

Assessing the benefits of flexible car clubs in UK cities



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Executive Summary

Bolt has committed to invest in shared mobility services in the United Kingdom (UK), including flexible car clubs, shared e-bikes and shared e-scooters. In combination with Bolt's current private hire operations and public transport these services can provide a realistic alternative to private car ownership.

Bolt has commissioned this independent research study, undertaken by Steer, to quantify the societal and environmental benefits of implementing flexible car clubs in 15 urban areas across the UK.



What are flexible car clubs?

Flexible car clubs offer users the ability to both travel one way within a defined operational zone or to return to the same location, providing significantly more flexibility when compared to round trip car clubs. They allow efficient access to a car on a trip by trip basis, reducing the need to own a car and providing access to a car for occasional trips to complement public transport, walking or cycling.

Flexible car clubs are commonplace in urban areas across Europe. In the UK the benefits of flexible car clubs are currently limited to residents of 10 London boroughs.

Purpose of this report

This study presents the potential benefits from implementing flexible car clubs at scale across 15 UK cities and city regions, based on the potential for car owning households to transition from private car ownership to using flexible car clubs to complement their usage of public transport, walking and cycling.

What did we do?

For 15 UK cities and city regions outside London we have analysed household car ownership levels and average annual car mileage to assess the potential for households to switch from private car ownership to using flexible car club services.

We have developed a series of assumptions on the proportion of car owning households who could replace car ownership with flexible car club use, based on households with low annual car mileage. For these households we have used data from the CoMoUK annual car club survey to calculate the potential benefits of moving from car ownership to flexible car club use.

What are the findings?

Based on our analysis, by implementing flexible car club services across 15 UK cities and city regions, our conservative estimates are that:



108,000 households could switch from private car ownership to using flexible car clubs.

To meet the demand from these switchable households,



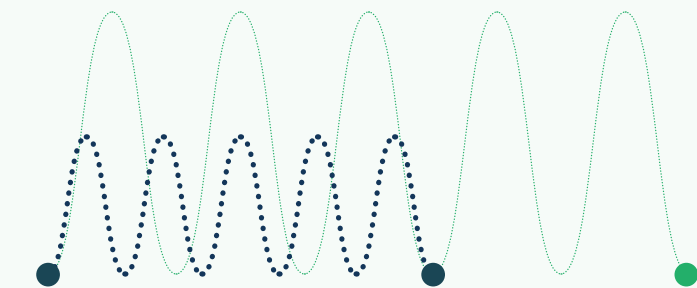
5,100 flexible car club cars would be required.

What are the benefits of flexible car clubs?

Implementing flexible car club cars at scale would unlock the following benefits:



48,000 fewer private cars: parking spaces saved (equivalent to the size of about 50 football stadiums).



80 million fewer car miles travelled annually (equivalent to 8,000 trips from London to Sydney).



20,000 fewer tonnes of carbon annually (equivalent to planting 800,000 trees).

Considerations for implementing flexible car clubs:

To facilitate the implementation of flexible car clubs and to enable car club operators to unlock the benefits highlighted, this report recommends the following supporting actions from local authorities:



1. Facilitate parking for flexible car clubs

Local authorities should **offer a flexible car club permit** for purchase by car club operators. This permit would allow the flexible car club vehicle to park in any on-street marked bay (excluding disabled bays). Provision of this permit will allow the benefits identified in this report to be achieved.



2. Set clear objectives for car clubs in local plans

Local authorities are encouraged to **develop more tangible plans for providing car clubs** (including flexible car clubs) in their local transport plans and strategies to meet emission targets, transport accessibility goals and achieve objectives in reducing private vehicle use.



3. Improve Electric Vehicle (EV) infrastructure provision

Local authorities should facilitate the provision of fully electric car clubs in their area by implementing **suitable electric vehicle charging infrastructure** for flexible car clubs as part of a council-led public charge point strategy.



4. Promote car clubs alongside multi-modal travel

Local authorities should **work in partnership with operators**, particularly those who offer flexible car club solutions alongside multi-modal options, to help meet their objectives of reducing car use and promoting multi-modality including public transport, shared mobility, walking and cycling.

1. Introduction

This study calculates the scale of potential benefits achievable from the enhanced provision of flexible car clubs across 15 UK cities and city regions outside London, based on the potential to shift car owning households using private cars to using flexible car clubs for different journey purposes.

What is a car club?

A car club is a means of sharing a car between people, allowing individual drivers and households all the benefits of access to a car, while reducing and often removing the need for them to own and maintain their own individual vehicle.

The CoMoUK 2020 Car Club Annual Survey Report for England and Wales found 21% of respondents sold a car since joining a car club¹.

Car clubs are socially inclusive and a sustainable mobility option which can help reduce dependency on private car ownership. Car clubs also provide individuals with pay as you go, affordable and occasional access to cars². Car clubs encourage individuals to:

- reduce their reliance on private cars,
- encourage modal shift and higher use of shared and more sustainable modes³.

Types of car clubs

There are a range of different car club types in the UK. These models have largely been pioneered in Western Europe or North America.

The size of car club operations range from less formal community-based schemes with a small number of participants to car clubs with thousands of members and a range of vehicles including hybrid and electric vehicles.

The most common operational model of car clubs in the UK is the round-trip model, while the flexible model is only currently available in London.

- **Round-trip** car club users can book the car, drive it and then return the car to the same location. For the round-trip model, local authorities typically need to provide dedicated on-street bays for each vehicle. One-way trips are not possible and users must pay for the vehicle until they have returned it to the dedicated bay.
- **Flexible** car club cars may be located on on-street parking or off-street and do not necessarily need to be returned to the same location where they were picked up but can be returned to any parking bay within a defined parking zone (typically comprising of one or more local authority area). Compared to the round-trip model, local authorities do not need to provide dedicated bays, reducing implementation costs. Users have greater flexibility to make a one way or round trip, which helps to maximise the efficiency of providing the service.

Figure 1.1 shows how these car club models operate.

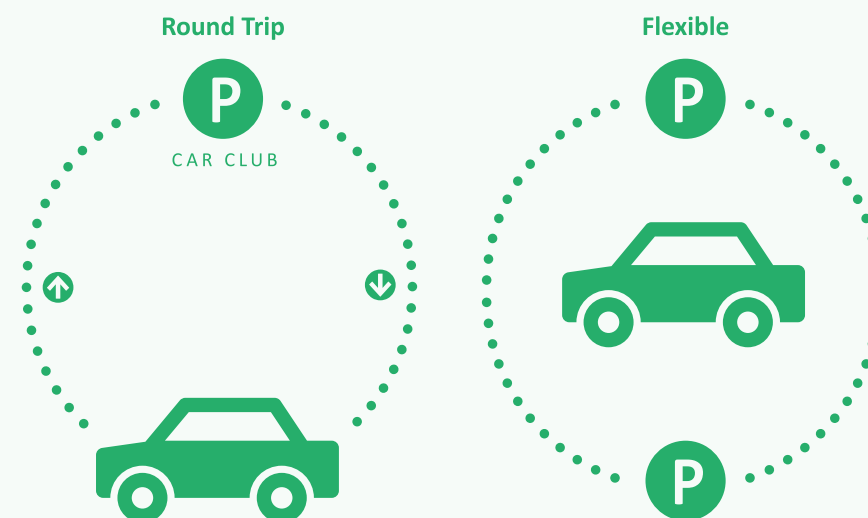


Figure 1.1: Car club model diagrams
Source: Steer interpretation of the models

The other two types of car club models (which are both in effect round-trip models) are:

- **Peer-to-Peer** car clubs: they enable individuals with underused vehicles to offer them for rent to other members of the local community. The platform provider links owners and users and provides insurance cover for users. Easy Car Club was one of the first peer car clubs in the UK with their service allowed local residents to rent their car to other residents when their cars were not in use⁴. A benefit for the provider is that they can take a commission for organising the hire and providing the insurance cover⁵.
- **Community-based** car clubs: users are part of a member-based initiative that provides access to self-service pay as you drive, low-carbon vehicles. Typically, community car clubs are run by local groups to support their community. For example, Harbury Car Club provides a community service using electric vehicles in a small village, where often car ownership is perceived as a necessity⁶. A benefit of the model is that it is a convenient and affordable way of using a car, without the added hassle of physically owning a vehicle⁷.

Case study 1: Share Now in Berlin, Germany

Background

Share Now is a car sharing company formed from the merger of car2go and DriveNow, part of a joint venture with Mercedes-Benz Group and BMW.⁸

- Launched in Berlin in April 2012, providing over 2,300 different rental cars for hire, provided through a flexible car club model.⁹
- In September 2017, Germany's Car Sharing Act entered into force. This created a basis for federal states to waive parking fees for car sharing vehicles and establish pick-up and drop-off points in public space.¹⁰

Operational area and parking

- The car club cars are available 24/7 and free float around the 'home area' (operational area). The car club mainly operates in the city centre, but also in some peripheral districts of Berlin.
- The rental cars can be used anywhere but can only be terminated in the home area, however, for an extra fee, users can drop cars in drop-off zones slightly outside the city centre.¹¹
- Street parking is free for car club vehicles in the home area and there are also dedicated parking spots throughout Berlin. Users can leave the home area for extended periods of time but must end in the home area. There are also dedicated parking spots at Berlin Airport.¹²

Registration and booking

- Users of Share Now cars must be at least 18 years of age and have a valid driving license.
- Users must register via the Share Now app then upload their driving license, once validation is complete, cars can be reserved and rented.¹³

Vehicle types

- In Berlin, Share Now offers various types of vehicles, including BMW i3 EVs. 26% (4,000) of all Share Now's cars in Europe are EVs.¹⁴

Pricing

- Share Now offers various different pricing structures, and costs are incurred on different conditions, minute, hourly and daily rates are offered.
- For example, as part of the hourly rate, it is €0.19 for each kilometre driven, refuelling is included in the price.¹⁵



Case study 2: Bolt Drive in Tallinn, Estonia

Background

- Bolt launched the car sharing service called Bolt Drive in May 2021, with 596 cars available for hire.
- Alongside car sharing, Bolt also offer micromobility, food delivery and private vehicle hire services.
- Currently, the Tallinn car club has 57,000 members. Annual miles driven by car club members compared to private car owners is 252 km lower per user.

Operational area and parking

- As part of Bolt Drive, users can park for free (parking fee included in rental price) by driving to the destination and the app will tell the user where to park the car safely.¹⁶ There is a small fee for parking a Bolt car club car outside the operational area.

Registration and booking

- In order to rent a Bolt car club car, users must be over 20-years of age and have held a valid driving licence for at least a year. Users must upload their driving licence and payment card, to complete verification.¹⁷
- Through the Bolt app, users can find a car, then unlock through the Bolt app.

Vehicle types

- Bolt offers a range of vehicle types, including -.

Pricing

- Bolt Drive provides a low-cost, safe and convenient car sharing service with car rental prices starting from just €0.08 per minute.¹⁸
- The pricing structure means that users pay for the distance travelled and rental time with fuel, parking and insurance included in the hire fee.¹⁹



UK car club market landscape

There are currently about 6,000 car club vehicles and 700,000 car club members across the UK, up from 350,000 in 2019.²⁰ This suggests there is strong evidence that more and more communities are recognising the benefits of car clubs, compared to car ownership. The benefits include access to cleaner vehicles such as EVs (18% of Scotland fleet is currently electric), without the expense of ownership such as tax, MOT, fuel, servicing, insurance, repairs and parking.



6,000 car club cars, with **only 1/3rd** currently outside of London



700,000 members, while **only 20%** of them currently outside London



40 members per car club vehicle outside London, compared to **145 members** per car club vehicle in London

The current UK car club market is largely dominated by London, where the vast majority of the fleet is deployed and therefore is home to the largest number of users. This study highlights the potential benefits achievable through introducing car club vehicles at scale across 15 major UK cities.

Structure of this report

Based on analysis of household car ownership and travel behaviour, this study calculates the potential number of car club vehicles required across 15 UK cities and regions to unlock potential benefits achievable in terms of reduction in car ownership, annual car mileage reduction, and carbon emissions.

This study includes the following chapters:

- **Chapter 2:** How do flexible car clubs help meet policy objectives?
- **Chapter 3:** Evaluating the potential for car clubs in UK cities
- **Chapter 4:** Benefits of an enhanced car club offer to UK cities
- **Chapter 5:** Considerations for implementing flexible car clubs

Table 1.1 below provides a list of cities/city regions considered for this analysis.

Table 1.1: List of cities analysed

| Region | City |
|----------------------|---------------------------------|
| East Midlands | Leicester, Nottingham |
| North East | Newcastle |
| North West | Liverpool, Greater Manchester |
| South East | Oxford, Portsmouth, Southampton |
| South West | Bristol |
| West Midlands | West Midlands |
| Yorkshire and Humber | Leeds, Sheffield |
| Scotland | Edinburgh, Glasgow |
| Wales | Cardiff |

2. How do flexible car clubs help meet policy objectives?

Across the UK, national and local transport policies are supportive of reducing car mileage, vehicle emissions and promote multi-modal travel. As demonstrated by the CoMoUK car club annual survey, car clubs align with each of these objectives.

Table 2.1: Key policy targets

| Policy Document | Key objectives |
|--|---|
| Department for Transport: Future of Mobility Urban Strategy | Ambition to have every car and van zero emission by 2050 (with all new cars and vans sold after 2035 being battery electric vehicles only), if achieved the forecast reduction in CO ₂ emissions is 80% by 2050. ²¹ |
| Department for Transport: Decarbonising Transport, A Better Greener Britain | Half of all journeys in towns and cities will be cycled or walked by 2030. Support car clubs to go fully zero emission. A further ambition is to take action to increase average road vehicle occupancy by 2030. ²² |
| Greater Manchester Five-Year Transport Delivery Plan 2021-2026 | Pledges that all cars and buses are to be electric by 2035 in Greater Manchester. There is also a Right Mix ambition for at least 50% of all journeys to be made by active travel and public transport by 2040. ²³ |
| Reimagining Transport in the West Midlands | Reduce carbon emissions by 70% by 2030. |
| Liverpool Combined Authority Transport Plan | A key priority action is to promote clean alternatives to fossil fuels through the development of options for ‘greening’ of the transport system, including an EV charging network. ²⁴ |
| North East Transport Plan 2021-2035 | Ambition that by 2035, there will be a transport network with improved environmental credentials including more sustainable journeys, better air quality and reduced carbon output. |
| Glasgow Transport Strategy 2022 | A key policy action is to enable a rapid and strategic shift to electric vehicles through increasing the current rate of deployment of EV charging infrastructure and introduce a charging regime for electric vehicles. ²⁵ |
| Edinburgh City Mobility Plan | Ambitious agenda to be carbon neutral by 2030. A cleaner vehicles policy measure which encourages a switch to cleaner vehicles by expanding the EV infrastructure, including the development of a citywide EV charging network. ²⁶ |
| Portsmouth Transport Strategy 2021-2038 | A key policy measure is that by 2038 Portsmouth will have a people-centred connected, travel network that prioritises walking, cycling and public transport to help deliver a safer, healthier and more prosperous city. In addition, support infrastructure for alternative fuelled vehicles, such as EVs. ²⁷ |
| Connected Southampton Transport Strategy 2040 | By 2040 to be a zero-emission city, by supporting alternative fuels. Thirdly, developing a Southampton Electric Vehicle Charging Network. ²⁸ |
| Connecting Leeds Transport Strategy | By 2030, be carbon neutral and reduce car use by 30%. A key policy area for decarbonisation transport is implementing a network for alternatively fuelled vehicles, such as EVs. ²⁹ |
| Bristol Transport Strategy | Deliver a clean air zone to improve air quality across the city and beyond by managing the movements of polluting vehicles, and to achieve carbon neutrality by 2030. ³⁰ |

Car club benefits



Reducing private car ownership and mileage

- Each car club car removes **18.5** private cars off the road
- **21%** of respondents highlighted that they had sold a car since joining a car club
- **22%** said they would have bought a car if they had not joined a car club
- **793 miles** reduction in annual car mileage by an average car club member (2018, pre-pandemic)



Reducing transport emissions

- **10%** of the car club fleet across UK is the fully electric, in comparison, only 1% of cars in the UK are electric
- **100%** of car club vehicles are Euro 6, Ultra Low Emission Zone and Clean Air Zone compliant
- **26.5%** lower carbon emissions from car club cars than an average UK car
- **89%** lower NOx emission from car club cars than the an average UK car
- **72%** lower PM2.5 emission from car club cars than the an average UK car



Promoting accessibility and multi-modal transportation

- **20%** of respondents couldn't afford their own car, with car clubs providing more equitable access to vehicles
- **30%** of car club users also use a bicycle three times a week.
- **31%** of respondents stated that they used car clubs because public transport would have taken too long.

Source: CoMoUK 2020 Car Club Survey for Great Britain

3. Evaluating the potential for car clubs in UK cities

To help better understand the potential for car clubs across the 15 cities, a switchable household analysis was undertaken to establish the percentage of households which could potentially switch to using a car club car, provided there is suitable car club car provision. This chapter outlines the methodology, data sources used and key findings from the analysis.

Switchable households methodology

Objective

The objective of the switchable households analysis was to identify how many households in each city have only one or two privately owned cars, and, of those households, identify households who currently have a lower annual mileage by car (less than 5,000 miles) and could feasibly replace one of their cars with a car club car.

This analysis has been undertaken at a local authority or city level and is referred to as the 'switchable households' analysis.

Approach and scenarios

It can be inferred that households that have lower annual mileage are already making some or a higher proportion of trips using other (sustainable) modes and therefore are more likely to switch to car clubs than those who have a high annual mileage. Therefore, we have made an assumption that **households that drive up to 5,000 miles annually are in scope and could potentially transfer from car ownership to car use, through a flexible car club service.**

Amongst the car-owning households, the higher the number of cars owned by a household, more likely they are to use them thus making a higher proportion of their total trips by private cars. **We have therefore excluded households with three or more cars from the analysis for the reasons outlined.** We have also not considered households who do not own a car in the analysis, although a flexible car club service could provide access to a vehicle for occasional trips for these households.

In summary, we estimated the potential households who are more likely to switch to car clubs (in-scope households), for each city/region, based on following filters:

- Households that own one or two cars (filter one)
- Households that drive less than or equal to 5,000 miles per vehicle annually (filter two)

Then for a Baseline scenario, we assumed **20% of households with one or two cars that are making less than 3,000 miles annually by their first (or only) car would replace them with car club cars and 5% of households with one or two cars that are driving between 3,000 and 5,000 miles will replace them with car club cars.** We have also considered two further sensitivity tests (low and high scenarios) where we assumed higher and lower proportions of in-scope households would switch from car ownership to flexible car club use.

For each scenario, we then estimated the number of car club cars required (to meet the demand from households) based on an assumed ratio of 40:1 between potential car club members (in-scope households) and car club cars.

Figure 3.1. outlines the switchable household analysis methodology.

