing in closed communities, are only known by respectively 40% and 20% of the participants, despite their long service record. Dégage for example started in 1998, has more than 1.500 members and offers 150 cars in Ghent. Still most of the attendees don't know the organisation.

Five other car sharing schemes operating in Ghent are completely unknown to the participants. The fact services with an own fleet who have been operating for a couple of years are known best, has a lot to do with visibility. Services supporting private car sharing (both P2P-platforms and organisations for private car sharing in closed communities) have a structural disadvantage because the shared cars on their platform are not really recognizable in the streets. In that sense, public information campaigns could be very useful for these services.

3.2.2.3 (Dis)advantages of car sharing

After asking the attendees about the car sharing organisations they already know, the differences between the existing car sharing systems were explained to them. We wanted to figure out what advantages and drawbacks they link to car sharing. They all agree one can save money with car sharing. After all, sharing a car means sharing costs. According to the participants, car sharing

can also be very useful when you occasionally need a second (or third) car, or when you want to use a larger car or van.

However, there are also several disadvantages associated with car sharing. Some participants find it difficult you have to plan your trips in advance and you can not always count on a car at the last moment. One attendee pointed out having to pay a price per hour would be disadvantageous for him, since he only occasionally needs a car but for a longer period, without driving a lot of hours. Although all participants are convinced of the price advantage of car sharing, they think it should be noticeably cheaper compared to owning a car. According to some, this is not always the case at this moment. Making the, often underestimated, real cost of owning a private car more visible might change their mind.

3.2.2.4 Future of car sharing

The non-car sharers see a number of areas for improvement so car sharing can generally become more successful. At first, one umbrella subscription for car sharing would be very useful. Now it is not easy for non-car sharers to find out which options are available. According to the attendees, one solution that brings together many systems would be much appreciated. Second, the participants would prefer positive stimuli for car sharing instead of the punishment of owning a car. For example, a lower tax rate could be given on shared cars, car sharers could be allowed to use bus lanes and more parking lots could be reserved for car sharing.

The majority of the participants is convinced car sharing will still grow in the coming years, especially in cities. In order to achieve this growth, communication will be very important. They openly wonder why they know so little about car sharing in their own city.

Finally, some participants commented on the system of salary cars. One third of the attendees has its own salary car. One of them uses the car for business-related trips, but the others got theirs just as part of their salary. One of those three participants does not even drive to work with the car because of the daily traffic jams on her journey to work. She indicates that she does not actually need her own car, but the system is fiscally too advantageous not to use it. This opinion was unanimous shared by all participants and shows what some of the car sharers already mentioned: the system of salary cars ensures that there are too many cars on the road and also means a brake on the growth of car sharing.

4 Living lab in Flanders

4.1 Living lab - 'Sharing neighbourhoods'

The living lab project 'sharing neighbourhoods' was set up in the Deurne-North neighbourhood in the city of Antwerp (Belgium) in the context of work package 4 of the STARS-project. The central goal was to make people think about the use and ownership of their own car. Participants of the experiment were asked to put their car aside for one month and to make use of sustainable mobility alternatives instead. By giving them the necessary guidance and information, the goal was to make participants think about their trips and their car ownership. In addition, it was interesting to gather knowledge about how (potential) users experience the first steps towards shared mobility.

4.1.1 Advantages for participants, neighbourhood and society

During the experiment the participants benefited from two main advantages. First, via the project they got access to alternatives for private car ownership in a very cheap way. By making deals with car sharing organisations, bike sharing schemes, public transport operators and suppliers of electric bikes financial burdens were lowered as much as possible. Adding to this, participants didn't have to arrange the mobility solutions themselves. The project managers were responsible for all contacts with mobility partners to unburden the participants as much as possible.

In addition, the project also had important advantages for the neighbourhood and society. First, since we worked together with the local community centre for this project, the social aspect of the experiment was very important. Big emphasis has been put on social contacts and on learning from each other's experiences. This not only ensured less obvious target groups to participate in the experiment, but also local residents got to know each other better. Second, during the month of testing, less trips were done by car. This had a direct positive effect on the liveability of the neighbourhood and last but not least, this project promoted providers of sustainable mobility solutions. Testing proves to be the best way to get to know new alternatives and also provides word-of-mouth advertising to friends and family of participants.

4.1.2 Previous living labs

The 'sharing neighbourhood'-project was not only executed in the city of Antwerp. Two other test cases, in the city of Aalst and the small village Beveren-aan-de-Ijzer, were rolled out also. In 2017 already two living labs took place in the cities of Ghent and Beveren-Waas. Where it offers added value, we will also include results from these experiments in this report.

4.2 Sharing neighbourhood Deurne-North (Antwerp)

4.2.1 Context

The neighbourhood Deurne-North is situated in the Deurne district, in the east of the city of Antwerp. Deurne-North, counting more than 15,000 inhabitants, is one of the poorer neighbourhoods of the city and has been confronted with busy traffic axes that weigh on the liveability of the area. Inhabitants of this neighbourhood have access to two car sharing schemes, Cambio and Poppy, and several closed private car sharing groups.

4.2.2 Course of the process

The first steps in the project were already taken in 2017. We contacted the community centre (Dinamo) with the request to support the sharing neighbourhood project. They were convinced of the concept and helped spread our call for participants (see Figure 8).

In February 2018 the first info moment for local residents took place. Here the goals of the project were explained, in order to convince as many attendants to participate in the project. One month later a second, similar meeting took place. All interested inhabitants were contacted afterwards and were asked to participate in an interview with one of the project officers. Via the face-to-face interviews the mobility profiles and needs of the potential participants were mapped.

Based on this information, we contacted several mobility providers with the request to offer one of their services to the participants at an advantageous rate. Many of them responded positively, which makes we could offer a wide range of alternatives during the experiment (see section 4.2.4).

The repeated calls and info moments resulted in 11 participants, of whom two were lost just before the start of the test month. The group of participants consisted of six women and five men and was nicely balanced in terms of age. In mid-June all participants gathered in the community centre to receive their specific mobility alternative(s), going from a subscription for a car sharing organisation, a multi-ride ticket for public transport or an electric bicycle. Also, the last instructions about the experiment were given to the participants.

Halfway the project participants met to talk about their experiences and where needed, extra incentives were given to them. One participant for example also tested public transport during the last two weeks of the experiment. At the end of the test month a last reunion was organized together with the community centre. One of the participants suggested cooking a meal for the whole group, and together they had a first quick evaluation of the project.

4.2.3 Mobility profiles of participants

Three months before starting the experiment, we asked participants to evaluate their mobility profile. All of them own a car, but the extent to which they use the car is quite different. Some

participants only use a car for longer trips to friends or family, others rely on their car for every kind of trip. As far as commuting traffic is concerned the bike is the most popular mode, closely followed by private car and tram. For leisure trips however, the car seems to be the mode that is used the most. In addition, it appears eight participants (73%) have their own bicycle and three of them also own an electric bike. Finally, three participants only have access to their own car.

4.2.4 Mobility alternatives tested

During the experiment, candidates were able to test a number of alternative sustainable modes of transport. We made deals with different providers to be able to offer the cheapest possible solutions. Regarding car sharing, two schemes with an own fleet, Cambio and Poppy, were willing to offer their services at a cheaper price. Different bike sharing services have been presented to the participants, but no one was interested in testing a shared bike. Electric bikes, on the other hand, were very popular among the testers. Half of the participants accepted the offer of Business Bike Solutions to ride for free with an electric bike for a month. At last, two people used train and bus tickets from NMBS and De Lijn to commute to work.

