



EPOA
Essex Planning
Officers Association

Essex GC and LSD Parking Guidance

Evidence Base Report

October 2023



a company of Royal HaskoningDHV

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Version 4-0

October 2023

Produced by:



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For:



EPOA
Essex Planning
Officers Association

Project Information Sheet

Client	Essex Planning Officers Association
Project Code	3908
Project Name	Essex GC and LSD Parking Guidance
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Start Date	July 2022
File Location	3908/Essex Parking Guidance/Reports

Document Control Sheet

Ver.	Project Folder	Description	Prep.	Rev.	App.	Date
V4-0	3908/Essex Parking Guidance/Reports	For consultation	JS	NL	NL	13/10/23
v3-1		Rev B	NS	NS	NS	07/02/23
v3-0		Rev A	BD GT	NS	NS	19/01/23
v2-0		Full draft	NS GT	NT	NT	23/09/22
v1-0		Draft Chapters 1-3	NS GT JP	GB	GB	06/09/22

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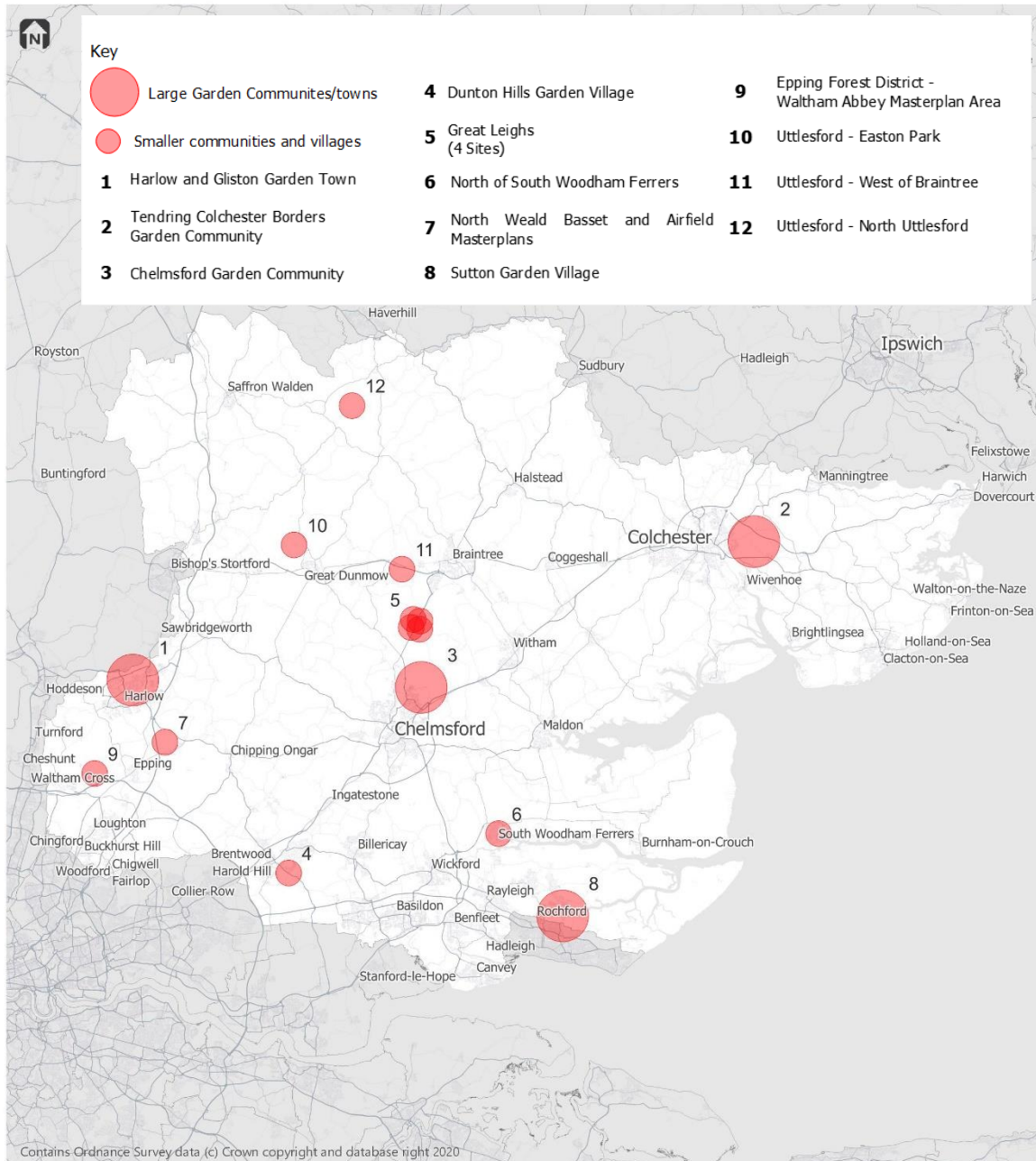
Consultation version

1. Introduction

Overview

- 1.1 Integrated Transport Planning (ITP) has been commissioned by Essex Planning Officers Association (EPOA), in collaboration with Essex County Council (ECC) to prepare new parking guidance for application to Garden Communities (GCs) and large scale developments (LSDs).
- 1.2 The overall aim of this commission is to prepare parking guidance that enhances the conventional, methodological approach to deriving and applying parking standards for new developments, which has been adopted across much of the UK. This is particularly relevant to GCs and LSDs, as they often are:
 - aspiring to achieve different outcomes in terms of sustainable mobility and urban design, because of policy aspirations and the requirements of the [Garden City Principles](#); and / or
 - of a sufficient, strategic scale that they will be providing a variety of land uses and transport interventions, and are therefore well-placed to implement alternative approaches to parking provision that exploit their walkability and access to public transport.
- 1.3 In Essex, there are currently four designated GCs:
 - Harlow and Gilston Garden Town - a cross-border GC encompassing the existing town of Harlow, plus 16,000 new homes
 - Tendring Colchester Borders Garden Community - 8,000 new homes to the east of Colchester
 - Dunton Hills Garden Village - 4,000 new homes in Brentwood, between Romford and Basildon
 - Chelmsford Garden Community - 10,000 new homes north of Chelmsford
- 1.4 In addition, other GCs being considered through ongoing Local Plan processes include Sutton Garden Village (12,000 homes in Southend and Rochford) and a number of GCs of 5-10,000 homes in Uttlesford. There are also several LSDs proposed across Essex and into neighbouring areas including at Great Notley, Great Leighs, Woodham Ferrers, North Weald and Waltham Abbey. These are shown in Figure 1-1.

Figure 1-1: Planned and potential GCs and LSDs in Essex



- 1.5 The eventual GC and LSD guidance (hereon referred to as 'the guidance') will consider parking in the context of the sites above, with flexibility allowing application in the long-term to other future strategic-scale allocations. The guidance will also be cognisant of the cross-boundary nature of many of Essex's GC and LSDs, with mapping, tools and approaches that will be able to transcend borders, where appropriate, to deliver coherent and consistent approaches to parking.

- 1.6 As such, the geographic scope of this report is the county of Essex, inclusive of all districts / boroughs and the unitary authorities of Southend-on-Sea and Thurrock. Some data is also presented for East Hertfordshire, given that Harlow and Gilston Garden Town extends beyond the Essex boundary into Hertfordshire.

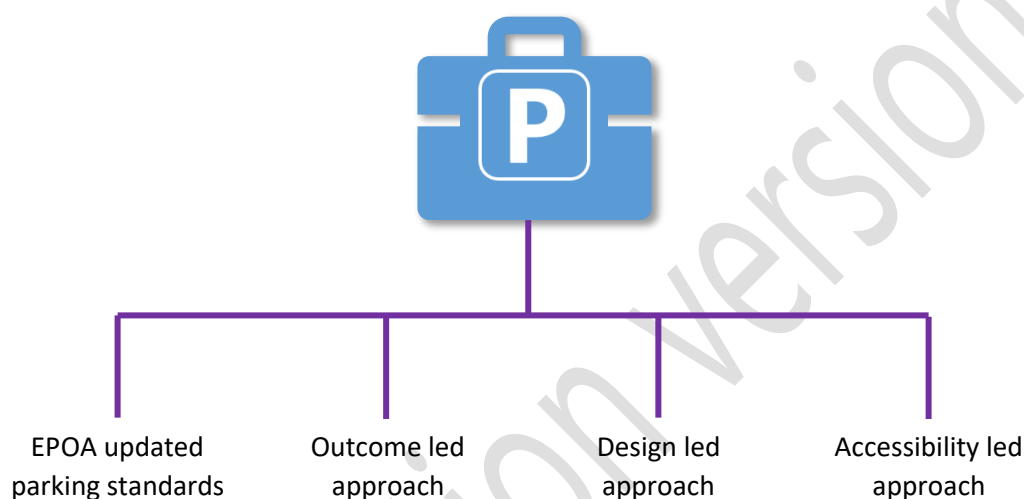
Why parking?

- 1.7 We often think of the key mobility ingredients of sustainable development and good growth (in a residential context) to be centred around:
- Access to high-quality, frequent public transport, which goes where people want to go, when they want to go there
 - A varied mix of land uses within a short walking distance of every home
 - Direct and safe walking and cycling infrastructure
 - High-quality public realm that fosters social interaction
 - Traffic demand management that places motorised trips at the bottom of the user hierarchy
- 1.8 In delivering the above, higher densities are needed to make public transport services more commercial, to create walkable places, and to make development viable. These are all underpinned by a commitment to a vision-led approach, and robust governance and stewardship models. The end-goal is high active and public transport mode shares and a low vehicle mode share.
- 1.9 Parking does not always come into this discussion, but it is intrinsic to many of these key ingredients; it drives down density, locks-in car dependency and disrupts public realm. But also, in conventional developer financial models, parking increases marketability and therefore viability.
- 1.10 An effective parking strategy is not just critical for good growth; it is also an emotive subject and has always been so. GCs and new LSDs in Essex are not immune to the same failings that blight new developments up and down the country - they could simply perpetuate them at a greater scale, unless they are planned and delivered differently.
- 1.11 All of the above is justification for a robust evidence base to underpin this study. The aim of the guidance and this Evidence Base Report in particular is therefore to explore these hypotheses and evidence, or in some cases challenge them.

Context for the guidance

- 1.12 EPOA and ECC are currently undertaking a review of the existing, adopted county-wide parking standards – ‘Essex Parking Standards and Good Practice’ – which were published in 2009. The EPOA 2009 or ‘Part 1’ standards relate to all land Use Classes in all geographical contexts in Essex, and are adopted by most Essex districts and the unitary authorities of Southend-on-Sea City Council and Thurrock Council. Some districts adopted them in a modified form.
- 1.13 EPOA and EPOA represent the key stakeholders for this commission. Other stakeholders include development management officers at the district and unitary authorities, representatives of the GCs, and at later stages the Essex Quality Review Panel and developers.
- 1.14 The current review, within which the guidance has its basis, comprises of:
- **Updates to the EPOA Part 1/2009 standards** to take account of the National Planning Policy Framework (NPPF) 2021 update, which only permits the use of maximum parking standards in accessible locations and where density needs to be optimised. The Part 1 Review also includes new detail on electric vehicles, cycle parking and a zone-based approach to residential parking standards.
 - An **accessibility-led approach** to defining vehicle and cycle parking standards. This may be standalone, informing various elements of the parking strategy, but will at minimum inform the zone-based approach adopted in the EPOA Part 1 Review and the GC and LSD parking guidance. This is likely to involve spatially mapping Essex and identifying areas that are more or less accessible, and hence may be able to support reduced levels of parking.
 - An **outcome-led approach** which focuses on what we expect the development to achieve in terms of principles, mode share, healthy lifestyles, environment, etc., to facilitate the generation of the numerical parking standards relevant for application at the GCs and LSDs. This likely to be informed by a numerical model, and will aim to reconcile accessibility with vehicle ownership, with the aim of producing a tool that allows for outputting bespoke parking standards relevant to a range of locations, land uses and contexts.
 - A **design-led approach** to determine the right type of parking to be provided in a range of contexts such as walkable neighbourhoods, including consideration of on / off street provision, parking courts and public realm, and responding to development scale, density and layout. This will take into account of, and if necessary update, the existing guidance contained in the [Essex Design Guide](#).

- 1.15 This has been referred to as a 'toolkit' of approaches; several 'tools' may be applied to one development site. Despite being referred to as different tools, these are not mutually exclusive and it may be that the guidance includes all of the approaches in some form.
- 1.16 The next steps following this report comprise development of accessibility and outcome-led models. The models will inform the accessibility-led and outcome-led approaches from the toolkit.



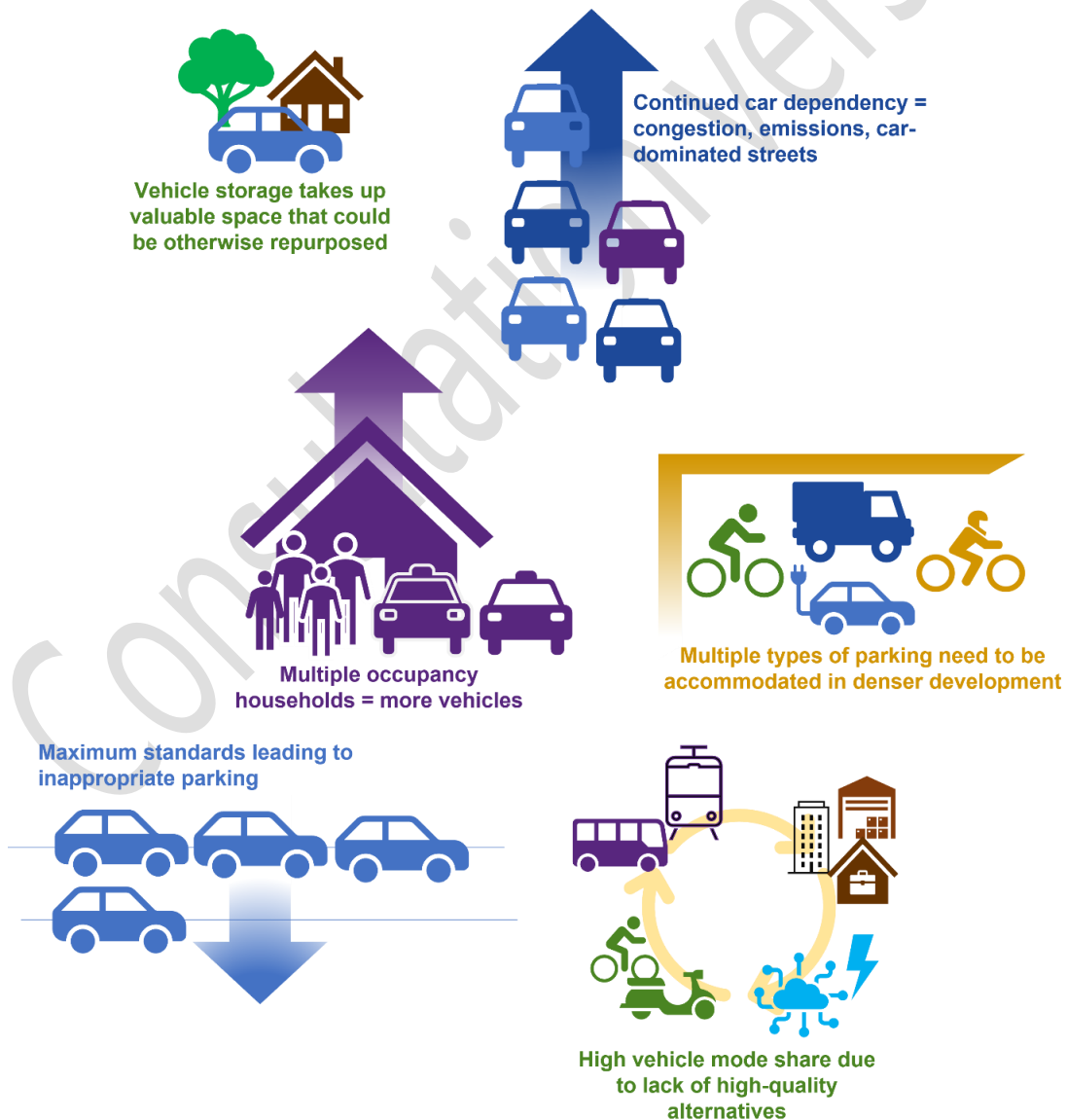
- 1.17 It is also worth noting that several other relevant studies have been or are being undertaken in Essex, at district/unitary authority or at county level. A separate 'Walkable Neighbourhoods' study is being undertaken by other consultants (Jas Bhalla Architects commissioned for Stage 1, Jacobs for Stage 2) and this considers how new neighbourhoods can be designed to be more walkable, focusing primarily on models to increase density and improve permeability, with a key theme being reduction of the space taken up by vehicle storage and access. It is intended that, when finalised, this study and the Walkable Neighbourhoods study align with and complement each other.
- 1.18 Several districts have undertaken studies around good growth and placemaking, including Southend, who have produced a [Settlement Role and Hierarchy Study](#) in support of their Local Plan, and Chelmsford, who have commissioned an independent parking standards study in support of Chelmsford Garden Community. The guidance will align closely with these, as they adopt similar principles in relation to sustainable mobility, accessibility and parking demand management. Southend's Settlement Role and Hierarchy Study in particular includes a form of accessibility mapping which is similar in nature to the type likely to be produced in the accessibility-led approach to parking at GCs and LSDs.

Purpose of this report

“The average car spends about 80% of the time parked at home, is parked elsewhere for about 16% of the time, and is thus only actually in use (i.e. moving) for the remaining 3-4% of the time”

Spaced Out: Perspectives on parking policy

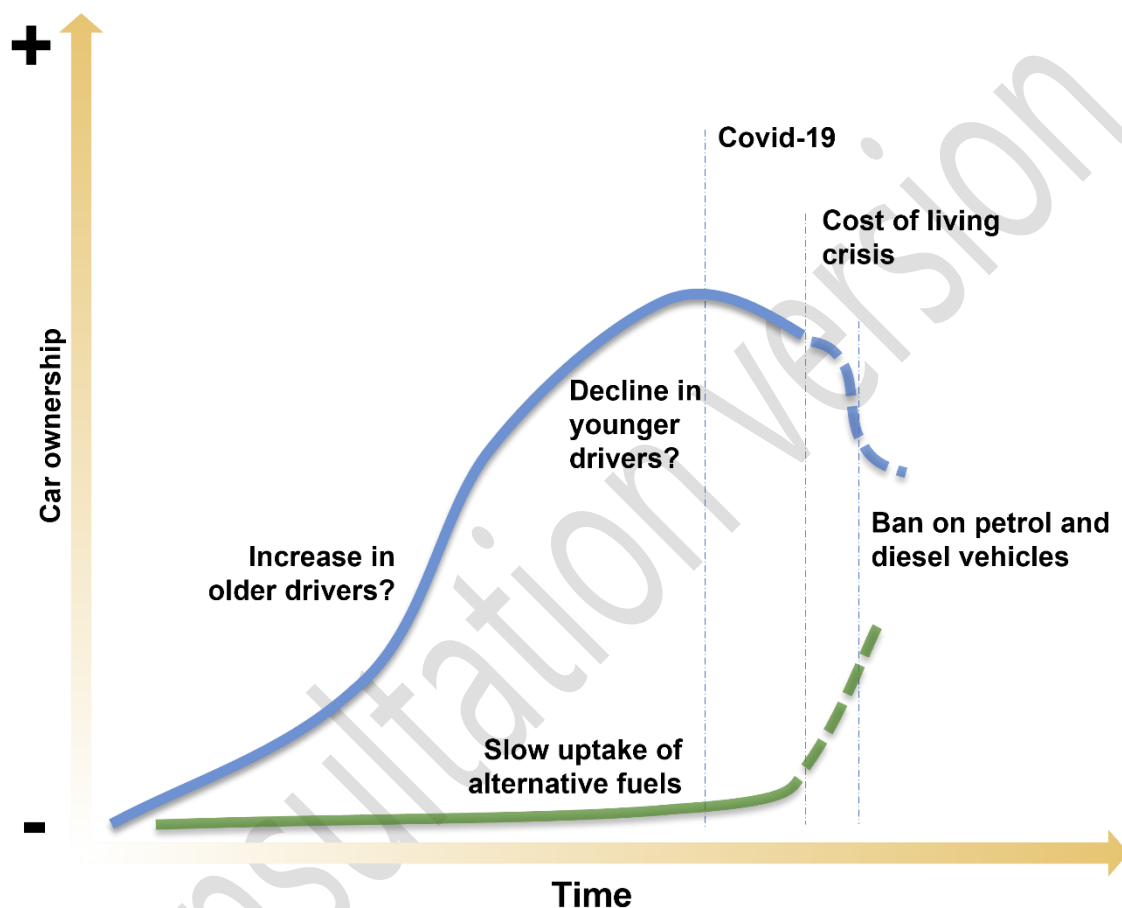
1.19 This Evidence Base Report is set in the context of a range of challenges - such as the above - facing authorities across the UK; delivering successful places that balance good urban design and sustainable outcomes, against a need to accommodate and store the private car and deliver marketable, viable development. This challenge is borne by policy makers, development management officers, developers and, ultimately, communities and their residents.



- 1.20 It is acknowledged that many of these challenges are set in the context of the storage and movement of vehicles, and indeed much of this report is focussed around data, research and design factors relating to vehicles, in particular the private car. There is more data available relating to vehicle storage and movement, and historically parking guidance has considered vehicle parking only, or as a priority over parking for other modes. Furthermore, by virtue of its land take and implications relating to place, mode share etc., vehicle parking is usually more difficult to manage than cycle parking, for example.
- 1.21 In many ways, this is indicative of a need for an evidence base which find solutions for these challenges, and results in guidance that puts sustainable modes first and establishes how prioritising their storage can encourage their use (amongst other measures). This is likely to primarily relate to the storage of bicycles, though e-mobility modes such as scooters should also be considered. Alongside private cars, vans and electric vehicles, this report therefore aims to consider the movement and storage of active modes, where data and research is available.
- 1.22 The remainder of this report is based around the following chapters:
- The Essex baseline - presents an understanding of car ownership and car use in Essex and how this has changed over recent years, using a variety of data sources. Where available, data is also presented on cycle ownership and use.
 - Localised data – presents a review of survey or site-specific data in Essex and the surrounding areas which may corroborate or enhance the Essex baseline data presented above, establishing what is available and whether it might inform the accessibility-led and outcome-led approaches.
 - Benchmarking - summarises the EPOA Part 1 Parking Standards Review and other parking approaches at emerging GCs, to understand the purpose and application of those standards and their implications if applied to GCs and LSDs.
 - Understanding - presents a literature and research review of what works where, considering questions around minimum/maximum parking standards, the benefits of allocated vs. unallocated parking, and design considerations.
 - Reducing car dependency –presents evidence and experience of what other considerations and interventions are needed to reduce car dependency, aside from managing parking and vehicle demand.
 - Summary –presents a summary of the findings in the report and the recommended next steps for preparation of the guidance.

2. The baseline

National context



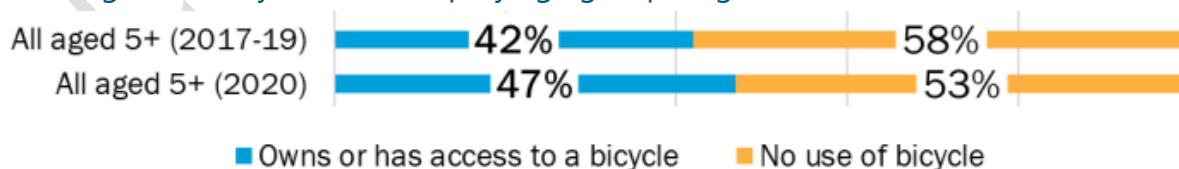
- 2.1 Nationally, there has been a long-term trend of increasing car ownership. The proportion of households owning two or more cars has risen considerably over the last 50 years or so - in 1981 only 15% of households owned two or more vehicles in the UK, whereas by 2016, this had increased to a third¹. There are many reasons behind this, ranging from increased availability and affordability (e.g. through financing options), to societal changes. For example, older women are now far more likely to drive after a 'societal shift' in the 1970s, attracting more young women to take up driving.
- 2.2 Conversely, the proportion of young people overall who drive is falling – whilst driving licensing peaked in 1992/94 with 75% of 21- to 29-year-olds holding a licence, this fell

¹ <https://www.bbc.co.uk/news/uk-42182497>

to 63% by 2014. The causes are multi-faceted, relating to the proportion of young people in full-time education, higher motoring costs and better alternative travel options, but also to changes in values and attitudes either because driving is no longer attractive or because it is no longer essential.² Driving licencing also does not necessarily directly relate to vehicle ownership – there is a higher proportion of young adults who still live at home than in previous decades³, and in some cases this might lead to shared vehicles amongst different generations in the household.

- 2.3 Despite the long-term trend, there has been a levelling off in car ownership in recent years, potentially in response to the Covid-19 pandemic. Car ownership has marginally declined across the UK since 2020, particularly in urban areas⁴. However, it should be acknowledged that the quality and extent of data collected in 2020 and 2021 may itself have been impacted. Rising living costs and the 2030 ban on the sale of new petrol and diesel vehicles may also be starting to contribute towards declining car ownership.
- 2.4 While alternative fuels still make up a small proportion of the total UK fleet, initiatives such as the end of sale of new petrol and diesel cars by 2030 are driving a rapid change towards new low and zero emission technologies. Figures released by the Office for Zero Emission Vehicles in May 2022 revealed that nationally sales of new plug-in vehicles rose by over 70% as UK continues to accelerate towards net-zero transport⁵. More than a quarter of a million electric vehicles now travel on UK roads and sales of plug-in vehicles have reached all-time highs, with 327,000 registered last year alone – a 77% rise compared to 2020.
- 2.5 Regards cycle ownership, there is some data at a national level. As shown in Figure 2-1, [surveys compiled by Cycling UK](#) show that from 2017-19 suggest that about 42% of people aged five or over own or have access to a bicycle. This figure rose to 47% in 2020, though the DfT warns that data collected during that year was poorer quality.