Data sources

Multiple sources of data were used to form the analysis, this included:

- Population and household data from Experian Mosaic 2021
- Household Car Ownership data from the 2011 Census
- Annual household car mileage from the National Travel Survey (NTS) 2019
- Annual household car mileage from Transport and Travel Scotland 2015

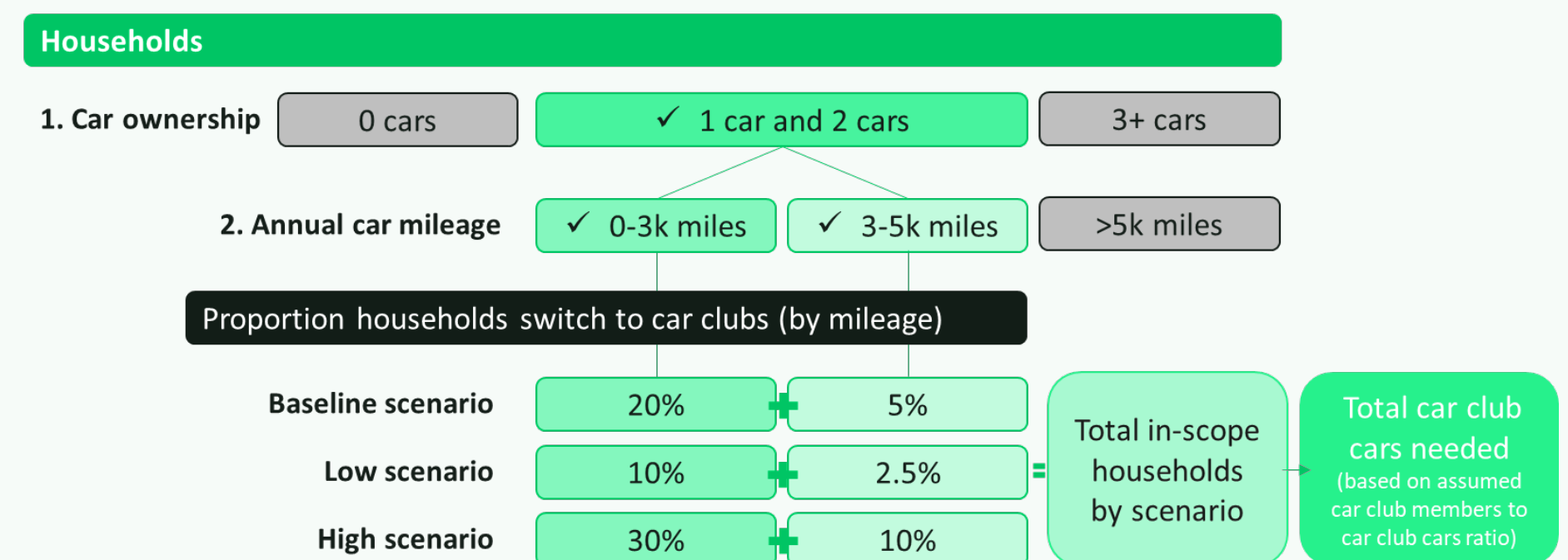


Figure 3.1: Switchable households analysis methodology
Source: Steer

Switchable households analysis

In this report, we have focused on the Baseline scenario, with the low and high scenario findings available in Appendix A.

Switchable households

Across the 15 city and city regions, an estimated 108,000 car owning households could potentially switch from private car use to using flexible car clubs, given flexible car club services introduced locally at scale.

Figure 3.2 highlights the number of switchable households broken down by city/region level, for the Baseline scenario. Based on the analysis almost 30,000 car owning households in Greater Manchester and 25,000 car owning households in the West Midlands could switch to using flexible car clubs. Over 7,000 households could switch in Leeds, Glasgow and Edinburgh.

The analysis presented in this report is a conservative estimate. In terms of switchable households as a proportion of car owning households, the highest potential is in Cardiff and Edinburgh at about 3% as presented in Figure 3.3.

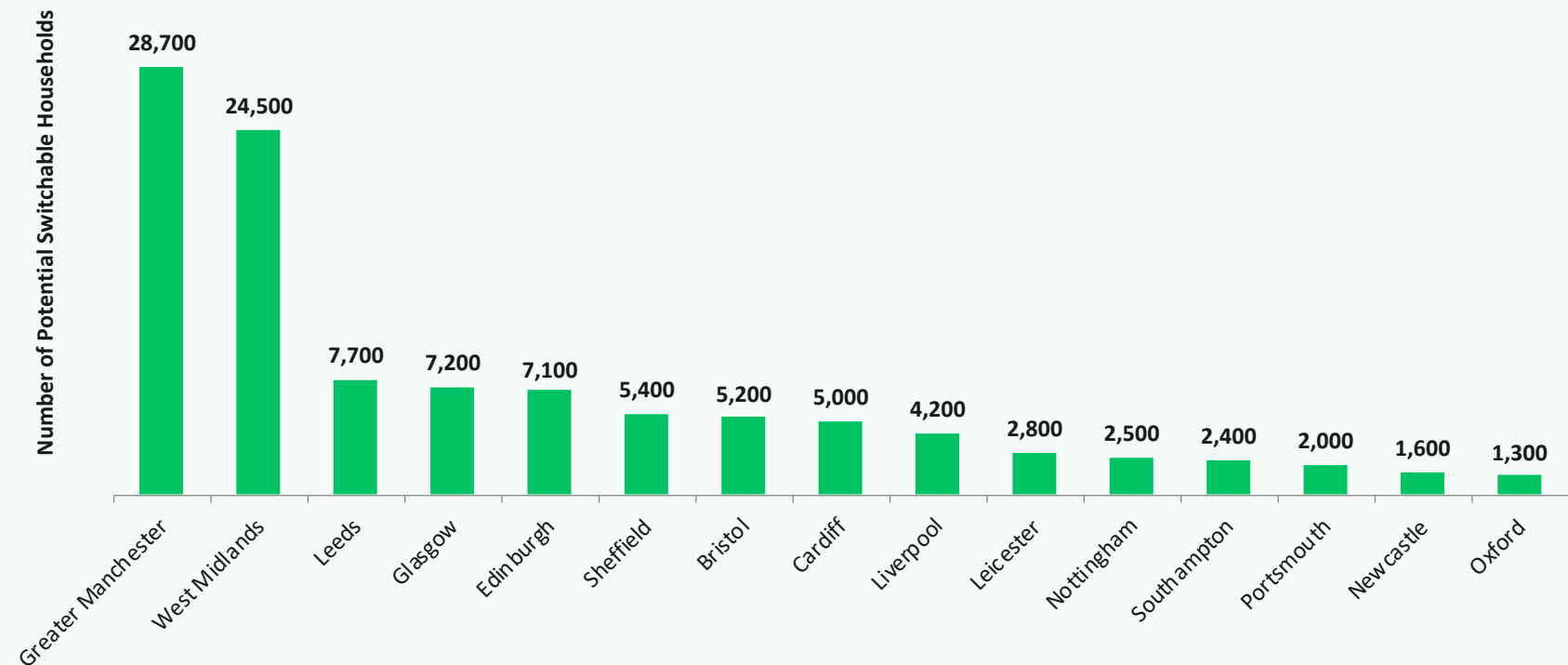


Figure 3.2: Number of potential switchable households by region/city (Baseline scenario)

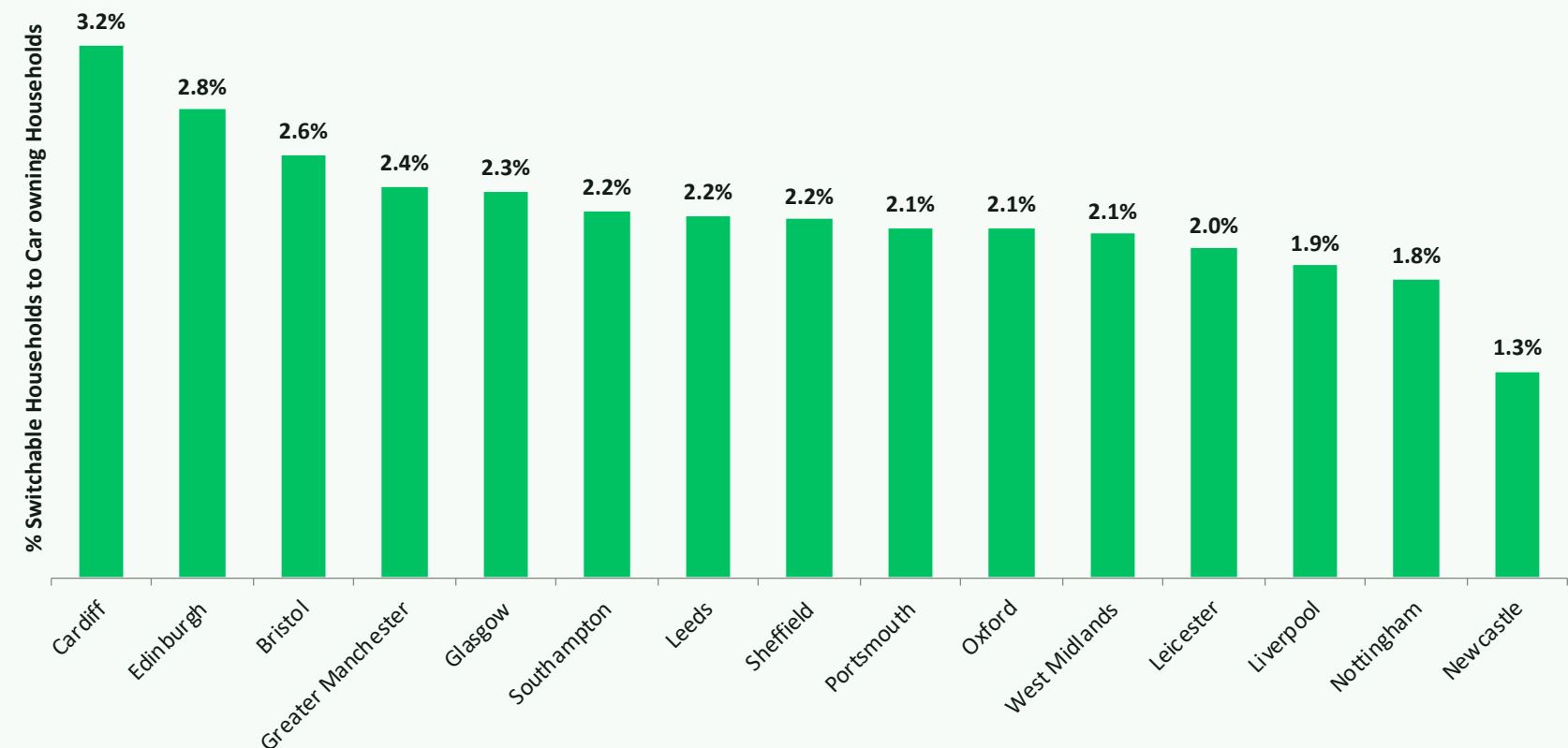


Figure 3.3: Switchable households as a share of total car owning households by region/city (Baseline scenario)

Number of flexible car club cars required

According to the 2020 CoMoUK annual survey, there are 30 members per car club car across England and Wales (except London) and 60 members per car in Scotland. Based on these existing ratios we have estimated the number of additional flexible car club cars required to serve the potential demand across the 15 cities and city regions. The number of car club cars required was calculated by assuming a ratio of 50:1 between the number of members to a car club car, this means we assumed for every 50 in-scope households one car club car should be provided. This assumes that for every household which joins a car club, one person in the household becomes a car club member, this is a conservative assumption. If more than one person on each household becomes a car club member a greater number of car club vehicles would be required.

Across the 15 cities/regions analysed, a total of approximately 5,100 flexible car club cars will be required to provide sufficient vehicles to encourage switchable households to switch to using car clubs. Figure 3.4 highlights the number of car club vehicles required for Baseline scenario, at regional level this is highest in Greater Manchester at 1,350. These numbers are in addition to any existing car club provision in each location.

At the city level, the highest number of vehicles required was 350 in Leeds with Edinburgh and Glasgow both at 300. Currently, all three cities have good car club provision in the city centre and then dispersed across the suburbs, flexible car clubs offer the potential to serve an increase in demand identified in this report from current car owners.

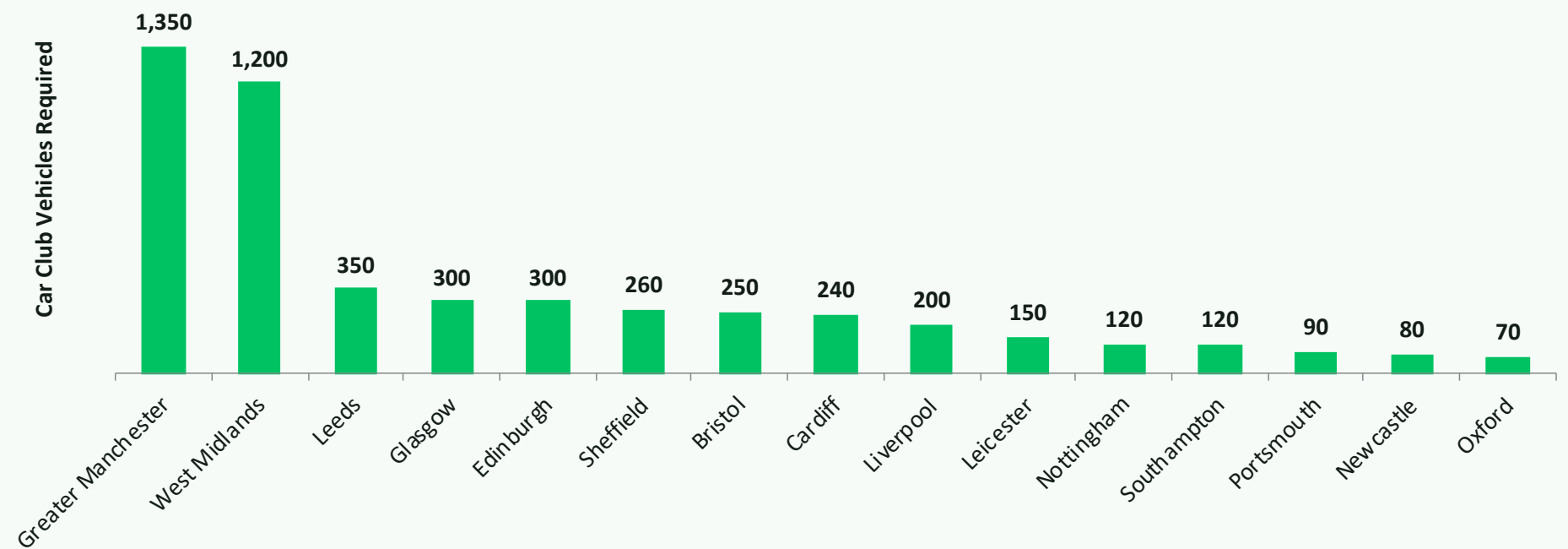


Figure 3.4: Flexible car club cars required by region/city (Baseline scenario)

4. Benefits of an enhanced car club offer to UK cities

This chapter quantifies some of the benefits of an enhanced car club offer across the 15 cities/regions. The chapter is structured to include our approach to benefits calculations including assumptions used, and to present key findings from the analysis.

Flexible car club benefits

Objectives

The objective of this chapter is to quantify some of the benefits of flexible car clubs and how they can contribute to many of the key policy priorities outlined in the 15 cities transport strategies; particularly focussing on reducing car dependency, reducing car use, and improving air quality.

Using the results of the switchable household analysis, which identified the number of car-owning households which could switch to a car club car and subsequent number of car club vehicles required to serve them, we have calculated what the benefits of this switch could be, if sufficient car club cars are provided across the 15 cities and city regions.

The benefit of flexible car clubs include:

- a reduction in private car ownership
- a reduction in car mileage
- a reduction in CO₂ emissions

Data sources

To identify the benefits of an enhanced car club offer, data was sourced from the CoMoUK 2020 car club survey findings (with the exception of estimating annual mileage reductions, this was done using pre-pandemic 2018 data). To account for regional differences, we have used the data from England and Wales (except London) survey findings for the cities/city regions in England and Wales, and Scotland survey findings for the cities in Scotland.

Benefits

Reduction in private car ownership

Typically, car club provision and membership results in lower levels of car ownership – each car club car takes off about 9 private cars off the road in England and Wales, which is even higher in Scotland at 10 private cars. To calculate reduction in private car ownership, we multiplied flexible car club cars required for each scenario by private cars taken off the road per flexible car club.

Figure 4.1 outlines our estimates of reduction in car ownership compared to new car club cars added in the region/city.

Our analysis indicates, that after joining a car club, for the Baseline scenario, at the regional level the reduction in car ownership will be about 12,200 and 11,000 for Greater Manchester and West Midlands respectively. Whilst at the city level, we found that the highest reduction in car ownership was in Leeds where 3,200 private cars were removed with 3,050 removed in both Glasgow and Edinburgh respectively. Evidence from CoMoUK shows that the availability of car clubs encourages households to sell their car, or delay or not buy a new or additional car.

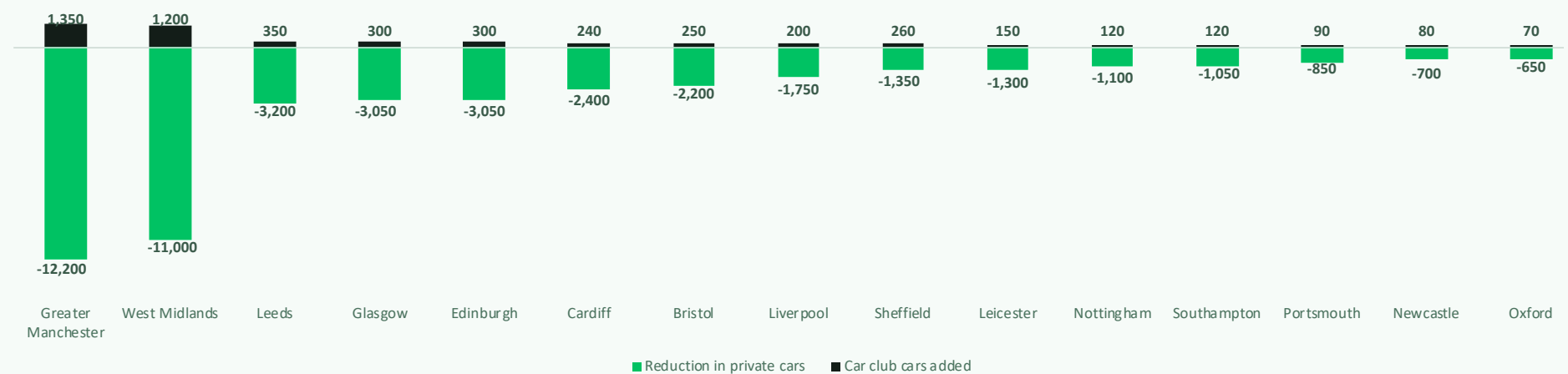


Figure 4.1: Number of private cars removed by region/city (Baseline scenario)

Reduction in annual car mileage

Households that join car clubs are more likely to reduce the number of car trips they take, particularly shorter trips which could be replaced by walking, cycling or public transport. To calculate annual car mileage reduction, we multiplied total car club members (in-scope households) for each scenario by the average decrease in annual mileage reported by car club users in the UK (which is between an estimated 500 to 800 miles per household).

For the Baseline scenario, the highest reduction in annual car mileage at the city level was for Leeds, at about 6.1 million miles. Whilst Oxford had the lowest, at 1 million miles reduced.

The potential annual mileage reduction by city and city regions for the Baseline scenario is shown in Figure 4.2.

Reduction in annual CO₂ emissions

Car club users travel less by car compared to households that use their own private vehicle. According to the latest CoMoUK car club survey, car club cars in England and Wales emit 25% less carbon than the average UK car, rising to 40% less carbon in Scotland. This calculation takes into account the proportion of the current car club fleet that is electric. While only 6% of the fleet in England and Wales (not including London) is electric, it is about 18% in Scotland.

To calculate the air quality benefits or CO₂ emissions savings (tailpipe emissions only), we considered two factors:

- CO₂ emissions saved due to reduction in mileage
- CO₂ emissions saved due to using less polluting vehicles in the car club fleet as compared to average UK car.

Therefore, for the first factor, we multiplied average emissions per mile by an average UK car with total annual car miles reduced, and for the second factor, we multiplied an estimate of total flexible car club miles travelled with a per mile reduction in CO₂ emissions by a car club car compared to the average UK car.

The potential reductions in annual CO₂ emissions for the Baseline scenario is presented in Figure 4.3.

Around 6,100 and 5,200 tonnes of CO₂ emissions can be saved annually in Greater Manchester and West Midlands respectively. At the city level the highest reductions will be in Leeds at 1,600 tonnes, and in both Sheffield and Bristol at 1,100 tonnes respectively. Higher reductions in carbon emissions can be achieved if an EV-only car club fleet is introduced given sufficient EV charging infrastructure in the local area.

