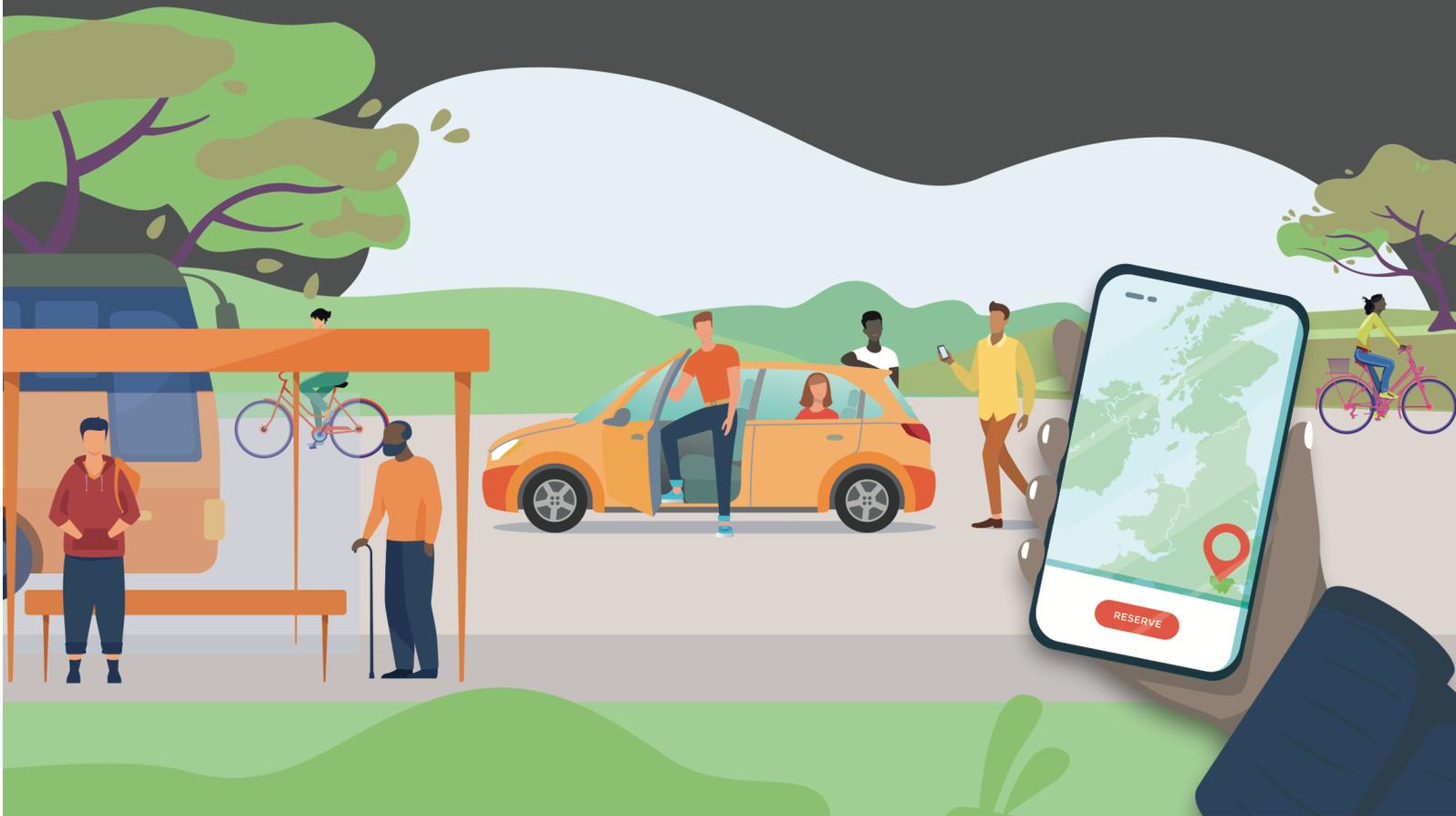


Car Club Annual Report London 2020



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CoMoUK Car Club Annual Report

London 2020

KEY FINDINGS

www.como.org.uk

ACTIVE CAR CLUB MEMBERS



189,275

Total members:
565,505

FLEET SIZE

Fleet size:
6,060 car club
vehicles in
Britain:

3,886
in London

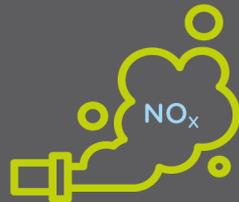


AIR QUALITY



100%

of car club cars are Low Emission Zone and Clean Air Zone compliant



91% ↓

lower NO_x emissions than the UK average car



74% ↓

lower PM2.5 emissions than the UK average car

CARBON SAVINGS



3,800

Car club carbon savings for London are equivalent to the lifetime CO₂e absorption of around 3800 trees

CAR AGE



1.6 YRS

is the average age of car club cars

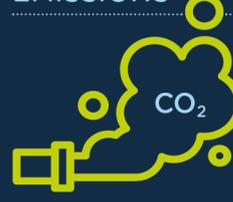
REDUCING PRIVATE CAR OWNERSHIP



23.5

private cars taken off the road by each car club car in London

CARBON EMISSIONS



25.5%

less emissions in London car club car compared to the average UK car

COST SAVINGS



24%

of respondents stated that they couldn't afford to own a car, and this was their reason for joining the car club

ELECTRIC CARS



59%

of respondents reported having used an electric vehicle



11%

of the car club fleet are electric, by comparison, less than 1% of cars in England and Wales are electric



OVER
80%

were satisfied with the electric car club experience



ONLY
39%

were satisfied with charging points

2 Foreword

It gives us at CoMoUK great pleasure to present this 2020 car club research, specifically reporting on our capital city.

This London report is one of a suite of reports covering Scotland, England and Wales and the whole of Great Britain respectively, all stemming from the same research conducted at the same time in this unique period in our history. Our thanks to all our stakeholders – and in particular car club users and providers – without whom this research would not be possible.

The Covid-19 pandemic has affected all of us far beyond transport, while inevitably shaping the experience and behaviour of London car club users. We expand on that in this report and hope that the post-pandemic momentum is towards public transport and sustainable travel and not away from it.

Yet for me the most important insight is how so many of our key findings are consistent with the many years of research we now have into this sector (our very first foray was in 2002).

That is to say that car clubs:

- take out substantial numbers of private cars (users told us wider availability of car club cars was a critical issue in encouraging them to dispose of car)
- per car emit much less than the UK average car
- are used by far more people per car than private cars, leading to far fewer cars for a population's motorised travel needs
- do not foster car use but rather cut net mileage and are mostly used off-peak
- boost use of public transport and walking and cycling
- provide much more affordable and more sustainable access to electric vehicles for Londoners than purchase or lease

Based on this evidence, we contend that this set of interlocking virtuous circles are what the future of London will need to have more of if the Mayor's transport strategy targets, the goal of London being net zero on carbon by 2030, our national legal limit of net zero greenhouse gas emissions by 2050 at the latest plus our forthcoming legal target of a 78% emissions cut from 1990 levels by 2035 are going to be met.

We cannot let these findings pass without acknowledging that this is a sector without subsidy support, that indeed pays to operate, one which is hampered by the incoherence of a borough-by-borough set of operating areas in London. It has almost no dedicated access to any electric vehicle chargepoints and is not part of strategic transport planning across the capital. Yet it is delivering for Londoners and the Mayor's transport strategy and we see some encouraging signs of policy progress. With the right policy environment it could deliver even more.

We look forward to working with stakeholders in London to help create that environment as part of the capital's continuing turn towards a range of convenient, attractive and sustainable transport options for its citizens and visitors.

Richard Dilks

Chief Executive, CoMoUK

3 Introduction

The research for the CoMoUK Car Club Annual Report was undertaken between 1 November 2019 and 31 October 2020. This research has been created by CoMoUK and has been administered by consultants from Cenex and Revolution9, with input and contributions from car club operators.

The Covid-19 pandemic has significantly altered how we live, work and travel. Personal circumstances have changed for many people and restrictions on movement have had a substantial impact on the car club sector.

4 Methodology

Over the last 14 years, CoMoUK has worked with car club operators to collect a range of data on the characteristics of their members and information on their fleets, as well as surveying car club members about their travel behaviour.

For this report, data was collected from the main national-scale operators (Zipcar, Enterprise Car Club, Ubeeqo, Cowheels and Hiyacar).

The data for the study was collected in four parts:

4.1 Members' survey

A survey was circulated to members of car clubs in London, which was distributed by the car club operators and promoted on social media. The survey was live from 9 November 2020 to 21 December 2020. Prize draws for free driving credit and vouchers were offered as incentives for completing the survey.

The survey of car club members was completed by 3,463 respondents, which is 2% of active members in London.

Not all questions were mandatory, or applied to all respondents, so where figures are given as a percentage, these represent the proportion of those who answered the question.

4.2 Operators' survey

Car club operators were requested to provide information about their membership base and utilisation patterns through an operators' survey. Data was provided covering the period from 1 November 2019 to 31 October 2020. This summarised the aggregate data for the membership base and their driving patterns, to identify usage profiles and any changes from either previous years or post-initial lockdown.

4.3 Fleet Data analysis

Car club operators provided vehicle registration numbers (VRNs) for the vehicles deployed in the fleet between November 2019 and October 2020 (the analysis period). They also provided the date each vehicle joined the fleet and the date the vehicle left the fleet (if applicable). One operator also provided mileage for each vehicle during the analysis period and the location where each vehicle is usually deployed, although these two fields were optional. Where mileage was not provided, it was derived from the car club operator survey.

The databases from the Driver and Vehicle Licensing and Safety Agencies (DVLA and DVSA) were used along with VRNs to determine information such as make, model, registration year, fuel type, engine Euro standard, and measured CO2 emissions provided by the manufacturer. The vehicle's safety performance in the European New Car Assessment Programme (NCAP) was established by matching the vehicle's DVLA make, model and year of registration to the NCAP database.

Please refer to the Appendix for more information about how fleet data was analysed.

4.4 Qualitative study

In order to get a deeper understanding into the factors that influence car club utilisation, and the barriers to increased use, Cenex undertook interviews with a selection of consumers across the UK. The interviews aimed to provide insight into motivations behind modal shift, the triggers and

Car Club Annual Survey for London

barriers to use, the customer experience and how these are impacted by Covid-19. The interviews covered:

- Experiences in using the vehicles (what works well, what does not).
- Reasons behind travel choices and how access to car club vehicles impact these.
- How location, accessibility and other services affect the use of car clubs.
- How Covid-19 has affected use and attitude towards car clubs.

Interviewees were split into three groups:

- Three car club users: members of a car club who use it at least once a month.
- Two 'lapsed' users: people who have joined the car club but do not use it or have not used it for a long time.
- Three non-users¹: people who live in areas where access and knowledge of car clubs is high, but they are not members.

The interview participants were recruited from a range of geographical locations. When completing the members' survey respondents were asked if they were interested in taking part in further research. 2835 respondents said they were interested in taking part in further research, of those 172 responded to the follow-up email. The non-users were recruited through contacts, community links and social media. Participants were selected to give a distribution of areas, ages and gender where feasible.

5 Impact of Covid-19

This year the broader market context has changed dramatically with Covid-19 changing work and leisure behaviours. Varying levels of national and sub-national restrictions have been in place at different times throughout the research period.

5.1 Operator reflections on the impact of Covid-19

There is significant variation in the findings around the impact of Covid-19. Most operators reported either no changes in the membership growth rate or significant increases the growth rate of new members since the pandemic started. Overall, with positive membership growth seen by many operators, the impact of Covid-19 has been felt less in London than elsewhere in the UK car club market. There has also been an increased proportion of longer round-trip journeys undertaken in car club vehicles in London compared to before the first Covid-19 lockdown.

Operators have adapted their approaches in light of the pandemic. The frequency of cleaning cycles has increased by most operators, which has slightly impacted the booking availability in some locations. Members reported that some operators put longer minimum booking durations in place.

5.2 Changes in car club usage in Covid-19 pandemic

Since the start of the Covid-19 pandemic, usage of car clubs has increased for 39% of respondents. This is notably different to the UK wide trend, where more users had decreased usage (only 28% increased their usage in the UK total)².

¹ For these participants, the sections of the interview that covered experience of using a car club was not included.

² The UK 2020 car club report can be found on the CoMoUK website <https://como.org.uk/shared-mobility/shared-cars/why/>

Since the start of the pandemic, has your usage of car club vehicles....

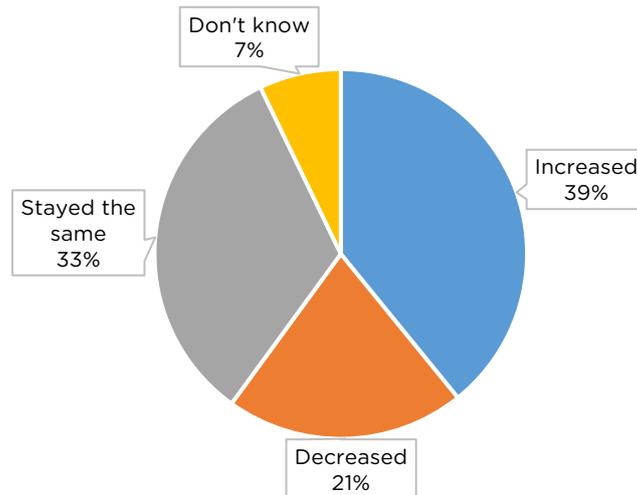


Figure 1: Change in usage of car club vehicles since the COVID-19 pandemic.

Where Covid-19 resulted in increased car club usage, analysis identified eight key underlying reasons, in order from most to least frequently cited:

- Avoidance of public transport.
- Reduction in lift sharing.
- Financial changes caused by Covid-19.
- Increased need to access family members.
- Increased leisure time, with lockdown creating a desire to get out of the local neighbourhood.
- Moving house meaning additional need for transporting large/bulky/heavy items.
- Sale of household/private car.
- Increased need for delivery/collection of large items/bigger grocery orders.

“At the moment I am avoiding public transport for COVID reasons, but also the journey that I am doing takes much longer on public transport (Bus-Tube-Bus) whereas in a car it is easy and direct.”
Richard, Richmond

Where Covid-19 resulted in decreased car club usage, analysis identified eight key underlying reasons, in order from most to least frequently cited:

- Travel demands and opportunities reduced because of Covid-19.
- Sanitizing and cleaning requirements inconvenient.
- Increased time in between bookings reducing availability of cars.
- Worries about inadequate cleaning/sanitizing.
- Difficulties in booking plus fewer slots and cars, resulting in increased difficulties in finding a car available.
- Changes in personal circumstances.
- Cost.

5.3 Covid-19 impact on past travel choices

The research explored the impact of Covid-19 on travelling habits of car club members. In the last six months, nearly 57% of respondents have walked three times a week, and 30% have used a bicycle as frequently.

Modes of transport used in the last 6 months

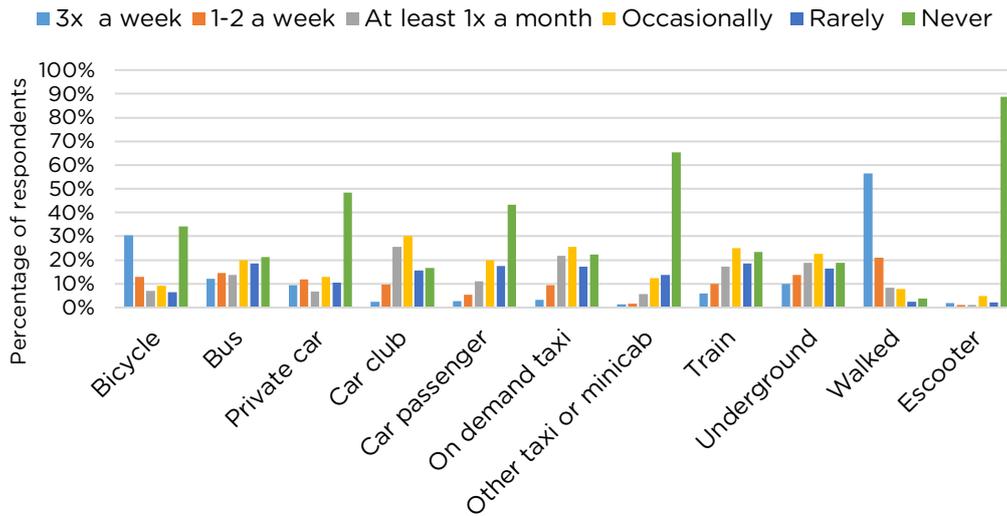


Figure 2: Modes of transport used in the last six months.

When asked about reasons underlying travel choices, 78% reported that their choices were affected by Covid-19, with 42% choosing that option which makes them feel safest to limit their exposure to Covid-19.