4.3 Experiences of the users

4.3.1 Feelings during and just after the experiment

Directly after the experiment took place, participants were asked to fill in an evaluation survey. More than seventy percent of the participants indicated to be (very) satisfied with their result during the test month. The question, of course, is where they set the bar. To better understand the answers, we asked participants if they felt obliged to not use a car considering they were taken part of an experiment. Only one in three participants felt obliged. Although the pressure to not use the car apparently was not so high, we see a number of participants have succeeded in often leaving the car aside. Participants on average used their car 3.6 times during the test month. Three participants used their car only ones or twice, two others used it almost twice a week.

	Are you satisfied with your result?	"During the test month I felt obliged to leave my car on the side."
	1 = not at all 5 = totally	1 = completely disagree 5 = completely agree
Mean	4.14	2.86
>= 4	71%	29%

Table 6: Satisfaction with result and degree of car abandonment

We also asked about their general feelings during the experiment. Eight out of ten felt freer during the test month and half of them felt healthier, more conscious and more connected with their environment. One respondent experienced no other emotions than before and – also important – no one reported negative feelings.

4.3.2 Mobility behaviour during and just after the experiment

We asked whether participants would start using other transport modes after the test month. One third is convinced they will change their mobility behaviour, another third is undecided and the last part does not think they will use more often other modes.

We presented a list of statements to participants from which they had to choose the most appropriate for their situation. More than half of them stated they always try to use as much as possible, other than the car, modes. They will keep their already low car use at this level or reduce it even further. The other group, who is using the car for almost every trip, would like to reduce their current car use but don't think it's possible at the moment or they do not know how to do that. In order to generate as much impact as possible with the project, it is important to further encourage this group of people to test alternatives or provide them with correct and enabling information.

	Percentage of participants
<i>At the moment I use the car for most trips. I would like to reduce my current car use, but that is not possible for me at the moment.</i>	14.3%
<i>At the moment I use the car for most trips. I am thinking about not making (a part of) these journeys by car anymore, but at the moment I do not know how I can do that or when I have to do that.</i>	28.6%
<i>I always try to use other means of transport as much as possible. I will keep my already low car use at this level or reduce it in the coming period.</i>	57.1%

Table 7: car use and willingness to abandon the car

We learned some people are rethinking their mobility behaviour, but are they also willing to get rid of their private car after participating the experiment? Four out of then has no plans to sell their car. One participant has no plans to sell his car, but if his car needs to be replaced, he might no longer want to buy a new one. Two participants, at last, want to share their car with neighbours and one is selling his car.

4.4 Follow-up process

Future evaluation will be taken place both three months and one year after the experiment. It will be very interesting to compare the results of these evaluations with the first impressions of participants, and thus gain an insight into the long-term impact of the experiment.

Evaluations of test-cases in 2017 in the cities of Ghent and Beveren-Waas are showing interesting results too. About half of the participants still own as many cars as they did before the project. However, a fifth of that group is indicating if their current car is broken, they are not going to buy a new car. In addition, it is striking one in five participants sold their car after the test month and one participant placed its own car in a private car sharing system. A quarter of the participants

did not have an own car before the project. We can conclude 25% of participants have changed their car ownership due to the experiment and have therefore started living without an own car or started a private car scheme.

The test month also ensured that on average, participants are driving slightly less with their own car after taken part in the experiment. Half of them drive the same amount, four out of ten are driving less and one out of ten is driving much less. The experiment clearly has a positive effect on car use and possession. A part of them found a solution in car sharing to not own a private car.

4.5 Lessons learned

With the experiment we reached participants in different stages of behavioural change. A few people were already taking steps to get rid of their private car and to start with car sharing. Others literally took the car for every displacement. Some were open to alternatives, but simply did not try yet. They all had the opportunity to test alternatives for a private car. Participants were very enthusiastic with the possibilities of trying out alternative modes for free. This real-life experience proved to be an excellent motivator for changing behaviour. For some people, it was almost a revelation.

Although testing alternatives for transport by car were very much appreciated, trying another shared car was not that successful. Participants only felt poorly obligated not to use their own cars. Probably, a better alternative is literally putting their cars aside (and lock them). By having the own car at the front door, this option is far easier than trying a shared car. In this way the project was mainly successful in convincing people alternative modes are useful and even fun. People realized a car isn't always the best option (not at least because of the busy traffic in the district) and they opened their minds into alternatives.

During the experiment, we tried to inform and to motivate participants by sending them an email about the benefits of alternative modes regularly. A couple of participants were enthusiastic about this approach and send, as a reaction to these emails, experiences to the project officers. The first evaluation also shows that the participants are unanimously very positive about the communication during the project. It is difficult to measure the impact of this close follow-up of the participants, as we did not conduct a control experiment without this communication, but participants indicated that these emails stimulated them to keep on persisting.

This kind of pilots do have a (large) impact on a small group of people. In this way a lot of time has been invested for a small scale effect. In order to maximize the resources invested, we are now introducing an ambassador function for participants. When they are helping to spread their experiences with shared mobility among friends, family and neighbours, the impact of the experiment can be optimized.

Furthermore, we experienced the project is setting things in motion. By starting a dialogue between neighbours about their mobility needs and issues, people came together and new projects are starting to grow, fulfilling shared needs. For example the community centre is thinking about supporting inhabitants to share their private cars.

It is important not to lose participants' interest in a new transport style. By asking them about their further needs to extend their car diet, we want to enable them to work on it. Additional incentives could be helpful here. For example, we could offer participants a quit big discount at the purchase of an e-bike, but since the poor financial status of most of them this was not the best way.

A motivated, local partner turned out to be an important driver for the project. In the first phase to recruit people and after the project to encourage participants in moving forward and even start up follow-up projects. Given their proximity, the community centre also provided a large part of the communication with the participants and offered a room to meet during the project. Without the help of this local partner, it would have been hard to reach as many people as we did know.

30 dagen je wagen aan de kant. Doe je mee?

Word jij één van de 25 buurtbewoners in Deurne-Noord die de eigen auto één maand aan de kant laat staan? Grijp je kans!

Je ontdekt manieren om je te verplaatsen die verrassend socialer, gezonder en goedkoper zijn dan je eigen auto. Boekje lezen op de trein of bus; met de elektrische (bak)fiets zonder file en met fris gemoed naar het werk, de winkel of familie; je laten vervoeren door de taxi; babbeltje slaan tijdens het carpoolen... Doe mee aan dit experiment, geniet van het voordelig en zelfs gratis aanbod en na de proefmaand bekijken we of dit leven met minder auto iets voor jou is!

Wil jij één van de 25 testers zijn? Schrijf je nu al in via delendebuurt@gmail.com.



Deurne-Noord
Waar burens delen

Graag meer info over dit experiment in je buurt? Je bent van harte welkom op 29 maart om 10 uur in parochiecentrum De Blijde Boodschap (René Heylenstraat 1, 2100 Deurne) om kennis te maken met dit initiatief!

V.U.: Jeffrey Matthijs, Autodelen.net, K. Maria Hendrikaplein 65b, 9000 Gent









Figure 8: Flyer 'Sharing neighbourhoods'

5 Turin customers' point-of-view on car sharing impacts

5.1 Introduction

The following section is focused on understanding behavioural patterns of car sharing users in Turin. Based on empathy interviews leveraging the design thinking approach, GM had interviewed 30 users of car sharing operators; in Turin there are three car sharing operators: Car2Go, Enjoy, and BlueTorino (100% electric vehicles). The first two are free-floating with operational area services (FFOA), while BlueTorino is a free-floating with pool stations service. The areas in which interviews have been done were outside GM and Politecnico of Turin premises, in the Turin city centre and in shopping malls (see mpas on appendix 3 for the three areas in which GM run empathy interviews).