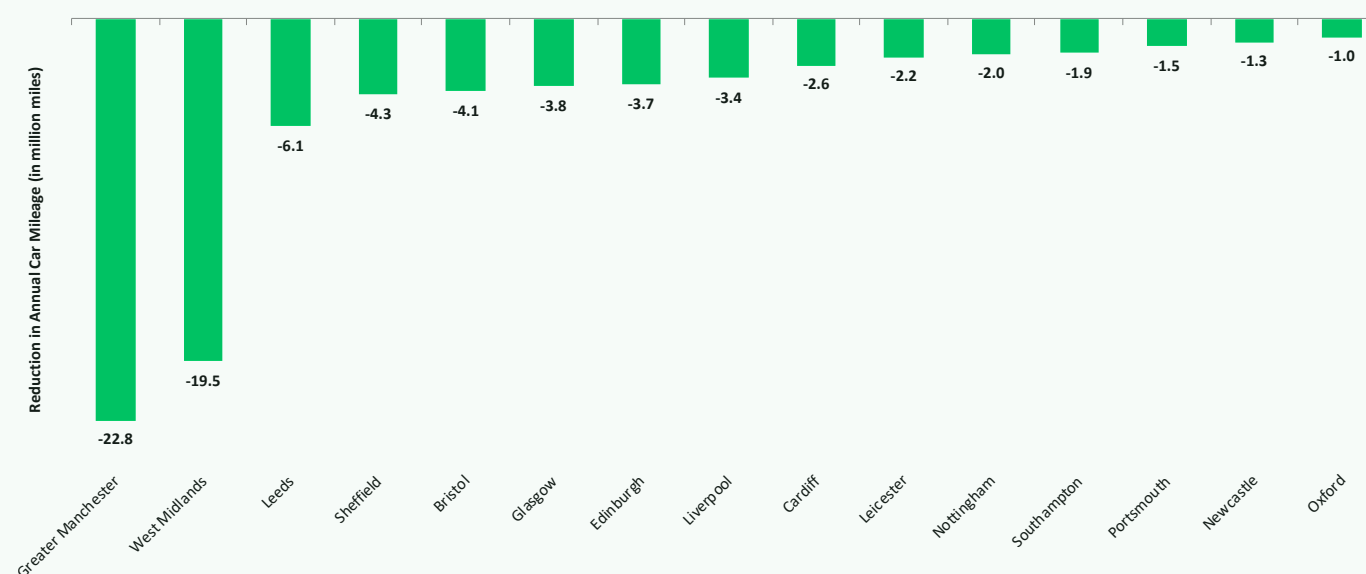


Figure 4.2: Reduction in annual car mileage by region/city (Baseline scenario)

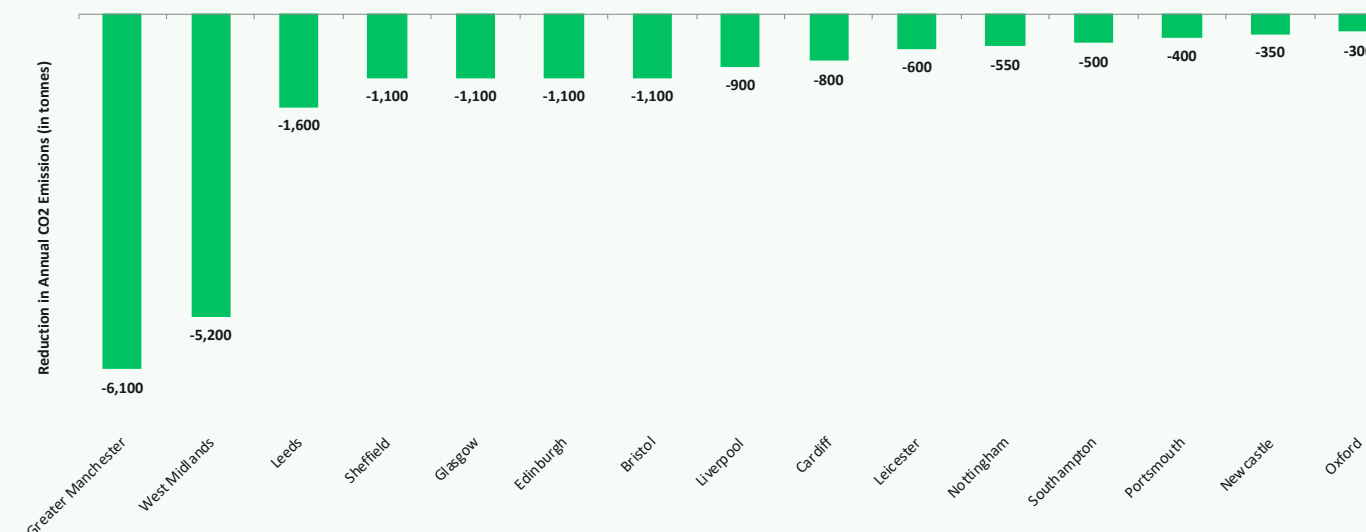


Figure 4.3: Reduction in annual CO₂ emissions by region/city (Baseline scenario)

5. Considerations for implementing flexible car clubs

Almost two-third of trips in the UK are still made by private cars, this is due to the culture of multiple car ownership and the lack of, or insufficient disincentives to, owning and using a private car. In many locations availability of public transport is not sufficient to consider reducing car use, even when supported by improvements in walking and cycling infrastructure.

There is an opportunity for flexible car clubs to fill the gaps in public transport provision and present a more appealing alternative to owning and using a car. This report highlights cities where there is higher potential for this switch and the benefits this switch can help achieve.

Car club operators can increase provision of their vehicles, but support is needed at local authority level to implement this action and fully realise the opportunity.

This chapter outlines the policy support or initiatives required at local authority level to facilitate higher provision of car clubs, particularly flexible car clubs to unlock the potential benefits.

1. Facilitate parking for flexible car clubs

Outside of London round trip car clubs are available in many UK cities. This model allows car club cars to be hired from a designated car club bay and must be returned to the same bay at the end of hire. The key challenges with this model include:

- Lack of flexibility: users must pay for a round trip journey, including any time that the car is parked at the destination. For example, a day trip to visit family in the same city would require the user to pay for the round trip car club vehicle for the whole day, in comparison a flexible car club model would only require the user to pay while the vehicle is in use.
- Barriers to implementation: in order to offer round-trip car clubs at scale, say 1,500 vehicles across Greater Manchester, significant officer time and costs would be required to define and allocate dedicated parking bays.

Recommendation

To facilitate flexible car club provision across a city, local authorities should **offer a flexible car club permit** for purchase by car club operators. This permit would allow the flexible car club vehicle to park in any on-street marked bay (excluding disabled bays). Provision of this permit will allow the benefits identified in this report to be achieved. Regional transport bodies such as Transport for Greater Manchester, Transport for West Midlands should work with local highway authorities to develop a regional permit system such as in Dublin where local authorities could sign up to allow flexible car club provision in their areas without having the operator to seek licences or permits separately in each local authority area.

2. Set clear objectives for car clubs in local plans

While car clubs are often included in local transport plans and strategies, plans for implementation are often vague and targets unspecific.

Recommendations

Local authorities are encouraged to **develop more tangible plans for providing of car clubs** (including flexible car clubs) in their local transport plans and strategies to meet emission targets, transport accessibility goals and goals around reducing private vehicle use. The plan should include options for integrating car clubs with public transport and other shared transport options.

Alongside increased provision of car club vehicles, local authorities can **disincentivise private car use** through a review of residential controlled parking zones (including potential expansion and increasing costs for higher emission vehicles) alongside the promotion of car clubs as an alternative to car ownership on renewal of residential parking permits.

3. Improve EV infrastructure provision

As found through the car club surveys, car club vehicles in the UK are typically more carbon efficient than private cars and have lower emissions (with 100% low emission zone compliance) and therefore replacing car trips with car club cars can potentially help with improving local air quality and reduce emissions.

Recommendation

Local authorities can facilitate provision of fully electric car clubs in the area by **making suitable electric vehicle charging infrastructure provision for flexible car clubs as part of a council-led public charge point strategy**. In addition, facilitating provision of electric flexible car clubs will help in encouraging local residents to try out electric cars, positively influencing electric vehicle take up.

4. Promote car clubs alongside multi-modal travel

Car clubs provide access to a car without ownership. They act as a catalyst to increased use of sustainable transport. car club members make more trips by public transport, walking and/or cycling after joining a car club.

Recommendation

Working in partnership with operators, particularly who offer flexible car club solutions alongside multi-modal options, local authorities can help meet their objectives of reducing car use and promoting multi-modality including public transport, shared mobility, walking and cycling.

Local authorities should explore the potential benefits of mobility hubs, bringing together public transport and shared mobility (in the form of bike share, e-scooter share where under trial and car clubs) as a realistic alternative to the private car.

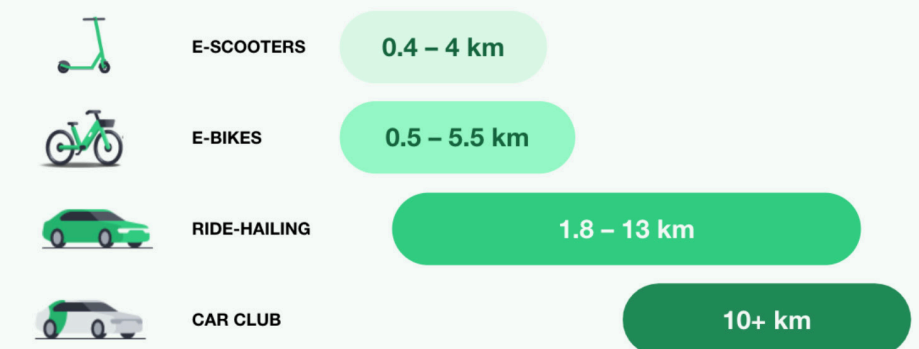


Figure 5.1 Preferred shared mobility mode by journey distance
Source: Bolt

Appendix A: Model sensitivity analysis

As outlined in the report (see Figure 3.1), alongside the baseline scenario, we have also analysed two variations to the baseline including Low and High scenarios. We have included the findings for this sensitivity analysis in this Appendix.

Evaluating the potential for car clubs

Switchable households

Figures A.1 and A.2 below outline the number of potential switchable households at regional or city level for the Low and High scenarios, provided there is suitable car club car provision.

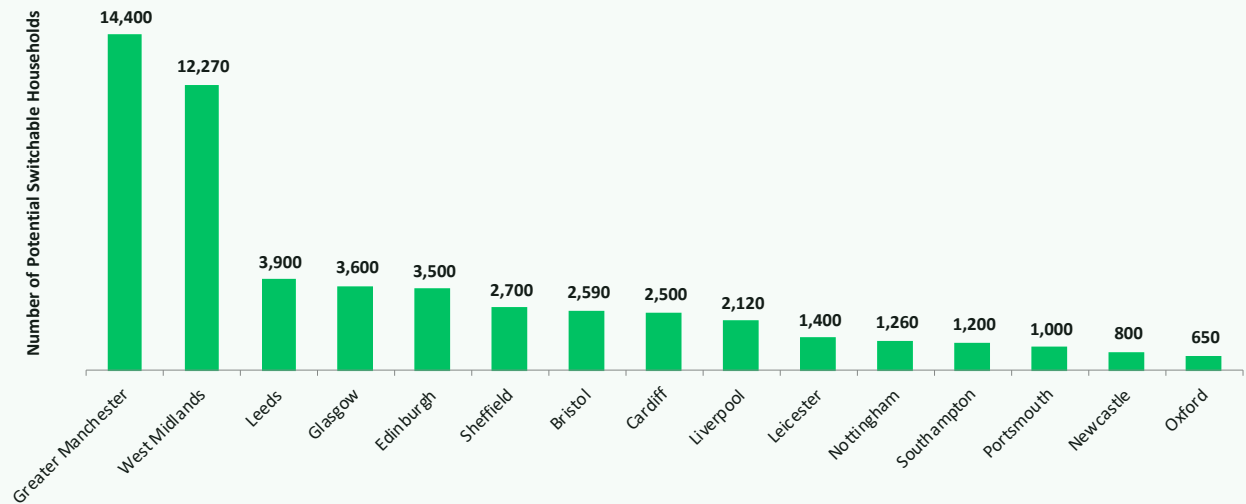


Figure A.1: Potential switchable households by region/city (Low scenario)

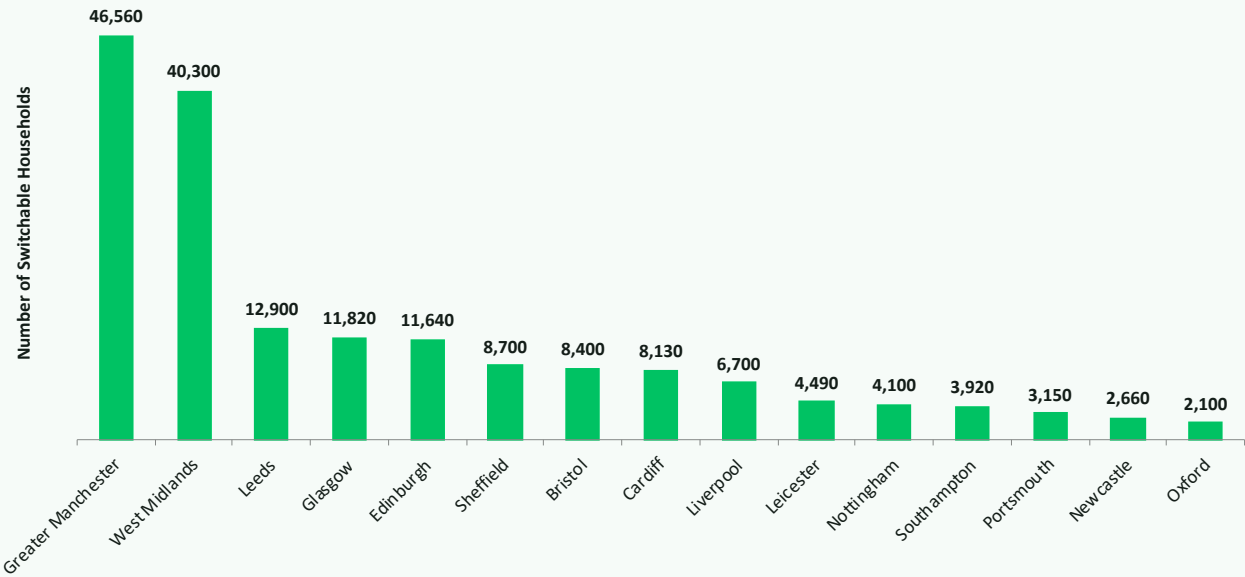


Figure A.2: Potential switchable households by region/city (High scenario)

Car club cars required

Figures A.3 and A.4 present the number of car club cars required to meet the demand from potential switchable households by region or cities for the Low and High scenarios respectively.

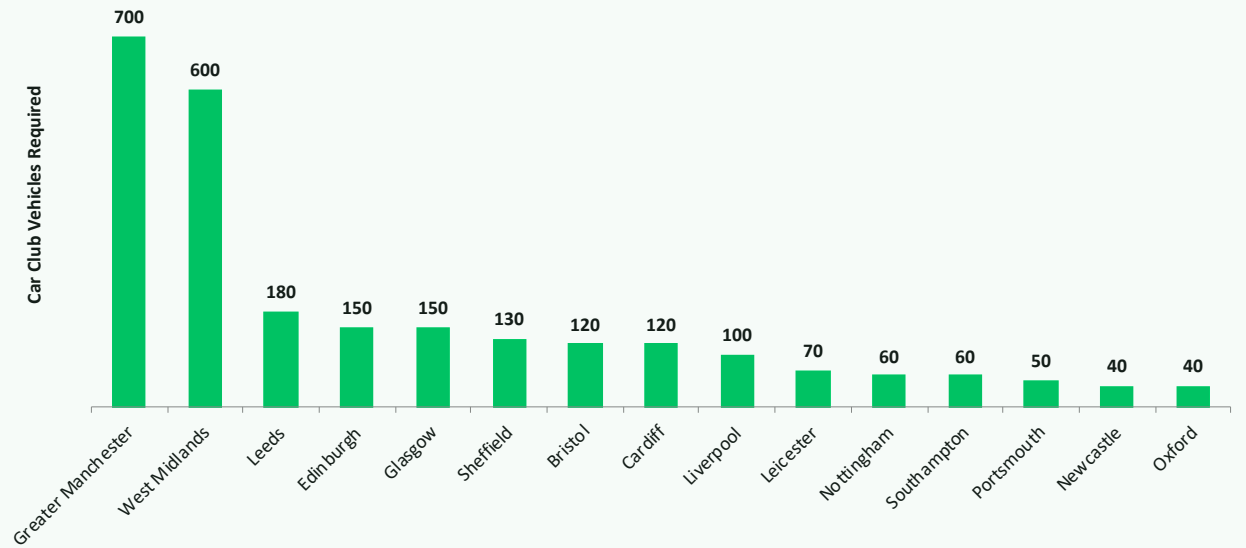


Figure A.3: Car club cars required by region/city (Low scenario)

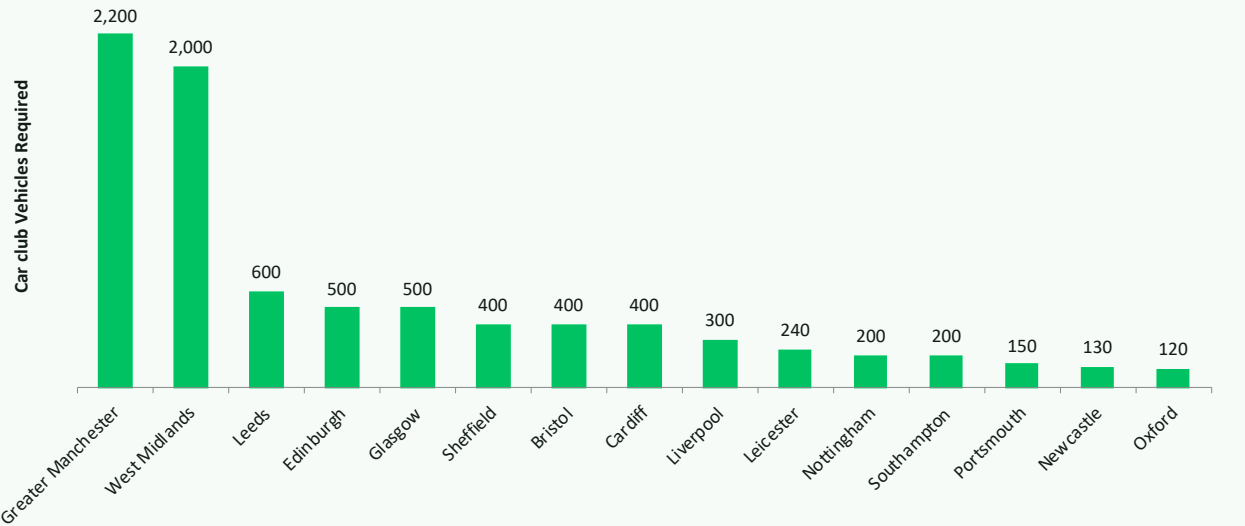


Figure A.4: Car club car required by region/city (High scenario)

Benefits of an enhanced car club offer

Reduction in car ownership

Figures A.5 and Figure A.6 below outline the number of private cars that can be removed across the 15 cities/city regions compared to new car club vehicles added for the Low and High scenarios respectively.