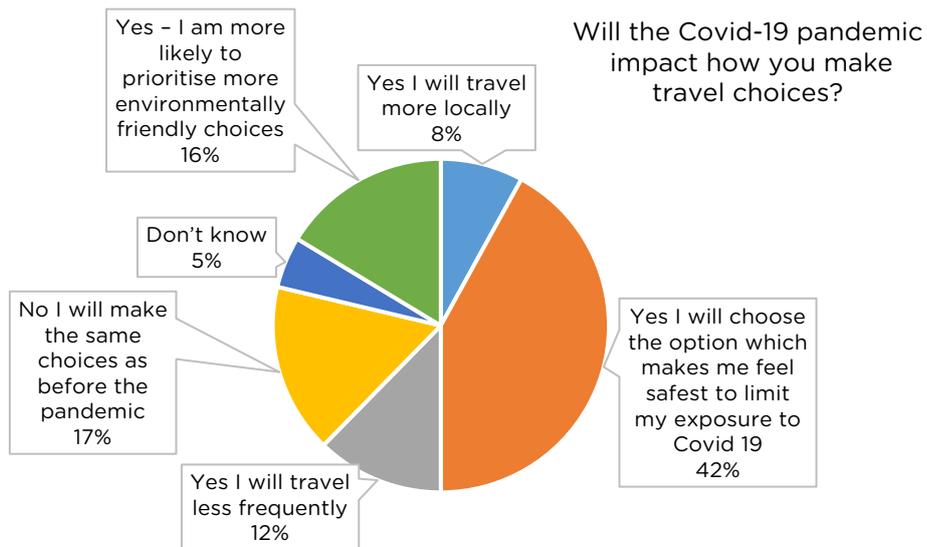


Figure 3: Impact of the COVID-19 pandemic on travel choices.

5.4 Covid-19 impact on future transport choices

When specifically asked about usage of car club vehicles in the future in the light of Covid-19, 53% think that usage will change (45% more frequent usage, 8% less frequent). The 45% expecting higher use is much higher than the UK report where 33% expect more frequent usage³. 28% think it will have no long-term effect on their usage.

³ The UK 2020 car club report can be found on the CoMoUK website <https://como.org.uk/shared-mobility/shared-cars/why/>

Do you think the COVID-19 pandemic will impact on your usage of car club vehicles in the future?

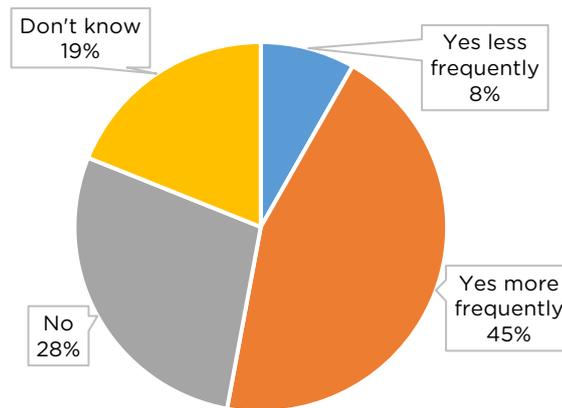


Figure 4: Impact of the COVID-19 pandemic on the use of car clubs.

5.5 Impact on car club fleets

Trends in car club fleet size over the past year are described later in this report. The summary is that the number of car club vehicles reduced slightly between March and June, when restrictions to tackle Covid-19 were first in place but have since recovered to the levels seen at the start of the survey period.

5.6 In-depth interviews: impact of Covid-19:

5.6.1 Concerns over safety and virus transmission

The majority of interview participants reported that they were happy to use car clubs and had no concerns over sharing the vehicles with others. Participants reported having some concerns at the beginning of the first lockdown, related to the lack of knowledge and understanding of how the virus spread. Some had increased cleaning the car themselves, many reported doing this at the beginning, but less so now. There was a mix of responses on what they expected from the car club company. The majority stated they do not expect the car to be cleaned after every booking. Only one interviewee reported having seen any correspondence from the car club on the cleaning of vehicles.

Interview participants were more concerned about using public transport in comparison to car clubs, as they felt less in control of the situation. Although they were happy with the measures being taken by public transport providers their concerns related to behaviour of other travellers. Although most of the interviewees reported using public transport, they stated they were trying to avoid it because they felt they should, rather than out of concern for safety.

5.6.2 Impact on travel and future transport choices

Interviewees reported travelling a lot less in general, but they were more likely to use the car club for the trips they were taking. The most frequent types of journeys for which a car club were used were shopping, moving large items/home decorating, caring for family and friends, and leisure/exercise.

It is difficult to draw conclusions about how journeys patterns will change in the long term due to Covid-19. Most interviewees were uncertain about future effects, but those that live in large cities expect to be able to return to using public transport. The largest change is for those that expect to continue to work from home more and therefore use public transport less. The non-users who owned cars either worked in a role that required the use of their own car or stated they would still need/want their car for leisure trips and shopping.

6 Members' Survey Results

This section presents the results of the survey of car club members in London.

6.1 Length of membership

Just over two thirds of respondents have been members for two years or less (in line with the UK-wide results), with only 15% (a marginal increase on UK figures⁴) having been members for more than 5 years.

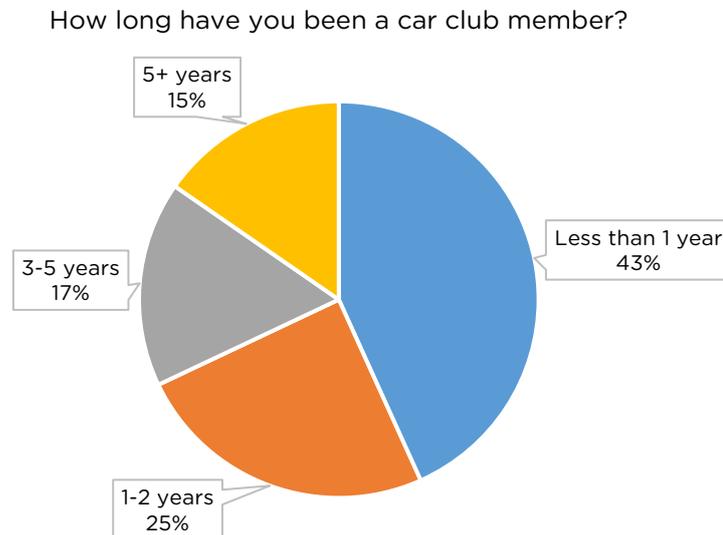


Figure 5: Length of car club membership.

46% of respondents in London hold membership of only one car club.

6.2 Factors affecting awareness of car clubs

Respondents were asked how they first became aware of car clubs. 37% cited word of mouth while 28% said that they had seen a car club vehicle on the street. This is in line with the UK findings⁵, though London shows a higher proportion in these leading categories.

⁴ The UK 2020 car club report can be found on the CoMoUK website <https://como.org.uk/shared-mobility/shared-cars/why/>

⁵ The UK 2020 car club report can be found on the CoMoUK website <https://como.org.uk/shared-mobility/shared-cars/why/>

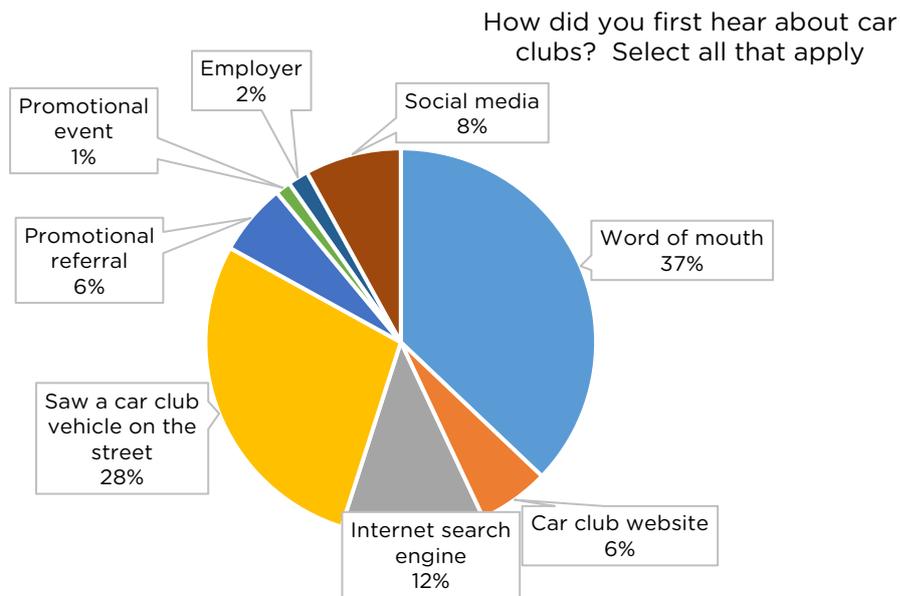


Figure 6: Factors affecting awareness of car clubs.

6.3 Initial membership expectations

Respondents were then asked to identify their initial expectations for car club membership. 44% expected to use the car club as a back-up to other travel options for ad hoc requirements. 41% expected to make regular use of the membership reducing reliance on running a private vehicle. 15% had a one-off specific need - the majority of these were linked to moving house although shopping or day trips were also identified.

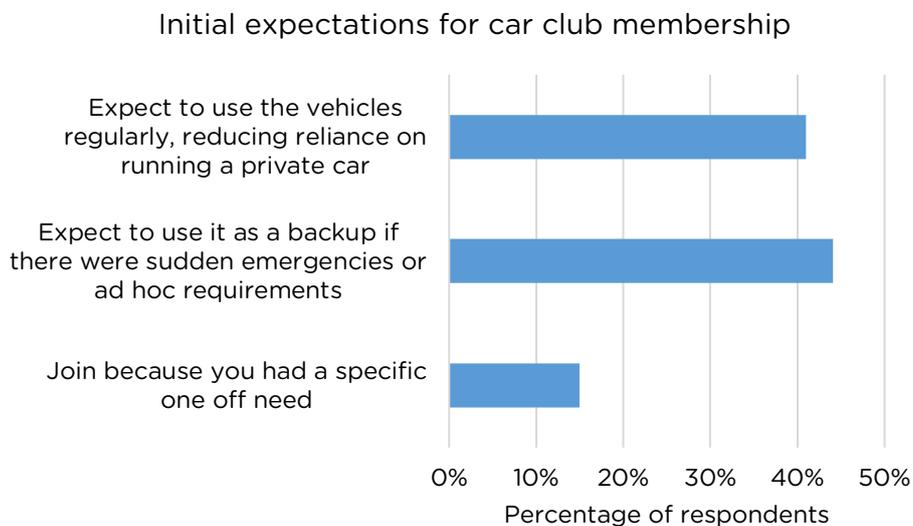


Figure 7: Initial membership expectations.

6.4 Reason for joining a car club

Among respondents who answered a question about owning a car prior to joining a car club, 61% did not own a car prior to joining a car club. This is higher than the UK wide result⁶ of 53% and the 2017/18 study asking the same question, suggesting a growth in uptake from groups without vehicles.

⁶ The UK 2020 car club report can be found on the CoMoUK website <https://como.org.uk/shared-mobility/shared-cars/why/>

Did you own a car prior to joining car club?

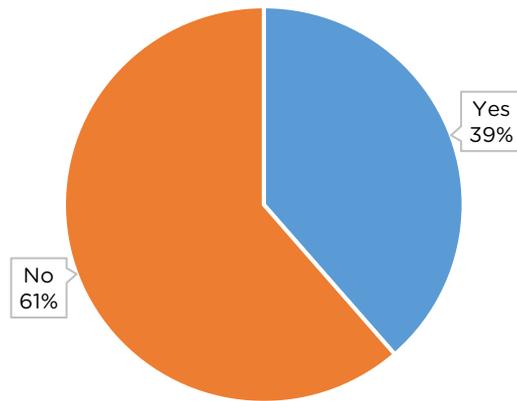


Figure 8: Car ownership prior to joining a car club.

6.4.1 Reasons for joining car club - those who previously owned a car

Respondents were then asked to identify the specific reason(s) that prompted them to join the car club with responses split between those who owned a car prior to joining the car club and those who did not. For those who had previously owned a car, reasons identified in the survey are shown in the chart below. Among responses to this question, key issues were joining the car club to then sell/dispose one or more existing household vehicles (44%), and changes in personal circumstances (16%). Joining to dispose of a vehicle is significantly higher in London compared to the rest of the UK⁷.

Those who previously owned a car: what were you specific reasons for joining car club?

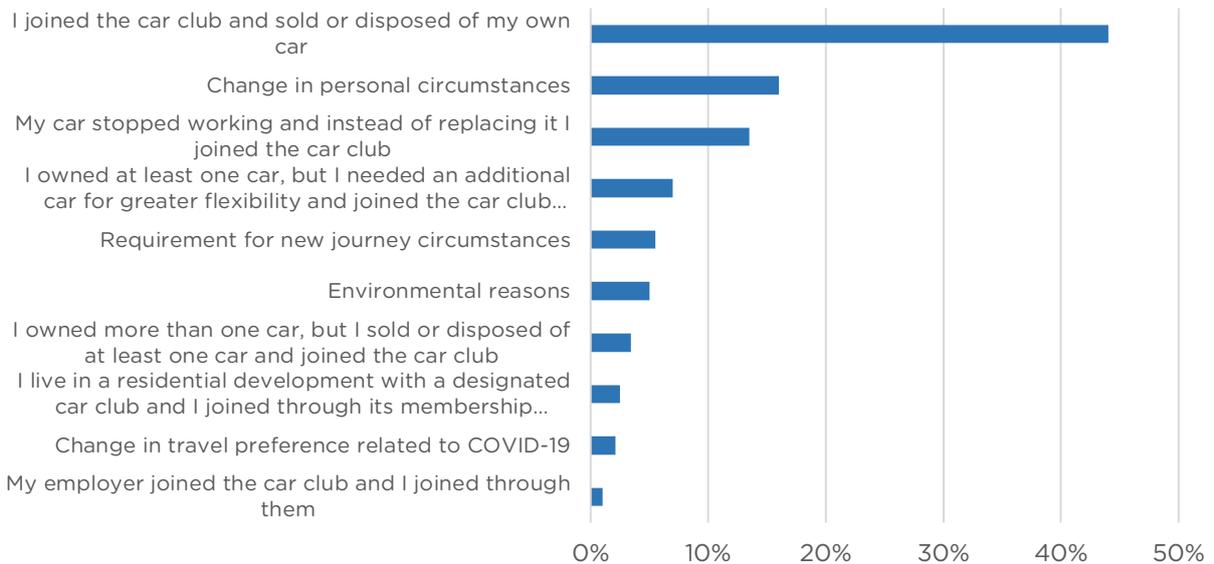


Figure 9: Reasons for joining a car club for those who previously owned a car.

⁷ The UK 2020 car club report can be found on the CoMoUK website <https://como.org.uk/shared-mobility/shared-cars/why/>

6.4.2 Reasons for joining a car club – those who previously had not owned a car

For those who had not previously owned a car, the primary reason cited was lack of a household vehicle resulting in them joining the car club to get flexibility through access to a car (52%). Costs of buying and running a private car were also cited by 24% of respondents.

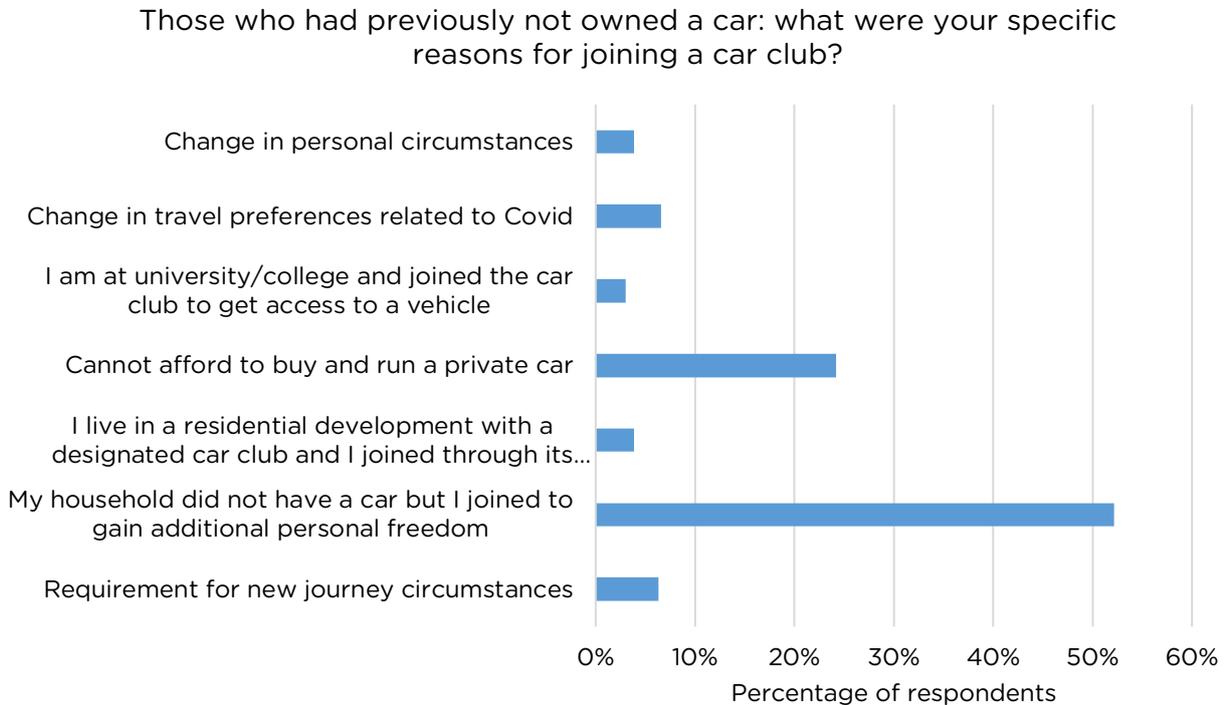


Figure 10: Reasons for joining a car club for those who previously had not owned a car.

