Carplus annual survey of car clubs

2015/16

England and Wales (excluding London)

Department for Transport

carplus bikeplus supporting shared transport

Prepared for Carplus by Steer Davies Gleave

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Carplus Annual Survey of Car Clubs 2015/16

Report
April 2016

Carplus

Our ref: 22862601

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Foreword

Background

The past year has seen strong growth of car clubs across England and Wales. Car clubs are no longer seen as an 'alternative' option, but rather an attractive part of a mobility mix alongside public transport, taxis, walking and cycling. The fastest growing urban car clubs (in England and Wales) outside London are York, Manchester and Brighton and Hove, whilst other major cities such as Leeds, Bristol, Cambridge and Oxford also have car club operations which have continued to expand over the past year.

Over the past five years, there has been sustained growth in car club membership - to over 27,500 members using almost 1,100 vehicles in England & Wales outside London. The reach of car clubs continues to expand, with new operations launched in Salford, Derby, Newbury, Barnstaple and Carlisle. Several local authorities are in the process of considering the feasibility of developing or expanding a car club including Birmingham and the Isle of Wight.

Car clubs across England and Wales are currently provided by a mixture of commercial and not-for-profit operators, and significant innovation is taking place.

In the commercial sector, significant developments include the acquisition of City Car Club by Enterprise Holdings and E-Car Club by Europcar. Co-wheels (the UK's largest independent CIC operator) and Co-cars (a co-operative focussed on south west England) have both seen significant growth and diversification; for instance, both are now piloting electric bikes alongside cars, Co-wheels are targeting visitor markets in the Lake District and Co-cars are offering services to support small independent operations.

There are around two dozen independent and not-for-profit car clubs operating in the UK, often serving single or small clusters of communities. These clubs, which are mainly constituted as co-operatives or community interest companies, have largely been established by local people to serve local populations. The expansion of car clubs serving rural communities continues apace with new clubs established in several locations over the past year, including Bakewell, Ilkeston, Frome and Harbury.

Carplus's DfT funded Developing Car Clubs in England (DCCE) programme (July 2014 – March 2016) will have delivered a total of 23 projects. These include the first city-scale integration of car clubs into city-wide SMART card accounts in Leeds and Nottingham and rapidly accelerating expansion across Norwich. In addition, a broad variety of car clubs of different scales have also been supported. These have demonstrated how the car club model can fit into a wide variety of different types of places and at different scales, being led by Local Authorities or communities. It has also allowed us to develop robust understanding of the economic value of car clubs and better understand success factors for car club development.

As a result of the DCCE programme, 15 new car clubs have been created, providing 43 communities with new access to a car club. 142 car club cars have been added to the network, including 28 electric vehicles. Whilst electric vehicles (EVs) are increasingly being integrated into car club fleets, financial and operational barriers to their widespread adoption still exist. The car club sector is committed to their adoption and progress has continued towards this goal. Many public sector bodies recognise the air quality benefits that stem from car club EVs when supporting development.

Peer-to-peer (P2P) operators including easyCar club, Rentacarlo, DriveJoy and HiyaCar developed or expanded their operations outside of London during 2015. Carplus are watching

with interest how the peer-to-peer rental model will develop as a complement to more traditional fleet based car sharing models. We are particularly interested in how P2P may offer the benefits of car sharing in areas where dedicated car club cars may not currently be viable, such as lower density and rural settlements.

The most exciting part of the 2015 car club story is what it indicates for the near future. Market observers such as Frost and Sullivan predict a further 10-fold rise in car club membership by 2020, based on an expanding range of car sharing models. The rise of the sharing economy as well as evidence from countries such as Germany, Austria and Switzerland, indicate significant untapped potential of car clubs to reduce the impacts of car traffic, support active travel and facilitate modal integration.

The Carplus Annual Survey 2015/16

The Carplus Annual Survey is the most comprehensive dataset collected across the car club sector on an annual basis since 2007. Year by year, the Annual Surveys build a comprehensive, robust and impartial evidence base upon which policy and funding priorities can be based. Since its establishment, the Carplus Annual Surveys have highlighted the important and growing role that car clubs play in improving air quality, and reducing private car ownership and congestion whilst also providing access to a car as a transport option when a journey cannot be made by other modes.

The England & Wales report complements those for London and Scotland. All three include an expanded profile of the emissions of car club fleets. The London survey includes the first evaluation of flexible car clubs in the UK.

Car clubs make an important contribution to the achievement of national policy objectives on carbon reduction, improving air quality and reducing private car dependency as part of a broad range of sustainable transport measures. In rural areas, car clubs can help to build rural resilience, improve access to job opportunities and help to support local businesses by providing alternatives to the purchase of vehicles.

We hope that this report makes a significant contribution to the understanding of the role of car clubs in delivering ever-wider social and environmental benefits by providing transport options that fit into modern lifestyles and make for better places.

Alistair Kirkbride, Director, April 2016

Executive Summary

The Carplus Annual Survey 2015/16 was completed by 2,500 car club members in England and Wales (excluding London) from a total of 27,585.

Fewer privately owned cars amongst car club members

For each round-trip car club vehicle, car club members sell or dispose of 5.4 cars - that's 4,400 private cars sold or disposed of by members.

A third of respondents reported that they would have bought a private car if they had not joined a car club meaning a deferred purchase of a further 8,800 cars, or 11 private cars for each car club vehicle.

Lower levels of car ownership

Joining a car club leads to lower levels of car ownership: 16% of respondents had sold a car in the last 12 months and 32% would have bought a private car if they had not joined the car club.

54% of new members (people who joined in the six months before completing the survey) owned at least one car before joining, falling to 35% after joining. 55% of longer-term members owned at least one car before joining, falling to just 35% afterwards.

Fewer miles travelled by car

Members reported an average reduction in miles driven of 1,000 miles a year after joining the car club.

Members make fewer trips by car as driver

After joining a car club, new members reduce their car use. 23% of new members decreased their use of private cars after joining, compared to just 7% who increased it. Before joining, 38% drive by private car at least once a week, falling to 29% after joining**.** The frequency of private car use as a driver among long-term members is lower than the national average (21% of all members travel by private car at least once a week compared to 88% of residents in England and Wales).

New members tended to already be frequent users of sustainable travel modes, particularly buses. Car club members travel more often by bicycle, train and bus than the national average.

The proportion of members walking and taking the bus at least once a week increased slightly after joining a car club with minimal impact on other modes.

Car club members join to gain additional personal freedom

The most common circumstance in which members joined a car club is *"my household did not have a car, so I joined a car club to gain additional personal freedom*" – 29% joined for that reason. This aligns with research in the US by the Mineta Transport Institute which also found this was the most popular statement.

There were a range of other statements to choose from: 12% of respondents chose a statement indicating that they had joined a car club having sold or disposed of a car and 11% had joined instead of buying a car.

Car club membership is used by many for only occasional car trips

Over half (56%) of all car club members have made a car club journey within the last month and a further 20% in the last three months. 17% of members were inactive (having not used the car club within the last six months or had not yet made a car club journey). Amongst members who had not made journeys in the last six months, the most common reasons given were that they are car club members as a back-up to their usual sustainable modes and that they had not made any journeys that required a car.

Car club cars are used when sustainable modes would take too long

The top two reasons for using a car club on their last car club journey were to reduce their journey time and because public transport would have taken too long, each chosen by one in three respondents. One in four noted that they were going to more than one place; such journeys are often more difficult using public transport.

Electric vehicles becoming increasingly popular

One in six respondents had used an electric vehicle with most of them (75%) rating the experience of driving the vehicle as 'good' or 'very good'. Members were less happy with the experience of using EV charging points, with 55% rating the experience 'good' or 'very good', though ratings were better than in 2014/15 when 48% rated charging points as 'good' or 'very good').

Respondents who have not yet used an electric car club car yet would be happy to do so: 91% respondents expressed an interest in trying an electric vehicle. Those who have concerns about using electric vehicles cited concerns about charging the vehicle, rather than the range or performance of the vehicle.

Car club members are frequent users of smartphones and travel apps

Nine in ten respondents reported owning a smartphone and one in four of them use their phone to access travel information on a daily basis. Popular travel websites and apps are Google maps and National Rail. Car club users are increasingly able to choose from a wide selection of transport options, using instantly available information from their smartphones to make decisions whilst on the move.

A cleaner, safer fleet

Car club cars are safer than the average car: 65% of the England and Wales fleet meets the NCAP 5+ Star or 5 Star standard, the highest rating in terms of occupant safety and pedestrian protection.

The average carbon emissions of a club car in England and Wales are 42% lower than the 2014 UK fleet average. Improved vehicle efficiency is reflected in carbon savings when compared with the UK average car: an annual saving of 750 tonnes in 2015/16 with carbon emissions 31% lower than in 2011.

Nine out of ten car club vehicles in England and Wales are in the lowest three emission bands: A, B and C. Car club cars are cleaner than the average private car: in the UK national fleet, the largest proportion of vehicles (16%) is in Band G.

Diesel cars are disappearing from car club fleets, accounting for just 3% of the 2015 fleet, compared to 21% in 2014.

Car club cars are used around five times more efficiently than private cars

On average, car club cars are booked for just under 6 hours a day, around 25% of the day. This is notably higher than the utilisation of private cars, which it is estimated are used for less than 5% of the day on average[1].

Car club members include a diverse range of people

Car club members reflect where car club provision is greatest with many drawn from accessible, central areas of the larger cities. Young people in their 20s and 30s, known as Central Pulse in the Mosaic classification make up 11% of respondents. In comparison, only 1% of the England and Wales population is in this classification. Members are also attracted from more diverse backgrounds with 7% of respondents from the Ageing Access group (older residents in inner suburbs) which accounts for just 1% of the England and Wales population. Aside from those groups, members are spread across a range of Mosaic classifications, reflecting the diverse nature of the car club membership.

Higher occupancy of cars

Car club cars are used by more people with an average occupancy of 2.2 people per trip compared to 1.6 people for private cars.

Car clubs are used for a wide range of purposes with the most popular being personal business, visiting friends/family and leisure. Car clubs are seldom used for commuting: just 2% reported this as a purpose of their last car club journey. In comparison, 15% of all trips in England and Wales are made for commuting.

[1] Spaced Out: Perspectives on parking policy, Bates & Liebling, RAC Foundation 2012

1 Introduction

1.1 This is the ninth edition of the Carplus Annual Survey and covers the period December 2014 – November 2015. It has been administered by consultants Steer Davies Gleave on behalf of Carplus.

1.2 The data collected from the Carplus Annual Survey is compiled into three reports covering:

- England and Wales (excluding London);
- London; and
- Scotland.

1.3 This report provides the results of the 2015/16 Carplus Annual Survey for England and Wales. All three versions of the Annual Survey are available from Carplus. For more information, visit the Carplus website: **www.carplus.org.uk**.

About Carplus

1.4 Carplus promotes car clubs and shared transport. We work for accessible shared mobility including car clubs, 2+ car sharing, bike sharing and taxi sharing. Carplus believes that new approaches to car use and ownership complement public transport, cycling and walking. They contribute significantly to reducing congestion and the unwelcome environmental, social and health costs of motoring today.

1.5 Carplus provides technical support, best practice guidance and practical advice to car club operators, community groups, local authorities and transport authorities to assist in setting up and developing car clubs. Carplus recently established Bikeplus - a new representative body for bike sharing which aims to optimise the benefits of cycling by supporting the emergence of an effective widespread network of shared bikes.

1.6 Carplus is also a resource centre on 2+ car sharing and the integration of shared mobility schemes.

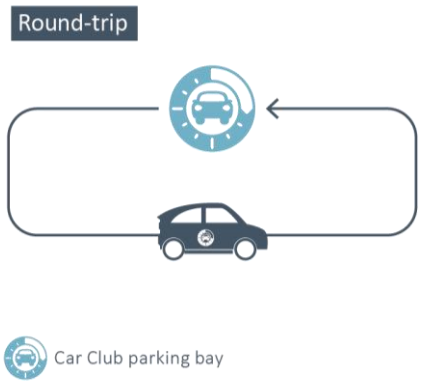
The Carplus Annual Survey

1.7 Carplus is committed to a standardised data collection system to assess the impacts of car clubs and inform development of car clubs in the UK. Since 2007, Carplus has worked with car club operators to collect a range of data from car club members about their travel habits and use of car clubs, through an online survey sent to the majority of members of car clubs in England and Wales.

1.8 The members' survey was completed by members of 'round-trip' car clubs. In round-trip car clubs, cars are located in designated on-street (provided by local authorities) or off-street bays (in private car parks and developments). At the end of the hire period, users must return the car to bay they picked it up from.

1.9 The graphic below illustrates how the round-trip model of car club works.

Figure 1.1: Illustration of round-trip car club model



1.10 Table 1.1 summarises the round-trip survey undertaken in 2015/16, topics covered and number of respondents.

Table 1.1: Carplus Annual Round-Trip Member Surveys 2015/16

Topics	Number of respondents 2015/16
• **Most recent car club journey**: purpose, number of passengers, carriage of large items, reasons for choosing to use car club, journey time variance from other modes • **Household circumstances when joining** • **Car ownership** before and after joining, influence of car club on decisions to buy or sell private cars • **Private car mileage** and changes since joining • **Frequency of using travel modes.** New members (member for less than six months) were also asked about frequency of use before joining • **Electric Vehicles**: Experiences of using vehicles and charging infrastructure, reasons for using EVs, attitudes and concerns • **Use of smartphone** journey planning apps • Use of other **shared mobility** services • **Satisfaction** with proximity, quality and availability of vehicles	London: 4,124 England & Wales (excluding London): 2,583 Scotland: 867

1.11 A survey of flexible car club members was also undertaken in London with full details contained in the London survey report available on the Carplus website (**www.carplus.org.uk**).

1.12 Peer-to-Peer, Corporate Members' and Corporate Administrators' surveys were not conducted this year.

1.13 In addition to surveys of members, car club operators were requested to provide information about their operations through an operators' survey. The information collected from operators is summarised in Table 1.2 and in Chapter 4.

Table 1.2: Carplus Annual Operator Surveys 2015/16

Survey name	Topics	Respondents 2015/16
Operators' Survey	Number of members Locations of members Gender profile of members Age profile of members Average distance travelled per hire Average length of hire period Average hires per active member[2] Number of hires per member per year Miles travelled per hire Vehicle utilisation (% of time booked out) How vehicle bookings are made Where vehicles are located (on-street or off-street bays) Proportion of on-street bays with information boards Views on lobbying for wider use of at-bay information	Round-trip: City Car Club, Co-wheels, E-Car, Hertz 24/7, and Zipcar. In addition, 13 smaller community car clubs provided data. Flexible: GoDrive and DriveNow

1.14 In addition, Gfleet Services provided an emissions analysis and profiling of the car club fleet based on a comprehensive set of data that has been collected about UK car club vehicles.

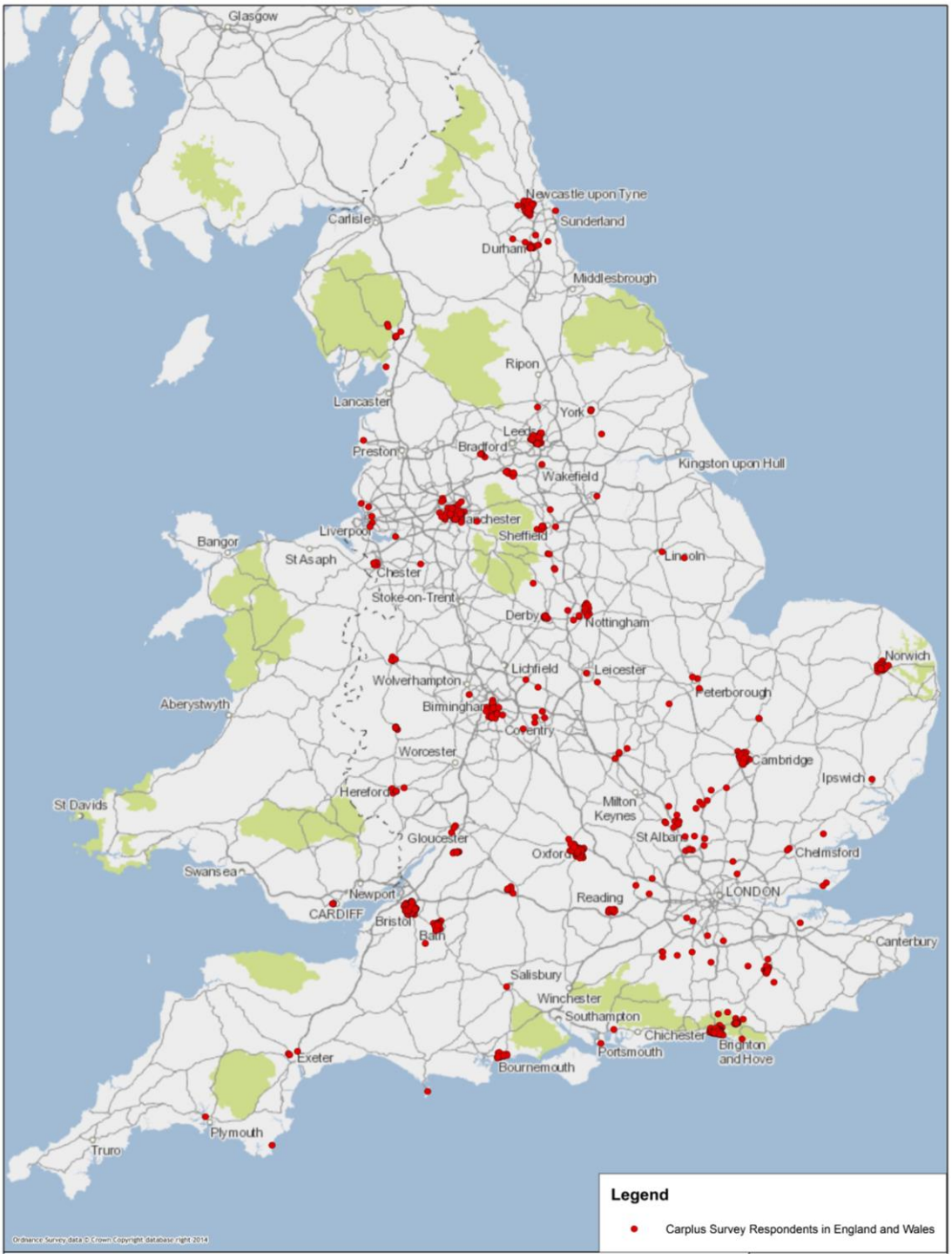
Home locations of survey respondents

1.15 Figure 1.2 overleaf shows the home postcodes of survey respondents. The key clusters of respondents were in East Sussex including Brighton (14%), Bristol (11% of respondents), Oxfordshire (7%), Greater Manchester and Norfolk (5% each).

1.16 While this distribution is not entirely representative of where car club members live, it provides a good illustration.

[2] The definition of an active member varies by operator.

Figure 1.2: Home locations of respondents



Structure of this report

1.17 Following this introduction, the report is structured as follows:

Section 2 contains the results of the members' survey for round-trip members in England and Wales;

Section 3 contains the results of the operators' survey for Great Britain; and;

Section 4 contains the emissions analysis and profiling of the English and Welsh car club fleet.

2 Round-trip Members' Survey

Introduction

2.1 This section provides the results of the surveys completed by 2,583 individual round-trip car club members in England and Wales (excluding London members). Separate reports are available containing the results of the surveys completed by members in Scotland and London. Please visit the Carplus website at **www.carplus.org.uk** for more information.

2.2 The survey was completed by 1,985 members and 598 new members of car clubs, who joined from July 2015. New members who joined after July 2015 were asked one additional question relating to their travel behaviour prior to joining a car club. A full set of survey questions is contained in Appendix B.

2.3 Appendix A contains all of the data collected as part of the survey. This section contains the key findings, including headline results and key trends (showing comparisons with previous annual surveys) for the following topics:

- Impact of car clubs on car ownership
- Impact of car clubs on car purchasing
- Impact of car clubs on miles travelled
- Mileage prior to joining a car club
- Impact of car clubs on travel behaviour: new members
- Impact of car clubs on travel behaviour: longer-term members
- Use of other shared mobility
- Profile of car club users
- How car club vehicles are used
- Why car club vehicles are used
- Reasons for not using the car club
- Circumstances when joining a car club
- The experience of joining a car club and satisfaction with car clubs
- Experiences of using electric vehicles
- Attitudes towards electric vehicles
- Use of smartphones and travel apps

2.4 All data presented is for 2015/16 unless otherwise stated.

Impact of car clubs on car ownership

Headlines

Car ownership amongst new members falls after joining

- 54% of new members owned at least one car before joining, falling to just 35% afterwards, as shown in the graph below.

Car ownership remains low amongst longer term members

- Longer-term members have similar changes in levels of car ownership. 55% of longer-term members owned at least one car before joining, falling to just 35% afterwards. Longer-term members are those who have been members for at least six months – many have been members for a number of years.
- 16% of all members stated that they had sold or disposed of a car in the 12 months prior to completing the survey. Of these, 29% stated that their car club membership was either the main reason or a major factor in their decision to sell or dispose of their car.

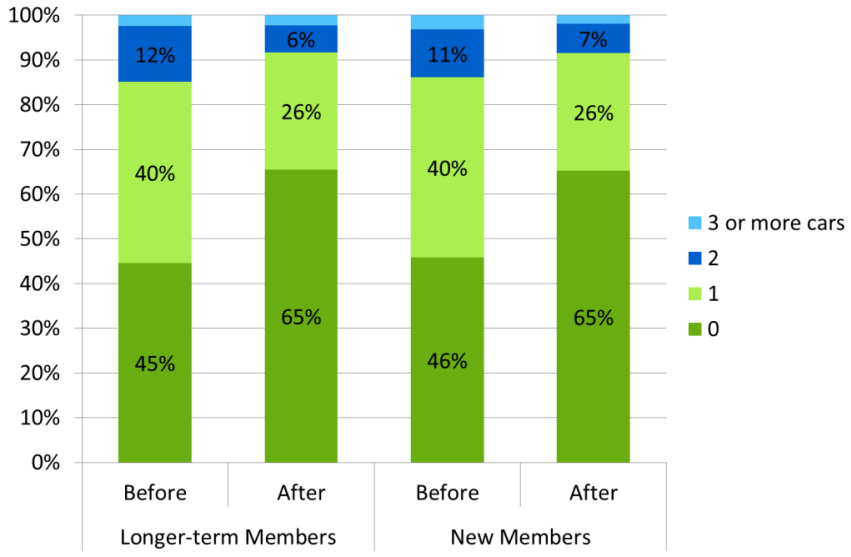
Trends

Car clubs continue to reduce car ownership

As shown in the table below, the level of change in car ownership has varied from year to year but a shift towards lower car ownership, after joining a car club has been a consistent finding.

Year	Owned at least one car		Change (+/- % point)
	Before	After	
2012/13	59%	32%	-27%
2013/14	50%	37%	-13%
2014/15	64%	35%	-29%
2015/16	54%	35%	-19%

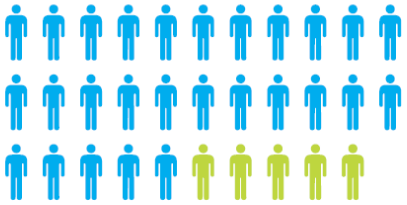
Car ownership before and after joining a car club



The infographic overleaf uses annual survey results to illustrate how car club cars remove private cars from roads in England and Wales.

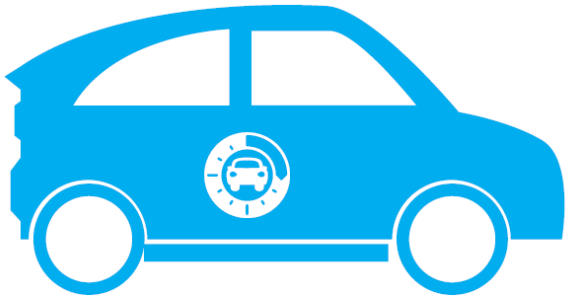
Cars removed from the road

34 members per car club car in England and Wales



×16% sold or disposed of a car

= **5.4** cars removed by each car club car



27,585 car club members in England and Wales

×16% sold or disposed of a car

= **4,414** cars removed from the road

Impact of car clubs on car purchasing

Headlines

Car clubs reduce the need to purchase a private car

- 32% of new and longer-term members would have bought a private car if they had not joined a car club.
- Respondents were also asked to state whether they would buy a private car if the car club was no longer available in their area. 11% stated that they would definitely buy a car and 20% stated they probably would, as shown in the chart below.

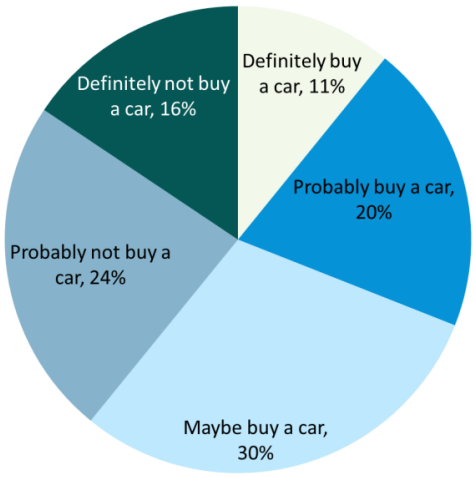
Trends

Car clubs help to defer future car purchase by members

As shown in the table below, results from 2015/16 survey indicate that car clubs are having a slightly reduced impact on the likelihood of purchasing a car. This may reflect the general move away from car ownership (particularly amongst the under 30s) – increasingly people do not see car ownership as necessary or desirable. The Mosaic profiling (see page 18) also shows a broadening of the demographics of car clubs, demonstrating appeal to a wider audience.