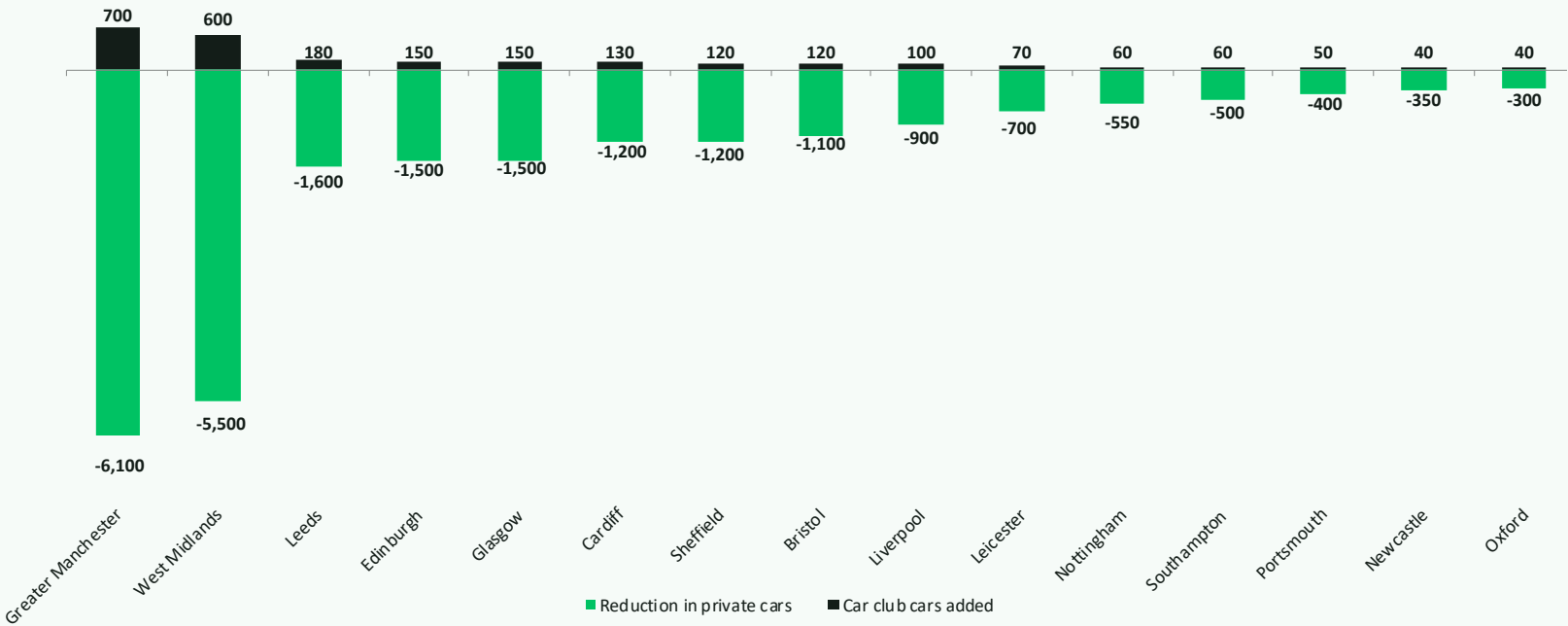


Figure A.5: Number of private cars removed by region/city (Low scenario)

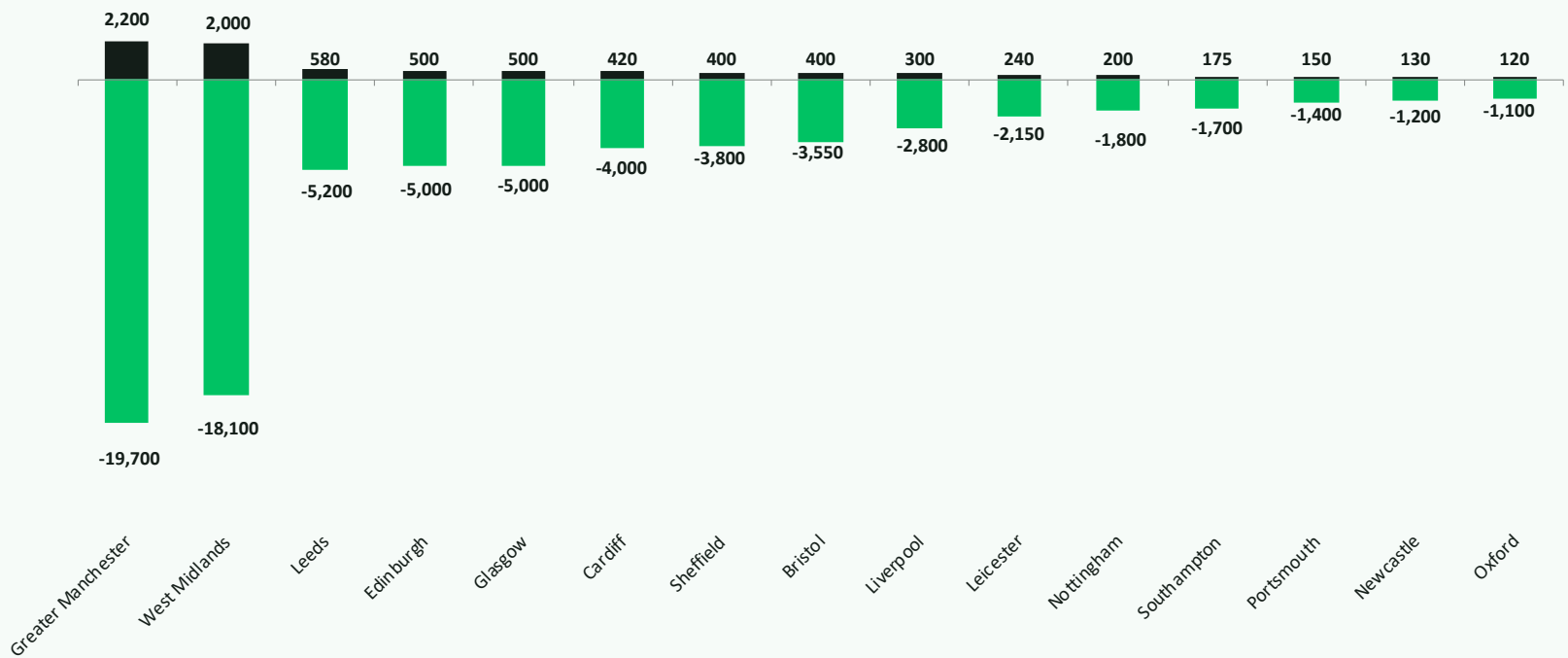


Figure A.6: Number of private cars removed by region/city (High scenario)

Reduction in car mileage

The potential annual trip reduction in miles across the 15 UK regions/cities for the Low and High scenarios respectively are presented in Figure A.7 and Figure A.8 below.

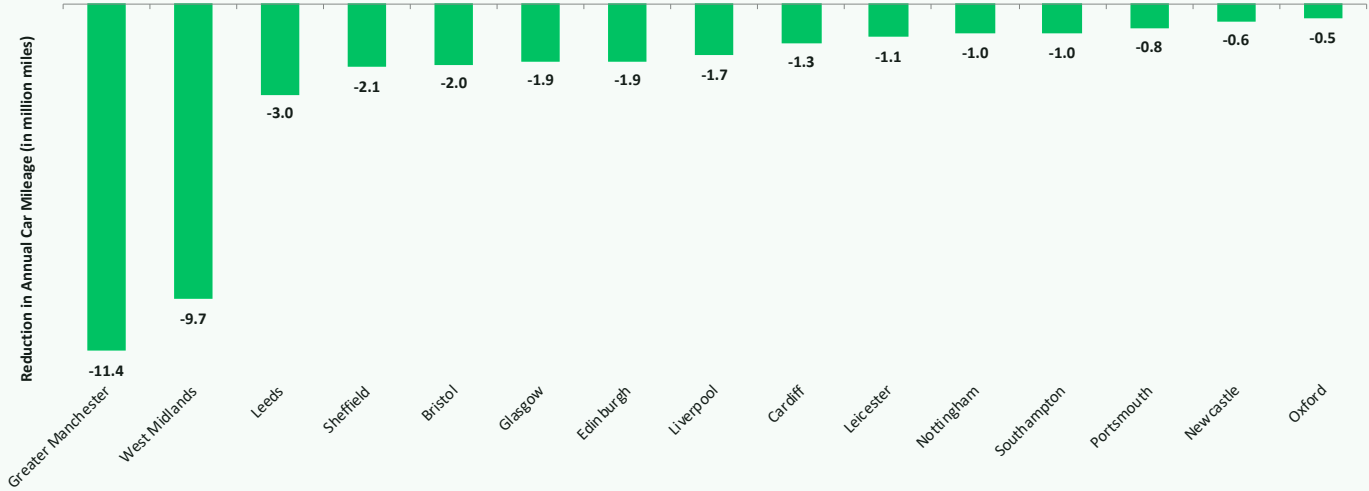


Figure A.7: Reduction in annual mileage by region/city (Low scenario)

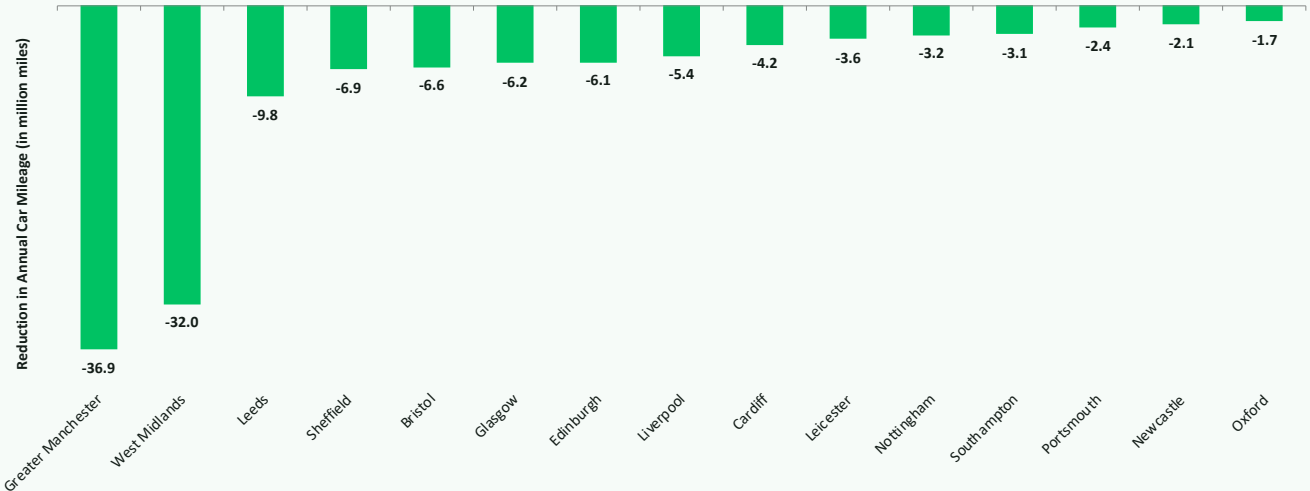


Figure A.8: Reduction in annual mileage by region/city (High scenario)

Reduction in annual CO₂ emissions

Figures A.9 and A.10 present the potential reduction in annual CO₂ emissions across the 15 UK region/cities for the Low and High scenarios respectively.

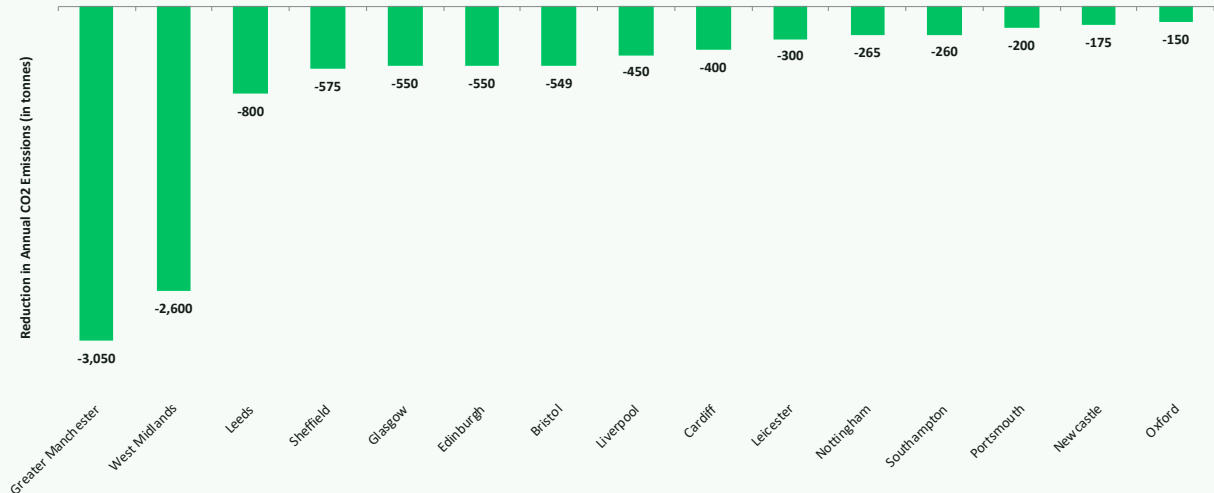


Figure A.9: Reductions in annual CO₂ emissions by region/city (Low scenario)

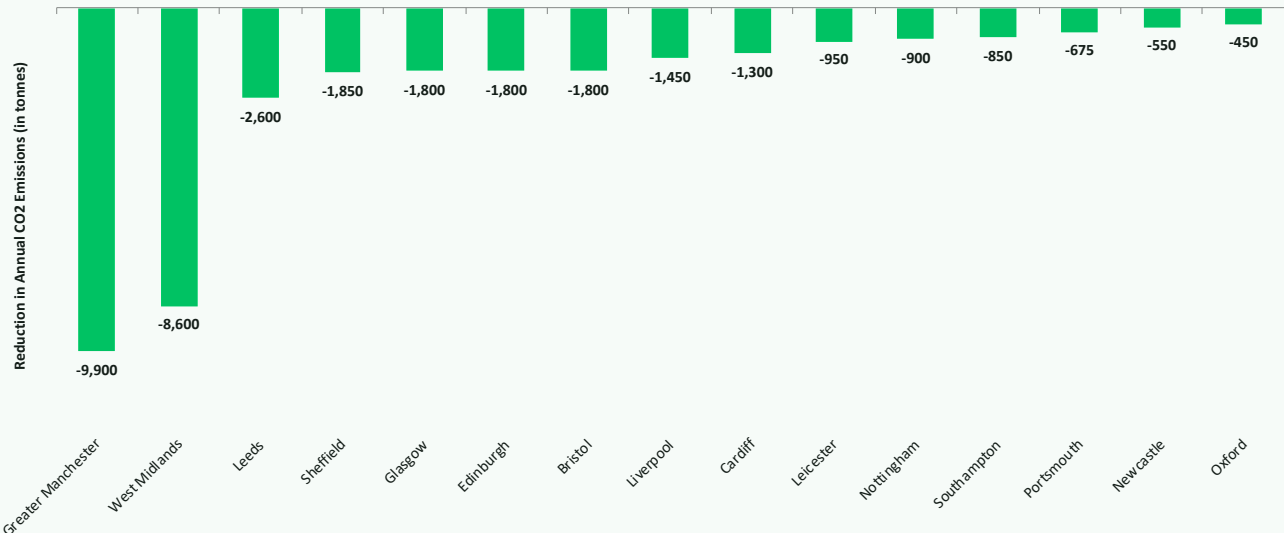


Figure A.10: Reduction in annual CO₂ emissions by region/city (High scenario)

Appendix B: City Summaries

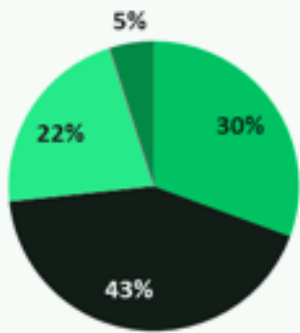
Greater Manchester



Total Households
1,200,600



Total registered cars
1,200,100



■ Proportion of Households with 0 Car ■ Proportion of Households with 1 Car
■ Proportion of Households with 2 Cars ■ Proportion of Households with 3+ Cars

New Mobility Provision

Electrification

⚡ 360 EV charge points

Car clubs

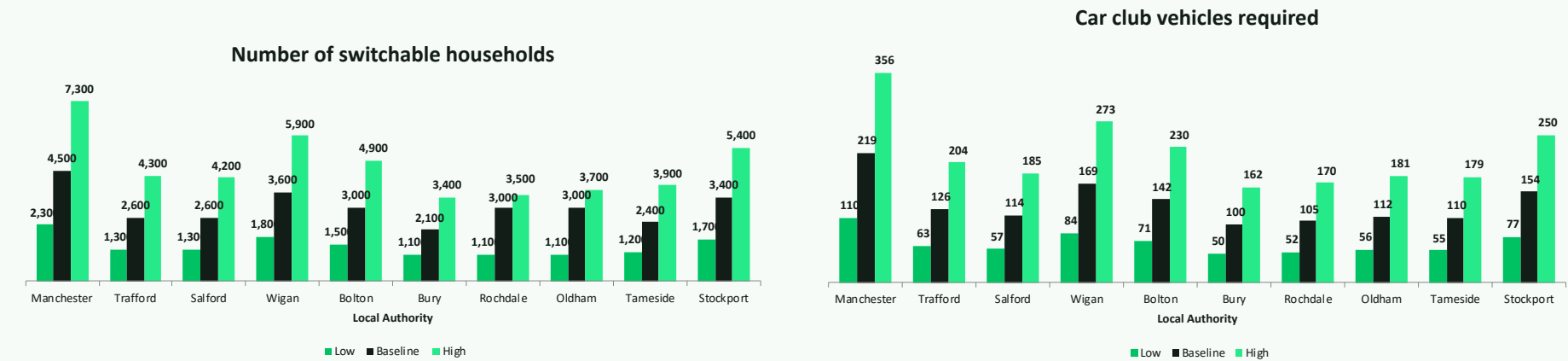
🚗 🚗 Medium

Bike share/rental e-scooter

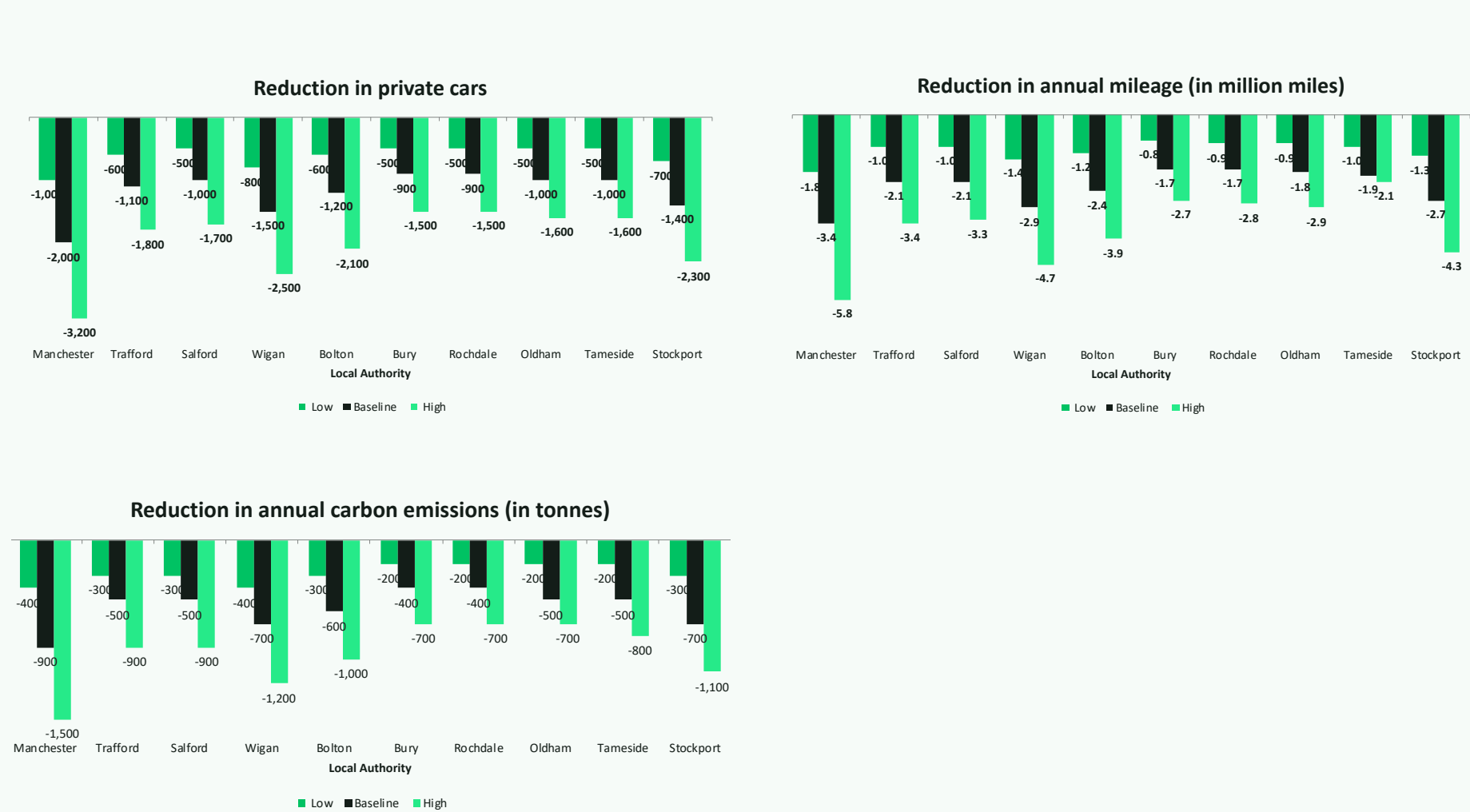
🚲 🚲 🚲 High

🛴 Low

Car club potential by scenario



Benefits of flexible car clubs



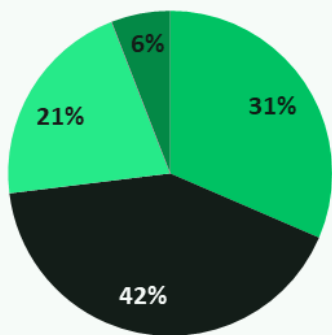
West Midlands



Total Households
1,200,000



Total registered cars
1,200,000



■ Proportion of Households with 0 Car ■ Proportion of Households with 1 Car
■ Proportion of Households with 2 Cars ■ Proportion of Households with 3+ Cars