This section has the following main aims:

- ★ To understand why users choose to use car sharing, how often, and for which purpose(s);
- ★ To verify if their mobility habits changed (and at which extent) after car sharing introduction in Turin;
- ★ If users have or don't have a car, if car sharing postponed the purchase of a new (or second/third car) or if their cars have been replaced by car sharing;

During the interviews several other information have been collected such as: gender, age group⁴, if they preferred pool stations or FF with operational area system, feedback on Applications (App), cars segment, if they use other sharing mobility operators⁵ (bike sharing) and public transport. Several other franks, genuine and spontaneous information (and improvements) have been collected and integrated in the current exposition.

5.2 Design thinking: What is an empathy interview?

An Empathy interview is an approach to finding out as much as possible about a person's experience as a "user" of a space, a process, an objective or an environment. We want to understand the choices that people make and why they make them (D.Studio, The University of British Colombia - Vancour Campus). It is part of the Design thinking with the objective to understand people's experience on how they use a thing or a service. Design thinking uses emotional language to describe what users think about a product or service, their desires, aspirations, and feeling. It is increasingly used for complex and intangible issues, such as car sharing users' experiences (Kolko, 2015). In our cases, GM run a series of interviews understanding Turin car sharing users' experiences. The approach is also characterized to leave the interviewee telling his/her story, his/her feelings and personal

⁴ The age group is classified according Deliverable 4.1 – section 2.2.3: under 30, 30-39, 40-49, 50-59, 60-69. and over 70.

⁵ Scooter sharing (SS) MiMito started its operation in Turin on September 4rd, 2018 during the interview period. Some users expressed their interested in SS.

judgment on the car sharing service. Questions are generally short but at the same time open ("Can you tell me the last time you used car sharing?", "How do you evaluate it, and why?"), and insisting in understanding the motivation behind a statement.

GM approached street interviews with the following technique:

- ★ We introduced ourselves and STARS H2020 project;
- ★ We quickly exposed the interview's purpose;
- ★ We shifted our attention to the interviewee and put it at the center of the conversation;
- ★ We tried to create a comfortable atmosphere and build a trusted relation;
- ★ We asked one question at time without interrupting the person in front of us;
- ★ We encouraged stories;
- ★ We avoided any judgment on car sharing operators;
- ★ If the interviewee got stuck, we asked "why", "can you describe...";
- ★ We explored emotional statement with "why do you feel...", and we insisted with "why" question even when we thought to know the answer;
- ★ We avoided suggesting answers;
- ★ Finally, we observed non-verbal signals such as hands, facial expressions, if interviewee spoke looking directly in our eyes and so on;
- ★ We thanked the interviewee for their time

After each interview, we waited at least 15 minutes before looking for another person to interview to wrap things up.

We consider a proper interview an interview in which a user replied to all key questions, or she/he covered all topics on car sharing, talking freely about his/her experience on using car sharing. On average, proper interviews took 30-35 minutes. Several interviews were not included for incomplete information or lack of time of the interviewee (for instance, interviews of less than 10 minutes have not been considered, or when the interviewee limited to answer "yes/no", "I don't know" and run away). Automatically excluded all those who did not stop or were in a hurry: statistically every five/six people stopped, only one was a successful interview.

5.3 Interviews results and discussion

5.3.1 Users composition, age group, and car sharing offers used

The 30 interviewees had the following compositions: 7 (23.3%) Female, and 11 (76.7%) Male; in term of age group, the most representative is the 30-39 years (60% of the interviews), while under 30 with 8 interviewed (26.67%), and both 40-49 and 50-59 scored 6.67% (see table No. 8). No over

60 was interviewed: we stopped and asked their option, but it seems Over 60 are not using car sharing or they are not interested in car sharing service preferring public transport⁶.

No. of interviews by age group and gender	F	M	total
Under 30	2	6	8
30-39	4	14	18
40-49	-	2	2
50-59	1	1	2
total	7	23	30

Table 8: Number and composition of interviewees

Regarding the car sharing preferences, the choices expressed by the 19 users were distributed as follows (see table No. 9):

Car sharing preferences by gender	F	M	total
BlueTorino	-	3	3
Car2Go	3	12	15
Enjoy	4	2	6
Car2Go & Enjoy	-	6	6
total	7	23	30

Table 9: Car sharing preferences by gender

Table 9 shows that Car2Go is the most preferred car sharing service among all interviewed users, and is the most used by males. As a general overview, free-floating with operational area dominates the preferences compared to the BlueTorino service with only three preferences. However, the choice expressed was not always a clear-cut choice. 17 interviewees use more than one operator: they have a preference, but they used another service when there are no vehicles available in their proximity. Table 10 shows this varied scenario:

Car sharing preferences by gender	F	M	total
BlueTorino		1	1
BlueTorino (Enjoy or Car2Go, but BlueTorino preferred)		2	2
Car2Go	2	5	7
Car2go & Enjoy (and BlueTorino for curiosity)		1	1
Car2Go (Enjoy only if C2G not available)	1	6	7

⁶ Turin local public transport company (Gruppo Trasporti Torinesi - GTT) has special rates for retired persons and over 65.

Enjoy & Car2Go		6	6
Enjoy	4	2	6
total	7	23	30

Table 10: Car sharing detailed preferences by gender

We asked why users prefer a specific car sharing operator, and if there are special aspects that drive their preferences. The main difference between free-floating with operational areas (FFOA) and Free-floating with pool station systems is the fact that the user has to book both the car and the destination parking slot in the pool-station system. For FFOA users these are the main two limitations in adopting a pool station system. The freedom of parking the car anywhere (even though they are conscious it may take some extra time to look for a parking space) is more valuable than being forced to go to an “imposed” parking space. FFOA users prefer to park close to their destination. On the other hand, BlueTorino users underlined how and why pool station is considered a plus: the well spread pool stations system allows to save a lot of time when looking for a parking.

As already mentioned above, 13 users are loyal to one car sharing operator (seven Car2Go and six Enjoy users respectively). Among those that are using only Enjoy, they did not create a Car2Go account because they considered the driving license process as a limitation and a loss of their time. Even if the process is now changed, they get used to rent Enjoy vehicles. From the Car2Go side, users had few bad experiences with Enjoy, mainly due to: long locking time when ending the trip, slow customer service, or simply due to a better service provided by Car2Go (the most named advantages are: application is user-friendly and faster than Enjoy’s App, 10 seconds only to end the rent, no need to insert PIN, automatic transmission, very easy to park, and Caselle airport parking slots).

The three users of BlueTorino outlined that BlueTorino can be used even when the smartphone has no more battery: the user card allows the users to unblock the car, the destination parking slot is already settled in the in-vehicle GPS and when the trip is concluded, the vehicle can be locked using both in-vehicle touch screen and user card using the charging station (after the vehicle has been plugged). The only user who use only BlueTorino admitted that the selection criteria was due to pool stations in city center.

In terms of population, car segment, space inside and design, all users are quite happy and satisfied by the vehicles proposed by all car sharing services; surprisingly, they are more focused on design, space for luggage, and if cars are clean. The propulsion is not an element of discrimination: only 1 user declared that he has chosen BlueTorino because of its pure electric engine.

The car sharing rates are generally considered fair and affordable (on average, a minute costs 0.25€ cent in Turin). This is true for all users that work and can easily afford a couple of Euros expenditure per rent. One under-30 user underlined its difficulty for a more intense car sharing usage due to its costs: this user identifies the cost of 0.24 € or 0.25 € cents per minutes as

expensive because not earning any salary. The service is considered a valid and useful alternative to taxi, but without any fixed salary both services (car sharing and taxi) are considered “luxury” transportation options.

5.3.2 Household composition and number of owned cars

Concerning household composition, we divided users in two main categories⁷: “1 adult” category represents the user living alone (two Under-30 are leaving with flat mates), and “2 adults” category which includes also couples with one or more children. As per Table 11, all users living alone have no children -representing the 53.57% of our interviewees. The age group 30-39 is the most represented with 18 users interviewed, but only two interviewees have children.