Figure 2-1: Cycle ownership by age group, England



² https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/673177/young-peoples-travel-whats-changed-exec-summary.pdf

³ <https://www.theguardian.com/uk-news/2019/nov/15/record-numbers-of-young-adults-in-uk-living-with-parents>

⁴ <https://www.smm.co.uk/2022/08/new-car-registrations-fall-as-supply-issues-continue-to-bite/>

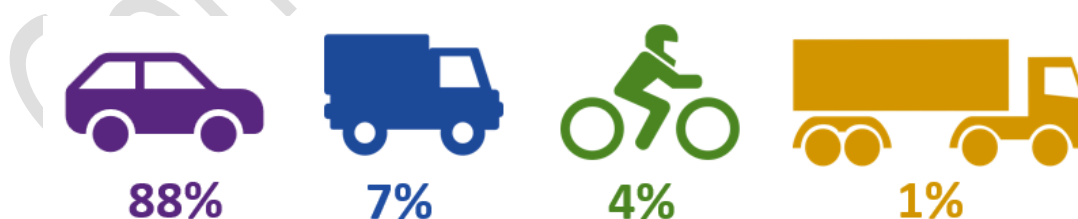
⁵ <https://www.gov.uk/government/news/quick-off-the-spark-electric-vehicle-sales-continue-to-soar-in-green-revolution>

- 2.6 The same report also presents a coarse analysis of the number of people who own a bicycle and also drive cars (in 2019, nationally):
- 85% of adults who cycle hold a driving licence
 - 83% of adults who cycle drive
 - 30% of adults who hold a driving licence cycle
 - 98% of adults who cycle and hold a driving licence drive
- 2.7 It can possibly be inferred from the above that only small proportions of people who cycle and have a driving licence choose not to (or do not have the means to) drive. Nevertheless it is positive that a significant proportion of people who own bicycles use them alongside using their cars.

The Essex baseline

Licensed vehicles

- 2.8 The [vehicle licensing statistics dataset](#) from the Department for Transport and Driver and Vehicle Licensing Agency provides information on the number of licensed vehicles by body type, fuel type and keepership at local authority level. This breaks licensed vehicles into cars, motorcycles, light goods vehicles, heavy goods vehicles, buses and coaches, and other vehicles. This represents the total numbers licensed for use on the road, and is different to car ownership, discussed later in this Chapter.
- 2.9 Similar proportions of vehicle types are found across Essex, with 85% to 90% cars, 5% to 10% light goods vehicles, and up to 5% motorcycles making up total licensed vehicles across the different districts. These are shown for each district alongside the Essex average in 2022 on Figure 2-2 overleaf.



- 2.10 In terms of change over time, the total number of privately owned vehicles licensed in Essex has grown by 14% between 2010 and 2021.
- 2.11 Figure 2-3 shows that this upward trend is similar across the districts, with the exception of Epping Forest which has remained broadly similar over time. Highest

levels of growth are seen in Colchester (19%), Harlow (19%), Tendring (19%) and Uttlesford (21%).

2.12 This is interesting in the context of other data presented in this Chapter, which indicates that at the time of the 2011 Census, car/van availability in Harlow, Tendring and Colchester was amongst the lowest in the county. Harlow and Colchester have seen some of the greatest increases in population since then (discussed below), but Tendring has not.

Figure 2-2: Privately owned vehicle licenses by vehicle class

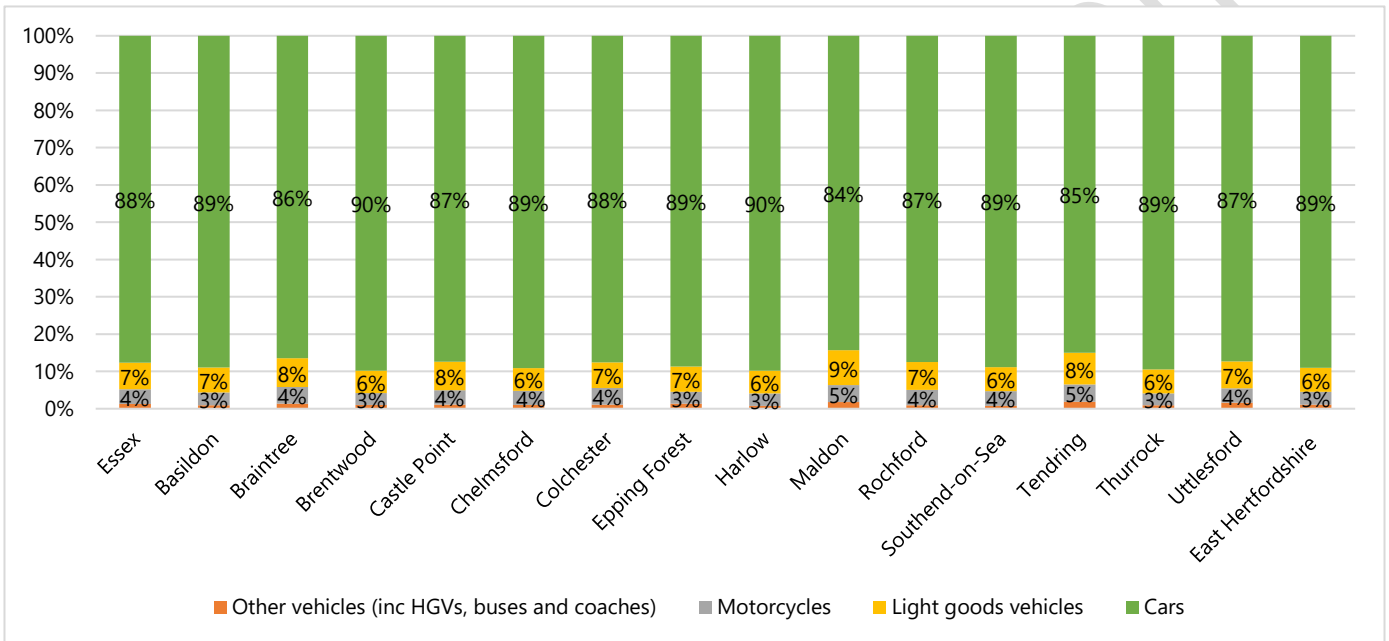
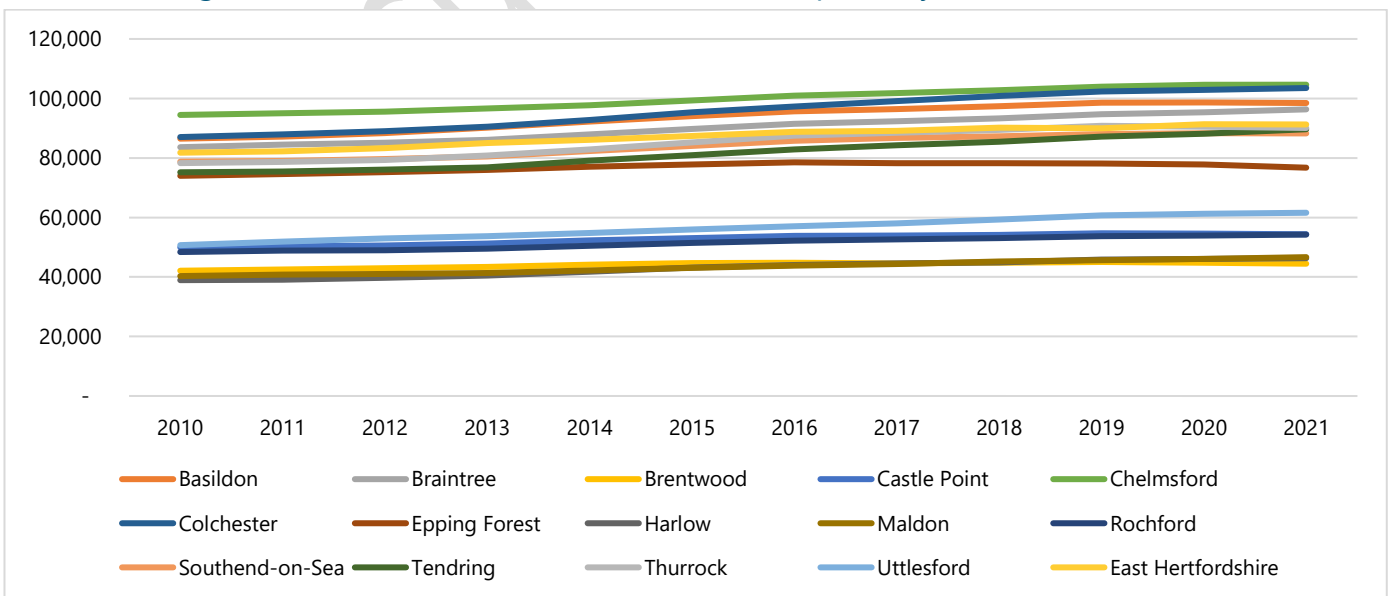
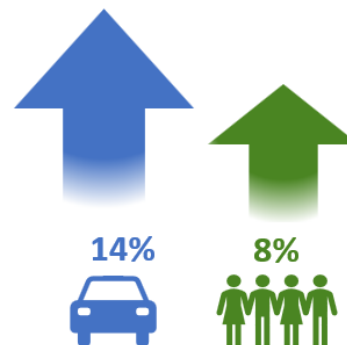


Figure 2-3: Number of vehicle licenses - total privately owned vehicles



Licensing and population change

- 2.13 As previously suggested, an element of growth in vehicle licensing will be a result of population growth. Figure 2-4 and Figure 2-5 overleaf illustrate the changes in population⁶ and vehicle licensing (private only) in Essex between 2010 and 2021. Figure 2-5 in particular shows a larger proportional change in vehicle registrations (14%) than population (8%), suggesting growing rates of car ownership in Essex.
- 2.14 The data does however show a reduction in the rate of increase in vehicle registrations, with the line flattening in more recent years compared to the steeper trajectory between 2013 and 2016. This may reflect the shorter-term events referenced at the beginning of this Chapter.
- 2.15 There are notable differences across the local authority districts within Essex. These are shown within Figure 2-6: while most districts have experienced a larger proportional growth in vehicle registrations than population, Epping Forest shows the opposite. Brentwood shows a very similar level of growth in both metrics. Both these districts have average car ownership levels which are above the Essex average. On the other hand, Tendring shows significantly higher growth in vehicle registrations (19%) compared to general population change (+6.5%) yet had one of the lowest average cars/vans per household in the 2011 Census.



⁶ ONS Crown Copyright Reserved [from Nomis on 9 August 2022]. 2021 data – KS101EW - Usual resident population. Historical estimates: Population estimates - local authority based by single year of age

Figure 2-4: Essex population and private vehicle registrations 2010 – 2021 (actuals)

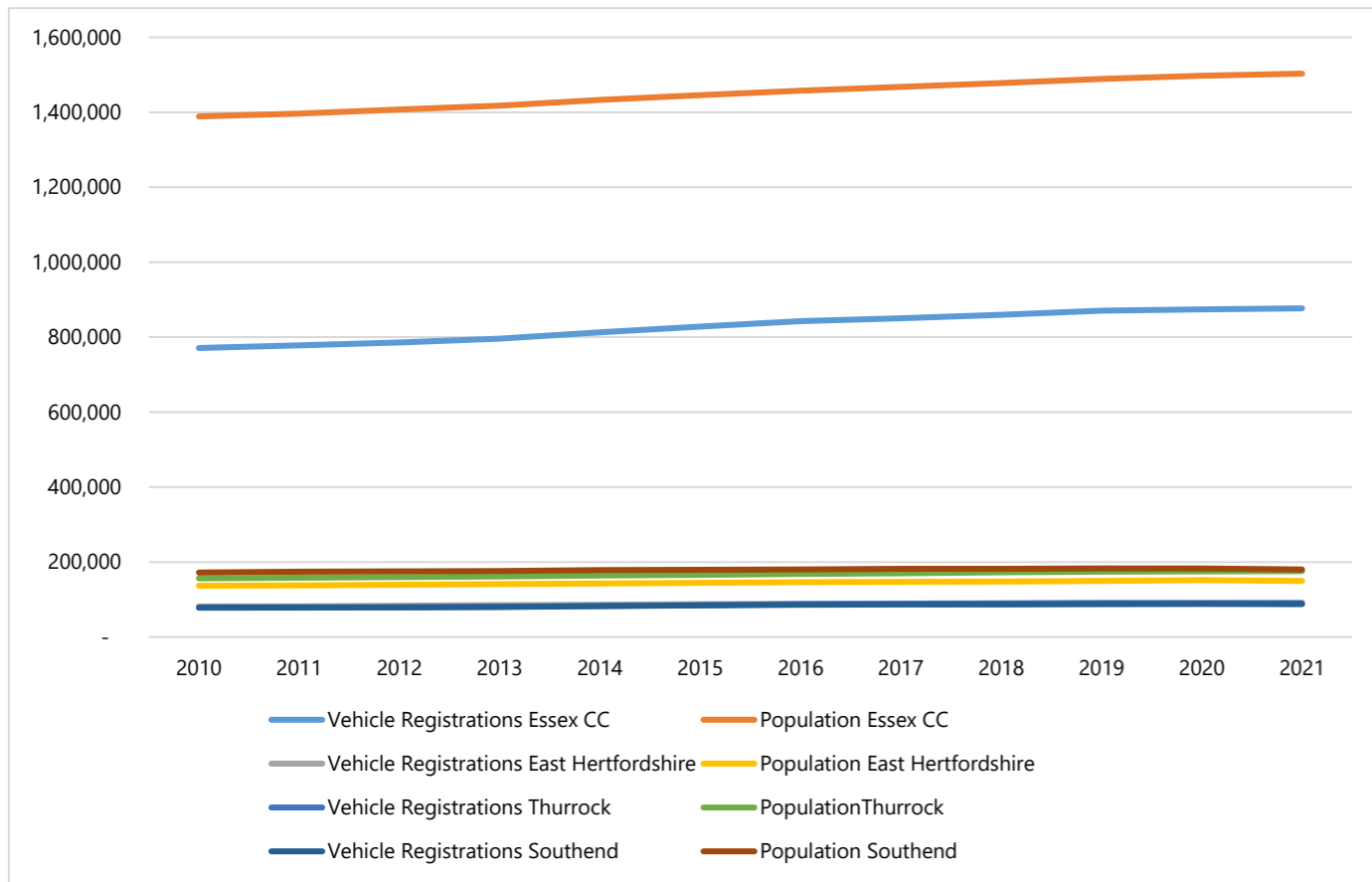


Figure 2-5: Essex population and private vehicle registrations 2010 – 2021 (proportional)

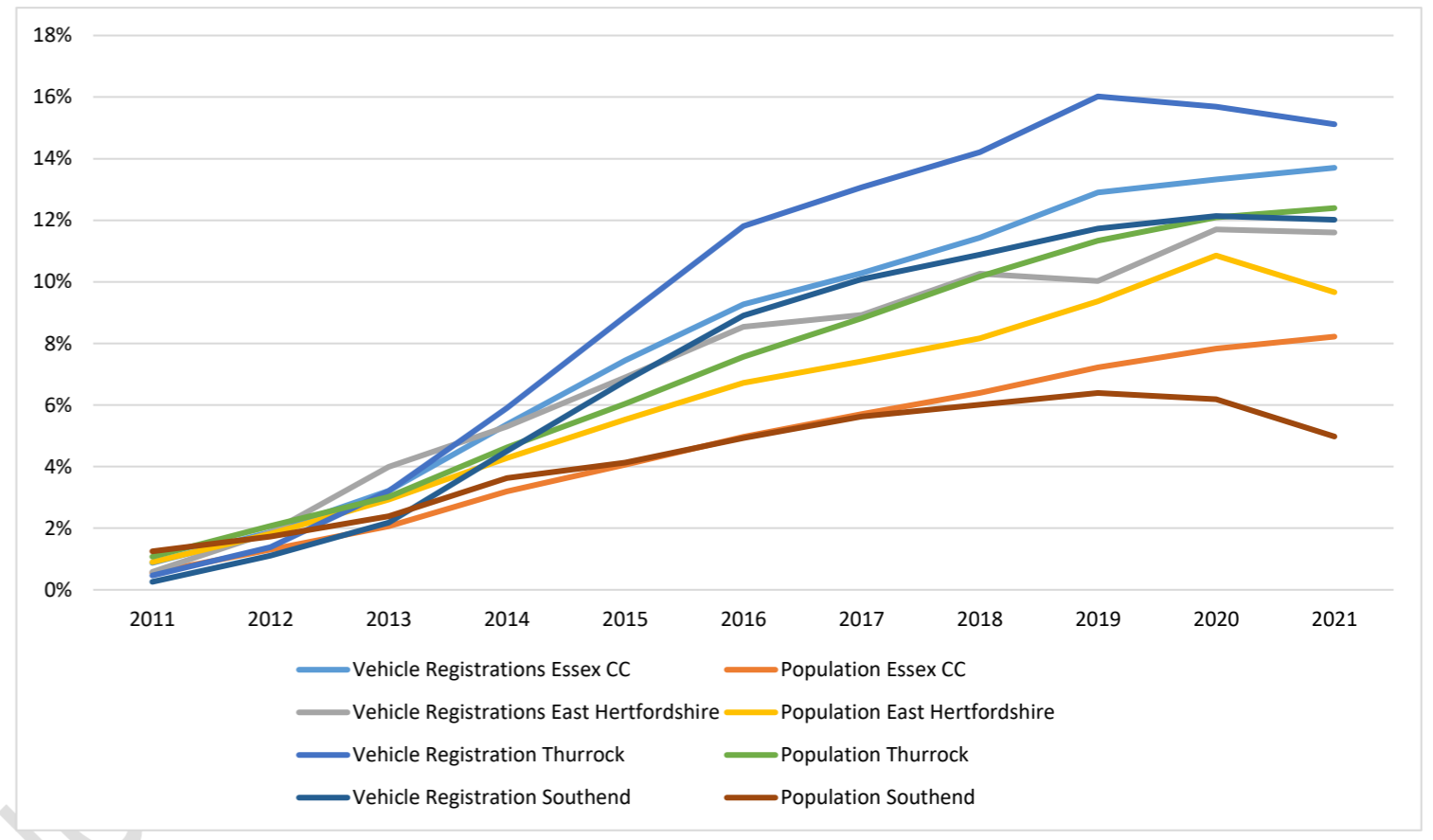
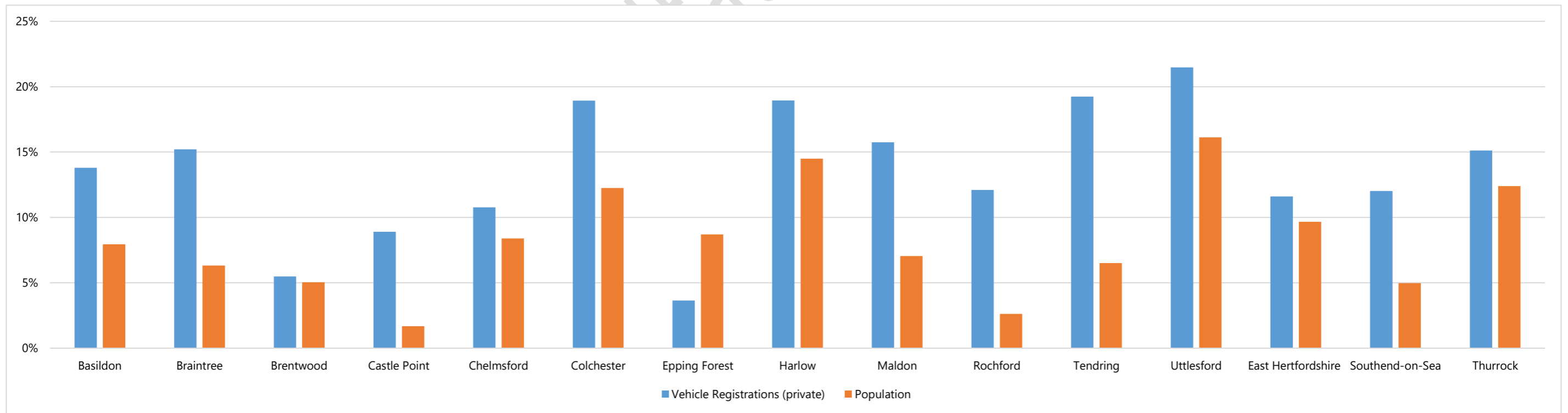


Figure 2-6: Population and vehicle registration change (2010 - 2021) by district



Alternative fuels

- 2.16 The vehicle licensing data also classifies vehicles by fuel type. In 2018, alternative fuels (non-diesel/petrol) made up 1% of the privately owned vehicles in Essex. Similar to the national trend, and as indicated in Figure 2-7, this has been rising year-on-year and they made up 3% of all vehicles in 2021. This is equivalent to around 27,500 vehicles of the 877,000 that were licensed in Essex in 2021.
- 2.17 The rate of increase in alternative fuel vehicles is, however, lower than the national rate. The increase between 2019 and 2020 was 27%, and between 2020 and 2021 was 45% (compared to 77% nationally).

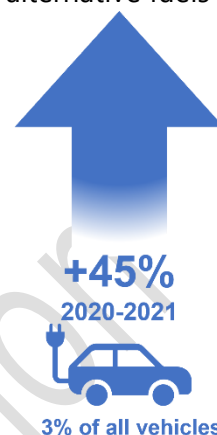
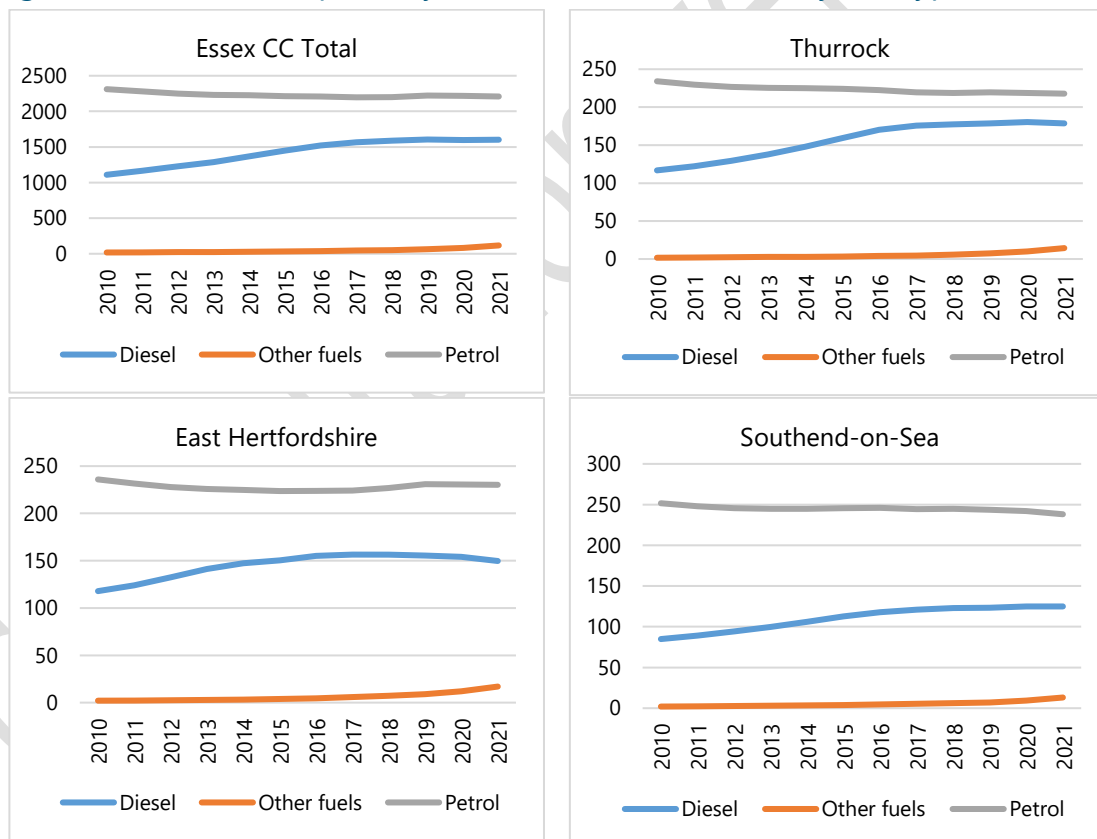


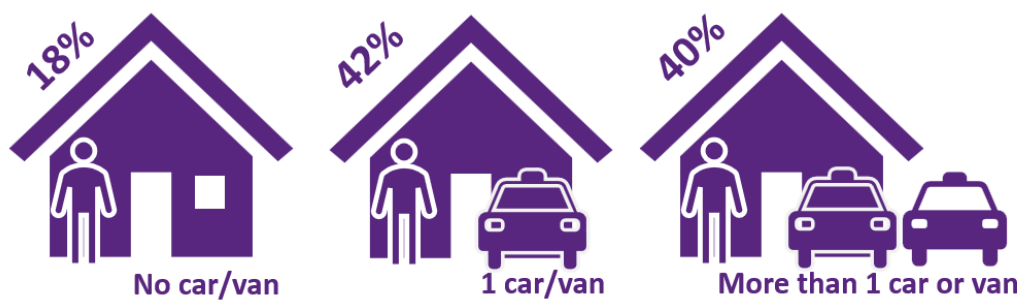
Figure 2-7: Number of privately owned vehicle licenses – by fuel type



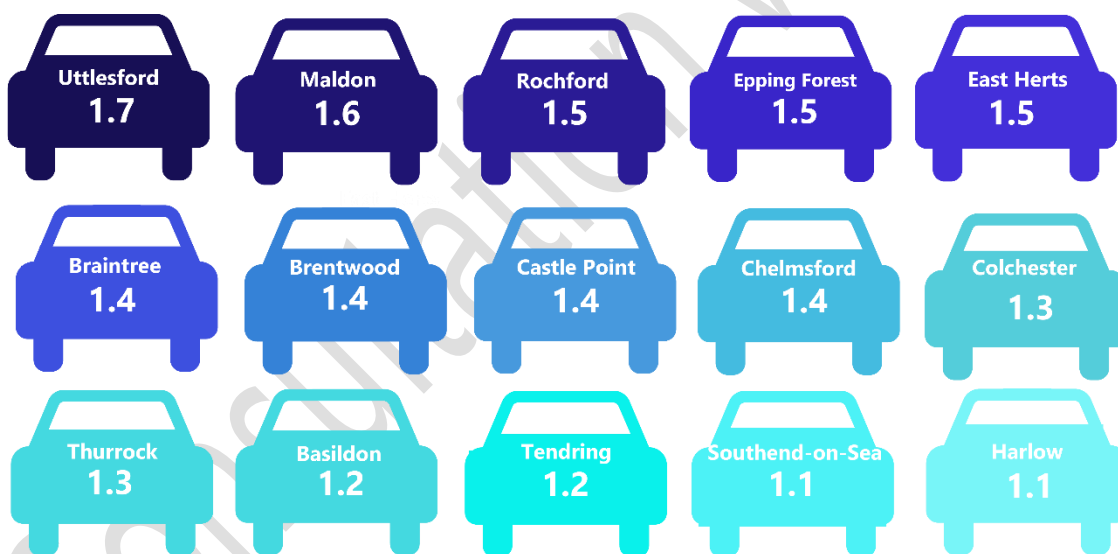
Car ownership per household

- 2.18 The 2011 Census KS404EW 'Car or van availability' dataset relates numbers of vehicles to households within local authority areas. The data indicate that, at the time of the Census, 42% of households in Essex had access to one car or van plus 40% of

households having access to more than one car or van, resulting in 82% of households overall having access to a vehicle. The remaining 18% have no access to a car or van. Car/van availability is a reasonable proxy for car ownership, although there may be subtle differences in how this question was interpreted by households, as discussed below.