6.4.3 Qualitative research insights

This sub-section presents implications from the in-depth interviews with selected car club users from across the UK.

Interviewees' reasons for joining a car club can be split into three categories:

- Wanting to dispose of their car: where car clubs are nearby, they can be an enabling factor that means users can still complete all the journeys they need to through access to a car club vehicle.
- New journey pattern: for example, moving home or changing job, either enabling them to be less dependent on their own vehicle and/or presenting the need to make trips to family/friends that cannot be done with public transport.
- Specific/one-off journey: Need for a vehicle either to travel somewhere or transport something as a one-off. Conversion to a regular car club user can develop if the other two circumstances present themselves.

The main enablers or pull factors identified which will encourage consumers to join a car club are:

- A car club operating with more than one car available nearby. Most users reported being aware of a car club because they saw vehicles on the streets, rather than through marketing or communications.
- Public transport availability and capability – it is unlikely that all journeys would be replaced by a car club. There must be other options available for some journeys.
- Expectation that they will save money when compared to their existing journey choices. For many consumers this comparison is made against public transport rather than private

Car Club Annual Survey for London

car use. Making subscriptions for public transport and car clubs more joined-up would be an advantage and incentive to many users.

- Journey time and flexibility: among some consumers there is a willingness to accept a higher cost to achieve greater flexibility.

The main triggers or push factors identified which may influence consumers to join a car club are:

- Size and type of car available, particularly for those joining and using the car club for a specific reason (moving to a new house, large object). Consumers in inner London prefer smaller cars and those in suburban areas want a larger variety of cars. For some, the opportunity to drive different cars and try out new technology is a big bonus of the car club – particularly the younger interviewees.
- The perceived hassle as well as cost of car ownership can persuade some people to give up their vehicle. Challenges around parking permits and regulations are particularly relevant to users in inner London.
- Whilst there are few social norms around the use of car clubs, there are social norms in place around the use of cars. For example, the use of a personal vehicle to drive into the city centre is viewed as unusual and unnecessary.

The main barriers that may stop consumers from joining a car club are:

- Social norms around aspiring to own a car. More prevalent in suburban and rural areas the social norm can be a barrier, with infrastructure and lifestyles built up around personal car usage meaning there is resistance to alternatives such as car clubs.
- Difficulty in reserving a car when and where it is needed. This has increased as an issue during Covid-19 as some vehicles were removed from the fleet and the cleaning pledge decreased availability. Providing a substantial amount of driving credits to be used in the first few months appears to be an effective way of encouraging usage and therefore forming a habit.
- Needing to make journeys with younger children is a major barrier to whether someone feels that car club usage is feasible. Specific concerns related to the hassle of taking a car seat, need for greater flexibility, and the need to take more personal items.
- Having a job or lifestyle with a requirement to use a car regularly makes it difficult to rely on a car club. This could potentially be overcome via employers introducing car club membership of pool cars. Evidence from both the interviews suggests that particularly in suburban areas, employer led pool car clubs are a significant facilitating factor.

6.5 Use of car clubs

Car club members use the vehicles regularly: 57% reported having used the service in the last 30 days. This is higher than the UK data, in which the equivalent figure is 48%⁸. Only 5% of members have not hired a vehicle at all over the last 12 months.

⁸ The UK 2020 car club report can be found on the CoMoUK website <https://como.org.uk/shared-mobility/shared-cars/why/>

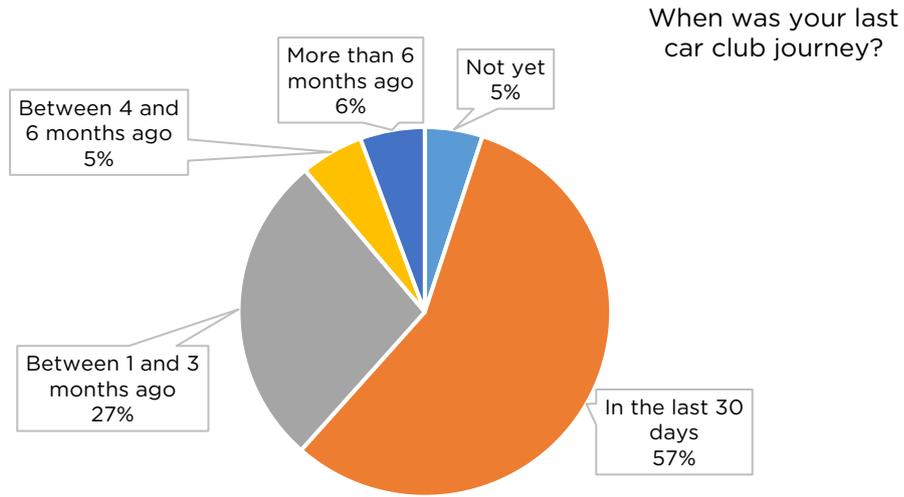


Figure 11: Timing of the last car club journey.

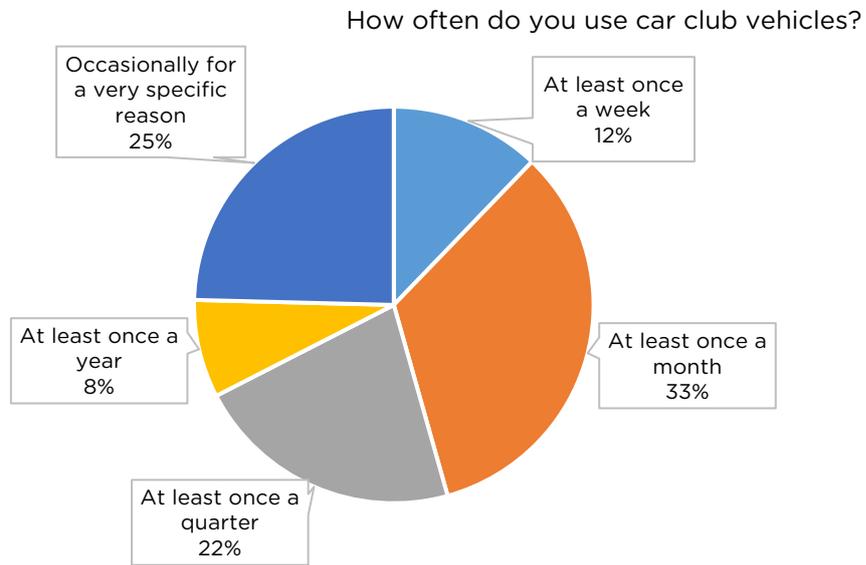


Figure 12: Frequency of car club vehicle use.

Among respondents who have not used a vehicle in the last six months, Covid-19 has been a significant factor with over 30% citing this as the reason for non use.

6.6 Travel method to collect the car club vehicle

Convenience and proximity are important to respondents as 84% of them walk or jog to pick up their car club vehicle.

How do you normally travel to pick up your car club vehicle?

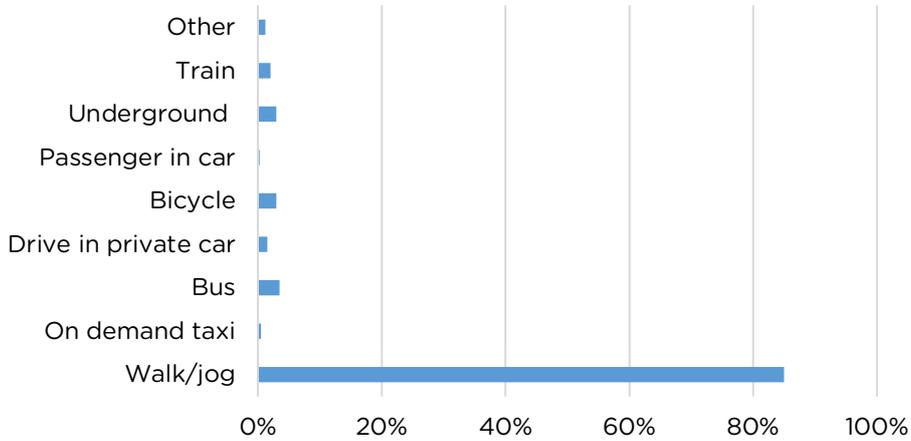


Figure 13: Travel method to reach car club vehicle.

6.7 Car club journey snapshot

6.7.1 Journey purpose

Respondents were asked to reflect on the most recent car club journeys they had undertaken. They were initially asked to identify the purpose of their most recent journey and, of the 1,136 responses received, 28% cited personal business and 23% leisure. Only 7% referred to work trips.

What was the purpose of your latest car club journey?

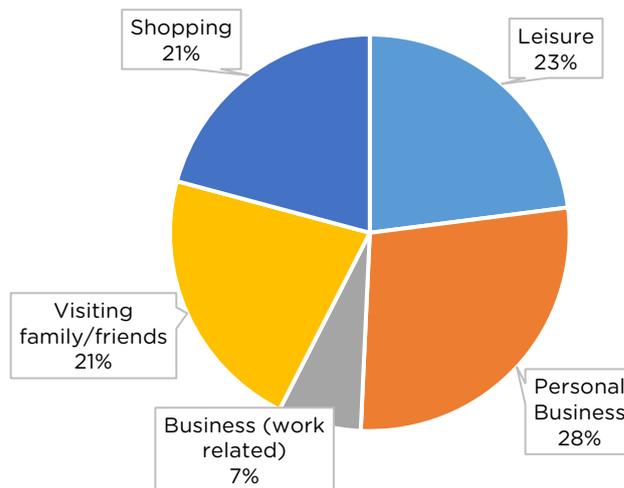


Figure 14: Purpose of car club journeys.

6.7.2 Reasons for choosing a car club for the journey

Key reasons for selecting car club for their last journey were carrying luggage/bulky items (31%), and hoping for a shorter journey time (19%). Unsurprisingly, public transport not being an option was a less frequent response than in other parts of the UK⁹.

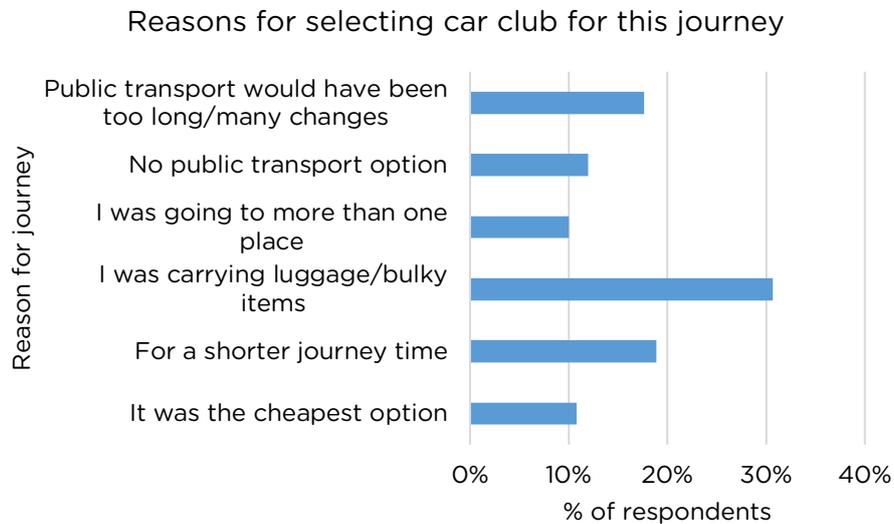


Figure 15: Reasons for choosing a car club for the journey.

There was a variety of specific journey purposes reported in the behavioural interviews, most were related to the transportation of larger items. A reoccurring theme in the way that many users planned and booked their journeys is that they would group together a number of trips all to be taken whilst they had the car, e.g., to visit family and then a DIY shop on the way home.

6.7.3 Travelling with children and other passengers

Children are infrequently passengers with car club users: 86% of journeys had no children, 9% had one child in the car. By contrast, adult passengers were more frequent as 44% of journeys had one passenger, 67% one or more passenger.

Evidence from the user interviews support this. Children are a major barrier to whether someone feels that car club usage is feasible. Reasons given for why using car clubs with children is difficult included the hassle of taking and fitting a car seat, the complication of having to pick the car up from somewhere other than home, need for greater flexibility/spontaneity, and concern over the need to take more personal items in the car.

⁹ The UK 2020 car club report can be found on the CoMoUK website <https://como.org.uk/shared-mobility/shared-cars/why/>

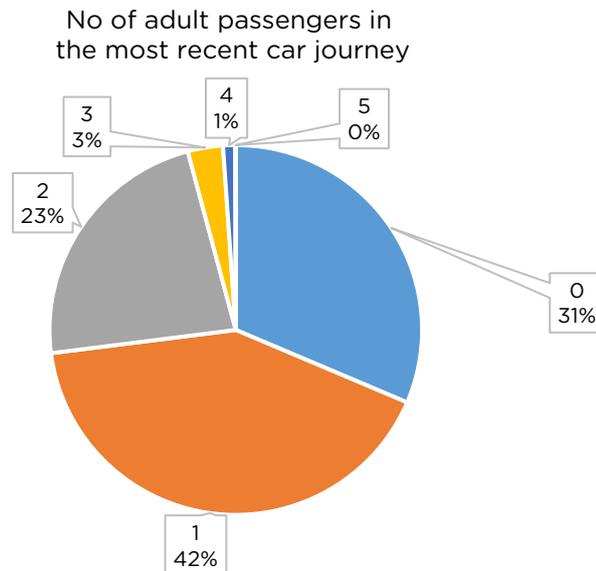


Figure 16: Number of adult passengers in the car club journey.

6.7.4 Alternatives to using a car club

Respondents were asked to consider the alternatives to using car club vehicles for their most recent journeys. Alternatives to car club for the journey are varied but the highest number of responses was on demand taxi and train (21% each) and bus (20%). 14% would not have made the journey had the car club not been available.

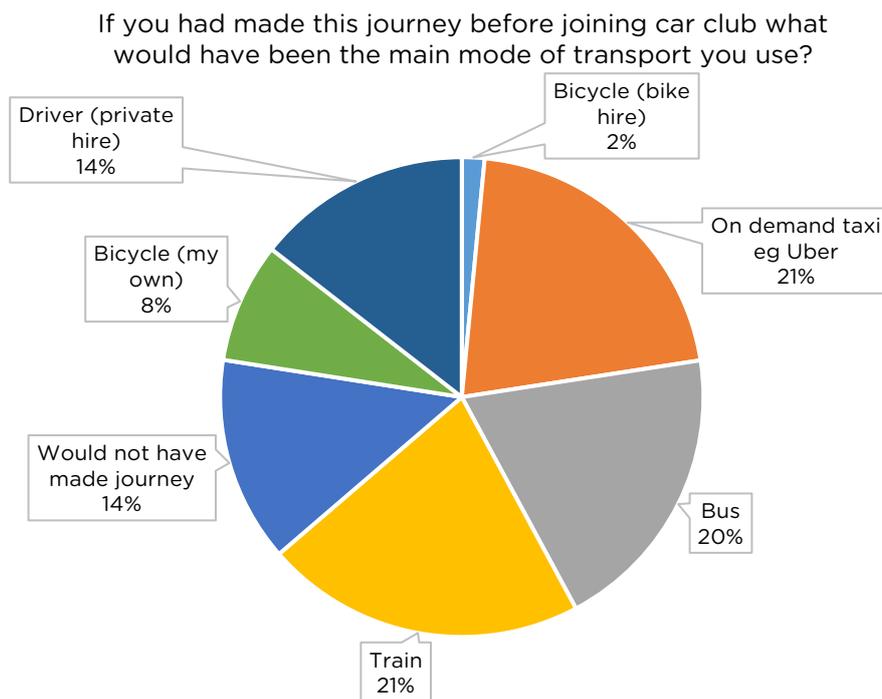


Figure 17: Alternatives to using a car club.

6.7.5 Journey distance

For each of the last three journeys completed by respondents over 60% of all journeys were for total distances of 25 miles or less. Only 1-2% were for distances exceeding 251 miles. While data shows round trip trends changing a little after the first Covid-19 lockdown, the operator data provided shows one-way models are primarily in the shorter distance categories.

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Table 1: Distances travelled during the last three car club journeys.

Distance driven	% of respondents		
	Journey 1	Journey 2	Journey 3
Less than 10 miles	50	48	50
11-25 miles	22	23	23
26-50 miles	11	11	11
51-100 miles	10	10	8
101-250 miles	6	6	6
251+ miles	1	2	2
Total	100	100	100

6.7.6 Journey duration

Figures for length of hire reflect these journey distances, with over 70% of all journeys being for four hours or less. Only 2 to 4 per cent of hires were for three days or more.

Table 2: Length of hire period for last three car club journeys.