Household composition by age group	1 adult	2 adults		total
	No Kids	No Kids	with Kid(s)	
Under 30	6	-	-	6
30-39	9	7	2	18
40-49	-	-	2	2
50-59	-	-	2	2
total	15	7	6	28

Table 11: Household composition of interviewees

If we cross the number of cars owned with the household composition, we can notice (see Table 13) that as far as the household has one or more children, at least one car is owned.

Cars per age group	0	1	2	total
Under 30	8	-	-	8
30-39	6	11	1	18
40-49	-	1	1	2
50-59	-	1	1	2
total	14	13	3	30

Table 12: Number of cars per household composition

⁷ For 2 under-30 interviewees the household composition is not available. The percentage calculation has been done based on 28 users, not 30.

No. of cars by household composition	0	1	2	total
1 adult	11	4	-	15
2 adults	1	5	1	7
2 adults + 1 kid	-	-	1	1
2 adults + 2 kids	-	4	1	5
N/A	2	-	-	2
total	14	13	3	30

Table 13: Number of cars per age group

All under-30 users do not own any car, whereas with increasing age, it increases also the number of cars owned. During our interviews we also tried to understand if car sharing can satisfy not only user personal car-needs, but also “family car-needs”, in particular among users with one or more children. We will describe later the different cases and if car sharing helped in avoiding a car purchase, or if car sharing replaced a previous car.

5.3.3 Frequency, Duration and Purpose(s) of trips

As showed in deliverable 4.1, the average duration time in Turin (based on URBI’s data) was around 25 minutes in both April and May 2018. Based on users’ responses, we had a confirmation that in Turin trips are no longer than 30 minutes. Interviewees declared to use car sharing for around 15-20 minutes (see table 14), but all users underlined the fact that the duration of each trip “depends on where I have to go, what I have to do, and if I am in a hurry”.

Declared duration time	
5-10 minutes	1
10 minutes (besides Caselle)	3
10-15 minutes (besides Caselle)	8
10-20 minutes	1
15 minutes	5
15-20 minutes	4
15-25 minutes	1
20 minutes	1
30 minutes	1
From 10 to 25 minutes	1
From 10 to 30 minutes	2
From 10 to 40 minutes	2
total	30

Table 14: Duration time of car sharing trips declared by users

From the above table, the trip from/to Caselle airport is not taken into account in the average duration time. There are nine users that use Car2Go's Caselle parking slots but for almost all of them, Car2Go is used for other purposes. The trip requires on average 25-30 minutes without heavy traffic.

Regarding the frequency of usage, we divided the users' responses in two main groups: those who use car sharing 1-2 times (or more) a week, and those who use car sharing 2-3 times a month or less till a few times per year. On Table 15 below, 18 users frequently book a car sharing; in particular, seven users declared to use car sharing daily and they are conscious in spending 40-60€ every month in car sharing (or even more). A couple of respondents admitted that they are now pampered/spoiled" by car sharing service to the detriment of public transport. Another one openly shared its strategy in saving money with car sharing: several times, this user intentionally rents car sharing vehicles that require to be refuelled. In this way -this frequent user- gets refunds from Enjoy and Car2Go: "a good way to save money and travel for free with car sharing".

On the opposite side, 12 users described their car sharing experience as an integration to their mobility needs: either they use their own car to maintain their freedom and flexibility of mobility, or to better integrate public transport, personal/shared bike, and walking. Car sharing is considered a good service when it is night time and public transport stops its operations, or when the user is late in going somewhere in Turin.

Frequency of car sharing usage	No. of rents
1/2 times a day (or even more)	7
3/4 times a week*	4
1/2 times a week	7
2/3 times a month*	4
1/2 times a month	6
4/5 times a year	2
total	30

Table 15: Frequency of car sharing usage

In the table, we added the symbol "*" indicating an annual average usage of car sharing or seasonality as only two users indicated seasonality variability in their car sharing usage. Two interviewees admitted that there are months with peaks in their rents, while other months they do not even access to car sharing Applications. For instance, users with 3/4 trips per week use car sharing more during cold season (or during bad weather): both users showed us on their smartphone that the months of December '17 and January '18 registered a daily car sharing usage, while in June, July and August '18 once a week, maximum twice.

If we put in relation the frequency of car sharing usage and age group, we can see on table 16 that Under-30 and 30-39 groups tend to use car sharing more intensively (16 users out of 30).

Frequency of car sharing usage	Under 30	30-39	40-49	50-59	total
1/2 times a day (or even more)	3	4			7
3/4 times a week*		4			4
1/2 times a week	3	2	1	1	6
2/3 times a month*		2	1	1	4
1/2 times a month	1	5			6
4/5 times a year	1	1			2
total	8	18	2	2	30

Table 16: Frequency of car sharing usage per age group

Finally, the purposes of their trips with car sharing. Again, we thought and tried to classify users under two main groups: who uses car sharing for commuting, and those who uses car sharing for leisure activities (shopping, going out for dinner, go to the cinema, and so on). The interviews revealed something more mixed and a fixed classification was impossible:

Reasons of car sharing usage	
Commuting	8
Caselle Airport access	9
Leisure	28
For work only (refunded by the employer)	1

Table 17: Reasons of car sharing usage – several options possible

From the table above (46 preferences), there are only three users who use car sharing for commuting only, while the rest of our respondents use car sharing for different reasons: mainly for leisure activities, but also from commuting and reaching Caselle airport (the 9 users we already mentioned).⁸

It is worth noting that two users decided to switch from car sharing to a leasing service: both used car sharing in a massive way (at least 4-5-6 trips per day for personal and work purposes). On average, they could have spent around 500€ each. According to them, using any car sharing services as a personal and business car is not convenient in term of costs.

⁸ In the Appendix 3 the complete table of what all users declared concerning the purposes of using car sharing in Turin is shown.

5.4 Impact of car sharing on users' mobility habits, car-needs satisfaction and impacts on car purchase or car replacement

During our interviews, we tried to focus our attention on users' experiences, stories and how car sharing had an impact, modified and satisfied (or not) users mobility needs. In particular, we focused to understand from their stories if car sharing replaced a previous owned car, or if car sharing avoided a new purchase or is postponing it.

5.4.1 Did car sharing change mobility habits?

Among the 30 interviewees, we had different feedback. First of all, only one user of car sharing is living outside the operational area of all Turin car sharing providers. For this user, car sharing did not change mobility habits: train remains the preferred way for commuting, and car sharing is a good option and alternative, but it needs to keep two cars.

Then, we registered eight users (26.67%) that replied with "not really changed" feedback. These users have a common point: they do not use extensively car sharing (the most intensive use is once/twice a week). For this category of users, car sharing is considered a good alternative to public transport, but without car sharing, they would walk more, use more their personal bicycle or bike sharing, public transport, and private car. All these users live in the operational area, and some of them in city centre or close to their workplaces.

On the opposite, we found 14 users (46.67%) who clearly stated that car sharing changed their mobility habits. Among those users, car sharing is frequently used (here we can find daily car sharing users), and there are no users with more than 1 car (eight with no cars, and six with one car). For them, car sharing is an alternative to a slow and not on-time PT. Car sharing is considered faster, safer than bike sharing or personal bicycle, and cheaper -where cheaper means the combination of time and cost. Interesting to note that for these users, PT is the last option among mobility possibilities in Turin. Regarding bicycle or bike sharing, only three users out of 14 do not use neither personal bicycle nor bike sharing, while the rest of this group used, and use bike sharing or personal bicycle.

We had also four users in which the response was "in part changed". These users tend to rent a car sharing vehicle less than the above group. Car sharing is still considered a good alternative to public transport or taxi, but less disruptive than before. These users tend to walk a lot, to use their personal bikes (only one uses ToBike sharing), and Public transport when they have time to reach their destination.