Year	Members (overall) for whom joining a car club has made it less likely that they will buy a car in the next few years
2012/13	67%
2013/14	62%
2014/15	70%
2015/16	56%

Intention to buy a private car if car club vehicles were no longer available in the area



Impact of car clubs on miles travelled

Headlines

Joining a car club is associated with a reduction in annual car mileage

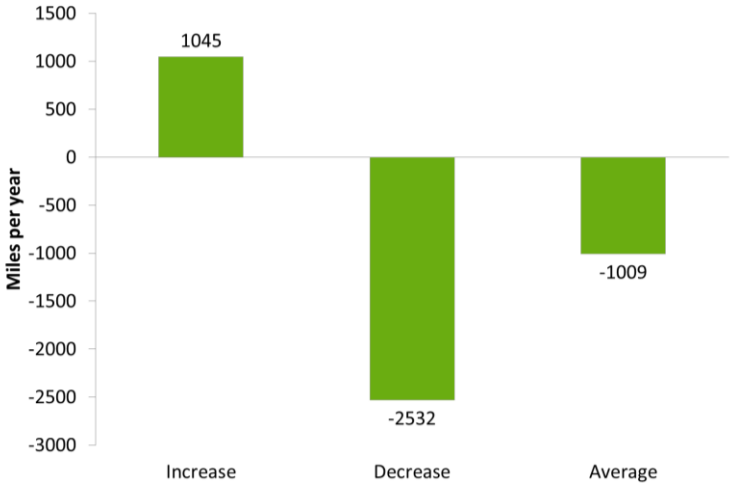
- The average change in annual household car mileage reported after joining was a decrease of 1,009 miles.
- This average change is derived from estimated changes in mileage provided by the 33% of all longer-term members who reported a decrease in their mileage after joining a car club and the 24% who reported an increase. Many respondents will not have accurate records of their mileage so the figures are estimates. The distribution of change is shown below; the average increase in annual mileage was 1,045 miles whilst the average decrease was 2,532 miles.
- 47% of all members reported household mileage of 500 miles or fewer in car club vehicles in the 12 months prior to completing the survey.
- Based on data provided by operators, the average annual mileage in car club cars per member in the UK was 375 miles. This is less than half of the survey longer-term members' average estimate of 820 miles: respondents to the survey are therefore more likely to travel further than the average car club member or may over-estimate their mileage.
- The estimated average annual mileage travelled by members (in their primary household car) is 3,370 miles. When added to the estimated miles travelled in car club cars, the annual average is 4,190 miles. This is just over half the average of 8,100 miles driven per year among households with at least one full driving licence holder (National Travel Survey).
- Members who had sold or disposed of a car in the last 12 months travelled an average of 7,760 miles a year before they sold it.

Trends

Average change in mileage

- The proportion of members who travel more than 6,000 miles a year in their primary household car (34%) is half of that in 2014/15 (68%). This also highlights the variability in responses to this question.

Average change in longer-term members' annual mileage following joining a car club



Impact of car clubs on travel behaviour: new members

Headlines

New members travel by private car less after joining

- 23% of new members decreased their use of private cars after joining, compared to just 7% who increased it. The chart below shows that the proportion of new members who drive at least once a week fell by 9%. New members also decreased their use of taxis and minicabs.

New members use of sustainable travel increases after joining

- New members tended to already be frequent users of sustainable travel modes. Nevertheless, the proportion of members walking and using buses and trains at least once a week increased further after joining a car club.
- The number of new car club users travelling by bicycle at least once a week fell by 1% after joining. The response options for this question were simplified in the 2015/16 survey, which may account for unexpected results in travel behaviour.

New members use sustainable transport more often and use cars less often than the average England and Wales resident

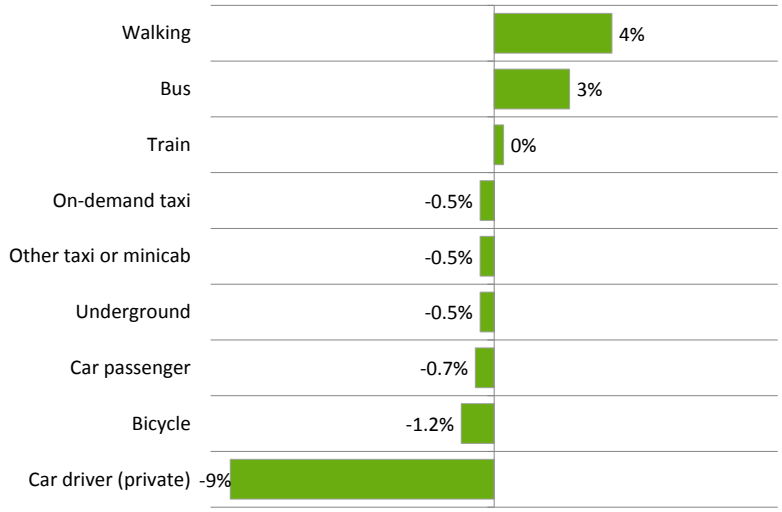
- Before joining, new members were already using sustainable modes of transport more often and driving less often than the national average. See Appendix A Figure A.12 for more information.

Trends

New members continue to travel by private car less often

As in previous years, the trend amongst car club members is to make fewer private car trips after joining the car club and continue to use sustainable travel modes regularly.

Proportion of new members using transport modes at least once a week after joining a car club compared with before (percentage point change)



Travel behaviour of longer-term members

Headlines

Car club members make frequent use of sustainable travel modes

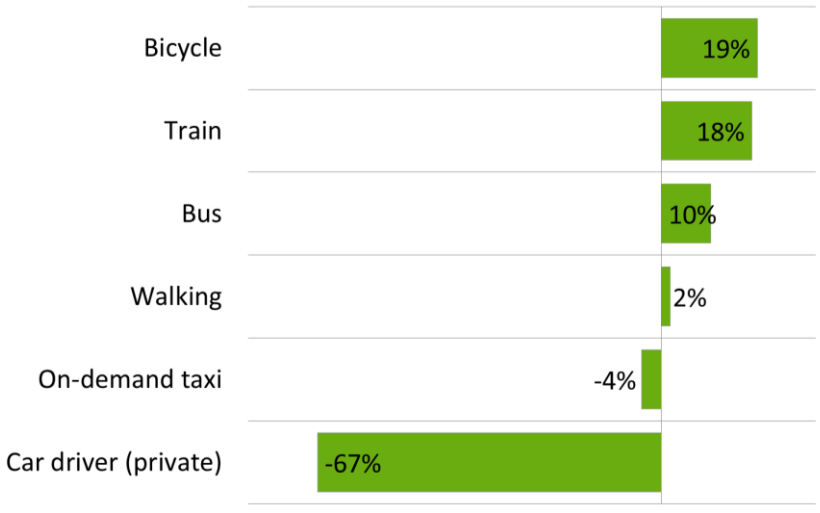
- Longer-term car club members generally make more use of sustainable modes of transport and less use of private cars than the average person in England and Wales:
  - 51% never travel by private car as driver compared to the national average of 4%;
  - 32% travel by bus at least once a week compared to the national average of 22%;
  - 23% travel by train at least once a week compared to the national average of 6%;
  - 34% travel by bicycle at least once a week compared to the national average of 15%; and
  - 10% travel by taxi (on-demand and other) at least once a week compared to the national average of 9%.
- 65% long-term members walk for 20 minutes or more at least once a week compared to 63% of people in England[3].

Trends

Higher use of sustainable travel by members since 2007

Frequency of mode use among longer-term members has higher than average by all sustainable travel modes since the survey began in 2007.

% of members using modes at least once a week compared with the national average (percentage point difference)[4]



[3] Table NTS0312, Walks of 20 minutes or more by age: England, 2014

[4] Walking, cycling, motorcycling and public transport use National Travel Survey table 0313

Use of other shared mobility

Headlines

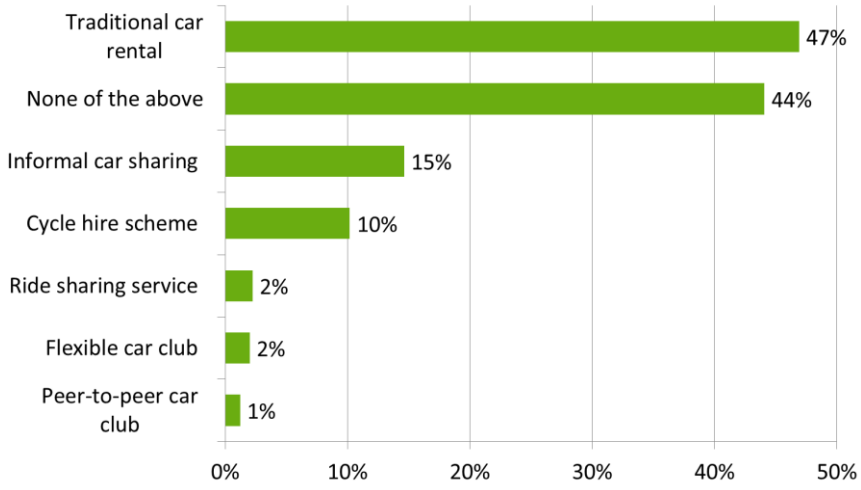
Car club members also use other shared mobility services

- Aside from car clubs, 47% of members have used traditional car rental in the last year, 15% have informally car shared and 10% have used cycle hire schemes.
- Just 2% of round-trip members are also members of flexible car clubs[5] and 2% are members of ride sharing services; whilst just 1% are members of peer-to-peer car clubs.
- Respondents were asked whether they joined other shared mobility services before or after joining the round-trip car club. Apart from "peer-to-peer" and flexible car clubs, respondents had used the other forms shared mobility transport before joining the car club.

Trends

- The question about use of shared mobility modes was simplified in the 2015/16 survey: respondents were not asked to provide the frequency of use of each mode, but only required to tick if they had used it in the last 12 months. The results are therefore not directly comparable but it appears that fewer people had used each shared mobility mode in this year's survey.

Use of other shared mobility services



[5] This reflects the fact that flexible car clubs are not currently providing services outside of London.

Profile of car club users

Headlines

Car club attract a diverse range of members

Based on analysis of members' postcodes using Mosaic[6], the characteristics of English and Welsh car club members are shown in the table below and include:

- Youngsters renting in vibrant city centre locations (Central Pulse - 11%).
- Prosperous households in accessible inner suburbs (Uptown Elite – 8%).
- Young professionals in their 20s and 30s (Metropolitan High-Flyers - 8%).
- Other Mosaic types include older residents owning inner suburban properties (Ageing Access - 7%) and people in their 20s and 30s progressing in their careers living in commutable properties (Career Builders – 6%).

Trends

Profile of car club members becoming more diverse

- The Mosaic profile of members in 2015/16 is more diverse than in previous years: Central Pulse is still the largest group but make up only 11% of car club members, compared to 19% in 2014/15. This is in line with the maturing of the car club market in England and Wales as members are moving beyond the demographic profile of initial early adopters.

Mosaic profile of England and Wales car club members: key types

Type	% of members	% of England & Wales population	Description
Central Pulse	11%	1%	Entertainment-seeking youngsters renting city centre flats in vibrant locations close to jobs and night life.
Uptown Elite	8%	0.2%	High status households owning elegant homes in accessible inner suburbs where they enjoy city life in comfort.
Metro High-Flyers	8%	0.2%	Ambitious 20 and 30-somethings renting expensive apartments in highly commutable areas of major cities.
Ageing access	7%	1%	Older residents owning small inner suburban properties with good access to amenities.
Career Builders	6%	1%	Motivated singles and couples in their 20s and 30s progressing in their field of work from commutable properties.
Learners & Earners	5%	1%	Inhabitants of the university fringe where students and older residents mix in cosmopolitan locations.
Cafes & Catchments	3%	1%	Affluent families with growing children living in upmarket housing in city environments.
Primary Ambitions	3%	3%	Forward-thinking younger families who sought affordable homes in good suburbs which they may now be out-growing.

[6] Mosaic is a geodemographic profiling tool which classified residential postcodes into one of 66 Types, based on demographics, attitudes and a wide range of other data from commercial and public statistics.

How car club vehicles are used

Headlines

Car club cars have a higher occupancy than private cars

- Car club cars have an average occupancy of 2.2 people (based on the last car club journey made) compared to 1.6 for private cars (NTS, 2014). This may be a reflection of the different journey types as detailed below.

Car clubs enable members to get around with large items

- 41% reported transporting bulky objects on their most recent trip.

Car clubs are not generally used for commuting

- As shown in the chart below, personal business (30%), visiting friends (21%) and leisure (20%) are the most popular car club journey purposes. Respondents could choose more than one journey purpose for this question.
- Compared to journey purposes reported in the National Travel Survey, fewer car club journeys are made for commuting. It is generally not cost-effective for members to use round-trip car clubs for commuting - members pay by the hour and would therefore be paying for the whole period of hire including the time spent at work when the car is not in use.
- Respondents were able to select multiple responses for this question.

Trends

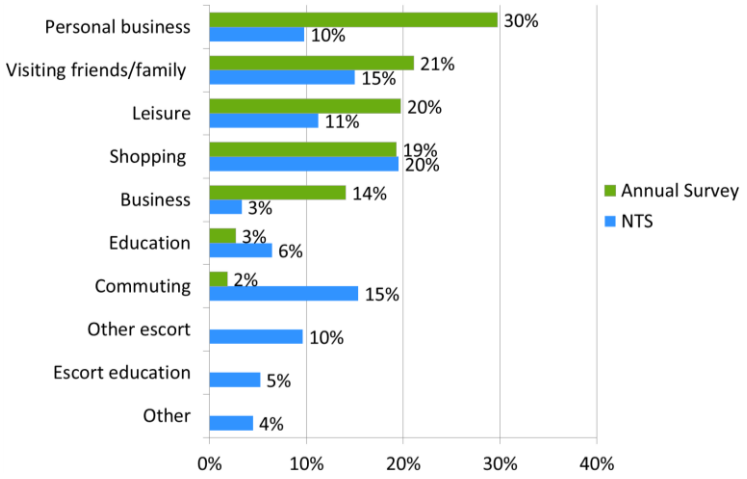
Top journey purposes remain unchanged

- The top four journey purposes (personal business, visiting friends/family, leisure and shopping) remain the same since 2013/14, the first time the question was asked, while the average occupancy of car club cars have increased from 2.0 to 2.2 over the same time period.

Average vehicle occupancy

Car club members 2015/16 (based on last trip made in a car club car)	England & Wales population (National Travel Survey 2014)
2.2	1.6

Comparison of journey purposes



Why car club vehicles are used

Headlines

Car club cars are used to make journeys when sustainable modes would take too long

- The chart below shows the top three reasons that members used a car club on their last car club journey. 33% chose to drive to reduce their journey time, 30% reported that public transport would have taken too long, and 25% said they were going to more than one place.
- Car clubs allow people who do not need a car for most journeys to benefit from the flexibility of car travel when needed. The survey also suggests that car club members are 'trip chaining' with car club trips (i.e. using the vehicle to make a journey encompassing several different purposes).

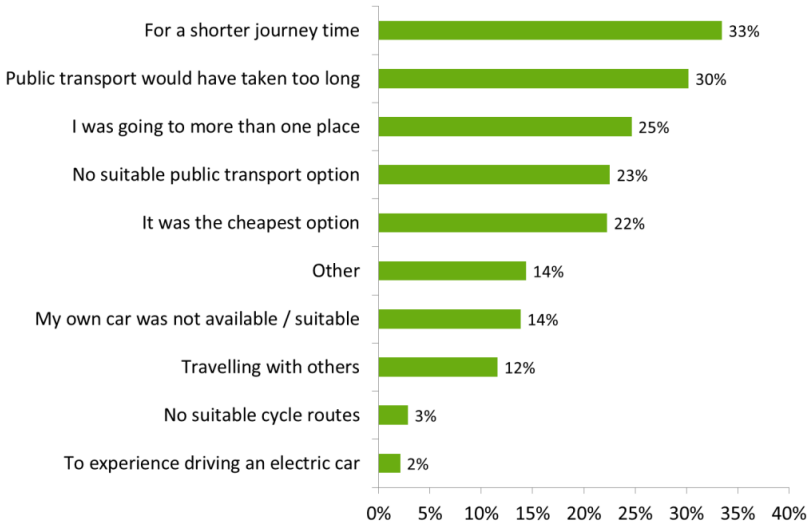
Car clubs save members time

- Members were asked to compare the journey of their last car club journey with the equivalent journey time for alternative modes. The table below shows that if car club users had made their last journey using public transport, 70% of members perceived that it would have taken more time.
- Just under half the respondents would not have been able to make the journey on foot or by bicycle, and just under half reported their journey would have taken longer using these modes.

Trends

- This question was asked for the first time in this year's survey.

Reason for use



Comparison of journey time using alternative modes (based on members' estimates)

	Public transport	Walking	Cycling	Taxi
More time	71%	52%	47%	19%
About the same	5%	1%	4%	51%
Less time	2%	1%	2%	7%
Not an option	22%	47%	47%	23%

Reasons for not using the car club

Headlines

Over half of all members have made a car club journey in the last month

- The chart below shows that 56% of car club members have made a car club journey within the last month and a further 20% in the last three months.

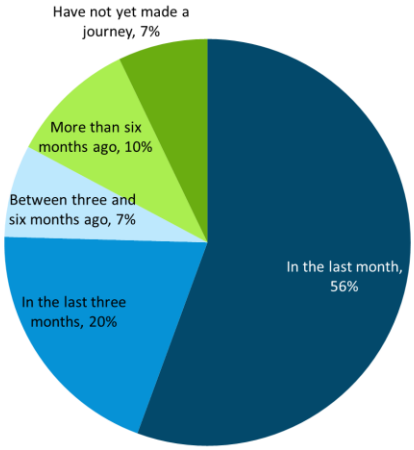
Some members join car clubs as a back-up travel option

- 10% of members had not made a car club journey for over six months. When asked for their reasons for not using the car club the most common reason given, by 41% of those infrequent users, was because they are only a car club member as a backup to their usual sustainable modes in case they need it. Other frequently cited reasons include not needing to use a car club car for any recent journeys and because car club vehicles are not close enough to where members need them.
- Respondents could choose more than one reason for infrequent use.

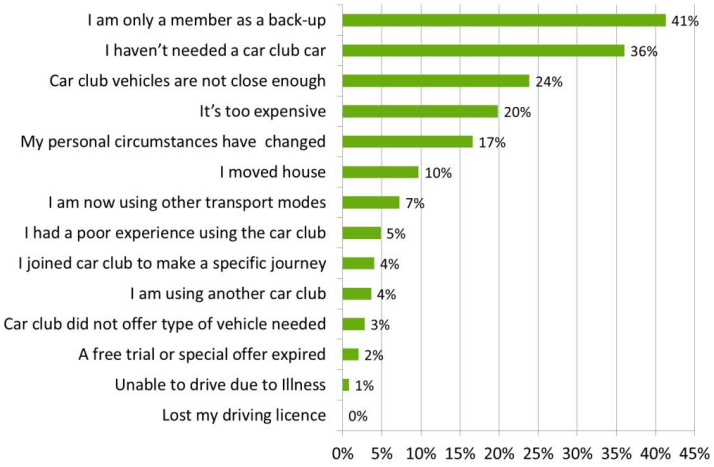
Trends

- This question was asked for the first time in this year's survey.

Most recent car club journey



Reason for infrequent use



Circumstances when joining a car club

Headlines

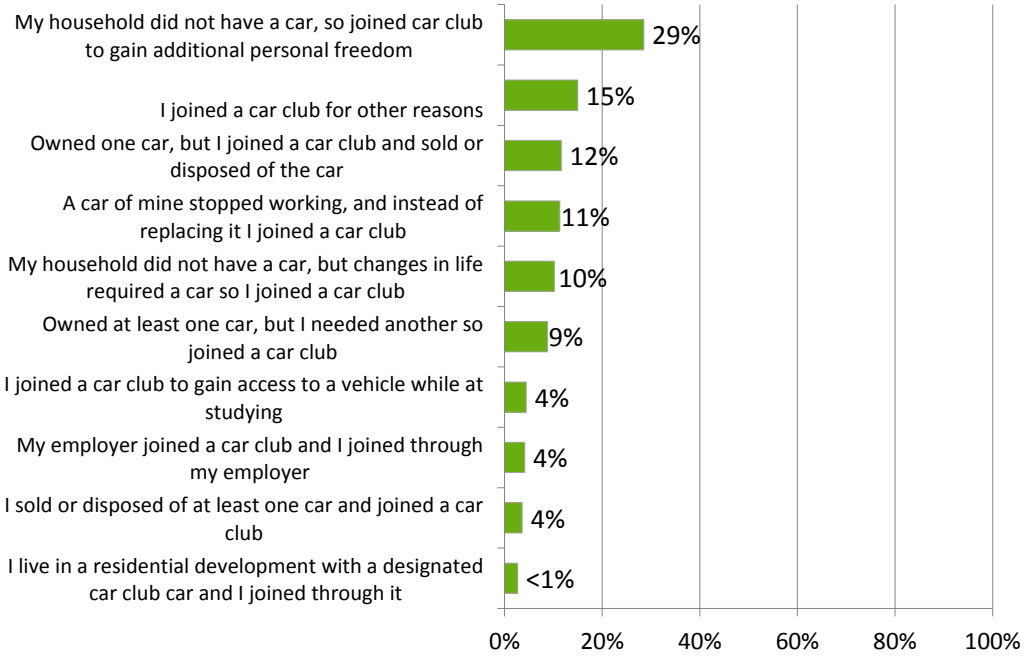
Members join car clubs to gain additional personal freedom and access cars occasionally

- The chart below shows that the most popular reasons for joining were among people who did not have a car in their household: to gain additional personal freedom (29%). Similarly, the most frequent response amongst respondents to the Mineta Transport Institute survey was "*my household did not have a car, but joined carsharing to gain additional personal freedom*[7]" (51%).
- 12% of members sold or disposed of a car and joined a car club to gain access to a vehicle when required and 11% of members joined after a car of theirs stopped working, in place of buying a new one.
- Members already tend to be regular users of sustainable travel modes, and joining a car club is an addition to a range of travel options already used.
- 15% of respondents gave 'other' reasons for joining a car club. The most frequently mentioned were to gain access to a car for occasional use, to gain access to vans for moving large items, and out of curiosity / to support the car club / to try driving a particular vehicle, such as an electric vehicle.
- Respondents could choose more than one reason for joining.

Trends

- This question was asked for the first time in this year's survey.

Members' circumstances when joining a car club



[7] Question based on Greenhouse Gas Emission Impacts of Carsharing in North America Study, Mineta Transportation Institute, June 2010

How members found out about car clubs and levels of satisfaction

Headlines

Word of mouth, referrals from friends and the internet encourage new members to join

- As shown in the graph below, 29% of new members found out about their car club through word of mouth, highlighting the importance of an operator's reputation in its ability to attract new members, and 20% joined after seeing a car club car in the street, highlighting the importance of visibility of vehicles in raising awareness of car clubs.

Member satisfaction levels remain high

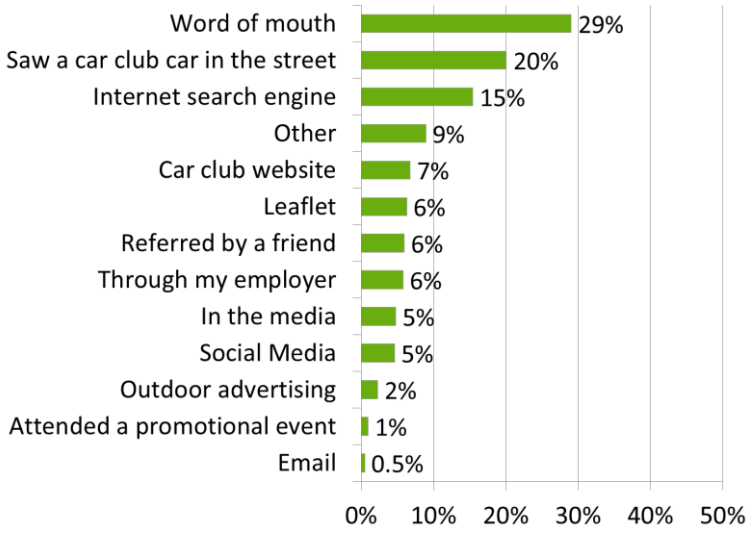
- 72% of all members are 'very' or 'quite' satisfied with the quality and condition of car club vehicles and 70% are 'very' or 'quite' satisfied with the availability of vehicles. Satisfaction with the proximity of vehicles was slightly lower with 69% of members 'very' or 'quite' satisfied.

Trends

Word of mouth and internet remain important

- Seeing a car club vehicle on the street is a less common way of finding out about car clubs than previously reported: 38% of members found out this way in 2014/15 dropping to 20% in 2015/16. A higher proportion of new members are finding out about car clubs through word of mouth (29% in 2015/16, up from 23% in 2014/15).
- The satisfaction questions changed slightly this year from previous years so comparable data is not available for last year (they were previously focused on the new member experience of joining).

How new members found out about their car club



Experiences of using electric vehicles

Headlines

One in ten car club members has tried an electric vehicle

- 15% of members have used an electric car club vehicle, up from 5% of members in 2014/15.
- As shown in the table below, 75% rated the experience of driving the vehicle 'good' or 'very good'. Members were less satisfied with the experience of using EV charging points, with 55% rating the experience 'good' or 'very good'. Those who rated the charging points 'poor' or 'very poor' encountered problems with the lack of charging instructions, scarcity of charging points and charging points broken or incompatible with car club vehicle.