New Mobility Provision

Electrification

⚡ 272 EV charge points

Car clubs

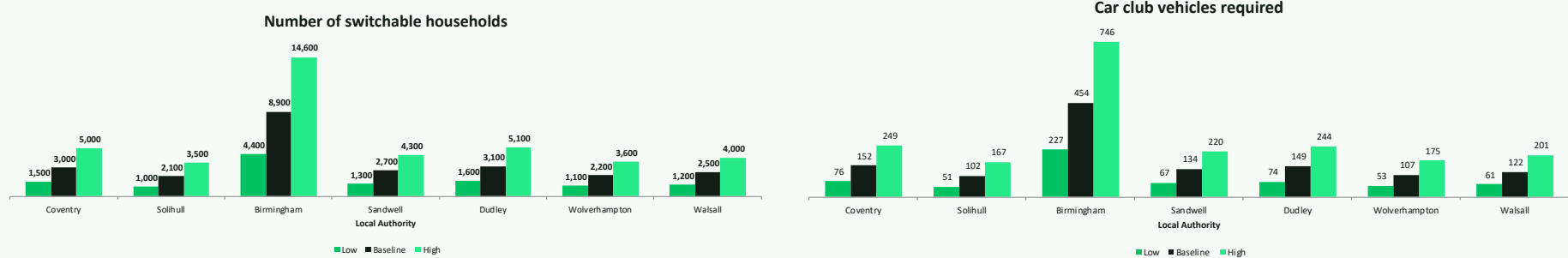
🚗 Low

Bike share/rental e-scooter

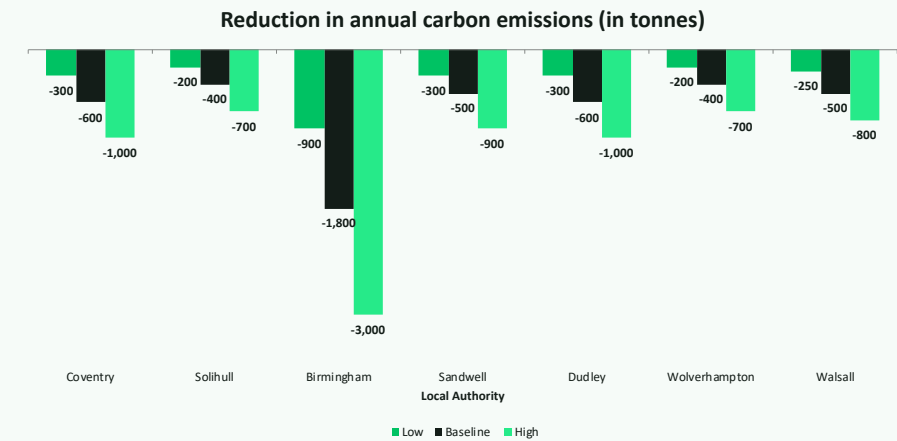
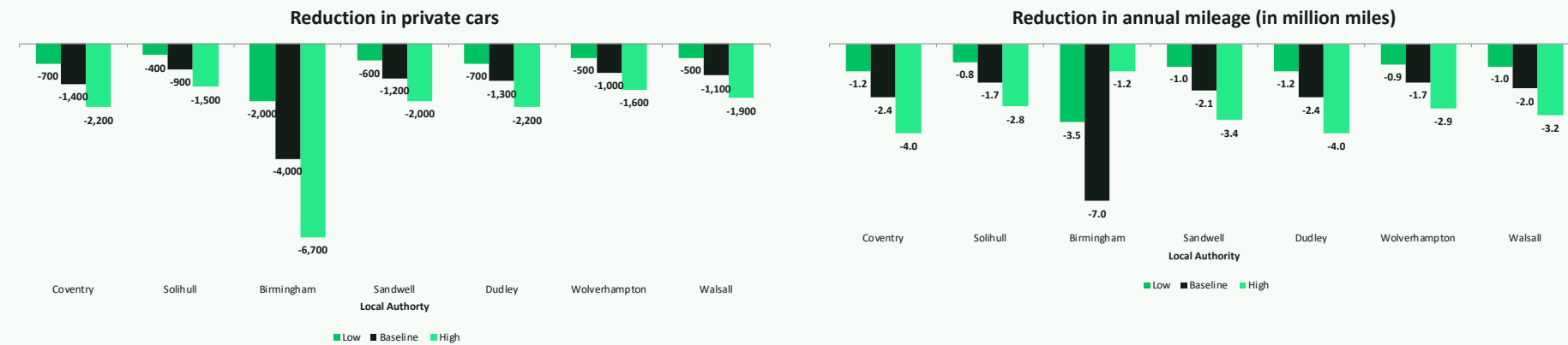
🚲 High

🛴 High

Car club potential by scenario



Benefits of flexible car clubs



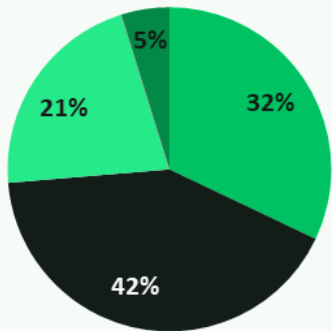
Leeds



Total Households
350,000



Total registered cars
350,000



■ Proportion of Households with 0 Car ■ Proportion of Households with 1 Car
■ Proportion of Households with 2 Cars ■ Proportion of Households with 3+ Cars

New Mobility Provision

Electrification

⚡ 150 EV charge points

Car clubs

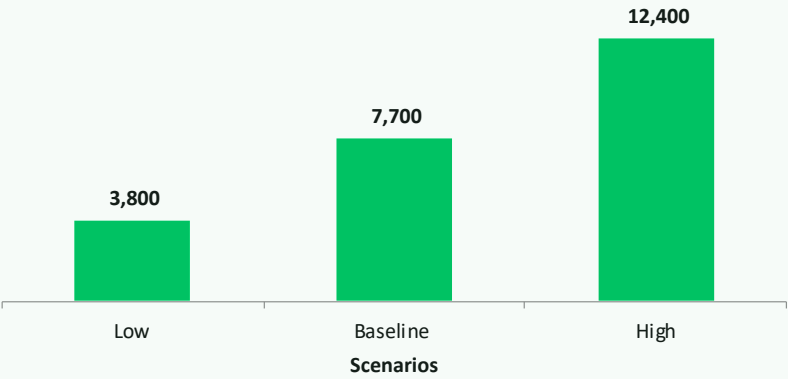
🚗🚗 Medium

Bike share/rental e-scooter

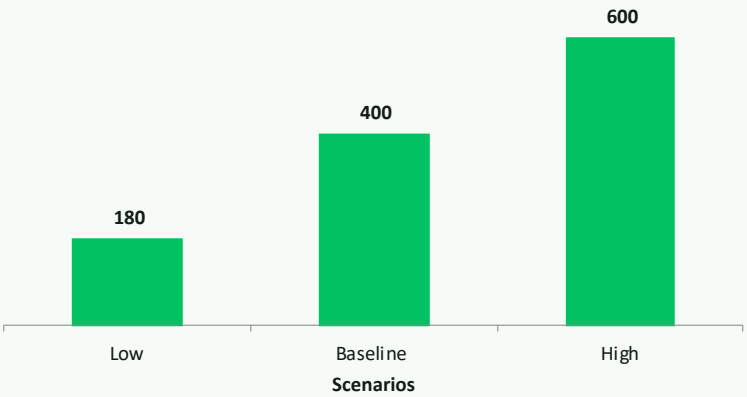
N/A

Car club potential by scenario

Number of switchable households

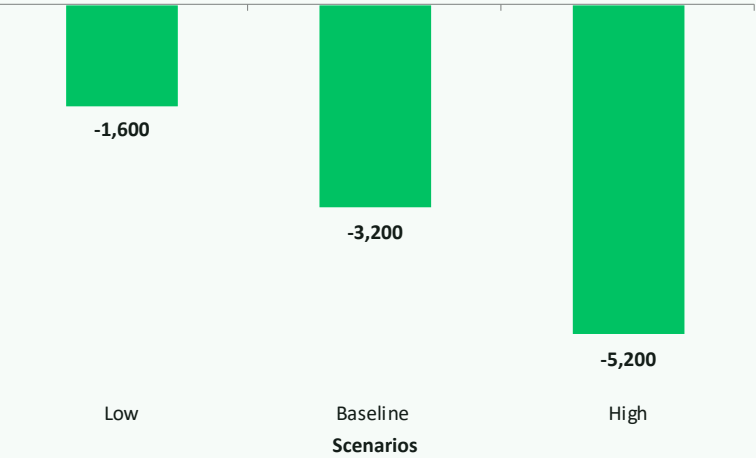


Car club vehicles required

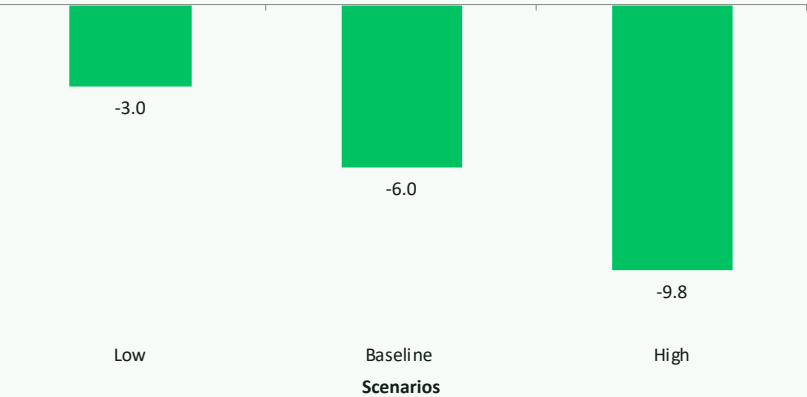


Benefits of flexible car clubs

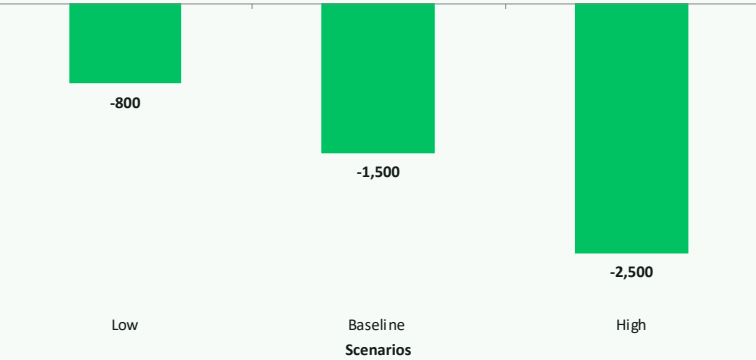
Reduction in private cars



Reduction in annual mileage (in million miles)



Reduction in annual carbon emissions (in tonnes)



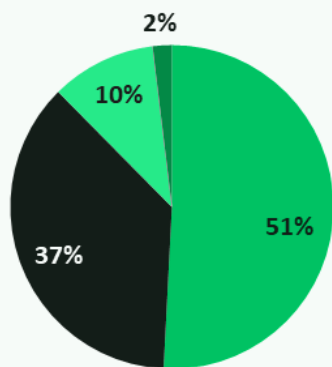
Glasgow



Total Households
130,000



Total registered cars
197,000



■ Proportion of Households with 0 Car ■ Proportion of Households with 1 Car
■ Proportion of Households with 2 Cars ■ Proportion of Households with 3+ Cars

New Mobility Provision

Electrification

⚡ 218 EV charge points

Car clubs

🚗 🚗 Medium

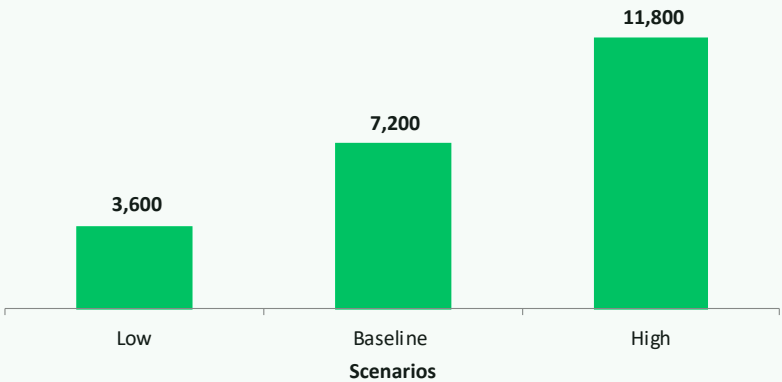
Bike share/rental e-scooter

🚲 🚲 🚲 High

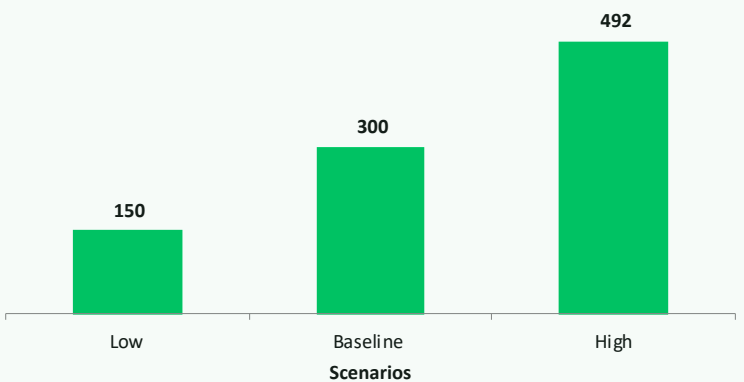
N/A

Car club potential by scenario

Number of switchable households

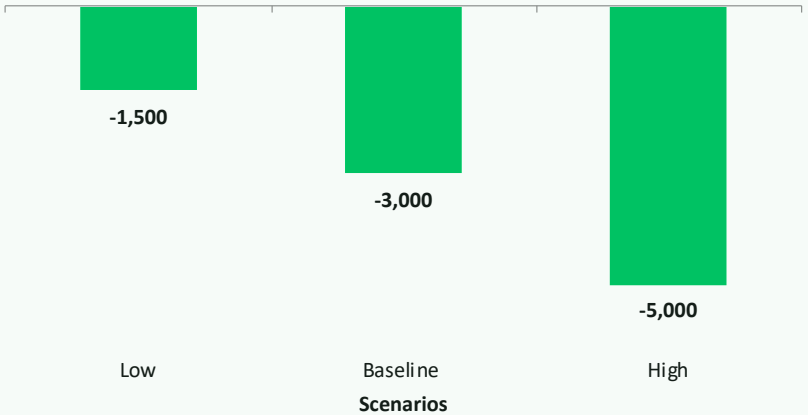


Car club vehicles required

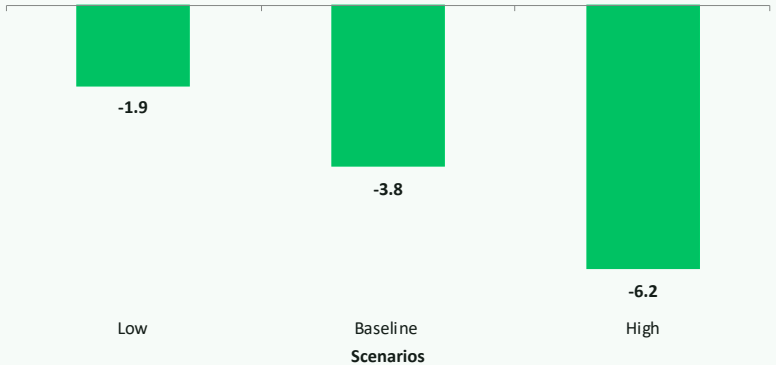


Benefits of flexible car clubs

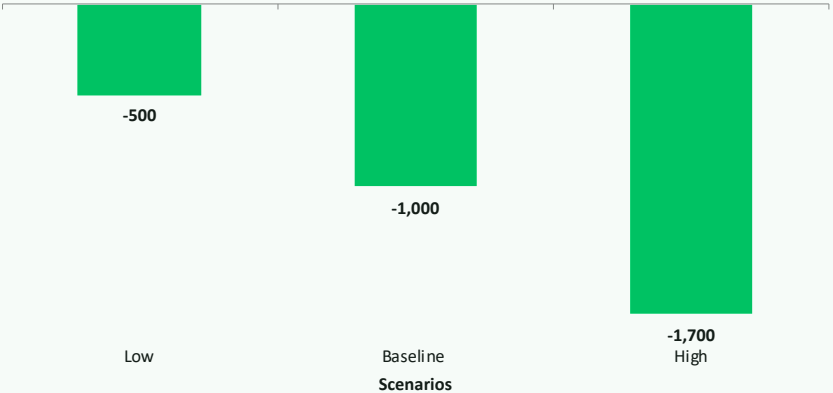
Reduction in private cars



Reduction in annual mileage (in million miles)



Reduction in annual carbon emissions (in tonnes)



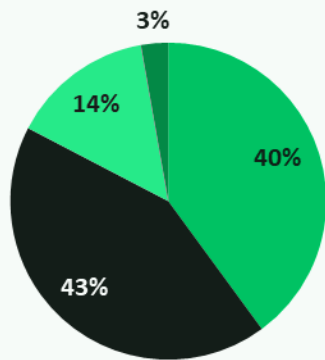
Edinburgh



Total Households
250,000



Total registered cars
200,000



■ Proportion of Households with 0 Car ■ Proportion of Households with 1 Car
■ Proportion of Households with 2 Cars ■ Proportion of Households with 3+ Cars

New Mobility Provision

Electrification

⚡ 66 EV charge points

Car clubs

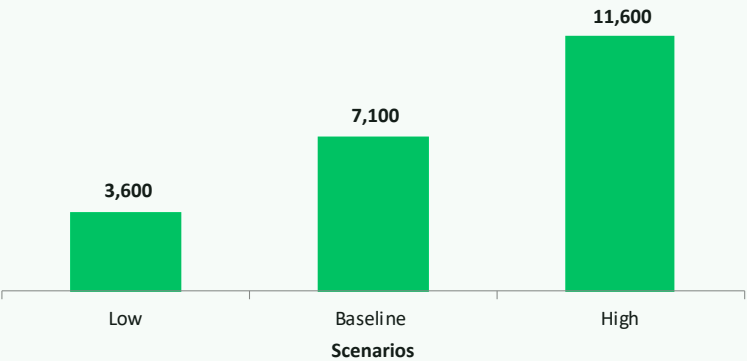
🚗🚗 Medium

Bike share/rental e-scooter

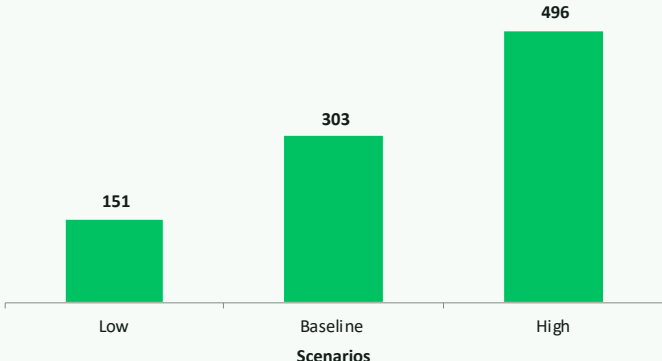
N/A

Car club potential by scenario

Number of switchable households

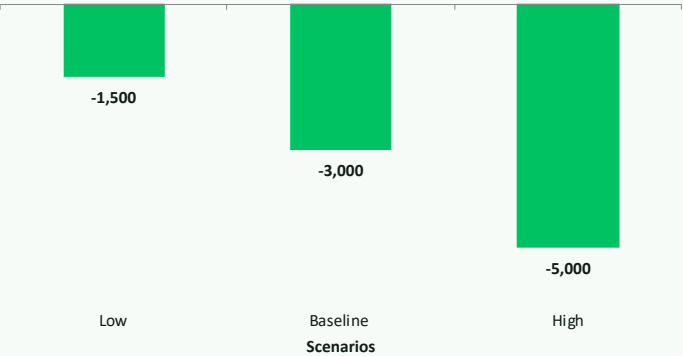


Car club vehicles required

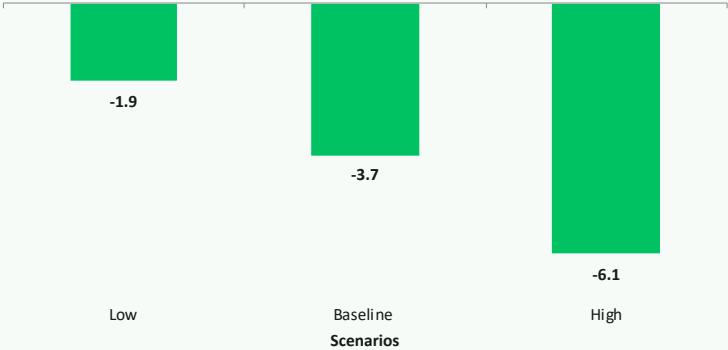


Benefits of flexible car clubs

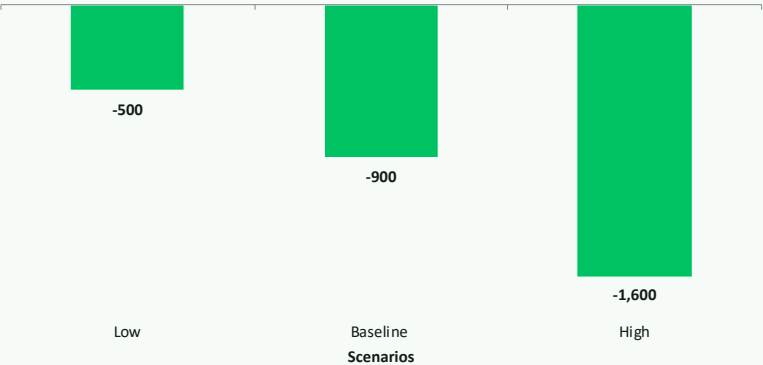
Reduction in private cars



Reduction in annual mileage (in million miles)



