

Car Club Annual Report England and Wales 2020



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CoMoUK Car Club Annual Report

England and Wales
(exc. London) 2020

KEY FINDINGS

www.como.org.uk

ACTIVE CAR CLUB MEMBERS

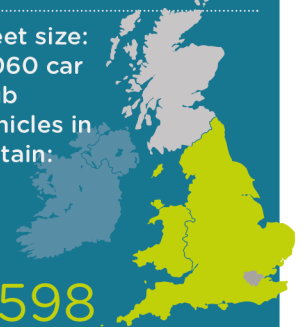


28,324
Total members:
47,785

FLEET SIZE

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

1,598
in England and
Wales (outside of
London)

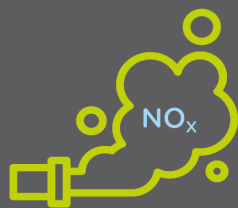


AIR QUALITY



99%

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



84%↓

lower NO_x emissions than
the UK average car



71%↓

lower PM2.5 emissions
than the UK average car

CARBON SAVINGS



1150

Car club carbon savings
for England and Wales
outside London are
equivalent to the lifetime
CO₂e absorption of
around 1150 trees

CAR AGE



1.5YRS

is the average age of car
club cars

REDUCING PRIVATE CAR OWNERSHIP



9

private cars taken off the
road by each car club car
in England & Wales

CARBON EMISSIONS



25.5%

less emissions in England
and Wales car club car
compared to the average
UK car

COST SAVINGS



20%

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

ELECTRIC CARS



42%

of respondents reported
having used an electric
vehicle



6%

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
32%**

were satisfied with
charging points

2 Foreword

It gives us at CoMoUK great pleasure to present this 2020 car club research. This England and Wales report is one of a suite of reports covering Scotland, London 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, the Department for Transport and the EU Inter-reg programme Share North – 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 car club users across England and Wales. 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 than purchase or lease

Based on this evidence, we contend that this set of interlocking virtuous circles are part of what the future of transport emissions across England and Wales will need to look like if 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 finding pass without acknowledging that this is a sector without subsidy support, that indeed pays to operate. It has almost no dedicated access to electric vehicle chargepoints and is not part of strategic transport planning across the country and often not part of that at regional or local levels either. Yet it is delivering sustainable transport on the ground 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 across England and Wales to help create that environment as part of the country's continuing turn towards a range of convenient, attractive and sustainable transport options.

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 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 England and Wales, 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 4,987 respondents, which is 18% of active members in England and Wales.

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

Car Club Annual Survey for England and Wales

UK. The interviews aimed to provide insight into motivations behind modal shift, the triggers and 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:

- Two car club users: members of a car club who use it at least once a month.
- Three '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-users: people who live in areas where access and knowledge of car clubs is high, but they are not members¹.

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. 2,835 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 regional 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. Some geographical areas saw private membership growth remain consistent with previous years while others saw a decrease, particularly in times of lockdown. Corporate memberships have generally decreased over the past year. More suburban locations seem to have recovered quickest.

Operators have adapted their approaches in light of the pandemic. The frequency of cleaning cycles has increased by most operators, which has slightly reduced the booking availability in some locations. Providing specific reassurance of cleaning practice approaches and safety in promotional materials seems to have supported quicker recovery.

5.2 Changes in car club usage in Covid-19 pandemic

Since the start of the Covid-19 pandemic, usage of car clubs has decreased for 34% of respondents with 25% saying that their usage has increased, which is similar to the GB average².

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

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

Car Club Annual Survey for England and Wales

Since the start of the Covid-19 pandemic, has your usage of club car vehicles....

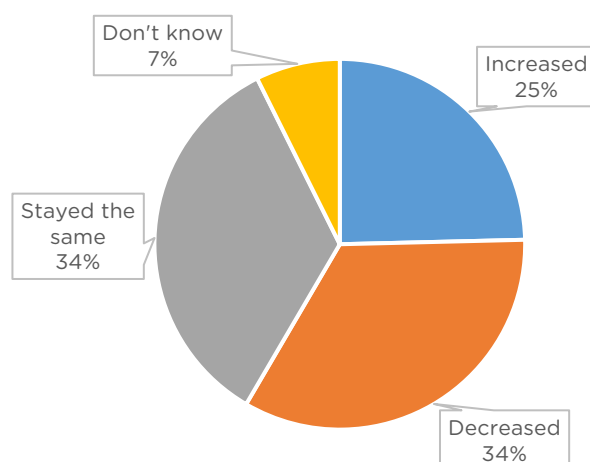


Figure 1: Change in usage of car club vehicles since the COVID-19 pandemic.

Where Covid-19 resulted in increased of 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.

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.
- Sanitising 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, 56% of respondents have walked and 30% have cycled three times a week.

Car Club Annual Survey for England and Wales

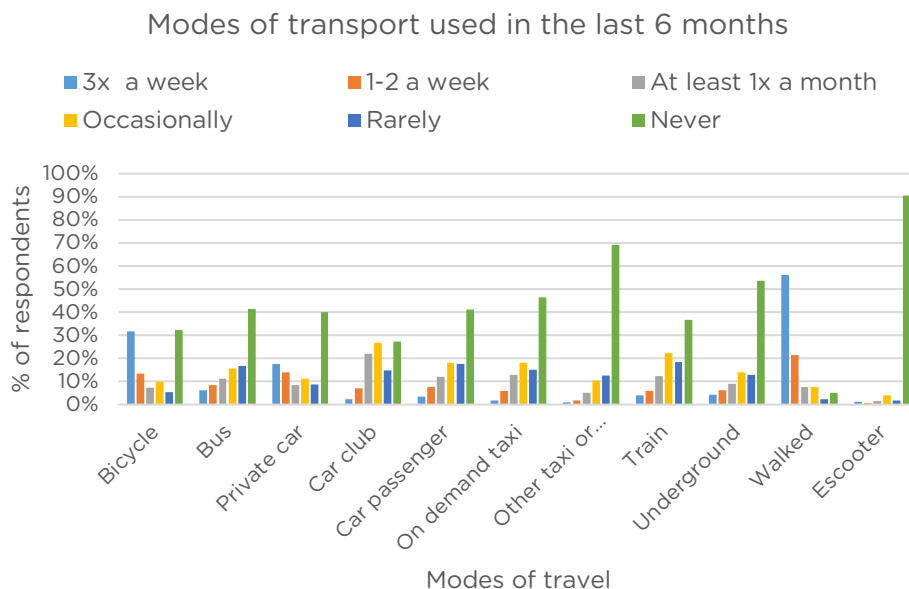


Figure 2: Modes of transport used in the last six months.

When asked about reasons underlying travel choices, 74% reported that their choices were affected by Covid-19, with 34% choosing that option which makes them feel safest to limit their exposure to Covid-19.

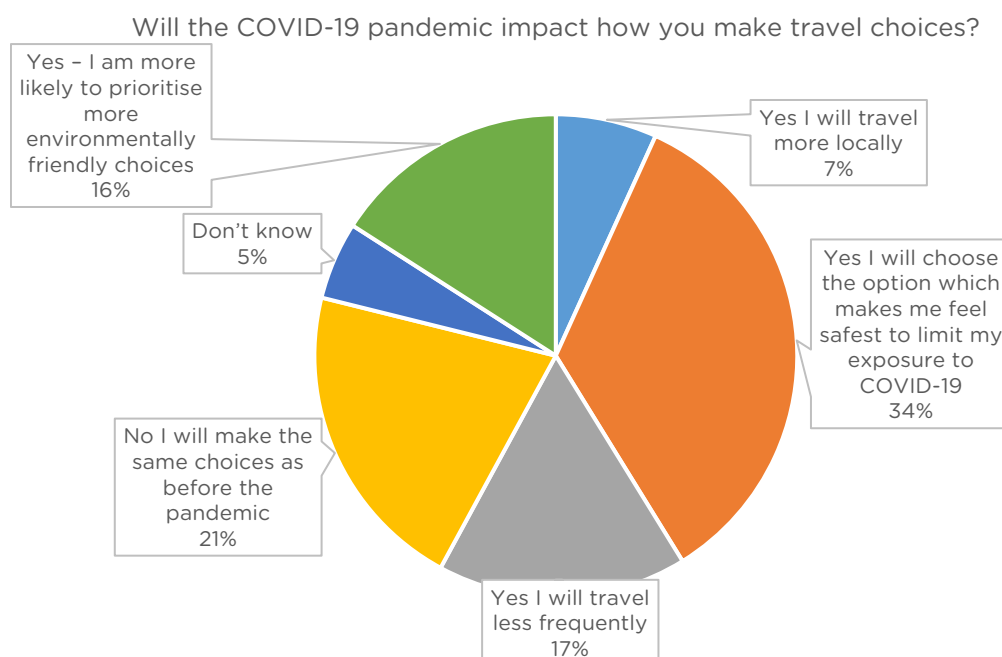


Figure 3: Impact of COVID-19 pandemic on travel choices.

5.4 Covid-19 impact on future transport choices

When asked to consider expected use of transport over the next 6-12 months, almost half of respondents said that their usage would be likely to stay the same, although travel by bus, walking, and cycling are expected to increase (53% of respondents said that they aim to walk more in the next 12 months).

When specifically asked about usage of car club vehicles in the future in the light of Covid-19, 45% thought that usage will change (30% more frequent usage, 15% less frequent). 34% thought it will have no long-term effect on their usage.

Do you think the COVID-10 pandemic will impact on your usage of car club vehicles in the future?

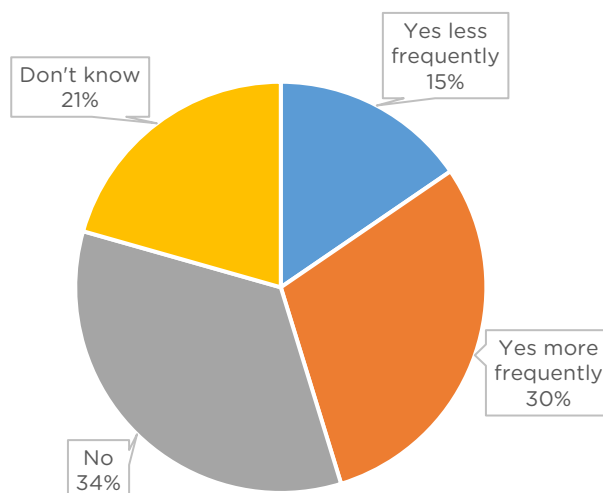


Figure 4: Change in future use of car club vehicles due to the COVID-19 pandemic.

5.5 Impact on car club fleets

Trends in car club fleet size over the past year are described later in this report. The number of car club vehicles reduced steadily from March 2020 and, unlike other regions of GB, England and Wales have not recovered to levels seen before Covid-19. However, the long-term trend shows continued growth with an 28% increase in cars since October 2016.

5.6 In-depth interviews: impact of Covid-19

5.6.1 Concerns over safety and virus transmission

Most 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 than 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 England and Wales.

6.1 Length of membership

Almost two thirds of respondents have been members for two years or less (in line with the GB-wide results³), with only 12% (a marginal increase on GB figures) having been members for more than 5 years.

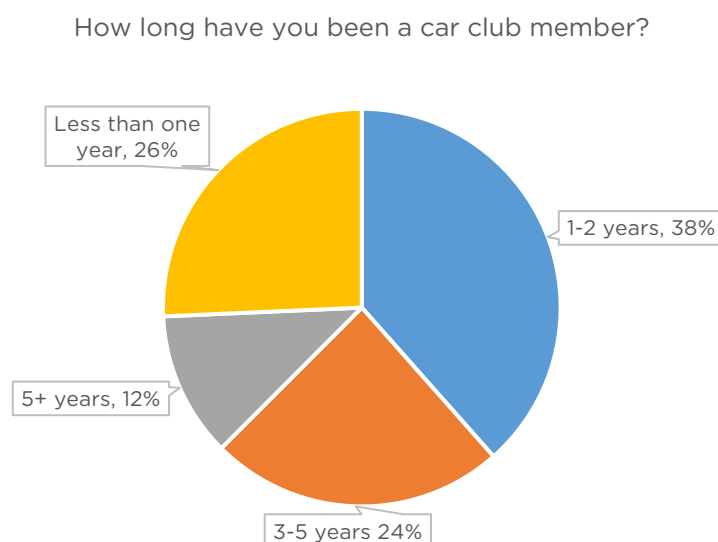


Figure 5: Length of car club membership.

6.2 Factors affecting awareness of car clubs

Respondents were asked how they first became aware of car clubs. 24% cited a car club website and 34% cited word of mouth. This is notably different to the rest of GB, where word of mouth is the most common response⁸.

How did you first hear about the car club? (Select all that apply)

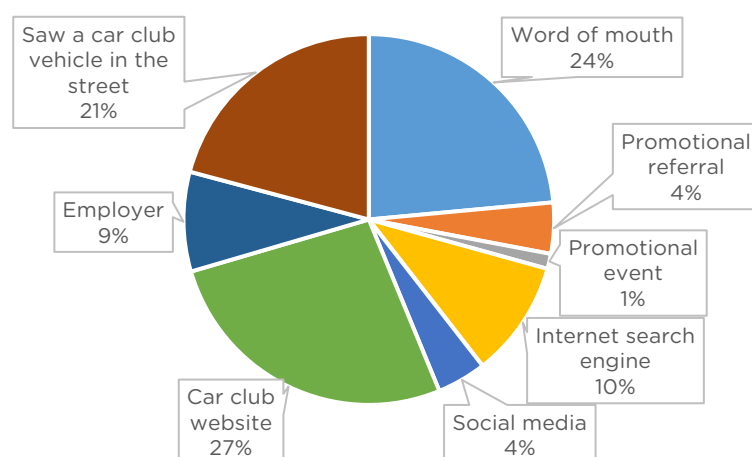


Figure 6: Factors affecting awareness of car clubs.

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

6.3 Initial membership expectations

Respondents were then asked to identify their initial expectations for car club membership. 49% expected to use the car club as a back-up to other travel options for ad hoc requirements (in line with figures for the whole of GB). 10% had a one-off specific need - the majority of these were linked to moving house although shopping or day trips were also identified.