2.19 The average vehicle availability per household in Essex is 1.36 cars/vans. The local authority with the highest average vehicle availability per household is Uttlesford, at 1.7, with Harlow and Southend being the lowest at 1.1 cars/vans per household.



2.20 Whilst the above figures are averages, there are varied levels of vehicle availability within each district. Figure 2-8 shows how car ownership varies in range across the Lower Super Output Areas (LSOAs) in Essex, grouped by district. The boxes show the upper, median and lower quartile car/van availability per household, with minimum and maximum range values shown on the whiskers extending from each end. The smaller the box, the more LSOAs have an average car ownership that is closer to the district median. This is particularly noticeable in Harlow and Castle Point, which may be indicative of their focus around urban areas. On the other hand, Basildon and Braintree

show large variation, which in the case of Braintree may be indicative of the district's large geographical cover with a range of settlement sizes and types. Basildon's variation is less easily explained in terms of geography, but it is possible that the two main settlements of Billericay and Basildon reflect very different car ownership and usage trends.

- 2.21 Mirroring overall vehicle availability, Figure 2-9 shows the proportion of multiple car households is particularly high in Maldon and Uttlesford where more than 50% of households have two or more vehicles, while in Tendring only 31% of households have two or more vehicles. All local authorities have similar levels of single vehicle availability (between 36% and 45% of households).

Figure 2-8: Range in car/van ownership by district - distribution (2011 Census)

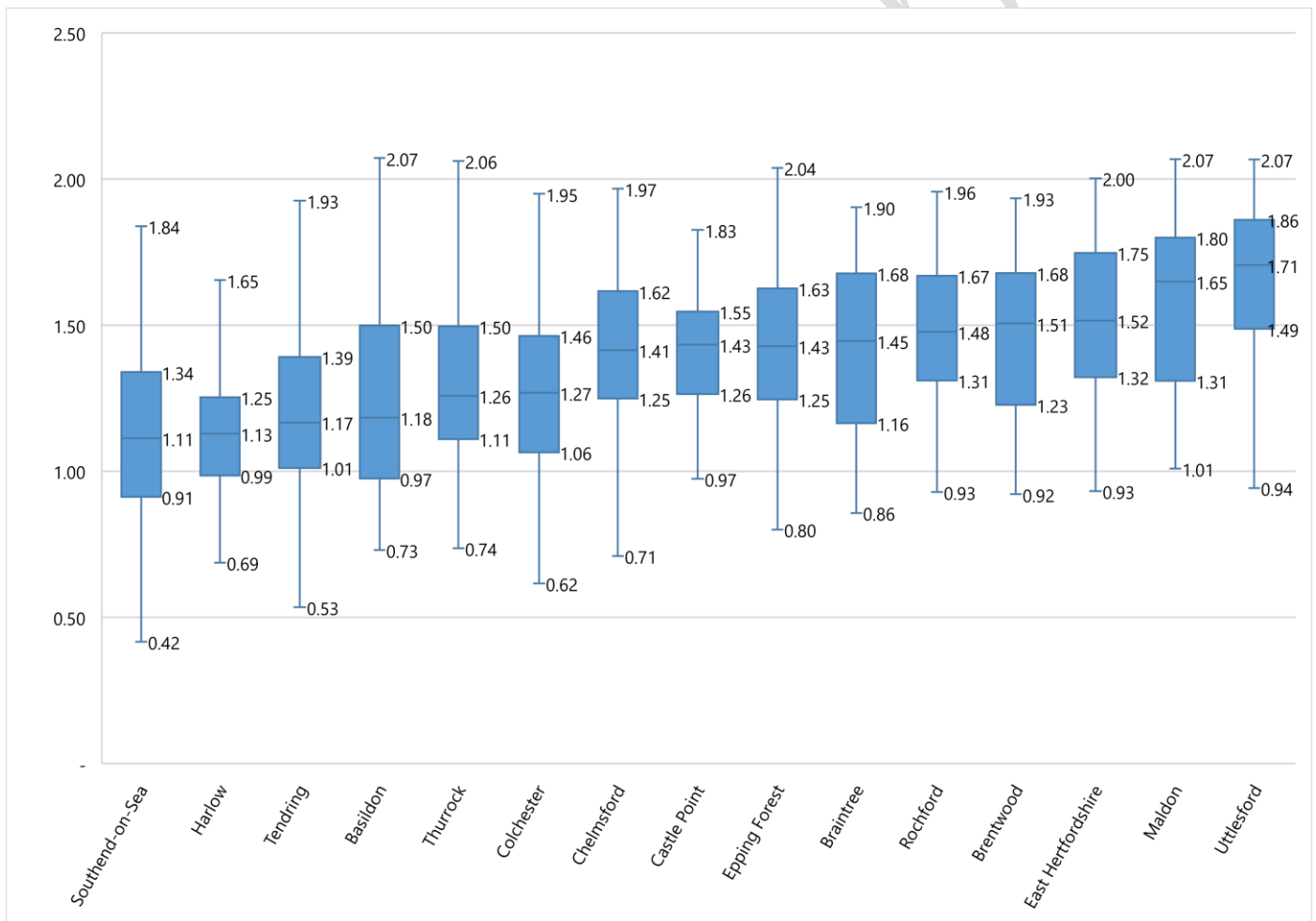
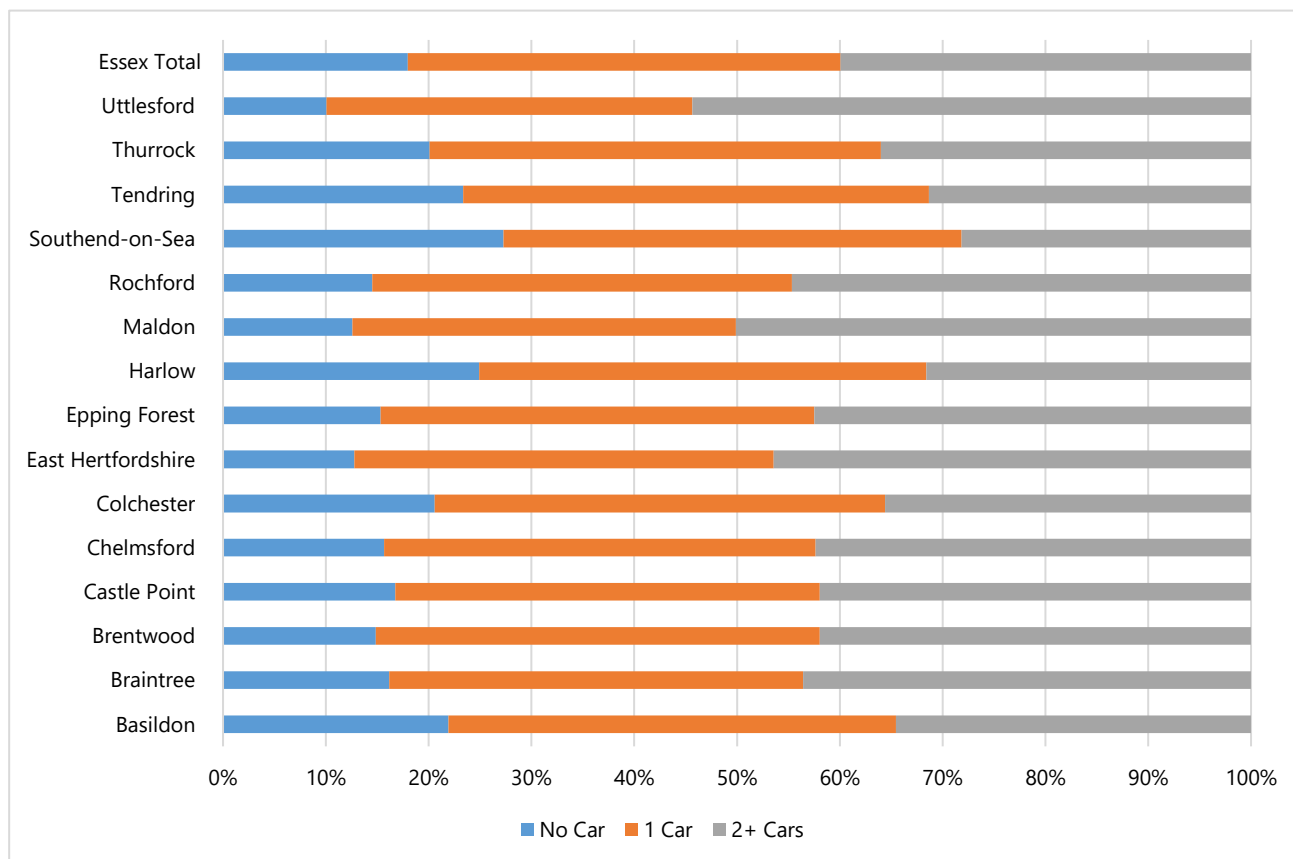


Figure 2-9: Multiple car/van ownership by district (2011 Census)



2.22 Figure 2-10 overleaf shows the spatial variation in average vehicle availability across Essex at LSOA level. It highlights that more rural areas have a higher number of cars / vans per household than the Essex average. There could be many factors involved (as discussed in Chapter 5 and 6); people are likely to need to travel further to their workplaces and there are in general fewer options for travelling more sustainably, e.g. high-quality and frequent public transport, and safe, well-lit cycle routes. On the other hand, as might be expected, areas around the Essex's primary towns and cities, such as Colchester, Chelmsford, Harlow, Basildon and Clacton-on-Sea, have lower levels of ownership.

2.23 Figure 2-11, Figure 2-12 and Figure 2-13 show a relationship between urban living and lower vehicle availability, with higher proportions of households in rural areas having more than one vehicle available per household.

Figure 2-10: Average car ownership per household (Census, 2011)

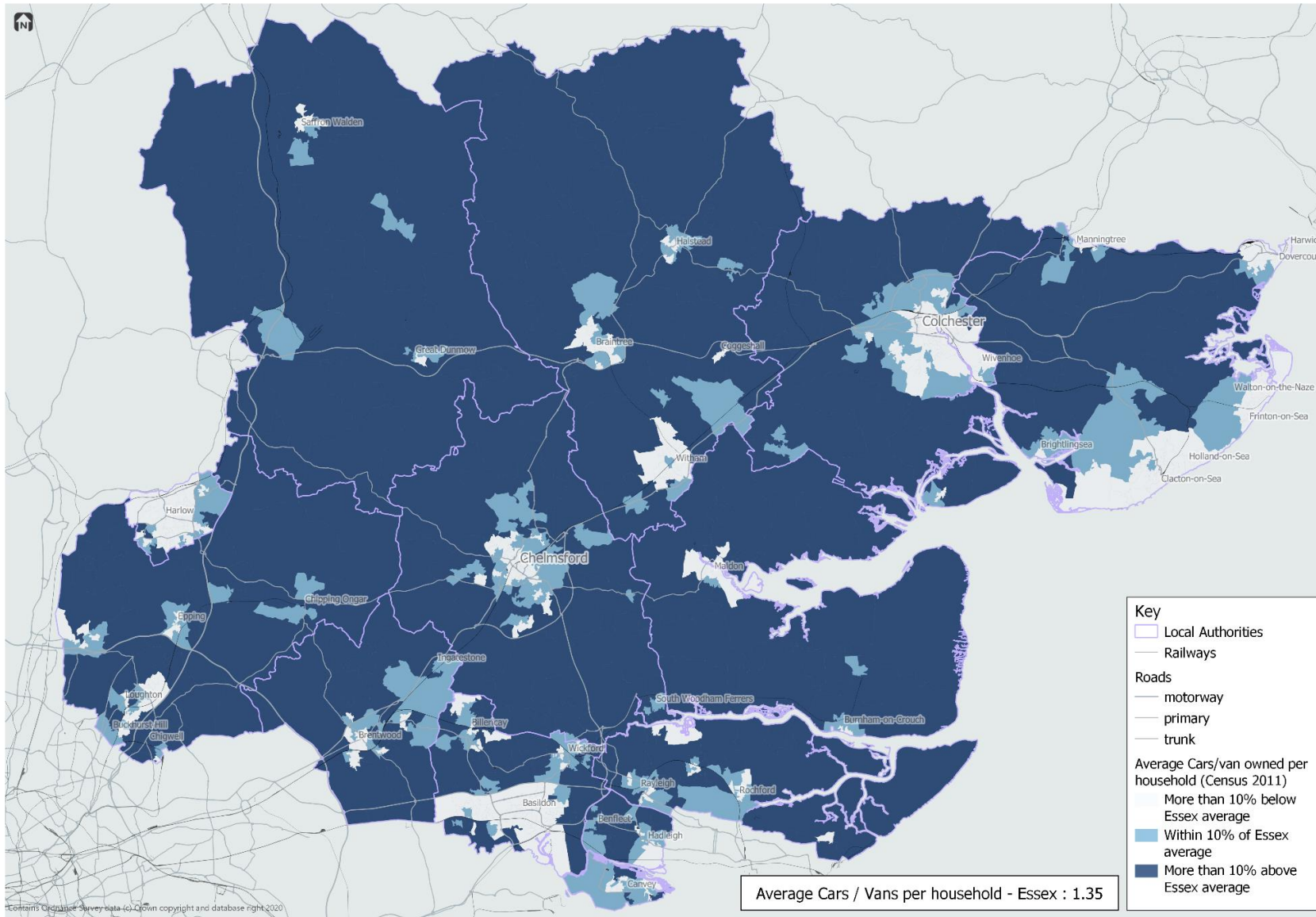


Figure 2-11: Proportion of households with no access to a car (Census, 2011)

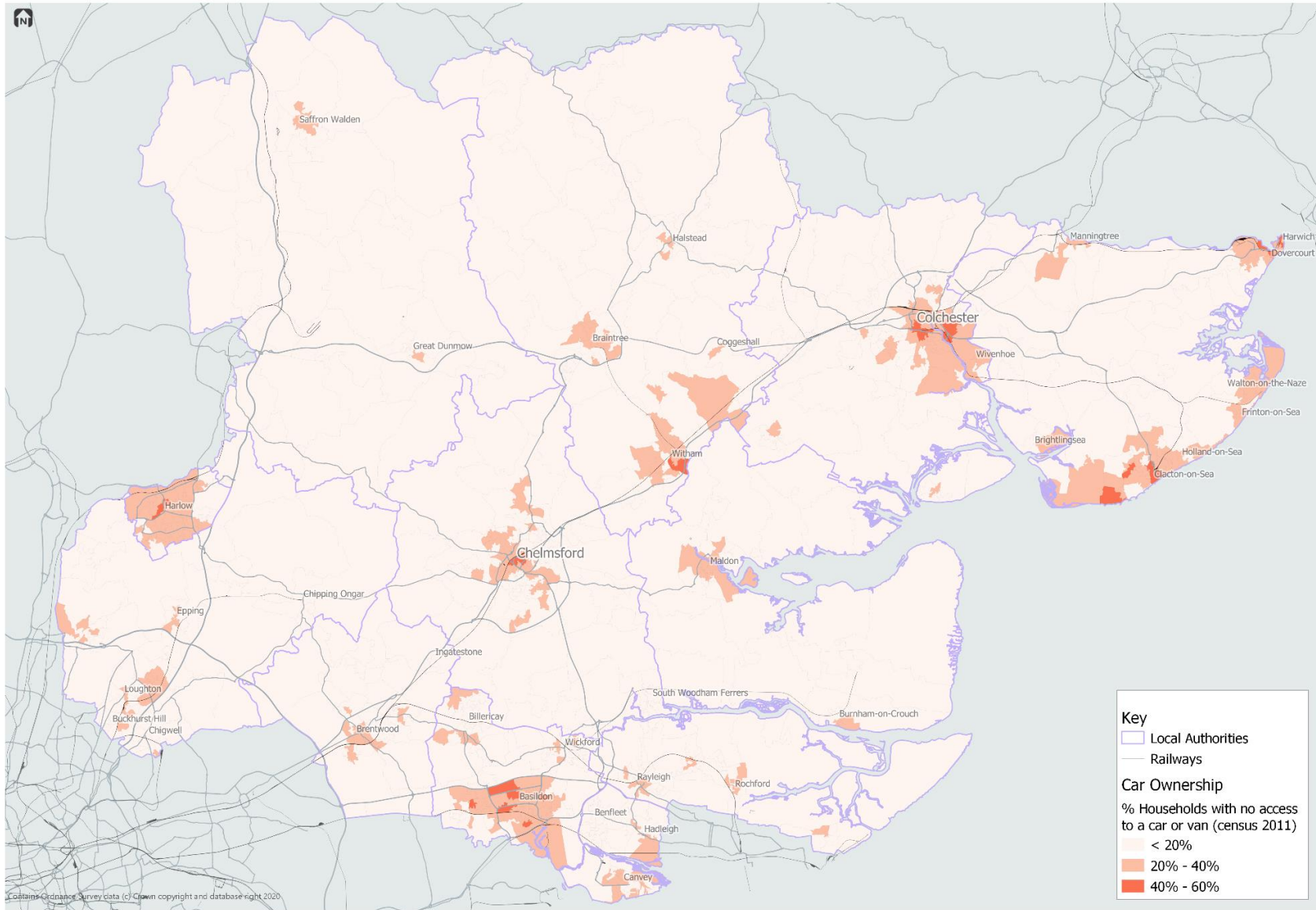


Figure 2-12: Proportion of households with access to one car (Census, 2011)

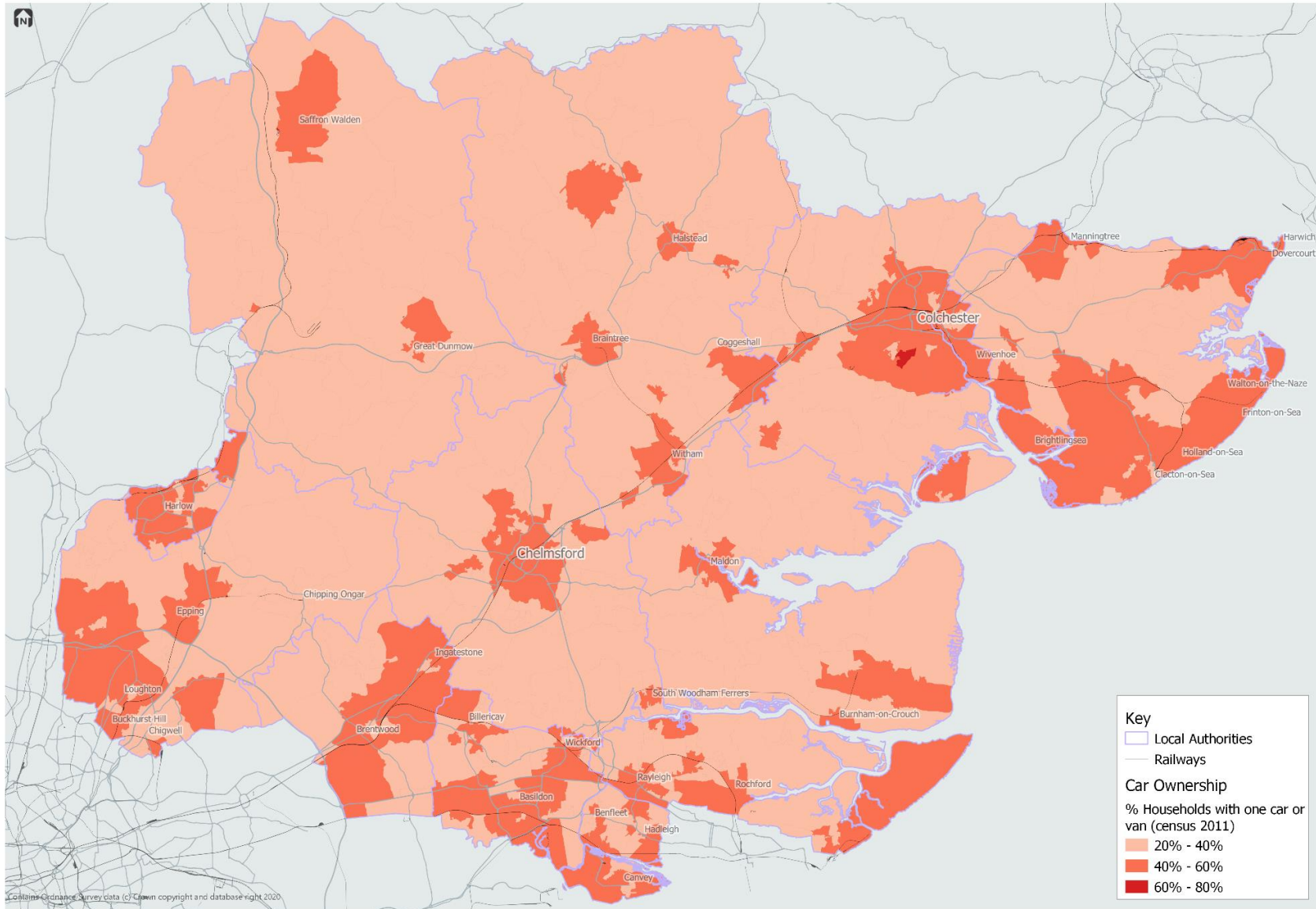
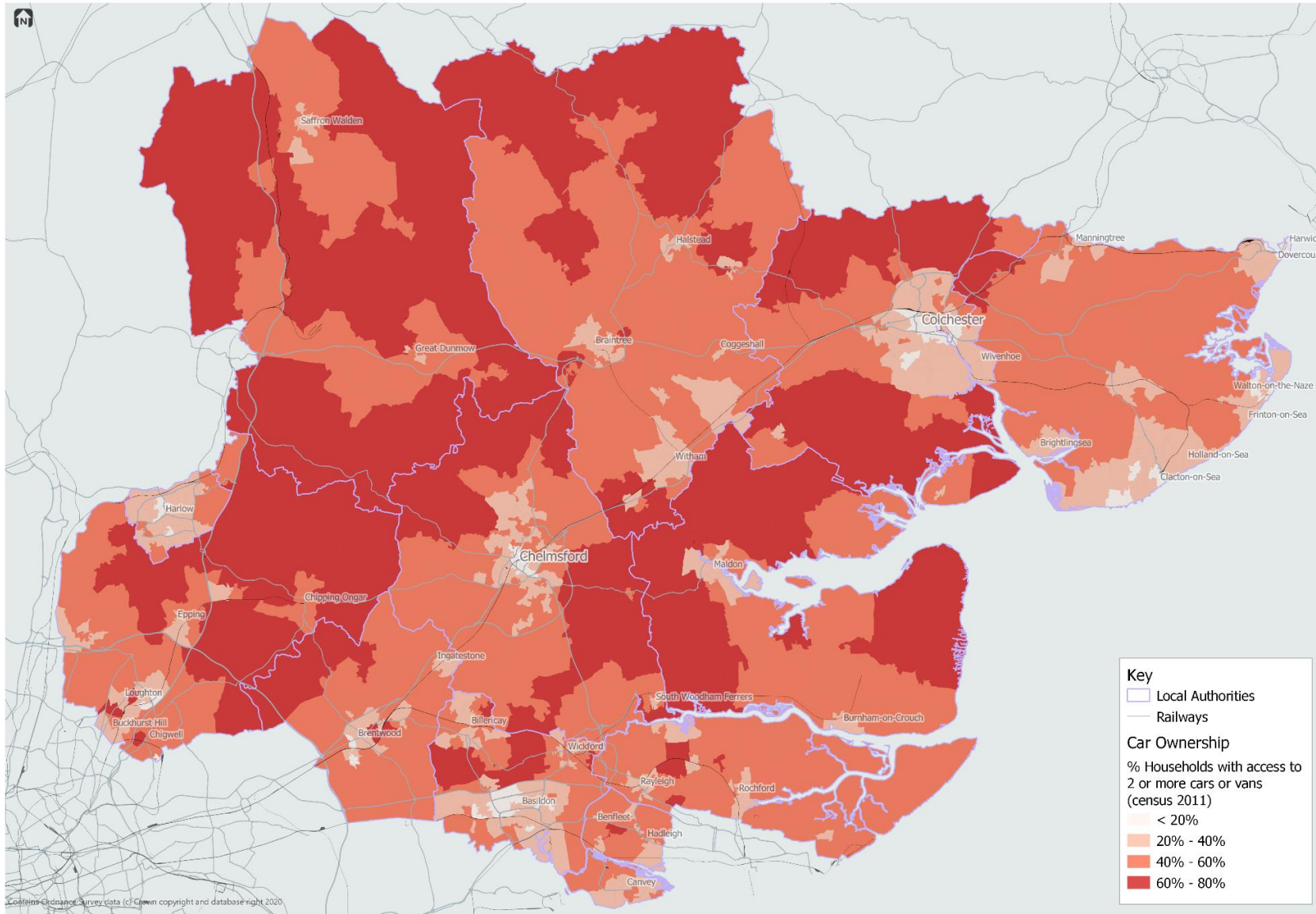


Figure 2-13: Proportion of households with access to two or more cars (Census, 2011)



Related factors

Density

- 2.24 Figure 2-14 shows car/van availability and population density (persons / sqkm), demonstrating an apparent relationship between denser places and lower car ownership. This could be because denser places in Essex are typically in the town / city centres and are likely to have more travel mode choices aside from the private car. This is indicative of the impact that density and accessibility can have on vehicle ownership, and the same principles could be applied to GCs and LSDs just as much as established urban centres.