Reduction in annual carbon emissions (in tonnes)



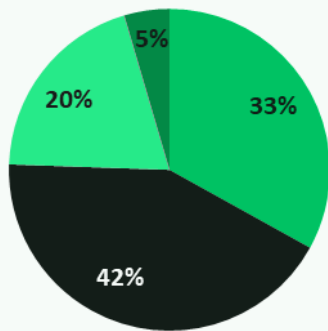
Sheffield



Total Households
250,000



Total registered cars
241,000



■ Proportion of Households with 0 Car ■ Proportion of Households with 1 Car
■ Proportion of Households with 2 Cars ■ Proportion of Households with 3+ Cars

New Mobility Provision

Electrification

⚡ 75 EV charge points

Car clubs

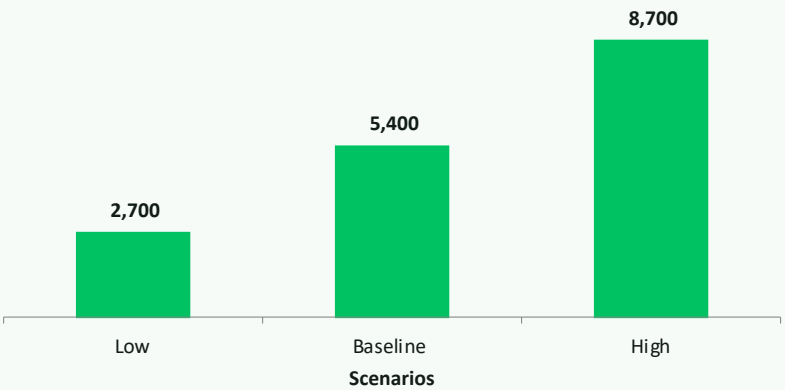
🚗 Low

Bike share/rental e-scooter

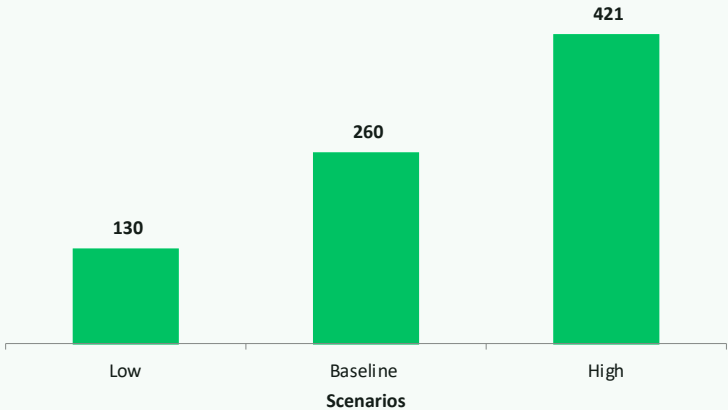
N/A

Car club potential by scenario

Number of switchable households

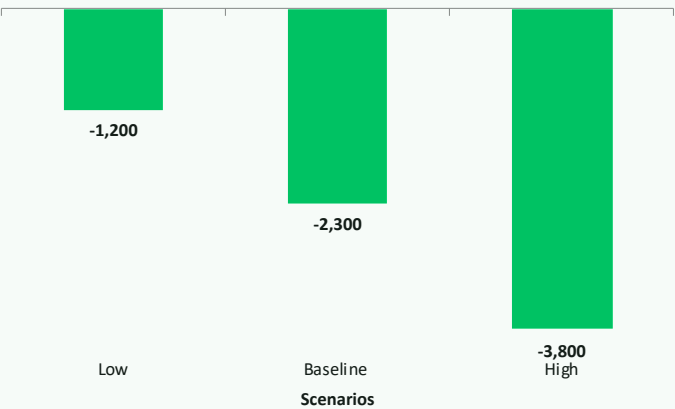


Car club vehicles required

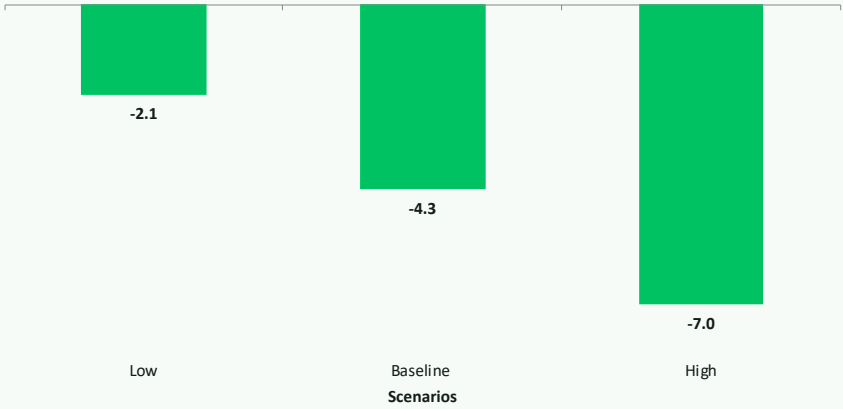


Benefits of flexible car clubs

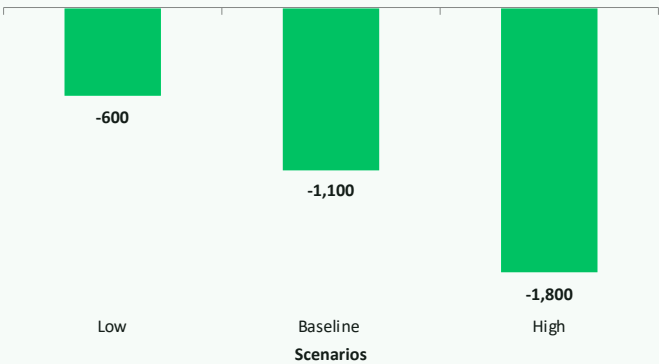
Reduction in private cars



Reduction in annual mileage (in million miles)



Reduction in annual carbon emissions (in tonnes)



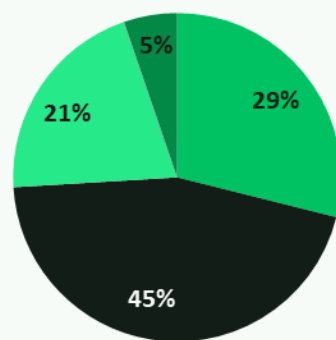
Bristol



Total Households
200,000



Total registered cars
209,000



■ Proportion of Households with 0 Car ■ Proportion of Households with 1 Car
■ Proportion of Households with 2 Cars ■ Proportion of Households with 3+ Cars

New Mobility Provision

Electrification

⚡ 250 EV charge points

Car clubs

🚗🚗 Medium

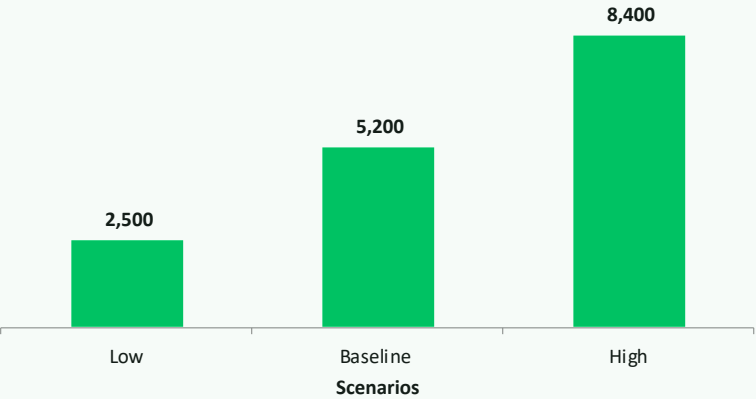
Bike share/rental e-scooter

🚲🚲🚲 High

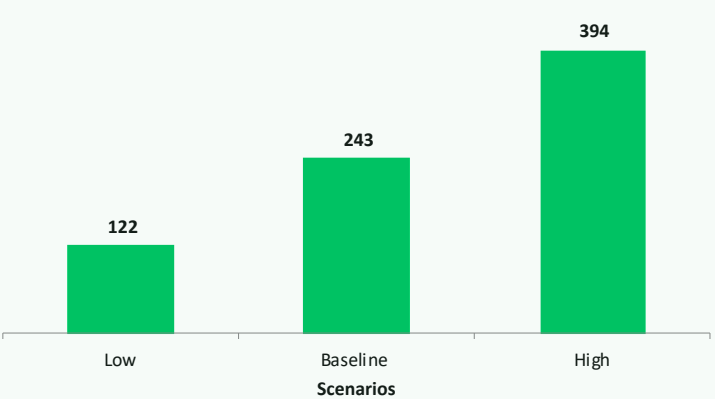
🛴🛴 Medium

Car club potential by scenario

Number of switchable households

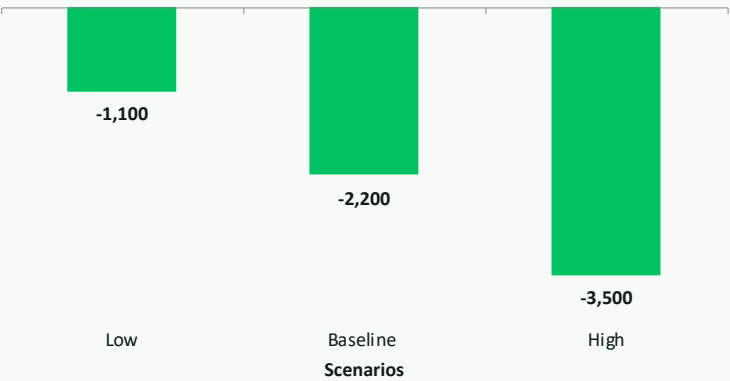


Car club vehicles required

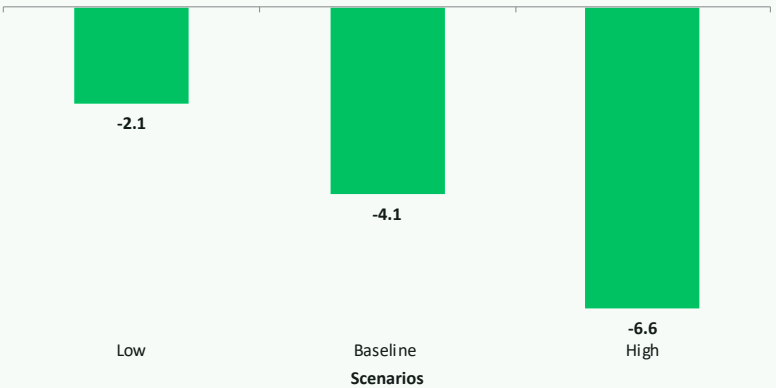


Benefits of flexible car clubs

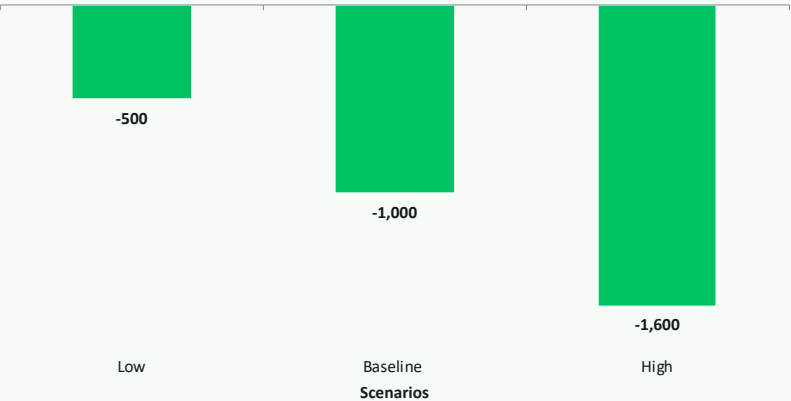
Reduction in private cars



Reduction in annual mileage (in million miles)



Reduction in annual carbon emissions (in tonnes)



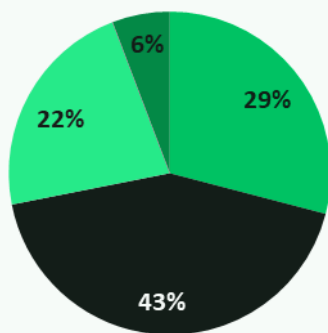
Cardiff



Total Households
150,000



Total registered cars
164,000



■ Proportion of Households with 0 Car ■ Proportion of Households with 1 Car
■ Proportion of Households with 2 Cars ■ Proportion of Households with 3+ Cars

New Mobility Provision

Electrification

⚡ 21 EV charge points

Car clubs

🚗 Low

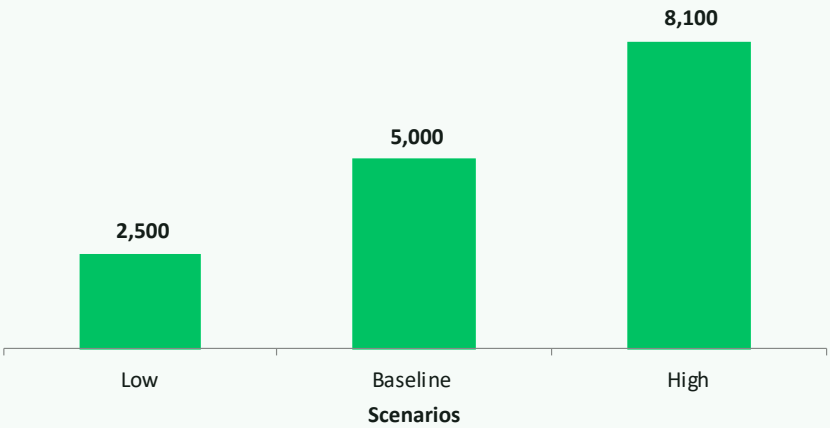
Bike share/rental e-scooter

🚲🚲🚲 High

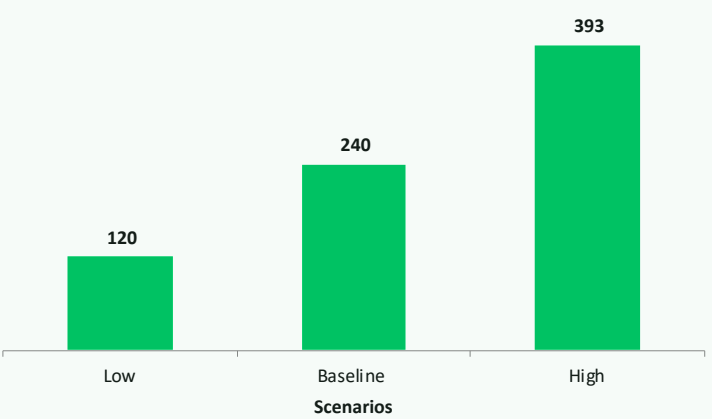
N/A

Car club potential by scenario

Number of switchable households

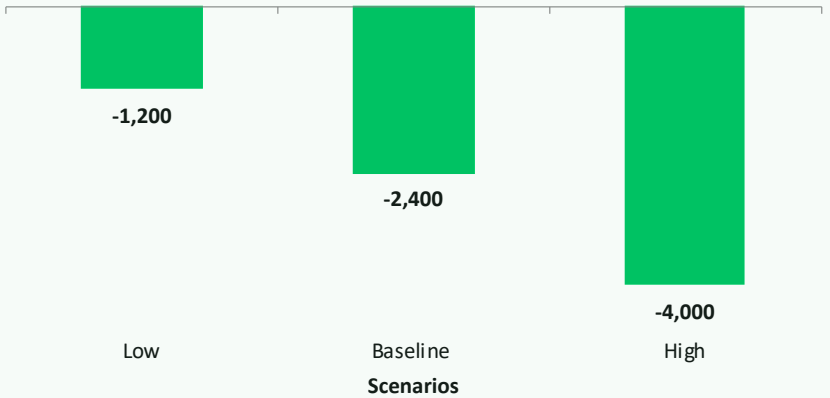


Car club vehicles required

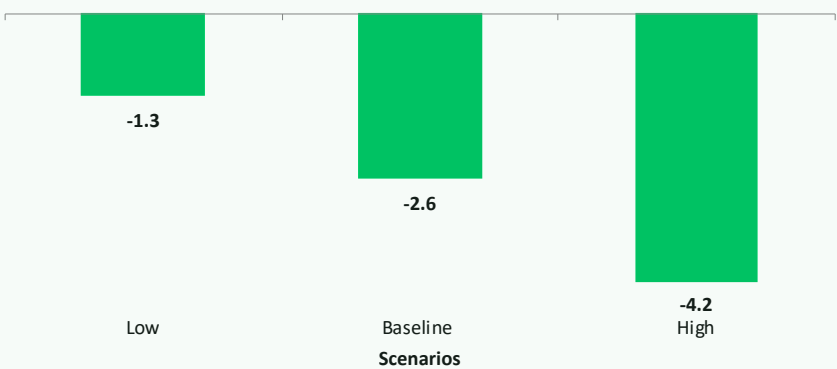


Benefits of flexible car clubs

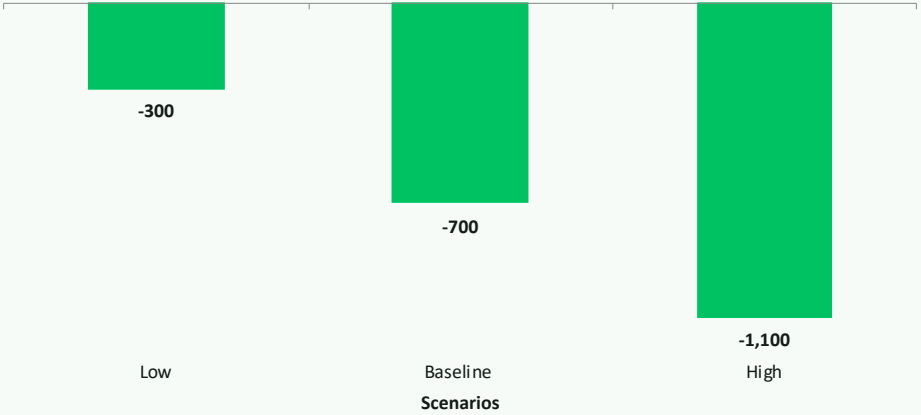
Reduction in private cars



Reduction in annual mileage (in million miles)



Reduction in annual carbon emissions (in tonnes)



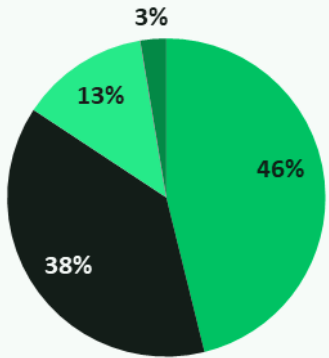
Liverpool



Total Households
223,513



Total registered cars
163,192



■ Proportion of Households with 0 Car ■ Proportion of Households with 1 Car
■ Proportion of Households with 2 Cars ■ Proportion of Households with 3+ Cars