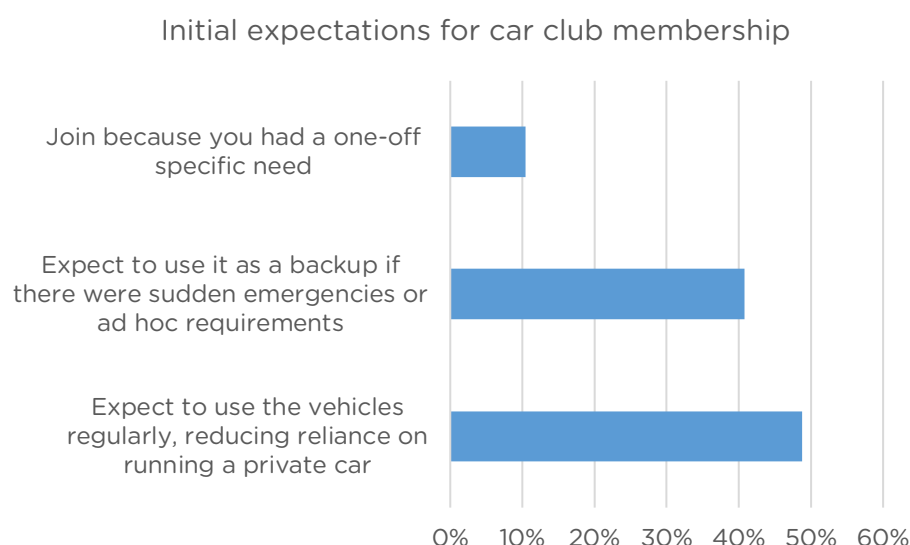


Figure 7: Initial membership expectations.

6.4 Reason for joining a car club

Among respondents who answered a question about owning a car prior to joining a car club, there was a 50/50 split between those who did and did not own a car prior to joining a car club.

Did you own a car prior to joining the car club?

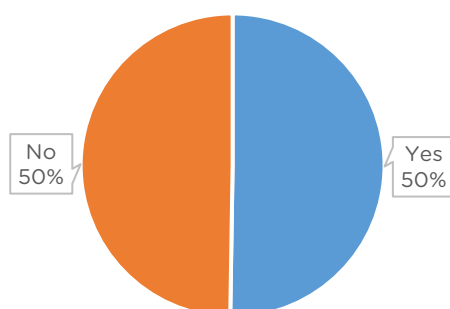


Figure 8: Car ownership prior to joining the car club.

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 factors were joining a scheme after their employer joined and joining the car club to then sell/dispose one or more existing household vehicles. The proportion joining after their employer signed up to a scheme is much higher than in the rest of GB. This is likely to reflect the geography of the study area; it seems to be a greater motivating factor for those in smaller towns and rural areas, rather than large cities.

Car Club Annual Survey for England and Wales

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

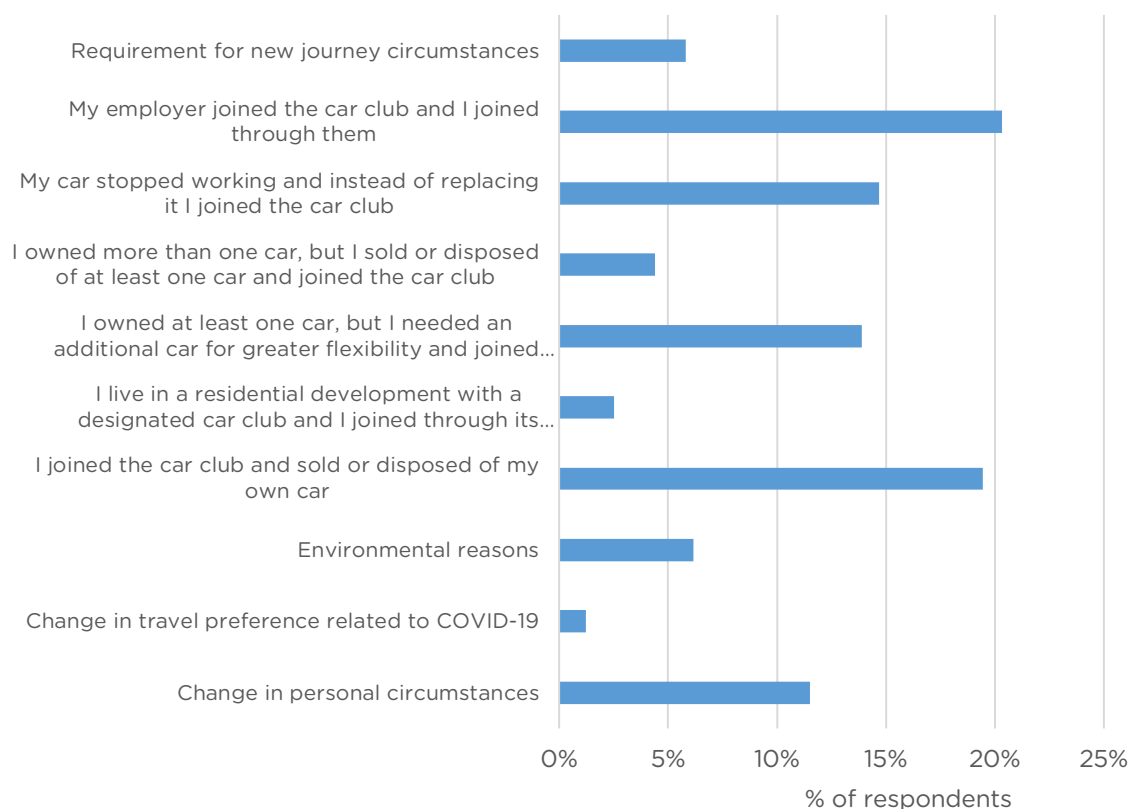


Figure 9: Reasons for joining a car club for those who previously owned a car.

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 20% of respondents.

Those who had not previously owned a car: what were your specific reasons for joining a car club?

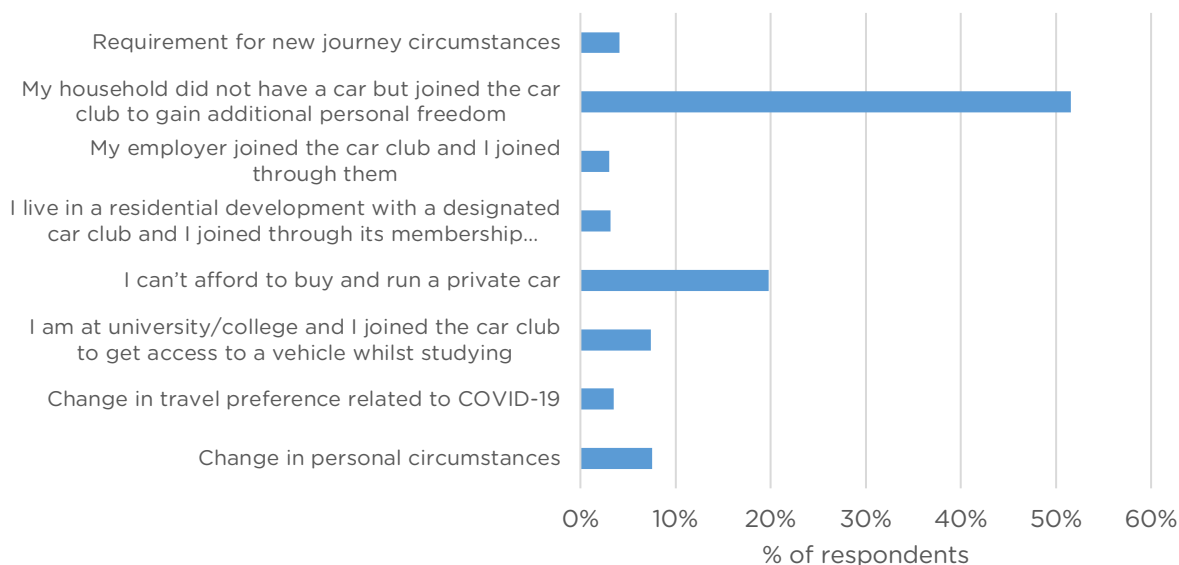


Figure 10: Reasons for joining a car club for those who previously not owned a car.

6.4.3 Qualitative Study Insights

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

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 made by 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 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 cities prefer

Car Club Annual Survey for England and Wales

smaller cars and those in suburban and more rural 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 cities.
- 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 and rural areas employer led pool car clubs are a significant facilitating factor.

The quotes below from the survey provide further context to these findings:

"I don't have a car and cannot get finance so hire when needed. I would normally have gone to a normal hire company but car club is more convenient, booking times are great, more cost effective and closer to get to. I don't need a car all the time mostly for my sons football matches and shopping." Gill, Newcastle upon Tyne

"I do not own a car and usually I use the train for most journeys but due to covid we are not being encouraged to do this so in order to visit my mother I have to go by car until its safer to go on train." Willa, Cambridge

6.5 Use of car clubs

Car club members use the vehicles regularly: 45% reported having used the service in the last 30 days. Only 8% of members have not hired a vehicle at all over the last 12 months.

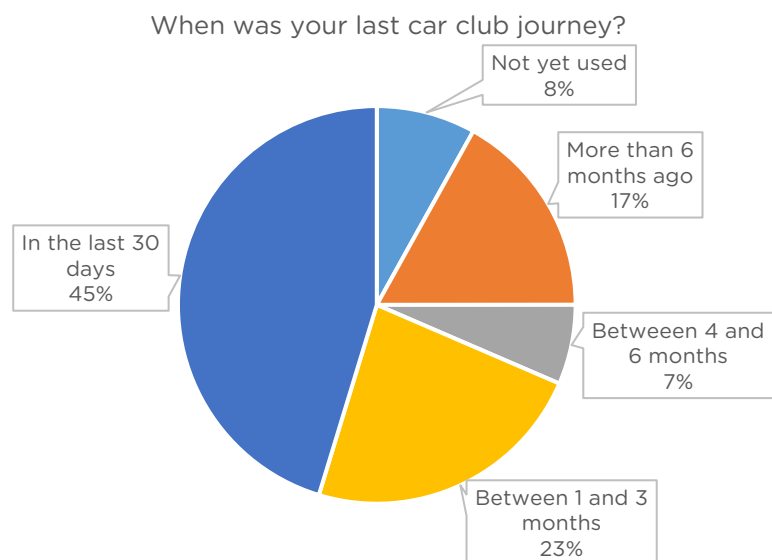


Figure 11: Timing of the last car club journey.

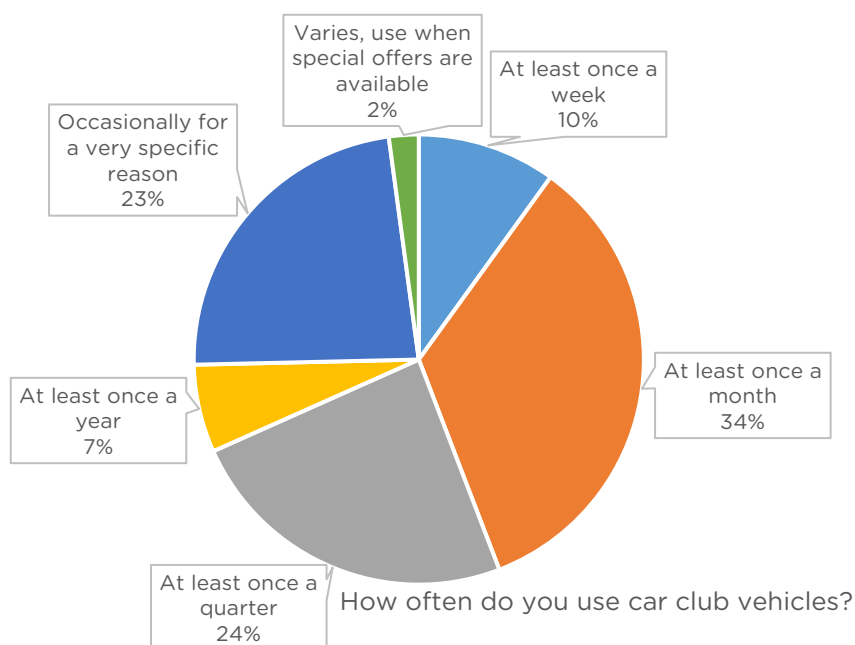


Figure 12: Frequency of car club use.

Among respondents who have not used a vehicle in the last six months, Covid-19 has been a significant factor with one third 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 74% of them walk or jog to pick up their car club vehicle and a further 8% cycle.

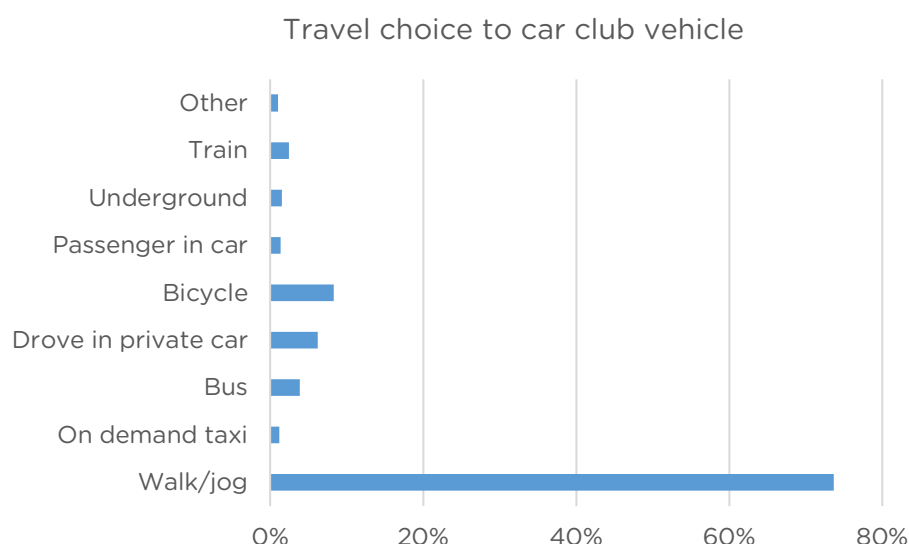


Figure 13: Travel method to reach car club vehicles.