Age

- 2.25 Figure 2-15 and Figure 2-16 show relationships between car/van availability and age. This shows that there is some relationship between areas that have higher numbers of younger people and areas that have car/van availability below the Essex average. This might be expected – young people appear to live in denser places, and as discussed earlier younger people may drive less and choose not to own a vehicle, particularly in more recent years.
- 2.26 There is also some correlation between areas with high proportions of older people and lower car/van availability. These areas are focussed along the coast. This might be explained by the reduced need for a vehicle for many people after retirement, the reduced need to travel for other trip purposes such as education, and the fact that the coastal areas such as Clacton are also reasonably high density.

Deprivation

- 2.27 Figure 2-17 shows deprivation based on the Indices of Multiple Deprivation, which take account of income, employment, education, health, crime, environment and housing metrics. This indicates that many of the most deprived areas in Essex are coastal, with a small concentration around Basildon, and are areas with car / van availability below the Essex average. Some of these are also the denser (more urban) areas, though not all dense areas have high levels of deprivation.

Figure 2-14: Car / van availability vs. population density

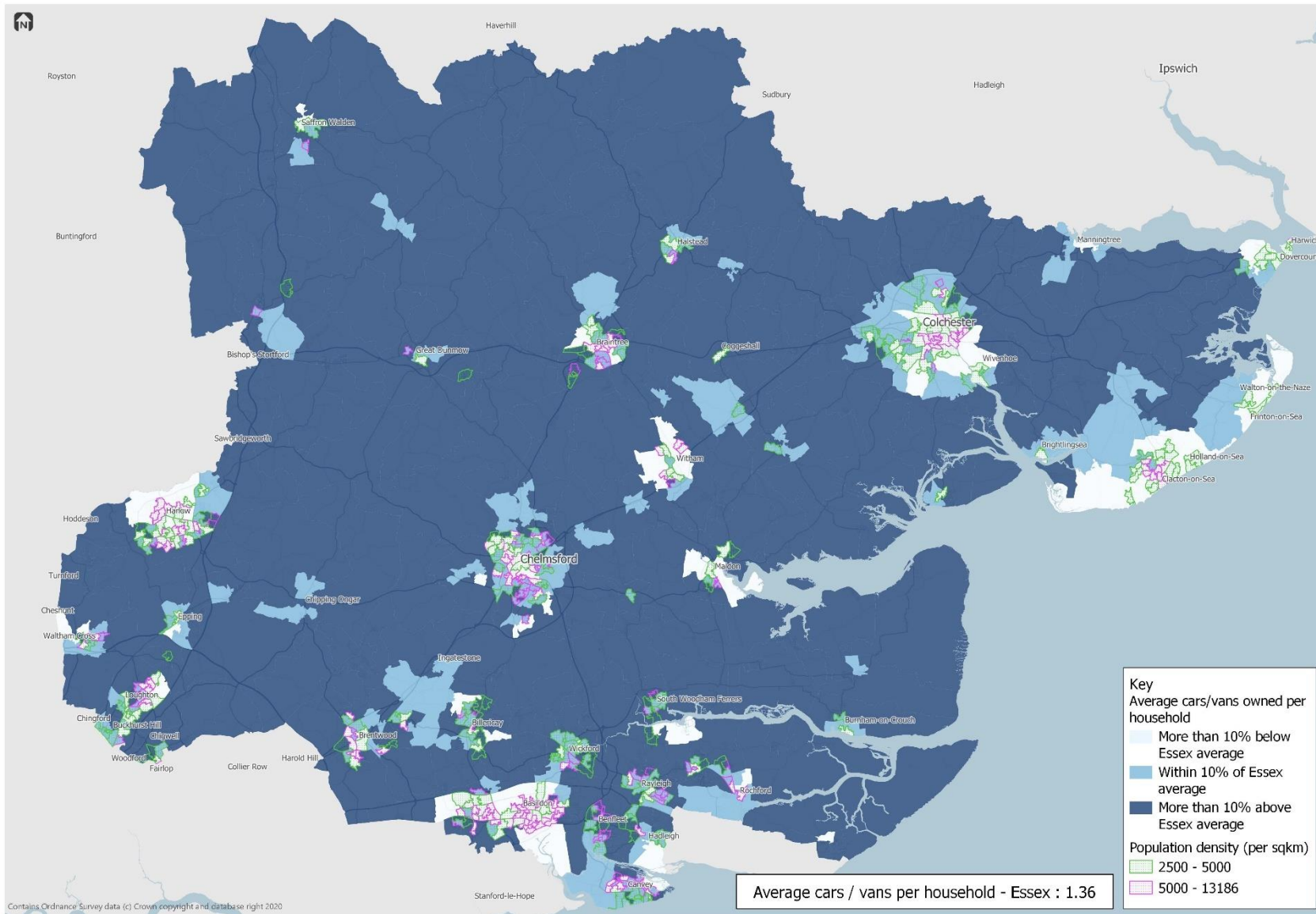


Figure 2-15: Car / van availability vs. age (18- to 25-year-olds)

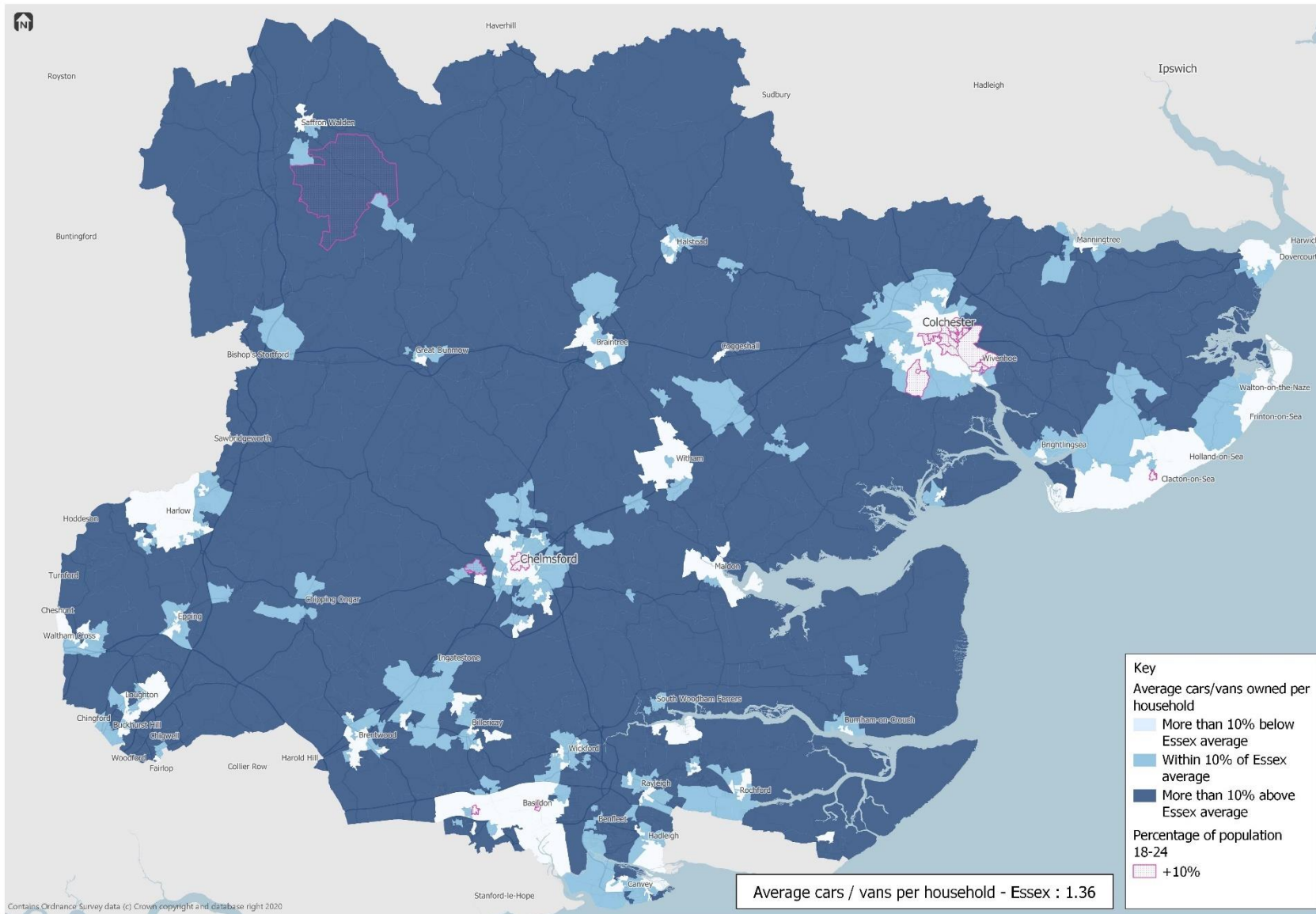


Figure 2-16: Car / van availability vs. age (65+ year olds)

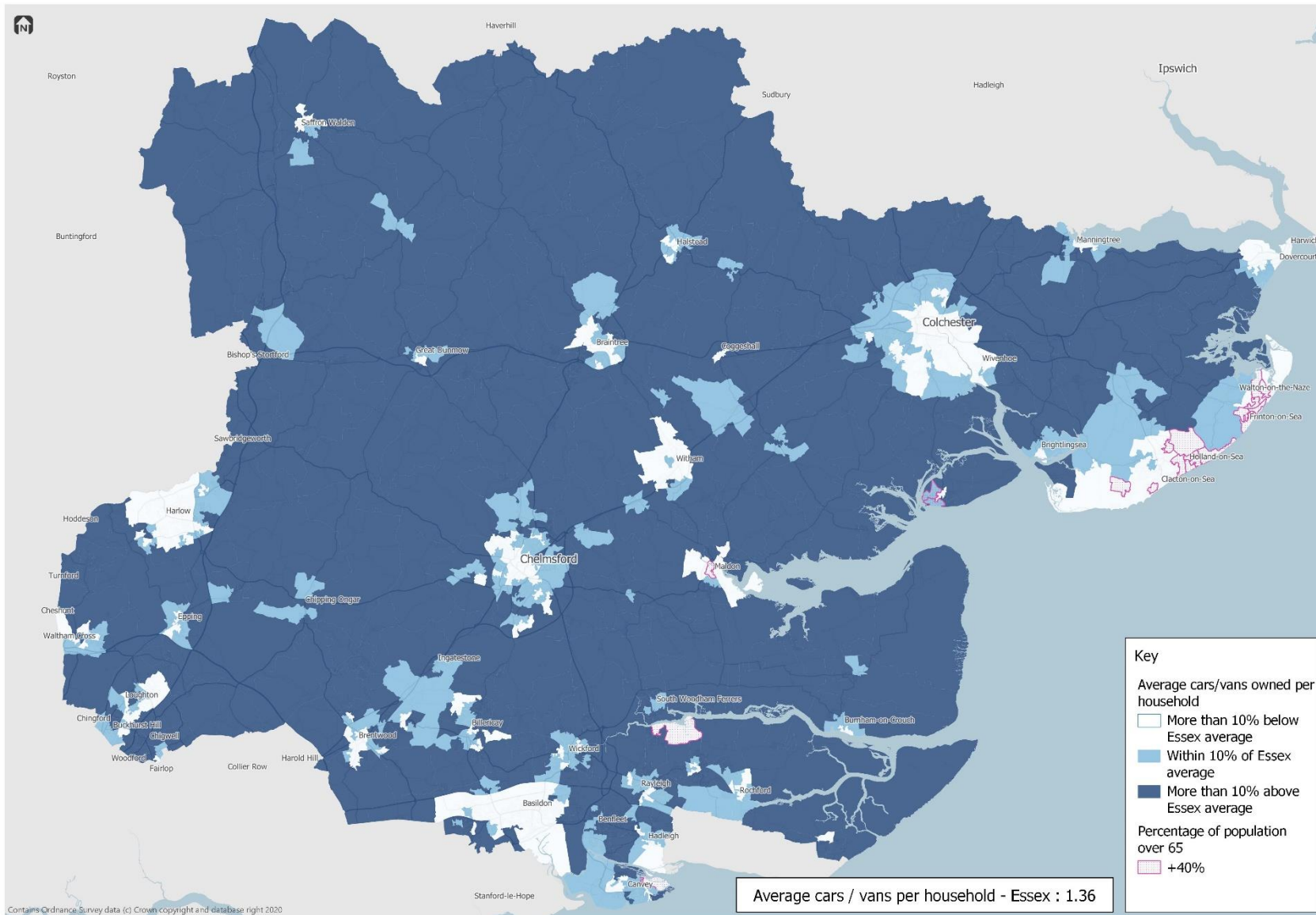
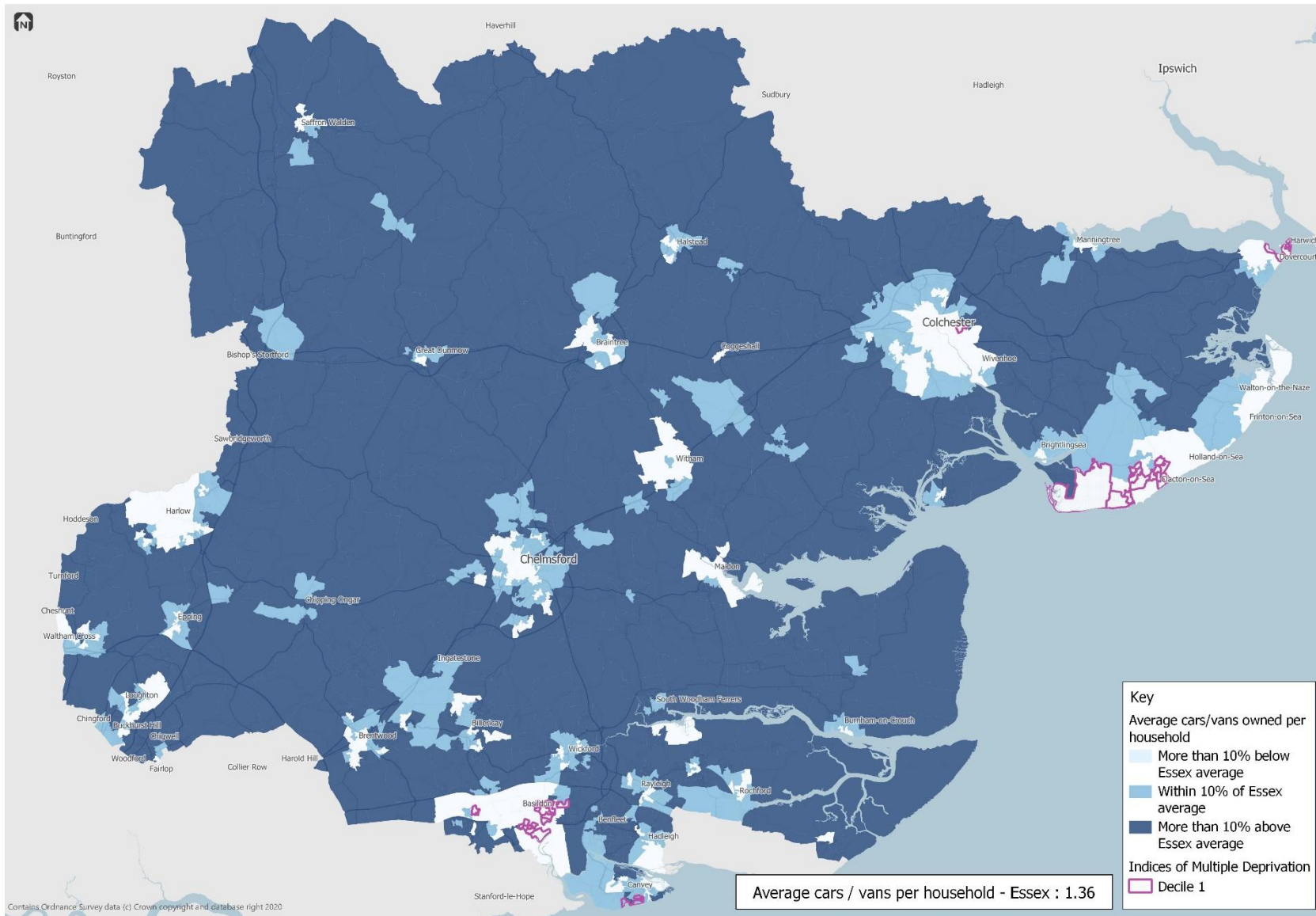


Figure 2-17: Car / van availability vs. deprivation (Indices of Multiple Deprivation)



What does this mean for mode share?

2.28 In addition to vehicle availability, the 2011 Census also included datasets indicating method of travel to work, including method of travel to work by vehicle availability. Whilst commuting trips represent only a proportion of all trips (15% in 2019, according to the [National Travel Survey](#)), the vehicle mode share for commuting trips in an area is often a reasonably proxy for how well-connected that area is, and subsequently how trips associated with other purposes are made.

2.29 As shown in Figure 2-18, across Essex 64% of commuters drive to work. This is higher in some districts than others; Uttlesford and Maldon have proportions above 70%. These are also the districts with the highest vehicle availability levels.

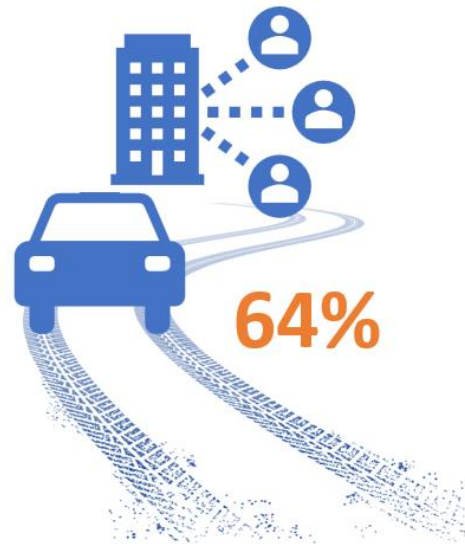
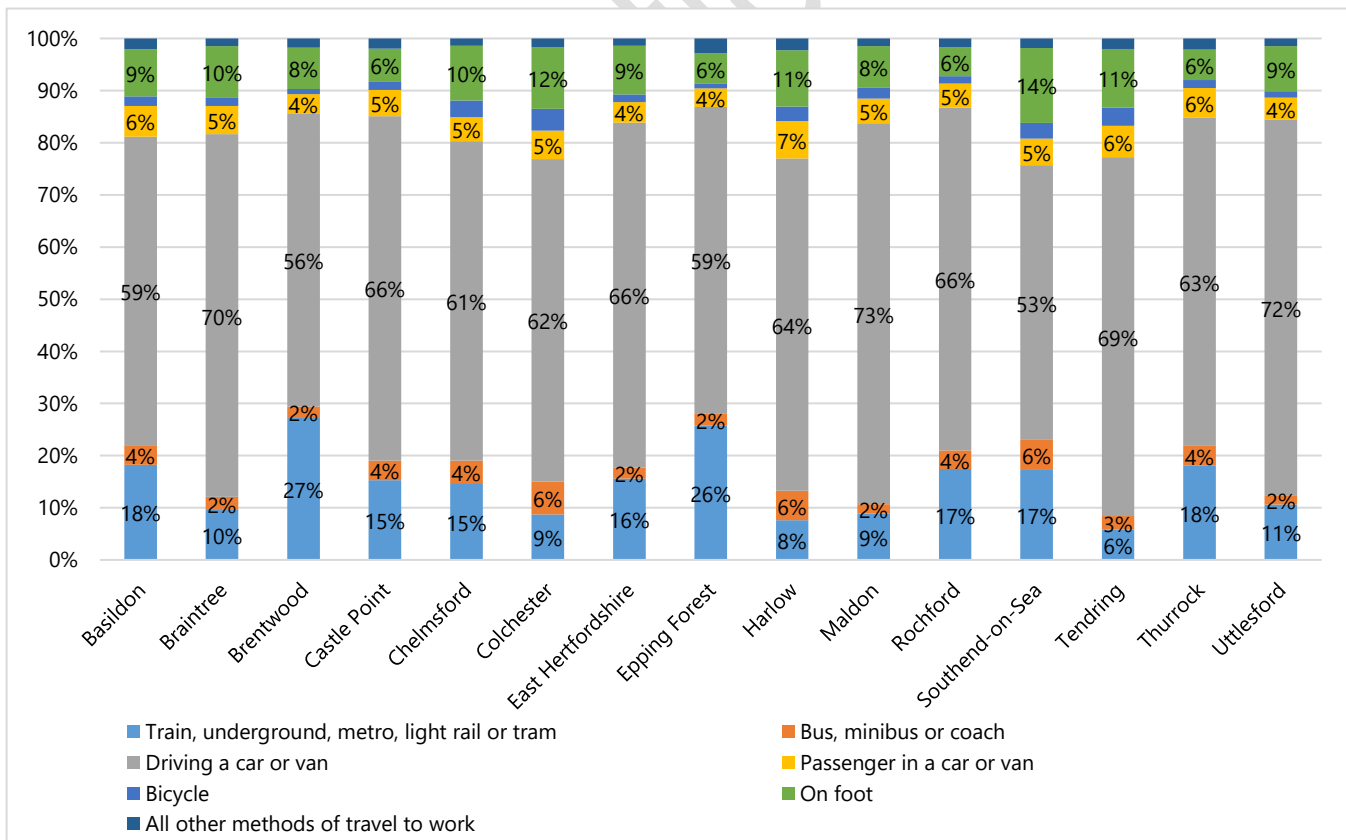


Figure 2-18: Mode of travel to work, all households (2011 Census)



- 2.30 Some of the greatest variation in travel mode share is seen in commuting trips by train (or light rail / tram). The highest proportions of around 20% to 30% are seen in places such as Brentwood, Epping Forest, which benefit from Crossrail and London Underground stations, and then in Basildon and Rochford, which also offer relatively quick and frequent services to London (as well as trains to other regional destinations).
- 2.31 This picture changes significantly when considering the travel mode choice of households with different levels of car ownership, as shown on Figure 2-19, Figure 2-20 and Figure 2-21 overleaf. As would be expected, far lower proportions of people travel to work by car or van when they have no car or van availability in their household. That said, the proportion of drivers is still as high as 28% in Maldon. It is not clear why, but perhaps this is respondents borrowing vehicles from other households (so selecting 'no car or van availability in household'), or simply confusion over what the Census question is asking. Households which can access a vehicle by way of a company car or van, for example, may not have correctly recorded this.
- 2.32 In households with no access to a car/van, all non-car modes see an increase in from the overall proportions shown in Figure 2-18. Cycling and car passenger see a small percentage point increases, but walking and to some degree bus and rail see larger increases. Households with access to one vehicle make up the majority of Essex. Therefore, commuter mode share is largely similar to the overall proportions for all households. Figure 2-20 shows lower proportions of car journeys, and train journeys in particular see increases compared to the overall mode shares.
- 2.33 Figure 2-21 shows the mode share proportions of commuter journeys of households with two or more vehicles. It shows a larger proportion of drivers. Other proportions are slightly smaller, with rail journeys showing the largest percentage point decrease from Figure 2-18. This could suggest rail journeys (which are typically longer) are replaced with car journeys, or alternatively that these households commute to destinations that are not accessible by rail, so instead choose to own another car.
- 2.34 Overall the figures demonstrate that the relationship between vehicle availability and vehicle use is not linear. Clearly households with no vehicle availability travel by active and sustainable modes more regularly, but there is still vehicle use in these households. The change in travel mode share by rail, for example, is not proportionate to the number of vehicles available in a household; generally similar proportions travel in no or one vehicle households, but far fewer in households with two vehicles. Car passengers remain relatively similar regardless of car or van availability – it is possible that these people are consistently passengers in vehicles owned by other households rather than within their own household.