Hiring period	% of respondents		
	Journey 1	Journey 2	Journey 3
Less than 1 hour	33	35	39
2-4 hours	39	36	33
5-8 hours	17	17	16
Up to two days	9	10	10
3-7 days	2	2	3
Total	100	100	100

6.8 Levels of satisfaction with the car club

6.8.1 Different factors and level of importance

Respondents were asked how easy they had found joining the car club, booking and driving a vehicle. As the chart below shows, 80% found these processes to be very easy or quite easy; fewer than 2% found them very difficult.

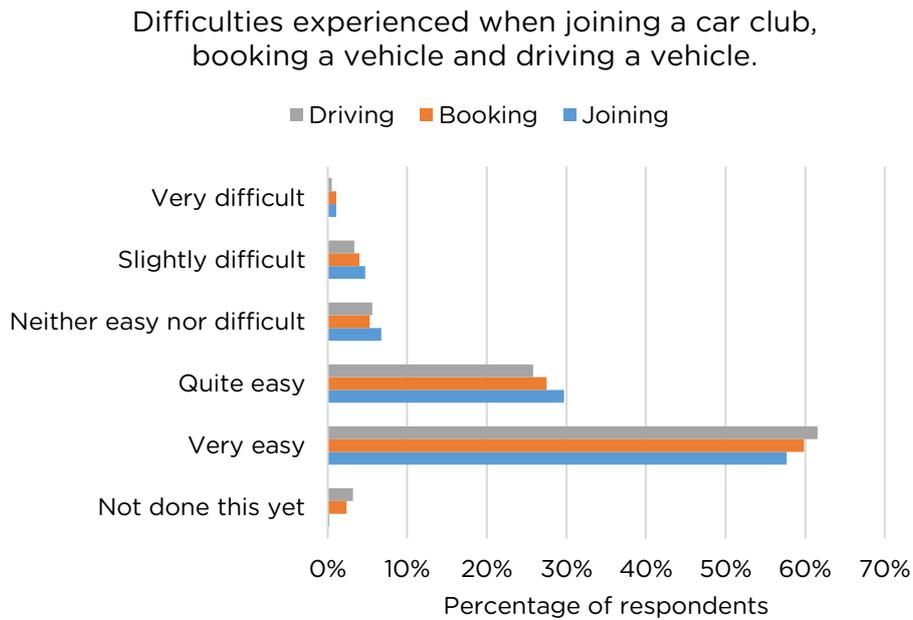


Figure 18: Different factors and level of importance.

6.8.2 Maximum acceptable travel time to a car club vehicle

Members want access to vehicles to be close and convenient: 67% want access to be within a 10-minute walk although 20% will accept a walk of up to 20 minutes.

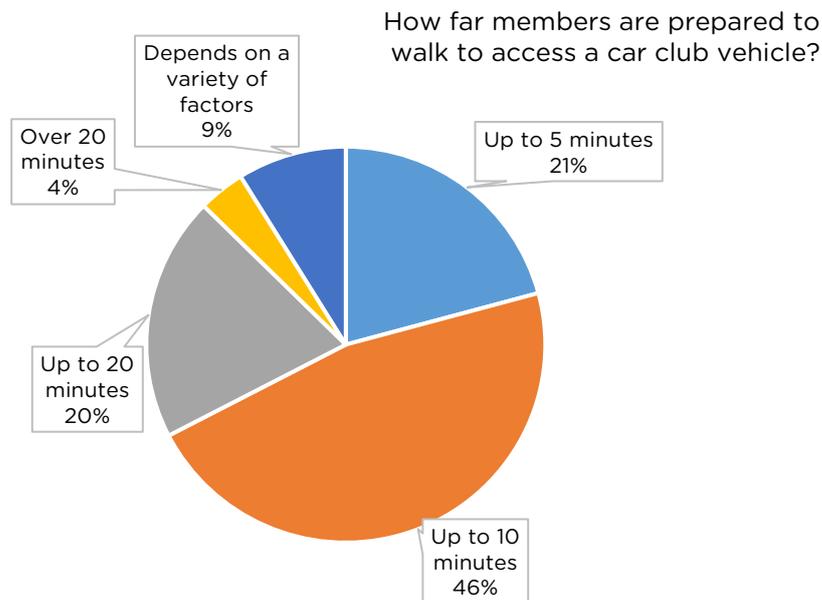


Figure 19: Maximum acceptable travel time to a car club vehicle.

“Booking was easy, I saw the available slots and picked what I needed. I went to the location, waited few minutes, another user came with the Van, parked and I took it. The only issue is that I had to ride 40min by bike to get to the location of the Van, because I live in Welling and the van was near Blackwall tunnel. I wish you could expand to other areas, maybe have few car/vans on the same location where Enterprise is or nearby.” Marcelo, Welling, Greater London

6.8.3 Satisfaction levels

Car club members reported that they were generally satisfied or very satisfied with facilities provided, as shown in the table below. The most satisfaction was shown in proximity to vehicles locally (78%), information about the vehicles (75%) and customer service (74%). The lowest

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satisfaction scores were for Covid-19 safety measures (47%), cleanliness of vehicles (65%) and administration and backup (65%).

Table 3: Satisfaction levels for different criteria.

	% of respondents who are satisfied/very satisfied with...
The proximity of Car Club vehicles to where you live	78
Information about the vehicles	75
Customer service	74
The quality and maintenance condition of the vehicles	73
The availability of Car Club vehicles when you need them	69
Choice of vehicles	66
The cleanliness of the vehicles	65
Administration and backup	65
Covid-19 safety measures put in place	47

These overall levels of satisfaction are reflected in responses to the question, ‘Would you recommend car clubs to a friend?’ with 83% agreeing that they would. This is higher than the UK average.

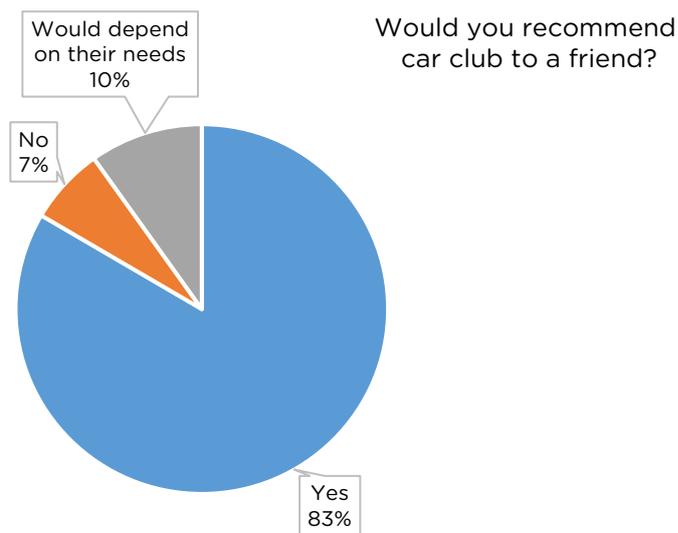


Figure 20: Proportion of respondents who would recommend car clubs to friends.

6.8.4 Importance of service-related factors

Respondents were asked to consider how essential they regard particular factors: results were very similar to the UK wide survey results.

Table 4: Importance of service-related factors.

	% of respondents who view these factors as essential
Vehicle available for collection close to home/work	75
Guaranteed maintenance of the vehicle	68
Competitive price in comparison to other clubs	66
Cleanliness of the vehicle	61
Effective customer support at all times	59
Guaranteed sanitisation of the vehicle between usages	47
Choice of different size/power vehicles	25
Choice of different power sources (electric vs petrol vs diesel)	24
Choice of different vehicle brands	17
Availability of child car seats	11

The most critical factors members are looking for is proximity of the vehicle for collection (75% said this was essential) with guaranteed maintenance seen as essential by 68%.

The interviews found that size and type of car are important factors for car club members, particularly for those joining and using the car club for a specific reason (moving to a new house, moving a large object). Having vans and larger vehicles available on the fleet is important to provide that option when needed and helps to bring in new users, who may then go on to use the car club more regularly. There was a difference in preference for the size of car, those in the inner city preferring smaller cars and those in suburban areas wanting a larger variety of cars. For some, the opportunity to drive different cars and try out new technology is a big bonus of the car club, particularly among younger consumers.

6.8.5 Impact of pickup/collection approaches

The process for returning the vehicle would seem to be less critical than availability of vehicles. Although, London respondents regard flexibility to drop off in different streets as essential far more than other parts of the UK¹⁰. The emphasis of this question is likely to be shaped by the one-way model operating in London whereas it remains rare elsewhere.

Table 5: Impact of pickup and collection approaches.

% of respondents who consider these options to be...	Pick up and drop off in the same 'car club only' bay	Pick up and drop off in the same neighbourhood	Pick up and drop off in different streets (one-way trips)
Essential	30	37	51
Desirable	32	40	33
One to be considered	16	33	10

6.9 Factors causing dissatisfaction with car club

Of the small number who expressed dissatisfaction, the main factors were:

- Problems with dirt, cleanliness and sanitisation.
- Problems with booking.
- Problems with accessing the car.
- Customer service.

¹⁰ The UK 2020 car club report can be found on the CoMoUK website <https://como.org.uk/shared-mobility/shared-cars/why/>

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- Technical problems.
- Issues related to charging.
- Unjustified accusations of damaging the car or traffic offences.

6.9.1 Customer experience from interviews

Echoing the members survey, availability and distance to an available vehicle were the key concerns, some participants stated that the locations were more important than the time of the journey and that this should be better reflected in the booking process.

In general, all car club users interviewed were positive about their experiences with using the car club. Some reported instances of accidents or other problems; however, nearly all were happy with how they had been resolved. There appeared to be a lack of understanding on some of the rules for customers. For example, many were unaware of where they could and could not park, some were unaware that you could use the same car club elsewhere in the UK and nearly all interviewees were unaware of any cleaning pledges.

There were some examples of how the structure of car club membership and payments do not necessarily help those on low incomes. The uncertainty of what the final cost would be was a concern and they wished to have the ability to preload their account, so that funds were available when the journey needed to be taken. Linking with other travel passes would be beneficial, particularly for those members in large cities who used many forms of public and shared transport. Non-users and some lapsed users reported that already paying for a travel pass meant they were unhappy having to pay for a car club membership and cost of hire as well.

6.10 Car Ownership and disposal

6.10.1 Car ownership prior to joining a car club

Prior to joining a car club 32% of users had one household car. Only 7% had two or more cars in the household.

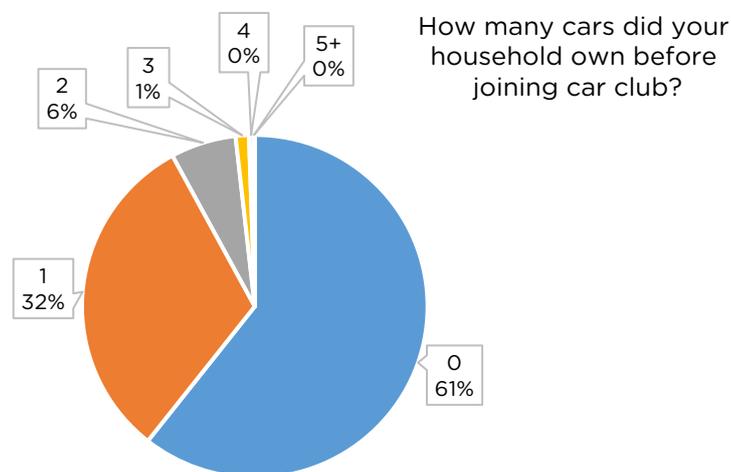


Figure 21: Number of cars owned before joining the car club.

For 74% of users, joining a car club had not resulted in any change in car ownership. 19% had one car fewer than when they joined a car club, which is in line with the UK figure. If this was extrapolated across the whole private user membership base, it would equate to 45,145 fewer vehicles on the road since users joined the car club.

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Compared to the number of cars prior to joining the car club, does your household now have:

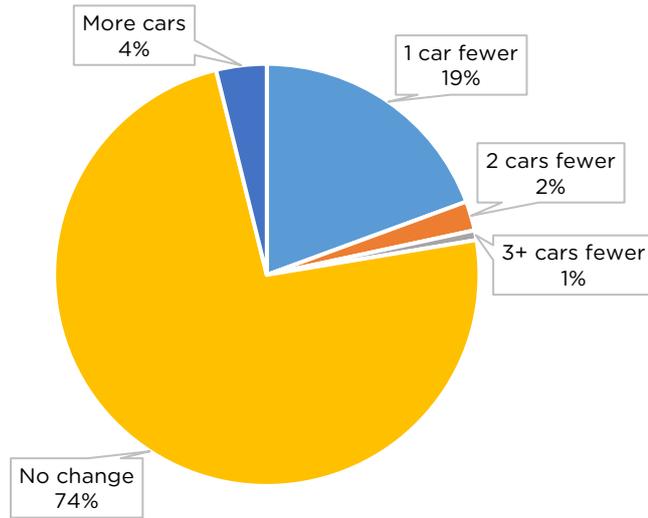


Figure 22: Change in number of cars owned since joining the car club.

When asked whether car club membership had prompted disposal of a car, 18% of those who had owned a car stated this was a result of car club membership.

As a result of car club membership have you sold or otherwise disposed of, and not replaced, a car?

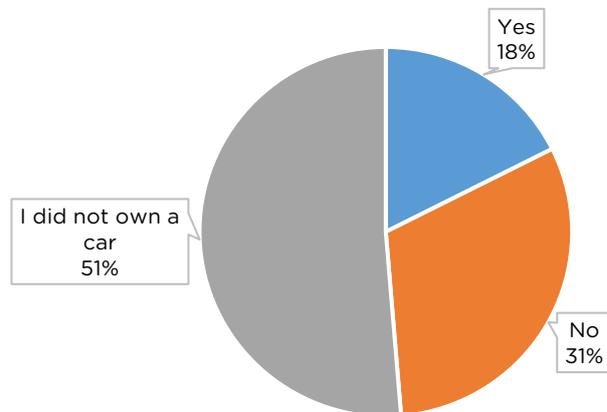


Figure 23: Impact of car club ownership on disposing of an owned car.

Those that disposed of a car were asked about the age of this vehicle and, as the figures (below) show, 28% of cars disposed of were at least ten years old.

Age of cars sold/disposed of:

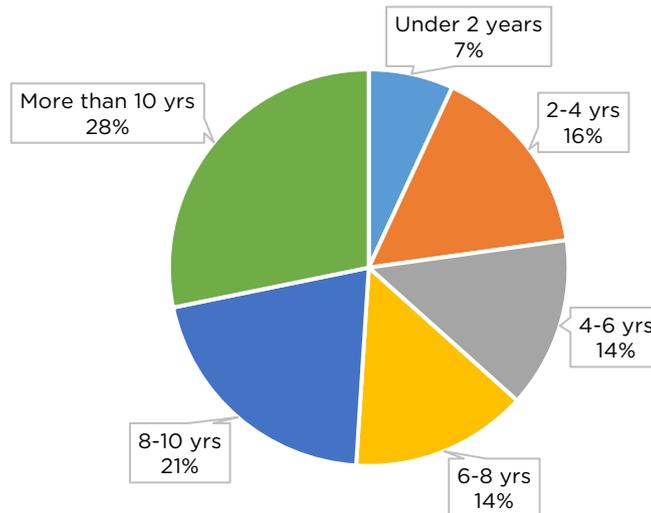


Figure 24: Age of car that was disposed of.

6.10.2 Average mileage of vehicle prior to disposal

In the 12 months prior to disposing of the car, 41% had driven fewer than 5,000 miles, 32% had driven between 5,001-10,000 miles. Only 7% had driven more than 15,000 miles. This shows it is typically those driving shorter to average annual distances who are more inclined to replace their vehicle with a car club vehicle.

6.10.3 Factors influencing the decision to dispose of a car

The cost of keeping a car on the road was the primary reason cited for selling/disposing of the car (28%) compared with those who said availability of the car club was a primary factor (25%). Insufficient usage of their own vehicle was also a significant factor. Contrary to the earlier question, the responses suggest the car club was an important factor for more respondents in their decision. This is higher than previous years.

How many miles did you drive in that car in the last 12 months before you sold/disposed of it?

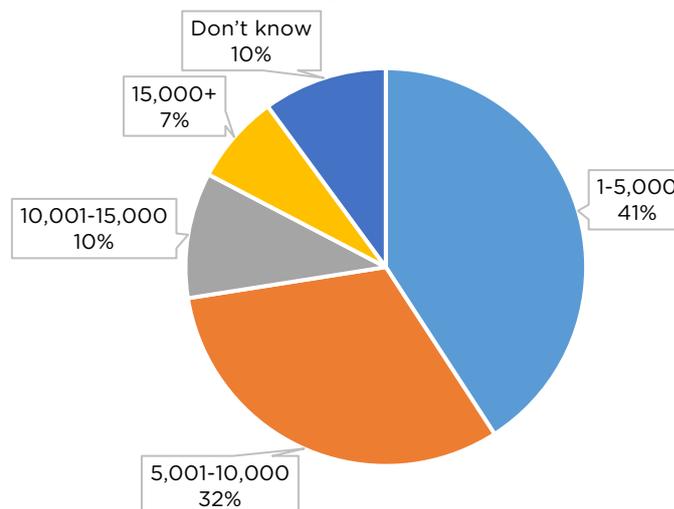


Figure 25: Reasons for deciding to dispose of a car and not replace it.