EVs are a curiosity and popular among those with environmental concerns

- 'I was curious to try an electric vehicle' was the most popular reason for choosing an EV (52% of members) as shown in the graph below. 41% of members reported they have used EVs because of they are environmentally friendly. 36% of members simply used an EV because it was the closest available vehicle.

Trends

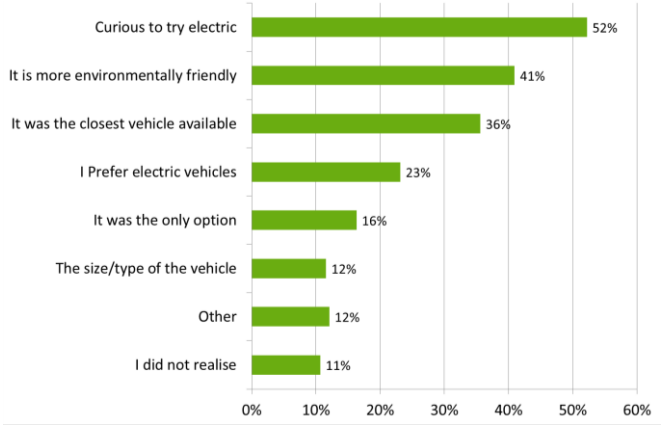
Experiences of charging points are improving

- Experiences of using charging points this year (55% good or very good) were better than in 2014/15 when only 48% rated the experience as good or very good. Rating of driving EVs was lower than last year (90% 'good' or 'very good' in 2014/15 compared to 75% in 2015/16).

Experience of using electric vehicles and charging points

Rating	Driving the vehicle	Charging point
5 Very good	46%	23%
4	29%	32%
3	16%	27%
2	5%	13%
1 Very poor	4%	6%
Average rating	**4.1**	**3.5**

Reasons for choosing an electric vehicle



Attitudes towards electric vehicles

Headlines

Members are interested in using electric vehicles and happy to use them

- Of members who haven't yet used an electric vehicle, 91% expressed an interest in using one: 57% would be happy to use an EV if there was one close to them and 34% would be happy to use an EV but haven't yet had the opportunity.

Concerns about using electric vehicles relate to charging not range or performance

- Among the 9% of respondents who have concerns with using electric vehicles, the most common concerns are running out of charge during the journey, being unable to find a charging point during the journey and the car not being fully charged when it is picked up. The chart below provides more detail.
- This was a new question in the 2015/16 survey.

Trends

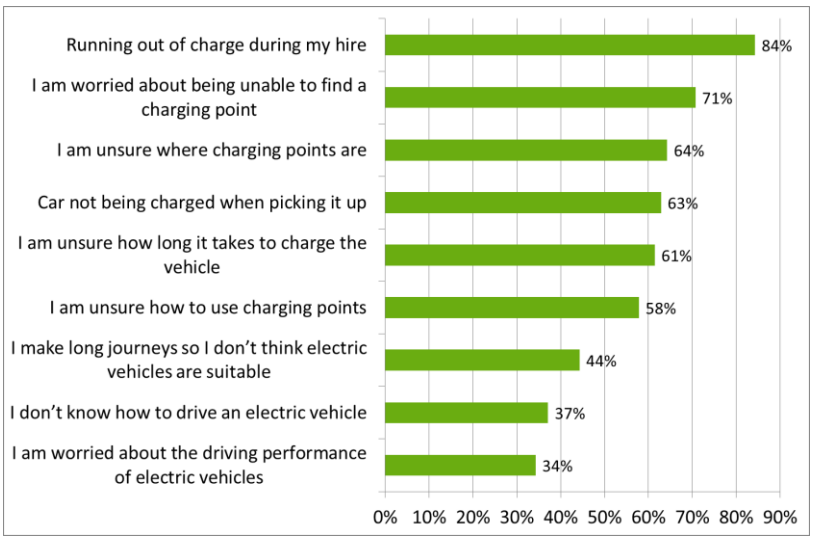
More interest in electric vehicles

- The questions on interest in using electric vehicles were altered slightly in this year's survey so are not directly comparable with last year's results.

Interest in using electric vehicles

Attitude towards EVs	Percentage
I would be happy to use an electric vehicle but haven't yet had the opportunity	34%
I would be happy to use an electric vehicle if there was one close to me	57%
I have concerns about using electric vehicles (see chart below)	9%

Concerns with using electric vehicles



Respondents could choose more than one option.

Use of smartphones and travel apps

Headlines

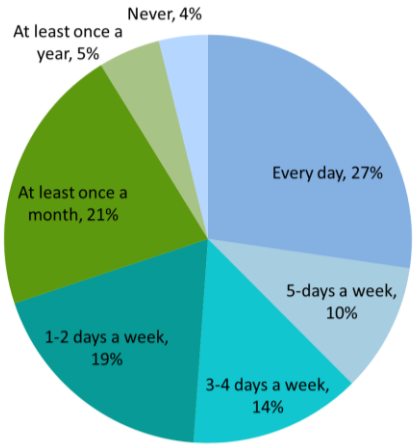
Car club members are frequent users of smartphones and travel apps

- 90% of all members own a smartphone, higher than the national average of 71%[8], and the chart below shows that over a quarter of all respondents use their smartphone on a daily basis to obtain travel information.
- Google Maps and National Rail are the most common apps / websites for accessing travel information. Other websites and apps mentioned include the Trainline, Waze and First Bus. Car club users are increasingly able to choose from a wide selection of transport options, using instantly available information from their smartphones to make decisions whilst on the move.
- Respondents could choose more than one option.

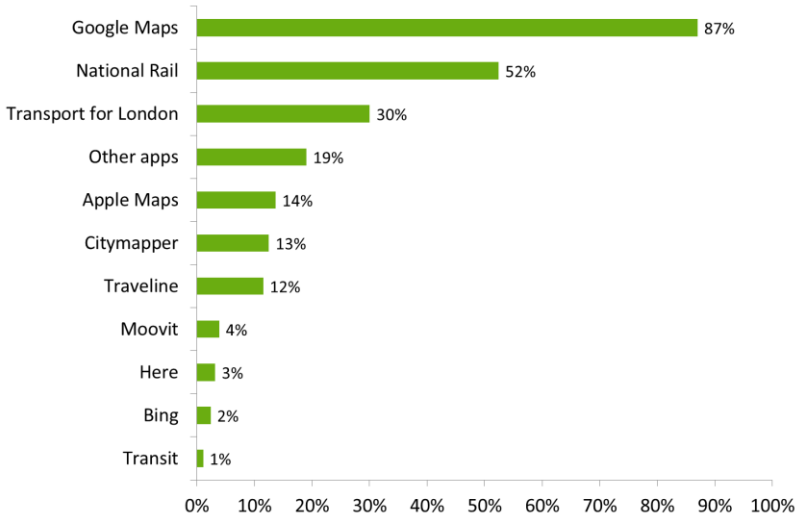
Trends

- This was a new question in the 2015/16 survey.

Frequency of smartphone use to access travel information



Most frequently used travel apps / websites (% of respondents who used them)



[8] https://www.ipsos-mori.com/Assets/Docs/Publications/Ipsos_Connect_Tech_Tracker_Q3_2015.pdf

3 Operators' Survey

Introduction

3.1 This section contains the information provided by car club operators about their service. Each car club operator provided details of their vehicle fleet, membership numbers and characteristics of members and data regarding use of car clubs by their members such as mileage travelled. The data was collected across England, Wales, Scotland and London by means of a self-completion questionnaire.

3.2 England and Wales accounts for 14% of the car club market. London remains the UK's primary market for car clubs with approximately four in five car club members residing in London and 4% in Scotland). These figures include round-trip and flexible members but exclude peer-to-peer car club members.

3.3 Data about NO_X, CO_2 and PM_{10} emissions of car club fleets were collected separately through the emissions analysis and profiling process and is reported in chapter 4.

3.4 The data provided here are for predominantly for round-trip car clubs. Where data provided by other types of operator is included, this is indicated in the description.

3.5 Not all operators provided data for each question.

Characteristics of car club members

Headlines

Car clubs attract a young profile of members

- The first graph below shows that there are fewer car club members aged 50+ years old compared to the profile of licence holders nationally. The market for car clubs is predominantly amongst the 25-44 age group.

Men are more likely to join car clubs than women

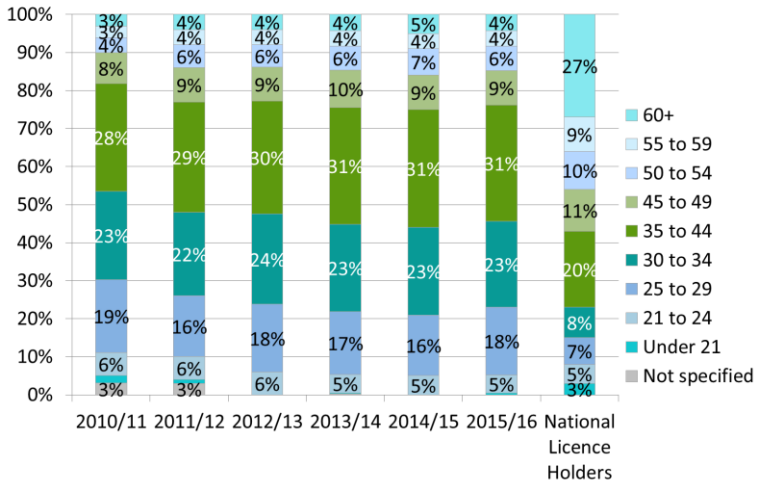
- 70% of car club members are men compared to 54% of UK licence holders who are men, as shown in the second graph.
- The profiles below include round-trip and flexible car club members.

Trends

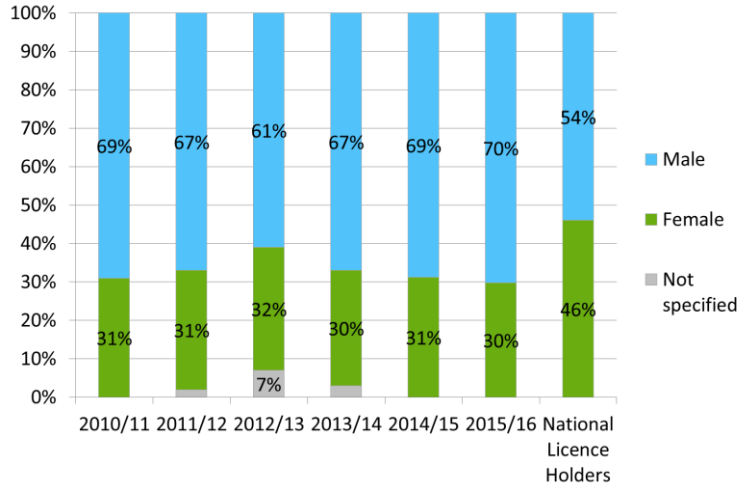
Fewer members in the 30-44 group, more aged over 45

- The age profile of members is similar in 2015/16 to previous survey years. Compared to 2010/11, there has been a 4% increase in the number of members over 50.

Age profile of members (2010/11 – 2014/15)



Gender profile of members (2010/11 – 2014/15)



How car clubs are used

Headlines

Round-trip car club members typically make short trips

- The average duration of hire for round-trip car clubs is 6.9 hours and the average distance travelled per hire 36.9 miles, as shown in the table below.
- The data below is for round-trip car clubs only.

Trends

- Members are making more trips: the number of hires per member continues to increase and with this the implied miles per member per year. Members make an average of 9.0 hires a year compared to 8.2 hires a year in 2012/13.
- The average duration of round-trip car club hire has increased slightly from 6.7 hours in 2012/13 to 6.9 hours in 2015/16. Excluding the community car clubs, the average distance per hire has reduced slightly from 37.8 miles in 2012/13 to 37.1 in 2015/16. The average distance per hire is significantly high for community car clubs, at 60.8 miles which reflects the slightly different pricing structures adopted by community car clubs.

Vehicle usage

Model	Measure	2012/13	2013/14	2014/15	2015/16
Round-trip car clubs	Average duration of hire	6.7 hours	6.2 hours	6.5 hours	6.9 hours
	Average distance per hire	37.8 miles	34.9 miles	34.1 miles	36.9 miles[9]
	Average number of hires per active member	8.2 hires	9.2 hires	10.6 hires	9.0 hires
	Implied miles per member per year[10]	305 miles	316 miles	347 miles	407 miles

[9] Excluding Community Car Club miles per hire.

[10] Calculated as average duration of hire multiplied by average distance per hire.

Utilisation of car clubs

Headlines

Car club cars are used more efficiently than private cars

- On average, round-trip car club cars are booked for 6 hours a day, or for 25%, of the day[11]. This is notably higher than the utilisation of private cars, which it is estimated are used for 5% of the day on average[12].

Car club vehicles provide for occasional and low mileage use

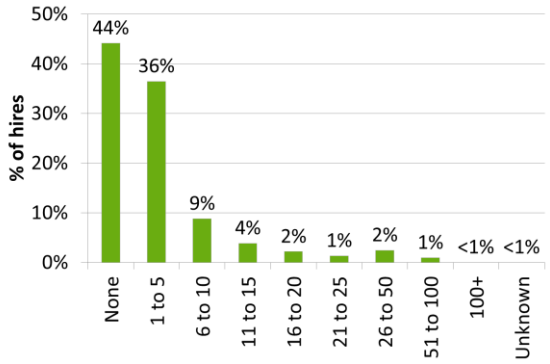
- The first graph below shows that 80% of round-trip members use a car club vehicle fewer than six times a year though there is a small group of members (5%) who make more than 20 car club trips a year.
- 57% of hires are for trips of 25 miles or less, as shown in the second graph. However, 31% of trips are over 51 miles which means that the average trip length is 35.6 miles. Data are for round-trip only.

Trends

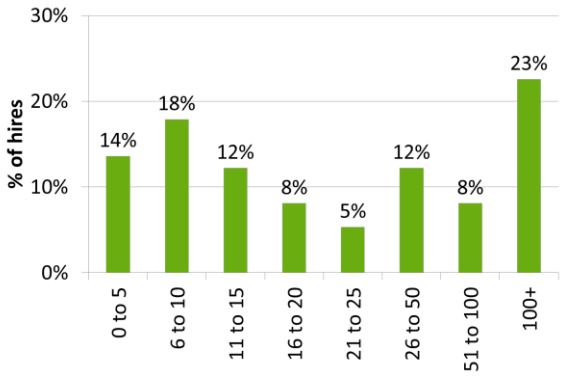
Higher proportion of inactive users

- The proportion of members who made no hires in the 12-month reporting period is higher this year (44%) than last year (29%). This accords with the finding above that car club membership is often an infrequently used back-up option. It may also reflect less frequent use of some community car clubs who participated in the survey for the first time this year.

Number of hires per member, per year



Miles travelled per hire



[11] This includes the time that vehicles are parked during bookings

[12] Spaced Out: Perspectives on parking policy, Bates & Liebling, RAC Foundation 2012

Round trip car club vehicle booking methods and bay locations

Headlines

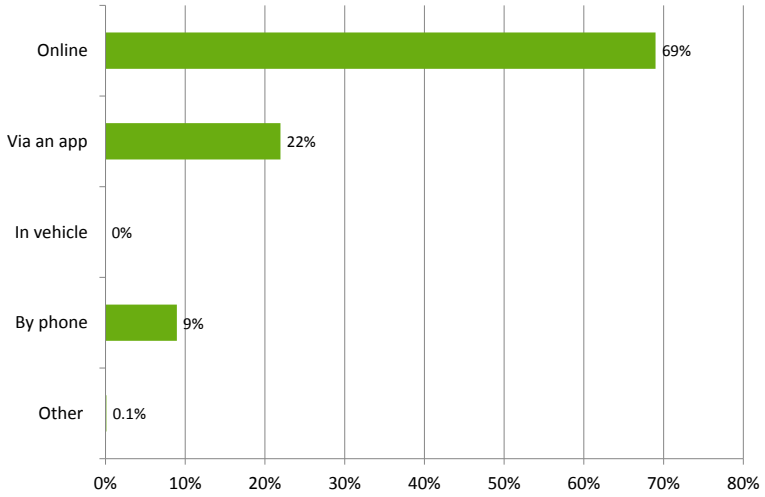
Round-trip car club users tend to book vehicles online

- The first graph below shows that 69% of round-trip members book car club vehicles online, followed by 16% of members who use the app and 14% who book in-vehicle.
- There is a near even split between round-trip car club cars parked in on-street bays (54%) and off-street bays (46%). 39% of bays have an information board and 73% of operators are lobbying for more information boards at car club bays to help raise awareness of car clubs within the local area and to help members locate car club vehicles.

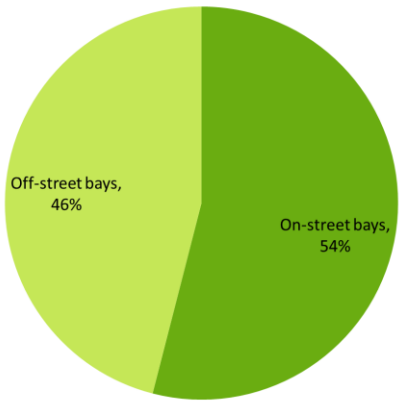
Trends

- 2015/16 was the first year questions about how car club vehicles are booked were asked.

Booking channel



Location of car club bays



4 Emissions Analysis and Profiling

Introduction

4.1 The following section reports on the emissions profiles of the national car club operators in England and Wales. It is based on a comprehensive set of data that has been collected about UK car clubs. The data has been independently verified by Gfleet Services Ltd using vehicle registration marks (VRM) and published datasets from the DVLA (Driver and Vehicle Licensing Agency), VCA (Vehicle Certification Agency) and vehicle manufacturers which enables the production of a fuller and more accurate profile (including Nitrogen Oxides NO_X and Particulates PM_{10}).

4.2 Seven UK national car club operators were contacted to supply data (two did not provide mileage data), one club did not submit any data and another was not able to provide the two key data elements (VRM and mileage). In total 12 community clubs submitted data and information for a further six community clubs was submitted by their franchise operator.

4.3 A full copy of the emissions analysis and profiling including data for community clubs is available in Appendix C.

England and Wales Car Clubs

4.4 The data presented in the following section relates to the fleets of the four commercial national car club operators who operate vehicles in England and Wales and who provided usable data. London car club fleets are excluded from this data set and are reported separately[13]. All data is anonymous to protect the identity of the car club operators.

[13] See Carplus Annual Survey report for London 2015/16 available at http://www.carplus.org.uk/tools-and-resources/annual-survey-of-car-clubs/

Car club vehicle fleet profile

Headlines

The England & Wales car club vehicle fleet is cleaner than the UK private car fleet

- 92% of the England & Wales commercial car club fleet are in the lowest three emission bands (A, B and C), with 64% being in Band A. In the UK fleet the largest proportion of vehicles (16%) is in band G (151-165 g/km).
- In October 2015 the average carbon emissions of England & Wales club cars were 42% lower than the 2014 UK average car.

England & Wales car club fleet is 98% Euro 5 emission standard or higher

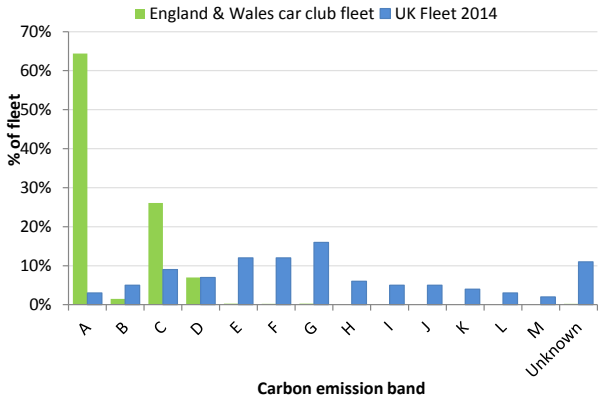
- 83% of England & Wales car club cars are Euro 5 compliant with 6% Euro 6 compliant and 9% zero emission.

Trends

Diesel club cars shifting to petrol, petrol hybrids, and EVs

- In 2013 the fleet was 29% diesel and 61% petrol. In 2014 that had shifted to 21% diesel and 62% petrol with hybrid and electric vehicles up from 10% to 17%. In 2015 the car club fleet was just 3% diesel, 64% petrol, 23% petrol hybrid, and 9% EV. In comparison, the UK fleet was 62% petrol, 37% diesel, and <1% petrol hybrid and EV.

Comparison of England & Wales Car Club VED Band Profile with UK Fleet



Fuel Type and Carbon Emissions

	Diesel	Petrol	Petrol Hybrid	Electric	Av. CO_2 g/km
England & Wales Car Club Fleet	3%	64%	23%	9%	90

Average Carbon Emissions of England & Wales Car Clubs (CO_2 g/km)

	2011	2012	2013	2014	2015
England & Wales Car Clubs	129.6	108.8	107.4	98.0[14]	90.0[13]
UK Car Fleet	162.8	160.1	157.0	153.9	No data

[14] Average includes "zero emission" electric vehicles.

Carbon savings

Headlines

Carbon emissions from car club cars are 35% lower than the equivalent miles by the UK fleet

- Car clubs in England & Wales save 750 tonnes of carbon dioxide each year (1.15 tonnes/car) on driven mileage alone, without considering the impact of modal change by members.
- Based on data provided by operators, the car club fleet emits an estimated 1,370 tonnes of carbon dioxide in a year. This has been calculated in line with the latest Defra methodology (using vehicle age to calculate uplift in carbon emissions).
- Assuming the same annual mileage was driven by the average UK car, the total CO_2 emissions would have been around 2,120 tonnes.

Trends

Carbon emissions of car club fleet are reducing

- Average carbon emissions of England & Wales car club cars were 8% lower than the 2014 car club fleet and 42% lower than the UK average car in 2014.

Carbon emissions and mileage of the England & Wales car club fleet

Annual car club miles 2015	Annual kg CO_2 2015 (age related uplift)	Annual kg CO_2 2015 (fixed 21% uplift)
7,018,102	1,503,699	1,368,061

Safety

Headlines

Car club cars are safer

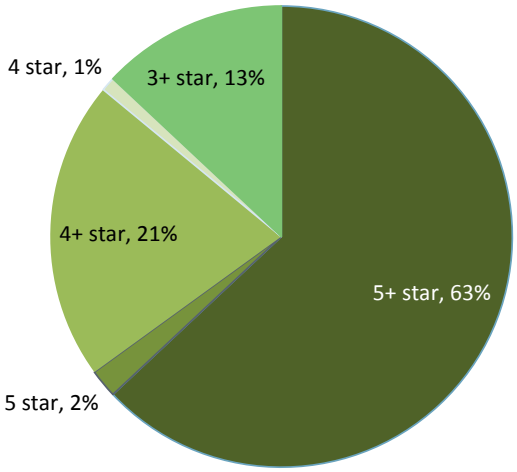
- 65% of the England & Wales fleet meet the NCAP 5+ Star or 5 Star standard and 21% the acceptable NCAP 4+ Star standard. NCAP is European New Car Assessment Programme covering vehicle safety in terms of occupant safety and pedestrian protection. NCAP 5+ is the highest safety rating.
- The car club fleet is likely to contain a greater proportion of cars with higher safety ratings compared to the private car fleet. While there is no dataset available profiling the safety ratings of the 30 million cars that make up the UK car fleet, research into the "grey fleet" (privately owned cars used for business) shows the, in the typical grey fleet about 10% of the vehicles meet the NCAP 5+ standard compared to 63% of the car club fleet.
- The NCAP profile of the car club fleet is shown in the figure below.

Trends

Change in safety profile

- There has been a reduction in the proportion of 5+ Star vehicles. This is due to improved data that eliminates double-counting of vehicles replaced within the year. There has also been a significant injection of 4+ Star vehicles into the fleet, notably the Toyota Aygo and the Vauxhall Corsa but also the Kia Picanto. In the case of the Corsa this would result in a 5 Star vehicle being replaced with a 4+ Star model.