Figure 2-19: Mode of travel to work, households with no access to car/van (2011 Census)

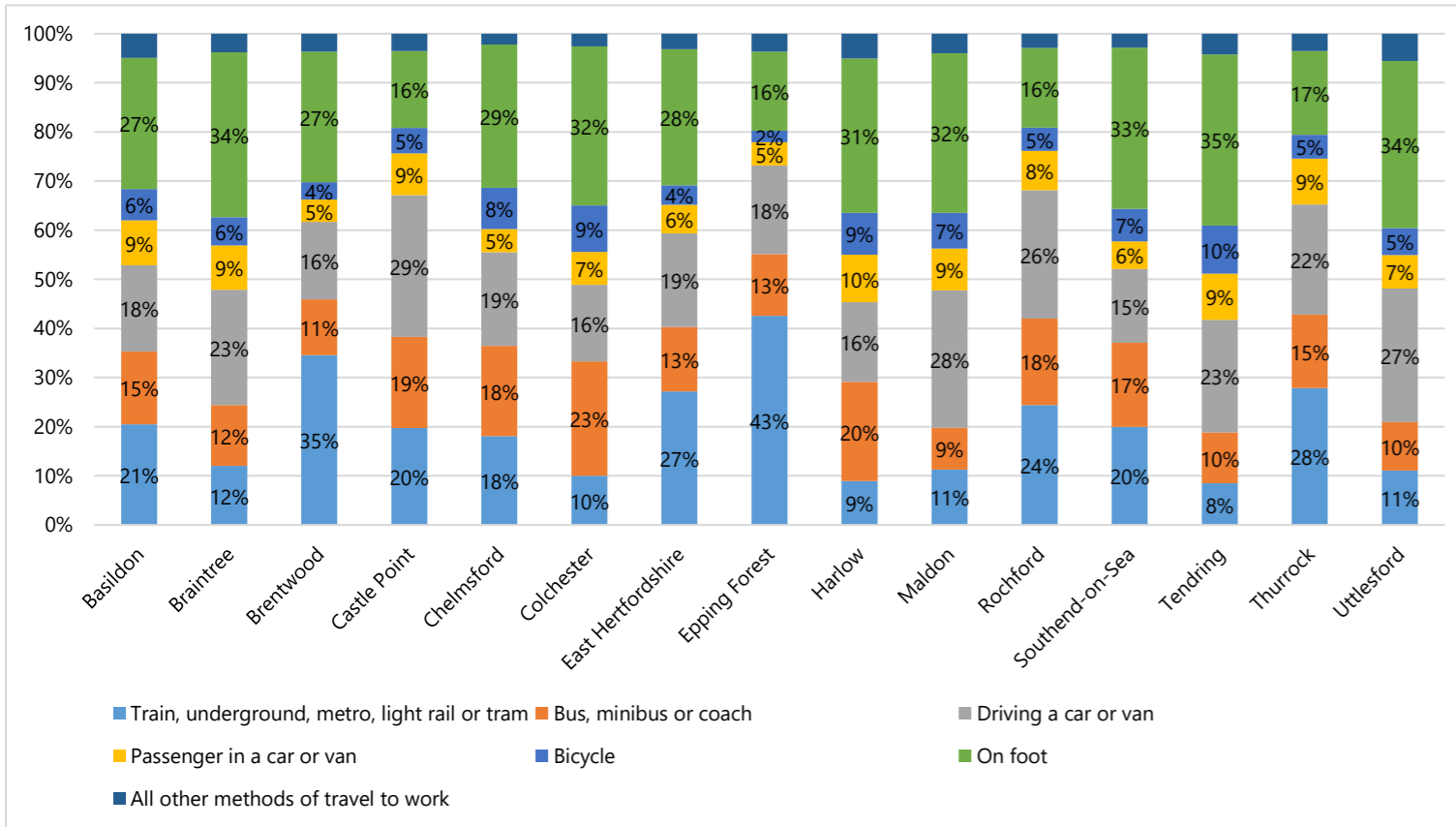


Figure 2-20: Mode of travel to work, households with access to one car/van (2011 Census)

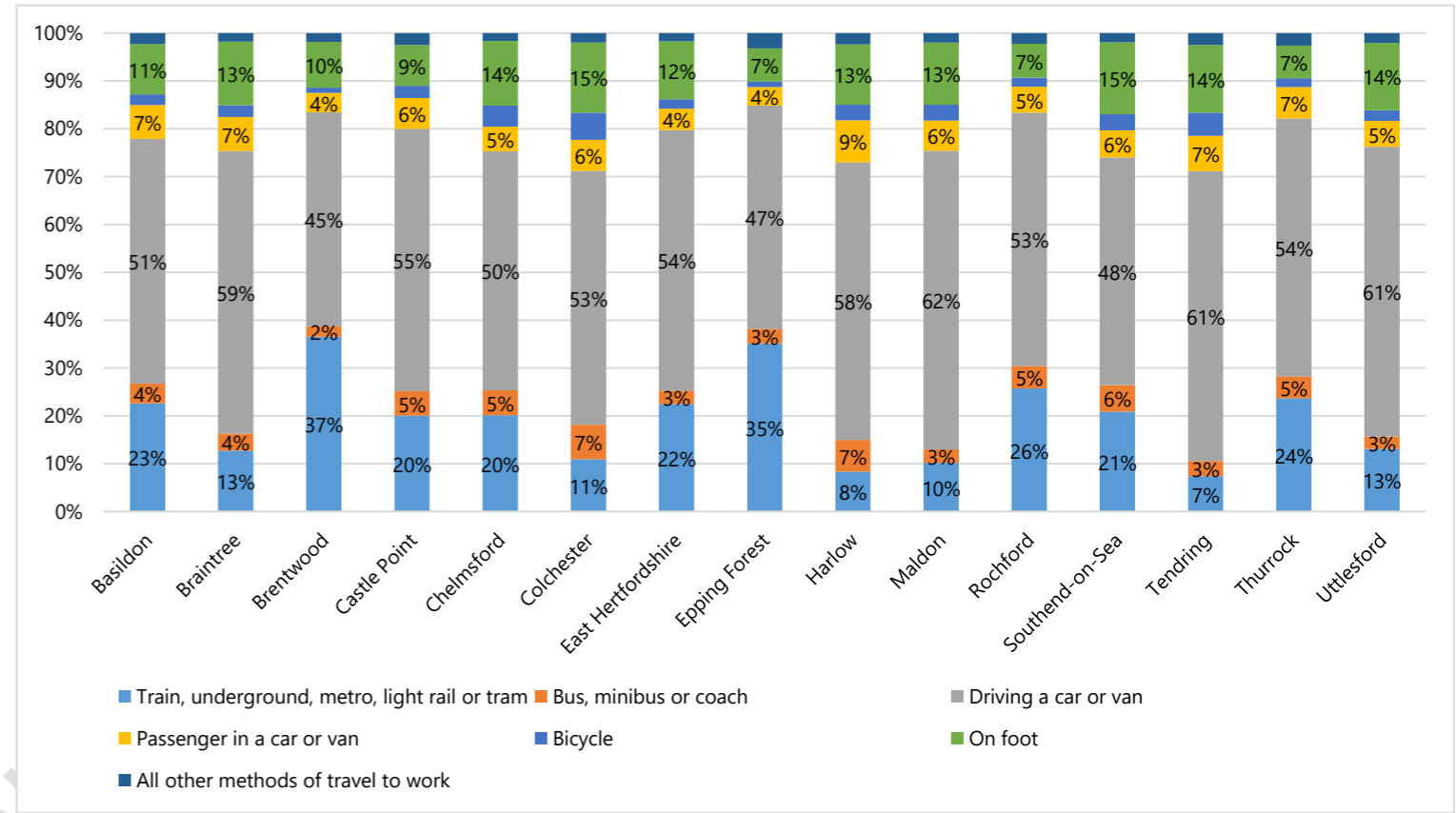
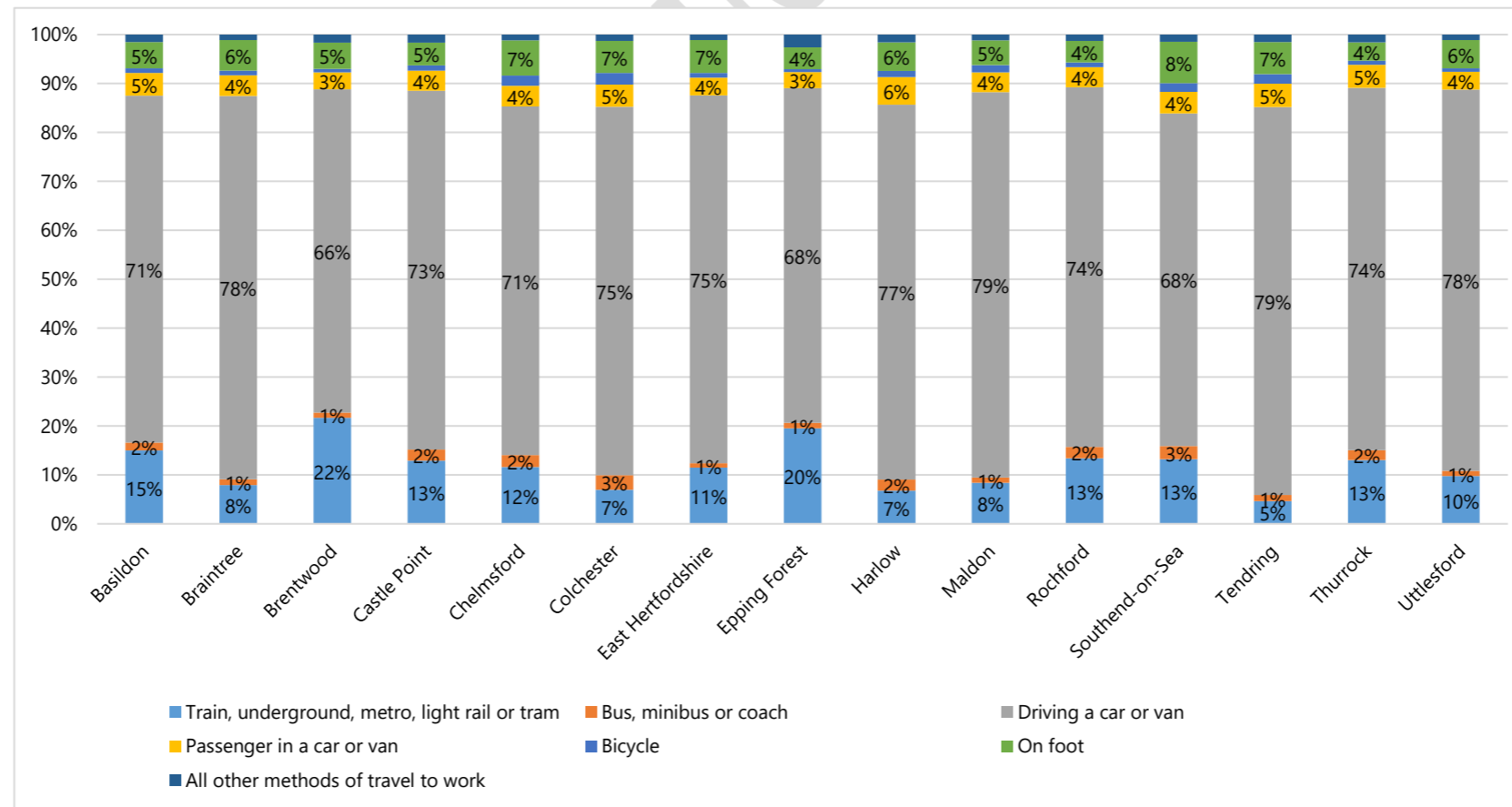


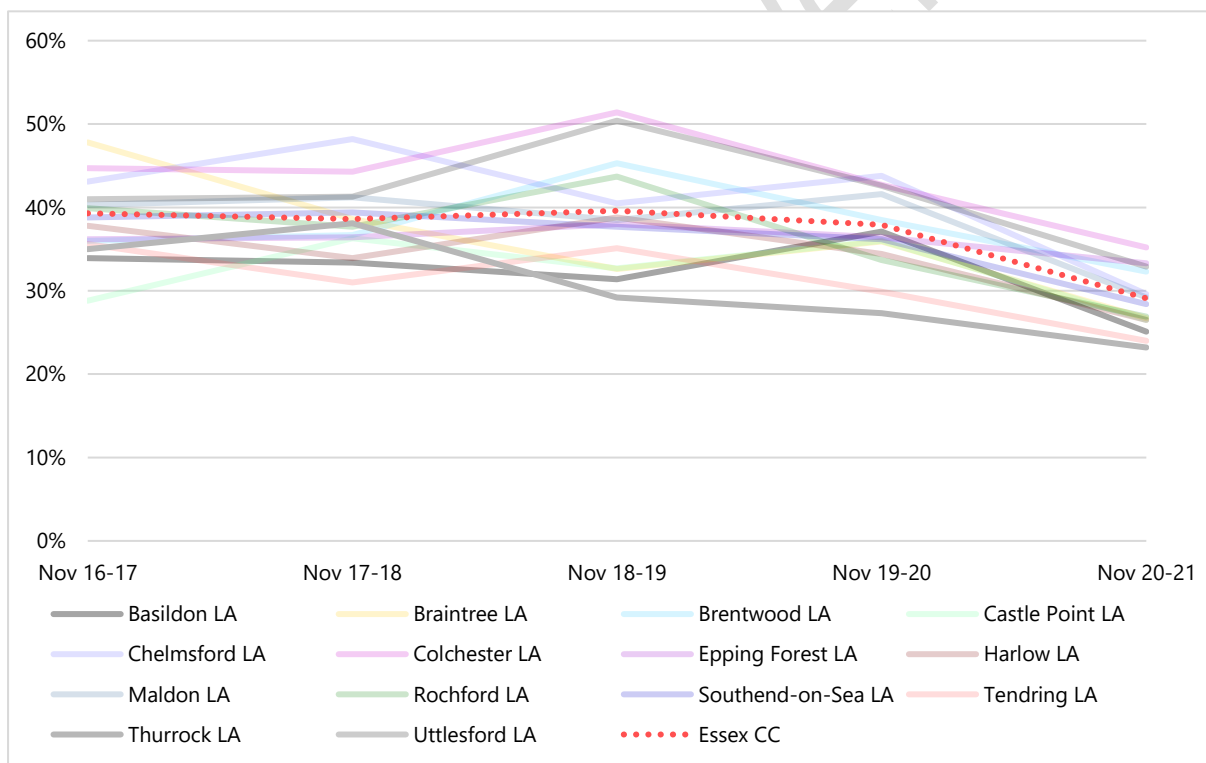
Figure 2-21: Mode of travel to work, households with two or more cars/vans (2011 Census)



Cycling trips

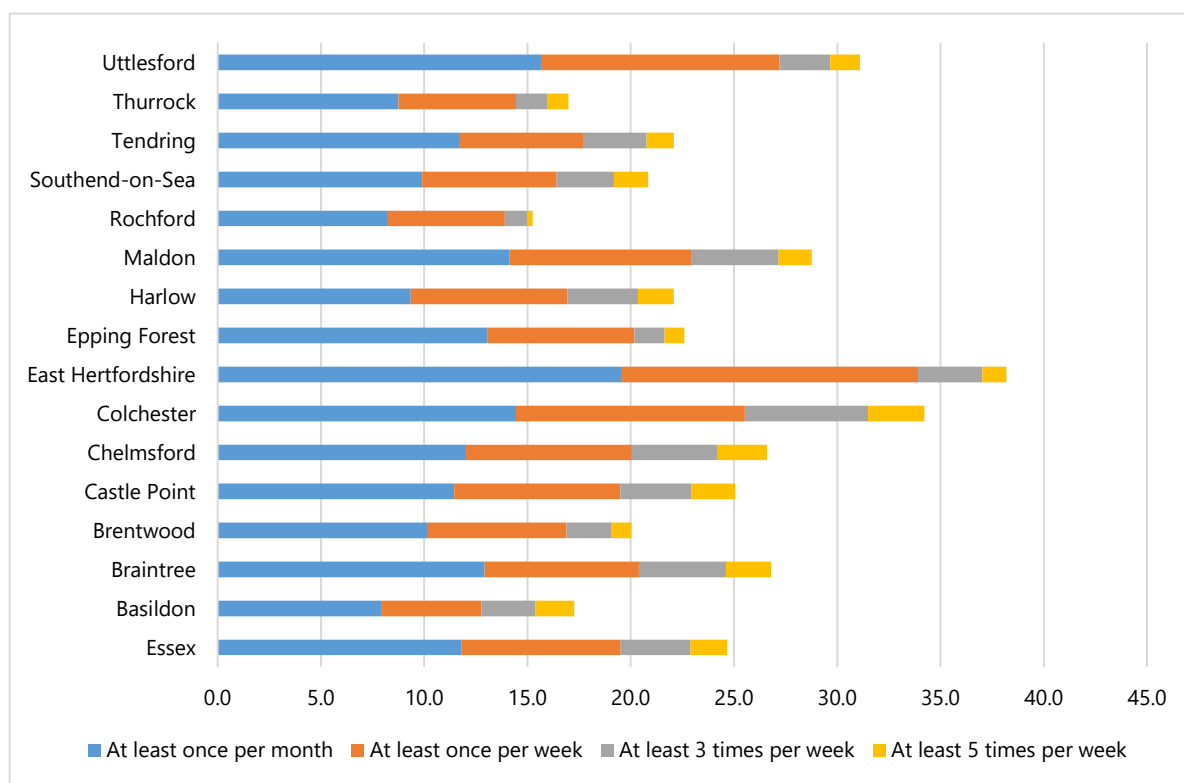
- 2.35 Aside from the 2011 Census, the [Active Lives Survey](#) by Sports England also records data on cycling and shows that Essex reflects similar levels of cycling to the England average (30% November 2020 – 2021). This has however decreased from 40% between November 2019 and 2017.
- 2.36 Figure 2-22 shows this downward trend reflected in each of the local authority areas in Essex. This trend from November 2018 persists in areas that had previously experienced an increase, such as Uttlesford and Colchester, which reached 50% of the population participating in cycling in 2018-2019. Overall, it illustrates that Colchester, Uttlesford, Brentwood and Chelmsford had the highest numbers of people who had participated in cycling.

Figure 2-22: Proportion of the population participating in cycling in the last year



- 2.37 Figure 2-23 illustrates the different frequencies of cycling in each local authority. All areas had highest proportions who cycle 'at least once per month', with the highest being Uttlesford (16%), Colchester (14.5%) and Maldon (14%) and the lowest Basildon (8%) and Rochford (8%). These patterns are similar within the other frequencies of cycling, where Basildon and Rochford show the lowest levels overall (17% and 15% respectively). This is around ten percentage points lower than the overall proportions of cycling in Essex.

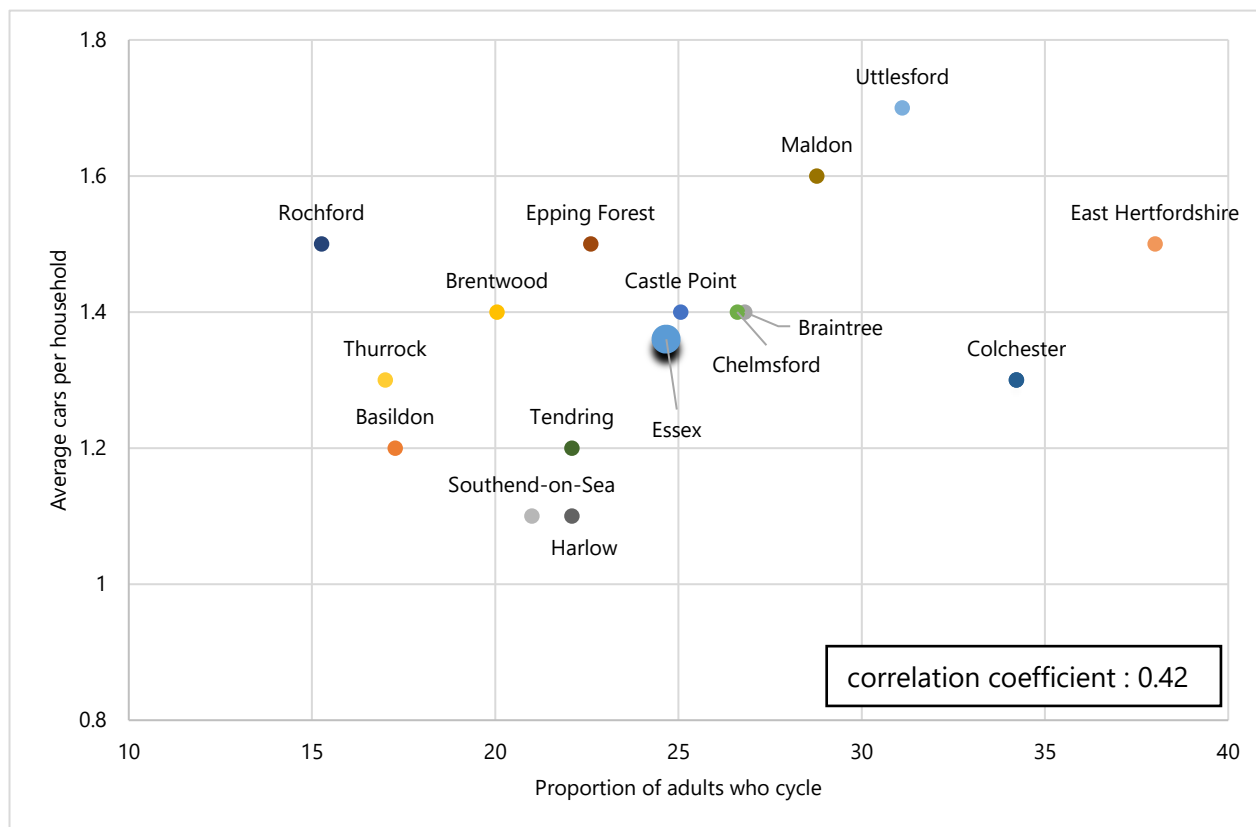
Figure 2-23: Proportion of adults who cycle



2.38 Figure 2-24 charts the total proportions of people who cycle (as presented in Figure 2-23) against the average number of cars owned per household (as presented in Figure 2-18). Whilst this shows a weak positive correlation (0.42), indicating that higher levels of cycling may be somewhat associated with higher levels of car ownership, there are interesting nuances to reflect on. For example, Uttlesford and Maldon, the districts consistently with higher car/van availability and car driver mode share, also have the highest number of people participating in cycling. Basildon has one of the lowest car/van availabilities and the lowest vehicle mode share, and the lowest cycling participation. Harlow follows a similar pattern. That said, the converse is true of Colchester, which has a low car/van availability and relatively low vehicle mode share, but the highest cycling participation overall.

2.39 There is clearly not a causal relationship between car/van availability and cycling participation, but rather it is likely that these are both influenced by a shared external factor (or multiple factors), such as income, or availability of cycling infrastructure. Colchester has benefitted from historic investment in cycle infrastructure through the Cycle Cities and Towns Programme, and has had consistently higher cycling mode share likely as a result of that.

Figure 2-24: Average cars per household and levels of cycling by local authority



Summary

2.40 Key findings from this chapter are as follows:

Number of vehicles

- Nationally, there has been a long-term trend of increasing car ownership, though, there has been a levelling off in recent years, potentially as a result of Covid-19 and the increasing cost of living.
- Current vehicle licensing data does not seem to mirror 2011 Census vehicle availability data in Essex – there may have been significant changes in demography since then, or the two might not be proxies for each other.
- The rate of growth of vehicles in Essex is higher than population growth, suggesting that overall car ownership per household is still increasing.
- Alternative fuel vehicles are increasing in Essex. The rate of increase in alternative fuel vehicles in Essex is, however, lower than the national rate.

Vehicle ownership

- The proportion of **multiple car households** is particularly high in Maldon and Uttlesford and low in Harlow and Tendring.
- **More rural areas have a higher number of cars / vans per household.** More urban / denser areas have lower car / van availability.
- There is some **correlation between high proportions of younger / older people and lower car/van availability.**
- Many of the most deprived areas have car / van availability below the Essex average.
- **The relationship between vehicle availability and vehicle use is not linear.**
- **Mode share by active and sustainable modes is not proportionate to the number of vehicles available in a household.**

Mode share

- There is **no clear causal relationship between car / van availability and cycling.**
- Having **more or less cars / vans in a household does not necessarily mean that more trips are made by other modes,** but it does seem that modes which travel over longer distances are replaced by car.
- **Population growth tends to result in more vehicles, but this is not linear,** and sometimes the two do not correlate.

Recommendations for the next stages of this study

2.41 The findings from this chapter will be used to inform the next stages of the guidance preparation as follows:

- 1) There is an opportunity to capture and exploit the slight decline in rate of vehicle licensing observed in recent years to set the foundations for reduced vehicle parking provision, both in GCs/LSDs and elsewhere in Essex.
- 2) Alternative fuel vehicles will need to be accommodated and facilitated to keep up with the national trend, albeit that they still represent a less sustainable choice compared with active and passenger transport modes, and should not contribute towards 'sustainable and active' modes as defined for GC mode share targets.
- 3) There may be opportunity, through a combination of measures, to encourage multiple vehicle households to own just one vehicle, as households with two or more vehicles are only slightly more likely to use them (to travel to work).

- 4) There are areas where car ownership is high, particularly in the more rural areas. Standalone, smaller-scale developments here may need to apply more flexible standards. At GCs and LSDs, however, it is expected that their scale and influence will result in improved infrastructure (both of which seem to have an influence on car ownership/use), plus lifestyle changes and new populations. Hence, even when located in districts with higher car ownership, there is opportunity to buck the trend and provide more restricted parking at these developments.
- 5) There are conditions that seem to result in lower car ownership and car use, and these should be replicated in GCs and LSDs where possible. These appear to be related to:
 - a) Density
 - b) Proximity to urban areas (likely a proxy for proximity to services and employment)
 - c) Proximity to public transport (especially rail)
 - d) Availability of cycle infrastructure
 - e) Deprivation – whilst this cannot be planned, provision of genuine choice of low-cost travel options that get people where they want to go should reduce barriers to sustainable and active travel in more deprived areas.

2.42 These findings and recommendations inform the recommendations in subsequent chapters of this report.

3. Localised data

- 3.1 An exercise has been undertaken to establish whether there are more localised and site-specific sources of data in Essex and the surrounding areas that might provide:
- More granular, detailed or up-to-date analysis of car ownership or mode share in Essex, compared with the 2011 Census.
 - Insights into whether recent LSDs are successful places in terms of reducing car dependency and space for storage of vehicles.
 - Direct comparisons between number of car (or cycle) spaces provided for different land uses, and / or any notable sustainable mobility interventions, and the resultant effect on car ownership or mode share of those places.

TRICS

- 3.2 The TRICS trip rate database contains multi-modal surveys of developments of most types of land use, across the UK. Surveys capture the number of trips made to / from a site over the course of a day, and therefore allows for calculation of trip rates and mode share, alongside review of development information such as scale of site, number of parking spaces provided, proximity to public transport infrastructure etc. It is generally a useful source of empirical data to understand how conventional development models have materialised, and although it is most often used to generate trip rates, the information provided around parking provision is comprehensive in terms of the detail and range of surveys available. What it does not do is provide qualitative insights, information on design, or comment on the relative successes or failures of development.
- 3.3 Despite the range of data available, when homing in on a specific type or quality of development, there are very few relevant surveys in Essex. Focussing on residential sites - given that dwellings will make up the majority of GCs and LSDs - TRICS has only four surveys in Essex (and similarly low numbers in adjacent areas). These are summarised in Table 3-1. It is interesting to note at this point that in most cases car parking provision is significantly more than the Essex average car/van availability figures, suggesting perhaps that the efficiency in use of parking spaces is more of a problem than the availability (i.e. that allocated spaces are not always fully utilised).
- 3.4 TRICS does include two residential-led LSDs, both of which are in relative proximity or potentially relevant contextually to Essex. These are summarised in Table 3-2.