6.10.4 Factors which encourage disposal of a car

Respondents were asked to identify what factors, if any, might encourage selling or disposing of a car: critical issues were cheaper prices (22%) and wider availability for car club vehicles (16%).

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Fewer respondents chose the 'Nothing' category compared to the UK average¹¹, suggesting the London respondents are more open to disposal if the right conditions are met.

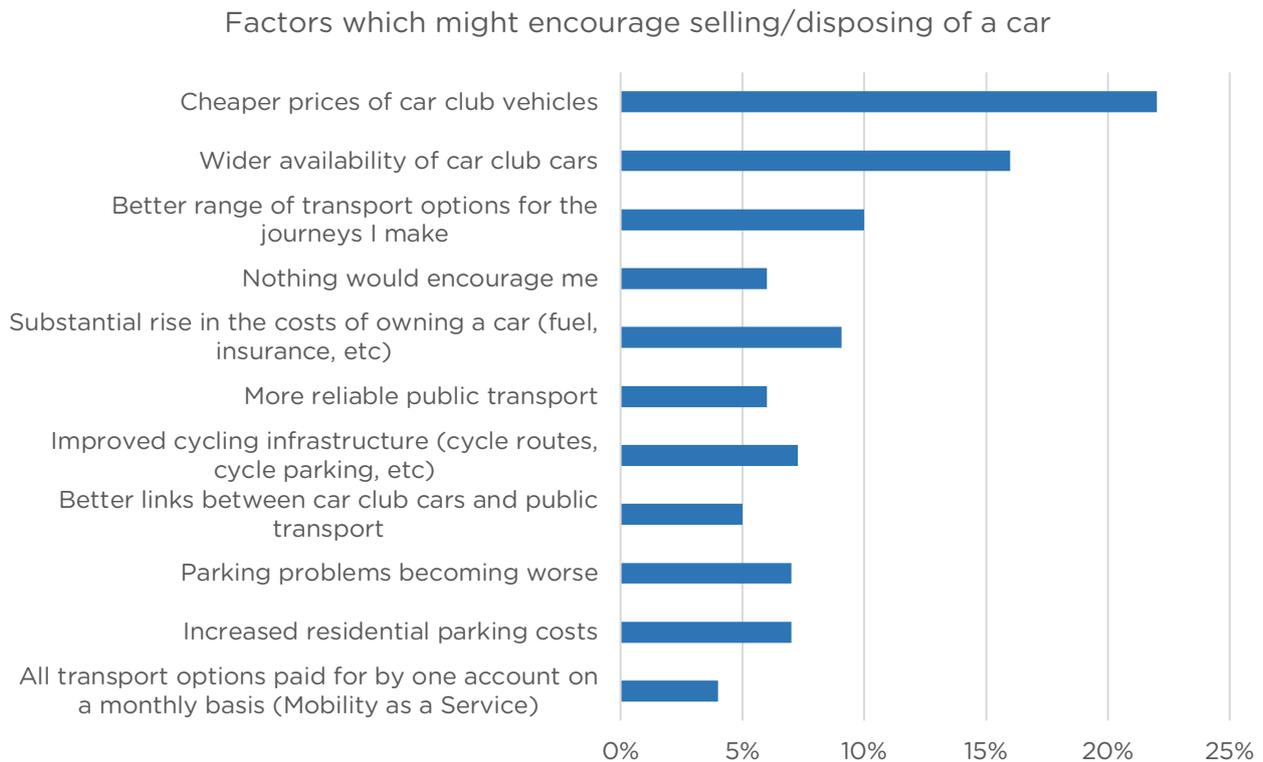


Figure 26: Factors which encourage disposal of a car.

6.10.5 Future car ownership

Findings suggest that car club membership has an impact on likelihood of purchasing a car: 21% of respondents said that they would definitely have bought a private/additional car if they had not had car club membership.

If you had not joined car club, would you have bought a private/additional car?

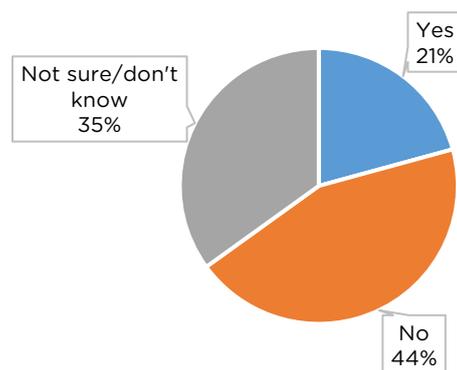


Figure 27: Impact of car club membership on purchasing a car.

Thinking about future plans it would seem that car club membership affects possible purchases – 44% say it is less likely that they will buy a car/additional car in the next few years as a result of car club membership.

¹¹ The UK 2020 car club report can be found on the CoMoUK website <https://como.org.uk/shared-mobility/shared-cars/why/>

Do you think that joining a car club has made it more or less likely that your household will buy a car/additional car in the next few years?

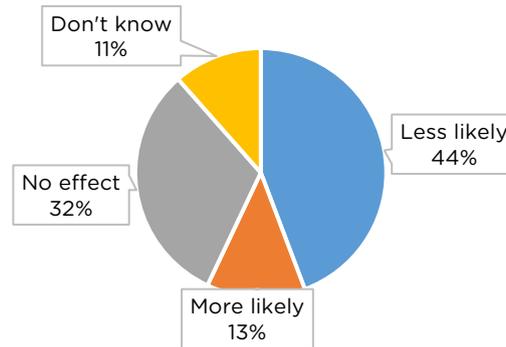


Figure 28: Impact of car club membership on future plans to buy a car.

Most respondents do not think car club membership will directly affect their decision to dispose of a car in the next few years, though 11% regard it as having a higher likelihood based on their car club membership.

Do you think that joining the car club will make it more or less likely that you will sell/dispose of a car in the next few years?

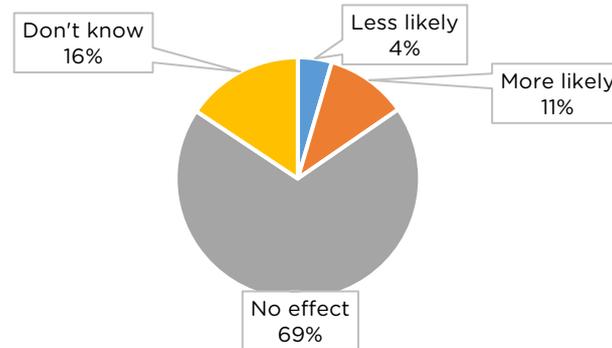


Figure 29: Impact of car club membership on future plans to dispose of a car.

Based on the number of respondents who have either disposed of or not bought a car because of the car club, we estimate that each car club vehicle in London replaces 23.5 private cars¹². The estimated total number of cars removed from the road is 81,388. The cars replaced per car club vehicle takes the sum of the net value of the change in car ownership (based on the question relating to change in number of vehicles per household) and the number of respondents who said they would have bought a car had the car club not been available. Then the figure is scaled up based on the number of survey responses as a proportion of active members (189,275¹³) and then divided by the number of car club cars in the region.

6.10.6 Qualitative insights: car ownership and modal shift

The close link between car club usage and other modes of transport is key. None of the regular or lapsed users interviewed used car clubs as their main form of transport. Most users will commute using public transport or active travel and use car clubs as a supplementary form of transport for shopping, trips out of the city or that require too many changes on public transport.

The regular users that were interviewed all stated that prior to joining a car club they rarely used their own vehicle and travelled mostly by public transport. Car clubs can often be a helpful factor in making the decision to dispose of a car, and for some make it more likely to push intention to action. Most said that the journeys they took with a car club did not replace active travel or public transport; instead, they replaced car trips or allowed them to take journeys that would not

¹² Rounded to one decimal place.

¹³ Active members are those who have hired at least once in the year.

otherwise have been possible. The member survey corresponds with this, with 44% saying that their last car club journey would have taken place using a car (either privately owned or rented/borrowed from elsewhere) if there was not a car club¹⁴.

Evidence from the interviews suggests that for car club membership to make sense there must be a car club operating with at least one car available nearby. Responses from the survey show acceptable distance to the car can vary depending on location, although it must be a comparable distance to other transport options. Most interviewees and survey respondents reported being aware of a car club because they saw vehicles on the streets, rather than through marketing or communications.

Interviewees all reported cost savings against car ownership (some as high as £1,000 in a year). The cost of car ownership and the savings available by using a car club are most likely to influence decision making when vehicle purchase is being considered, rather than for drivers who already own a vehicle. An additional factor in the cost of car clubs is that some non-users (particularly those in the cities) reported weighing up the extra cost of the car club against what they already paid for public transport. This meant that they felt it was not something they could afford or were happy to pay extra for.

Instead of cost, the perceived 'hassle' of car ownership is a much larger factor in why people decide to give up their vehicle. Parking was reported as a particularly crucial factor in for those in London. One of the perceived benefits of using car clubs was no longer having to worry about parking regulations and permits.

6.11 Electric vehicles

45% of all respondents reported having used an electric vehicle (EV). This is higher than the proportion of car club fleets which are EVs - one explanation may be that members are deliberately selecting an EV when other options are available. This could also be explained by survey respondents considering hybrid vehicles when answering the question. Analysis of questions provided below suggest that may be the case.

Have you used an electric vehicle?

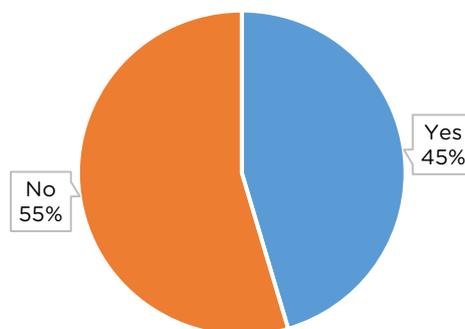


Figure 30: Use of an electric vehicle.

6.11.1 Reasons for selecting an electric vehicle

Reasons for selecting EVs include choosing a vehicle which was closest (24%), curiosity (23%), and environmental concern (20%). Although closest is the most common answer, when you combine all those that suggest an active choice (I prefer driving EVs, I was curious to drive an EV and it is more environmentally friendly) 61% of respondents made the choice to book the car because it was an EV.

¹⁴ Figures in the table below are for the whole UK.

Why did you choose an electric car club vehicle

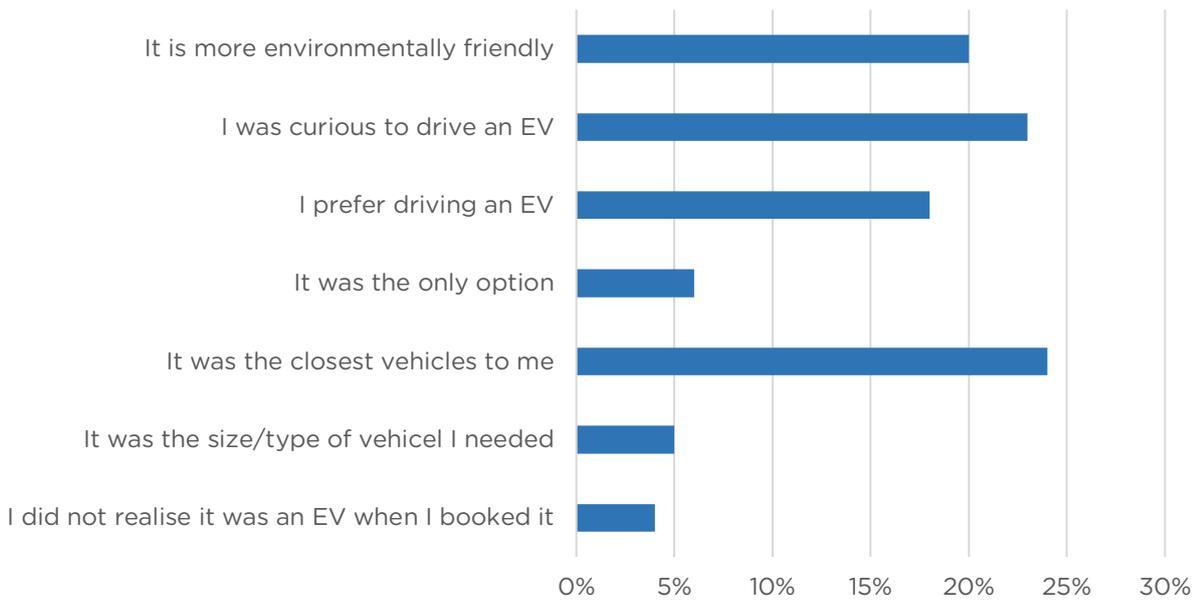


Figure 31: Reasons for choosing to use an electric vehicle.

6.11.2 Satisfaction with electric vehicles

There was a high level of satisfaction with electric vehicles – 80% or more of all respondents were satisfied with the experience, comfort and performance of the electric vehicle. Experience with charging points (24% were satisfied) showed much lower satisfaction, qualitative feedback suggests that more education on their use and greater reliability of the charge points is required.

When driving an electric vehicle, how satisfied were you with....

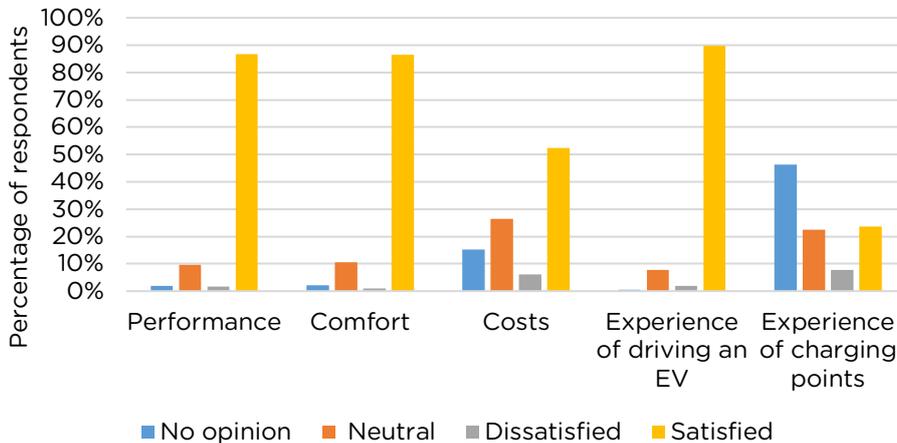


Figure 32: Satisfaction with electric vehicles.

Qualitative analysis showed that negative comments about EVs were focused almost entirely on issues relating to charging. There were problems with trying to utilise bookings when so many cars were left without being fully charged, plus concerns about the range that could be achieved on the charge available, and difficulties in finding charging points. Additionally, lack of instructions and difficulty in dealing with the cable also caused problems. Some felt that costs were excessive compared with traditional cars.

Despite these challenges, respondents view EVs more optimistically: 69% say that they have become more positive about electric vehicles in the last 12 months.

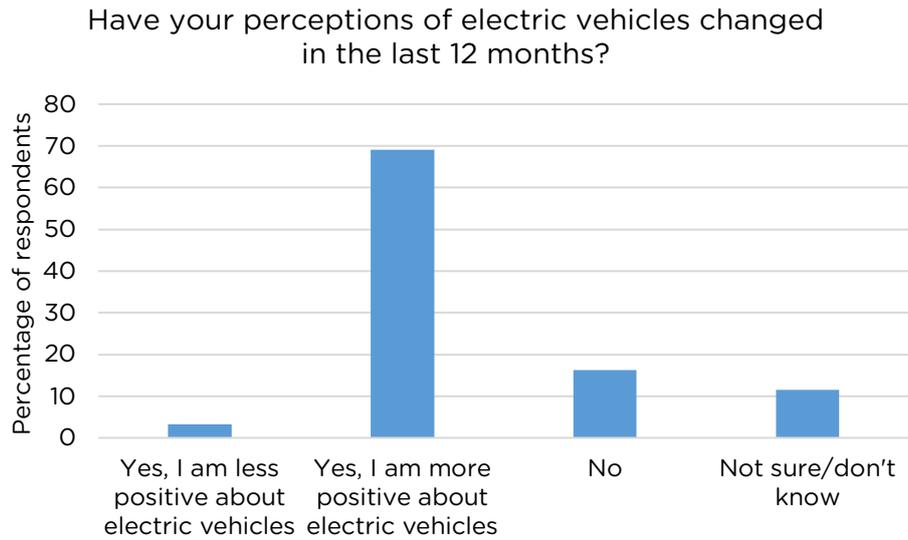


Figure 33: Change in perception of EVs over the last 12 months.

6.12 Profile of survey respondents

66% self-reported living in inner city locations, 31% suburban, and 3% rural.