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 25% cited leisure, 23% personal business and 21% shopping. Shopping has almost doubled in proportion from 11% in 2017/18, potentially due to lower reliance on public transport or lift sharing due to Covid-19. Only 12% referred to work trips, compared with 25% in 2017/18; this is likely to be connected to Covid-19 but the data does not allow us to conclusively make this link.

What was the purpose of your latest car club journey?

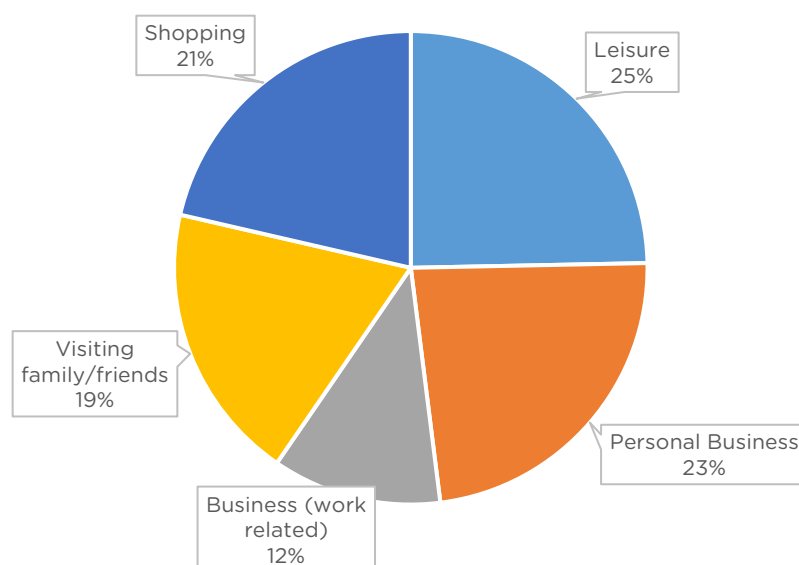


Figure 14: Purpose of car club journeys.

The quotes below from the survey provide further context to these findings:

"I needed a car for work purposes as I don't own a car I can use for work. I needed a car to collect a number of objects from another town. My workplace's car club cars are conveniently located to my office so I booked one. I couldn't have used a courier for this collection due to the nature of the objects, so this was very convenient and cost-effective." Katie, Bristol

I had shopping to transport, the cost compares favourably with using cabs, and driving myself gives me flexibility to alter my plans as I go along. There is no waiting involved, and I can visit several places efficiently and quickly. Elizabeth, Birmingham

6.7.2 Reasons for choosing a car club for the journey

Key reasons for selecting car club for their last journey were lack of suitable public transport and carrying luggage/bulky items (both 24%). These are in line with GB-wide findings⁴ and previous CoMoUK car club studies.

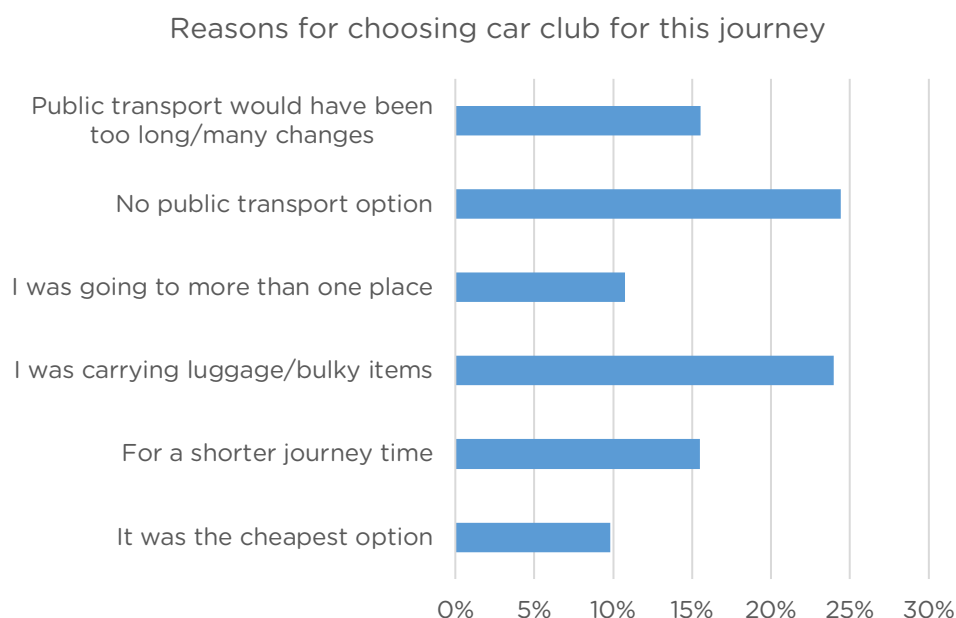


Figure 15: Reasons for choosing a car club for the journey.

There was a variety of specific journey purposes reported in the qualitative interviews, most were related to the transportation of larger items. A recurring 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: 84% of journeys had no children, 10% had one child in the car. By contrast, adult passengers were more frequent as 67% of journeys had 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.

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

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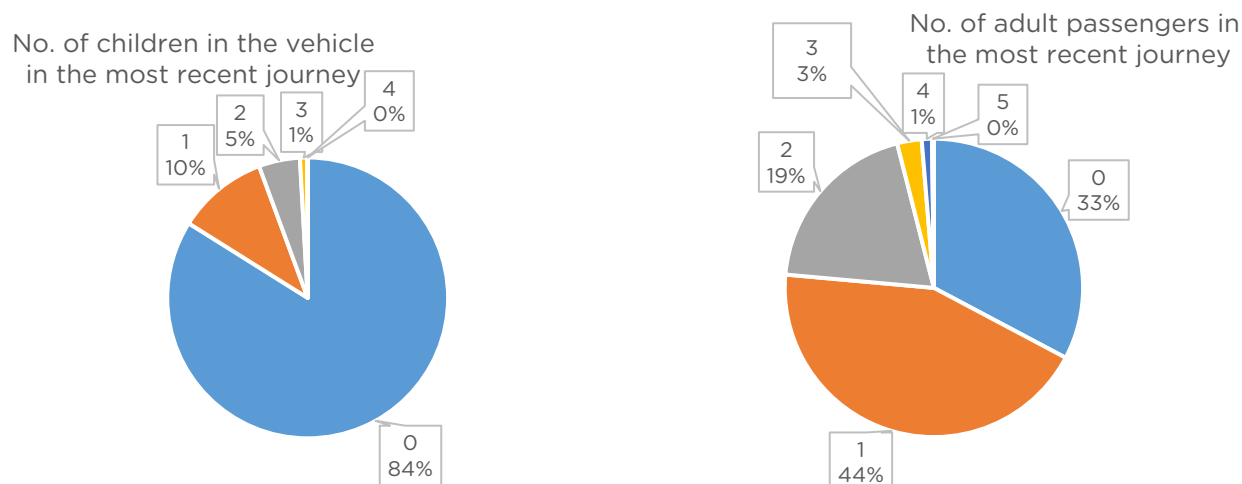


Figure 16: Number of adult and child occupants in car club journeys.

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. The most frequently cited answers were that the journey would not have been made (21%) or that the trip would have been completed by train (20%).

If you had made this journey before joining the car club what would have been the main mode of transport you use?

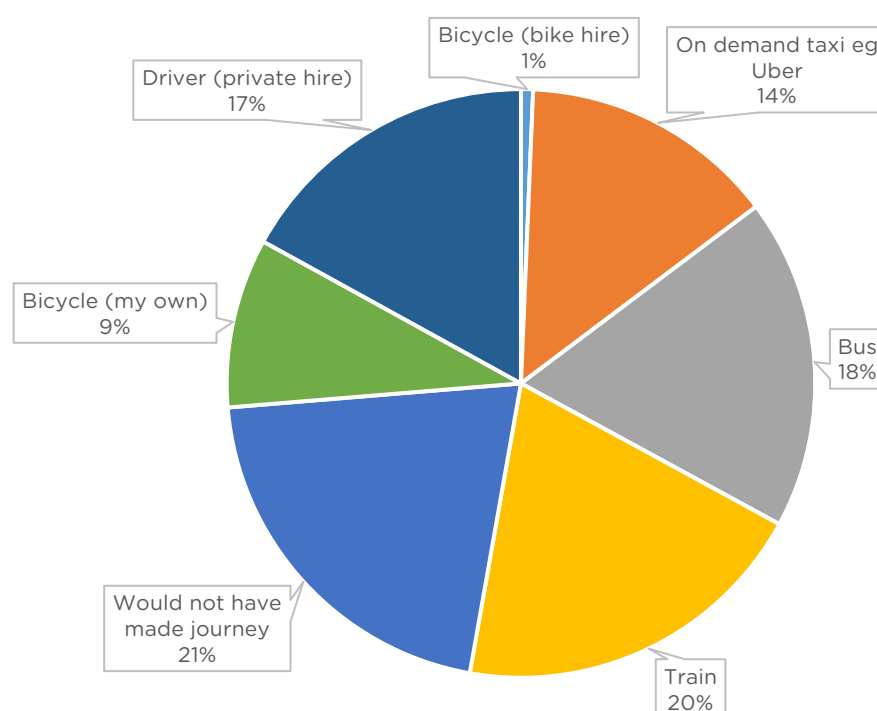


Figure 17: Alternatives to using a car club.

6.7.5 Journey distance

Users most frequently use car clubs for relatively short journeys. 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 3% were for distances exceeding 251 miles.

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

Distance driven	% of respondents		
	Journey 1	Journey 2	Journey 3
Less than 10 miles	37	36	37
11-25 miles	24	25	24
26-50 miles	14	16	16
51-100 miles	13	13	13
101-250 miles	9	8	8
251+ miles	3	3	3
Total	100	100	100

6.7.6 Journey duration

Figures for length of hire reflect these journey distances, with 60% of all journeys being for four hours or less. Only 3% of hires were for three days or more.

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

Hiring period	% of respondents		
	Journey 1	Journey 2	Journey 3
Less than 1 hour	18	19	20
2-4 hours	42	41	40
5-8 hours	22	23	22
Up to two days	15	15	15
3-7 days	3	3	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.

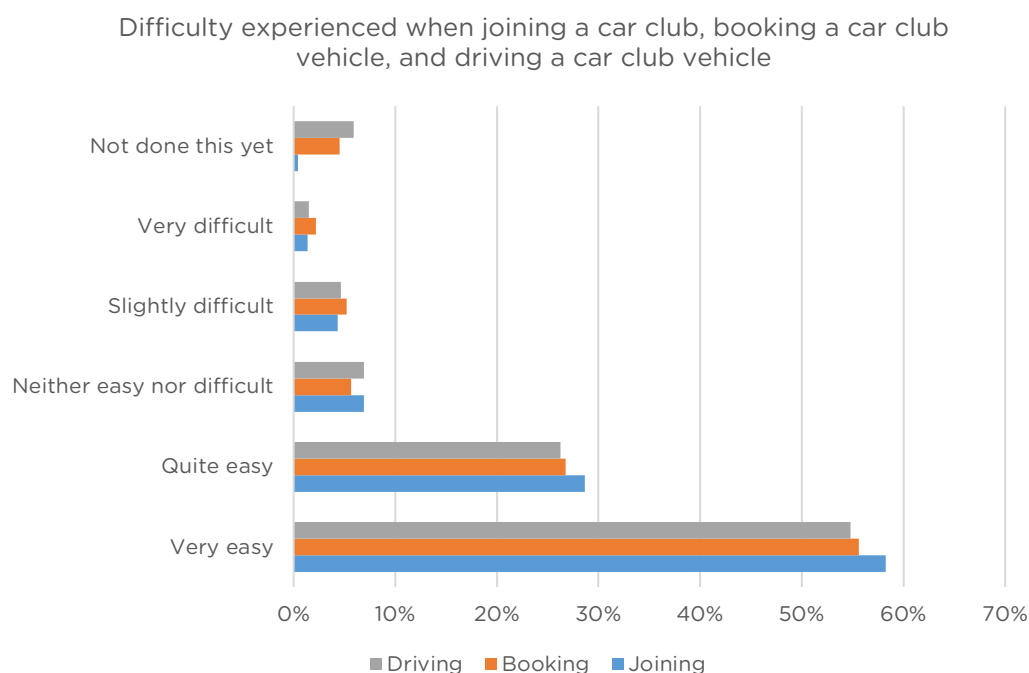


Figure 18: Different factors and levels of importance.

6.8.2 Maximum acceptable travel time to a car club vehicle

Members want access to vehicles to be close and convenient: 57% want access to be within a 10-minute walk although 25% will accept a walk of up to 20 minutes. People are generally happier to travel further to pick up the vehicle than in other parts of the GB, particularly London⁵.

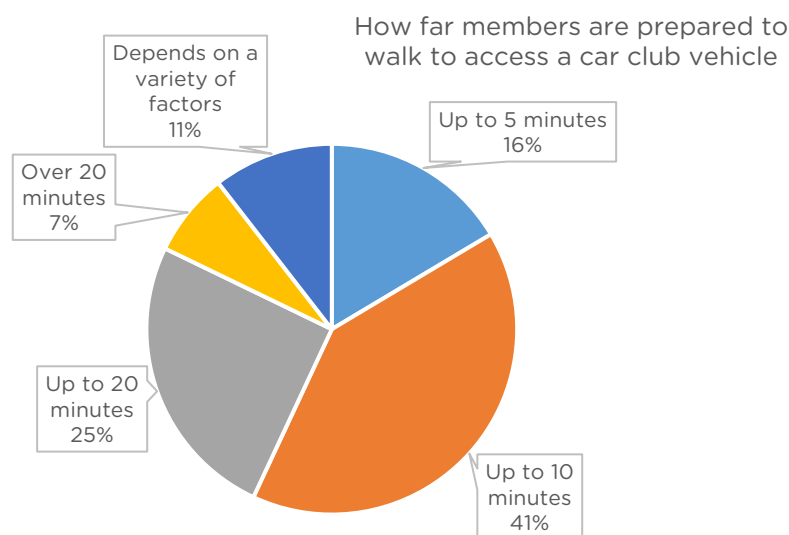


Figure 19: Maximum acceptable travel time to a car club vehicle.