Table 3-1: Residential TRICS sites in Essex

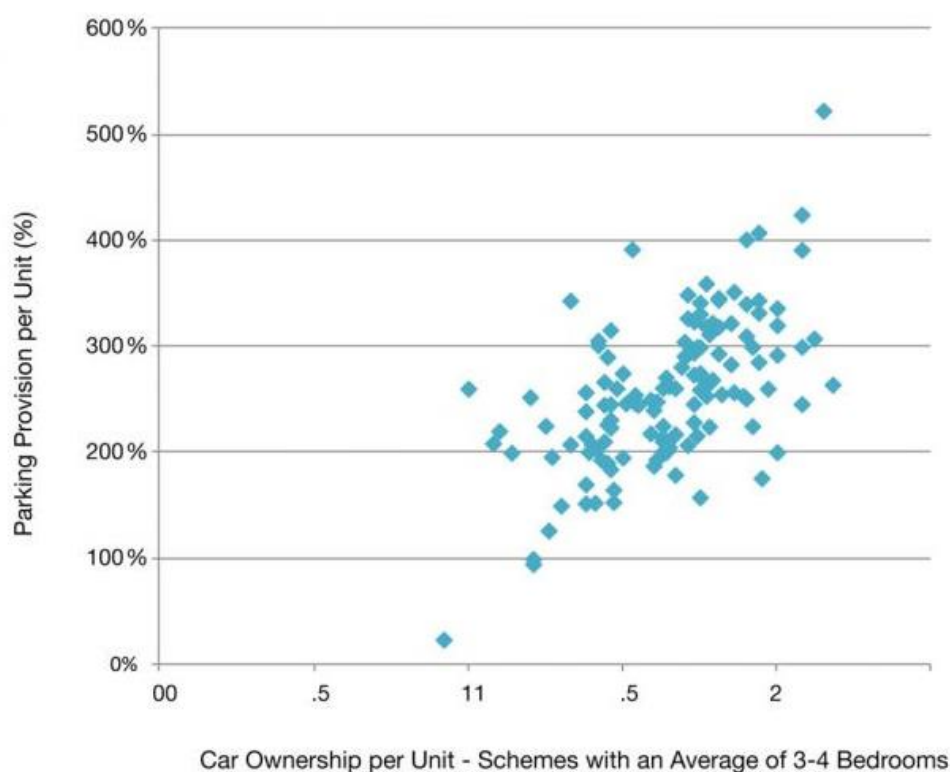
Site name/area	Survey year	Scale	Type	Density	Area type	Spaces per dwelling	Comments
Greenwich Way, Waltham Abbey	2008	312 dwells	Mix affordable houses / flats	49dph	Edge of town	1.26 (around 20% in garages)	Despite the high density, which is contributed to by flats, the site is a typical edge of town dormitory development. It is very well connected to the road network, including the M25, and parking standards have been applied in a reasonably conventional manner, albeit slightly lower, likely reflecting the London context. The design and integration of parking is typical of mid-scale residential sites, e.g. in the form of garages, tandem parking, and small on-street parking courts. Not relevant to GCs and LSDs with ambitious sustainable mobility goals.
Milton Road, Stanford-le-Hope	2008	237 dwells	Private houses	35dph	Edge of town	2.5 (around 34% in garages)	This is not a new development in relative terms (it was surveyed, rather than built, in 2008) and as such has adopted very high parking standards which have resulted in a streetscape dominated by asphalt, paving and vehicles. Not relevant to GCs and LSDs with ambitious sustainable mobility goals.
Manor Road, Chigwell	2017	97 dwells	Private houses	20dph	Edge of town	0.87 (no garages, around 25% on-street in courts)	This site is small scale and low density. That said, it is immediately adjacent to Grange Hill tube station and initially provided low parking provision per dwelling, including in (allocated) central parking courts. On Google Streetview, it does appear that there is an issue with on-street parking, with some areas of verge converted to parking spaces. Could present an interesting study of 'what went wrong'.
Heron Gardens, Rayleigh	2021	123 dwells	Private houses	53dph	Edge of town	2.4 (around 30% in garages)	The site is suburban in nature and is designed around several convoluted cul-de-sacs, which are inconvenient for vehicles but do not provide good permeability for pedestrians or other modes. The site is reasonably close to Rayleigh station, but despite that has a high ratio of spaces per dwelling, and the way in which these are provided is conventional, comprising mostly driveway and garage parking. Not relevant to GCs and LSDs with ambitious sustainable mobility goals.

Table 3-2: Large-scale TRICS sites potentially relevant to Essex

Site name/area	Survey year	Scale	Type	Density	Area type	Parking spaces per dwelling	Comments
Cambourne, Cambridgeshire	2018	4,240 dwells, plus retail, education, community	'New community' – mix private/affordable houses	Unknown	Out of town	~2.7 (caution: detailed data not available)	Cambourne is a good example of a completed LSD, however, is sometimes regarded as unsuccessful in achieving sustainable mobility outcomes. It has very good access to the road network and the internal layout is characterised by cul-de-sacs. Large surface level car parking dominates the town centre. Could present an interesting study of 'what went wrong'.
Crookham Park, Fleet (Hampshire)	2021	922 dwells, plus retail, education, community	'Urban extension' – mix private/affordable houses	Unknown	Edge of town	~2.5 (caution: detailed data not available)	Crookham Park is relatively new and has provided parking in a number of ways (though a large proportion is through garages). That said it is not very accessible by public transport and the streetscape is very dominated by areas for parking and roadspace. Data may have been influenced by Covid-19. Could present an interesting study of 'what went wrong'.

Space to Park

- 3.5 The [Space to Park](#) resources are a user-generated set of studies and case studies aiming to establish what works where in terms of parking provision. A detailed research report published in 2013 looked at 402 residential developments in Kent, constructed within 'the recent era'.
- 3.6 The dataset is rich in detail around the type of parking provided at sites and not only includes quantitative data, but also qualitative data that informs some of the thinking in later Chapters of this report. In general terms, conclusions are drawn about parking provision and car ownership, as below (images sourced from <http://www.spacetopark.org/>).



- 3.7 This demonstrates that across the sites surveyed, there was a generally positive correlation between parking spaces per dwelling and car ownership, albeit that there are some significant variances, with some sites having nearly double the car ownership of other sites with the same parking provision.
- 3.8 The data collected at each of the 402 survey sites follows a pro-forma, an example of which is shown below.

FIELD DATA			
Number of homes	59	Allocated parking ratio excluding garages	100%
PARKING PROVISION		Total parking ratio (all designated spaces)	161%
Garages	22	% Unallocated	15%
Allocated (excluding garages)	59	OBSERVED PARKING	
Unallocated bays	14	Observed Parking	43
TOTAL	95	Of which - parked outside designated spaces	6
FROM THE KENT DATA			
Vehicles/unit	1.26	Residents park on-street	16%
No car households	5%	Visitors park on the street	42%
2+ car households	26%	Garages used for parking	50%
Parking Rating	-68%	Parking problems	79%

3.9 This information, along with the mapping of different types of parking provision and the supporting narrative would provide useful evidence base for the numerical, accessibility and design-based elements of the guidance, however, this should all be under the recognition that:

- The sites are in Kent and are generally suburban in nature or are within a dormitory town.
- Few sites have even moderate levels of accessibility, and few have targeted interventions such as car share schemes available.
- The surveys informing the research were undertaken between around 2007 and 2013, with the development sites themselves being older. This may not be representative enough of modern development models and travel habits.
- None of the sites were GCs and it does not appear that any could genuinely be considered LSDs, i.e. above around 1,000 dwellings in scale.

3.10 Given the above, it is considered that the qualitative data and general conclusions around the interrelationships between vehicle ownership, usage and parking provision are very useful and relevant to the guidance. The actual numerical relationships may

not be suitable to robustly inform the spreadsheet and accessibility models that will inform next steps of this study.

Beaulieu Travel Plan monitoring

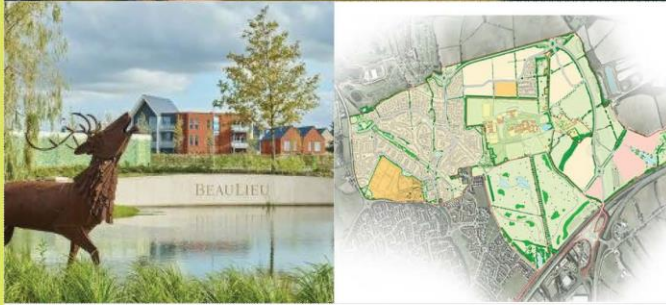
- 3.11 Beaulieu – a recent LSD at the northern extents of Chelmsford – has been undertaking Travel Plan monitoring since around 2015. It is still under construction but at the most recent survey (2019), 559 dwellings were occupied, a new bus service had been introduced and Travel Plan/behaviour change measures were implemented.
- 3.12 The monitoring data captures multi-modal trips (though not directly mode share) and bus patronage, annually. An example of the monitoring results is shown below, suggesting that the target trip rates have been more than met following introduction of the bus service. This does not seem to reconcile with car ownership though, as it is understood that inappropriate parking has become a problem at the site and that double yellow lines are being implemented. This will be interesting to explore in more detail.

	AM Peak (Departures)	PM Peak (Arrivals)
Trip Rate Target once the Bus Service is operational	0.417	0.302
Recorded Trip Rate Year 4	0.291	0.253
% Difference to Target	-30.2%	-16.2%

- 3.13 Given that Beaulieu was the subject of a relatively recent planning application, there is also detailed information available relating to how many car parking spaces were provided across the phases and in what form, plus anecdotal evidence from officers about how parking standards were applied and indeed how successful the development has been in terms of sustainable mobility (with varying opinions).
- 3.14 The Beaulieu monitoring data is again considered to be a useful source of information and seems to show relatively 'good growth' in terms of vehicle mode share, although car ownership and resultant parking demand does seem to be an issue.
- 3.15 Notwithstanding the above, this is just one example of relatively good quality data from an Essex development and is not recommended for use in isolation to inform accessibility or numerical modelling.

Case study

Beaulieu, Chelmsford



Key details

Beaulieu is a new district in Chelmsford, Essex proposed to be finished in 2026. It will provide facilities such as two new primary schools and one secondary school, health and community centres, sports facilities and retail options with a network of green open spaces and parklands. As of 2019, over 550 dwellings had been occupied, with free cycle training and sustainable travel information offered to all residents. The transport network is key to the success of the district, with two enhanced bus links, and development underway for a new railway station connecting to the Great Eastern mainline. Further network additions will include a new relief road connecting Beaulieu to the A12, substantial cycle parking, and dedicated walking and cycling routes.

New rail station and bus services

Comprehensive Travel Plan implemented

Target vehicle mode shares met



Chelmsford, UK

Modal split



3%



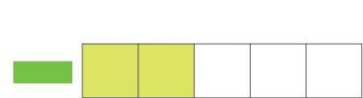
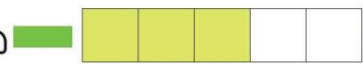
2%



74%



20%



- On plot - driveway
- On plot - garage
- Off plot
- Undercroft
- Courts / barns

Parking provision

London Healthy Streets Scorecard

3.16 The [London Healthy Streets Scorecard](#) coalition is a group of transport, health, road safety and environmental campaigners who have developed and promoted a 'scorecard' to compare the outcomes of different transport interventions across all London boroughs. 'Input' data are collected on:

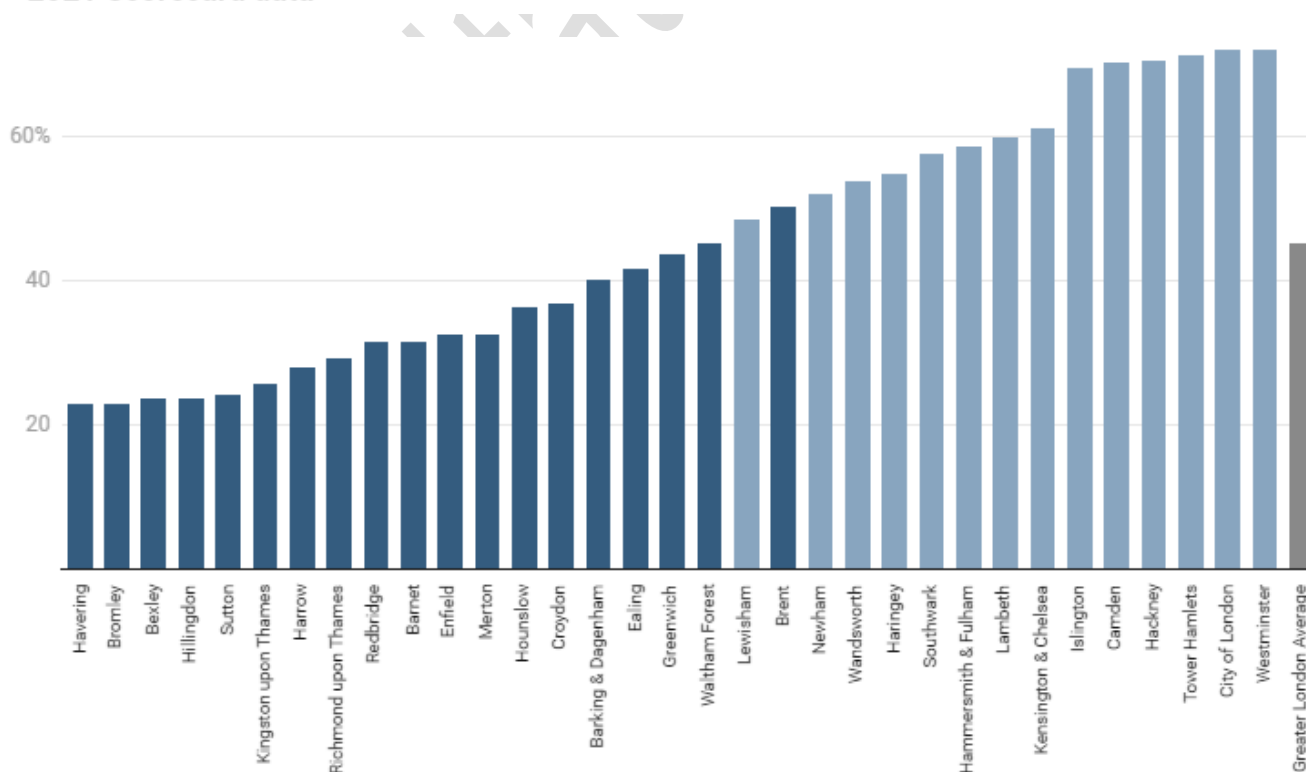
- Introduction of Low Traffic Neighbourhoods
- Extent of 20mph speed limits
- Prevalence of Controlled Parking Zones
- Length of physically protected cycle track
- Amount of action on the school STARS programme
- Implementation of School Streets
- Length of prioritised bus corridor

3.17 The 'outputs' or outcomes analysed are then:

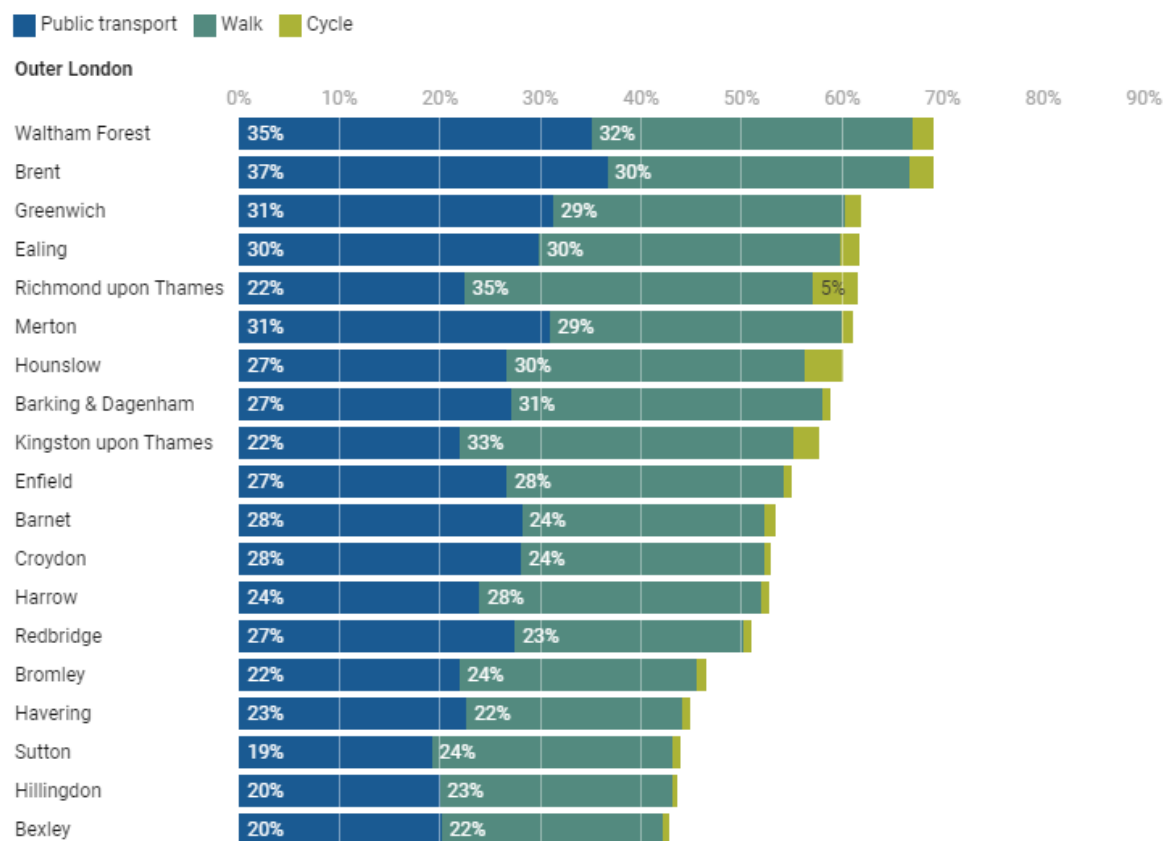
- The borough mode share
- Walking and cycling rates (e.g. numbers of trips per week)
- Road collision casualties
- Car ownership

3.18 Examples of the 2021 mode share and car ownership data are shown below.

Percentage of households with no car: Inner/Outer London boroughs, 2021 Scorecard data



Sustainable modeshare, 2021 Scorecard data, by London borough



- 3.19 The coalition’s own analysis notes a significant drop in car ownership in the 2021 data compared with previous years. It draws out a relationship between those boroughs that score well in the Scorecard and those that have seen falls in car ownership, for example Waltham Forest have done more than most boroughs to encourage alternative modes (mostly related to Low Traffic Neighbourhoods) and also has the second highest percentage of households with no cars in Outer London. This is not necessarily indicative of a causal relationship as there are many factors at play (deprivation, density etc.) but these interventions will have contributed.
- 3.20 Whilst the raw input and output data does not appear readily available, and hence direct use of the statistics to inform modelling may not be possible, the Scorecard dataset in its entirety is a large and reasonably robust study of how various interventions related to sustainable mobility impact on car ownership (as well as mode share). The Scorecard dataset is therefore considered useful in understanding and demonstrating the influences of measures introduced on parking demand, however, its London context should be applied with caution in the Essex setting.

Case study

Waltham Forest, London



Key details

Low Traffic Neighbourhoods in Forest Gate, Maryland and South Leytonstone were developed in 2018 and 2019 to reduce pressure on roads and public transport networks. London boroughs allocated funding towards the introduction of LTNs to create better streets for walking, cycling and public transport. The LTN prevents motor vehicles from cutting through the neighbourhoods in an attempt to avoid the more congested main roads (rat running). Modal filters allow walking and cycling trips and local residents, visitors, businesses and services can still access all areas within the boundary by vehicle.

Modal filters introduced to discourage vehicle through trips

Walking and cycling are prioritised



London, England

Modal split



33%



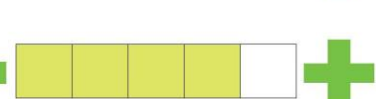
2%



36%



29%



On plot - driveway



On plot - garage



Off plot



Undercroft



Courts / barns

Parking provision

Summary

3.21 Key findings of the data review presented in this chapter are summarised below and in Table 3-3:

Table 3-3: Summary of localised data

Data source	Type	Captures	Quantitatively relevant	Qualitatively relevant
TRICS	<ul style="list-style-type: none"> ✓ Quantitative ✓ Small-scale sites ✓ Small sample size 	<ul style="list-style-type: none"> ✓ Trip rates ✓ Mode share ✓ Parking provision ✓ Development details 	Maybe	No
Space to Park	<ul style="list-style-type: none"> ✓ Quantitative ✓ Qualitative ✓ Small scale sites ✓ Large sample size 	<ul style="list-style-type: none"> ✓ Parking provision ✓ Parking demand ✓ Development details 	Maybe	Yes
Beaulieu	<ul style="list-style-type: none"> ✓ Quantitative ✓ Qualitative ✓ Large scale site 	<ul style="list-style-type: none"> ✓ Trip rates ✓ Parking provision ✓ Development details ✓ Intervention details 	Maybe	Maybe
Healthy Streets Scorecard	<ul style="list-style-type: none"> ✓ Quantitative ✓ Large sample size 	<ul style="list-style-type: none"> ✓ Mode share ✓ Intervention details 	Maybe	Maybe

- TRICS and Space to Park suggest that **car parking provision is often significantly more than car/van availability or ownership**, pointing towards the issue of parking space efficiency rather than availability.
- **There is a paucity of examples of recently constructed, large-scale, good growth in Essex** with readily available travel mode share, car ownership or parking data – some data is in fact better for understanding lessons learnt.
- There is some data that captures the **important factors aside from parking availability that influence parking demand**.

Recommendations for the next stages of this study

3.22 The findings of this chapter have relevance to the potential requirement to collect new data to inform this study:

- 1) There is considered to be enough qualitative data (in particular when combining the data with the findings of the research presented in Chapters 2, 5 and 6) to be able to draw out general relationships between demand and:
 - a) parking provision
 - b) location
 - c) sustainable interventions
 - d) design

To inform the development of the three toolkit approaches.

- 2) The localised data do not give 'the answer' in terms of quantitative relationships, but alongside other findings could be enough to begin to inform modelling, alongside reasonable assumptions and judgement based on experience of delivering good growth and sustainable outcomes in the GCs and LSDs and elsewhere.

- 3.23 If it becomes apparent that there are other available datasets during the remainder of this commission, these will be incorporated into the toolkit development if appropriate. The general paucity of relevant localised data is itself indicative of the relatively low number of recently constructed LSDs or GCs in Essex, and hence collection of new data may not be a straightforward or cost-effective exercise if it is not wholly contextually relevant. More often than not, any new data is likely to be exemplifying what 'does not work' rather than 'what works where'. With this in mind it is for EPOA and ECC to ultimately weigh up the costs vs. benefits of this exercise.
- 3.24 These findings and recommendations inform the recommendations in subsequent Chapters of this report and in the Summary.

4. Benchmarking

Essex parking standards

- 4.1 The 2021 draft EPOA Part 1 Review sets out parking standards for residential Use Classes, with parking allocations dependent on dwelling size **and the location of the development**. This differs from the adopted [2009 Essex Parking Standards Design and Good Practice guidance](#), which focusses solely on the dwelling size.
- 4.2 Overall, the draft Part 1 Review standards are lower than the 2009 standards, with a greater parking space allowance only for the largest dwellings in rural areas. For quick reference in the remainder of this section, the adopted 2009 parking standards are replicated in Table 4-1. The Draft Part 1 Review standards for C3 residential Use Classes are replicated in Table 4-2, Table 4-3 and Table 4-4 for each of the 'urban', 'rural' and 'other location' types, respectively.

Table 4-1: Adopted 2009 ECC parking standards

Use	Vehicle	PTW	Cycle	Disabled
1 bedroom	1 space per dwelling	N/A	1 secure covered space per dwelling. None if garage is within curtilage of dwelling	As visitor or unallocated if not within curtilage of dwelling
2+ bedrooms	2 spaces per dwelling			
Retirement developments (e.g. warden assisted independent living accommodation)	1 space per dwelling	2 PTW spaces and 1 space per 2 dwellings for mobility scooters	1 space per 8 units (visitors)	
Visitor/unallocated	0.25 spaces per dwelling unallocated	For up to 100 car spaces: 1 space + 1 space per 20 car spaces For over 100 spaces: 1 per 30 car spaces	1 covered and secured space per dwelling in a communal area for residents plus 1 per 8 dwellings for visitors if parking is not supplied as a garage or within curtilage of the dwelling	200 vehicle bays or fewer = 3 bays or 6% of total capacity, whichever is greater. Over 200 vehicles = 4 bays plus 4% of total capacity.