New Mobility Provision

Electrification

⚡ 62 EV charge points

Car clubs

🚗 Low

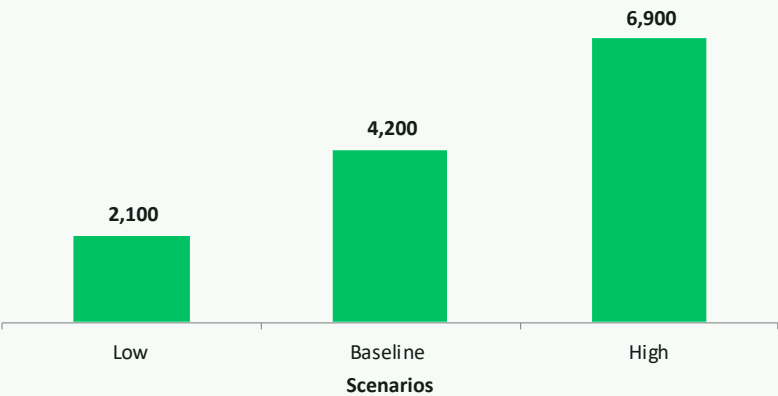
Bike share/rental e-scooter

🚲 High

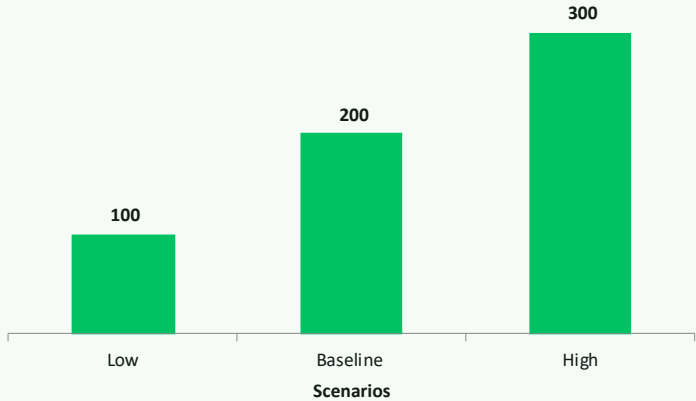
🛴 High

Car club potential by scenario

Number of switchable households

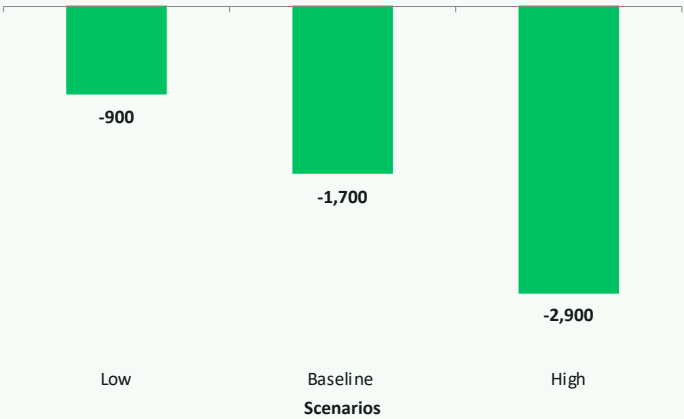


Car club vehicles required

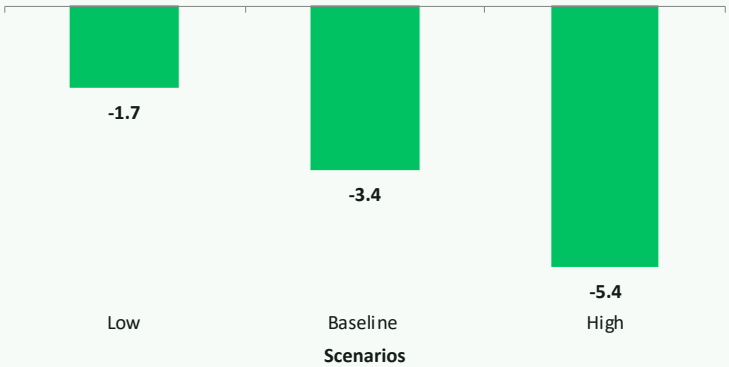


Benefits of flexible car clubs

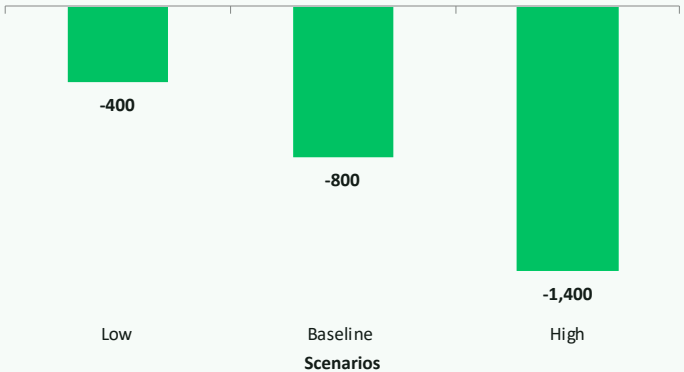
Reduction in private cars



Reduction in annual mileage (in million miles)



Reduction in annual carbon emissions (in tonnes)



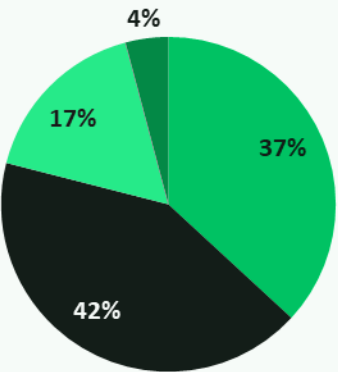
Leicester



Total Households
140,000



Total registered cars
123,000



■ Proportion of Households with 0 Car ■ Proportion of Households with 1 Car
■ Proportion of Households with 2 Cars ■ Proportion of Households with 3+ Cars

New Mobility Provision

Electrification

⚡ 150 EV charge points

Car clubs

🚗 Low

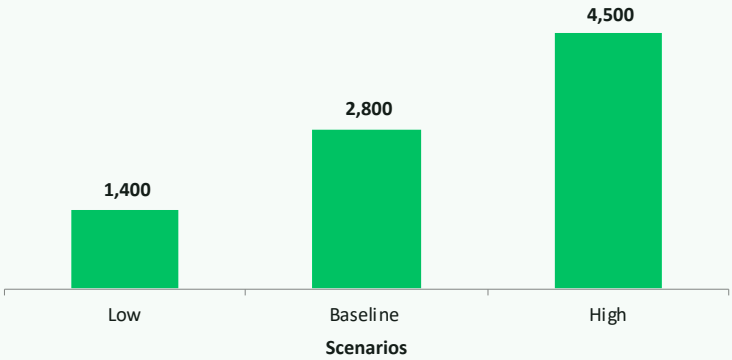
Bike share/rental e-scooter

🚲🚲🚲 High

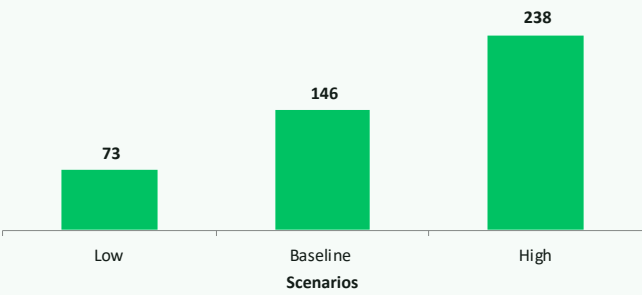
N/A

Car club potential by scenario

Number of switchable households

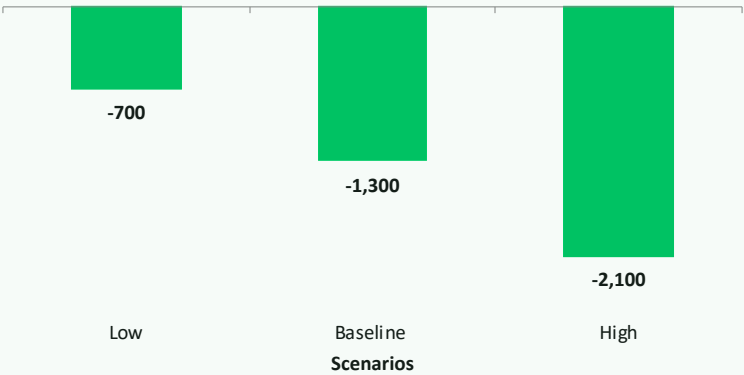


Car club vehicles required

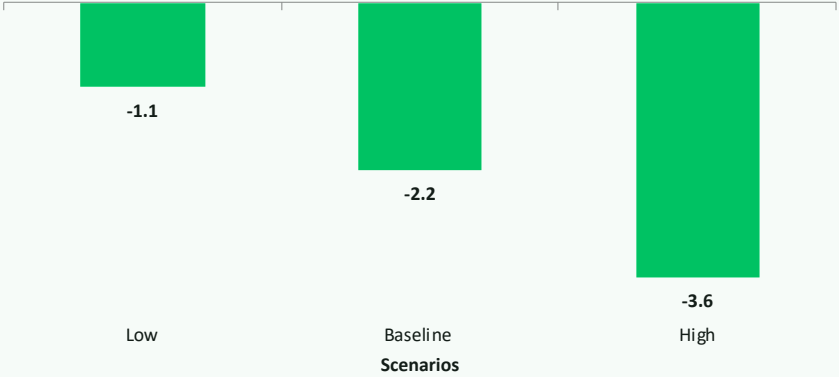


Benefits of flexible car clubs

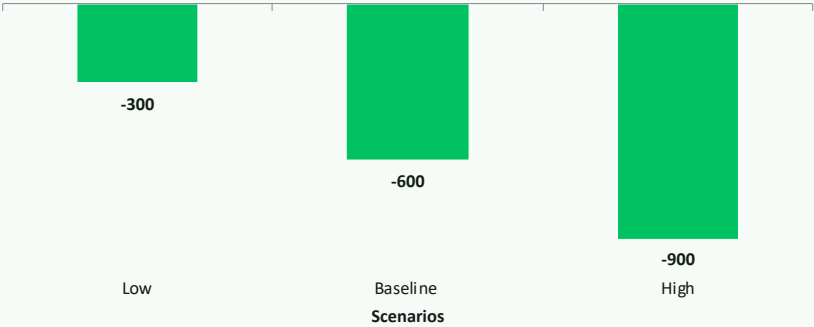
Reduction in private cars



Reduction in annual mileage (in million miles)



Reduction in annual carbon emissions (in tonnes)



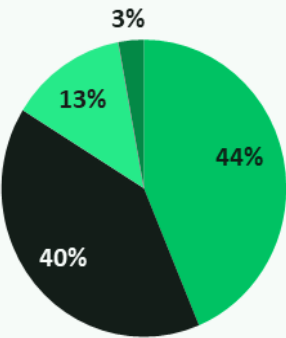
Nottingham



Total Households
140,000



Total registered cars
106,000



■ Proportion of Households with 0 Car ■ Proportion of Households with 1 Car
■ Proportion of Households with 2 Cars ■ Proportion of Households with 3+ Cars

New Mobility Provision

Electrification

⚡ 109 EV charge points

Car clubs

🚗 Low

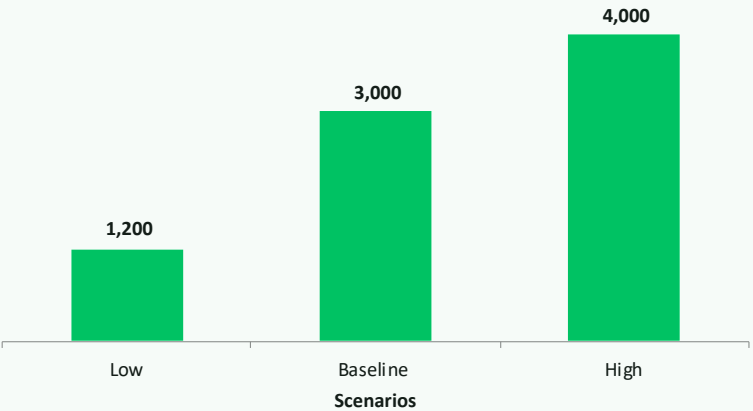
Bike share/rental e-scooter

🚲 Low

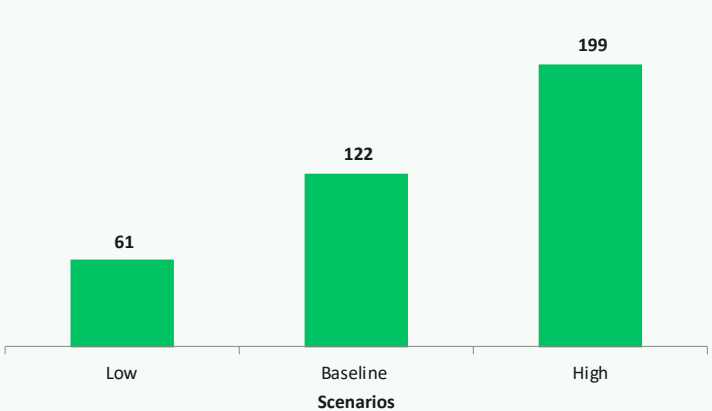
🛴 High

Car club potential by scenario

Number of switchable households

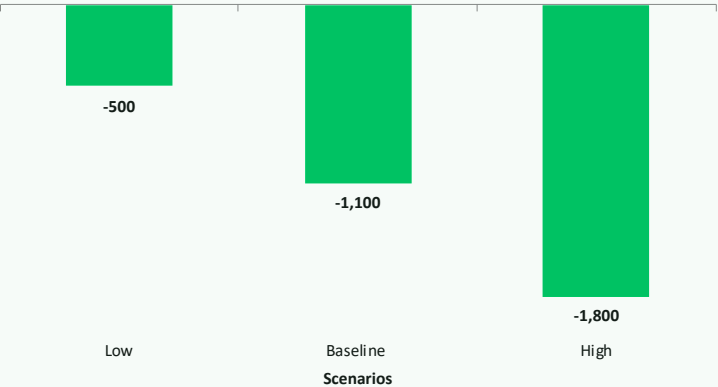


Car club vehicles required

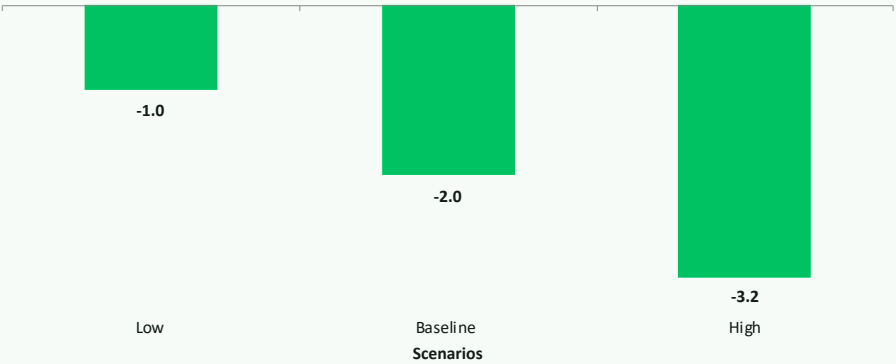


Benefits of flexible car clubs

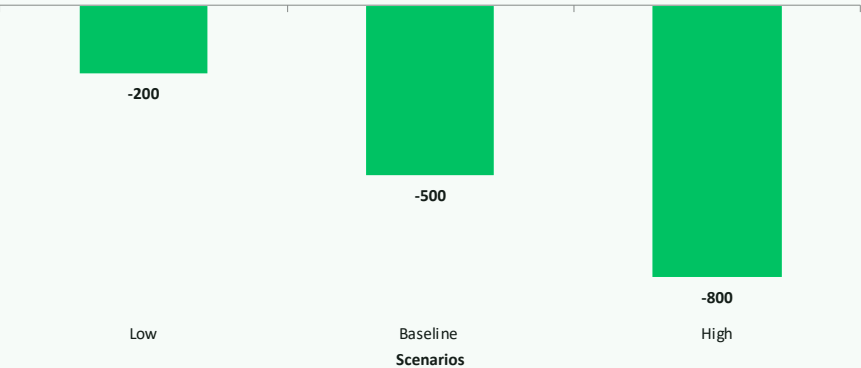
Reduction in private cars



Reduction in annual mileage (in million miles)



Reduction in annual carbon emissions (in tonnes)



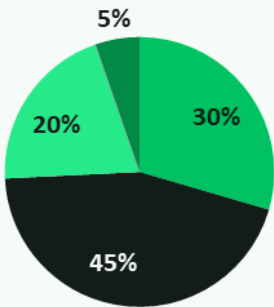
Southampton



Total Households
110,000



Total registered cars
112,000



■ Proportion of Households with 0 Car ■ Proportion of Households with 1 Car
■ Proportion of Households with 2 Cars ■ Proportion of Households with 3+ Cars

New Mobility Provision

Electrification

⚡ 44 EV charge points

Car clubs

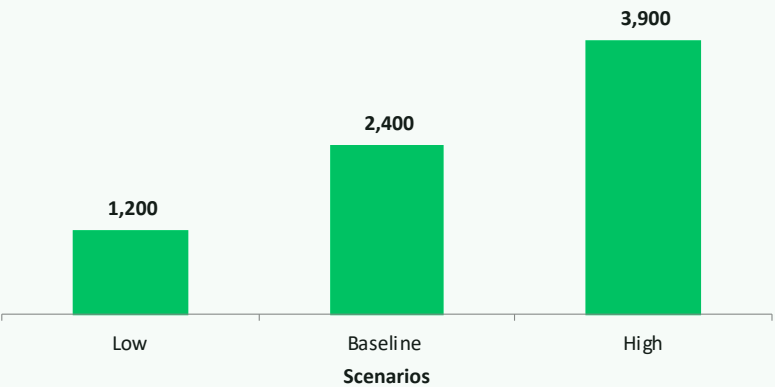
🚗 Low

Bike share/rental e-scooter

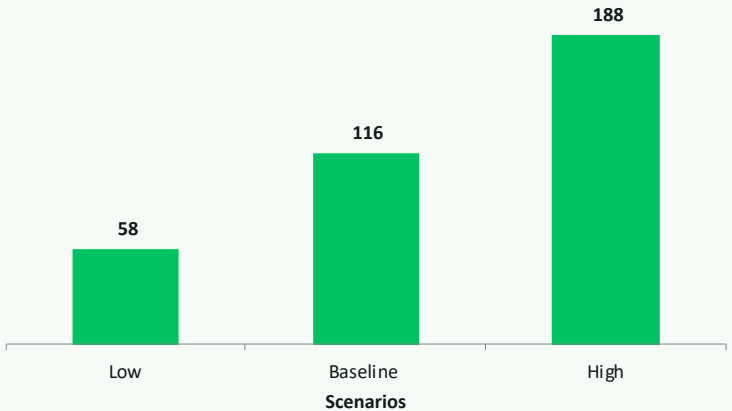
N/A
🚲 🚲 🚲 High

Car club potential by scenario

Number of switchable households

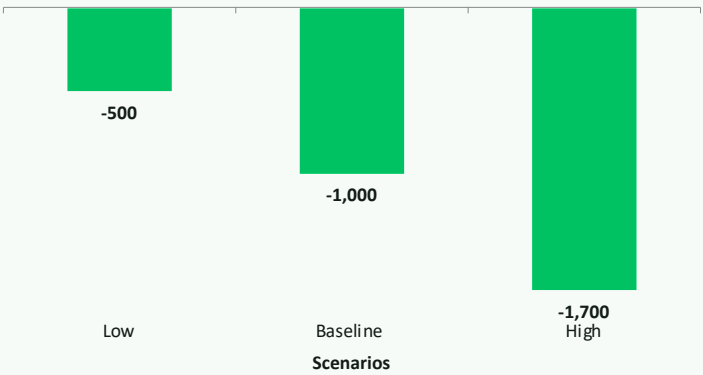


Car club vehicles required

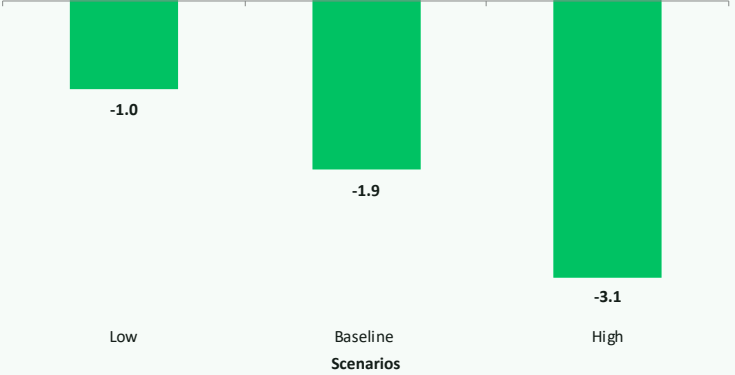


Benefits of flexible car clubs

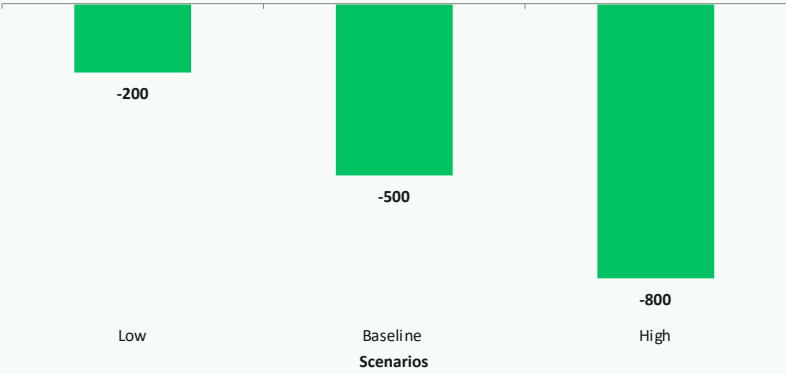
Reduction in private cars



Reduction in annual mileage (in million miles)