5.4.2 Does car sharing satisfy car-needs and does it replace/avoid an additional car purchase?

The answers to those questions revealed a lot about the current users' approach to car, car ownership and the value of the car in term of social status. We divided our respondents group according to the number of cars owned in each household.

No. of Cars per household composition	0	1	2	total
1 adult	11	4	-	15
2 adults	1	5	1	7
2 adults + 1 kid	-	-	1	1
2 adults + 2 kids	-	4	1	5
N/A	2	-	-	2
total	14	13	3	30

Table 18: Number of cars and household composition

Regarding those who do not own any car, among the 14 users interviewed, only one user is currently leaving with his/her partner. The rest are living alone or with flat mate. For the user living with his/her partner, car sharing is currently avoiding a new car purchase. We also insisted on how this user manages weekends' outings: the interviewee have already used rental cars (such as Hertz, Budget etc.) to reach the desired destination. Concerning those who are living alone, owning a car is not fundamental. For these users, car sharing replaces or helps in avoiding a car purchase. Owning a car, for them, is a luxury that maybe they can even afford, but they do not want. A similar line of reasoning is also present in those families or couples with only 1 car: why spending money for a second ("*stupid*") car when you can save money using car sharing?

Concerning who has at least one car (13 users), nine are living with their partner (and among those, four with children). Here we registered the most evident impacts of car sharing on car ownership. Several users consider the 2nd car an extra luxury items, others sold their 2nd oldest car without replacing it. These nine users recognize they can save money with car sharing: in particular insurance, car title, maintenance, parking costs, fuels main costs saved. In addition, for those living in high density areas, car sharing avoids also a potential box rental. A couple of users openly shared with us the cost they would have to afford for a second car, and with their car sharing usage, they can easily save more than 400€ every year. Focusing now on users living alone (four interviewees), one user is thinking to replace its car with car sharing and use a combination of mobility services (car sharing + rental cars + PT and other solutions). Another user is still owning a car -even if it recognizes that the car is parked most of the time and for in-city trips it prefers car sharing- for the flexibility given by having a car, in particular for week-ends or out-of-the-city trips. A final interesting story concerns a user with 2 children: the oldest has coming of age in six months but s/he is not interested in getting the driving license. The family is discussing if they should buy a second micro car or not

considering that Enjoy and Car2Go do not accept young drivers unless after 1 year from obtaining the license.

To conclude, the three users with two cars in their households. One user is living outside the operational area, and without two cars it would be impossible for them to move, to commute. The other 2 users underlined the fact that on car sharing vehicles there are not child seats. They could be interested in using car sharing with the family, but no operator offers child seats in its vehicles, not even incorporated child seats. Another problem underlined by one of these “2 cars” users is that if the work place is outside Turin or in its outskirts, it is impossible to reach via public transport, and the operational areas are even far from Turin bypass. Below Car2Go and Enjoy operational areas;