Table 4-2: Draft Part 1 standards for residential development in urban (town centre) areas

Use	Vehicle	Powered Two Wheeler	Cycle	Disabled
1 bedroom	Maximum 1 space per dwelling*	Large flatted developments to provide PTW parking area(s) based on need	1 secure covered space per bedroom within curtilage in secure area(s) or adequately sized garage(s)	N/A if parking is in curtilage of dwelling Flatted developments to provide a minimum of 5% of number of dwellings or actual need whichever is the greater
2+ bedrooms	1 space per dwelling*			
Retirement developments (e.g. warden assisted independent living accommodation)	Maximum 1 spaces per dwelling depending on existing on-street parking situation and the presence of a controlled parking zone	2 PTW spaces and 1 space per 2 dwellings for mobility scooters	1 space per 8 units (visitors) Short stay - 0.05 per residential unit Long stay - 0.05 per bedroom	
Visitor / unallocated	0.25 spaces per dwelling unallocated (rounded up to nearest whole number)	1 space plus 1 space per 20 car spaces for first 100 car spaces, then 1 space per 30 car spaces over 100 car spaces	If no garage or secure area is provided within curtilage of dwelling, then 1 covered and secure space per dwelling in a communal area for residents plus 1 space per 8 dwellings for visitors	

* Excluding garage if less than a 7m x 3m internal dimension

Table 4-3: Draft Part 1 standards for residential development in rural areas

Use	Vehicle	Powered Two Wheeler	Cycle	Disabled
1 bedroom	1 space per dwelling*	Large flatted developments to provide PTW parking area(s) based on need	1 secure covered space per bedroom None if garage or secure area is provided within	N/A if parking is in curtilage of dwelling, otherwise as visitor/ unallocated
2+ bedrooms	2 space per dwelling*			

Use	Vehicle	Powered Two Wheeler	Cycle	Disabled
4+ bedrooms	3 spaces per dwelling*		curtilage of dwelling	Large flatted developments to provide a minimum of 5% of car parking provision or actual need whichever is the greater
Retirement developments (e.g. warden assisted independent living accommodation)	1 space per dwelling*	2 PTW spaces and 1 space per 2 dwellings for mobility scooters	1 space per 8 units (visitors) Short stay - 0.05 spaces per residential unit Long stay - 0.05 spaces per bedroom	
Visitor / unallocated	0.25 spaces per dwelling (unallocated) (rounded up to nearest whole number)	1 space plus 1 space per 20 car spaces for first 100 car spaces, then 1 space per 30 car spaces over 100 car spaces	If no garage or secure area is provided within curtilage of dwelling, then 1 covered and secure space per dwelling in a communal area for residents plus 1 space per 8 dwellings for visitors	

* Excluding garage if less than a 7m x 3m internal dimension

Table 4-4: Draft Part 1 standards for residential development in other locations (not town centre or rural)

Use	Vehicle	Powered Two Wheeler	Cycle	Disabled
1 bedroom	1 space per dwelling*	Large flatted developments to provide PTW parking area(s) based on need	1 secure covered space per dwelling. None if garage is within curtilage of dwelling	N/A if parking is in curtilage of dwelling, otherwise as visitor/ unallocated
2+ bedrooms	2 spaces per dwelling*			
4+ bedrooms	2 spaces per dwelling*			

Use	Vehicle	Powered Two Wheeler	Cycle	Disabled
Retirement developments (e.g. warden assisted independent living accommodation)	1 space per dwelling	2 PTW spaces and 1 space per 2 dwellings for mobility scooters	1 space per 8 units (visitors) Short stay 0.05 spaces per residential unit Long stay - 0.05 spaces per bedroom	Flatted developments to provide a minimum of 5% of number of dwellings or actual need whichever is the greater
Visitor/unallocated	0.25 spaces per dwelling unallocated	1 space plus 1 space per 20 car spaces for first 100 car spaces, then 1 space per 30 car spaces over 100 car spaces	If no garage or secure area is provided within curtilage of dwelling, then 1 covered and secure space per dwelling in a communal area for residents plus 1 space per 8 dwellings for visitors	

* Excluding garage if less than a 7m x 3m internal dimension

- 4.3 **Appendix A** contains a review of the key differences between the 2009 adopted ECC standards and the EPOA Part 1 Review for other (non-residential) use classes.

Benchmarking

- 4.4 Initially, a benchmarking exercise has been undertaken to compare the Draft EPOA Part 1 Review residential standards against those of neighbouring, or comparable, local authorities. Table 4-5 shows that the Part 1 Review standards are either broadly the same or lower (i.e. more restrictive) than the parking standards set by neighbouring local authority areas. This demonstrates the objective of taking a more progressive approach to setting parking standards in Essex through the Part 1 Review process.

Table 4-5: Benchmarking against neighbouring authorities

Beds	Essex		Cambridge		North Herts		Suffolk		Oxford	
	Max	Visitor	Max	Visitor	Min	Visitor	Max	Visitor	Max	Visitor
1	1	0.25	1	0.25	1	0.25-0.75	1	0.25	1	0.3-1.2
2	2		2		2		2			
3	N/A		2		2		2			
4	2-3		2		2		3			

	Lower than the Essex standards
	Broadly in line with Essex standards
	Higher than the Essex standards

- 4.5 Table 4-6 overleaf benchmarks the Draft EPOA Part 1 Review residential parking standards against standards set by designated GCs across the UK, including Chelmsford GC. Direct comparisons are challenging for a number of reasons, not least that different places structure their parking standards differently (e.g. zonally, allocated/unallocated, on/off plot). Furthermore, some of the GC parking strategies encourage off-plot parking rather than on-plot (e.g. Chelmsford allows for parking clusters). Chapter 5 demonstrates that, sometimes, this can be a more efficient way of providing parking and managing demand. Hence, whilst more parking spaces are provided overall, these may be more efficiently used by the dwellings they serve.

Table 4-6: Benchmarking against other Garden Communities

Beds.	EPOA Part 1 Review			Ebbsfleet Garden City		Langarth Garden Village			Welborne Garden Village			Dunton Hills Garden Village		Chelmsford Garden Community	
	Urban	Rural	Visitor	Min	Visitor	Urban	Rural	Visitor	On plot / allocated	Visitor (on plot / allocated areas)	Shared / unallocated	Potential	Visitor	Max	Visitor
-															
1	1	1	0.25	0-0.8	N/A	1	1	10%	1	0.2	0.75	0.5	0.25	1 (on plot or in parking cluster)	0.25
2		2		0-1.05		1	1		2		1.25	0.75		2 (on plot or in parking cluster)	
3	1	2		0-1.2		1.5	2		2		1.75	2		TBC- "Due to lesser number of 3+ bed properties"	
4		3		0-1.3		1.5	2		3		2.25	2		N/A	

	Lower than the Essex standards*
	Broadly in line with Essex standards
	Higher than the Essex standards

*the GC standards are not always structured in the same way as the EPOA Part 1 Review standards (i.e. by location) and therefore the GC standards are compared to the range of EPOA standards for different locations.

- 4.6 Table 4-6 shows that the EPOA Part 1 Review parking standards slightly less progressive/restrictive than **the standards of many emerging GCs**. Ebbsfleet Garden City is the GC with the most progressive standards, and the only GC where all standards are lower than the Draft Part 1 standards. It is important to note that the Part 1 standards are not intended for use for GCs – that is the purpose of the GC and LSD guidance - by comparison to its own local authority area, the Ebbsfleet GC standards are significantly lower than the Kent standards that are otherwise applied to residential developments across that county.
- 4.7 This generally indicates that, if Essex is to apply even more progressive parking standards (restrictions) to GCs and LSDs, then these will be lower than those standards being applied in other local authority areas, but also equal to or lower than those being used in most other GCs around the UK. This is likely demonstrative of a combination of:
- EPOA and ECC’s laudable ambitions for truly sustainable, low-car places that challenge historic and current norms.
 - Local authorities delivering other emerging GCs struggling to convince members and developers of a genuinely low-car approach, and hence having ultimately adopted ‘business as usual’, conventional parking standards.
- 4.8 There is therefore an element of caution to consider, given the level of parking space reduction that EPOA and ECC may be aiming for in guidance appears to be largely untested in a UK context, outside of major cities such as London. This underlines the need for a **robust, convincing evidence base** and a comprehensive strategy that holistically considers **all of the interventions needed to successfully deliver a low-car place**.

Case study

Ebbsfleet Garden City



Key Details

Ebbsfleet Garden City located in Kent, bases residential parking requirements on future residents' ability to access high quality public transport, walking and cycling routes, with a target 40% of local journeys to be made using sustainable modes. Ebbsfleet Garden City will accommodate 15,000 new homes as well as a comprehensive sustainable transport network with denser development focused around local centres and public transport nodes. 'High accessibility' areas are within a 400m walking distance of Fastrack bus stops and 800m distance of a train station. These areas will have a lower parking standard of around 0-1.3 per dwelling depending on the number of bedrooms. 'Lower accessibility' locations are within 800m of Fastrack bus stops and 1600m of a train station. These will tend to have more parking, ranging from 0.8-2.4 spaces per dwelling. The current assumption is that there will be an oversupply of parking spaces due to the residents typically being younger than expected, reflecting lower car ownership than planned for.

Development planned around public transport accessibility

Parking provided based on accessibility



Kent, England

Modal split



10%



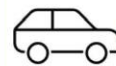
15%



35%



40%



- ✓ On plot - driveway
- ✓ On plot - garage
- ✓ Off plot
- ✓ Undercroft
- ✓ Courts / barns

Parking provision

Implications of applying the standards

- 4.9 Notwithstanding the above, the spatial implications of applying the EPOA, Ebbsfleet or Chelmsford GC standards are still significant when applied across an entire GC. For illustrative purposes, the EPOA Part 1 Review residential standards have been applied to each of the currently designated Essex GCs. This has been indicatively calculated and is based on a number of rational assumptions around the tenure, mix and size of dwellings proposed at each GC. The results are summarised in Table 4-7.

Table 4-7: Application of EPOA Part 1 Review parking standards

Garden Community	Dwellings total	2009 standards		Draft Part 1 standards (urban)		Difference	
		No. of car spaces	Land take	No. of car spaces	Land take	<i>in spaces</i>	<i>land saved</i>
Tendring Colchester Borders	8,000	16,000	26 ha	12,000	19 ha	4,000	6 ha
Harlow and Gilston	16,000	32,000	51 ha	24,750	39 ha	8,250	12 ha
Chelmsford	10,000	20,000	32 ha	15,000	24 ha	5,000	8 ha
Dunton Hills	4,000	8,000	13 ha	6,000	10 ha	2,000	3 ha

- 4.10 Table 4-7 illustrates, at a high level, the significant spatial extent of parking spaces required at each of the GCs if the EPOA Part 1 Review standards were applied (noting that these are at the more progressive end of parking standards). The hectareage comparisons are based on the area of a parking space plus a conservative 20% allowance for access and manoeuvring space associated with areas of parking.
- 4.11 Provision of more restrictive parking standards would clearly result in fewer parking spaces required at each GC, but also more land available for other uses. Put simply, if an assumption of 35 dwellings per hectare is applied uniformly (though central areas of the GCs should be aiming for considerably more), applying just the Draft Part 1 Review standards at each GC would have the following impacts:
- Space for ~210 more homes at Tendring Colchester Borders Garden Community
 - Space for ~455 more homes at Harlow and Gilston Garden Town

- Space for ~280 more homes at Chelmsford Garden Community
 - Space for ~105 more homes at Dunton Hills Garden Village
- 4.12 Application of more restrictive / progressive standards, i.e. the GC and LSD parking guidance standards, would clearly result in greater land saving and higher densities again when compared with the current, adopted 2009 ECC standards.
- 4.13 Acknowledging that the availability of parking spaces can often affect the saleability of homes and hence the viability appraisal of a development at its inception, there is potential benefit to be gained from understanding the impacts of a different development model based around lower parking provision and denser places. It is understood that this forms a key finding of the Walkable Neighbourhoods commission.
- 4.14 For further comparison, Table 4-8 indicates the level of parking required if either Chelmsford GC’s parking strategy or the Ebbsfleet Garden City parking standards were applied across all of the Essex GCs.

Table 4-8: Application of Chelmsford and Ebbsfleet parking standards

Garden Community	Dwellings	No. of spaces			
		2009 standards	Draft Part 1 standards (urban)	Chelmsford GC standards	Ebbsfleet GC standards
Tendring Colchester Borders	8,000	16,000	12,000	14,500	6,400
Harlow and Gilston	16,000	32,000	24,750	29,906	17,325
Chelmsford	10,000	20,000	15,000	18,125	12,000
Dunton Hills	4,000	8,000	6,000	7,250	5,200

- 4.15 This demonstrates again the progressive nature of the EPOA Part 1 Review standards compared against the higher allowances made in the Chelmsford GC parking strategy. Ebbsfleet Garden City has adopted considerably lower standards again and these are likely to be having genuine and material impacts on the look and feel of the Garden City, including allowing for a greater range of land uses and higher density development, more attractive streetscapes, and a higher likelihood of achieving mode share targets.

Summary

- 4.16 Key findings from this chapter are as follows:

- **The EPOA Draft Part 1 Review standards for residential use classes are generally more progressive** than the adopted 2009 Essex parking standards, although there is a greater allowance for larger dwellings.
- This is demonstrated when comparing to other adjacent or comparable local authorities, whose parking standards are either the same as or **more generous than the EPOA Part 1 Review**.
- **The EPOA Part 1 Review standards are comparable to many standards and strategies adopted for emerging GCs across the UK**, and the urban standards especially are more progressive / restrictive than the parking strategy prepared in support of Chelmsford GC.
- Ebbsfleet is the GC with the most progressive standards, and **the only GC reviewed where the majority of standards are lower than the EPOA Draft Part 1 Review**. The Ebbsfleet GC standards are significantly lower than the Kent standards.
- **No matter which parking standards are applied, the implications in terms of land take are significant for GCs** (and would be for LSDs). Reductions of 10 or 20% in parking spaces could have material benefits in terms of the number of additional homes, community facilities, green space and other key features intrinsic to high quality new communities that could be delivered in their place.

Recommendations for the next stages of this study

4.17 The findings from this chapter will be used to inform the next stages of the guidance preparation as follows:

- 1) The EPOA Part 1 Review standards are progressive and are not overly generous. There may not be a need to seek significant reductions from them – particularly the urban standards - in some contexts. That said the absence of generous standards elsewhere ought not to entirely predicate the basis of new lower standards for GCs, and LSDs.
- 2) Any reduction sought may be largely untested in a UK context. This underlines the need for a robust, convincing evidence base and a comprehensive strategy that holistically considers interventions needed to successfully deliver a low-car place.
- 3) The land-take associated with any level of parking presented in this Chapter is still significant. Reduction in parking spaces may affect saleability, but equally higher density and more homes may increase land values. The benefits of this approach need to be weaved into viability modelling and land negotiations.

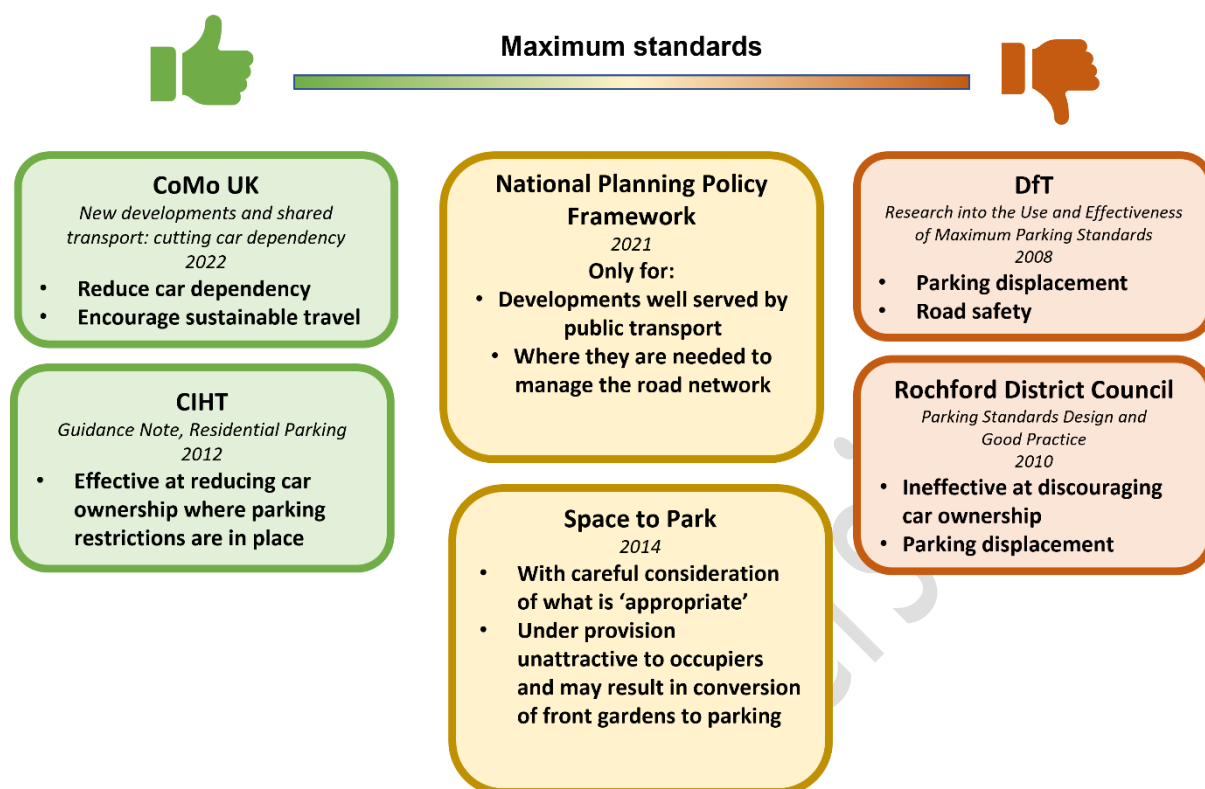
5. Understanding

Minimum vs. maximum parking standards

- 5.1 In the early 2000s, parking standards across the UK began to evolve from minimum parking standards (requiring a minimum amount of parking spaces per dwelling) to maximum standards, which were introduced as a means of encouraging lower-car development. Since then, questions have been raised over the effectiveness and appropriateness of maximum parking standards, the debate around which is summarised below.
- 5.2 The [NPPF](#) accepts that minimum standards should now be the norm, but continues to allow the use of maximum parking standards under specific conditions: *“Maximum parking standards for residential and non-residential development should only be set where there is a clear and compelling justification that they are necessary for managing the local road network, or for optimising the density of development in city and town centres and other locations that are well served by public transport”*. This ties back to the need to consider a range of factors and conditions aside from simply limiting parking provision.
- 5.3 Nevertheless, there remain advocates for maximum parking standards. In their report [New developments and shared transport: cutting car dependency](#), CoMoUK suggest that we should *“Limit average car parking provision to one private car per dwelling or less. The lower the ratios the greater the chance of breaking dependency on the private car and supporting the switch to sustainable modes. This allows the intensification of housing and will support the 20-minute neighbourhood policy objective.”* This may be supported by other research presented in this report, for example the indication from the Essex Census data that increasing car ownership does not linearly result in increased car use. One parking space and one vehicle may be enough for some households, supplemented by other measures, as suggested by CoMoUK, such as access to sustainable modes and a variety of land uses nearby. Car clubs may also play a role in filling the ‘gap’ in multiple car ownership.
- 5.4 Other studies do contest the effectiveness of maximum parking standards, with some citing parking displacement as a concern, such as the DfT’s [Research into the Use and Effectiveness of Maximum Parking Standards](#): *“A mixture of rural and urban authorities have highlighted the increase in on-street parking demand and problems in areas where*

fewer parking restrictions in place, which has led to safety problems for one rural authority”.

- 5.5 This has been reported by several local authorities within Essex, such as Rochford District Council, who state in their [Parking Standards Design and Good Practice Supplementary Planning Document](#) that *“limiting parking availability at trip origins does not necessarily discourage car ownership and can push vehicle parking onto the adjacent public highway”*. The report concludes that *“people own more cars than there are spaces for within residential developments. Government advice to reduce car travel through reducing availability of parking at origin and destination has not worked at origins, therefore vehicle parking standards need to be increased, along with sustainable transport measures.”*
- 5.6 The Chartered Institute of Highways and Transportation [Guidance Note: Residential Parking](#) advocates for retaining maximum parking standards alongside on-street parking restrictions to reduce displacement. *“While attempts to limit car ownership through limitations on parking provision have often failed where there are no controls in respect of on-street parking, there is clear evidence that limited provision within controlled areas (with less need to travel and greater sustainable travel options) is usually matched by lower ownership.”* This effectively leaves no room for displacement though and, as highlighted in the [Spaced Out](#) study (expanded on in Chapter 6), even introduction of extensive parking controls sometimes has no tangible effect because of other wider and exogenous factors that influence ownership.






On-plot vs. off-plot parking

- 5.7 By providing on-plot parking, private vehicles are often just steps from the owner's front door, meaning that they are perceived to be the most convenient mode of transport. Several reports such as DfT's [Building Sustainable Transport into new developments](#) state that "*Opportunities must be taken within the planning process to make cycling, walking and public transport the modes of choice. These modes must be made more convenient for the majority of journeys than car usage, in order to promote genuine modal shift*". Off-plot parking may be one mechanism of encouraging the use of more sustainable modes of transport, especially if appropriate cycle storage can be accommodated on-plot and public transport stops provided nearby.
- 5.8 Another benefit of off-plot parking is an enhanced sense of place. Car dominated places are often considered to be unattractive, and excessive street level parking can 'sterilise the streetscape', according to the [Essex Design Guide](#). Off-plot parking provides an opportunity to reclaim the streets for pedestrians and cyclists by moving parking to designated locations and/or away from street level.
- 5.9 Whilst there are many examples in Europe of off-plot parking at residential developments being successfully delivered, UK examples are sparser. Many UK authorities are beginning to embrace the concept, more often as part of a hybrid

solution. Often, parking guidance such as the EPOA Part 1 Review does not specify what proportion of a parking allocation should be on or off plot, and the choice is left to the developer. Oxfordshire County Council's [parking standards](#), for example, do promote a combination of on-plot and off-plot parking, stating that: *"Where local circumstances allow, a substantial element of shared off-plot parking will be preferred over provision of 2 or more spaces per unit."*

- 5.10 Ultimately, according to [Car Parking: What Works Where](#), *"there is no one single best solution [to parking]... A combination of off-plot, on-plot and on-streets is the solution, according to location topography and the market"*.
- 5.11 Related to this, there are also many design considerations when it comes to off-plot, probably more so than on-plot parking. The most appropriate type of off-plot parking for a development may vary, depending on the development location, context, density and applicability of constraints such as conservation areas and controlled parking zones. A range of potential off-plot parking options are set out in Table 5-1 below, with an indication of where they are generally most applicable.

Table 5-1: Off-street parking types

Type	Description	Suitable
Off-plot multi-storey	 <p>Single or multiple entry points. Covered parking in marked bays, arranged over levels connected with ramps. Access is controlled from residents' cars. No direct access to homes.</p>	<p>Urban</p> <p>Suburban</p> <p>Rural</p>
Off-plot underground	 <p>Single or multiple entry points. Covered parking in marked bays, full storey height or more below street. Access is controlled from residents' cars. No direct access to homes.</p> <p>According to the Essex Design Guide, Underground parking is the optimum solution to a lack of parking in urban areas.</p>	<p>Urban</p> <p>Suburban</p> <p>Rural</p>
Off-plot undercroft	 <p>Open sided parking bays at street level or half level down for natural ventilation. Best secured with a grill or other bar to access from street. Accommodation over top. No direct access to homes.</p> <p>According to the Essex Design Guide, the provision of parking at ground level below buildings is the least satisfactory arrangement for compact urban developments as ground level parking can 'sterilise street scape' and is off putting to pedestrians. The guidance allows this parking on small developments only.</p>	<p>Urban</p> <p>Suburban</p> <p>Rural</p>

Type	Description	Suitable
<p>Off-plot podium</p>	 <p>Distinction from underground/undercroft by the additional of private or shared outdoor space above parking. Naturally ventilated. Should be closed to street or it echoes open ground floor structures. No direct access to homes. The Essex Design Guide notes that ground level parking below buildings can 'sterilise' streetscape and be off putting to pedestrians.</p>	<p>Urban</p> <p>Suburban</p> <p>Rural</p>
<p>Off-plot front court</p>	 <p>Marked or unmarked bays overlooked by fronts of homes partly enclosed by buildings/walls and within depth of pavement.</p>	<p>Urban</p> <p>Suburban</p> <p>Rural</p>
<p>Off-plot rear court</p>	 <p>Grouped (often terraced) garages or hard standings (marked or unmarked) around shared court, accessed between and located to rear. Court should serve no more than 6 homes.</p>	<p>Urban</p> <p>Suburban</p> <p>Rural</p>

Case study

Vauban (Freiburg)



Key details

The Vauban District of Freiburg is located in the south of Germany with the community currently housing over 5000 inhabitants. Commonly referred to as "the most sustainable city district in Europe," the district was designed with a strong focus on sustainable transportation due to it having one of the hardest ecological impacts to reduce in its development stage. The result has been a district that doesn't cater for car parking, in this case residents who own a car have to use the community car park at the edge of the development, which remains unsubsidised. Vauban is connected by a network of pedestrian and cycle paths with all homes located within walking distance of tram stops, schools, shopping centres, and businesses, allowing 70% of all residents to currently live without a car.

"Most sustainable city district in Europe"

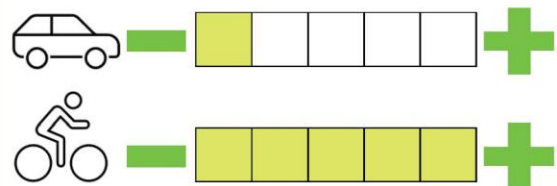
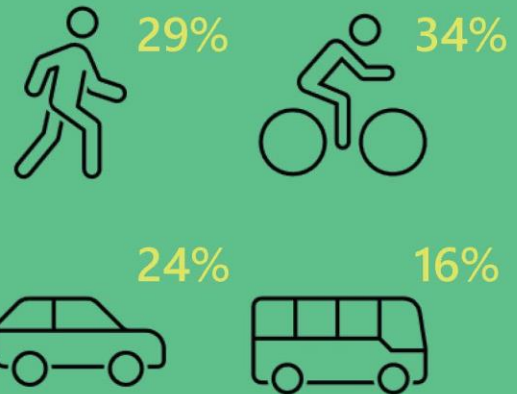
Parking provided off-plot in communal areas

70% of residents do not own a car



Southern Freiburg, Germany

Modal split



- On plot - driveway
- On plot - garage
- Off plot
- Undercroft
- Courts / barns

Parking provision

Case study

Houten (Utrecht)



Key Details

Houten, in the province of Utrecht, is a city in the Netherlands designed and built with the prioritisation of high quality cyclist and pedestrian infrastructure. The province provides public bikes, encourages car sharing and applies employer contributions as well as educational programmes to promote cycling.

There are over 129km of segregated cycle paths which also accommodate electric scooter usage. Due to so many residents cycling, it has been difficult to accommodate enough bicycle parking, particularly in the city centre, leading to the construction of new cycling parking facilities under the tracks of the central train station. Moreover, due to the accessibility of the train stations, there had to be an increase in service frequency to accommodate the rise in popularity. The result is low vehicle mode share.