NCAP profile of the England & Wales car club fleet



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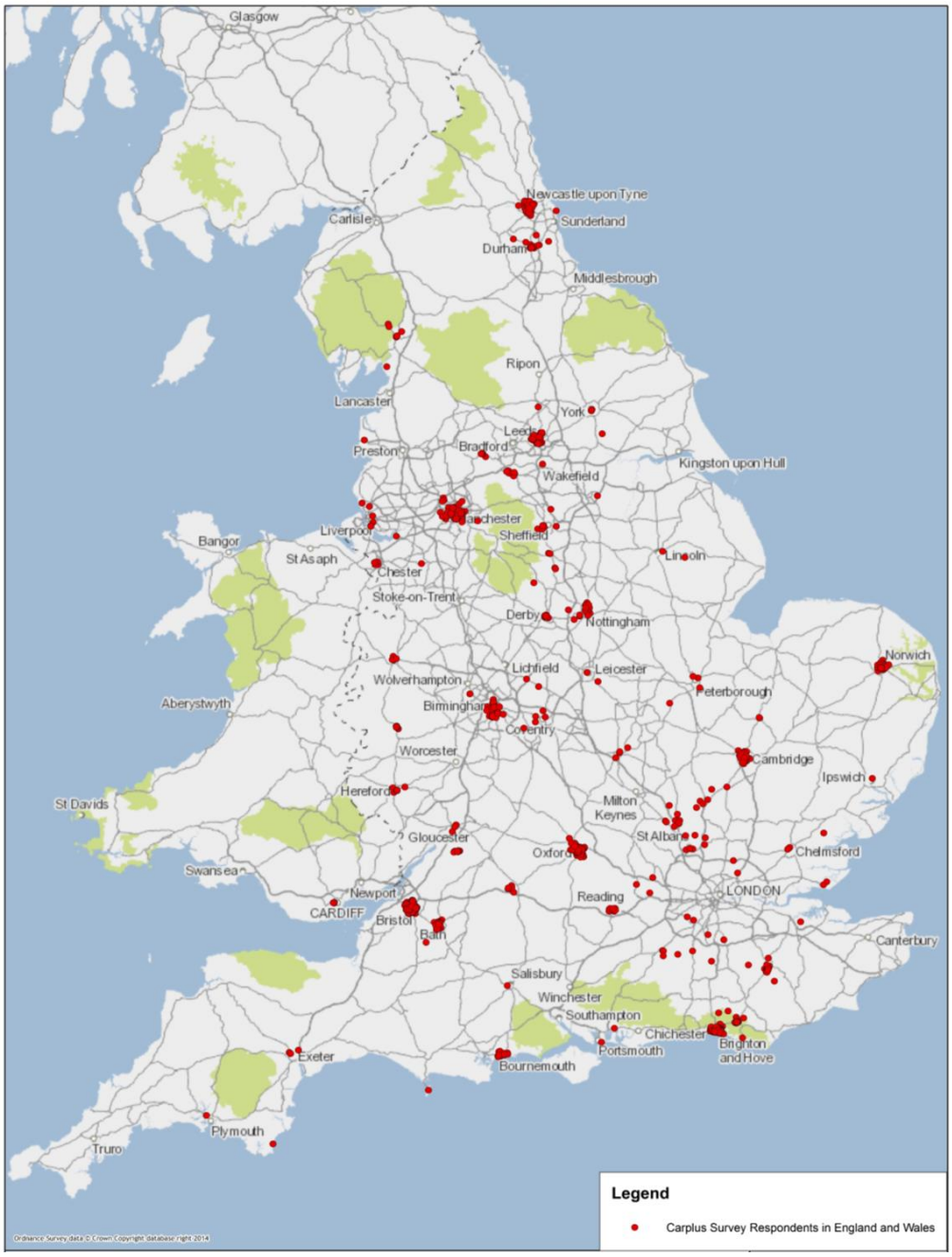
Appendices

A Detailed Tables and Figures

Respondents' home locations

Figure A.1: Respondents' home locations: all members



Impact of car clubs on car ownership

Figure A.2: Car ownership before and after joining a car club: all members

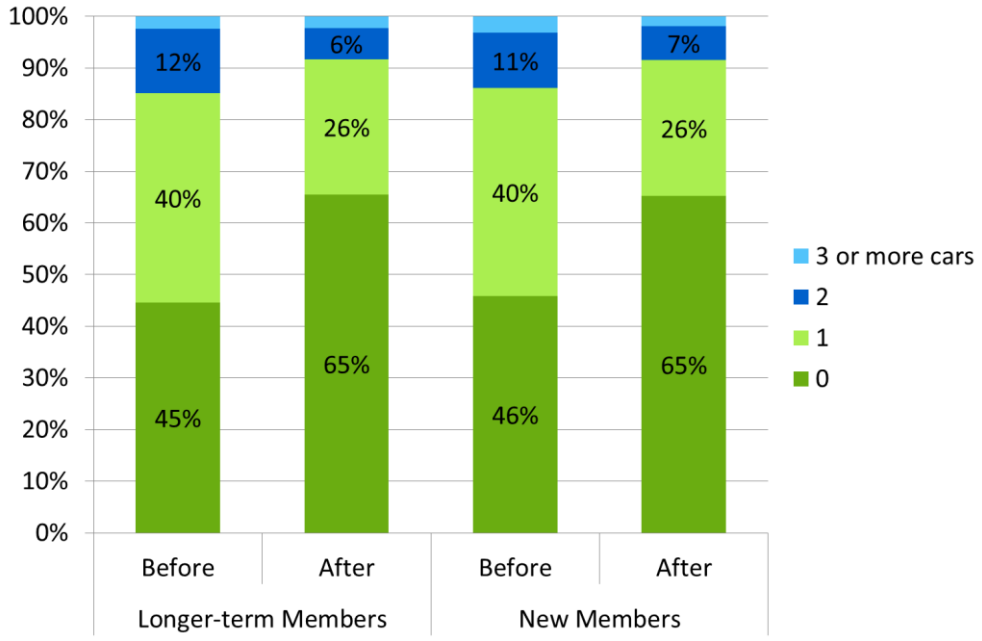
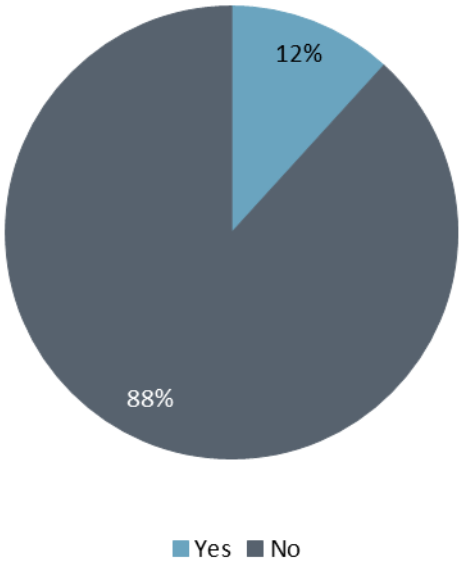


Table A.3: Sold or disposed of a car in the last twelve months: longer-term members



Impact of car clubs on car purchasing

Figure A.4: Would have bought a private car if hadn't joined a car club: all members

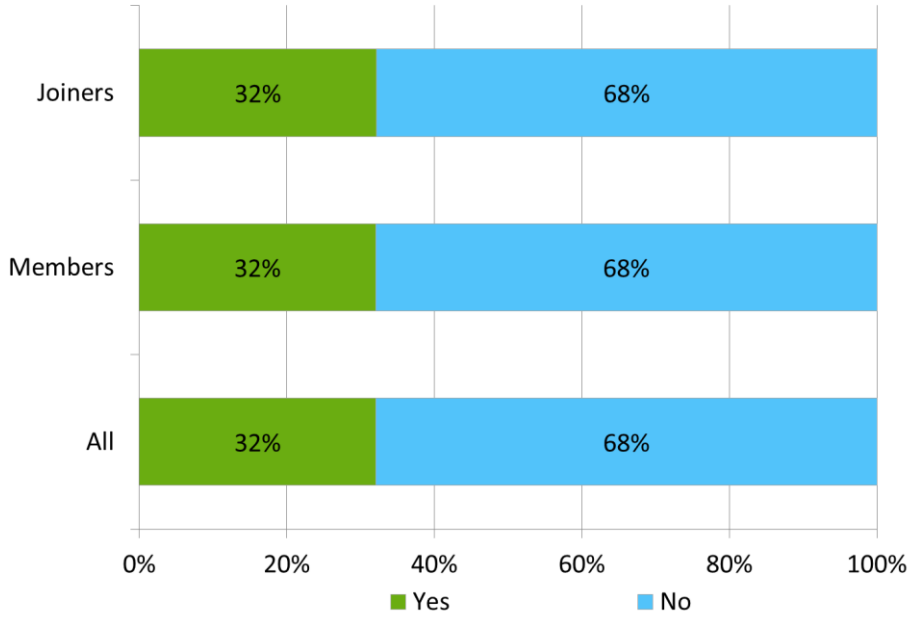


Figure A.5: Likelihood of buying a private car in the future: all members

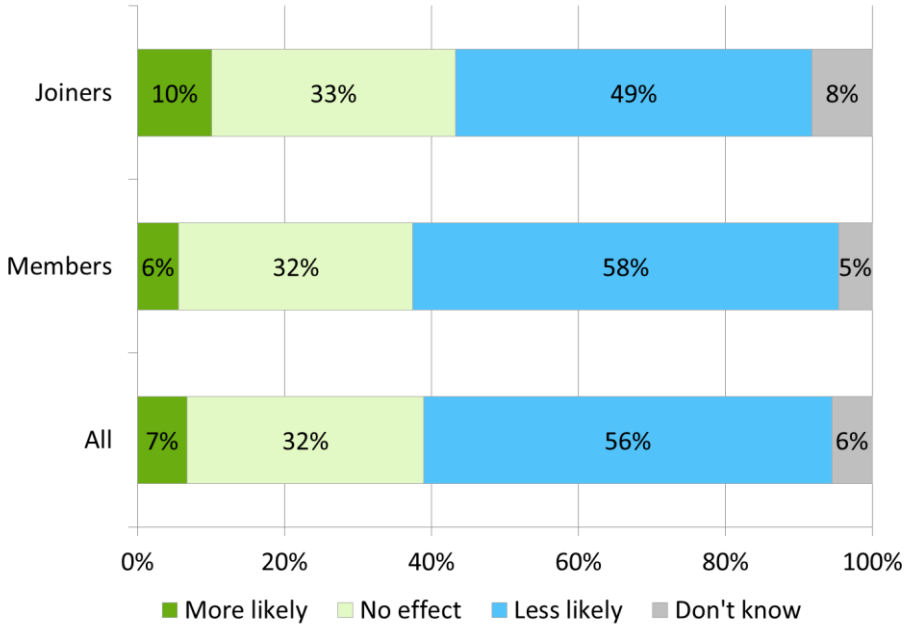
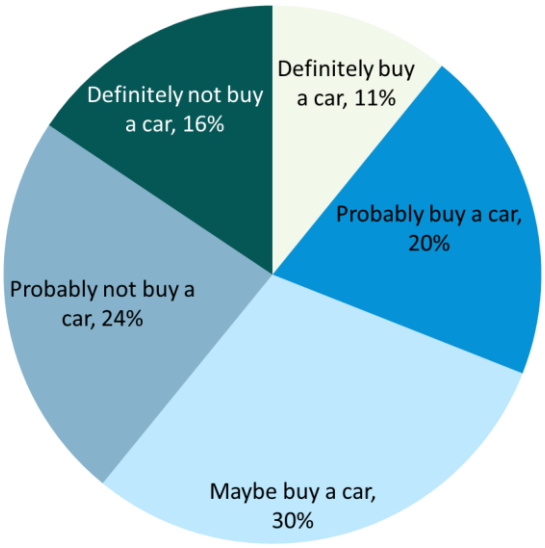
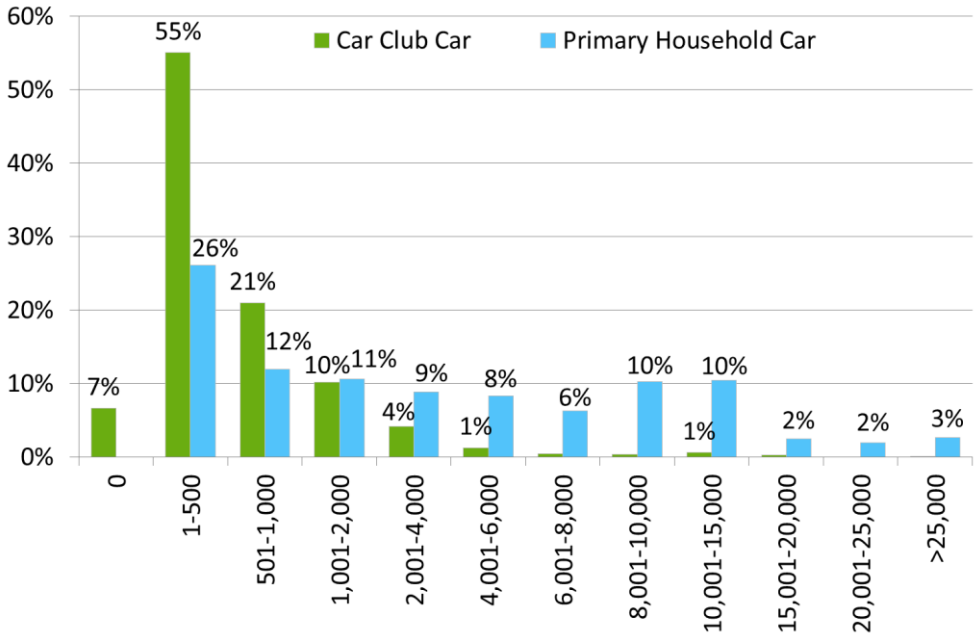


Figure A.6: Probability of buying a private car if car club was no longer an option: all members



Impact of car clubs on miles travelled

Figure A.7: Estimated household mileage by primary household car and car club cars: longer-term members[15]



[15] Mileage for primary household car excludes respondents who had sold/disposed of a car in the previous 12 months.

Figure A.8: Change in household mileage since joining the car club: longer-term members

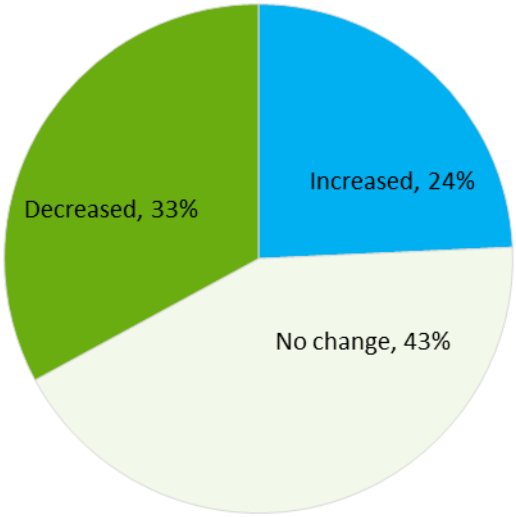


Figure A.9: Average change in annual mileage since joining the car club: longer-term members

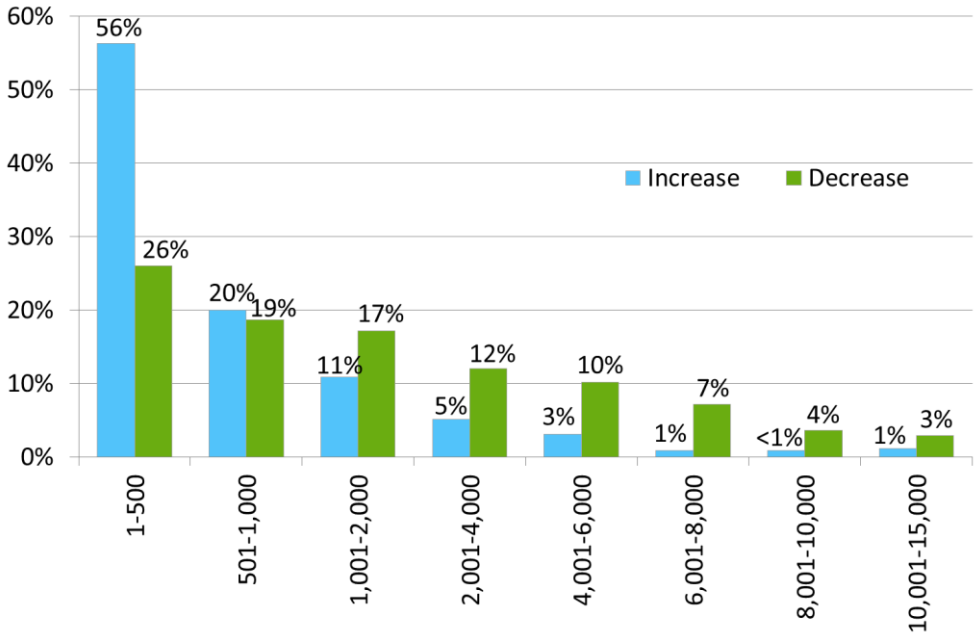
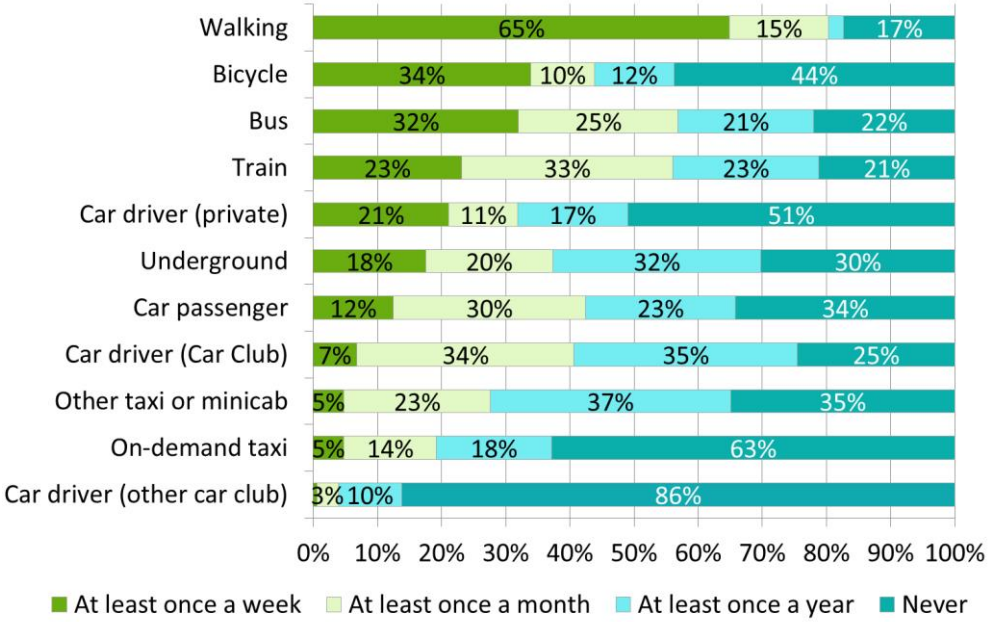


Figure A.10: Estimated household mileage by primary household car in 12 months prior to joining: new members

Impact of car clubs on travel behaviour: longer-term members

Figure A.11: Frequency of travel by mode: longer-term members



Impact of car clubs on travel behaviour: new members

Figure A.12: Frequency of travel by mode before joining: new members

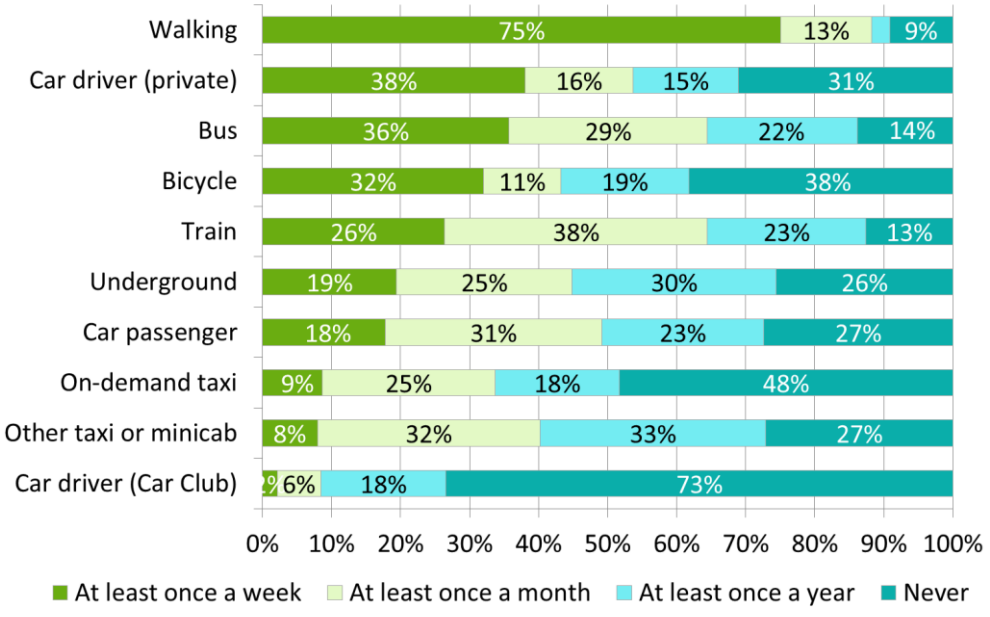
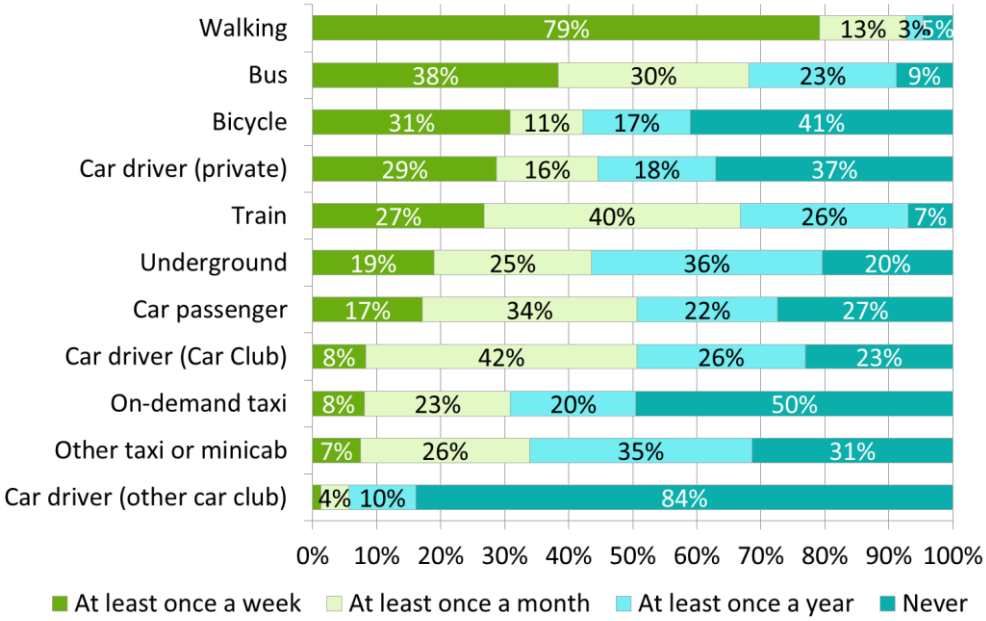


Figure A.13: Frequency of travel by mode after joining: new members



Use of other shared mobility

Figure A.14: Use of other shared mobility modes: all members

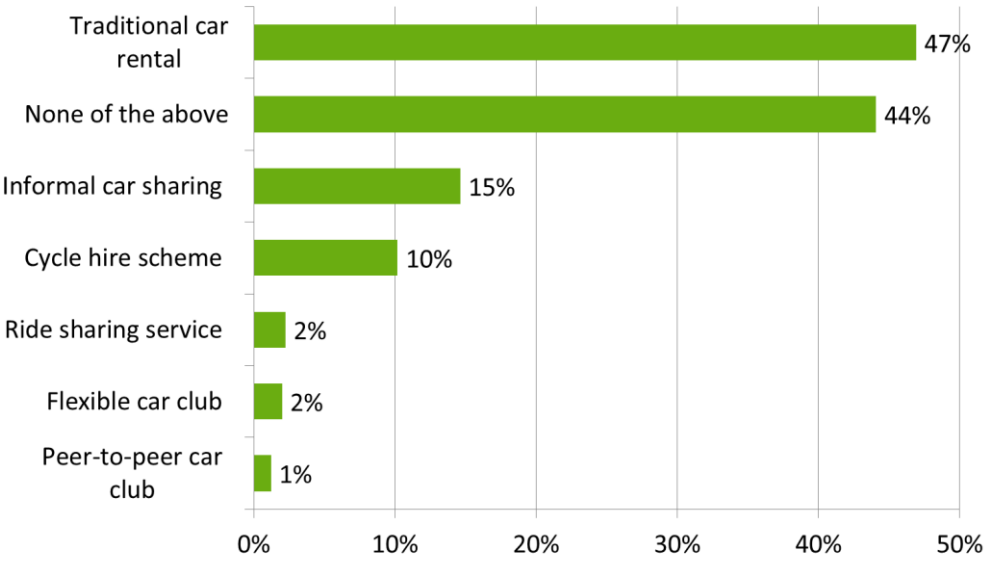
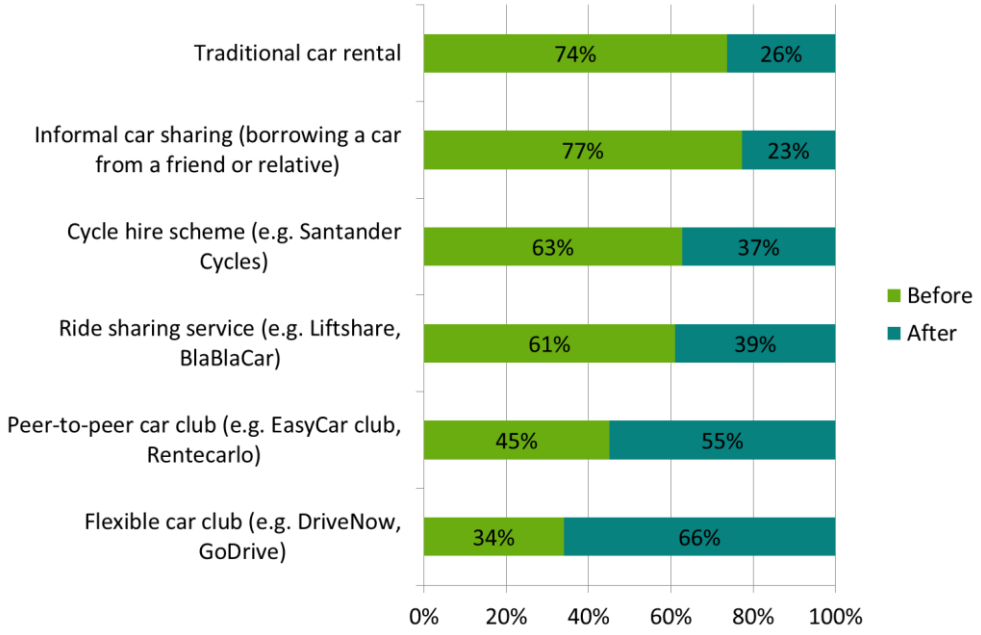


Figure A.15: Did you join before or after joining the round-trip car club: all members who use other types of shared transport