Figure 9: Car2Go operational area in Turin

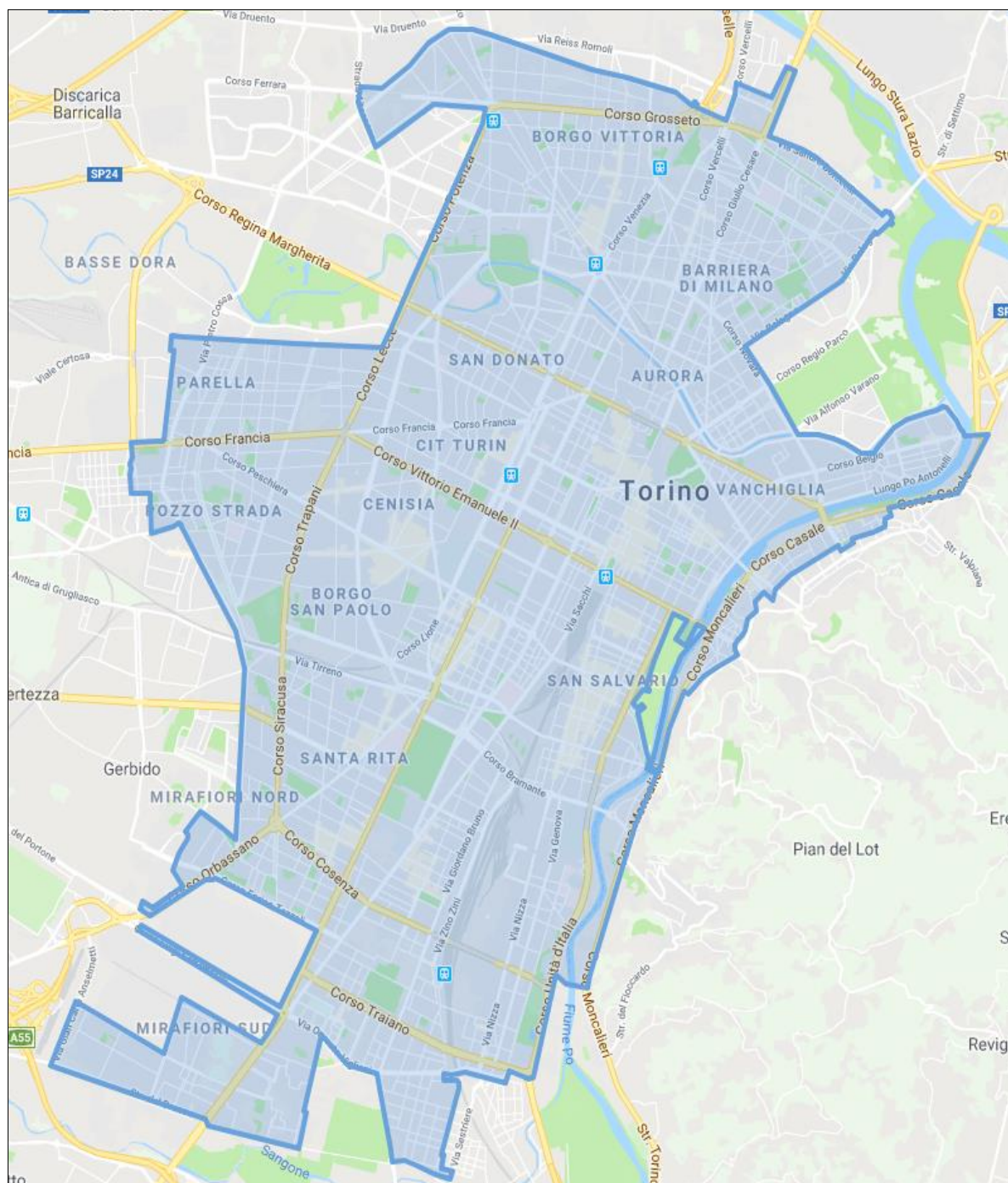


Figure 10: Enjoy operational area in Turin

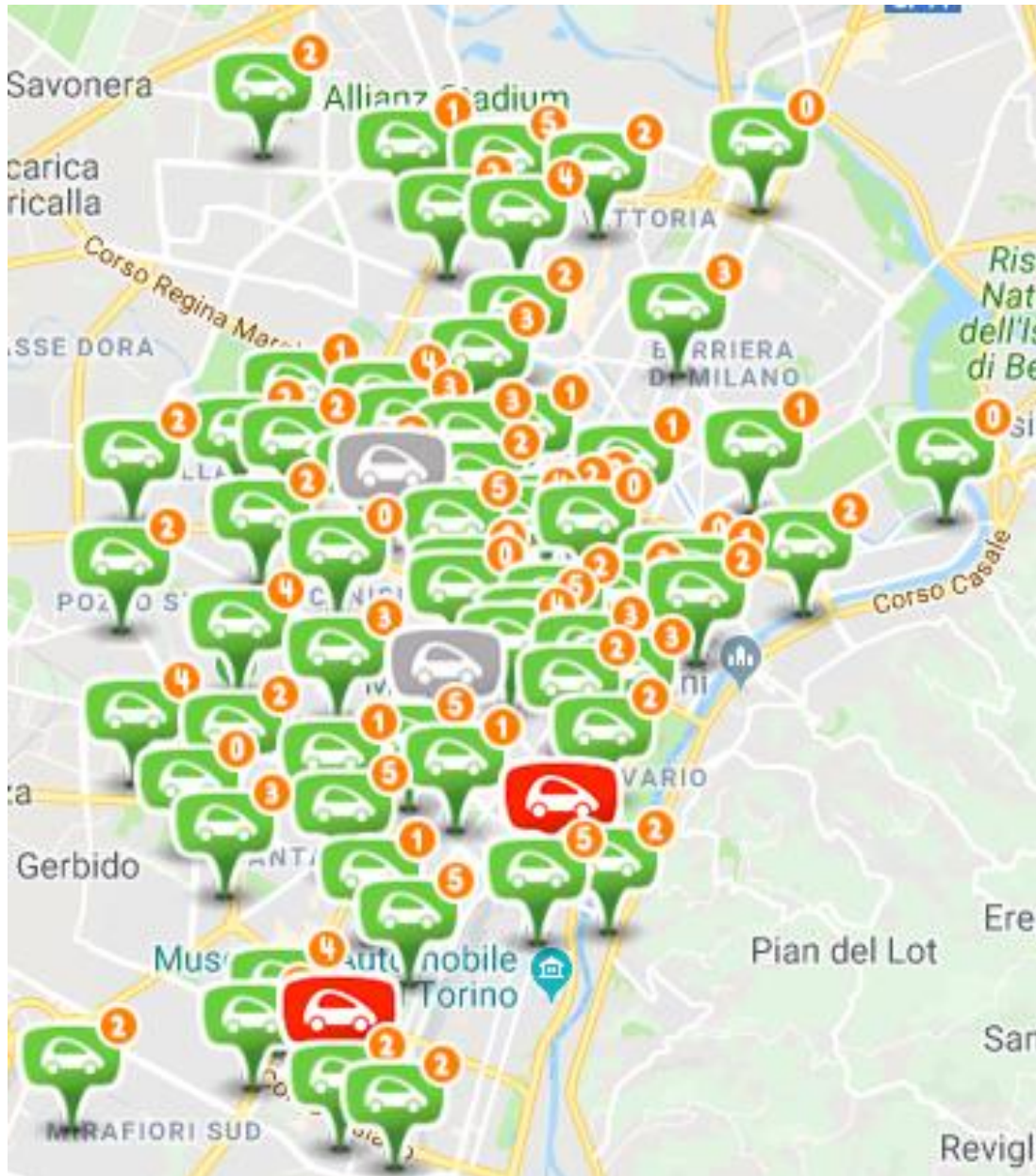


Figure 11: Bluetorino pool stations in Turin

5.5 Users wishes (and potential improvements)

When we ran our interviews, we also collected all users complains, their bad stories and what users proposed to improve their car sharing experiences, or what they would enjoy to see/to have as part of car sharing service in Turin.

The two most cited are: bigger operational area and more vehicles. Regarding the first, several users would include at least Turin's outskirts (towns such as: Moncalieri, Nichelino, Orbassano, Beinasco, Collegno, Grugliasco, Rivoli, Venaria Reale, Settimo Torinese). For them it is inconceivable that no operator reaches the Metro terminus at Fermi in Collegno. Concerning fleet dimensions, more vehicles may satisfy car sharing needs during peak hours. We investigated with additional questions the reason behind demanding more vehicles. Besides satisfying a potential need during

peak hours, the main problem was that available vehicles are far from their places or because users noticed an elastic effect of fleets: during the day all vehicles are more concentrated in the city center, while after 10pm or 11pm vehicles move to operational area margins and it becomes difficult coming home or book a vehicle to reach Caselle airport.

Concerning Enjoy, several users prefer Car2Go only because Car2Go application is faster. In particular, Enjoy takes -according to users responses - too much time in opening cars, and especially in ending rents. Another painful point is the slow customer care service: in case of need, the Enjoy's customer case service seems to be pretty slow and users have to wait at least 10-15 minutes before talking with someone (of course if the smartphone has enough battery).

Other "requests" are:

- ★ More dedicated parking slots for car sharing either in town or in Caselle Airport. Currently only Car2Go offers 16 parking slots in Caselle airport, while IoGuido Parking slots have been recently converted in dedicated car sharing parking slots (of course BlueTorino did not benefit from this conversion as it has its own pool stations by definition).
- ★ Longer booking time. Currently, a user has 15 minutes on average before reaching the selected car and unlock it. Several users would prefer book the car -even paying a fee- for the next morning or for the next half an hour. In particular, users that rent Car2Go from Caselle airport are never sure to find a vehicle: a pre-booking service using the boarding pass or informing Car2Go about their need of a vehicle via App would be an appreciated improvement.
- ★ Weekend packages and special offers: among those who do not own any car, the only option available is the traditional rental cars, while a car sharing service is much faster in booking, opening and ending the rental. Weekend packages can provide an extra flexibility in some users' mobility. Also, special offers, and car sharing agreement with employer can have a positive impact on the frequency of car sharing usage⁹.
- ★ Insurance and penalty transparency: few users complain that penalties or insurance coverages and its deductibles are not always well exposed or clear. These users have no idea what they must do in case of any accident or if customer services will be there in case of need.

5.6 Summary

The 30 interviewees were globally satisfied by the car sharing service in Turin. As already mentioned, Car2Go and Enjoy are the most used operators. The propulsion seems not influencing

⁹ We collected also interesting proposal concerning rates and packages; one proposal was a flat rate as for smartphone: a fix amount every month with unlimited kilometers or unlimited rentals. Another interesting idea was a family/friend account like Netflix or Spotify: if there is a couple with 2 driving licenses, it would be useful to use a unique account with a single credit card for payment. Of course, both drivers need to be verified before accessing to the service.

users' choices: only 1 user out of 30 declared that full battery propulsion was part of its selection elements.

We identified several important points on how car sharing changed and impacted the way how people move and commute, and how car ownership is perceived:

- ★ Younger users seem not be interested in owning a car: the social status given by having a personal car is now changed for a more flexible, affordable and shared car usage;
- ★ "Older" users -even with children- are now considering a second car as an extra expense that can be easily avoided with car sharing;
- ★ Taxi service is considered expensive and a luxury service: in users' mobility priority, taxi is either not even mentioned or the last option (to use just in cases of emergencies).
- ★ Public transport is impacted by car sharing. For a few users, car sharing replaced completely public transport, but for others car sharing is a good alternative to public transport, for example when the destination requires to go with more than one bus or a combination of Metro and bus.
- ★ Bike sharing and/or personal bicycle can have an impact on car sharing usage according to the season or weather condition. More studies are required to verify how bike sharing may impact both car sharing and public transport.

To conclude, the impression we had after all these interviews is that users are more multi-modal customer than before: they continuously compare different transportation options according to their needs and time available to reach a specific destination. They use a combination of options even on the same day. According to our view, a better fleet management or an increased number of car sharing dedicated parking slots can attract more customers, and we think that Turin can embrace a forth car sharing operator proposing either a bigger operation area and pool stations in city centre, or a more car segments in its fleet with specific packages according to customer needs.

6 Focus group results on car sharing cultures in low- and high-uptake European countries

As a back-to-back event with the CIVITAS Forum conference in Umea, Sweden, from 19-21st September 2018, ICLEI organized a dissemination workshop. This was a joint dissemination workshop with another relevant EU funded project on mobility, "MoTiV", in order to maximise the reach and impact of the dissemination. The main purpose was to disseminate the results obtained in the STARS project until Month 12, but the interactive focus was to engage the participants and selected guests to share their experience on car-sharing uptake in their respective cities.