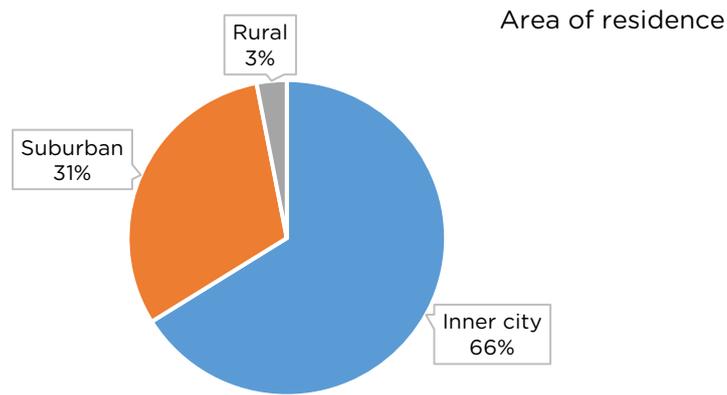


Figure 34: Urban-rural classification of respondents.

The most frequently reported household profile (38% of respondents) is a couple. Singles account for 16%, and house shares are more prevalent in London compared to the other regions.

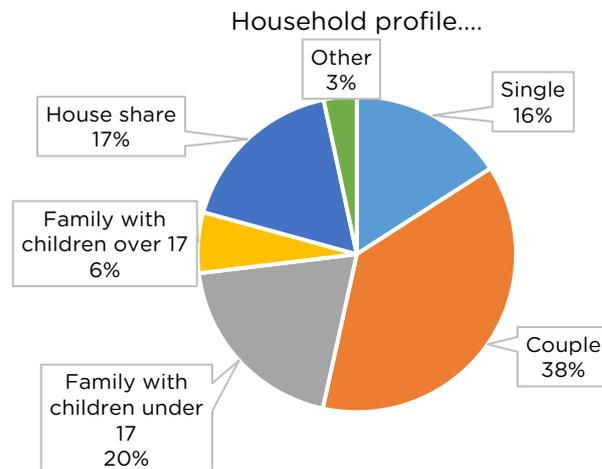


Figure 35: Household profile of respondents.

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Two thirds of respondents were male (63%) and one third (34%) female. With the overall membership statistics showing a higher proportion of male users, this indicates a representative split of the car club membership.

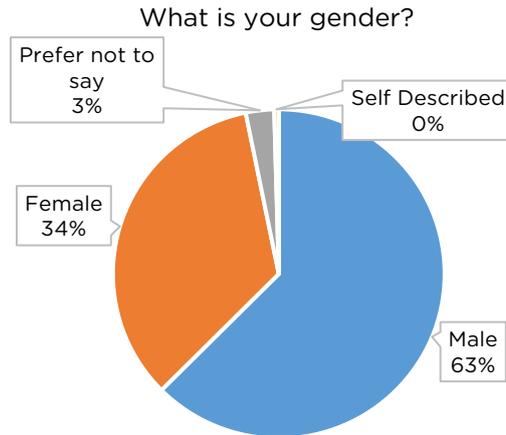


Figure 36: Gender of respondents.

Nearly 45% of respondents are in two people households. This fits with the majority of respondents travelling alone or with one other adult for most of their journeys.

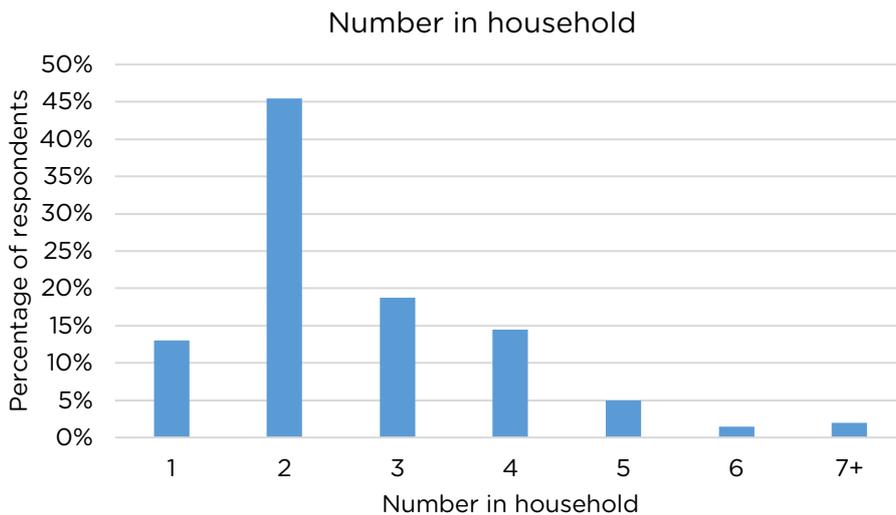


Figure 37: Number of people in respondents' households.

Nearly all survey respondents pay personally for their car club membership, only 1% have this paid by their employers. The proportion paid by their employer is lower than the UK average of 9%.

60% of respondents are aged 26-40. This is slightly younger than the UK average.

6.13 Case studies

6.13.1 Case study: Rebecca, London

Rebecca had seen car club vehicles around and read about them. When her own car broke down, she made the decision not to replace it but to join a car club instead. This was mostly done to avoid the hassle and expense of owning a car in London. She did not use the car that much, traveling by public transport, walking and private hire taxis. But since the Covid-19 restrictions have been in place her use of the car club has increased as a replacement for the bus and tube.

6.13.2 Case study: Clive London

After returning from living abroad for two years, Clive decided to not purchase a car and to try living in zone one of London using public transport, walking, cycling, and the car club. The car club provided an option in addition to the great public transport links that were available to them. Clive uses the car club for one or two days when travelling out of London where it is not convenient to travel by train.

The cost (compared to owning a car) and convenience is very important to Clive when using the car club. He finds booking the cars very easy and flexible; having around seven cars within walking distance it is easy to book a trip at any time. Clive has two young adult children both of whom are keen to start using the car club.

Clive is very happy using the car club and other transport options to travel around. Occasionally the family considers purchasing their own vehicle, but they are put off by the expected cost and hassle.

7 Operators' survey results

This section presents the results of the survey of car club operators in England and Wales. Note that the data presented here will not necessarily match the data reported in the previous section, as that comes from a survey of a sample of members, while the statistics here are the analysis of operators' full data sets.

7.1 Membership levels

Prior to the disruption to travel patterns as a result of the pandemic, membership of car clubs in London was growing. Total membership has grown by 130% to over 550,000. The number of active members (those who have used a car club vehicle in the last year) stands at 189,275.¹⁵

1.1 Member ages

Where ages were recorded, 59% of respondents are aged 26-40¹⁶.

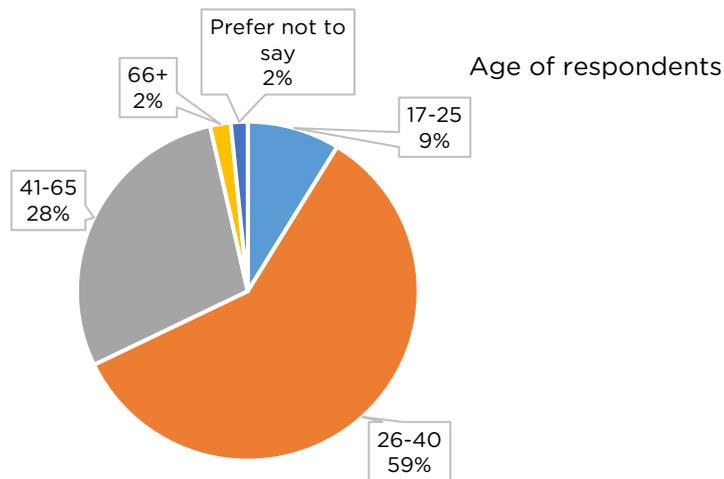


Figure 38: Age distribution of members.

7.2 Average annual journeys per member

The mean average annual number of journeys per active member in London is 8 in 2019/20, which is similar to 2017/18. The median average is in the 1-5 hires band. This suggests that most users are using the vehicles for a specific journey requirement or limited need rather than a consistent usage on a weekly or monthly basis.

¹⁵ Active membership is defined as someone who has made a booking in the last 12 months.

¹⁶ Note that demographic data provided in this section provides information about those responding to the survey. This is different to the demographic data provided later in the Operators Survey section, which covers the whole membership base.

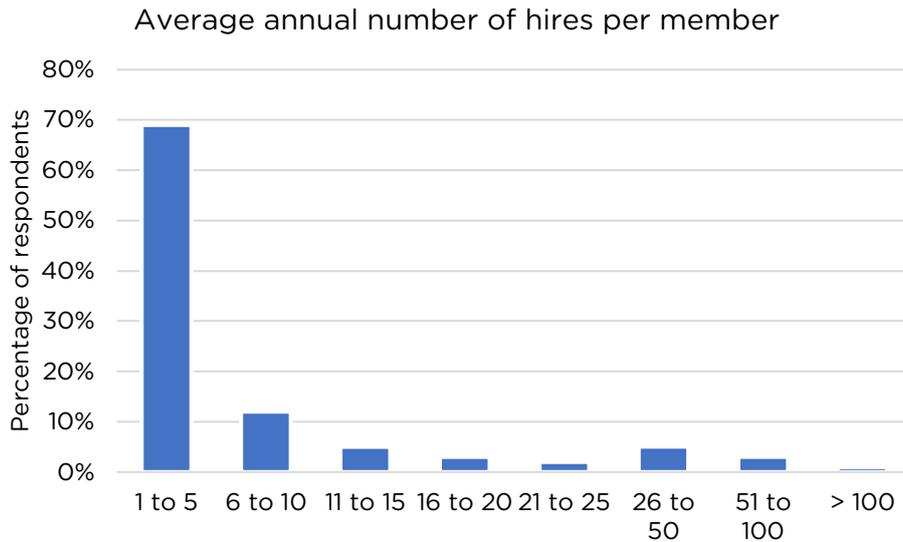


Figure 39: Average number of hires per member.

7.3 Changing journey patterns (round trip only)

Overall distance per journey analysis shows the 6-10 mile range is now the most prevalent use case for round trips, with 26-50 miles next. The longer journey distances (26 miles plus) are now exceeding the 1-10 mile range.

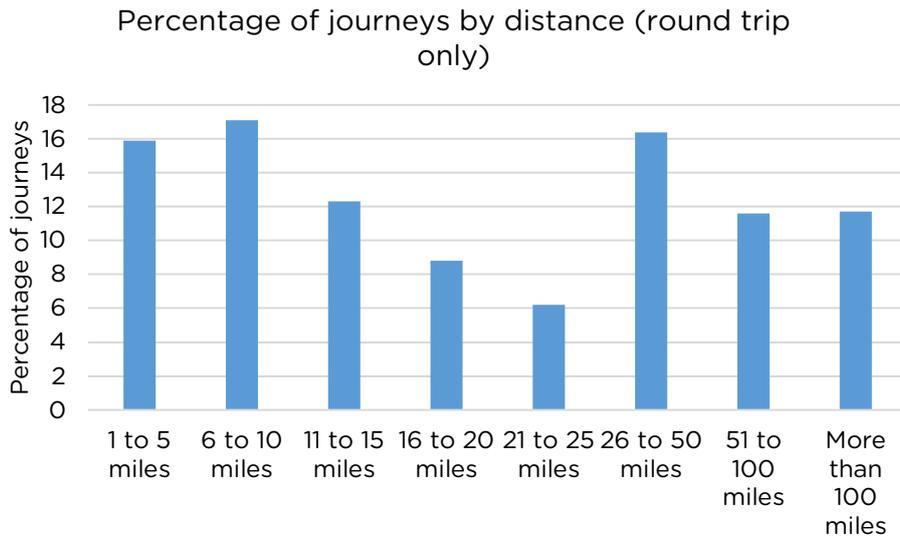


Figure 40: Distribution of journey distances per booking.

However, comparing round-trip distances before and after the first lockdown shows a greater proportion of longer journeys taken and reduction in the shorter journeys.

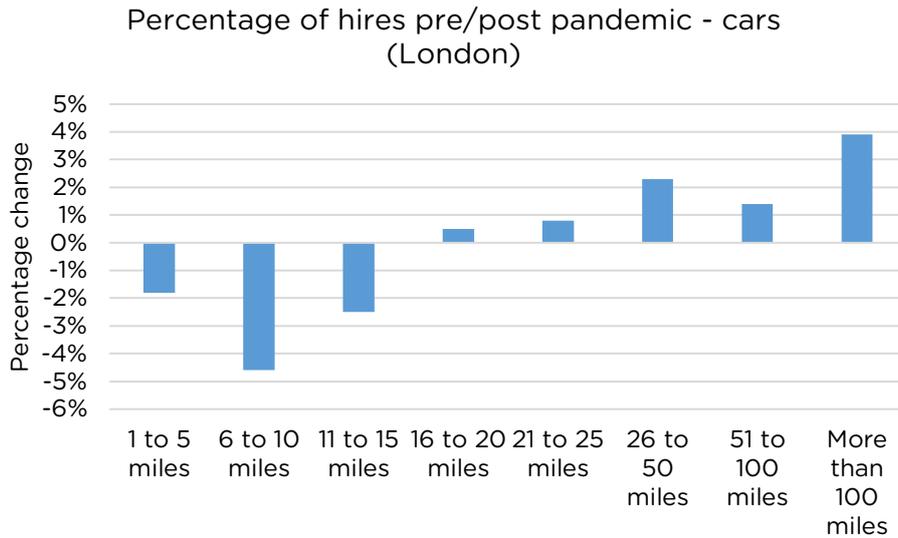


Figure 41: Percentage change in travel distance pre- and post-lockdown.

The comparison with 2017/18 shows the frequency of shortest round-trip journeys almost halved and a doubling of longer journeys.

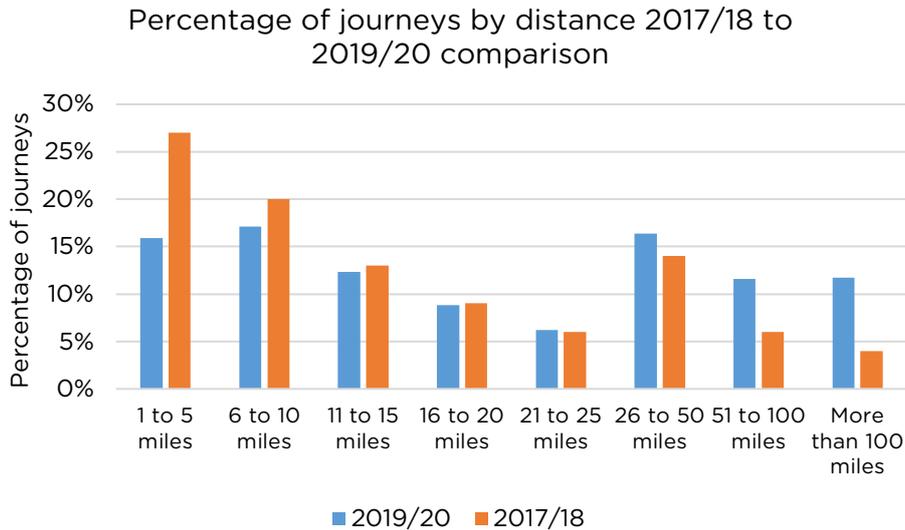


Figure 42: Comparison of journey distance between 2017/18 and 2019/20.

The shift in distribution has pushed the mean average distances to 51 miles, though the median average shows a more representative value of 28 miles¹⁷.

7.4 Booking durations and timings

The shift in booking patterns is also noticeable as an increase in average booking duration. The mean average duration is 11.1 hours (up from 7.4 hours in 2017/18), however the median of 3.3 hours offers a more representative view¹⁸ (the same as 2017/18 - 1-5 hours).

As shown in the chart below, 32% of bookings start on weekends and 68% on weekdays. Most journeys start outside of peak travel times. This is broadly in line with previous years, though there has been a small movement towards the evening peak time from the weekday other category.

¹⁷ Round trip and one way combined

¹⁸ The mean average is impacted by smaller numbers outlier long bookings distorting the overall picture. There was no median figure in previous reports for comparison.

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Booking start times

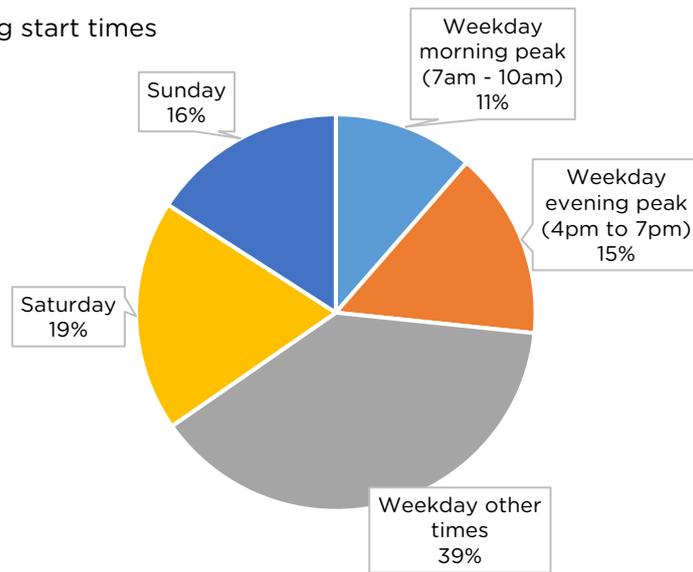


Figure 43: Booking start times.