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 the quality and maintenance condition of the vehicles (77%), customer service (72%) and cleanliness of the vehicles (72%). The lowest satisfaction scores were for Covid-19 safety measures (54%) and choice

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

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of vehicles (63%). These are quite different from the rest of GB, where cleanliness of vehicles was among the lowest scoring factors.

Table 3: Satisfaction levels for different criteria.

	% of respondents who are satisfied/very satisfied with....
The quality and maintenance condition of the vehicles	77
Customer service	74
The cleanliness of the vehicles	72
The proximity of car club vehicles to where you live	71
Information about the vehicles	70
Administration and backup	68
Availability of car club vehicles when you need them	67
Choice of vehicles	63
COVID safety measures put in place	54

These overall levels of satisfaction are reflected in responses to the question, 'Would you recommend car clubs to a friend?' with 81% agreeing that they would.

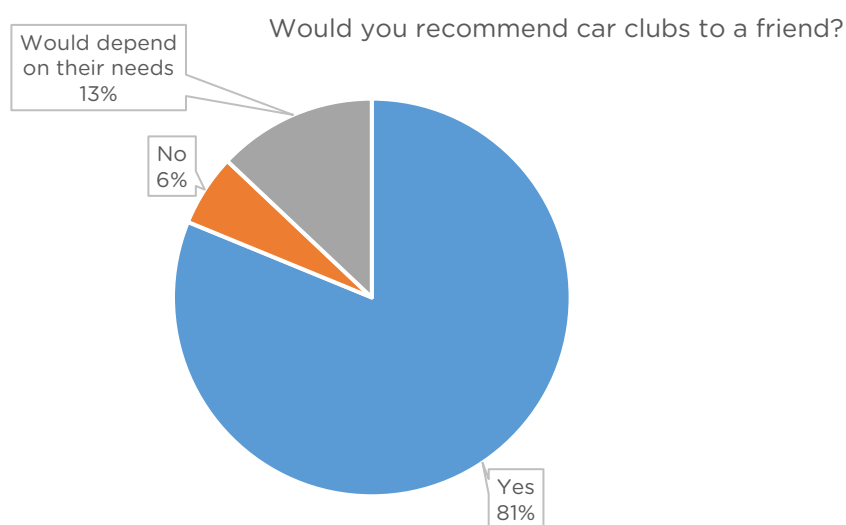


Figure 20: Proportion of respondents who would recommend car clubs to a friend.

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 GB 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	69
Guaranteed maintenance of the vehicle	68
Effective customer support at all times	59
Competitive price in comparison to other clubs	55
Cleanliness of the vehicle	55
Guaranteed sanitisation of the vehicle between usages	46
Choice of different power sources (electric vs petrol vs diesel)	22
Choice of different size/power vehicles	21
Choice of different vehicle brands	12
Availability of child car seats	8

The most critical factors members are looking for is proximity of the vehicle for collection (69% 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 in 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. However, the table below shows that in England and Wales, members are more likely to regard pick up and collection options as 'desirable' rather than 'essential' compared to the GB average, suggesting more flexibility in approach.

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	32	31	29
Desirable	35	40	39
One to be considered	15	16	20

6.8.6 Factors causing dissatisfaction with car club

Generally, levels of satisfaction among car club members are very high (see section 5.8.1-3). A small number of respondents identified factors causing dissatisfaction in this qualitative question in the survey. The key themes were:

- Problems with dirt, cleanliness, and sanitisation.
- Problems with booking.
- Problems with accessing the car.
- Customer service.
- Technical problems.
- Issues related to charging.
- (Perceived) unjustified accusations of damaging the car or traffic offences.

6.8.7 Customer experience from interviews

Echoing the members survey, availability and distance 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 the 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.

6.9 Car Ownership and Disposal

6.9.1 Car ownership prior to joining a car club.

Prior to joining a car club 49% of users had one household car and 24% had two or more cars in the household.

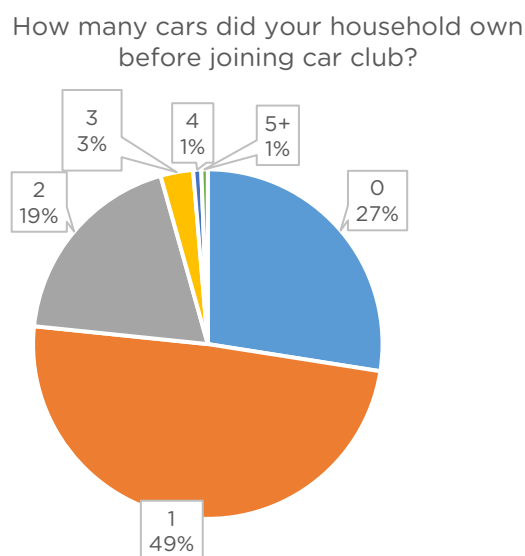


Figure 21: Number of cars owned before joining the car club.

69% of users stated that joining a car club had not resulted in any change in car ownership. 25% had at least one car fewer than when they joined a car club, which is in line with the GB figure. If this was extrapolated across the whole private user membership base, it would equate to 4,350 fewer vehicles on the road since users joined the car club.

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Change in car ownership since joining a car club

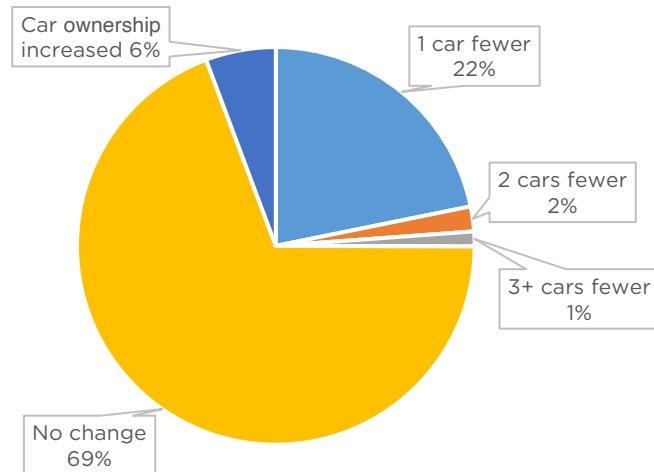


Figure 22: Change in car ownership since joining the car club.

When asked whether car club membership had prompted disposal of a car, 20% 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?

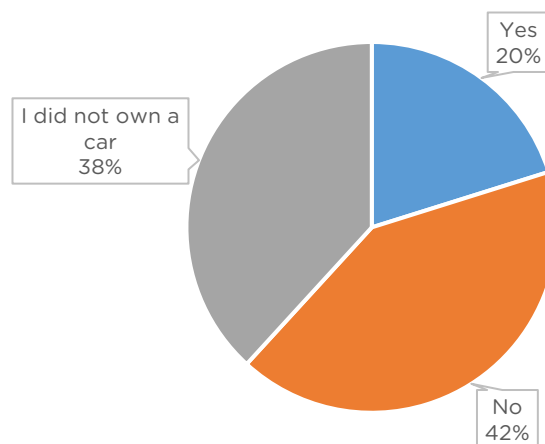


Figure 23: Cars disposed of due to car club membership.

Those that disposed of a car were asked about the age of this vehicle and, as the figures (below) show, 30% of cars disposed of were at least ten years old.

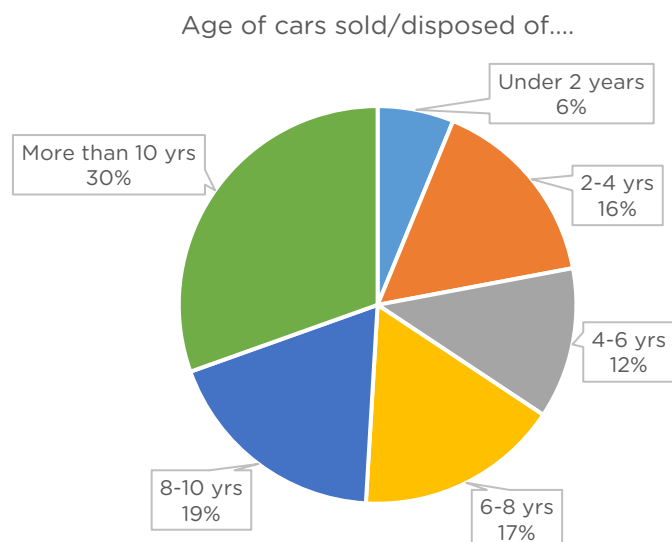


Figure 24: Age of car that was disposed of.

6.9.2 Average mileage of vehicle prior to disposal

In the 12 months prior to disposing of the car, 40% had driven fewer than 5,000 miles and 33% had driven between 5,001-10,000 miles. Only 8% 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.

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

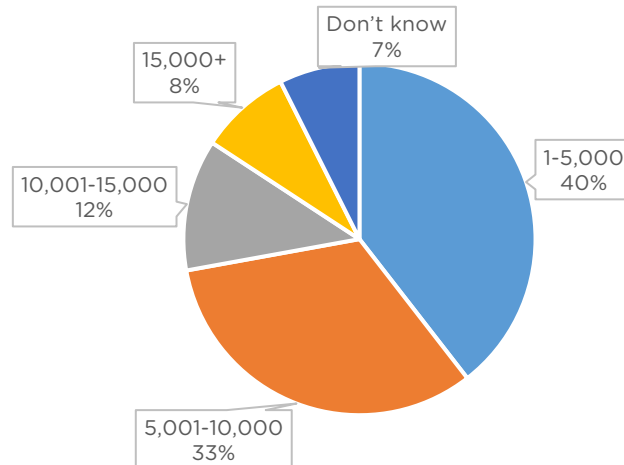


Figure 25: Average mileage of car that was disposed of.

6.9.3 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 a car. Compared to the rest of GB, fewer respondents cited availability of car clubs as a key factor.

Factors influencing the decision to dispose of a car

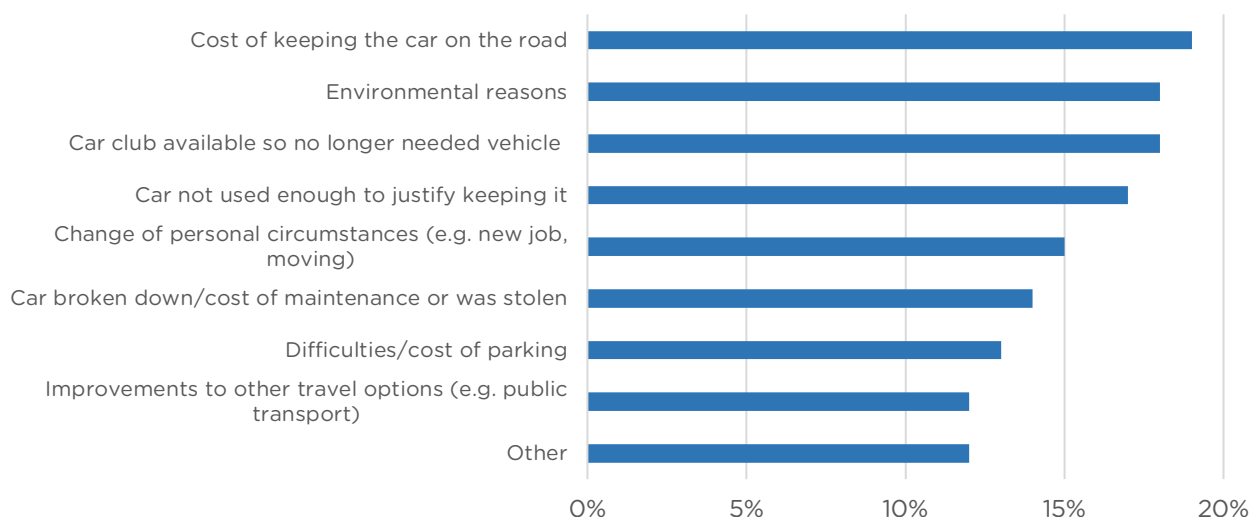


Figure 26 Factors influencing the disposal of a car

6.9.4 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 of car club hire (19%) and wider availability for car club vehicles (17%).

Factors which might encourage selling/disposing of a car

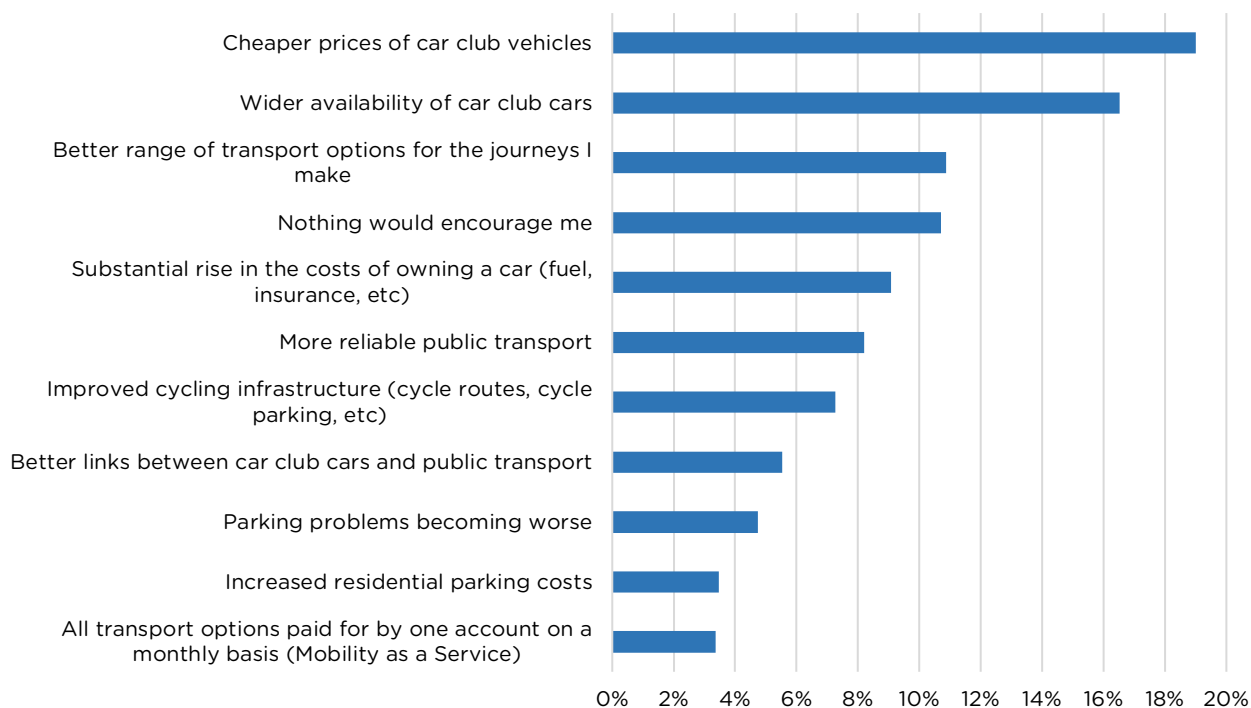


Figure 27: Reasons for deciding to dispose of a car and not replace it.