First part of the workshop was facilitating the dissemination of STARS and MoTiV projects, where Johannes Rodenbach (Autodelen.net) presented on STARS project and its results thus far, while Dr Ghadir Pourhashem introduced the activities and results of MoTiV. Second part of the workshop engaged participants into group discussion and comparing the experience how their respective cities and countries see and adopt car-sharing systems, what are the available systems in the cities they represent, along with their input on uptake and usage of car sharing in their respective cities.

In order to start the discussion, opening presentations from two European cities that were pre-selected explained their car-sharing experience. Madrid, Spain was chosen to represent a city with a "successful story" from a Western European country, while Budapest explained a case of Eastern European country where the take up was unsuccessful.

The workshop was promoted in advance to the CIVITAS Forum by all consortium partners, as well as during the first and second day of CIVITAS Forum with special promo flyer, word of mouth, personal invitations etc. distributed by consortium partners attending the conference, mainly ICLEI, LGI and Polito.

To better understand how different countries from EU experience different car sharing models, the participants were given questions on car sharing experience in their cities. Participants were grouped in four different tables and were given workshop materials to help them answer specific questions, pin it on the flipchart and to motivate their answers. These questions were given to participants, where each table only got three different questions, to help them assess the car sharing situation in their city:

- ★ What are the opportunities of introducing car sharing? Why? What type of car sharing?
- ★ What are the obstacles of introducing car sharing? Why? What type of car sharing?
- ★ What are the experiences with car sharing in your city? Impact?
- ★ What is needed to boost car sharing in the future and/or to attract larger audience?

- ★ How important are values such as safety and comfort in the choice of shared transport modes?
- ★ How can Citizens' Value of Travel Time (VTT) shape the future (or improve quality) of Mobility as a Service (MaaS) in Europe?
- ★ What are the factors that influence the choice of your transport mode?

The participants represented the following cities: Brussels (Belgium), Valencia (Spain), Stockholm (Sweden), Umea (Sweden), Budapest (Hungary), Bremen (Germany) Madrid (Spain) and non-EU representative from Melbourne (Australia). Furthermore, other non-city representatives were also present, such as transport planners, universities representatives, researchers and one city network.

After the participants carried out the task of representing their city and main car sharing characteristics, they engaged in discussing how different car sharing models are perceived in their respective cities and countries.

In their discussion, the participants, i.e. city representatives, mobility practitioners and academics, relied on their general experience and knowledge without any data on hand at the workshop.



Figure 123: Four workshop groups

Eastern and Southern European country representatives (Hungary and Italy) discussed how they share similar experience in car sharing operational models in their cities. Since these countries share similar cultures towards mobility in general, in both Hungary and Italy, experience from participants shows that free-floating operational model is more popular than any other operational model. Participants from Italy shared that that in Italy, the synonym for the car sharing is actually free-floating operators such as car2go and DriveNow. They imply that this is partly because the free-floating model ensures independence and great number of available vehicles in customers' vicinity, and that there is a lack of other available operational models in the cities. However, moving away from car-sharing, the participants pointed out that culture in their cities affect the operational

capacity of free-floating bicycle scheme, as customers tend to leave the vehicles in unreachable areas for other customers, in the middle of the street or they even vandalise the vehicles.

Madrid representative claims that there is a great amount of available vehicle sharing models, and great variety of vehicles to share, such as different types of scooters, cars, bicycles etc. Similar problem with occasional vandalism occurs there, but a greater problem could potentially arise from the interaction between different vehicle providers and the lack of responsibility they show towards their vehicle. According to Sergio, this does not represent a very important problem yet, but this was remarked as a potential issue in the future. Madrid, as a Western European representative, presented a successful story of many different vehicle sharing, not only car sharing, alternatives gaining popularity after 2014. It is not completely clear what lead to expansion of different sharing providers (scooters, bikes, cars), however it is clear that there was no strict regulations, for service providers, other than for car sharing, entering the shared mobility market.

Budapest representative explained that that only free-floating car sharing operators approached the transport planning authority, but that they offered diesel vehicles instead of electric, which was unacceptable in certain cases, thus the deal had to be renegotiated to ensure a significant share of the fleet as electric cars. This resulted the free-floating operator enter the market in Budapest with a certain percentage of electric vehicles, and currently there are two free-floating car sharing service operators: GreenGo and MOL Limo.

Jonas from city of Stockholm stated the example of culture towards car sharing in Northern Europe. He stated how free-floating car sharing model is not feasible in Swedish cities, due to high aversion towards this operational model. As understood from Jonas, citizens in Sweden perceive free-floating model to be unnecessary influx of additional vehicles into the cities, and that it heavily adds to traffic jams. This lack of demand and interest from citizens in Swedish cities was reflected in economic losses occurred by DriveNow. Furthermore, Jonas stated that the acceptable car sharing operational model would be peer-to-peer car sharing in Sweden, especially in the areas outside main cities.

The picture for car sharing is fuzzy: only a minority of the citizens is interested in this service and, half of those interested do not see this service as an actual alternative to car ownership. In the Eastern European countries, much fewer individuals know what a car sharing service is: sometimes only the share is 20% or even lower.

Even if the individual mobility needs were well accommodated in terms of car-sharing, only a segment of the population is prepared to choose the combination of the eco-modes of transport. Individual preferences, mobility orientations and the images associated with various modes of transport discourage people from perceiving shared cars as a mobility option. The private car is seen and used not only as a means of transport, but also – or even predominantly - as a status symbol

and an expression of prosperity. The principles of the freedom associated to the automobile are still communicated in car advertising in Eastern European countries, stating that only individually driven cars bring the positive feelings and freedom, no matter how, no matter how tough the different periods are. This suggests that car sharing is not necessarily perceived like a solution to optimise the use of car but like an additional mobility opportunity sometimes more convenient than public transport.

In Eastern society, over the last two decades, an emotional attachment to car ownership as a socially desirable symbol of prosperity has due to catch up with motorisation after many years of deprivation. Also, the more significant domestic car production is to the national economy, the more strongly this social image is supported by national policy. As time passes by, the belief of "using, rather than owning" gains more and more sense to the point that even the car manufacturers contemplate about enclosing this principle in their discussions of future business models.

Desk research has been conducted to understand these differences in terms of car-sharing use for the Eastern European citizens. For some countries, there is no information available and no debate on this topic has been identified.

In Bucharest, Romania, for example, the car sharing system is called Get Pony and it is the only company providing this service in the city. The two owners of Get Pony shared their experiences from working with the Romanian market.

"Today, the world shares music, movies, books, even houses. Sharing is the future. And slowly the Romanians begin to realise this "stated Demis Ghindeanu, who, along with his friend Iulian Pădurariu, brought to Romania a system that is increasingly appealing to the Western cities. The Get Pony car-sharing experience has "exploded" in less than a year and it was brought as an alternative to regular taxi service or Uber - structured applications.

Although the concept is called "car sharing", not everyone wants to share. There are also users who love their Pony, even if the cars are the same: "The cars do not differ, you can't distinguish them. Only by the license plate. There was this person that rented the car for a month because his car was being kept in the service. It was winter, so the tires needed to be changed for all cars. All have been changed, except for his. I called him and told him someone would come to pick up the car and replace it with another one for tyre replacement. . He did not agree, though I explained the cars were identical. He insisted that he wants to keep that specific car", says Demis Ghindeanu.

Romania is the country with the highest percentage of homeowners in the European Union. The sense of ownership - state the sociologists - is an effect of the decades of communism and has deeply settled in the citizens' life form: "have your own thing, it's easier." So starting a business in

Romania based on trust and sharing is an act of courage, but it's quite clear that nobody can run away from the future.