8 Fleet data analysis

This section presents our analysis of fleet data supplied by the car club operators.

8.1 Number of car club vehicles

Operators reported that at the end of October 2020 there were 3,886 car club vehicles operating in London. This is comprised of 3,449 cars and 437 light commercial vehicles (vans).

As shown in the chart below, the number of cars has fallen slightly over the past year, but the long-term trend shows continued growth.

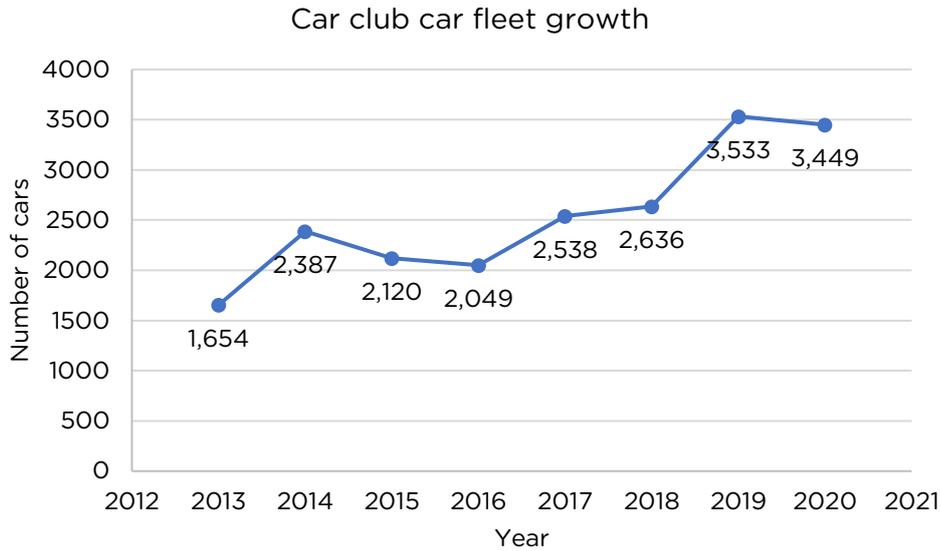


Figure 44: Car club fleet growth.

The chart below shows the variance in total vehicles in London over the period in scope of this report (November 2019 to October 2020). It is based on dates provided by operators for when vehicles were added to and removed from the fleet. Note the y-axis of the chart does not start at zero.

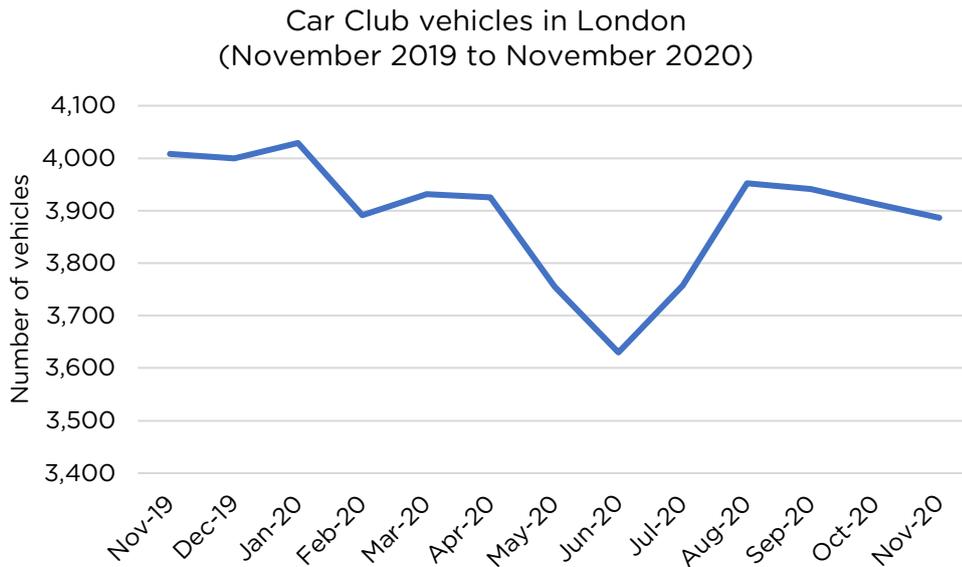


Figure 45: Number of car club vehicles available between November 2019 and November 2020.

The number of car club vehicles reduced significantly in spring 2020 but have since recovered close to the levels seen at the start of the survey period.

8.2 Vehicle class and segment

89% of the car club vehicles are cars and 11% of the vehicles are vans, as shown in the chart below. These proportions are in line with those reported in the previous survey (88% cars and 12% vans).

Car Club Fleet by Vehicle Type

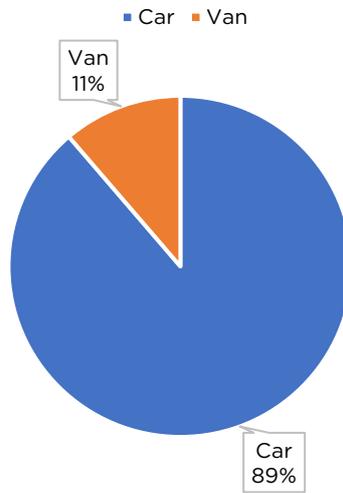


Figure 46: Car club fleet by vehicle type.

Segmentation of the car fleet showed that 46% are small cars (e.g. Toyota Yaris, Volkswagen Polo) and 53% are medium cars (e.g. Volkswagen Golf, Ford Focus). This compares to the UK average¹⁹ of only 70% of cars being in these two segments. The full breakdown is shown in the chart below.

Car Fleet by Vehicle Segment

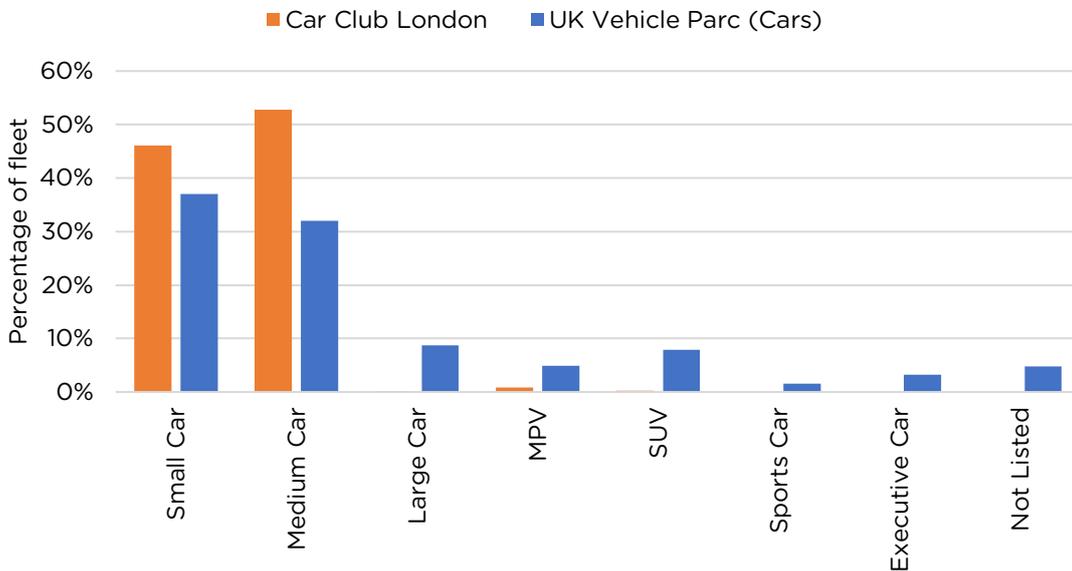


Figure 47: Car fleet by vehicle segment.

Segmentation of the van fleet showed that 97% of the vans are medium vans (e.g., Volkswagen Transporter, Citroen Dispatch). By comparison, the UK van fleet is evenly split between small, medium, and large vans.

¹⁹ We have used UK average figures for comparisons where London-specific equivalents are not available.

8.3 Total mileage

The total distance covered by all car club vehicles in London in 2019/20 was 24.8 million miles.

Total mileage has reduced by 13% since the most recent data was collected (in the 2017/18 survey). It is likely that the restrictions associated with Covid-19 in spring and summer 2020 significantly reduced demand during that period. The trend in vehicle numbers reported above and the findings of the members' survey reported earlier in this report suggest that demand is returning to pre-Covid-19 levels.

8.4 Fuel type

The breakdown of the fleet by fuel type is shown in the charts below. The key points to note are:

- 87% of the car fleet is petrol powered.
- 9% are petrol hybrids.
- 2% are plug in hybrids.
- 11% of the car club fleet are electric vehicles, by comparison, less than 1% of owned cars in London are electric vehicles²⁰.
- Since 2017/18 there has been a 24% increase in the proportion of electric vehicles in the fleet.
- Vans have a near equal split between diesel and petrol power. This is significantly different to the UK where 96% of vans are diesel powered²¹.

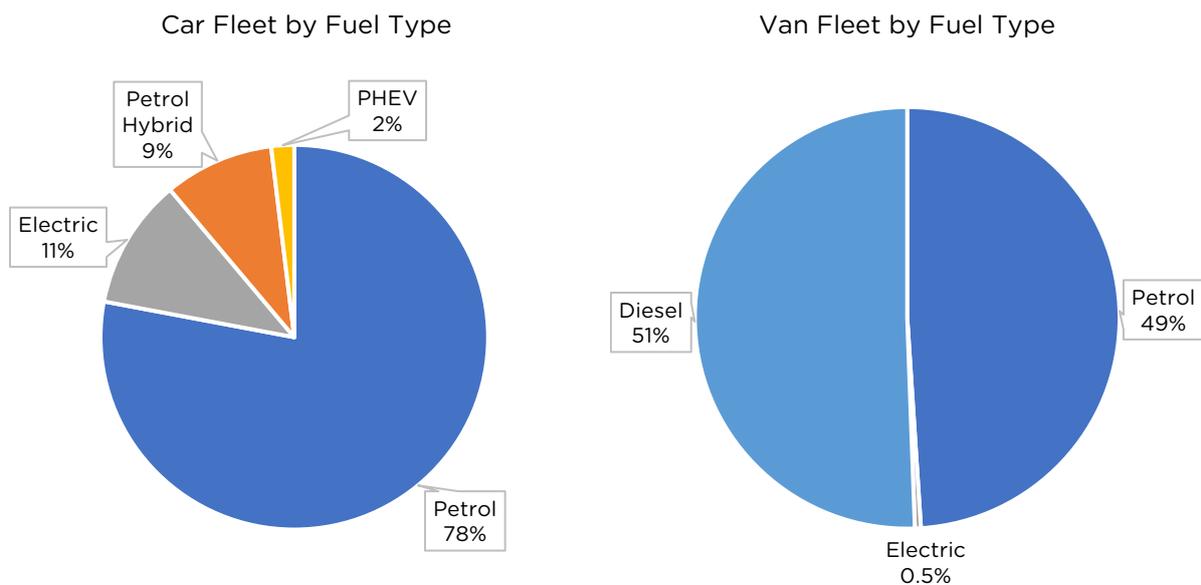


Figure 48: Car and van fleet by fuel type.

²⁰ Department for Transport, VEH0105 and VEH0132b.

²¹ Department for Transport, VEH0403

8.5 Vehicle age

The breakdown of the fleet by vehicle age is shown in the chart below. The key points to note are:

- Two thirds of cars and 99% of vans are fewer than two years old.
- No cars or vans are aged five years or older.
- Car club cars have an average age of 1.6 years. Vans have an average age of 1.0 years. Vehicles are significantly newer than average UK cars and vans, both of which have an average age of 8.3 years^{22,23}.

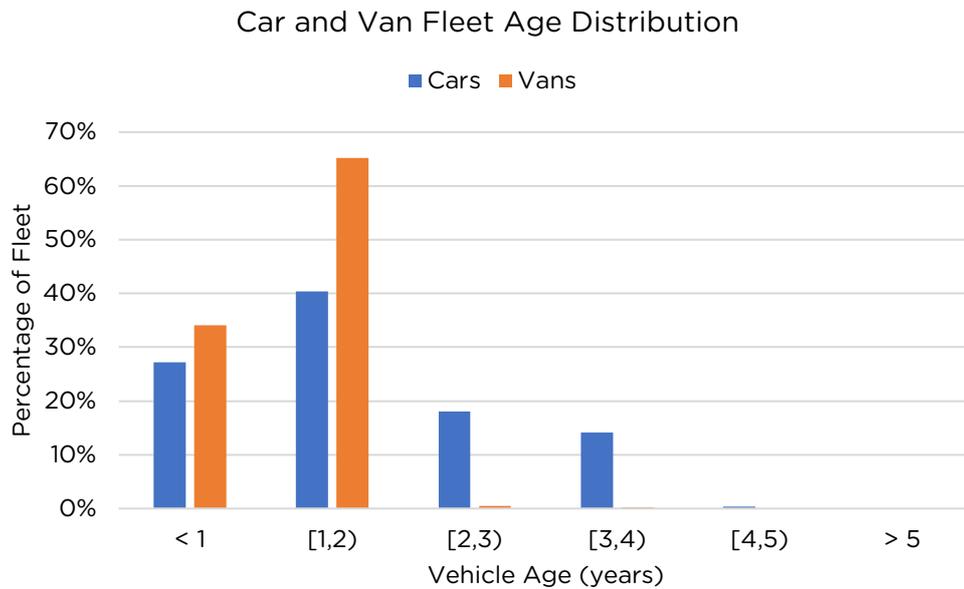


Figure 49: Car and van fleet age distribution.

8.6 Euro standard

European Union emission regulations for new light duty vehicles, commonly known as Euro Standards, regulate tailpipe emissions including those associated with poor air quality (nitrogen oxides (NOx) and particulate matter). At the time of writing Euro 6 is the most stringent standard.

The breakdown of the fleet by vehicle age is shown in the chart below. The key points to note are:

- 11% of the cars emit no tailpipe emissions as they are 100% electric EVs.
- The remaining 89% of cars are Euro 6 compliant, as required by CoMoUK accreditation.
- All the vans are Euro 6 compliant or electric vehicles.

²² Department for Transport, VEH0211

²³ Department for Transport, VEH0411

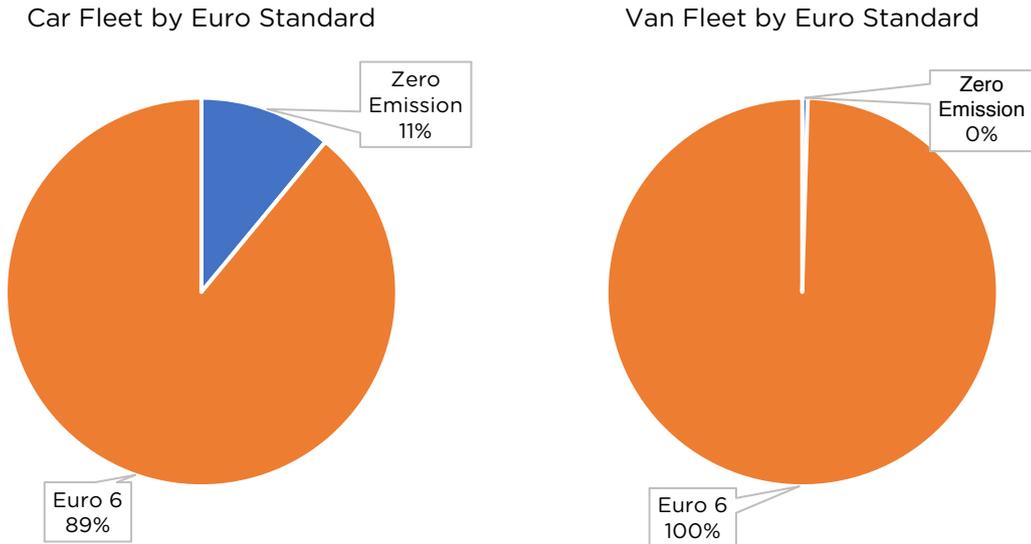


Figure 50: Car and van fleet by Euro standard.

As a result, 100% of cars and vans are ULEZ compliant.

8.7 Euro NCAP rating

Euro NCAP is a five-star safety rating system, against which all new vehicles must be tested.

The breakdown of the fleet by Euro NCP rating is shown in the chart below. The key point to note is that 98% of the cars achieve either a 5 star or 4 star rating.

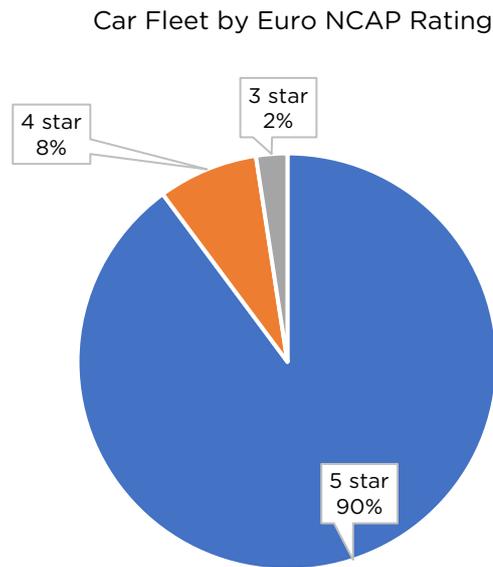


Figure 51: Car fleet by Euro NCAP rating.