6.9.5 Future car ownership

The data suggest that car club membership has an impact on the likelihood of purchasing a car: 22% 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 a car club would you have bought a private/additional car?

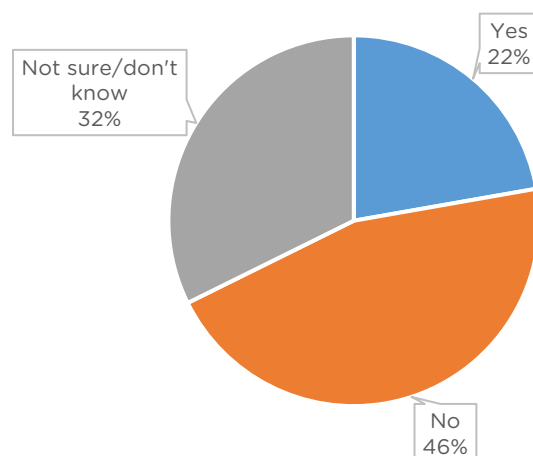


Figure 28: Impact of car club membership on purchasing a car.

Thinking about future plans, it would seem that car club membership affects possible purchases – 49% 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. This is an increase from 36% in the 2017/18 survey.

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?

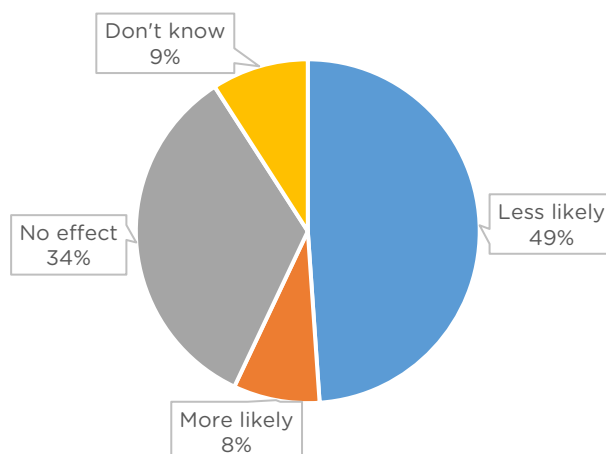


Figure 29: Impact of car club membership on future plans to buy a car.

However, most respondents (70%) stated that car club membership will have no impact on the likelihood that they will sell or dispose of a car in the next few years. It is possible that some of these respondents do intend to dispose of a car and the car club is not influencing them, while others do not plan to dispose of a car.

This is broadly in line with the disposal rates of existing members highlighted above. It seems needing to sell a car (often for financial reasons) or not replace it if it is broken down is a higher driver to force a disposal decision.

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?

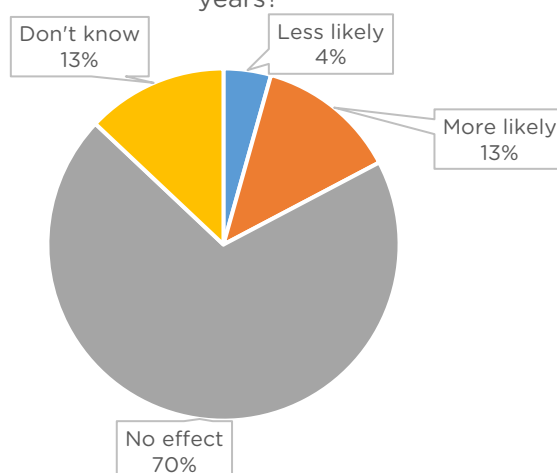


Figure 30: Impact of car club membership on future plans to dispose of a car.

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 England & Wales replaces 9 private cars⁶. The estimated total number of cars removed from the road is 12,790. 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 response as a proportion of active members (28,423)⁷ then divided by the number of car club cars in the region.

6.9.6 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; rather they replaced car trips or allowed them to take journeys that would not 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 club⁸.

Environmental considerations played little role in any of the interviewees' decisions on how to travel. There is some evidence to suggest it may influence longer-term decision making (such as purchasing an EV) but the impact is less than other factors such as ease of use, availability, and cost.

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

⁶ Rounded to zero decimal places

⁷ active members which is those who have hired at least once in the year

⁸ Figures in the table below are for the whole UK.

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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 inner-city areas. One of the perceived benefits of using car clubs was no longer having to worry about parking regulations and permits.

6.10 Electric vehicles

42% 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, or it could be explained by survey respondents considering hybrid vehicles when answering the question. Analysis of questions provided below suggest that may be the case.

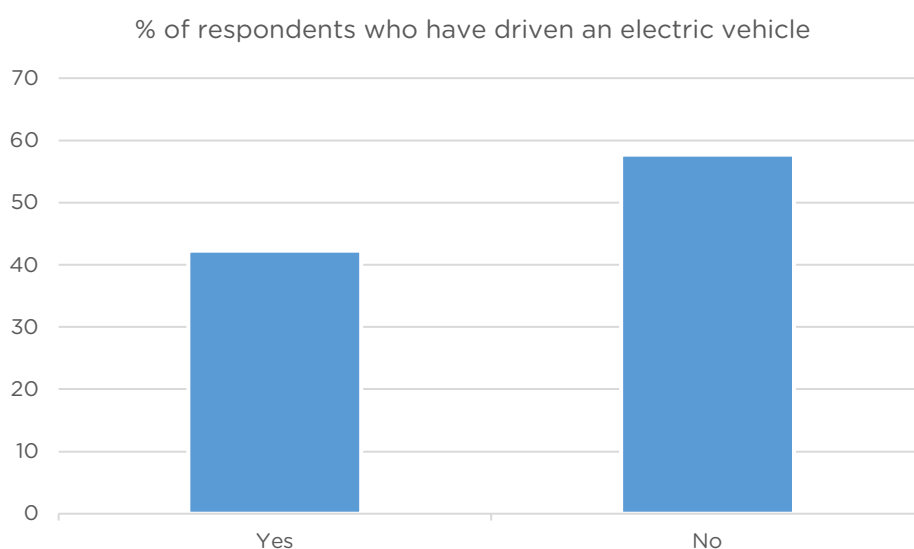


Figure 31: Percentage of respondents who have driven an electric car.

6.10.1 Reasons for selecting an electric vehicle

Reasons for selecting electric vehicles include desire for an environmentally friendly vehicle and curiosity (23% and 22% of responses). 19% of respondents stated that an EV was their closest vehicle, and 18% chose an EV as they prefer to drive them.

Why did you choose an electric car club vehicle

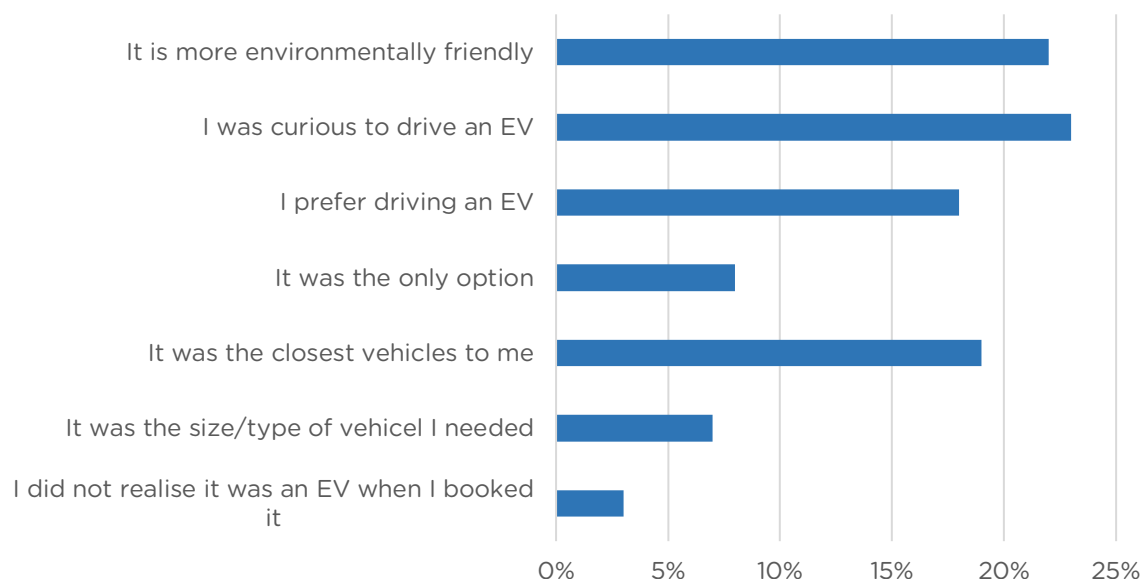


Figure 32: Reasons for choosing to use an electric vehicle.

6.10.2 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 (32% were satisfied) showed much lower satisfaction, qualitative feedback suggests that more education on their use and greater reliability of the chargepoints are required.

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

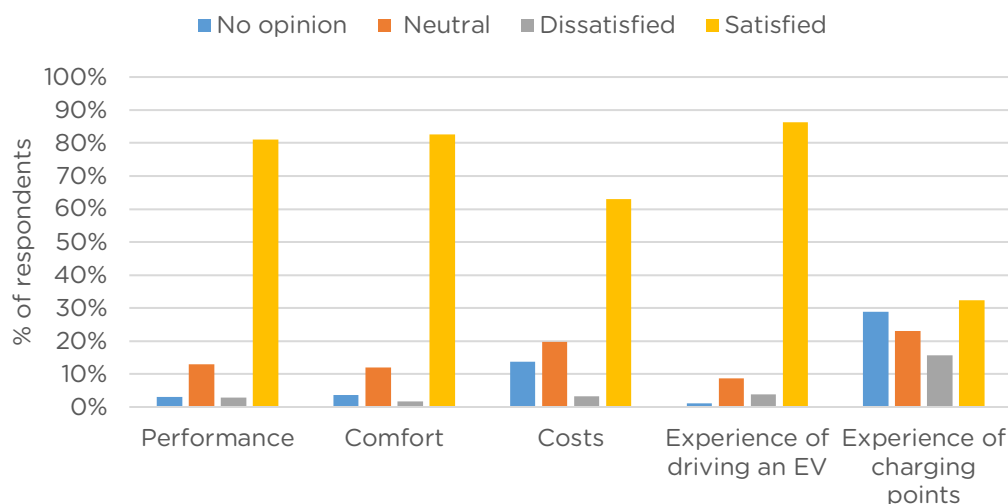


Figure 33: Satisfaction with electric vehicles.

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.

6.11 Profile of survey respondents

50% place themselves in inner city locations, 40% suburban, and 10% rural. The equivalent figures for GB as a whole are 62%, 34% and 10% respectively.

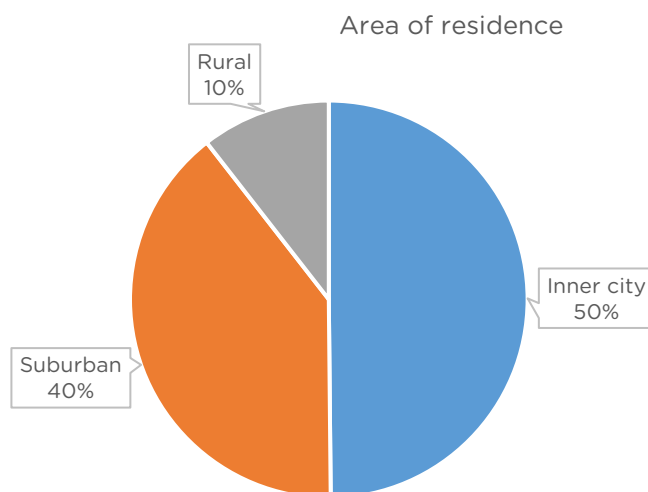


Figure 34: Urban-rural classification of respondents.

The most frequently reported household profile (20% of respondents) is single, and 34% are couples.

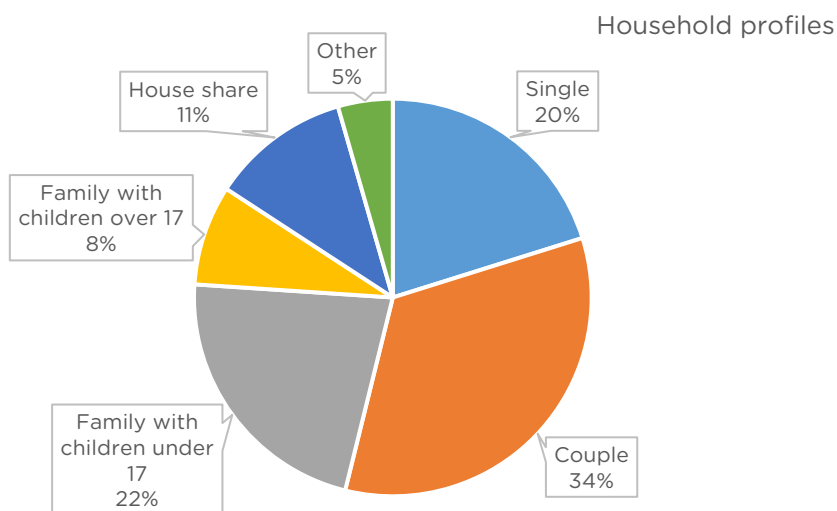


Figure 35: Household profile of respondents.