CONCLUSIONS

The statistical segmentation of car sharing user mobility styles has shown that two of three styles identified within the car sharing user group are characterised by a high affinity to car use. Only one identified style is centered around the use of sustainable modes, namely public transport. This shows that use of car sharing and high affinity to car-use do not exclude one another. The distribution of car sharing customers to the three styles seems to differ according to used variant, country and city. This phenomenon has to be investigated in detail in further research.

One of the identified mobility styles of car sharing users entails high car-orientation and high awareness for sustainable mobility. This style can only be found in car sharing user groups, it is not present among non-users. It is possible that the adoption of this style may also involve a general openness for a more sustainable mobility behaviour in general. This should be investigated more closely in the future.

Focus groups in Germany showed that users and non-users of car sharing both share the general impression that cars are not the best way to travel in an urban environment. In fact a majority of car owners only use their car rarely and in a way that resembles the use of roundtrip car sharing. The further conversion to car sharing and thus the reduction of space consumption of parking cars is hindered by two problems: non-users do not trust car sharing offers in respect to availability and they have the impression that car sharing will add a new complexity to their live. This is a problem car sharing providers should think about when optimizing their offers. It is also a hint that digitally and physically integrated Mobility as a Service offers may help to increase the conversion to car sharing and multimodal mobility.

Focus groups in Flanders gave a very good insight in how car sharing use may be spread among non-users: a majority of the interviewed users was introduced to car sharing by friends and relatives. This shows that peer-to-peer approaches in marketing are a good way to overcome the scepticism of non-users. The role of "good examples" is still underestimated in car sharing marketing. This could be a further learning field for car sharing providers, city authorities and marketing experts.

Interviews with users of free-floating car sharing in Turin showed that this variant is in general very attractive but might not be sufficient to avoid car ownership if people have children in their household. Users recommend to improve the free-floating system with features that are traditionally associated with roundtrip car sharing variants: reservations long in advance, plannable accessibility of the cars, better possibility to do out of town trips. This suggests that an integration of features from roundtrip and free-floating car sharing might improve the perceived and actual value of car sharing offers. The same became also visible in the German focus groups where it was evident that present users of free-floating and roundtrip variants see advantages and disadvantages of their

services that would be compensated by the other variant. Combined roundtrip/free-floating car sharing offers now emerge in several cities across Europe. The use and impact of this services is a field of further research for car sharing providers and scientists. City authorities may conclude from the research done in D4.1 and D4.2 that the promotion of car sharing needs to be done with the aim to better combine the different variants.

In this light, the finding of the STARS workshop, that in some European countries car sharing in general and free-floating are thought to be just the same, might be a problem.

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APPENDIX 1

Items and scale of measurement for statistical segmentation

Items	Scale
Private car use Habit <i>I feel strange travelling without a car.</i> <i>I use the car without planning ahead.</i> <i>It would require an effort for me not to use a car.</i> <i>Using a car is part of my daily routine.</i> <i>Using a car is something that I do automatically.</i> <i>I have been using a car for a long time.</i> <i>Driving a car saves time.</i> <i>Driving a car makes life easier.</i>	1 Strongly disagree – 7 Strongly agree
Daily travels modes <i>If you think about your daily travel (for work, study, food purchase, etc.), how often do you use the following modes?</i> <i>Private car as a driver</i> <i>Private car as a passenger</i> <i>Car sharing</i> <i>Public Transport</i> <i>Motorcycle/ scooter</i> <i>Taxi</i> <i>Cycling</i> <i>Walking</i>	Daily – 4-6 days/week – 1-3 days/week – Once/ a few times a month – More seldom – Never *Motor based travels was calculated by the average of answers for <i>Private car as a driver</i> , <i>Private car as a passenger</i> , <i>Car sharing</i> , <i>Motorcycle/ scooter</i> , <i>Taxi</i> . **Active travels was calculated by the average of answers for <i>Cycling</i> and <i>Walking</i> .
Attitudes <i>My support for implementation of car sharing in society is...</i>	1 very weak – 7 very strong
<i>Overall, my view of car sharing is...</i>	1 very negative – 7 very positive
<i>Using a car sharing is relatively comfortable</i>	1 Strongly disagree – 7 Strongly agree

<i>Using a car sharing is relatively environmental friendly</i>	1 Strongly disagree – 7 Strongly agree
Environmental Awareness <i>It is urgent to do something against the ecological destruction caused by using the car.</i> <i>I believe that using the car causes many environmental problems.</i>	1 Strongly disagree – 7 Strongly agree
Personal norms <i>I feel morally obliged to reduce the environmental impact due to my travel patterns.</i> <i>I would feel guilty if I did not reduce the environmental impact of my travel patterns.</i>	1 Strongly disagree – 7 Strongly agree
Green political scale <i>Political issues are sometimes referred to in a green environmental scale. Where would you place yourself on such a green scale?</i>	1 Not at all green – 7 Very green
Political affiliation <i>Political issues are sometimes also referred to as "left" and "right". Generally, where would you place your views on this scale?</i>	1 Far to the left – 2 – 3 – 4 Neither to the left nor the right – 5 – 6 – 7 Far to the right

Table 19: Items and scales of measurement.

APPENDIX 2

Main asked questions during empathy interviews Turin

- ★ Age group and gender?
- ★ Do you live close to a car sharing operator or car sharing operational area?
- ★ Why they choose car sharing?
- ★ Could you describe how you commute, and if car sharing is part of it? Open question; the purpose is to understand "user stories".
- ★ When you use it and for which reasons (pleasures, commuting, others);
- ★ How often? (daily basis, once a week or once a month).
- ★ Do you also use other mobility operators or services? Public transport, personal bike, bike sharing, (and walking);
- ★ Did car sharing alter your travel behaviors? If Yes, how and why?

- ★ Have you ever used the same service (e.g. Car2Go) in other country? Yes / No and Why? (maybe they are not aware of this option);
- ★ Do you prefer FF or SB?
- ★ Do you care of the car segment/type (small or 4 seats) and propulsion system?
- ★ Do you own a car or cars?
- ★ If you have a car, what is the car used for? and what is car sharing used for?
- ★ Are you thinking of substituting your/their car(s) with car sharing? or if they avoided in purchasing a second/third car due to car sharing presence.
- ★ If you don't have a car, is car sharing sufficient for your "car-needs"?
- ★ What would you improve of your current car sharing experience? What does it work and not?

APPENDIX 3

Purposes of car sharing use in Turin

Purposes of car sharing use in Turin – all interviews	
commuting	1
commuting (go home after work mainly)	1
commuting (when late) & leisure + Caselle airport	1
Commuting first sometimes leisure	1
for commuting when he is late	1
for work purposes (refunded by the employer)	1
leisure & Caselle (never commuting)	1
leisure & Caselle airport	1
leisure (never commuting)	1
leisure (shopping, going to play football with friends...) sometimes to commute when late	1
Leisure and commuting	1
leisure, commuting, Caselle	1
leisure, commuting, Caselle (for every single in-city transfer)	2
Leisure, going home after courses	1
leisure, commuting and go to Caselle	1
visiting friends, dinners outside city centre	1
shopping, go to cinema, leisure both alone and with all family	1
for shopping, leisure (after work)	1
for shopping, leisure, going out with friends, dinners, movies... (average of 50€/month). The use is done as a couple.	1
leisure, visiting friends	1
leisure, playing tennis, coming home after dinner (Never for commuting)	1
leisure, shopping (Never for Commuting)	1
leisure, going out for dinner	1
leisure (if too long with bicycle)	1
leisure (sharing the ride & cost with friends)	1

leisure (shopping, hairdresser,)	1
Go to Caselle Airport (main reason) and leisure (shorter trips)	1
commuting (every day), leisure, and Caselle Airport	1
Total	30

Table 20: Purposes of car sharing use in Turin