How car club vehicles are used

Figure A.16: Journey purposes: all members

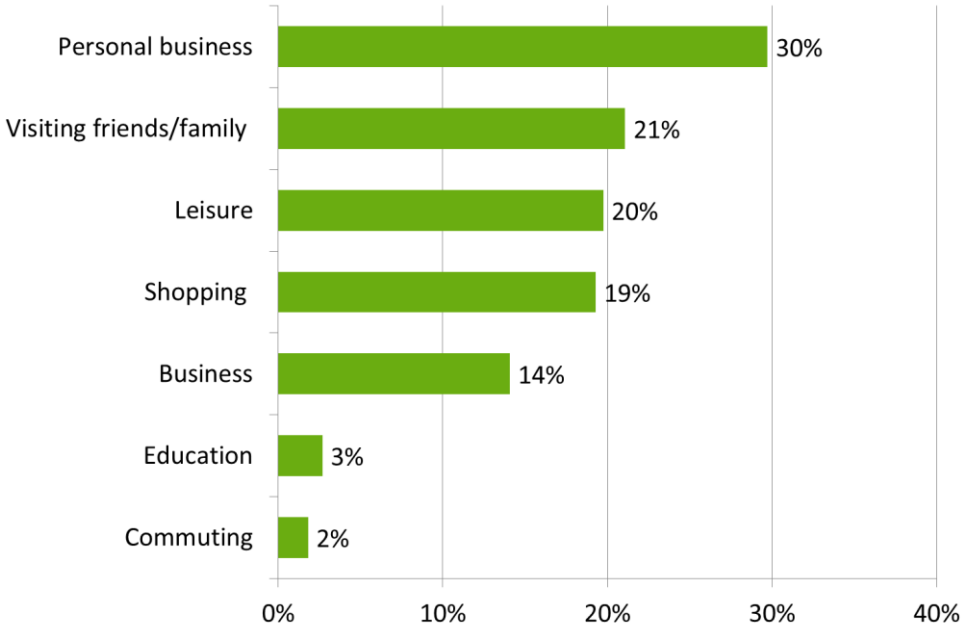


Figure A.17: When did you last use a car club vehicle: all members

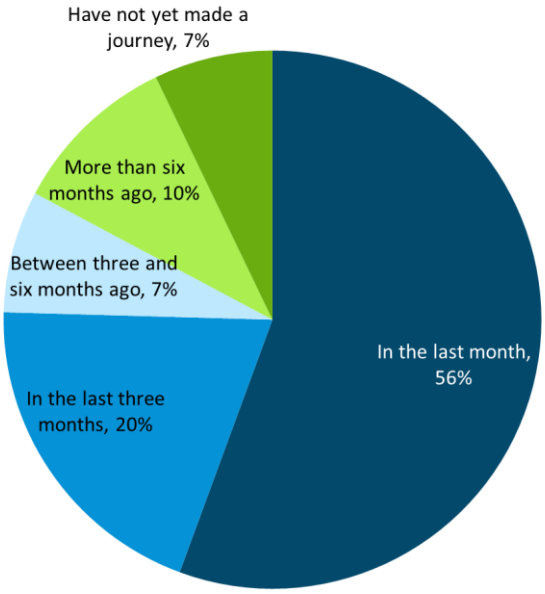


Figure A.18: Reasons for infrequent use: all members who have not made journey in the last six months

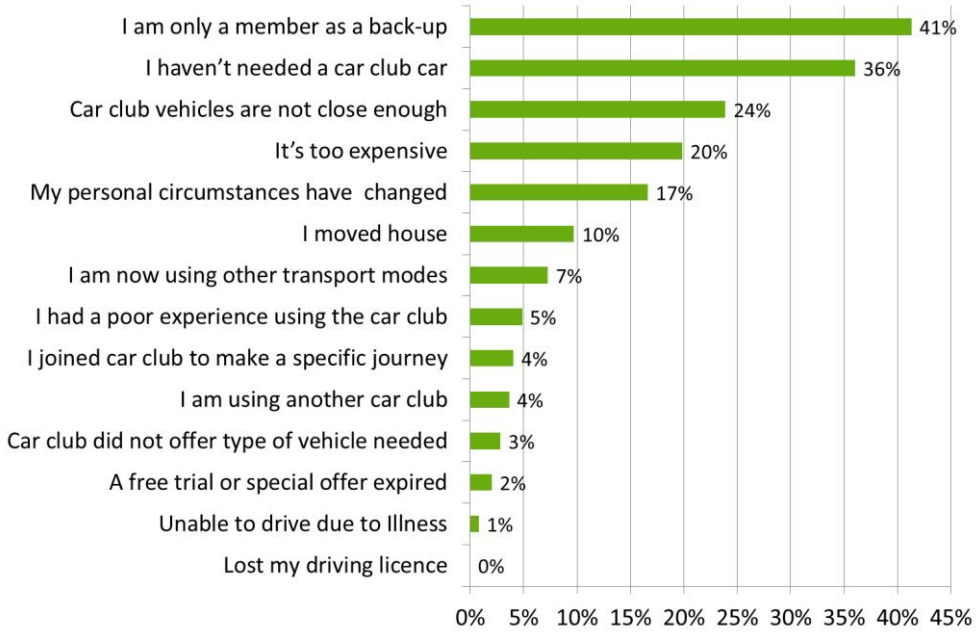


Figure A.19: Reasons for using car club on your most recent car club journey: all members

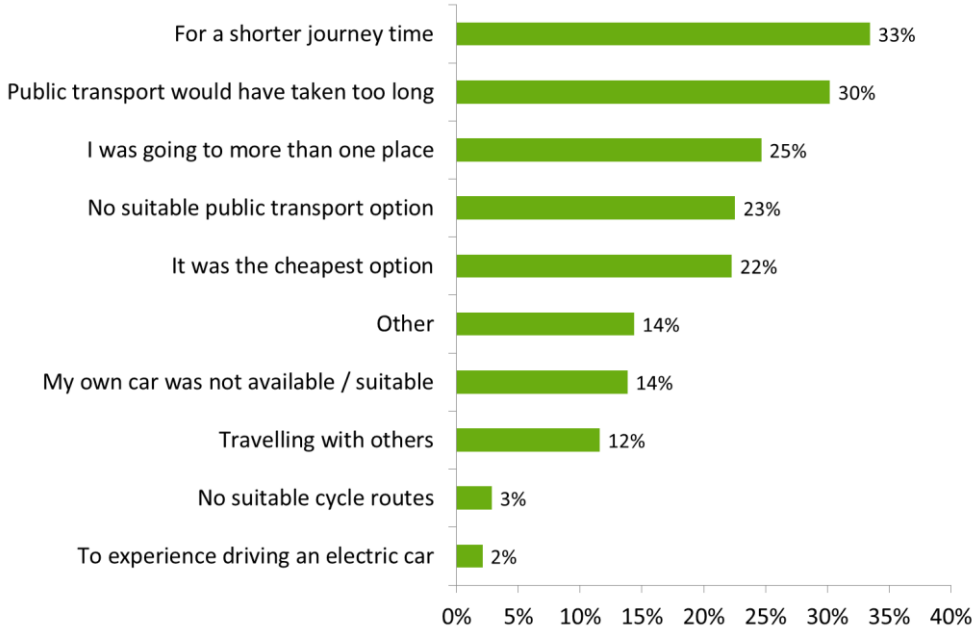


Figure A.20: Difference in journey time if a different mode had been used: all members

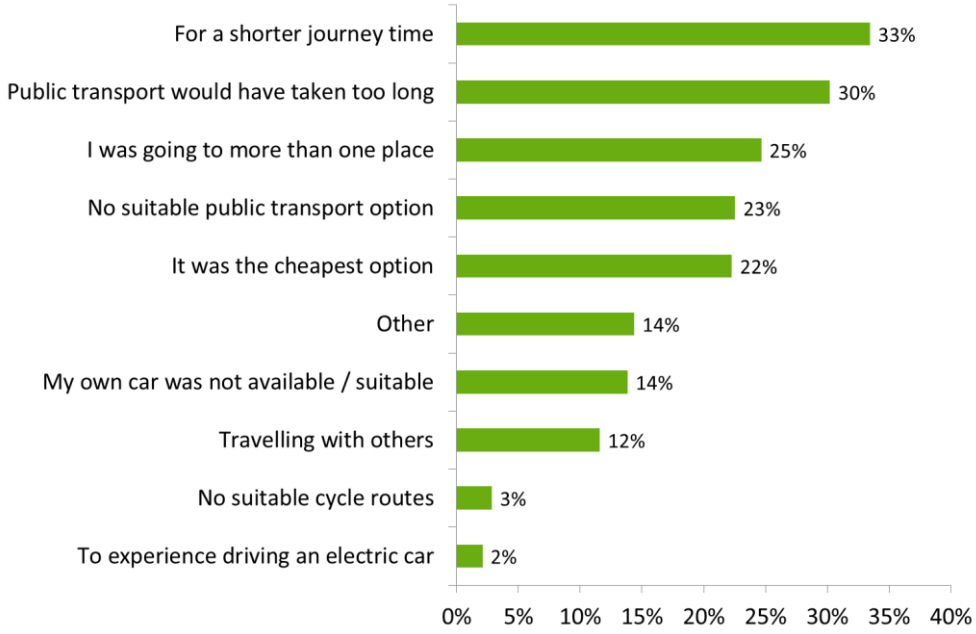


Figure A.21: Satisfaction with car club: all members

Reasons for joining a car club: all members

Figure A.22: Reasons for joining a car club: all members

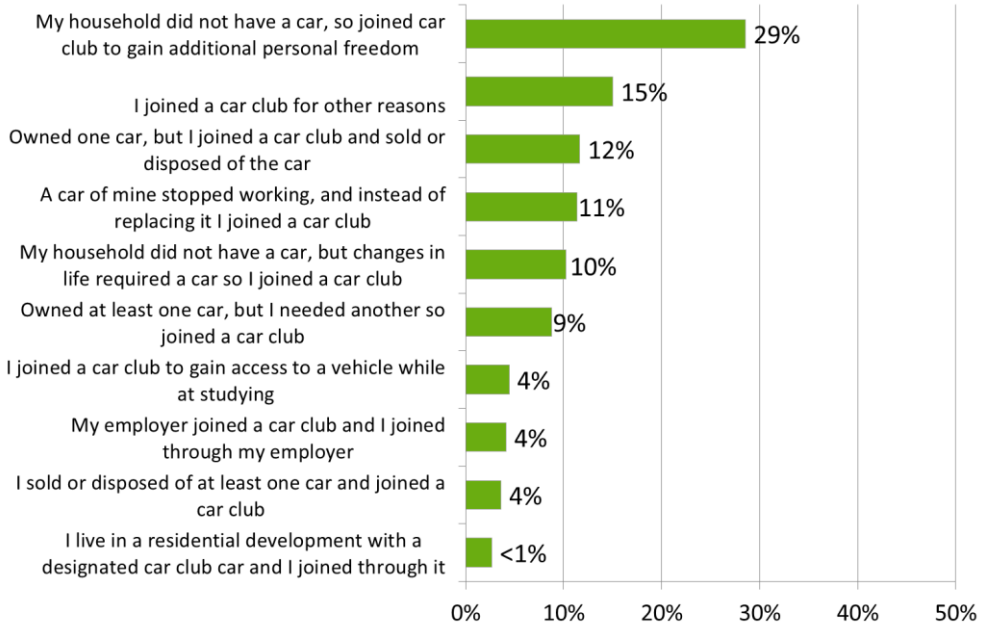
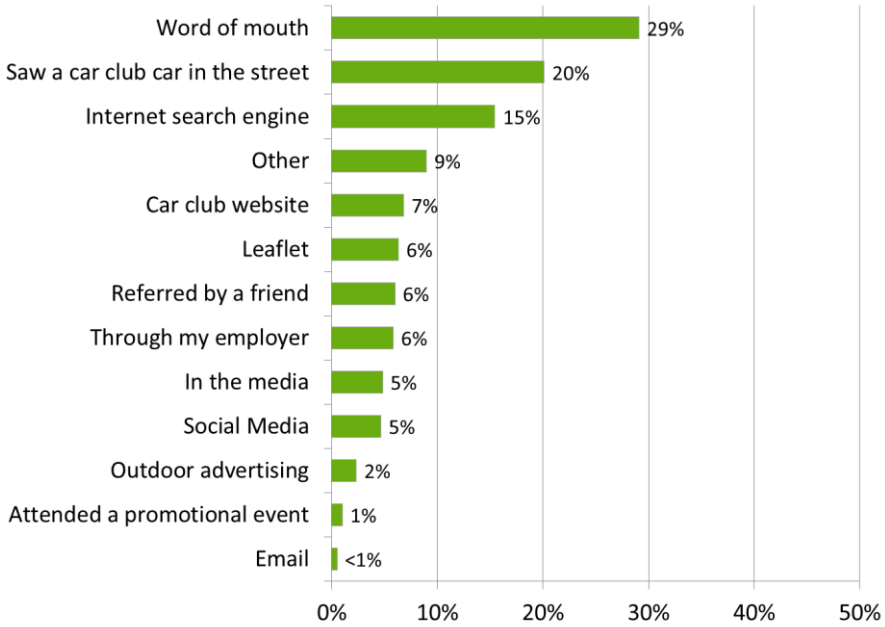


Figure A.23: How new members found out about their car club



Experiences of using electric and hybrid vehicles

Figure A.24: Rating of driving an electric vehicle: all members

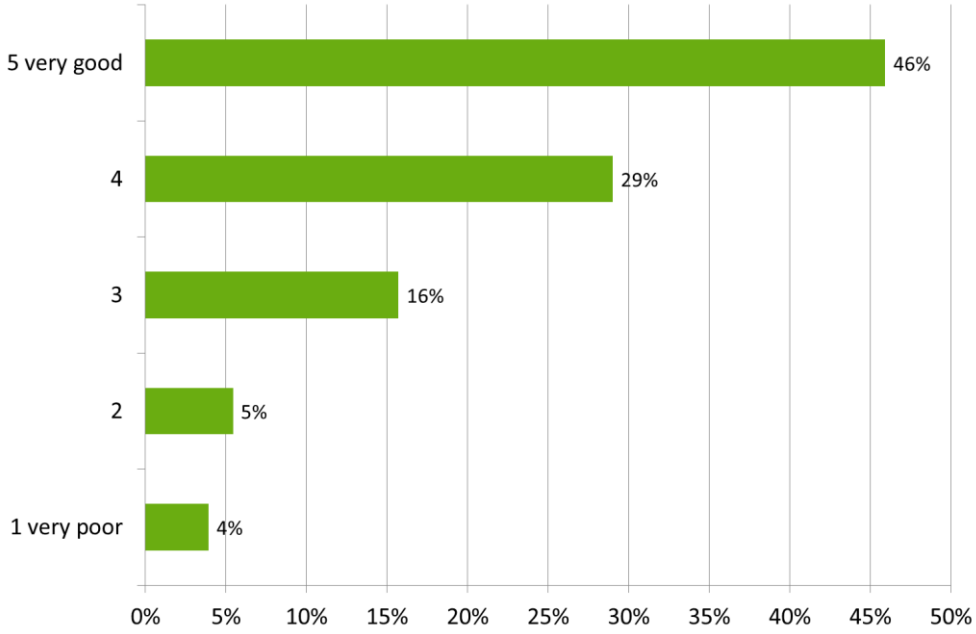


Figure A.25: Rating of using electric vehicle charging points: all members

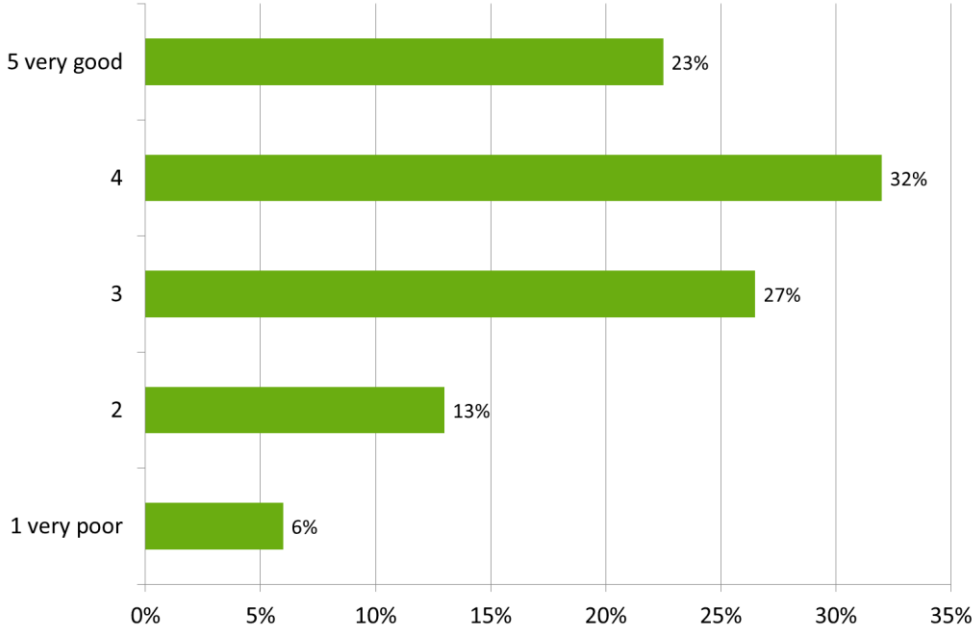


Figure A.26: Reason for choosing an electric vehicle: all members

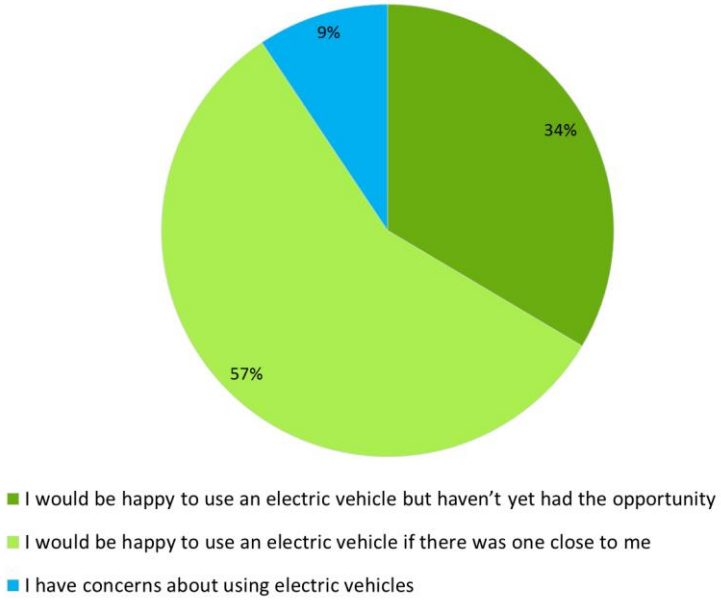


Figure A.27: Rating of using electric vehicle charging points: all members

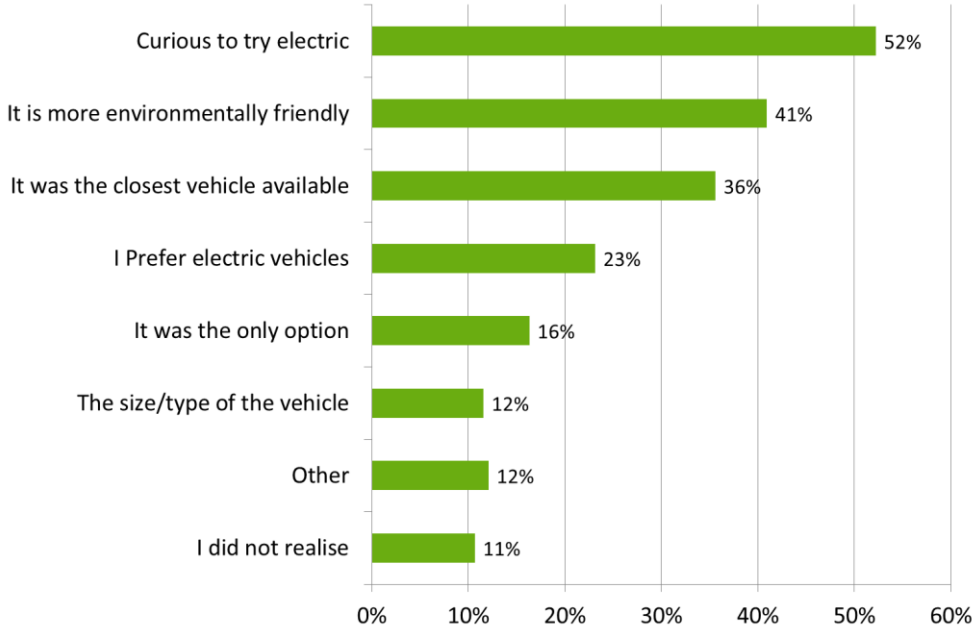
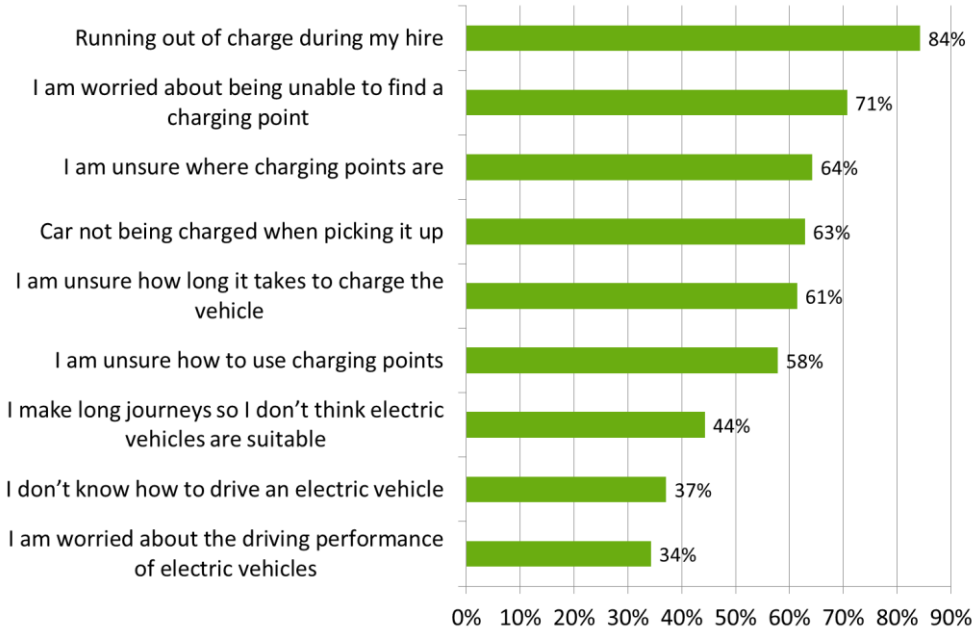


Figure A.28: Concerns with using electric vehicles: all members who are concerned with using electric vehicles



Use of smartphones and apps

Figure A.29: Frequency of smartphone use to access travel information: all members

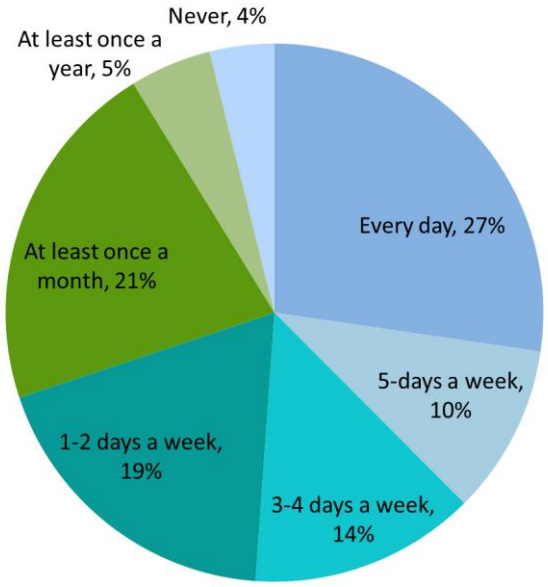
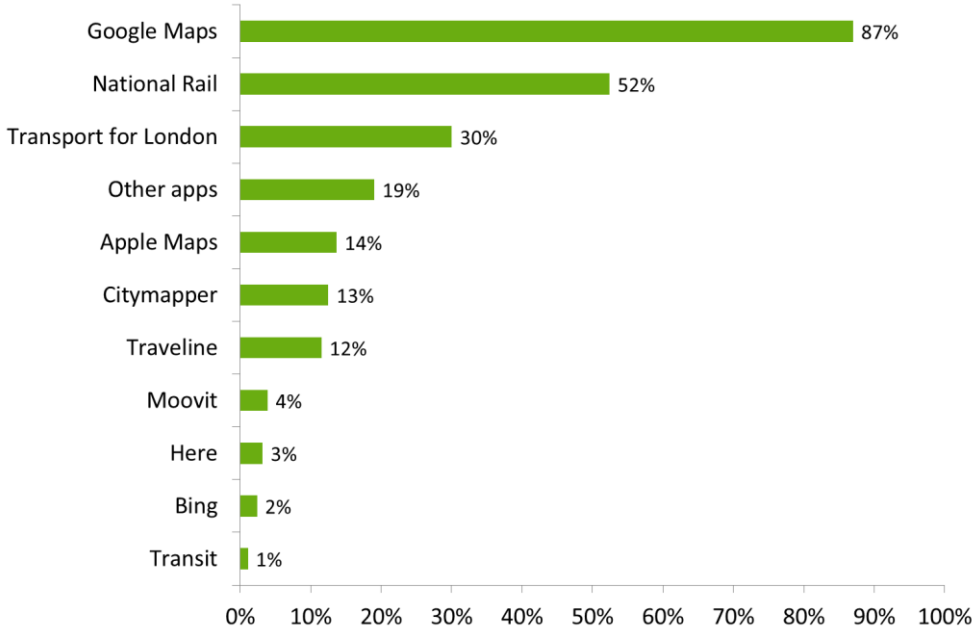


Figure A.30: Apps and websites used most often to access travel information: all members



B Survey Questionnaires

Members' Survey

Carplus annual survey: round-trip V2

City Car Club member survey

Please take a few minutes to answer the following questions. This information will help Carplus – the national organisation for shared mobility - and our funding partners, Transport for London, Transport Scotland and the Department for Transport, to gain a better understanding of how car clubs influence travel patterns, and help in gaining support for putting more car club cars on the street in the future.