Over two thirds of respondents were male (66%) and less than one third (31%) female, with a small proportion selecting 'prefer not to say/other'. With the overall membership statistics showing a higher proportion of male users, this indicates a representative split of the car club membership.

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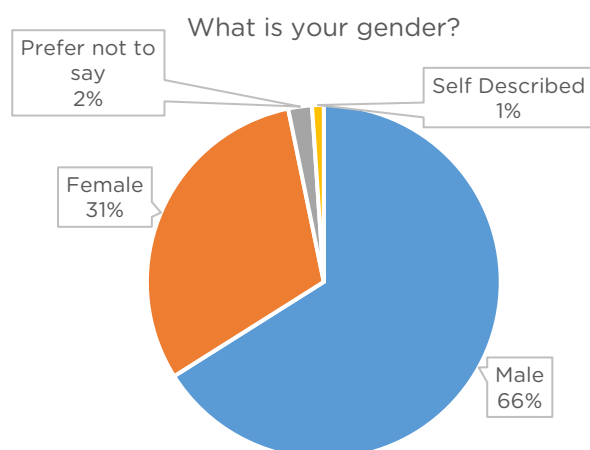


Figure 36: Gender of respondents.

Nearly half 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.

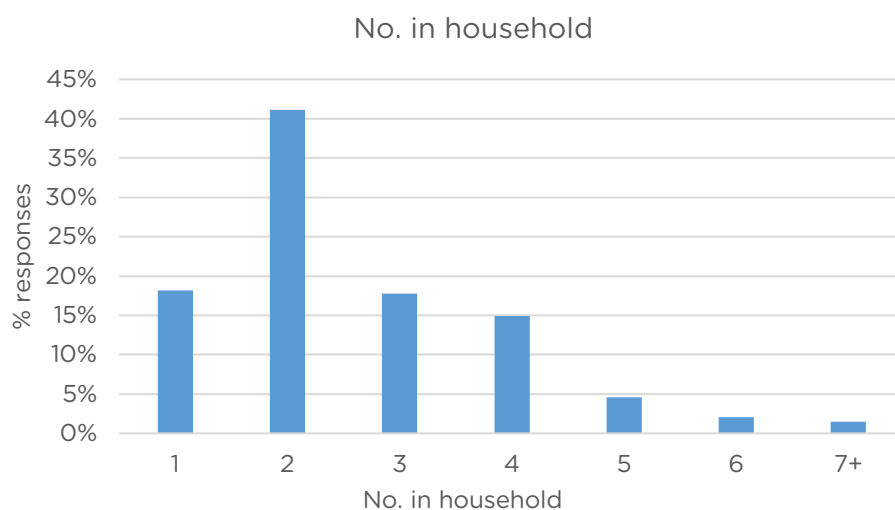


Figure 37: Number of household members.

The majority of members (89%) pay personally for their car club membership.

43% of respondents are aged 26-40, and the same proportion are 41-65. This is an older distribution of ages than the GB average where the 26-40 category is slightly higher.

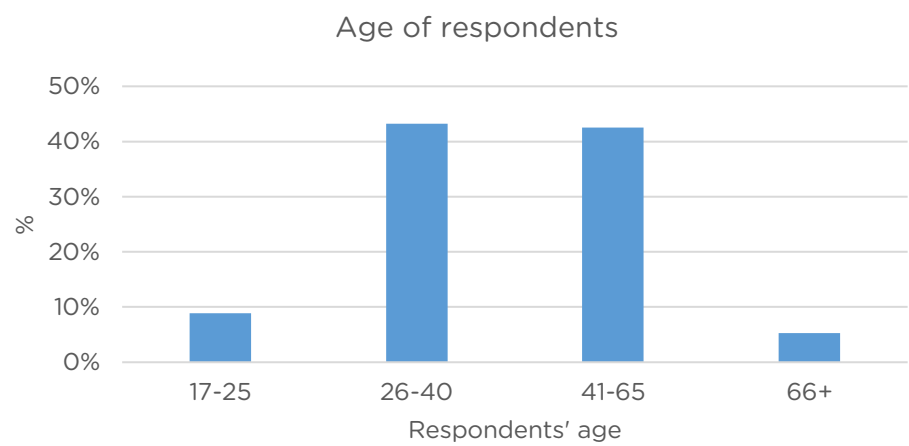


Figure 38: Age of respondents.

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 because of the pandemic, membership of car clubs in England and Wales was growing. Total membership has grown by 90% to nearly 50,000 since the last survey in October 2018. The number of active members (those who have used a car club vehicle in the last year) stand at 28,324.

7.2 Member ages

Where ages were recorded, 54% of respondents are aged 25-44.

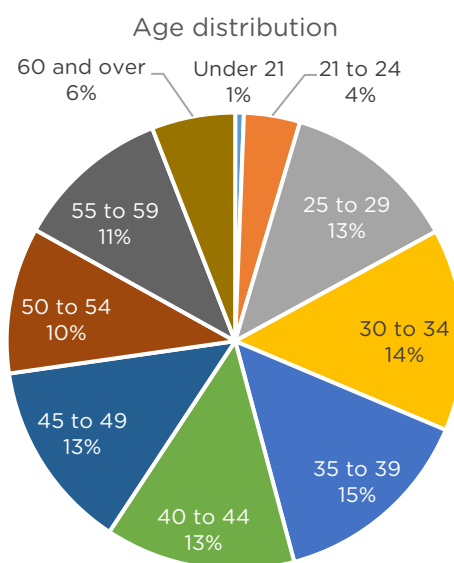


Figure 39: Age distribution of members.

7.3 Average annual journeys per member

As reported by the car club operators, the mean average number of journeys per active member in England and Wales is 6, though 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.

Average annual hires per individual member

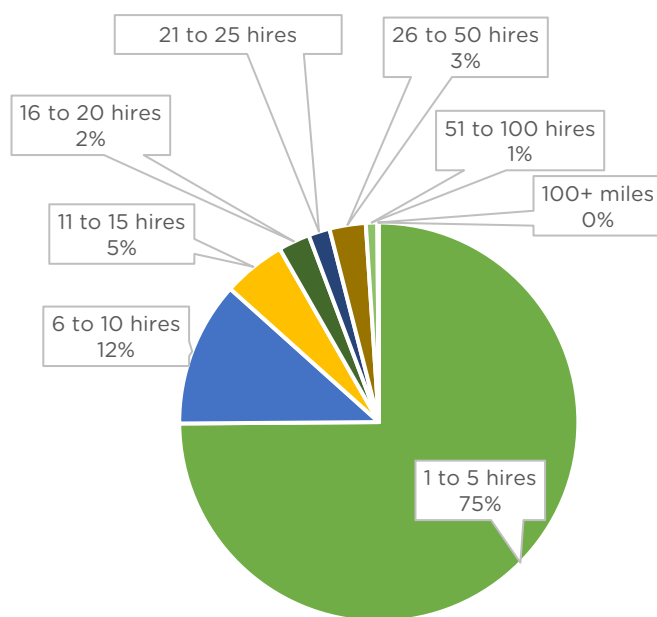


Figure 40: Average annual hires per member.

7.4 Changing journey patterns

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, compared to previous years reports. The longer journey distances (26 miles plus) are now exceeding the 1-10 mile range.

Booking mileage distribution as percentage of total bookings

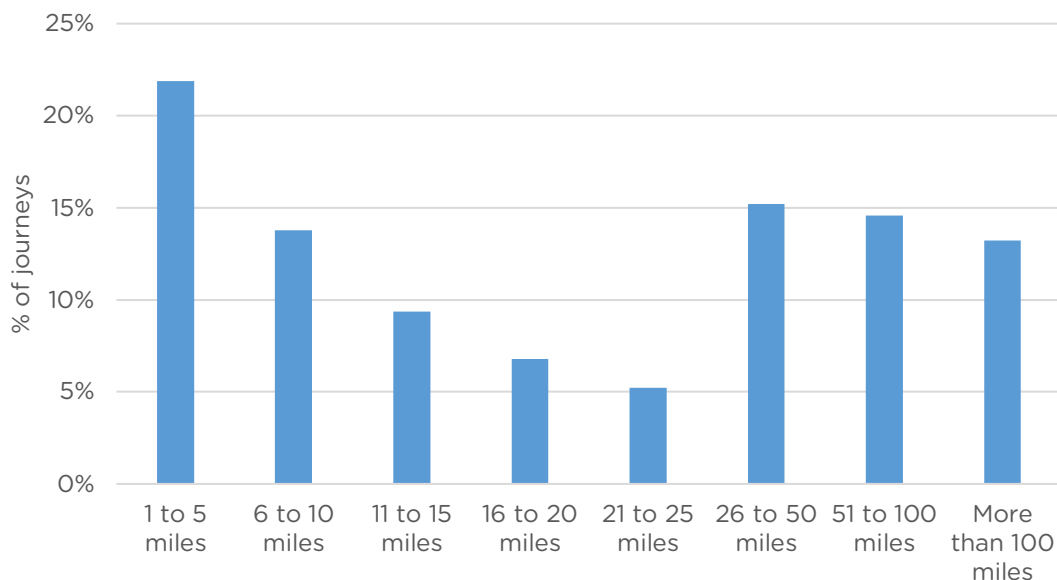


Figure 41: Distribution of journey distances per booking.

However, comparing round-trip distances before and after the first Covid-19 lockdown shows a greater proportion of longer journeys taken and reduction in the shorter journeys.

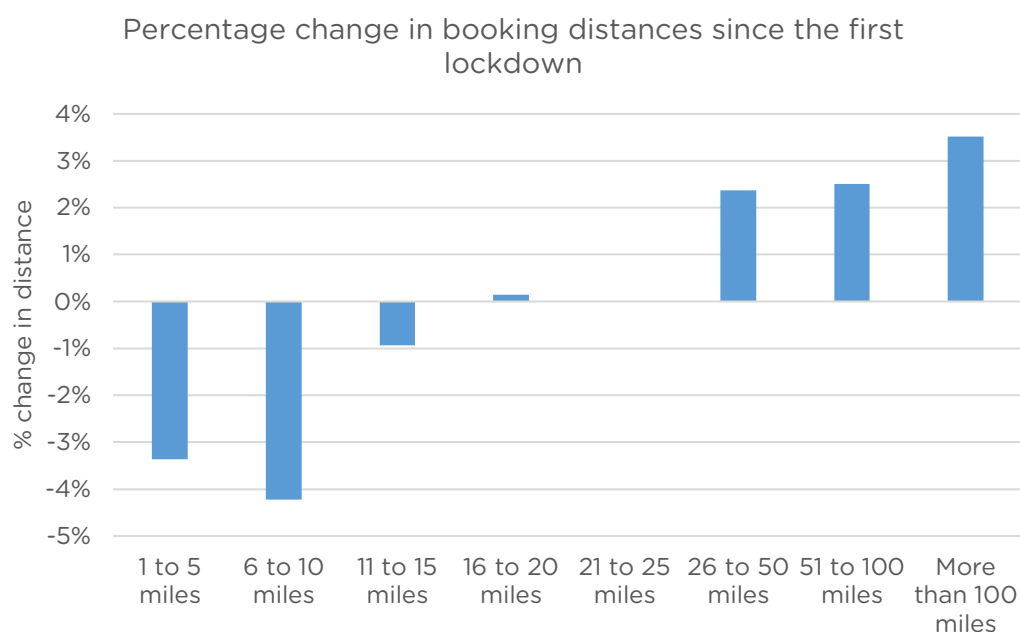


Figure 42: Percentage change in travel distance pre- and post-lockdown.

The shift in distribution has pushed the mean average distances to 54 miles, though the median average shows a more representative value of 22 miles.

7.5 Booking durations and timings

The shift in booking patterns since the 2017/18 report is also noticeable as an increase in average booking duration. The mean average duration is 9.9 hours; however, the median of 4.2 hours offers a more representative view⁹.

As shown in the chart below, 26% of bookings start on weekends and the remainder on weekdays. There has been a 30% increase in the proportion of journeys at peak time weekdays (7am-10am and 4pm-7pm) compared to the last available data from 2017/18.

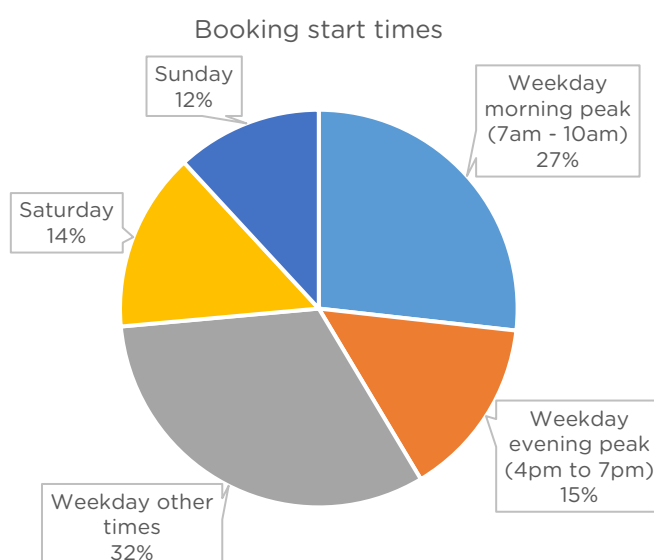


Figure 43: Booking start times.

⁹ The mean average is impacted by smaller numbers of outlier long bookings distorting the overall picture.

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 1,598 car club vehicles operating in England and Wales. This is comprised of 1,406 cars and 192 light commercial vehicles (vans).

The number of vehicles has fallen 14% from 1,630 cars reported in 2018/19, but is still much higher than the figure of 783 cars reported in 2017/18.