Reduction in annual carbon emissions (in tonnes)



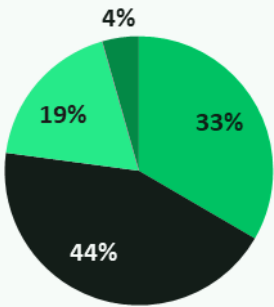
Portsmouth



Total Households
90,000



Total registered cars
87,000



■ Proportion of Households with 0 Car ■ Proportion of Households with 1 Car
■ Proportion of Households with 2 Cars ■ Proportion of Households with 3+ Cars

New Mobility Provision

Electrification

⚡ 50 EV charge points

Car clubs

🚗 Low

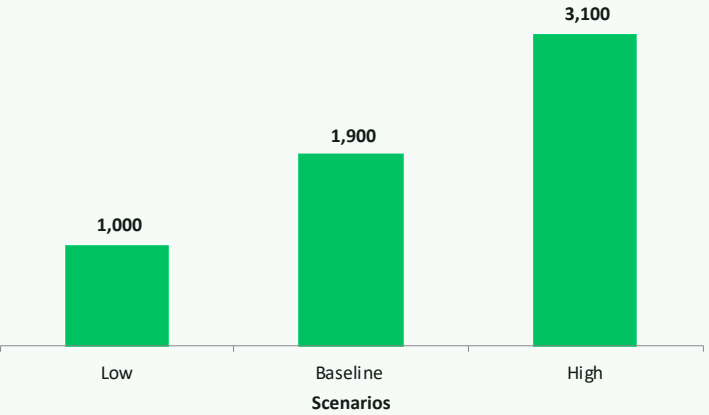
Bike share/rental e-scooter

N/A

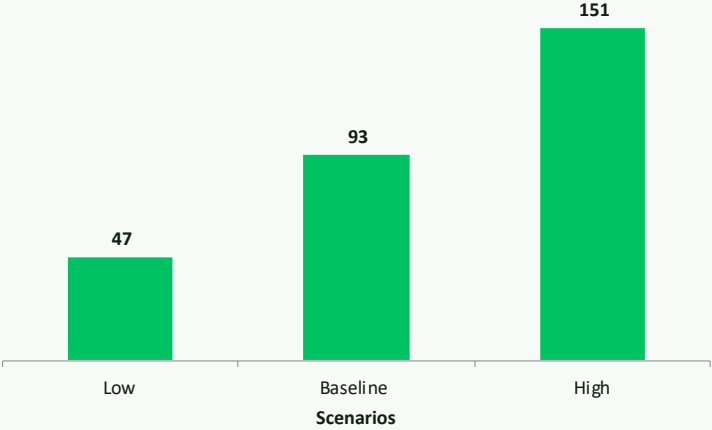
🚲🚲🚲 High

Car club potential by scenario

Number of switchable households

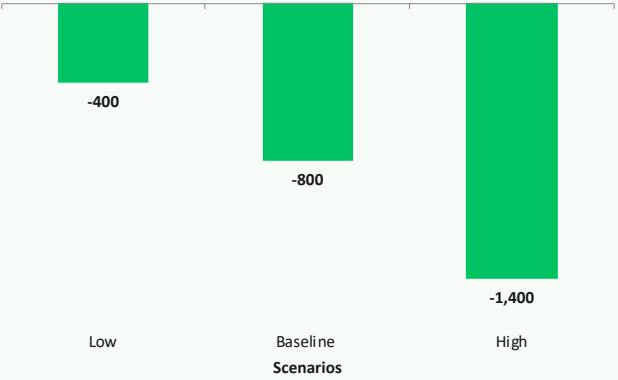


Car club vehicles required

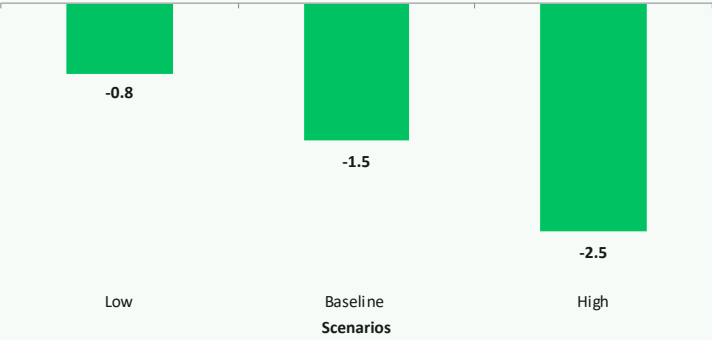


Benefits of flexible car clubs

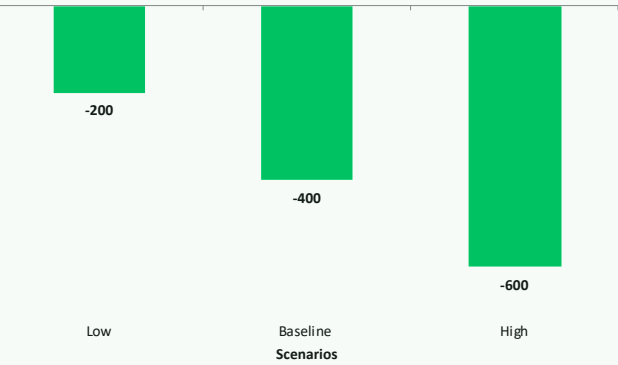
Reduction in private cars



Reduction in annual mileage (in million miles)



Reduction in annual carbon emissions (in tonnes)



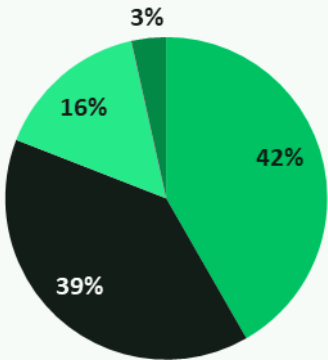
Newcastle



Total Households
130,000



Total registered cars
106,000



■ Proportion of Households with 0 Car ■ Proportion of Households with 1 Car
■ Proportion of Households with 2 Cars ■ Proportion of Households with 3+ Cars

New Mobility Provision

Electrification

⚡ 39 EV charge points

Car clubs

🚗🚗 Medium

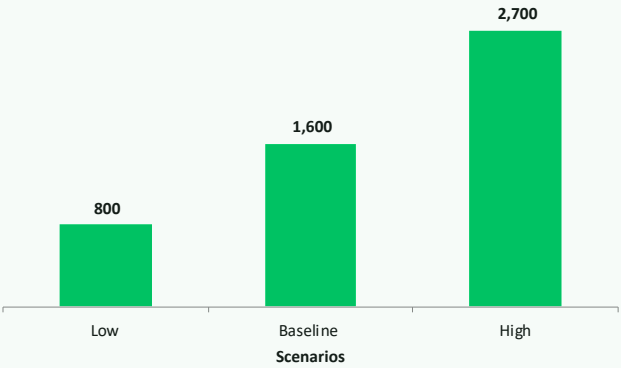
Bike share/rental e-scooter

N/A

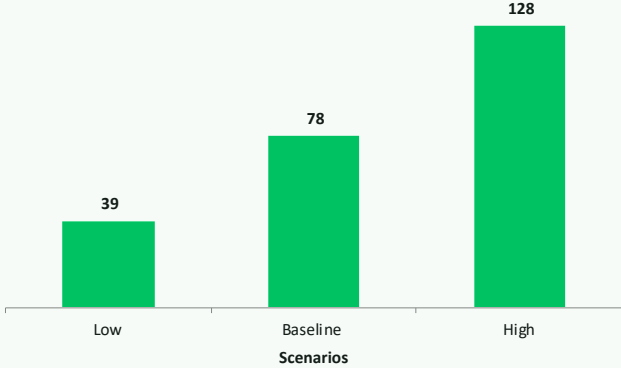
🚲🚲🚲 High

Car club potential by scenario

Number of switchable households

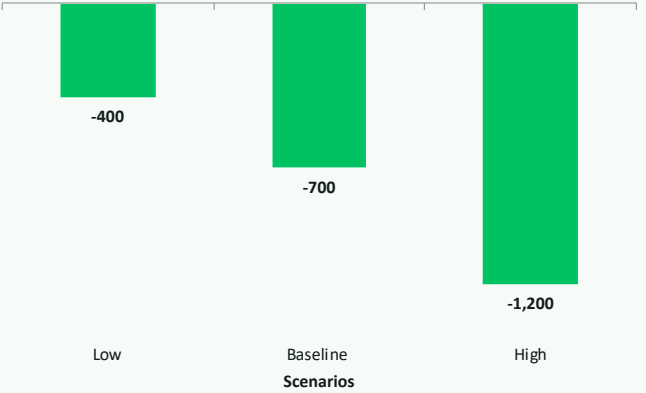


Car club vehicles required

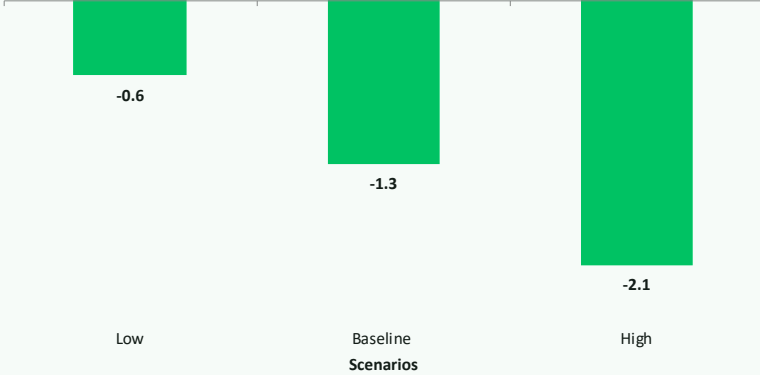


Benefits of flexible car clubs

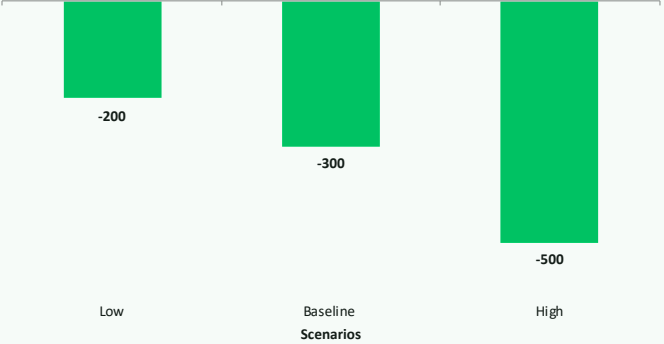
Reduction in private cars



Reduction in annual mileage (in million miles)



Reduction in annual carbon emissions (in tonnes)



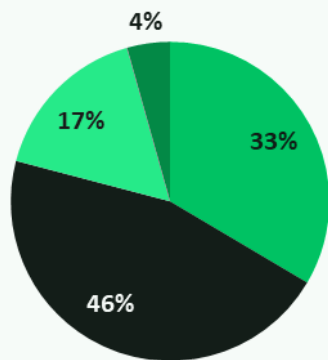
Oxford



Total Households
60,000



Total registered cars
57,000



■ Proportion of Households with 0 Car ■ Proportion of Households with 1 Car
■ Proportion of Households with 2 Cars ■ Proportion of Households with 3+ Cars

New Mobility Provision

Electrification

⚡ 108 EV charge points

Car clubs

🚗🚗 Medium

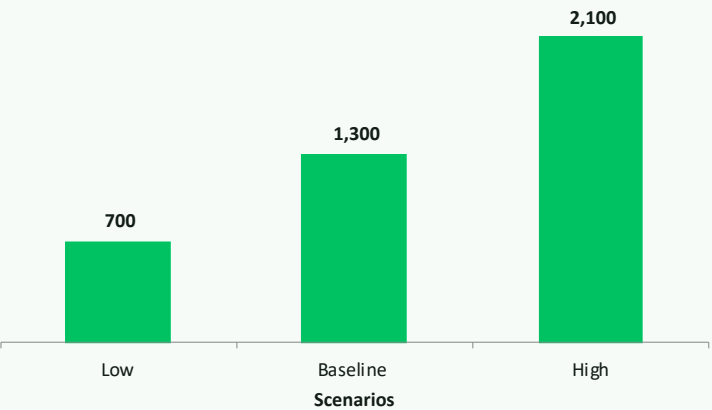
Bike share/rental e-scooter

🚲 Low

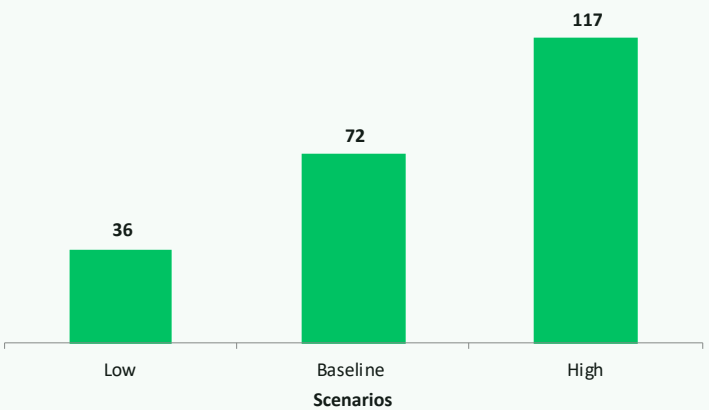
🛴🛴🛴 High

Car club potential by scenario

Number of switchable households

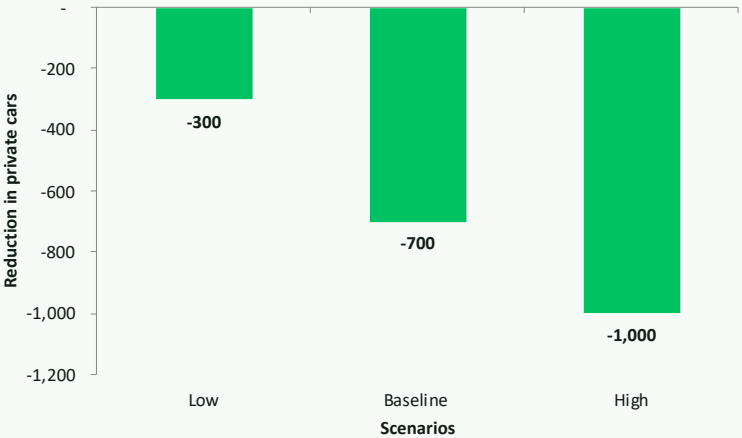


Car club vehicles required

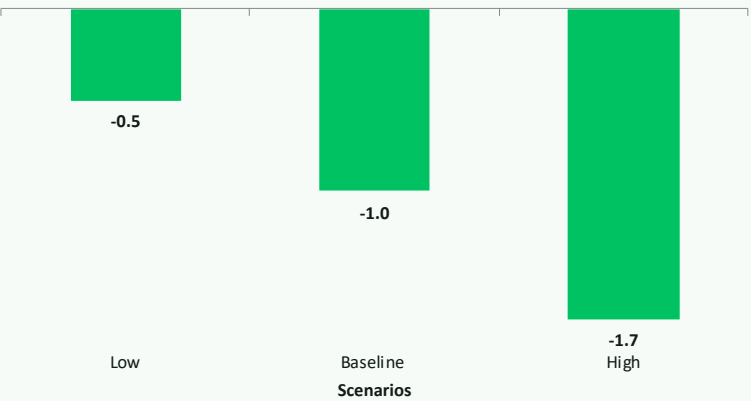


Benefits of flexible car clubs

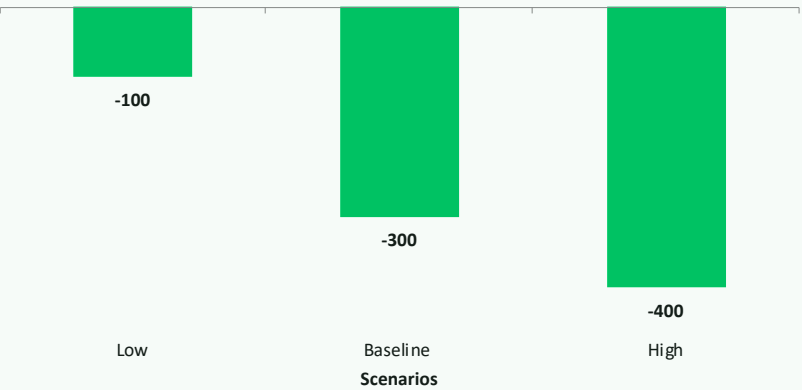
Reduction in private cars



Reduction in annual mileage (in million miles)



Reduction in annual carbon emisissions (in tonnes)



Endnotes

1 <https://como.org.uk/wp-content/uploads/2021/06/CoMoUK-England-and-Wales-Car-Club-Summary-Report-2020.pdf>

2 <https://como.org.uk/shared-mobility/shared-cars/why/>

3 <https://como.org.uk/shared-mobility/shared-cars/why/>

4 Overview | Car clubs | Birmingham City Council

5 <https://como.org.uk/shared-mobility/shared-cars/what/>

6 Harbury Car Club - CoMoUK

7 <https://como.org.uk/shared-mobility/community-schemes/community-car-share/#:~:text=A%20community%20car%20club%20is,and%20hassle%20of%20owning%20one.>

8 Share Now – Berlin.de

9 Share Now – Berlin.de

10 D4.2_Case-Study-Carsharing_FINAL.pdf (circular-impacts.eu)

11 Share Now – Berlin.de

12 Car-sharing in Berlin from 0,09 €/min | SHARE NOW (share-now.com)

13 Car-sharing in Berlin from 0,09 €/min | SHARE NOW (share-now.com)

14 Autovista24 - Share Now to increase EV fleet in Europe (autovistagroup.com)

15 Car-sharing in Berlin from 0,09 €/min | SHARE NOW (share-now.com)

16 <https://bolt.eu/en-gb/drive/>

17 <https://bolt.eu/en-gb/drive/>

18 <https://bolt.eu/en-gb/drive/>

19 <https://bolt.eu/en-gb/drive/>

20 CoMoUK-Great-Britain-Car-Club-Summary-Report-2020.pdf

21 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033587/dft-operational-sustainability-strategy.pdf.pdf

22 Decarbonising Transport – A Better, Greener Britain (publishing.service.gov.uk)

23 Delivery_Plan_2021-2026_Jan_2021_Final.pdf (ctfassets.net)

24 LCRCA-TRANSPORT-PLAN.pdf (liverpoolcityregion-ca.gov.uk)

25 Glasgow Transport Strategy - Policy Framework 2022

26 City Mobility Plan - Combined v2.pdf (edinburgh.gov.uk)

27 Portsmouth Transport Strategy 2021-2038

28 mrd-1-connected-southampton-transport-strategy-2040.pdf

29 Connecting Leeds Report Appendix 1A 111021.pdf

30 383a996e-2219-dbbb-dc75-3a270bfce26c (bristol.gov.uk)

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