The survey closes on 21st December 2015

Survey responses will be kept confidential to each individual's car club operator, Carplus and our survey partners, Steer Davies Gleave. The survey results will be used for research purposes only, as authorised by Carplus.

For further information, contact Kate Gifford, Carplus on 0113 4105 263

Many thanks.

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Where you live

1. Where do you live?

- ◯ England (excluding London)
- ◯ Wales
- ◯ London
- ◯ Scotland

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London boroughs

2. Which London borough do you live in?

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Areas in England

3. Which area in England do you live in?

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Areas in Wales

4. Which area in Wales do you live?

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Areas in Scotland

5. Which area in Scotland do you live in?

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Home postcode

6. What is your full home postcode?

(Postcode information is used for research purposes only and will not be shared with any third party)

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Joining the car club

* 7. How did you hear about City Car Club? Choose all that apply.

- [ ] Word of mouth
- [ ] Referred by a friend (promotional referral offer)
- [ ] Through my employer
- [ ] City Car Club website
- [ ] Internet search engine
- [ ] Email
- [ ] Social Media
- [ ] Saw a City Car Club car in the street
- [ ] Outdoor advertising
- [ ] In the media (e.g. newspaper etc.)
- [ ] Leaflet
- [ ] Attended a promotional event
- [ ] Other (please specify)

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Other car clubs and cycle hire

8. Are you also a member of, or have used any of the following in the last 12 months?

- [ ] "One-way" car club (e.g. DriveNow, GoDrive)
- [ ] "Peer-to-peer" car club (e.g. EasyCar club, Rentecarlo)
- [ ] "Ride sharing" service (e.g. Liftshare, BlaBlaCar)
- [ ] Cycle hire scheme (e.g. Santander Cycles)
- [ ] Informal car sharing (borrowing a car from a friend or relative)
- [ ] Traditional car rental
- [ ] None of the above

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Joining other car clubs / cycle hire

9. For the options below that you are a member of, did you join before or after joining City Car Club?

	Before	After
"One-way" car club (e.g. DriveNow, GoDrive)	◯	◯
"Peer-to-peer" car club (e.g. EasyCar club, Rentecarlo)	◯	◯
"Ride sharing" service (e.g. Liftshare, BlaBlaCar)	◯	◯
Cycle hire scheme (e.g. Santander Cycles)	◯	◯

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Your most recent car club journey

* 10. When did you last use City Car Club?

- ◯ In the last month
- ◯ In the last three months
- ◯ Between three and six months ago
- ◯ More than six months ago
- ◯ Have not yet made a journey

Carplus annual survey: round-trip V2

Reasons for infrequent car club use

11. What are your main reasons for not using City Car Club in the last six months? Choose all that apply.

- [ ] A free trial or special offer expired
- [ ] City Car Club vehicles are not close enough to where I need them
- [ ] City Car Club did not offer the type of vehicle I needed
- [ ] I am only a City Car Club member as a back-up in case I need it
- [ ] I am using another car club
- [ ] I had a poor experience using City Car Club
- [ ] I haven't needed a City Car Club car for any journeys I have made
- [ ] I joined City Car Club to make a specific journey and haven't used it since
- [ ] I moved house
- [ ] It's too expensive
- [ ] Journeys which I previously made by in City Car Club car, I am now making using other transport modes
- [ ] Lost my licence / licence expired for use in the UK
- [ ] My personal circumstances have changed which means the car club is less useful to me
- [ ] Unable to drive due to Illness

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About your last journey

* 12. What was the purpose of the last journey you made in a City Car Club car? Choose all that apply.

- [ ] Business (a work-related trip that is not your commute)
- [ ] Education (including doing the school run)
- [ ] Shopping
- [ ] Personal business (e.g. going to the bank, hairdressers, dentist etc) or giving a lift
- [ ] Visiting friends/family
- [ ] Leisure (e.g. going swimming or to the cinema)
- [ ] Commuting (your journey to/from work)

13. How many people were you travelling with?

Adults	
Children	

14. Were you carrying any large items of furniture, luggage or shopping during any part of your journey?

- ◯ Yes
- ◯ No

Carplus annual survey: round-trip V2

Alternatives to City Car Club

15. If a City Car Club car had not been available, how would you have made this journey? Choose all that apply.

- ☐ Would not have made the journey
- ☐ Bicycle (my own)
- ☐ Bicycle (bike hire)
- ☐ Bus
- ☐ Car driver (private car)
- ☐ Car driver (other car club car)
- ☐ Car passenger (either private or car club car)
- ☐ On-demand taxi (a taxi booked through a mobile phone app e.g. Uber)
- ☐ Other taxi or minicab
- ☐ Train
- ☐ Underground, tram or other light rail
- ☐ Walking

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Your last journey: reasons for using the car club

* 16. Why did you choose to use City Car Club for this journey? Choose all that apply.

- [ ] For a shorter journey time
- [ ] I was carrying luggage / bulky items
- [ ] I was going to more than one place
- [ ] It was the cheapest option
- [ ] No suitable cycle routes
- [ ] No suitable public transport option
- [ ] Public transport would have taken too long / too many changes
- [ ] My own car was not available / suitable
- [ ] To experience driving an electric car
- [ ] Travelling with others
- [ ] Other (please specify)

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Your last journey: time

17. If you had travelled in a different way, would this journey have taken more time, less time or about the same amount of time.

	More time	Less time	About the same	Not an alternative option for this trip
Walked	○	○	○	○
Cycled	○	○	○	○
Used public transport	○	○	○	○
Used a taxi	○	○	○	○

Carplus annual survey: round-trip V2

Reasons for joining City Car Club

18. Please select the statement that best characterises the household circumstances under which you joined City Car Club.

- ◯ A car of mine stopped working, and instead of replacing it I joined City Car Club
- ◯ I am at university/college, and I joined City Car Club to gain access to a vehicle while at studying.
- ◯ I live in a residential development with a designated City Car Club car and I joined through its membership arrangement
- ◯ My employer joined City Car Club, and I joined through my employer.
- ◯ My household did not have a car, but changes in life required a car and I joined City Car Club instead.
- ◯ My household did not have a car, but joined City Car Club to gain additional personal freedom.
- ◯ Owned one car, but I joined City Car Club and sold or disposed of the car.
- ◯ Owned more than one car, but I sold or disposed of at least one car and joined City Car Club.
- ◯ Owned at least one car, but I needed an additional car for greater flexibility, and joined City Car Club instead of acquiring an additional car.
- ◯ I joined City Car Club for reasons other than those listed above. Please explain

Carplus annual survey: round-trip V2

How you get around

19. In the last 12 months, how often have you used the following?

	At least once a week	At least once a month	At least once a year	Never
Bicycle	○	○	○	○
Bus	○	○	○	○
Car driver (private car)	○	○	○	○
Car driver (City Car Club car)	○	○	○	○
Car driver (other car club car)	○	○	○	○
Car passenger (either private or car club vehicle)	○	○	○	○
On-demand taxi (a taxi booked through a mobile phone e.g. Uber)	○	○	○	○
Other taxi or minicab	○	○	○	○
Train	○	○	○	○
Underground, tram or other light rail	○	○	○	○
Walking (for 20 minutes or more without stopping)	○	○	○	○

Carplus annual survey: round-trip V2

Year of joining

* 20. Which year did you join City Car Club?

Carplus annual survey: round-trip V2

Month of joining

21. Which month in 2015?

- ◯ January
- ◯ February
- ◯ March
- ◯ April
- ◯ May
- ◯ June
- ◯ July
- ◯ August
- ◯ September
- ◯ October
- ◯ November
- ◯ December

Carplus annual survey: round-trip V2

How you got around before joining City Car Club

22. Before joining City Car Club, how often did you use the following?

	At least once a week	At least once a month	Never	At least once a year
Bicycle	◯	◯	◯	◯
Bus	◯	◯	◯	◯
Car driver (private car)	◯	◯	◯	◯
Car driver (other car club car)	◯	◯	◯	◯
Car passenger (either private or car club vehicle)	◯	◯	◯	◯
On-demand taxi (a taxi booked through a mobile phone e.g. Uber)	◯	◯	◯	◯
Other taxi or minicab	◯	◯	◯	◯
Train	◯	◯	◯	◯
Underground, tram or other light rail	◯	◯	◯	◯
Walking (for 20 minutes or more without stopping)	◯	◯	◯	◯

Carplus annual survey: round-trip V2

Cars in your household

* 23. How many cars did your household own before joining City Car Club?
(please include lease cars or company cars where appropriate)

◯ None ◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 or more

* 24. How many cars does your household own now?
(please include lease cars or company cars where appropriate)

◯ None ◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 or more

Carplus annual survey: round-trip V2

Impact of City Car Club on private car purchase

* 25. Have you sold or otherwise disposed of and not replaced a car in the last 12 months?

◯ Yes

◯ No

Carplus annual survey: round-trip V2

The car you sold / disposed of

26. Please tell us how many miles you drove in that car in the 12 months before you sold / disposed of it

[ ]

* 27. When you sold / disposed of your car, was City Car Club...?

◯ The main reason ◯ A major factor ◯ A minor factor ◯ Not a factor

Carplus annual survey: round-trip V2

Buying a car

* 28. If you hadn't joined City Car Club, would your household have bought a private car?

- ◯ Yes
- ◯ No

29. Do you think that joining City Car Club has made it more or less likely that your household will buy a car (or another car) in the next few years?

- ◯ More likely
- ◯ Less likely
- ◯ No effect
- ◯ Don't know

30. If City Car Club no longer had cars in your area, would you:

- ◯ Definitely buy a car
- ◯ Probably buy a car
- ◯ Maybe buy a car
- ◯ Probably not buy a car
- ◯ Definitely not buy a car

Carplus annual survey: round-trip V2

Private car mileage

31. What was the approximate mileage driven by your household in the last 12 months in car club vehicles and private vehicles?

	Car club vehicles	Private vehicles
Approximate mileage driven		

32. How has your household's annual car driver mileage (including car club cars, private cars) changed since joining City Car Club?

◯ Decreased ◯ No change ◯ Increased ◯ Don't know

Carplus annual survey: round-trip V2

Changes in mileage

33. Please provide an estimate of the CHANGE in mileage (i.e. the amount of increase or decrease)

Carplus annual survey: round-trip V2

Electric vehicles

* 34. Have you ever used an electric City Car Club vehicle?

- ◯ Yes
- ◯ No

Carplus annual survey: round-trip V2

Using an electric City Car Club vehicle

35. Why did you choose to use an electric City Car Club vehicle? Choose all that apply

- ☐ I prefer driving electric vehicles
- ☐ I was curious to try an electric vehicle
- ☐ It is more environmentally friendly
- ☐ It was the closest vehicle available to me (your journey to/from work)
- ☐ It was the only option
- ☐ The size/type of the vehicle
- ☐ I did not realise it was an electric vehicle when booking
- ☐ Other (please specify)

36. Please rate your experience of driving an electric City Car Club vehicle on the scale below.

◯ 1 very poor ◯ 2 ◯ 3 ◯ 4 ◯ 5 very good

37. Please rate your experience of using charging points for an electric City Car Club vehicle on the scale below.

◯ 1 very poor ◯ 2 ◯ 3 ◯ 4 ◯ 5 very good ◯ Not applicable

Carplus annual survey: round-trip V2

Experiences of charging points

38. Why have you rated your experience of using charging points as poor or very poor?

Carplus annual survey: round-trip V2

Views on electric City Car Club vehicles

39. Which of the following statements applies most closely to you?

◯ I would be happy to use an electric vehicle if there was one close to me

◯ I would be happy to use an electric vehicle but haven't yet had the opportunity

◯ I have concerns about using electric vehicles

Carplus annual survey: round-trip V2

Concerns about electric vehicles

40. What are your main concerns? Choose all that apply.

- [ ] Running out of charge during my hire
- [ ] Car not being charged when picking it up
- [ ] I am unsure how to use charging points
- [ ] I am unsure where charging points are
- [ ] I am worried about being unable to find a charging point during my journey
- [ ] I am unsure how long it takes to charge the vehicle
- [ ] I make long journeys so I don't think electric vehicles are suitable
- [ ] I am worried about the driving performance of electric vehicles
- [ ] I don't know how to drive an electric vehicle

Carplus annual survey: round-trip V2

Smartphone apps

* 41. Do you use a smartphone?

- ◯ Yes
- ◯ No

Carplus annual survey: round-trip V2

Smartphones and travel apps

42. How often do you use it to obtain travel information about local journeys / find your way?

- ◯ Every day
- ◯ 5-days a week
- ◯ 3-4 days a week
- ◯ 1-2 days a week
- ◯ At least once a month
- ◯ At least once a year
- ◯ Never

43. Which apps / websites do you use most often for this purpose?

- [ ] Google Maps
- [ ] Apple Maps
- [ ] Bing
- [ ] Here
- [ ] Transit
- [ ] Other (please specify)
- [ ] Moovit
- [ ] Traveline
- [ ] Transport for London
- [ ] National Rail
- [ ] Citymapper

Carplus annual survey: round-trip V2

Case studies

44. Are you happy for Carplus to contact you for further research?

- ( ) Yes
- ( ) No

Carplus annual survey: round-trip V2

Your contact details

45. Please insert your name and email address in the boxes below

Name

Email Address

46. Carplus is compiling case studies of car club members to understand more about the people who use car clubs. If you are willing to be a case study, please use this box to tell us a little bit about yourself and how you use City Car Club.

Carplus annual survey: round-trip V2

Thank you!

Thank you for completing our survey!

If you would like to find out more about Carplus and our work, please visitwww.carplus.org.uk

If you would like to find out more about City Car Club and where car club vehicles are located, please visit https://www.citycarclub.co.uk

Operators' Survey

Operator Survey 2015

Please complete the form below and return to Kate@carplus.org.uk by Monday 14th December 2015.

1. How many members do you have as at end November 2015?

Members	**Number of members**
Individual	
Corporate	
Total	

2. How many members hired a car in the previous 12 months as at end of November 2015?

	Number of members
Members who hired a car in last year	

3. Where do car club members live?

Member location	**Number of members**
London	
England and Wales (outside London)	
Scotland	
Total	

4. What is the gender split of members?

Gender	**Number of members**
Male	
Female	
Total	

5. How many members are there in each age band, as at end of November 2015?

Age	**Number of members**
Under 21	
21 to 24	
25 to 29	
30 to 34	
35 to 44	
45 to 49	
50 to 54	
55 to 59	
60 or over	
Total	

6. What is the mean average distance travelled per hire (in miles)?

	Distance in miles (to 2 decimal places)
Mean average distance travelled per hire	

7. What is the average length of hire period (in hours)?

	Time in hours (to 2 decimal places)
Average length of hire	

8. What is the average number of hires per member per year (for those who have hired a car in the last 12 months)?

	Number of hires (to 2 decimal places)
Average hires per 'active' member	

9. What is the distribution of number of hires per member per year (last year to end November 2015)?

Hires in last 12 months	**Number of members**
None	
1 to 5	
6 to 10	
11 to 15	
16 to 20	
21 to 25	
26 to 50	
51 to 100	
Total	

10. What is the distribution of mileage travelled per hire (last year to end November 2015)

Mileage	**Number of hires in last year**
0 to 5	
6 to 10	
11 to 15	
16 to 20	
21 to 25	
26 to 50	
51 to 100	
100+	
Total	

11. On average, how many hours per day are your vehicles booked out / in use?

	Time in hours (to 2 decimal places)
Average usage (hours) per day over whole fleet	

12. Please tell us what how your vehicle bookings are made:

	Percentage (%)
Online	
Via an app	
In vehicle	
By phone	
Other (please provide details)	

13. A) What proportion of your vehicles are:

	Percentage (%)
On-street bays	
Off street bays	
Not applicable	

B) Please tell us approximately what proportion of those on-street bays have information about the car club on boards located nearby:

	Percentage (%)
Proportion of on-street bays that have information boards	

C) Do you think we should be lobbying for wider usage of at-bay information?

YES/NO

Please feel free to provide us with further information to expand on your response below.

Many thanks for taking the time to provide us with this data. If you have any queries please contact Kate Gifford on kate@carplus.org.uk.

C Emissions Analysis and Profiling

Introduction

The following section reports on the emissions profiles of the national car club operators in England and Wales. It is based on a comprehensive set of data that has been collected about UK car clubs. The data has been independently verified by Gfleet Services Ltd using vehicle registration marks (VRM) and published datasets from the DVLA (Driver and Vehicle Licensing Agency), VCA (Vehicle Certification Agency) and vehicle manufacturers which enables the production of a fuller and more accurate profile (including Nitrogen Oxides NO_X and Particulates PM_{10}).

The car club operators were asked to provide the vehicle registration marks (VRM) of all their vehicles operational between the 1st November 2014 and the 31st October 2015 (12 months) together with the mileage driven during that period (new for this year) and the dates when vehicles joined or left the fleet during the year.

Seven UK national car club operators supplied this data (two did not provide mileage data), one club did not submit any data and another was not able to provide the two key data elements (VRM and mileage). Seven national car club operators supplied data but of those two did not provide any mileage data. One national club did not submit any data and another was not able to provide the two key data elements (VRM and mileage). In total 12 community clubs submitted data and information for a further six community clubs was submitted by their franchise operator.

The VRM data from the seven clubs was submitted to CarweB and a full performance and environmental data set was obtained for each vehicle based on the data held by the DVLA and the manufacturer. For most vehicles air quality emission data (Nitrogen Oxides NO_X, Particulates PM_{10}, Hydrocarbons HC, and Carbon Monoxide CO) was not available and this was obtained by matching the vehicle details from the DVLA with its published emission figures downloaded from the VCA. The vehicle's safety performance in the European New Car Assessment Programme (NCAP) was also established using DVLA make, model and year of registration.

England and Wales Car Clubs

The data presented in the following section relates to the fleets of the four commercial national car club operators who operate vehicles in England and Wales and who provided usable data. London car club fleets are excluded from this data set and are reported separately. All data is anonymous to protect the identity of the car club operators.

Carbon Emission Profile - Cars

When a car is registered with the DVLA its carbon emissions as measured in grams of carbon dioxide per kilometre (gCO_2/km or g/km) must be submitted. The data is supplied by the manufacturer and may vary within a model range depending on the vehicle energy source, engine size and specification.

Since 2001 the carbon emission data has been used to determine the Vehicle Excise Duty (VED) payable on a car. For that purpose, the emissions have been broken down into 13 bands from Band A (less than or equal to 100 g/km) to Band M (over 255 g/km). During 2014/15 no duty was payable on a Band A car while on a Band M car the duty was £500/annum.

The current definition of an ultra-low emission (ULE) car is a vehicle with published carbon emissions of 75 g/km or less[16]; this "standard" only relates to carbon emission and not to air quality emissions. At the end of October 2015 there were 143 (22%) cars on the England and Wales fleet that met the ULE standard; 70 (11%) petrol-electric hybrids (Toyota Yaris), 12 plug-in petrol hybrids (Prius, Ampera and Outlander) and 61 (9%) zero emission electric vehicles (mainly Nissan Leaf, Renault Zoe and Citroen C-Zero).

To achieve a reduction in UK transport carbon dioxide emissions UK commercial fleet operators are encouraged to select vehicles under 100 g/km (Band A). Carplus Accreditation requires that Car Club operators use vehicles that are less than four years old (for full accreditation) and less than eight years (for basic accreditation) but there is no upper limit on carbon emissions. The age limit is an attempt to ensure that the best quality, lowest emission vehicles are made available to car club members. All of the major back to base car club operators are currently accredited with Carplus.

Table C.1 shows the number and proportion of England & Wales car club cars in each VED emission band as at the period end (31st October 2015). The data made available relating to fleet changes meant it was possible to accurately determine the number of vehicles on fleet at the period end (654). In 2013/14 this was not possible and the fleet size reported (802) included *all* vehicles that had been on the England & Wales car club fleet during the survey's five-month sample period. In 2014/15 there were 864 different vehicles on the England & Wales car club fleet during the year.

Table C.1 Carbon emission profile of the England & Wales commercial car club fleet (Period End)

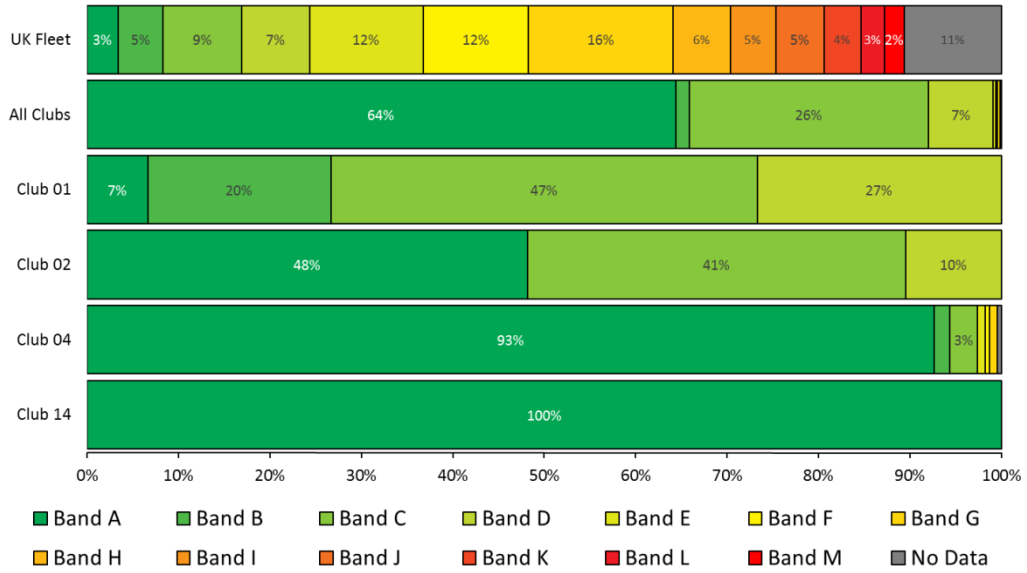
CO2 Emission Band (gCO2/km)		Number	%
Band A	<=100	421	64.4%
Band B	101-110	10	1.5%
Band C	111-120	171	26.1%
Band D	121-130	46	7.0%
Band E	131-140	2	0.3%
Band F	141-150	1	0.2%
Band G	151-165	2	0.3%
Band H	166-175	0	0.0%
Band I	176-185	0	0.0%

[16] https://www.goultralow.com/what-are-go-ultra-low-cars/#

CO2 Emission Band (gCO2/km)		Number	%
Band J	186-200	0	0.0%
Band K	201-225	0	0.0%
Band L	226-255	0	0.0%
Band M	256+	0	0.0%
No data available		1	0.2%
Total		654	

Figure C.1 shows the profile of the England & Wales commercial car club fleet in relation to the 2014 UK national car fleet data[17]. Clearly most England & Wales car club vehicles (92%) are in the lowest three emission Bands A, B and C with nearly two thirds (65%) in Band A. In the UK fleet the largest proportion of vehicles (16%) are in Band G (151-165 g/km).

Figure C.1 Comparison of England & Wales commercial car clubs VED band profile (Period End)



The high proportion of Band A vehicles is reflected in the England and Wales car club fleet average carbon emission which is shown in Table C.2. As at 31st October 2015 the England & Wales car club cars had average carbon emissions 42% lower than the 2014 average UK car and 8% lower than the 2014 car club fleet.

Table C.2: Average Carbon Emissions of England and Wales Car Clubs (Period End)

	2011	2012	2013	2014	2015
England & Wales Car Clubs	129.6	108.8	107.4	98.0[18]	90.0[16]
UK Car Fleet17	162.8	160.1	157.0	153.9	

[17] DfT Statistics: Table VEH0206. Licensed cars by CO_2 emission band, Great Britain, April 2015. Next Update April 2016.

[18] Average includes "zero emission" electric vehicles.