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

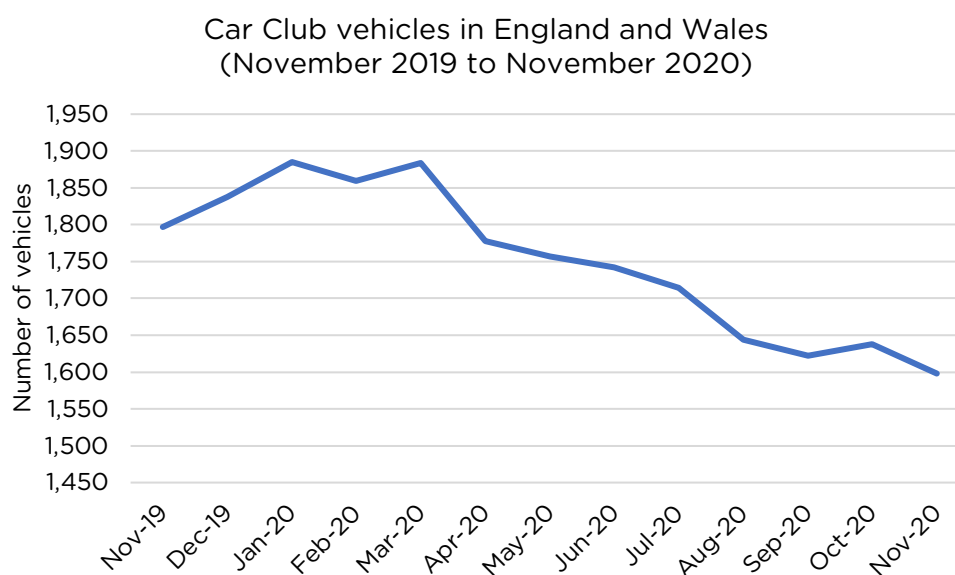


Figure 44: Number of car club vehicles available between November 2019 and November 2020.

The number of car club vehicles started to fall in spring 2020 and, unlike the rest of GB, has not recovered to pre-Covid-19 levels¹⁰.

8.2 Vehicle Class and Segment

88% of the car club vehicles are cars and 12% of the vehicles are vans, as shown in the chart below.

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

Car Club Fleet by Vehicle Type

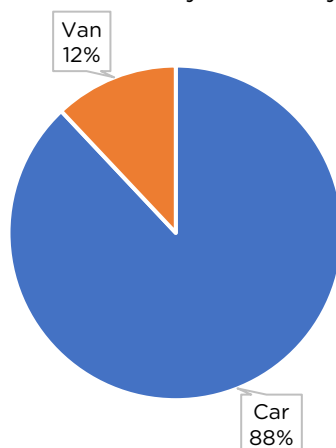


Figure 45: Car club fleet by fuel type.

Segmentation of the car fleet showed that 67% are small cars (e.g., Toyota Yaris, Ford Fiesta) and 32% are medium cars (e.g. Vauxhall Astra, Hyundai Ioniq). This compares to the GB average¹¹ of only 70% of cars being in these two segments. The full breakdown is shown in the chart below.

Car Fleet by Vehicle Segment

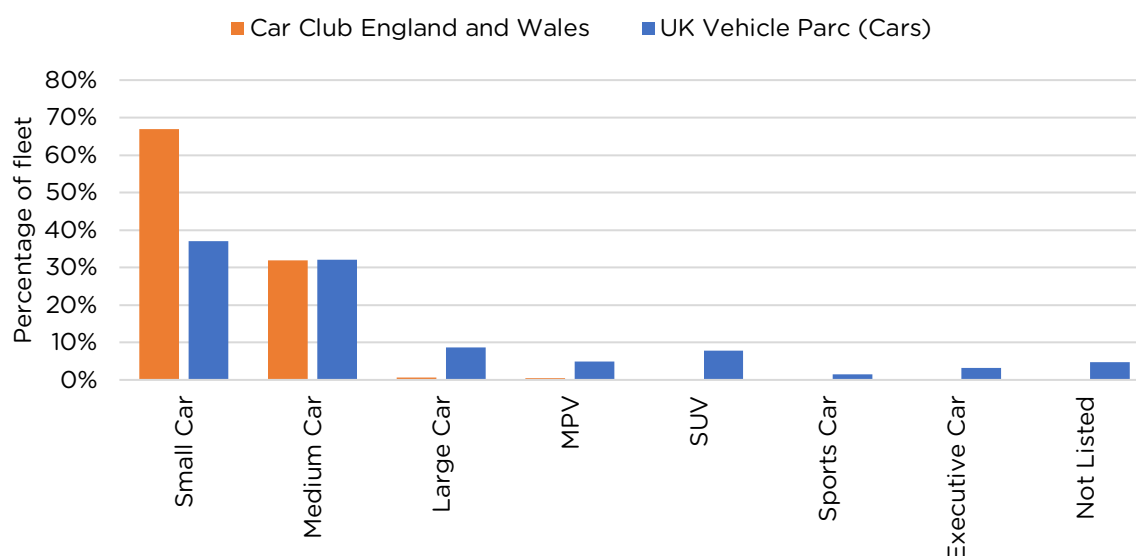


Figure 46: Car club vehicles by vehicle segment.

Segmentation of the van fleet showed that 82% of the vans are medium vans (e.g., Vauxhall Vivaro, Ford Transit Custom). By comparison, the GB van fleet is evenly split between small, medium, and large vans.

8.3 Total mileage

The total distance covered by all car club vehicles in England and Wales in 2019/20 was 6.4 million miles.

Total mileage has increased by 42% since the most recent mileage data was collected in the 2017/18 survey. This equates to a reduction of around 23% per member since 2017/18 because the

¹¹ We have used UK average figures for comparisons where England and Wales - specific equivalents are not available.

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number of members has increased significantly over that two-year period. We are unable to show the change in mileage since 2018/19 (when no report was published) during which time the number of vehicles on the road has reduced.

8.4 Fuel type

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

- 50% of the car fleet is petrol powered.
- 37% are petrol hybrids.
- 2% are plug in hybrids
- 6% of the car club fleet are electric by comparison, less than 1% of cars in England and Wales are electric¹².
- 100% of the vans are diesel powered. This is in line with all vans on the GB roads, but significantly different to the car club van fleet in other parts of GB, which has a roughly even split between diesel and petrol vehicles.

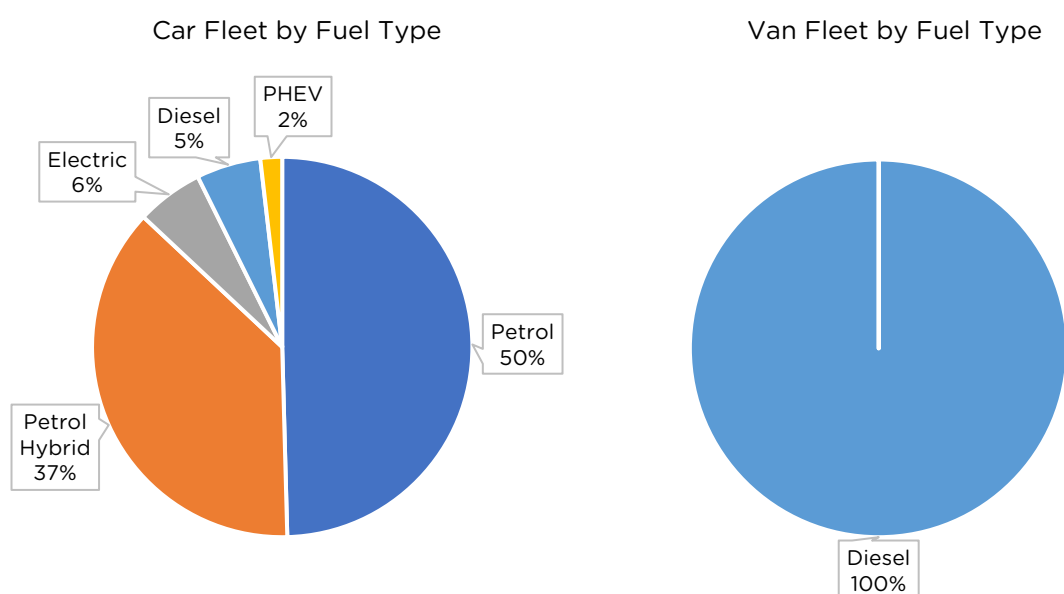


Figure 47: Car and van fleet by fuel type.

8.5 Vehicle age

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

- 74% of cars and 80% of vans are fewer than two years old.
- Only a small percentage of the fleet are aged five years or older.
- Car club cars have an average age of 1.5 years. Vans have an average age of 1.4 years. Vehicles are significantly newer than average UK cars and vans, both of which have an average age of 8.3 years^{13,14}.

¹² Department for Transport, VEH0105 and VEH0132b.

¹³ Department for Transport, VEH0211

¹⁴ Department for Transport, VEH0411

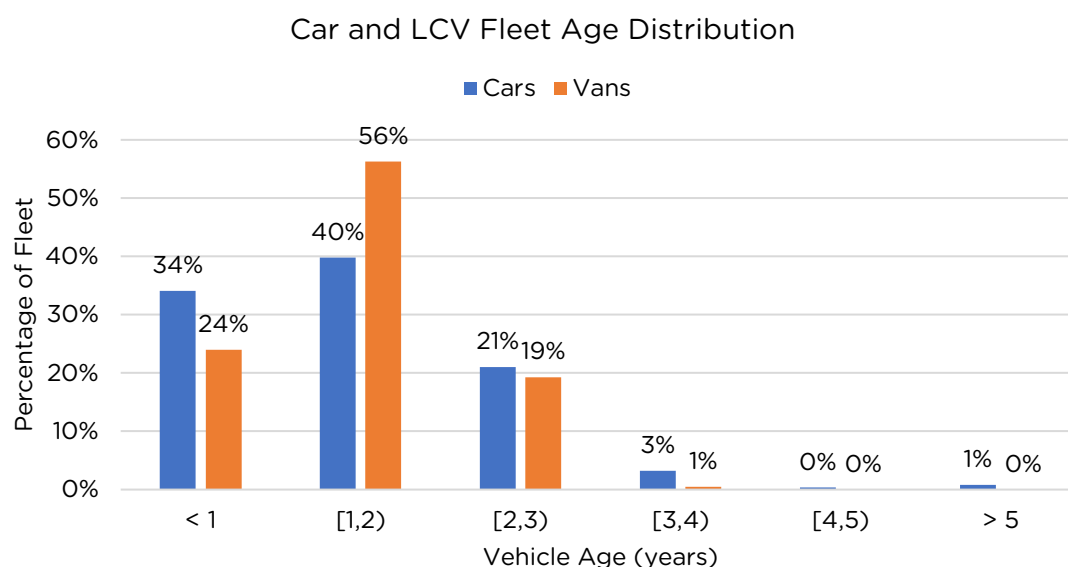


Figure 48: Car and van fleet age distribution.

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 Euro Standard is shown in the chart below. The key points to note are:

- 6% of the cars emit no tailpipe emissions as they are electric vehicles.
- A further 93% of cars are Euro 6 compliant, as required by CoMoUK accreditation.
- All the vans are Euro 6 compliant or electric vehicles.

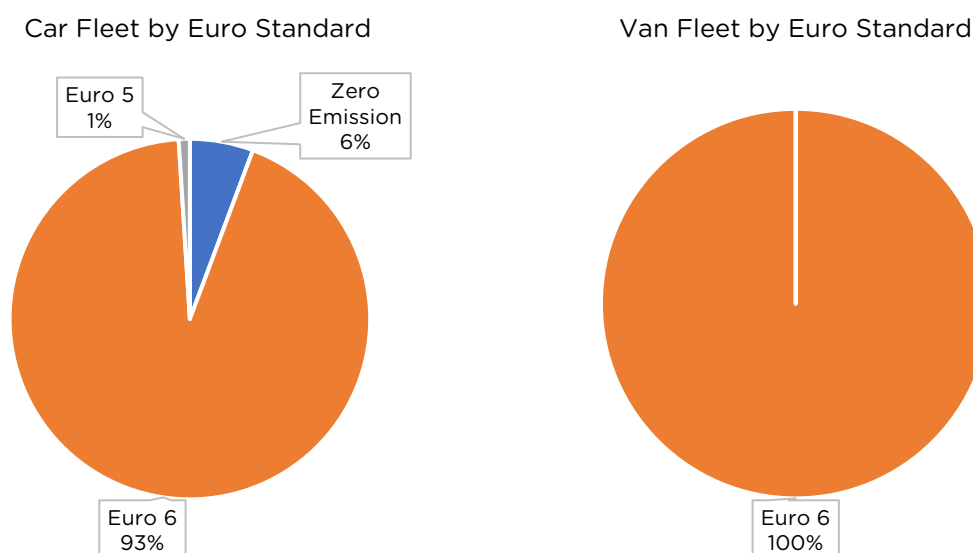


Figure 49: Car and van fleet by Euro standard.

As a result, over 99% of cars and vans are LEZ / CAZ / 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 points to note are:

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- 100% of the cars achieve either a 5 star or 4 star rating. CoMoUK accreditation requires 4 stars or above, so car clubs are exceeding the minimum requirements by procuring newer vehicles and rapid turnover of their fleets.
- The vehicle safety ratings have improved from the 2017/18 survey where 14% of the vehicles had 3 star ratings.

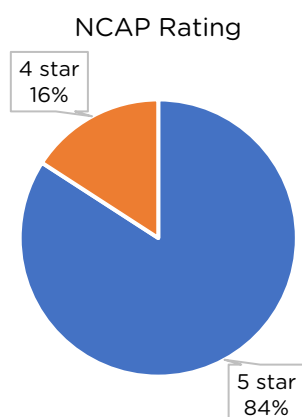


Figure 50: Car fleet by Euro NCAP rating.

8.8 Greenhouse gas emissions

8.8.1 Tailpipe emissions

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

- The average England and Wales car club car has emissions which are 25.6% lower than the average car on the UK's roads¹⁵.
- The average England and Wales car club van has emissions which are 15% lower than the average van on the UK's roads¹⁶.