8.8 Greenhouse gas emissions

8.8.1 Tailpipe emissions

The table compares the tailpipe emissions of car club vehicles in London, car club vehicles in the UK, and the average UK vehicle. It shows that cars and vans in London car clubs have lower emissions than average UK vehicles.

Car Club Annual Survey for London

- The average London car club car has emissions which are 25.5% lower than the average car on the UK's roads²⁴.
- The average London car club van has emissions which are 2.4% lower than the average van on the UK's roads. This relatively small saving is because of the high share of petrol vans in the fleet²⁵.

Table 7: Difference in TTW CO₂ emissions between car club vehicles and the UK average.

TTW gCO ₂ e/km	Average London Car Club	Average UK Car Club ²⁶	Average UK vehicle	London Car Club difference to average UK vehicle
Car	127.7	125.8	171.4	-25.5%
Van	240.2	228.7	246.2	-2.4%

Vehicle Excise Duty (VED) first year rates vary according to the CO₂ emissions of the car. The distribution of vehicles across these bands is therefore a useful proxy for the emissions of a fleet.

The breakdown of London car club cars²⁷ and a comparison to all cars in the UK in 2019²⁸ are shown in the chart below. The key points to note are:

- London car clubs have significantly fewer highly emitting vehicles (>130 g/km CO₂). Over half the vehicles in the UK are in a VED band above 130 g/km CO₂.
- 13% of London car club cars are ultra-low emissions vehicles (ULEVs), which are defined as emitting less than 75 g CO₂/km, as opposed to just 0.9% among all vehicles on the road in the UK.

²⁴ This is the percentage difference between the average emissions of a car club vehicle and the emissions of an average UK car or van. Individual car club vehicle emissions were reported by the car club operators and the average calculated using the methodology detailed in the Appendix to this report. Average UK car/van emissions taken from UK Government greenhouse gas reporting conversion factors 2020, available at: <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020>.

²⁵ This is the percentage difference between the average emissions of a car club vehicle and the emissions of an average UK car or van. Individual car club vehicle emissions were reported by the car club operators and the average calculated using the methodology detailed in the Appendix to this report. Average UK car/van emissions taken from UK Government greenhouse gas reporting conversion factors 2020, available at: <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020>.

²⁶ Whole of the UK car club fleet including London.

²⁷ VED for vans is not based on CO₂ emissions.

²⁸ Department for Transport, VEH0206.

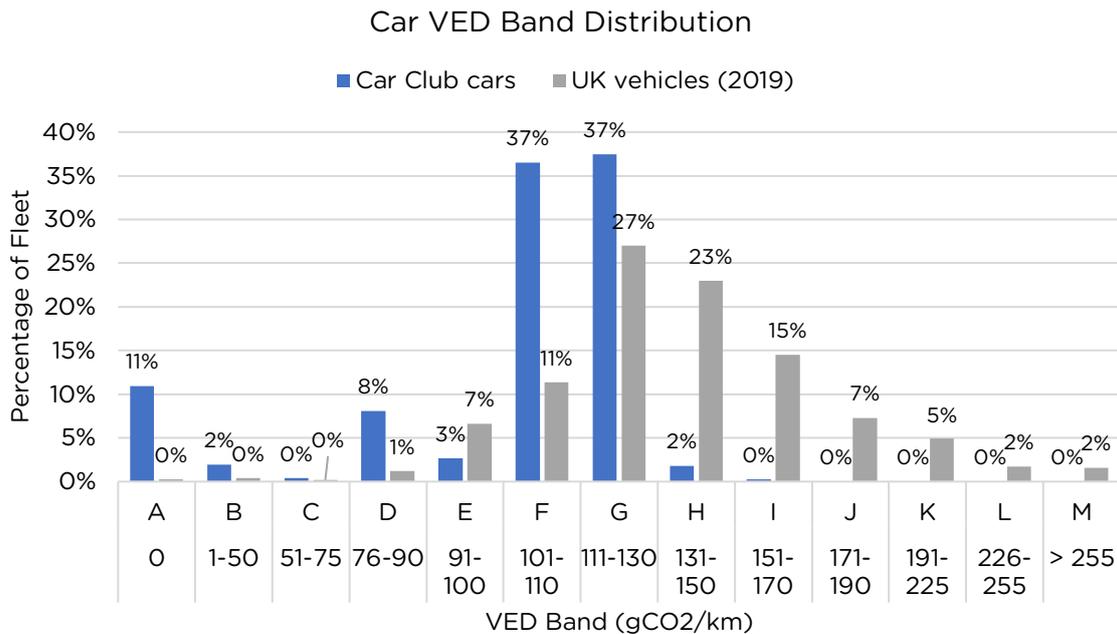


Figure 52: Car VED band distribution.

8.8.2 Total emissions

We have estimated well-to-wheel (WTW) carbon dioxide equivalent (CO₂e) emissions, which is the standard that should be used for reporting purposes. WTW emissions include the emissions from producing, transporting, and combusting fuel and electricity.

- The WTW CO₂e emitted by the London fleet is estimated to be 7,259 tonnes.
- Over the same distance, the average UK car and van would have emitted 8,961 tonnes WTW CO₂e.
- This represents a reduction of 19% or 1,702 tonnes CO₂e, assuming all car club journeys would otherwise have been undertaken by another vehicle.
- This saving is approximately the equivalent of removing 671 cars from the road for a year²⁹, or the lifetime CO₂e absorption of 3,800 trees.

8.9 Air pollutant emissions

According to Public Health England “poor air quality is the largest environmental risk to public health in the UK”³⁰. The two largest components of urban air pollution are oxides of Nitrogen (NOx) and Particulate Matter (PM). Real-world emissions of these pollutants from vehicles have been estimated using COPERT 5³¹. COPERT outputs are not directly comparable with Euro Standard regulations, though the standards are incorporated into its assessment.

The breakdown of the fleet by estimated real-world pollutant emissions are shown in the charts below. The key points to note are:

- London car club vehicles have average NOx emissions of 0.03 g/km and 0.29 g/km for cars and vans respectively. This is a 91% and 75% reduction respectively from the UK average (0.32 and 1.16 g/km)³².
- PM_{2.5} emissions are also significantly lower than the UK average car and van, with car clubs achieving 74% and 91% reductions, respectively.

²⁹ Numbers of cars removed from road calculated using average annual mileage for UK cars (7,400 miles/year from National Travel Survey 2019), reduction in emissions from driving more efficient car club vehicles, and average UK vehicle emissions from BEIS.

³⁰ PHE, <https://www.gov.uk/government/publications/health-matters-air-pollution/health-matters-air-pollution>

³¹ <https://copert.emisia.com/>

³² NAEI, <https://naei.beis.gov.uk/data/ef-transport>

Car Club Annual Survey for London

Car club vehicles have much lower air quality pollutant emissions than average UK vehicles for two reasons; there are far fewer diesel vehicles on the fleet and the vehicles are all much newer and so comply with the latest Euro standards.

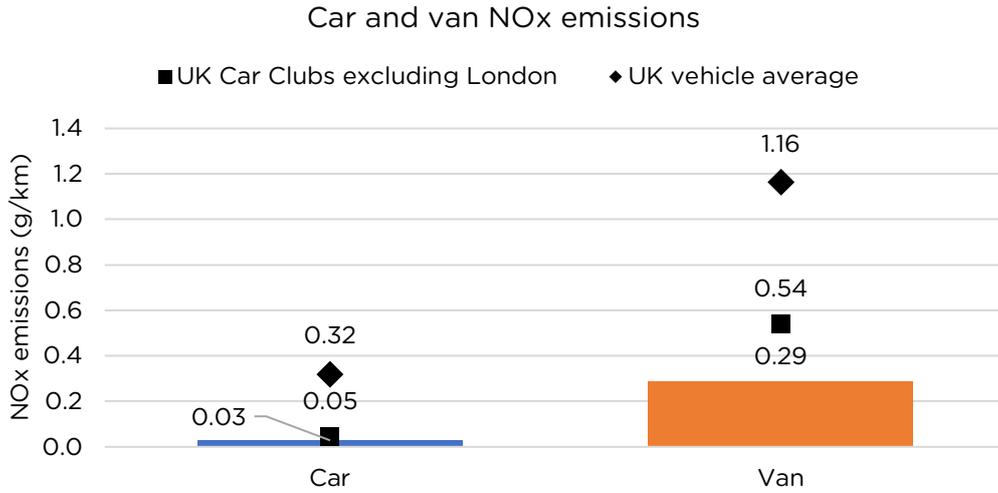


Figure 53: Car and van NOx emissions.

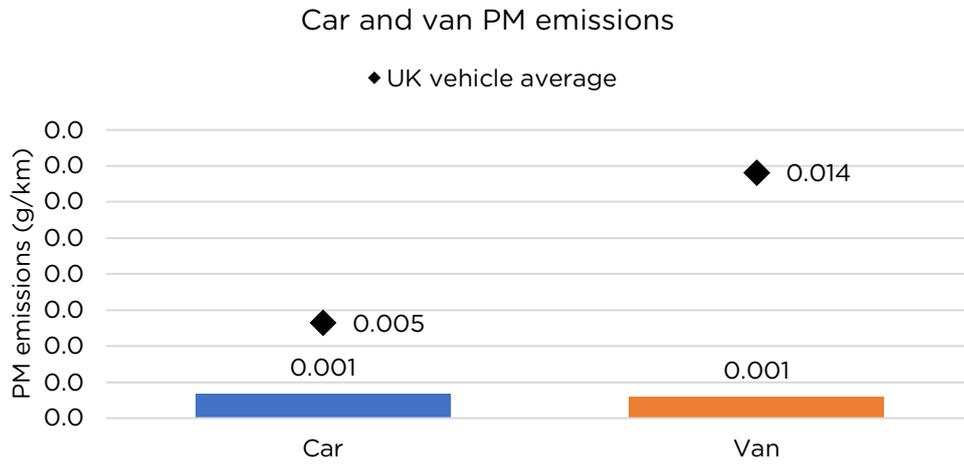
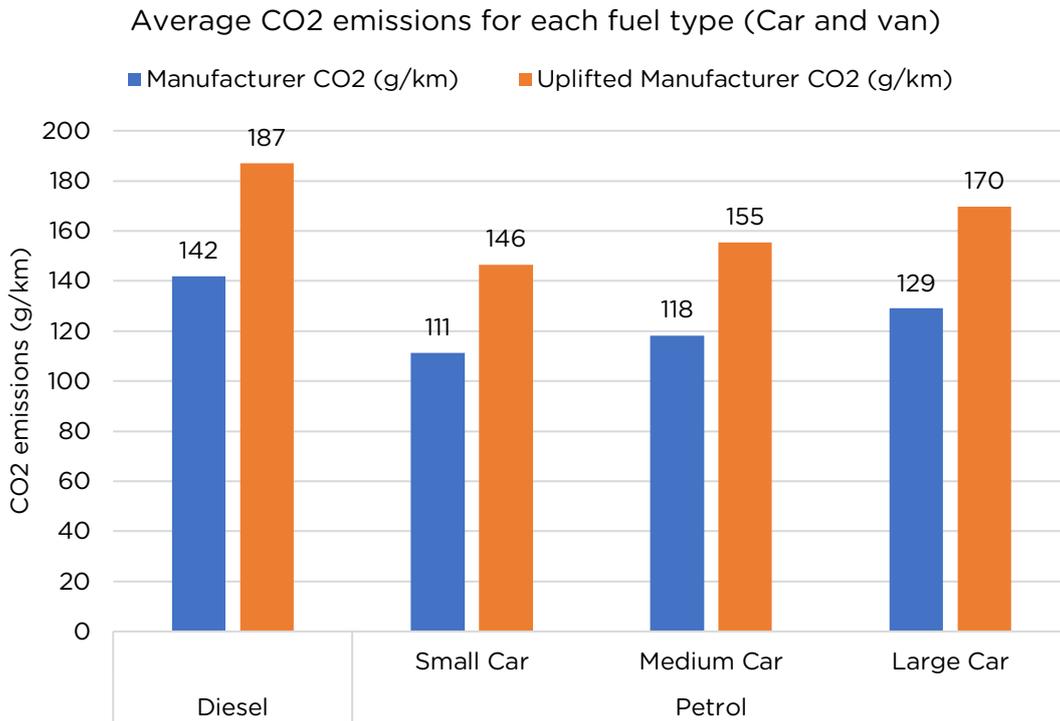


Figure 54: Car and van PM emissions.

9 Appendix

9.1 Carbon emissions

The measured carbon dioxide equivalent³³ (CO₂e) emissions provided by vehicle manufacturers were uplifted to account for the difference between the measured emissions and the real-world emissions. The uplift factor is based on the year of registration and is provided by the Department for Business, Energy and Industrial Strategy (BEIS)³⁴. These uplifted emissions were compared against Cenex’s own independently measured emissions factors³⁵ and good agreement was found. The uplifted emissions were used as they are provided for each specific make and model, hence providing more granularity than (which are valid for generic vehicle types, e.g., small car). The different uplift factors are shown in the chart below.

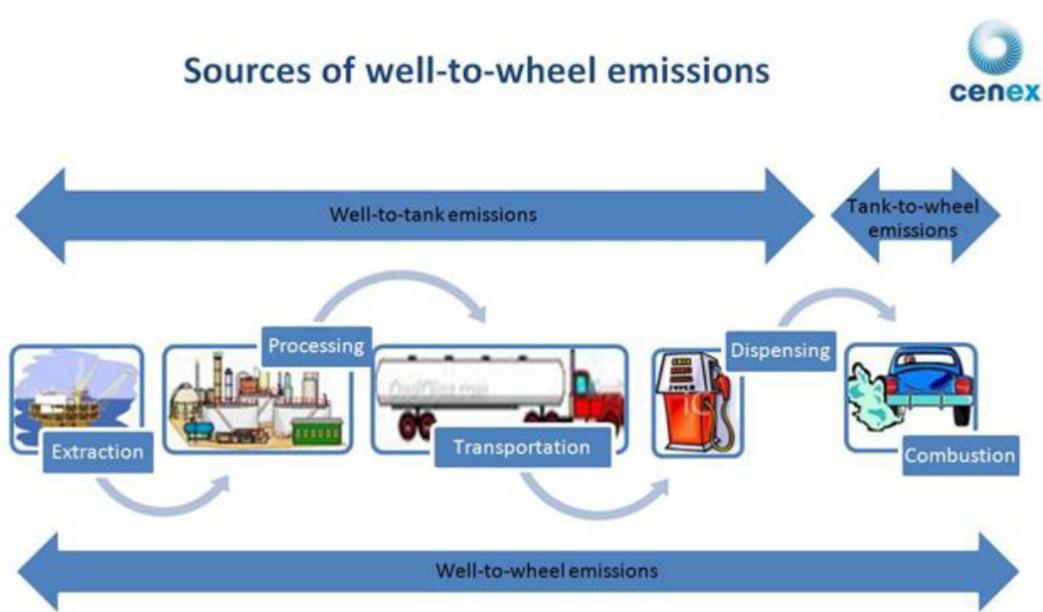


Both tailpipe and well-to-wheel (WTW) emissions are reported. Tailpipe emissions only consider the products from the combustion in the engine, while WTW emissions also account for, on top of the combustion, the extraction and processing of the fuel (or generation of electricity for electric vehicles) and its transportation/dispensing to the petrol station or chargepoint.

³³ CO₂e emissions is the equivalent amount of CO₂ in kg that accounts for all greenhouse gases emitted by vehicles: CO₂, methane and N₂O.

³⁴ BEIS, 2020 Government greenhouse gas conversion factors for company reporting: Methodology Paper for Conversion factors. [Greenhouse gas reporting: conversion factors 2020 - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020)

³⁵ Cenex’s real world emissions are based on actual measurements and capture fuel type and vehicle segment but do not have the granularity of the manufacturer measured emissions that additionally account for different models and manufacture years



9.2 Air quality emissions

Air quality emissions were calculated using the COPERT 5 tool³⁶, which estimates the real-world air quality emissions of vehicles based on their size, fuel type and engine Euro Standard. The emissions given by the tool come from a database of test data held through the Joint Research Centre’s programme “European Research group for Mobile Emission Sources”. The emissions test data is typically derived from laboratory studies where vehicles are tested on a chassis dynamometer over different real-world drive cycles, but increasingly often from testing vehicles on the road using portable emission measurement systems (PEMS).

9.3 Low emission zone compliance

Vehicles were deemed Low Emission Zone compliant if they met the following minimum emission standards:

- Euro 4 (or better) petrol or petrol hybrid engine.
- Euro 6 diesel engine.
- Zero tailpipe emission vehicle.

Many active and proposed zones in the UK require with these standards, for example the London Ultra Low Emission Zone the forthcoming Scottish LEZs, and the Birmingham Clean Air Zone

³⁶ <https://copert.emisia.com/>

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