Table C.3 Minimum, average and maximum carbon emissions (g/km) of England & Wales car clubs (Period End)

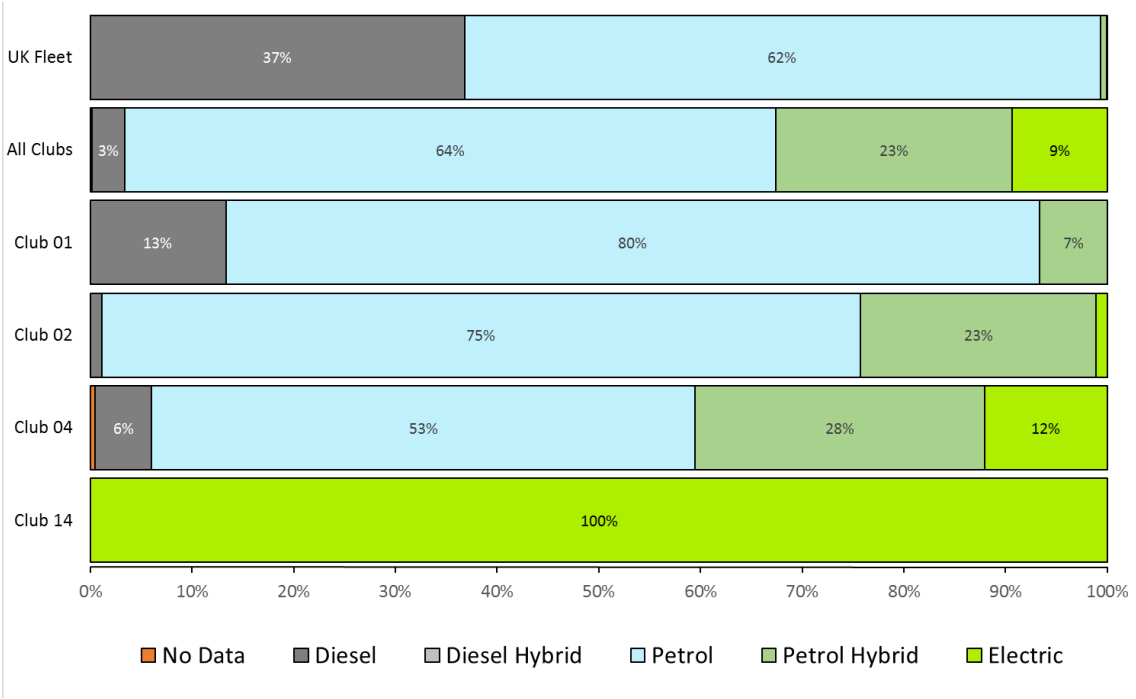
Fleet	Min g/km	Av g/km	Max g/km
Club 01	27.0	110.8	122.0
Club 02	0.0	101.7	129.0
Club 04	0.0	80.0	162.0
Club 14	0.0	0.0	0.0

While three clubs included zero emission vehicles in their England and Wales fleet, one club had none and had the highest average carbon emission. The range in emissions is also variable with Club 14 being all electric and Club 04 having zero emission EVs as well as the vehicle with the highest carbon emissions in the England & Wales fleet (162 g/km).

Fuel Profile -Cars

In terms of the fuels used, clubs in England & Wales show similar strategies (Figure C.2) with the exception of Club 14 which is all EV. Petrol is clearly the dominant fuel type and petrol hybrids are also very popular. The proportion of diesel vehicles in the car club fleet is significantly lower than in the UK fleet.

Figure C.2: England & Wales car club fuel type (Period End)



It is of note that there is no specific combination of fuel types that results in low carbon emissions, in the England & Wales fleets it is down to the model of cars selected and Club 04 has achieved a low average by mixing petrol cars with petrol hybrids and zero emission EVs.

EVs are rated as zero emission at their point of use but their actual carbon impact will depend on the source of the electrical energy used to charge the vehicle. The VCA records electric vehicle energy efficiency as miles/kWh. Performance ranges from 4.1 miles/kWh (2014 Nissan Leaf) to 4.9 miles/kWh (Peugeot iOn and Citroen C-Zero). For comparison a diesel vehicle with

carbon emissions of 100 g/km will be achieving 1.52 miles/kWh (there is about 10.6 kWh of energy in a litre of diesel).

The Defra UK grid emission factor for 2014/15 was 462 gCO_2e/kWh and the carbon emissions of cars charged from the grid (without a real world adjustment) ranges from 58 g/km (iOn/C-Zero) to 70 g/km (Leaf). In 2013/14 the carbon intensity of the grid was 494 gCO_2e/kWh so the carbon intensity of the grid has fallen by 32 gCO_2e/kWh or 6.5% as a direct result of the increase in the proportion of electricity generated from renewables. This will have resulted in a similar reduction in the carbon intensity of the electric vehicle fleet.

If electric vehicles are charged from renewable sources or from electricity generated in a local combined heat and power (CHP) plant the carbon intensity of the vehicles will be significantly lower or even zero although that will depend on how the Renewable Obligation Certificates (ROCs) have been managed. We have no information about the energy sources used to charge the EVs included in this analysis[19].

Carbon Emissions & Fuel Profile – Vans

There is no equivalent carbon banding scheme in place for vans and the car banding is not applicable as it does not reflect the wide range in size and load carrying capability of vans. Published carbon emission data (g/km) is available for most vans registered since 2009 but was not obligatory until 2010.

During 2014/15 there were 37 vans available to Car Club members in England and Wales. They included five electric Renault Kangoo, 17 Peugeot Experts, five Toyota Proace and eight VW Transporter T28. With the exception of the Kangoo all the vans were diesel powered. The Peugeot Expert has published carbon emissions of 168 g/km while the VW Transporter T28 has published carbon emissions of 198 g/km; the Kangoo is a zero emission vehicle (at the point of use).

Air Quality – Cars

As well as carbon dioxide emissions, internal combustion engines (ICE) also produce a range of other gases many of which are toxic and these impact on local air quality. These toxic emissions are meant to be regulated by the Euro emission standards scheme. The current standard is Euro 6 which was mandatory for all newly registered cars from September 2015. The DVLA classifies electric cars as Euro 6 which does not reflect the fact that they are zero emission so for clarity all electric cars have been categorised in this report as ZE (Zero Emission).

[19] Carplus would like to be able to present this analysis in 2016/17.

Figure C.3 Euro emission profile of England & Wales car club fleet (Period End)

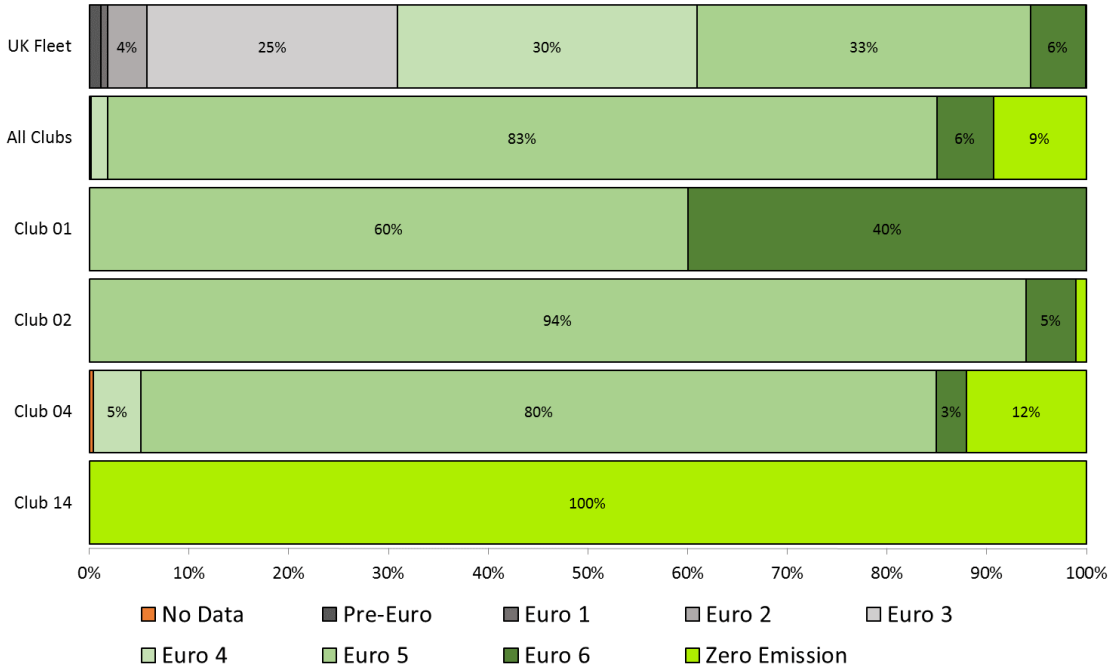


Table C.4 shows the impact of fuel type on air quality emissions – it is based on the period end fleet. Clearly fleets with a low proportion of diesel vehicles have the lowest average nitrogen oxides and particulate emissions. The car club fleet has significantly reduced air quality impacts compared to the UK car fleet.

Table C.4: Fuel Type and Air Quality Emissions (Period End)

Car Club	Diesel	Petrol	Electric	Petrol/Electric Hybrid	Average NOX mg/km	Maximum NOX mg/km	Average PM10 mg/km	Maximum PM10 mg/km
Club 01	13%	80%	7%	0%	47	142	0.04	0.60
Club 02	1%	75%	23%	1%	17	139	0.00	0.00
Club 04	6%	53%	28%	12%	18	217	0.07	10.00
Club 14	0%	0%	0%	100%	0	0	0.00	0.00

The principal pollutants of concern in urban areas across England and Wales are NO_X (nitrogen oxides and in particular nitrogen dioxide, NO_2) and PM_{10} (particulates under 10 microns) and their output is measured in milligrams per kilometre (mg/km). There are over 200 UK local authorities with Air Quality Management Areas (AQMAs) and most of these (over 80%) are associated with nitrogen dioxide levels.

The Euro emission standards for diesel and petrol cars are not the same and for any given standard the diesel vehicle is permitted to be more polluting. For example, in 2014, with the first phase of the introduction of Euro 6, new diesel cars were meant to achieve the same NO_X emission standard that Euro 4 petrol cars were required to meet in 2005. In practice the difference between the two is often greater as petrol is a cleaner burning fuel.

Table C.5 shows the published emissions of the Euro 6 Toyota Yaris which is available as a diesel, petrol and petrol-electric hybrid car and is widely used in the UK car club fleet. There

were 70 petrol-electric Toyota Yaris Hybrids in the England and Wales fleet at the end of the reporting period.

Table C.5: Impact of fuel type on a Euro 6 Toyota Yaris emissions

Yaris Model	Fuel	CO2 g/km	NOX	PM10
1.4 D-4D	Diesel	91	50	0
1.0 VVT-i	Petrol	99	15	N/A
1.5 VVT-i	Petrol Electric Hybrid	75	6	N/A

While the Euro 6 diesel Yaris has carbon emissions of only 91 g/km – 10% better than the petrol car – its published NO_X emissions are over three times greater. The petrol-electric hybrid Yaris achieves both low carbon emissions and low NO_X emissions and is therefore better than both the diesel and petrol versions.

There is mounting scientific evidence to show that the real world impact of the Euro emission scheme has been disappointing with little real difference in the on-the-road performance of Euro 3, Euro 4 and Euro 5 cars. In urban use cars are producing significantly higher emissions than would be suggested from the standards and although Euro 6 cars have been shown to perform better than Euro 5 cars their emissions are still higher than would be expected.

Recently the Volkswagen Audi Group (VAG) has admitted to cheating the air quality regulation system by programming the engine management software of some VW diesels to detect when the vehicle is on test and to modify its emissions to meet the US standard while continuing to produce high levels of emissions when in normal use. However even vehicles that do not use a cheat strategy do not meet the standard in real world use with the real world performance of some manufacturers being worse than VW. The number of diesel vehicles in the England & Wales fleet is low and there were only 12 VAG vehicles on fleet with the 1598cc diesel engine that may be fitted with the emission test defeat software.

The failure of the Euro standard system to improve real-world emissions of cars means that more onerous restrictions may be needed if the UK's towns and cities are to meet 2010 air quality standards and in Europe some cities (e.g. Paris) are already considering a ban on diesel vehicles from 2020. The only vehicles that we know are not producing harmful emissions in use are the zero emission electric cars and although there may be toxic emissions associated with the generation of electricity these occur at the site of generation and not in the centre of towns and cities.

The actual human health impact cause by vehicle emissions and poor air quality is under constant re-assessment. The most recent (2015) assessment from Defra[20] suggests that in the UK each year 23,500 premature deaths are associated with NO_2 and a further 29,000 with PM_{10} and $PM_{2.5}$. This gives a total of 52,500 premature deaths annually due to two pollutants both of which are produced by diesel engines. In comparison the number of road deaths in 2014 was 1,775 (an increase of 4% compared with 2013). Poor air quality has now been scientifically associated with coronary disease, stroke, low birth weight and dementia.

[20] **Draft plans to improve air quality in the UK, Tackling nitrogen dioxide in our towns and cities**. UK Overview Document, September 2015, Defra.

The latest data (January 2016) from Public Health England[21] (which also covers Wales, Scotland and Northern Ireland) shows that, after a steady fall from 2010 to 2012, the fraction of adult mortality attributable to anthropogenic particulate air pollution rose in 2013 from 5.1% to 5.3%.

The shift to using petrol, petrol electric hybrid and electric vehicles will have a positive impact on air quality in towns and cities in England and Wales as these energy sources are all significantly cleaner than diesel. Unfortunately, because of their poor real world performance, the move to Euro 5 and Euro 6 diesel cars may not have the same benefit.

Air Quality - Vans

With one exception (a Euro 4 Citroën Dispatch) all the car club vans available in England and Wales during 2014/15 met the Euro 5 air quality emission standard or were zero emission. In 2014/15 five of the 41 vans (20%) were electric vehicles (all Renault Kangoo or Kangoo Maxi). In 2013/14 there was only one electric van on the fleet.

As yet manufacturers have not been obliged to publish air quality emissions data (NO_X and PM_{10}) for vans and with no vehicle specific data no further analysis of van emissions can be carried out.

Currently (January 2016) only new model vans needing type approval must meet the Euro 6 standard but from September 2016 all newly registered vans must meet the Euro 6 standard. According to the VCA there is only one large van - the new model Ford Transit 350 with stop-start technology - on the market that meets the Euro 6 standard.

Mileage & Carbon Emissions (Cars)

Where available the mileage of all cars that were on fleet in the year 2014/15 was used in conjunction with the published carbon dioxide emissions of the vehicles (g/km) to estimate the total carbon dioxide emissions from car club cars.

In 2013/14 the established Defra/EST methodology was to uplift the published carbon emission figure by 21% to reflect "real-world" operation and then multiply this by the distance driven (in kilometres). This method is still valid and is used where age data is not available but in its 2014/15 Greenhouse Gas (GHG) guidelines Defra moved to using an age related uplift to reflect the fact that in 2001 the average difference between the manufacturers' carbon emission data and real world performance was only 8% but by 2014 it had risen to 37%[22].

For continuity with previous reports both methods have been used to determine the carbon emissions of the England & Wales car club fleet. As can be seen in Table C.6, the impact of the age related calculation is significant because so many of the vehicles in the car club fleet are new. The age related uplift adds 136 tonnes to the carbon emissions of the car club fleet. The average annual mileage in this table takes account of the number of days a vehicle was on fleet during the year to produce an annualised figure.

[21] **Public Health Outcomes Framework**, Public Health England, 3.01, 2016

[22] **From Laboratory to Road**: A 2015 Update, 2015, Mock, German, et al. ICCT.

Table C.6: Carbon Dioxide (CO_2e) emissions of the England & Wales car club fleet

Car Club	Final Mileage	Average Annual Mileage/Car	Annual kg CO2 (Age Related Uplift)	Annual kg CO2 (Fixed 21% Uplift)
Club 01	853,328	16,540	207,123	183,870
Club 02	4,213,959	11,445	938,954	855,286
Club 04	1,934,871	9,219	357,621	328,905
Club 14	81,015	3,777	0	0
England & Wales	7,018,102		1,503,699	1,368,061
UK Fleet				2,119,943

If the same annual mileage of 7.0 million miles had been driven by the average UK car which, in 2014, had emissions, including a fixed 21% uplift, of 186 g/km the total CO_2e emissions would have been an estimated 2,120 tonnes so there was an estimated carbon saving of 752 tonnes (35.5%) against the "fixed uplift" emissions. This saving does not take into account those additional carbon savings arising from modal changes made by car club members.

Safety Assessment

Advances in vehicle safety are in part responsible for the year on year reduction in the number of fatalities on UK roads. Passive safety features such as seat belts and air bags assist in the survivability of collisions while active features such as Electronic Traction Control help drivers avoid the accident.

In coming years, a range of new active features known as "Safety Assist" will become standard on new cars: e.g.

- **Autonomous Emergency braking;** forward facing radar detects a possible collision and stops or slows the car.
- **Lane Support Systems;** warns driver of lane wander (often also linked to a blind spot warning system to detect vehicles in the blind spot).
- **Driver Drowsiness Detection;** detects driver behaviour typical of tiredness and warns all occupants.
- **Secondary Collision Brake Assistance;** tries to prevent or mitigate secondary impacts following a collision when the vehicle may still be in motion but the occupant is unconscious.
- **Pre-Crash Systems;** detects driver collision avoidance and prepares vehicle systems for an impact, for example by tensioning seat belts pulling passengers back into seats.
- **Adaptive Forward Lighting;** one set of lights "look" around the corner while additional lights will come on in tight urban manoeuvres.

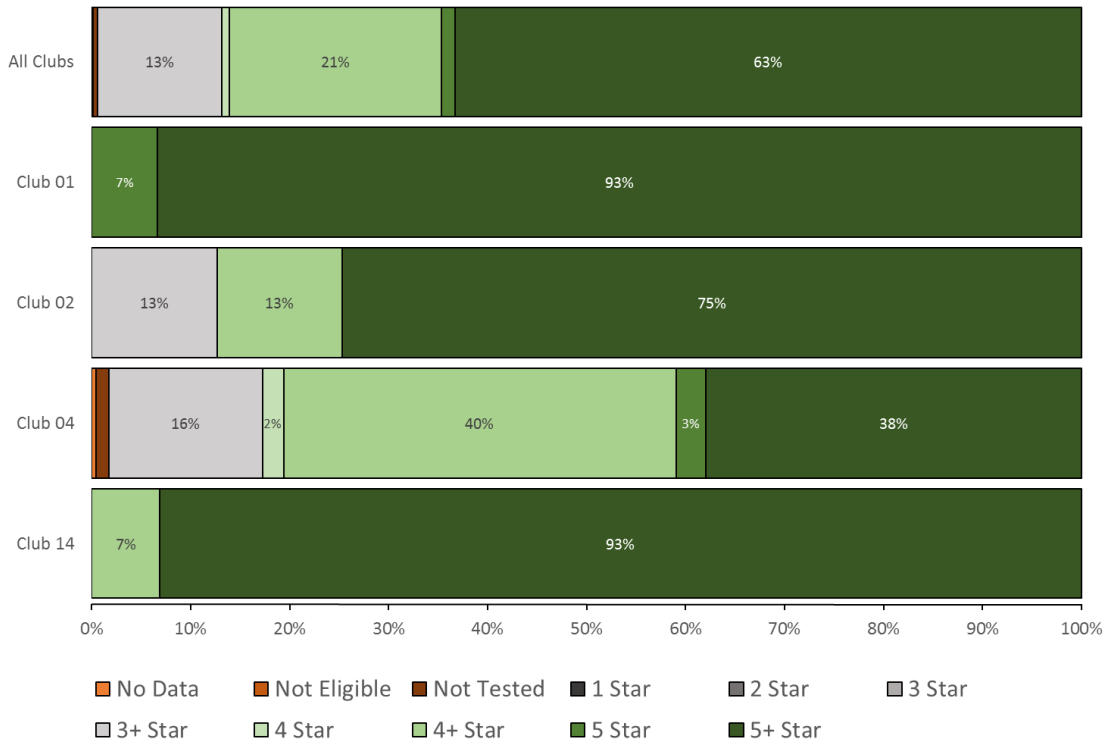
All new cars must meet minimum construction standards but the actual behaviour of a car in a collision is dependent on how well those mandatory standards have been integrated. Since 1996 the European New Car Assessment Programme (NCAP) has been independently testing cars to see how well they perform in collisions designed to represent the more frequent real-world events.

From February 2009 all new Euro NCAP test results have been reported as a single overall rating that covers Adult Occupant Protection, Child Occupant Protection, Pedestrian Protection and Safety Assist. The new post-2009 assessment incorporates all previous tests and adds a set of Rear Impact (Whiplash) tests. In addition, the availability of Electronic

Stability Control (ESC), speed limitation devices and other "Safety Assist" technology is considered.

The chart below shows the NCAP profile of the England and Wales car club fleet. Where a vehicle has achieved a rating since 2009 it is indicated with a "+" sign; e.g. 5+ Star. While 64% of the England & Wales fleet meet the NCAP 5+ Star or 5 Star standard and a further 21% the acceptable NCAP 4+ Star standard it was of note that 13% were NCAP 3+ Star.

Figure C.4: Safety Profile (NCAP rating) of the England & Wales car club fleet (Period End)



The 3+ Star vehicles were almost all 2012/2013 Toyota Aygo models (also sold as the Citroen C1 and the Peugeot 107), there was also one 3+ Star Citroen Berlin go Multispace. When the new model Aygo/C1/107 was tested in 2012 it was downgraded from a 4 Star vehicle (2005 model) to a 3+ Star vehicle. In 2014 a re-test of the latest model of Aygo resulted in it being upgraded to a NCAP 4+ Star vehicle. The small number of untested vehicles in the car club fleet are the Renault Twizy Technic electric car.

There is no NCAP data for the 30 million cars that make up the UK car fleet and the best approximation we have is research into the "grey fleet" – privately owned cars used for business. In the typical grey fleet about 10% of the vehicles meet the NCAP 5+ standard and a further 25% meet the 5 Star standard; 65% are NCAP 4 Star or better and the picture improves year on year. This safety profile reflects the average age of the grey fleet which is typically between 7.6 and 8.2 years and that is in line with the average age of the national fleet at 7.9 years.

Summary

1. The car club fleets in England and Wales continue to offer members vehicles that are low carbon, meet the current air quality standards and most vehicles offer a good level of safety (NCAP rating).

2. Almost all England & Wales club cars are in the lowest three VED emission Bands A, B and C with most club cars (65%) in Band A. In the UK car fleet the largest group of vehicles is in Band G (151-165 g/km).
3. The average carbon emissions of the car club fleets in England & Wales in 2014/15 are 42% lower than the average 2014 UK car and 8% lower than the car club fleet average reported in 2013/14.
4. Car clubs in England & Wales saved about 750 tonnes of carbon dioxide in 2014/15 on driven mileage alone without considering the impact of modal change by members (increased walking, cycling and use of public transport).
5. The car club fleet in England & Wales is 98% Euro 5, Euro 6 or Zero Emission and the move away from diesel vehicles has been sustained with the proportion down to 3% from 21% in 2014.
6. At the end of the reporting period there were 61 (up from 44) electric cars and 152 (up from 91) petrol electric hybrids available to car club members in England & Wales.
7. Vehicle safety is good but as in 2014 but could be improved by restricting new car club cars to NCAP 5+ Star vehicles. Vans are now being safety tested by NCAP and the NCAP safety rating should also be considered when procuring vans.
8. Clubs in England & Wales have achieved a fleet which effectively addresses the two issues of climate change (low carbon, fuel efficient) and public health (low toxic emissions; notably nitrogen oxides and particulates) but the vehicle safety (NCAP rating) in parts of the fleet could be improved.

Community Car Clubs

As well as bringing environmental benefits, community car clubs facilitate social and economic opportunities such as the ability to access education, leisure and employment. They also allow households to downsize their car ownership levels and in some cases can help connect otherwise very isolated and transport-poor places to the wider transport network as part of a portfolio approach to mobility.

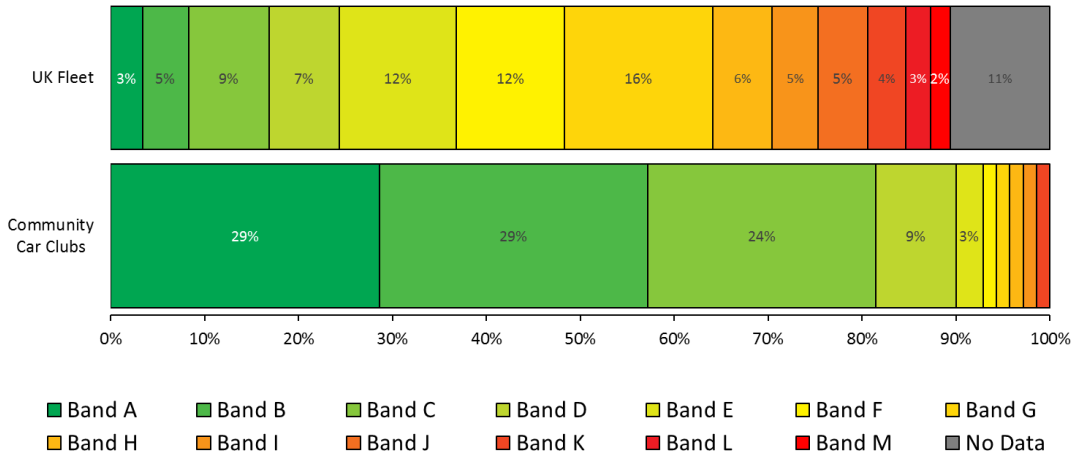
Twelve English and Welsh Community Car clubs provided data about their fleets, this is up from three in 2014 because this year the community clubs operated under franchise by a national operator have been reported separately from the National fleet. At the end of the reporting period there were 70 vehicles available to members and 81% were in the low carbon emission VED Bands A, B and C.

Table C.7 Comparison of E&W community car club VED band profile (Period End)

CO2 Emission Band (gCO2/km)		Number	%
Band A	<=100	20	29%
Band B	101-110	20	29%
Band C	111-120	17	24%
Band D	121-130	6	9%
Band E	131-140	2	3%
Band F	141-150	1	1%
Band G	151-165	1	1%
Band H	166-175	1	1%

CO2 Emission Band (gCO2/km)		Number	%
Band I	176-185	1	1%
Band J	186-200		
Band K	201-225	1	1%
Band L	226-255		
Band M	256+		
No data available			
Total		70	

Figure C.5 Comparison of England and Wales community car club's VED band profile (Period End)



The community car club fleet still contains a small number (5) of higher emission vehicles in VED Bands F to K (from 141 to 225 g/km) but these are a small percentage of the enlarged fleet. The town and city based community fleets operated under franchise are mainly low carbon vehicles and the fleet as a whole has a high proportion of low carbon cars.