Table 6: Difference in TTW CO₂ emissions between car club vehicles and the UK average.

TTW gCO ₂ e/km	Average England and Wales Car Club	Average UK Car Club	Average UK vehicle	England and Wales Car Club difference to average UK vehicle
Car	127.6	125.8	171.4	-25.6%
Van	209.3	228.7	246.2	-15.0%
Weighted average	137.4	137.5	-	-

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.

¹⁵ 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>.

¹⁶ 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>.

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The breakdown of England & Wales car club cars¹⁷ and a comparison to all cars in the UK in 2019¹⁸ are shown in the chart below. The key points to note are:

- England and Wales 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.
- 11% of England and Wales car club cars are ultra-low emissions vehicles (ULEVs), which are defined as emitting less than 75 g CO₂/km, as opposed to just 1% among all vehicles on the road in the UK.

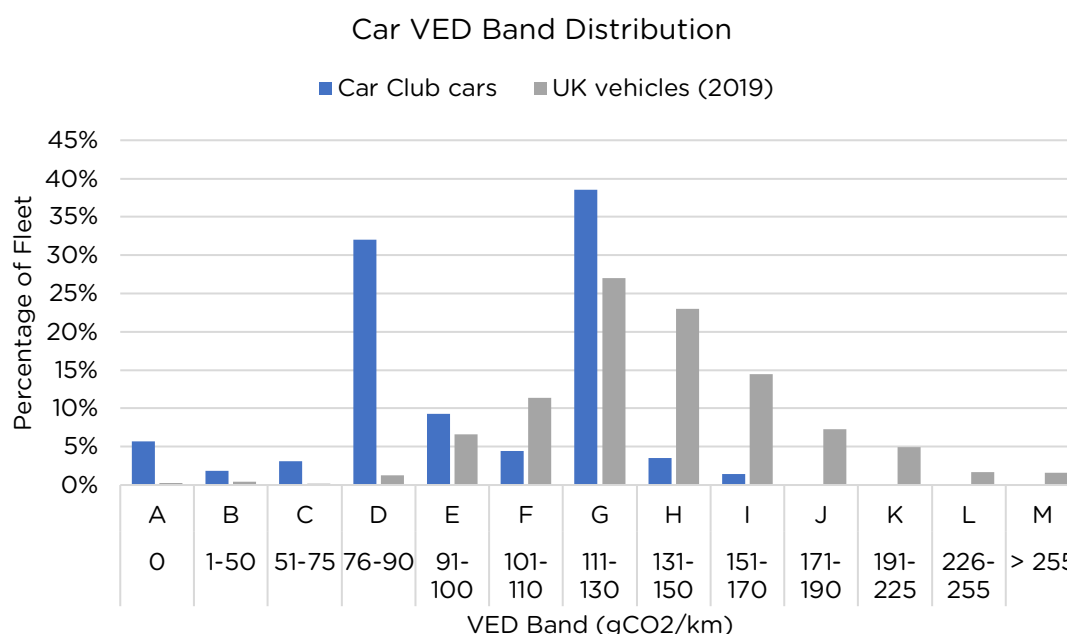


Figure 51: Car VED band distribution.

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 fleet is estimated to be 1,399 tonnes.
- Over the same distance, the average UK car and van would have emitted 1,769 tonnes WTW CO₂e.
- This represents a reduction of 22% or 370 tonnes CO₂e, assuming¹⁹ all car club journeys would otherwise have been undertaken by another vehicle.
- This saving is approximately the equivalent of removing 203 cars from the road for a year²⁰, or the lifetime CO₂e absorption of 1,150 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”²¹. The two largest components of urban air pollution are oxides of Nitrogen (NO_x) and Particulate Matter (PM). Real-world emissions of these pollutants from vehicles have been

¹⁷ VED for vans is not based on CO₂ emissions.

¹⁸ Department for Transport, VEH0206.

²⁰ 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.

²¹ PHE, <https://www.gov.uk/government/publications/health-matters-air-pollution/health-matters-air-pollution>

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estimated using COPERT 5²². COPERT outputs are not directly comparable with Euro Standard regulations, though the standards are incorporated in 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:

- England and Wales car club vehicles have average NOx emissions of 0.05 g/km and 0.55 g/km for cars and vans respectively. This is 84% and 53% lower than the UK car and van average (0.32 and 1.16 g/km)^{23, 24}.
- PM2.5 emissions are also significantly lower than the UK average car and van, with car clubs achieving 71% and 91% reductions, respectively.

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.

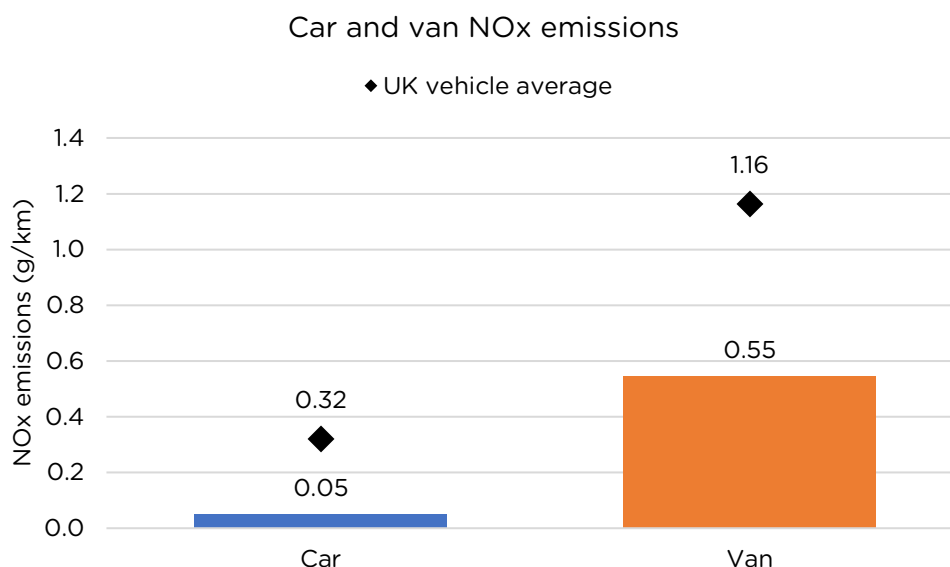


Figure 52: Car and van NOx emissions.

²² <https://copert.emisia.com/>

²³ NAEI, [Emission factors for transport - NAEI, UK \(beis.gov.uk\)](https://www.beis.gov.uk/emission-factors-for-transport)

²⁴ This assumption is for demonstrative purposes only. Whilst the members survey indicates that 44% of journeys would either have been done by car or not at all, at least a quarter would have been done by public transport or active travel

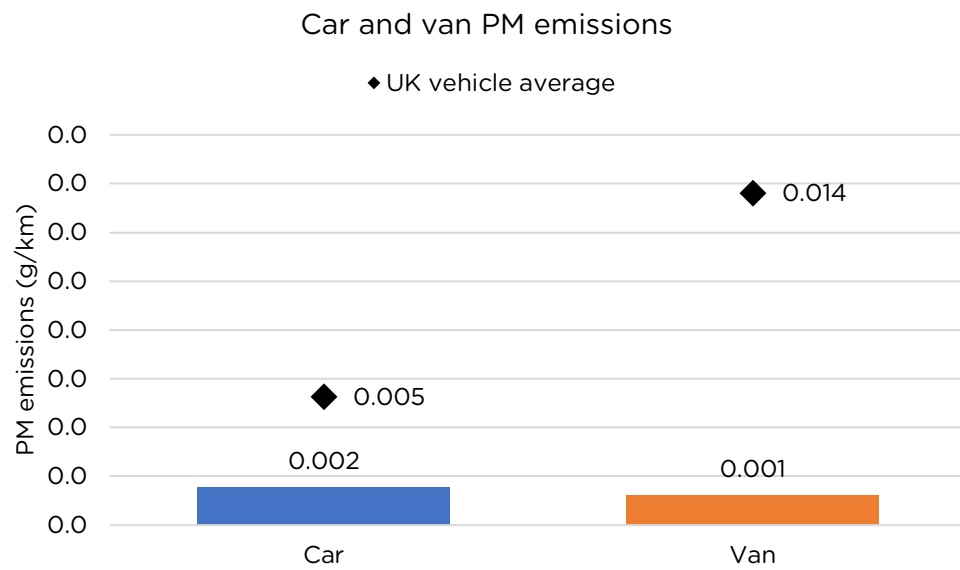
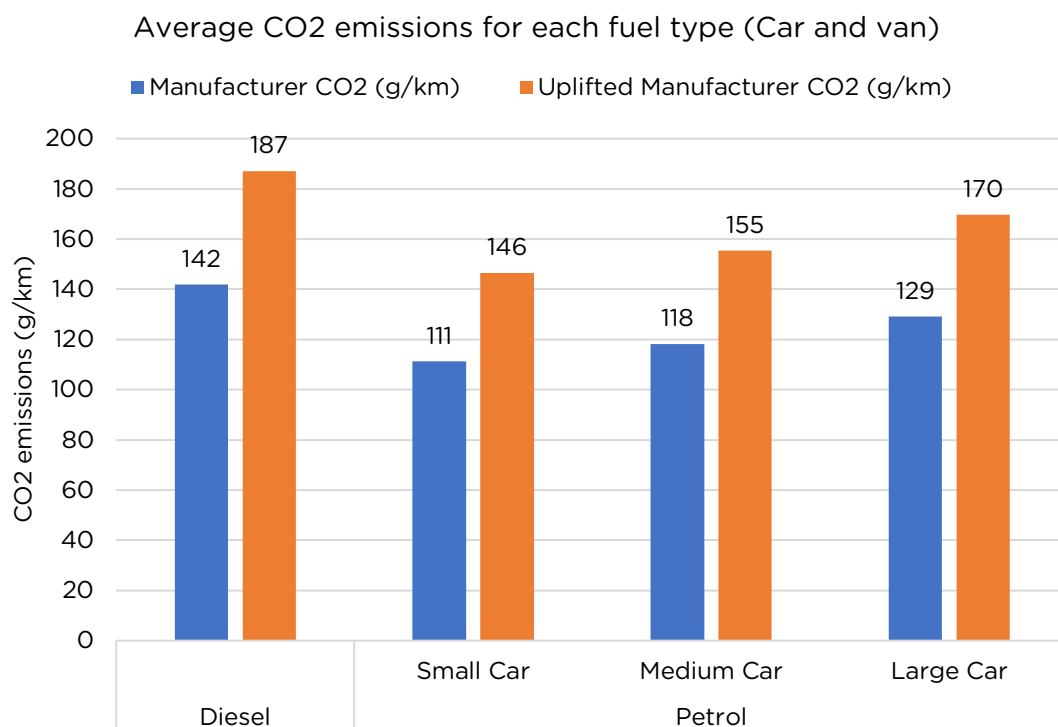


Figure 53: Car and van PM emissions.

9 Appendix

9.1 Carbon emissions

The measured carbon dioxide equivalent²⁵ (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)²⁶. These uplifted emissions were compared against Cenex's own independently measured emissions factors²⁷ 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 generic vehicle type measurements, e.g., small car). The different uplift factors are shown in the chart below.

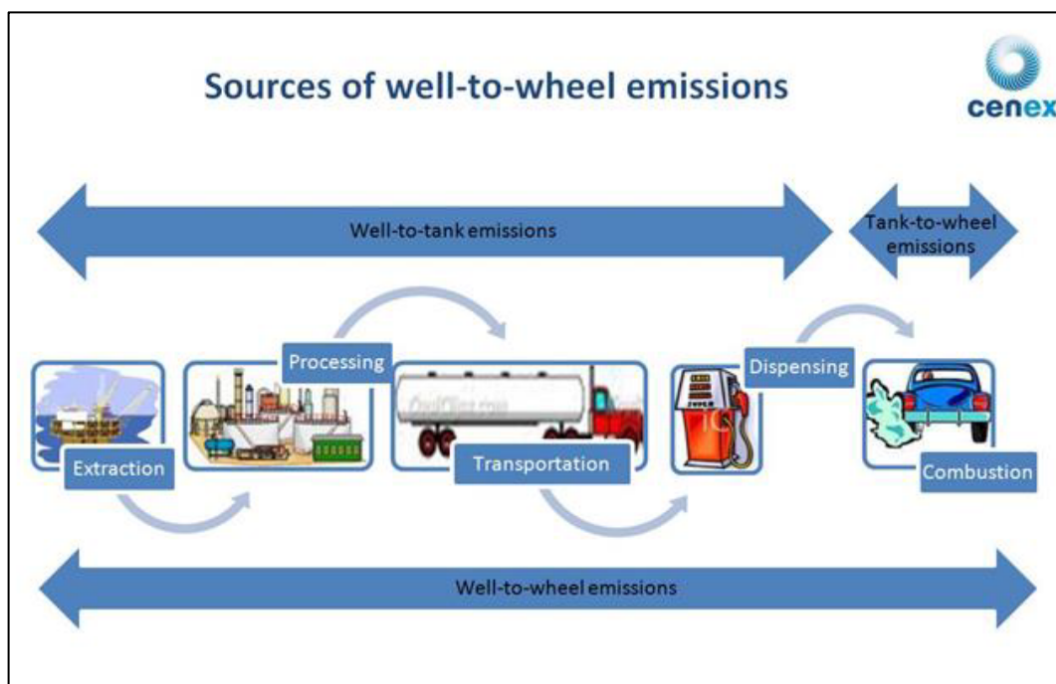


Both tailpipe and well-to-wheel (WTW) emissions are reported. Tailpipe emissions only consider the products from the combustion in the engine, while WTW emissions also account for, the extraction and processing of the fuel (or generation of electricity for electric vehicles) and its transportation/dispensing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

²⁵ CO₂e emissions is the equivalent amount of CO₂ in kg that accounts for all greenhouse gases emitted by vehicles: CO₂, methane and N₂O.

²⁶ 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)

²⁷ 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 tool²⁸, 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 Low Emission Zones, and the Birmingham Clean Air Zone.

²⁸ <https://copert.emisia.com/>

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