Table C.8 Average Carbon Emissions of England and Wales Community Car Clubs (Period End)

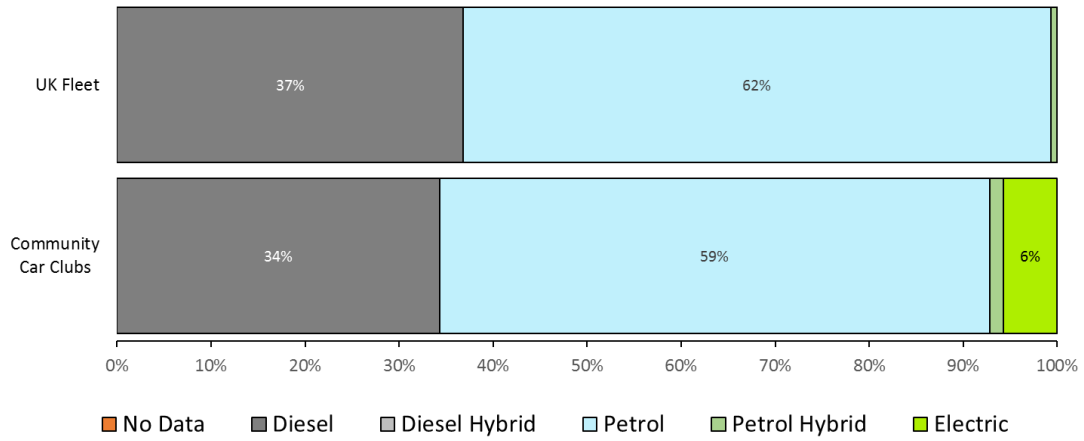
	2011	2012	2013	2014[23]	2015
E&W Community Car Clubs	No Data	No Data	133.7	135.6	106.6
UK Car Fleet17	162.8	160.1	157.0	153.9	

The average England & Wales community car club car has emissions 31% below the national average car and 21% better than last year. This is a significant improvement from 2013/14 but is due to the low carbon emission profile of the community based clubs operated under franchise and included in this data set for the first time.

[23] Includes "zero emission" electric vehicles.

Community Cars – Fuel Profile

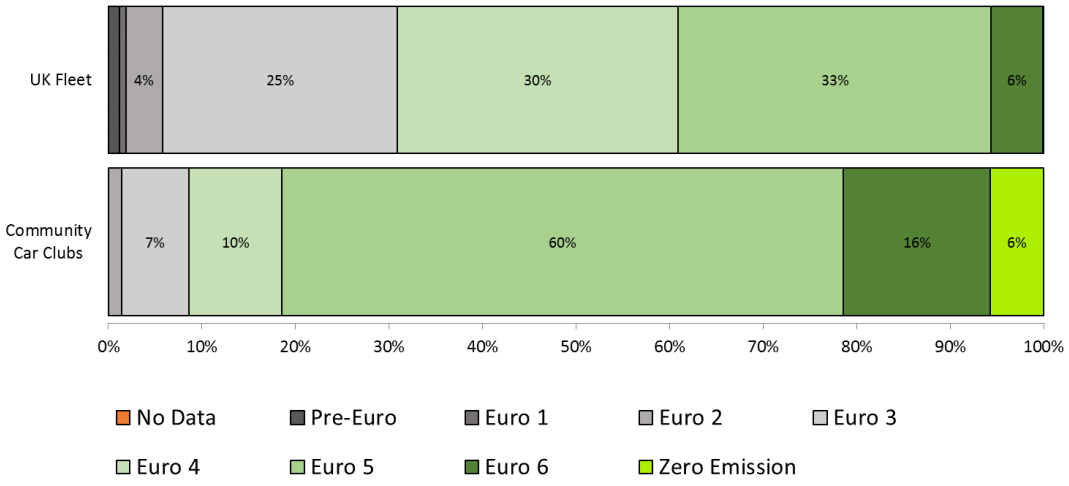
Figure C.6: England & Wales community car club fuel type (Period End)



The fleet has a high proportion of diesel vehicles compared with the national car club fleets but air quality can be less of an issue in some of the more rural locations where these fleets operate.

Community Cars – Air Quality

Figure C.7: Euro Emission Profile of the England & Wales Community Car Club Fleet (Period End)



The fleet is 81% Euro 5, Euro 6 or Zero Emission but there is one Euro 2 vehicle on the fleet and 7% are Euro 3. The fleet is significantly better than the UK car fleet. As with the fuel type, air quality emissions may not be a significant issue in the areas where these older vehicles are being operated.

Community Cars - Fleet Mileage & Carbon Emissions

The carbon emissions of the community fleets were determined using the same methodology as the national fleets.

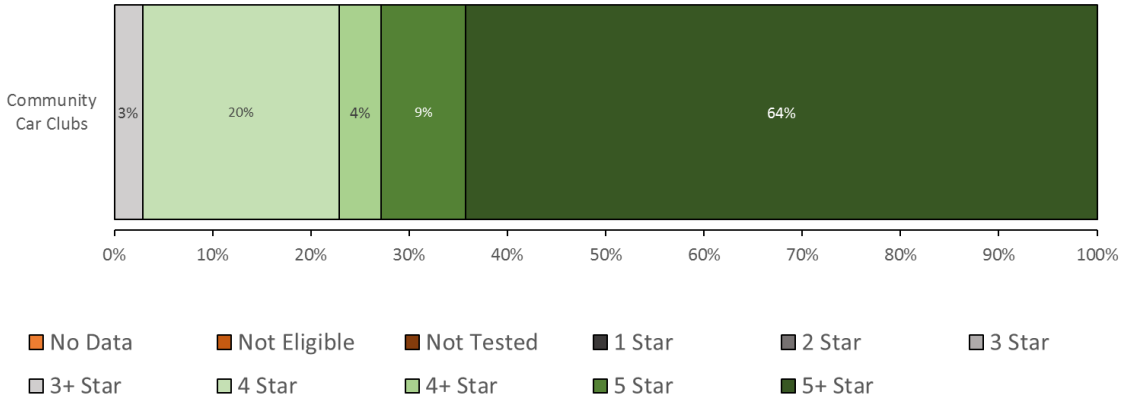
Table C.9 Carbon emissions

	Mileage	Average Annual Mileage/Car	Annual kg CO2 (Age Related Uplift)	Annual kg CO2 (Fixed 21% Uplift)
Totals	625,165	9,681	133,606	129,538
UK Fleet				187,107

Driving the same mileage, the average UK car (186 g/km including 21% uplift) would have produced 187 tonnes of carbon dioxide so the English & Welsh Community Car Club fleet saved an estimated 57 tonnes of carbon dioxide in 2014/15.

Community Cars – Safety (NCAP)

Figure C.8: Safety profile (NCAP rating) of the Scottish community car club fleet



The majority of the fleet meets the NCAP 5+, 5 and 4+ Star standards. There are two 3+ Star vehicles; a Toyota Aygo and a Peugeot Expert Taxi.

Summary - Community Cars

The addition of the franchised community cars has transformed the profile of the England & Wales Community Car fleet but several of the older and higher emission vehicles remain; there are 10 vehicles over 10 years old and two that are 15 years old.

Overall the community car club fleets offer their members a selection of vehicles that are, in the main, low carbon, low emission and safe and the clubs provide vehicles in areas that would not be serviced by the national clubs. The fleet represents a significant improvement on the “average” UK car, particularly as we know that in rural areas cars tend to be older and higher emission. The benefits of the community car clubs are social, environmental and economic.

It is to be hoped that in the next 12 months the very small number of older vehicles can be replaced by newer models.

D UK commercial car club vehicles analysis and profiling

Introduction

The following section reports on the emissions profiles of commercial club operators across the UK. It is based on a comprehensive set of emissions data that has been collected about all UK commercial car clubs and is presented by reporting region where appropriate. The data has been independently verified by Gfleet Services Ltd using vehicle registration marks (VRM) and published datasets from the DVLA (Driver and Vehicle Licensing Agency), VCA (Vehicle Certification Agency) and vehicle manufacturers which enables the production of fuller and more accurate profiling (including NO_x and particulate PM_{10} emissions).

All UK commercial car club operators were asked to provide the vehicle registration marks (VRM) of all their vehicles operational between the 1st November 2014 and the 31st October 2015 (12 months), together with the mileage driven during that period and the dates when vehicles joined or left the fleet during the year (new for this year).

The VRM data from all the clubs was submitted to CarweB and a full performance and environmental data set was obtained for each vehicle based on the data held by the DVLA and the manufacturer. For most vehicles air quality emission data (nitrogen oxides NO_x, particulates PM_{10}, hydrocarbons HC, and carbon monoxide CO) were not available and these were obtained by matching the vehicle details from the DVLA with its published emission figures downloaded from the VCA. The vehicle's safety performance in the European New Car Assessment Programme (NCAP) was also established using DVLA make, model and year of registration.

Carbon Emission Profile – Cars

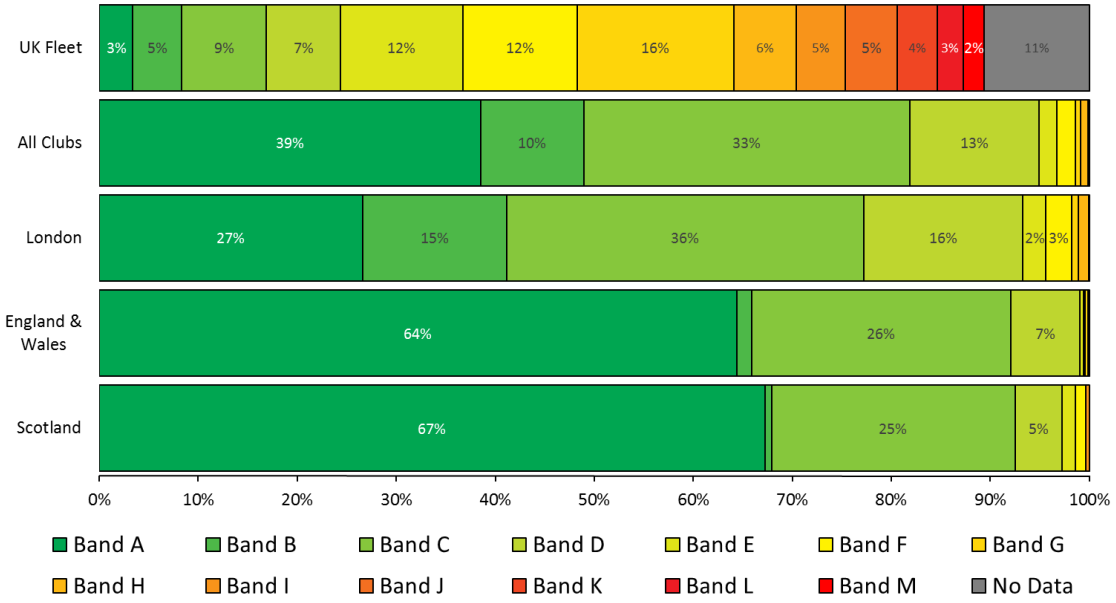
Table D.1 Carbon emission profile of the UK Commercial car club fleet (Period End)

CO2 Emission Band (gCO2/km)		Number	%
Band A	<=100	1,182	39%
Band B	101-110	320	10%
Band C	111-120	1,009	33%
Band D	121-130	400	13%
Band E	131-140	55	2%
Band F	141-150	59	2%
Band G	151-165	16	1%
Band H	166-175	23	1%

CO2 Emission Band (gCO2/km)		Number	%
Band I	176-185	1	0%
Band J	186-200	0	0%
Band K	201-225	0	0%
Band L	226-255	0	0%
Band M	256+	0	0%
No data available		2	
Total		3,067	

Overall this is a low carbon fleet with 82% of the vehicles in VED Bands A, B or C compared to only 17% of the UK fleet being in these categories. At the end of the period there were 486 Ultra Low Emission (ULE) vehicles on the fleet with emissions of 75 g/km or less and of these 203 were zero emission electric vehicles.

Figure D.1 Comparison of UK Commercial car clubs VED band profile (Period End)



The high proportion of Band A vehicles is reflected in the UK Commercial car club fleet average carbon emission which is shown in Table D.2. As at 31st October 2015 the fleet had average carbon emissions 34% lower than the 2014 average UK car.

Table D.2 Average Carbon Emissions of UK Commercial Car Clubs (Period End)

	Average g/km[24]		Minimum g/km	Maximum g/km
	2014	2015	2015	2015
UK Fleet	153.9			
All Clubs		101.0		
London		107.3	0.0	175.0
England & Wales		90.0	0.0	162.0
Scotland		79.0	0.0	179.0

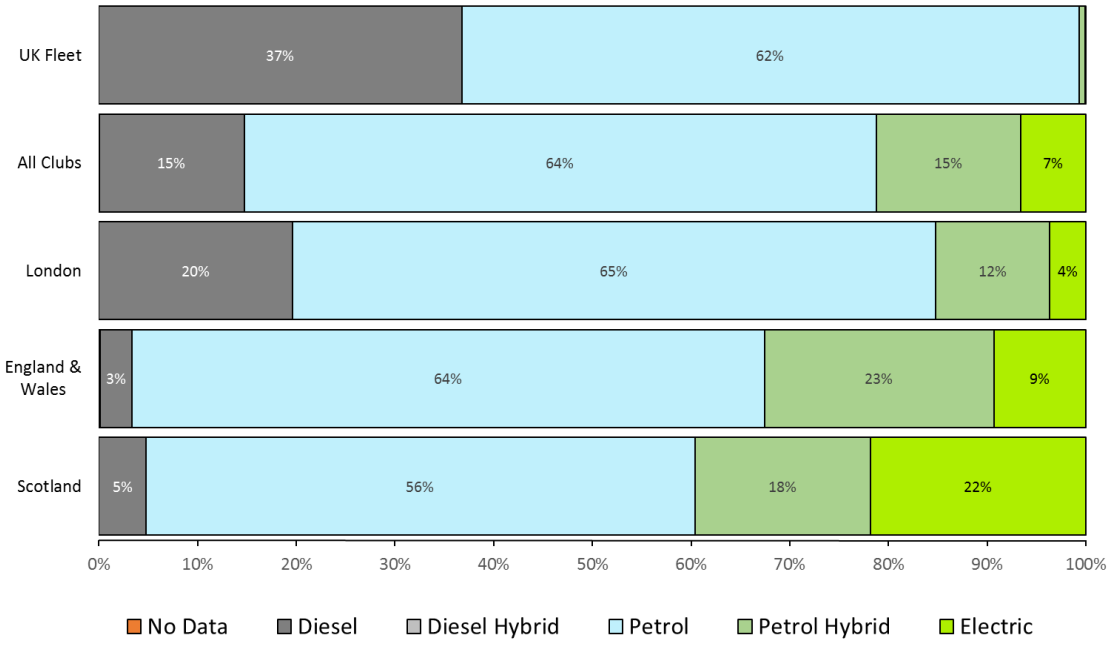
[24] Average includes "zero emission" electric vehicles

The large number of electric vehicles in the Scottish fleet (see Figure D.1) is responsible for it achieving the lowest average carbon emissions of the three areas studied.

Fuel Profile – Cars

Petrol is clearly the dominant fuel type in both the UK fleet and the car club sector, but petrol hybrids are also very popular in car clubs.

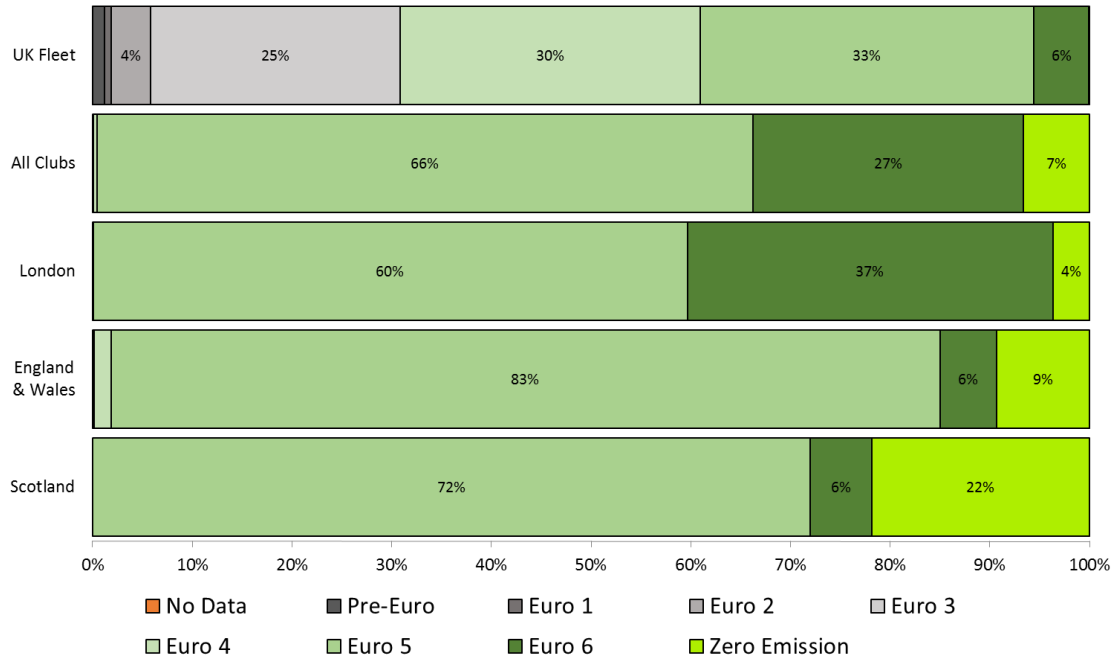
Figure D.2: UK Commercial car club fuel type (Period End)



The Scottish car club fleet has a very high proportion of electric vehicles, due to support in 2015 from the Developing Car Clubs in Scotland programme, funded by Transport Scotland. The highest proportion of diesels in the UK car club fleet is in London which is also the area with the most significant air quality problem. It should be noted that the majority of car club operators will have completely replaced diesel vehicles in their fleets by the end of 2016.

Air Quality – Cars

Figure D.3: Euro emission profile of UK Commercial car club fleet (Period End)



All the car club fleets are significantly better than the UK fleet.

Mileage & Carbon Emissions (Cars)

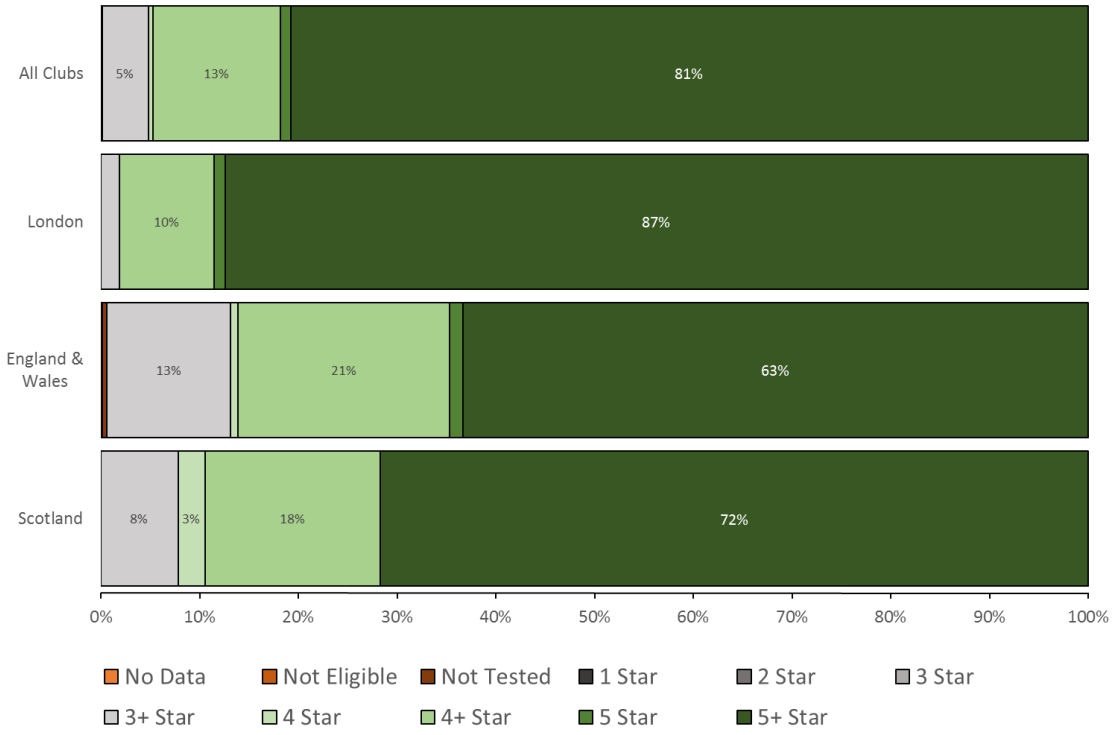
Table D.3: Carbon Dioxide (CO2e) emissions of the UK Commercial car club fleet

Car Club	Final Mileage	Average Annual Mileage/Car	Annual kg CO2 (Age Related Uplift)	Annual kg CO2 (Fixed 21% Uplift)
London	24,866,364	0	5,905,586	5,269,392
England & Wales	7,103,800	0	1,503,699	1,368,061
Scotland	2,536,679	0	525,100	481,505
UK Car Clubs	34,506,843	-	7,934,385	7,118,959
UK Car Fleet	-	-	-	10,327,649

If the same annual mileage of 34.5 million miles had been driven by the average UK car which, in 2014, had emissions, including a fixed 21% uplift, of 186 g/km the total CO2e emissions would have been 10,327 tonnes so there was a carbon saving of 3,209 tonnes (36%) against the "fixed uplift" emissions. This saving does not take into account those additional carbon savings arising from modal changes made by car club members.

Safety Assessment

Figure D.4: Safety Profile (NCAP rating) of the UK Commercial car club fleet (Period End)

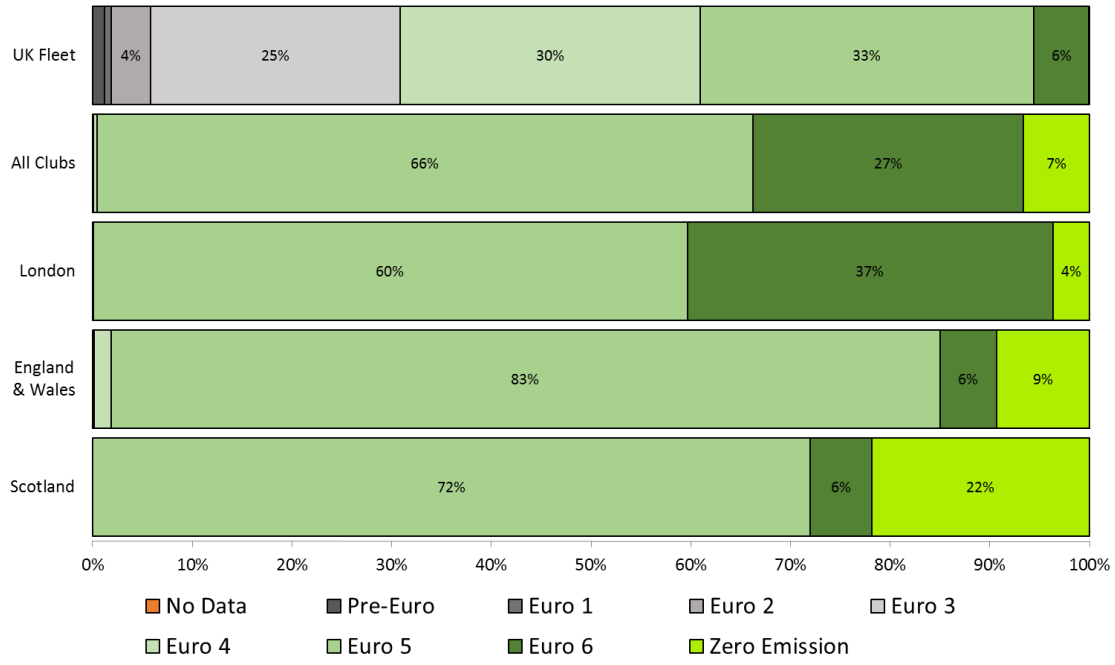


The 3+ Star vehicles were almost all 2012/2013 Toyota Aygo models (also sold as the Citroen C1 and the Peugeot 107). When the new model Aygo/C1/107 was tested in 2012 it was downgraded from a 4 Star vehicle (2005 model) to a 3+ Star vehicle. In 2014 a re-test of the latest model of Aygo resulted in it being upgraded to a NCAP 4+ Star vehicle. The small number of untested vehicles in the commercial car club fleet are the Renault Twizy Technic electric car.

There is no NCAP data for the 30 million cars that make up the UK car fleet and the best approximation we have is research into the "grey fleet" – privately owned cars used for business. In the typical grey fleet about 10% of the vehicles meet the NCAP 5+ standard and a further 25% meet the 5 Star standard; 65% are NCAP 4 Star or better and the picture improves year on year. This safety profile reflects the average age of the grey fleet which is typically between 7.6 and 8.2 years and that is in line with the average age of the national fleet at 7.9 years.

Air Quality – Cars

Figure D.5: Euro emission profile of UK Commercial car club fleet (Period End)



All the car club fleets are significantly better than the UK fleet.

Mileage & Carbon Emissions (Cars)

Table D.4: Carbon Dioxide (CO_2e) emissions of the UK Commercial car club fleet

Car Club	Final Mileage	Annual kg CO2 (Age Related Uplift)	Annual kg CO2 (Fixed 21% Uplift)
UK Fleet			10,327,649
All Car Clubs	34,506,843	7,934,385	7,118,959
London	24,866,364	5,905,586	5,269,392
England & Wales	7,103,800	1,503,699	1,368,061
Scotland	2,536,679	525,100	481,505

If the same annual mileage of 34.5 million miles had been driven by the average UK car which, in 2014, had emissions, including a fixed 21% uplift, of 186 g/km the total CO2e emissions would have been 10,327 tonnes so there was a carbon saving of 3,209 tonnes (36%) against the "fixed uplift" emissions. This saving does not take into account those additional carbon savings arising from modal changes made by car club members.

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