Walk, cycle and public transport prioritised over and quicker than vehicle journeys

Parking provided off-plot



Utrecht, Netherlands

Modal split



27%



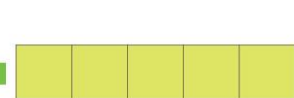
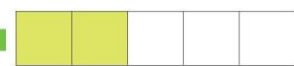
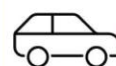
28%



34%



11%



- On plot - driveway
- On plot - garage
- Off plot
- Undercroft
- Courts / barns

Parking provision

- 5.12 A [blog by Planning Design](#) advocates for off-plot parking with unallocated parking for second vehicles, noting that the parking location should still be 'close' to home: *"On sites that are primarily accessed by car one approach would be to reduce levels of car parking by giving each property a dedicated parking space close to the home. This would provide the security many want. Second cars and visitor parking would be accommodated in communal parking areas located close to residents"*. This recognises the fact that allocated off-plot parking still occupies an unconscionable amount of space and acknowledges that off-plot unallocated parking is the most efficient and desirable approach.
- 5.13 At many residential developments, off-plot parking spaces are still allocated to individual dwellings, effectively perpetuating the inefficiencies arising from on-plot parking. However, many sources highlight that unallocated spaces are more efficient in terms of land use than allocated spaces at residential developments. This is because when parking is unallocated the flexibility of occupation rises. The total number of spaces used for the same number of dwellings is almost always reduced, because not every household is living under the same circumstances and needs the same number of cars. Equally, different land uses will have peaks and troughs in demand at different times, meaning that shared unallocated space will more often than not result in a more efficient use of space across the course of a day or week.
- 5.14 Many sources argue that, where parking is provided off-plot, unallocated spaces are more efficient in terms of land use than allocated spaces at residential developments. This is because when parking is unallocated, flexibility increases. This is evidenced in a residential context by WSP and Phil Jones Associates in their [Residential Parking – Quantity and Quality](#) research, which gives the following example of how unallocated parking, based on an average across a number of dwellings, leads to a lower number of spaces required:

Average car ownership for 5 room houses, 1.1 vehicles per dwelling:

- 19% have no car
- 54% have 1 car
- 23% have 2 cars
- 4% have 3 or more cars

If all spaces were unallocated, demand would be 1.1 spaces per dwelling.

BUT, if each dwelling is allocated 1 space

Additional Demand = (1 x 0.23) + (2 x 0.04) = 0.31 cars/dwelling

Overall demand = 1 allocated + 0.31 unallocated

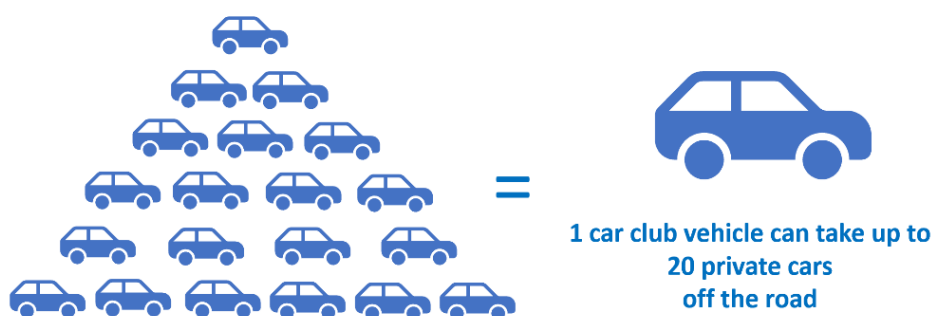
= 1.31 spaces/dwelling

- 5.15 This is a worked example of the research presented in [Residential Car Parking Research](#), which confirmed that *"The allocation of spaces to individual dwellings can have an adverse impact upon the efficiency of car parking provision"*. The example above results in a 31% uplift in the space needed for parking. More recently, the [National Model Design Code](#) has continued to adopt this principle: *"Unallocated spaces are an efficient way to provide parking. A scheme provides for the average rather than the maximum level of car ownership"*.
- 5.16 All this said, a report titled [How to pick the best parking allocation strategy for a residential building](#) highlights that there are both advantages and disadvantages to providing unallocated parking. According to the report, unallocated parking *"maximises usage but minimizes reliability"*, which can lead to antisocial and antagonistic behaviour from frustrated residents who feel that they are entitled to park at their home and may worry about not finding a space. Consideration should be given to those with reduced mobility, who may be particularly affected by unallocated spaces. Where parking spaces are unallocated, disabled parking bays will be required.

Car clubs

- 5.17 As previously mentioned, there may be a role for car clubs to play in bridging the gap between one and two car households, if space is only provided for one vehicle to park per dwelling.
- 5.18 Several studies recommend access to car clubs for these occasional or harder to make journeys, which are infrequent enough that a second car may not actually be needed all of the time. That said, evidence demonstrating the tangible benefits of introducing car clubs to reduce car ownership in residential areas is limited, despite these studies supporting the concept in general. Furthermore, many UK-based studies that relate to car clubs at residential developments are London focussed.
- 5.19 DfT's [Building Sustainable Transport into new developments](#) lists car clubs as one method of reducing car dependency: *"Measures to reduce car dependency must be supported by providing alternative access to cars, particularly for essential journeys. These may include:*
- *Business and residential car clubs;*
 - *Local taxi services and on-demand public transport provision;*
 - *Establishing a car sharing scheme for the development"*.

- 5.20 [Transport for New Homes](#) also supports the inclusion of car club cars within new residential sites, stating that they *“bring significant benefits to the developer and is a valuable sales tool. Space that may have been used for personal parking or garages is freed up, providing additional outside green space for the residents”*.
- 5.21 Research conducted by [Carplus and Steer Davis Gleave](#) and CoMoUK suggests that car clubs have a positive impact on car ownership. For example, in Scotland, for each car club car available, five vehicles were sold or disposed of. This number was significantly higher in London where the number of cars replaced by one car club vehicle was 10.5. More recent research by CoMoUK in their report [New developments and shared transport: cutting car dependency](#) suggests that *“each car club vehicle can on average replace 18 private cars”*. Their Car Club Annual report 2021 goes further in suggesting that one car club vehicle can take up to 20 private cars off the road, estimating the replacement of 116, 811 vehicles across the UK.



- 5.22 However, the studies suggest that car club membership was not the only reason for giving up the car, and it is likely that factors such as moving house also played a part in people making such lifestyle decisions. These are also almost certainly developments where measures have been taken to provide a range of sustainable mobility interventions to drive down car use overall, and it is well known that car club success is not universal. Indeed an [Imperial College London](#) study found that *“4% of users of the DriveNow car sharing service had disposed of a car they had previously owned as a result of becoming a member of the scheme”* with 63% of respondents to the DriveNow survey indicated that introduction of the service *“did not affect their ownership of private cars”*.

Case study

Riverside, Bath



Key details

Bath Riverside is a regeneration project located on a brownfield former industrial site towards the west of central Bath. With over 2,000 dwellings, the 35 hectare site has helped to improve public transport in the area as well as enhancing new and existing cycle and pedestrian links. Car parking in Bath Riverside is very limited in order to encourage use of the high quality pedestrian network. To promote use of the public transport options, a free one-month pass is offered to every Bath Riverside resident, as well as a free club card membership and £100 bike voucher. To further encourage use of cycling over other modes, adequate storage is provided with secure shelters, lockers for gear, and showers in places of employment.

Cycle and walk prioritisation

Cycle vouchers provided

Limited car parking



Bath, England

Modal split



39%



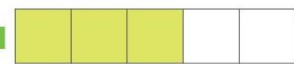
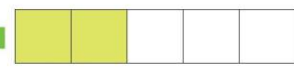
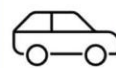
17%



33%



11%



On plot - driveway

On plot - garage

Off plot

Undercroft

Courts / barns

Parking provision

Parking at trip destination

- 5.23 All journeys have an origin and a destination, and conventionally it has been accepted that trip-making is easier to influence at the origin. However, according to the [Spaced Out](#) study, cars spend 17% of their time parked at a destination, second only to being parked at home (with the remaining time spent travelling).
- 5.24 An abundance of parking and the availability and convenience of alternatives to car use at either end of the journey can have a significant impact on the mode of travel a person chooses. For example, if there is a bus stop with a frequent service within 50m of a person's home, but the closest bus stop to their place of work is 600m away, the bus becomes less attractive than the car. The DfT commissioned report [The Impact of interventions encouraging a switch from cars to more sustainable modes of transport](#) states that "*Restricting access to cars in cities or workplaces to reduce individual car use works best when both public and active transport alternatives are put in place first.*"
- 5.25 Many studies, such as [Changes in workplace car parking and commute mode: a natural experimental study](#), have shown that the introduction of free or pre-paid workplace parking is associated with higher proportions of vehicle trips. If parking is free at their destination, people will generally interpret driving to be 'cheaper' than public transport, despite the costs of running a vehicle. The Spaced Out study claims that for 94% of all destination parking acts there is no charge, meaning that this 'free' option is abundant and wide-ranging.
- 5.26 Likewise, if a walking or cycling route is of poor quality (insufficient lighting, no natural surveillance, poor maintenance etc.) at any point between the origin and destination, or there are insufficient changing or cycle parking facilities at their destination, then people may turn to the car.
- 5.27 The options to manage destination parking are focussed around either reducing the provision available or introducing cost. When supported by a range of public transport and accessibility measures, reducing parking provision is effective for destination land uses such as employment, although the implications are more complex when considering land uses such as schools, hospitals or care homes.

Case study

Merwede, Utrecht



Key details

Merwede, a Dutch district in Utrecht, is a design for a car free neighbourhood with sustainable housing for over 12,000 residents. Plans are to have the first dwellings available to move in to by 2024 with all services to be accessible via foot or by using bicycles. The districts road network incorporates the prioritisation of shared mobility ahead of road traffic with the heart of the district becoming a car free zone aside from emergency vehicles. It is envisaged that there will be three car parking spaces for every ten households, and 300 of these will be reserved for shared car club vehicles, freeing the streets of traffic and parking spaces.

Car free district centre

All accessibility through walking and cycling

Three parking spaces for every ten households



Utrecht, Netherlands

Modal split (Targets)



9%



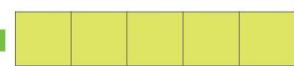
41%



42%



8%



On plot - driveway



On plot - garage



Off plot



Undercroft



Courts / barns

Parking provision

- 5.28 Regards introducing cost, [The Transport Act 2000](#) supports local authorities introducing workplace parking charges where these can help to tackle congestion as part of a Local Transport Plan. Nottingham's Workplace Parking Levy is the only example of where a levy has been successfully implemented at scale to reduce car usage at the destination - in the first three years of operation, the levy raised £25.3 million of revenue, all of which has funded improvements in the city's transport infrastructure, including a fleet of electric buses. Recent research indicates that the levy has significantly contributed to a 33% fall in carbon emissions, and a modal shift which has seen public transport use rise to over 40%.
- 5.29 Ultimately, according to the Spaced Out study, *"the most obvious source of growth in the demand for parking is increased car ownership (though restricted parking availability may itself reduce car ownership)"*. With cars being parked at residential dwellings over 80% of the time, this suggests a symbiotic relationship between generous parking standards at the source - which enable and generate higher car ownership - and a resultant demand for higher parking provision at the destination.

Summary

- 5.30 Key findings of the review presented in this chapter are summarised below:
- **Setting maximum parking standards is only an effective measure for reducing car dependency when combined with other measures.** Otherwise, in isolation, it is ineffective at reducing car ownership and causes parking displacement.
 - The location of parking within the development is important and **off-plot parking can have a positive impact on placemaking and reduce car dependency**, if it is designed with reference to the local context.
 - Both on and off-plot parking are however **particularly efficient if they are unallocated.**
 - Making **alternatives to the private car more convenient can reduce car dependency.**
 - **Car clubs have been shown to reduce car dependency**, and may replace a vehicle in multiple car households where one vehicle is only used infrequently.
 - Destination parking and the availability of alternative transport modes at the destination are **equally important factors in reducing car dependency in residential areas.**

Recommendations for the next stages of this study

- 5.31 The findings from this chapter will be used to inform the next stages of the guidance preparation as follows:
- 1) Reducing parking provision in totality may be appropriate, but also measures to improve efficiency will likely improve the way in which parking spaces are used and reduce inappropriate parking.
 - 2) The guidance should advocate either for largely off-plot or a combination of on/off plot to maximise efficiency at GCs and LSDs. In both cases, off-plot parking should be unallocated so far as possible.
 - 3) Reliability will still need to be considered, as will space for people with reduced mobility for whom off-plot parking may not be appropriate.
 - 4) The benefits of off-plot unallocated parking and restricted destination parking are dependent on the provision of attractive and convenient walking, cycling and public transport infrastructure.
 - 5) The guidance will need to give weight to shared mobility services, such as car clubs, and the convenience of parking for other modes - namely bicycles.

6. Reducing car dependency

A new approach?

6.1 The NPPF sets out an approach to setting car parking standards at Paragraph 107:

"If setting local parking standards for residential and non-residential development, policies should take into account:

- a) The accessibility of the development*
- b) The type, mix and use of development;*
- c) The availability of and opportunities for public transport;*
- d) Local car ownership levels; and*
- e) The need to ensure an adequate provision of spaces for charging plug-in and other ultra-low emission vehicles.*

6.2 This is not new policy; it was in the 2012 iteration of the NPPF. Yet, as an approach, it does not appear to have effectively found its way into adopted parking standards or guidance across the majority of local authorities in the UK.

6.3 The benchmarking presented in Chapter 4 demonstrates that some local authorities are adopting a zonal approach to parking standards (e.g. EPOA Part 1 Review), and that individual developments such as Ebsfleet Garden City are taking into account the vision for a highly accessible, mixed-use development when developing a parking strategy. Nevertheless, it is not apparent that an approach which genuinely considers all of the above factors in a flexible manner - applicable to developments of different locations, accessibility levels, types and scales - has been more widely adopted.

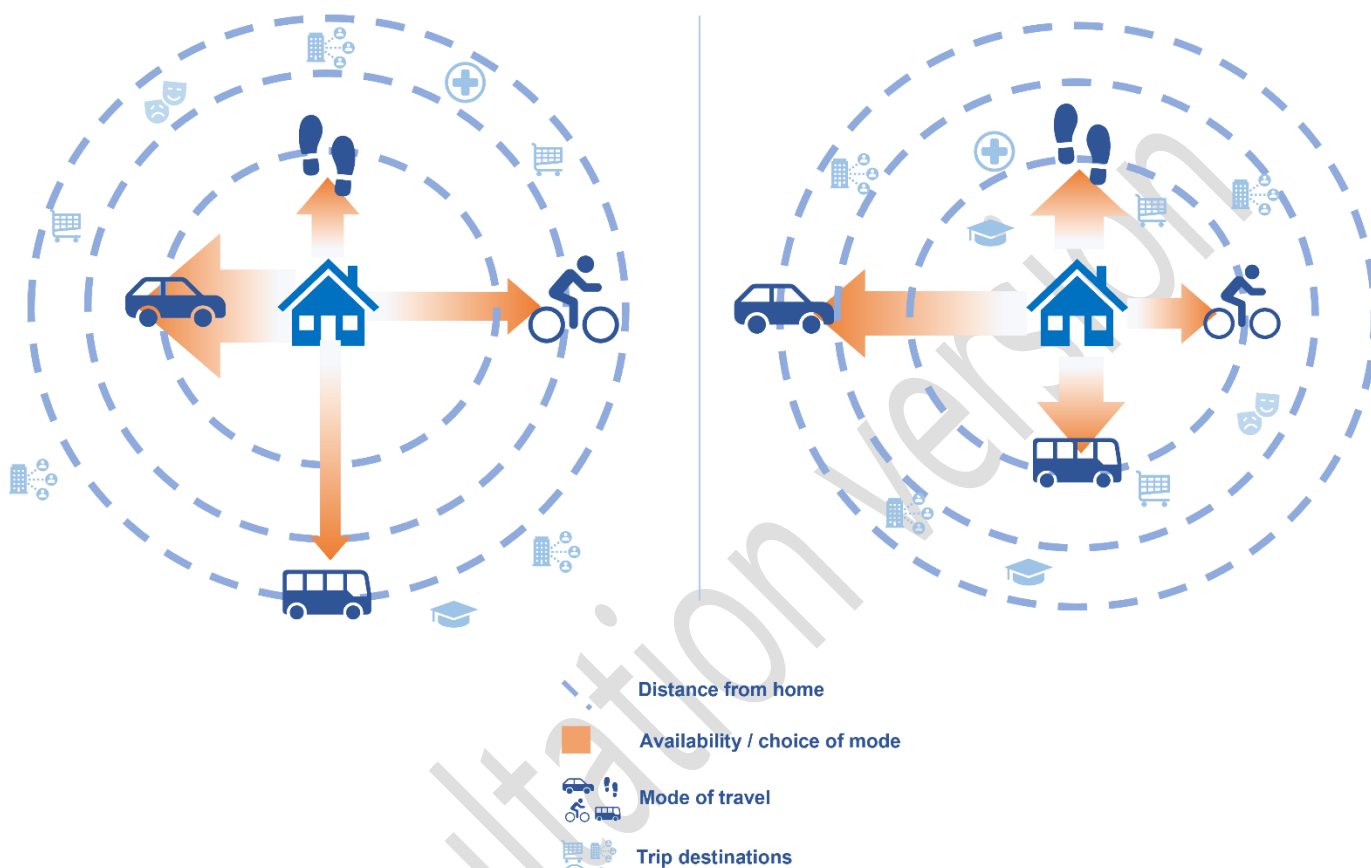
6.4 Alongside simply considering the effect of parking availability on car ownership and use, the objective of the GC and LSD parking guidance toolkit approach will be to take into account these other factors. This chapter considers how the accessibility of development, the type of development (mainly its scale and density), and the availability of public transport can influence car use, and hence influence car ownership.

Factors that influence mode share

Parking more convenient than sustainable modes and development built in unsustainable location

VS

Parking less convenient than sustainable modes and development built in sustainable location



- 6.5 The relationship between location, accessibility and car use has been explored and demonstrated through the research presented in this report, as well as in guidance and research from many other sources. In their [GC guidance](#), the Town and Country Planning Association Guide 13: Sustainable Transport recognises that *“A move away from car-dependent development can be achieved if active travel and public transport networks are put in place effectively and the fundamental layout of the place favours walking, cycling, and public transport use. These modes need to be easier to access and use than the car.”*
- 6.6 This is also established more widely and for all scales of development at a national policy and guidance level, for example in DfT’s [Building Sustainable Transport into new developments](#), which recognises that active and sustainable modes must be exploited in the planning process to ensure they are the modes of choice, and more convenient than car usage (as discussed in Chapter 5).

6.7 Regards the relationship between sustainable mobility interventions and car ownership specifically (i.e. not just mode share), [CoMoUK research](#) does find a strong correlation between low parking standards and use of sustainable transport modes in some contexts and settings. Much of the research presented and cited thus far, however, has signposted a need to consider not just reduced parking provision as a disincentivisation for car use / ownership, but also a suite of other sustainable transport interventions that create a range of 'push' and 'pull' measures. Research on the [effect of minimum parking requirements on the choice to drive](#) recognises this multi-faceted relationship, stating that people "*tend to choose the car even to destinations that are well served by public transport if parking norms are generous*".

6.8 In summary, rather than working in isolation (for example by focusing primarily on controlling parking supply in new developments), a comprehensive and well-planned range of interventions is most likely to affect a shift towards more sustainable modes and an associated reduction in the desire to own a car.

6.9 It is acknowledged that these measures alone still do not wholly dictate car ownership. Exemplifying this, the RAC [Spaced Out study](#) reviewed data relating to several London Boroughs relating to car availability and population. Many were experiencing increases in population and increases in car/van availability (like Tendring, as discussed in Chapter 2) but also many experiencing decreases in car/van availability (like Epping Forest). Counter-intuitively, those experiencing increases in ownership were also some of those which had introduced rigorous parking controls. The study concludes that parking availability/control and access to other alternatives are only two of a number of factors affecting car ownership. Other related factors include household income / structure; nationality; access to employment; access to services; and upfront and ongoing costs.

6.10 This chapter considers those interventions which relate directly or indirectly to transport and movement, broken down into the following:

- Scale, land use and density
- Walking and cycling infrastructure
- Public transport availability and quality
- Traffic management
- Management and governance

6.11 Table 6-1 summarises a review of case studies and best practice examples of places in the UK and Europe which have achieved low vehicle mode shares through implementing measures relating to the above.

Table 6-1: Places achieving low vehicle mode share

City	Country	Year	Population	Walking	Cycling	Public Transport	Car
Essex	UK	2011*	All authorities	9%	2%	18%	64%
Aarhus	Denmark	2015	325,000	19%	18%	9%	54%
Amersfoort	Netherlands	2008	141,211	13%	28%	7%	52%
Amsterdam	Netherlands	2013	2,410,960	29%	32%	17%	20%
Barcelona	Spain	2013	3,247,281	42%	2%	27%	29%
Bath Riverside	UK	-	-	39%	17%	11%	33%
Beaulieu, Chelmsford	UK	2019	-	3%	2%	20%	74%
BedZed	UK	2009	-	11%	11%	61%	17%
Berlin	Germany	2008	3,574,830	30%	13%	26%	31%
Brighton	UK	2011*	290,395	24%	6%	27%	38%
Cambridge	UK	2017	123,900	5%	39%	10%	37%
Copenhagen	Denmark	2013	1,307,000	6%	27%	27%	26%
Delft	Netherlands	2013	99,737	27%	34%	8%	31%
Dresden	Germany	2013	512,546	27%	12%	22%	39%
Durham	UK	2013	50,000	30%		11%	59%
Ebbsfleet, Kent	UK	2019	-	35%	20%	30%	15%
Freiburg	Germany	2016	227,000	29%	34%	16%	24%
Groningen	Netherlands	2008	182,484	15%	31%	10%	44%
Houten	Netherlands	2008	48,000	27%	28%	11%	34%
Hull	UK	2011*	261,149	13%	9%	15%	53%
Ljubljana	Slovenia	2003	265,881	19%	10%	12%	58%
London	UK	2013	8,787,892	24%	2%	37%	37%
Malmo	Sweden	2013	313,000	15%	22%	21%	42%
Nottingham (City)	UK	2011*	331,069	18%	4%	25%	53%
Odense	Denmark	2008	178,210	19%	27%	26%	28%
Oslo	Norway	2013	988,873	29%	6%	30%	35%
Oxford	UK	2011	150,200	19%	19%	21%	41%
Pontevedra	Spain	2013	80,000	70%	6%	3%	22%
Poundbury	UK	-	-	36%	4%	5%	55%
Stockholm	Sweden	2013	1,538,517	21%	8%	47%	23%
Strasbourg	France	2009	439,000	33%	8%	12%	47%
Warsaw	Poland	2013	1,753,977	18%	3%	47%	32%

*Census data is based on commuter trips so does not include all trips, but is a useful proxy.

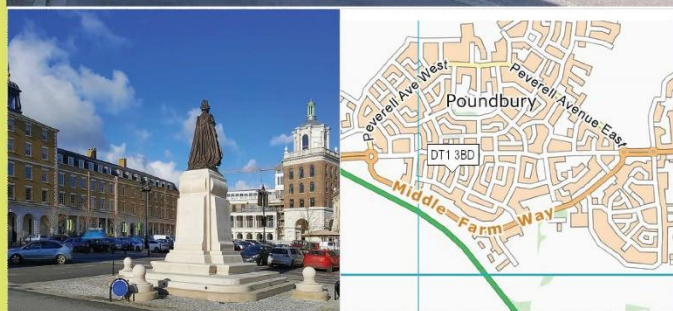
- 6.12 Table 6-1 confirms that there are many places which have successfully achieved the mode share objectives of GCs; Cambridge, Oxford, Brighton, Poundbury and BedZED (in Wallington), plus Delft, Dresden, Freiburg, Houten, Malmo and Pontevedra in Europe, have all recorded a car driver mode share of circa 40% or less.
- 6.13 It is acknowledged that context plays a critical role in how a place operates and how effective interventions are on the ground. High levels of sustainable and active mode share are being achieved in some places within the UK, although the specific context and characteristics of these places should be considered. For example, Cambridge and Oxford are historic cities with very limited parking and constrained road networks, while Wallington (London) has a much denser public transport network than most places in the UK.
- 6.14 This perhaps demonstrates, however, that there is nothing intrinsically different about Dutch or Danish communities that predisposes them to sustainable travel in comparison to the UK context. Instead, people simply appear to choose the mode that is quickest, cheapest and most convenient. What is also common amongst many of these places is that measures and infrastructure were in place before development was occupied or were introduced when people were going through life transitions or lifestyle changes.
- 6.15 Table 6-2 and the accompanying case study sheets summarise the key interventions introduced in these places which have likely had a bearing on their mode share. Aside from the measures tabulated, it is worth clarifying that most of these places have also introduced interventions and constraints relating to parking, including car-free streets and developments, lower standards, off-plot parking and car clubs.

Table 6-2: Interventions influencing mode share

Theme	Example core measures / interventions which have led to low-car places	Example places
Scale, land use and density	<p>Sufficient scale, providing critical mass that helps deliver infrastructure requirements by generating high demand and collective funding potential.</p>	<ul style="list-style-type: none"> ● Houten ● Freiburg ● BedZED ● Poundbury
	<p>Higher density, increasing towards local centres and sustainable transport nodes. New residential development built around hubs and local centres to create walkable and self-sufficient neighbourhoods. Employment integral to new neighbourhoods.</p>	
	<p>Streets as places not just transport corridors. Increased seating, planting and sociable places. New development designed to overlook streets, open spaces and the sustainable transport corridors.</p>	
	<p>Permeable street layout to integrate with surrounding areas and transport links.</p>	
Walking infrastructure	<p>High specification walking environment – generous footways, extensive greenery, no obstructions (e.g. parked cars), lighting, priority at crossing points. Inclusive infrastructure with safety and wayfinding by design.</p>	<ul style="list-style-type: none"> ● Vienna ● Pontevedra ● Barcelona ● Strasbourg
	<p>Careful masterplanning to ensure new development is within 15 minutes walking distance of amenities and sustainable transport hubs.</p>	
	<p>Quality public realm activated by mixed land uses to encourage social interaction and active spaces. Regeneration of existing public realm.</p>	
	<p>Traffic volumes controlled through careful planning of the street hierarchy and use of measures such as filtered permeability.</p>	
	<p>New walking/cycle links across key constraints such as water, rail and road.</p>	
	<p>The walking network should also connect with and protect surrounding leisure routes, making use of, and upgrading where necessary, local public rights of way.</p>	

Case study

Poundbury (Dorset)



Key details

Poundbury, on the outskirts of Dorchester, England, is an experimental planned community due for completion in 2026 with an estimated population of over 6,000 residents (currently housing 3,800). The development is designed for the prioritisation of people rather than cars. The layout is characterised by high density urban patterns across the area, focusing on internal communities of accessible shops and businesses such that residents are less inclined to use a private vehicle. This is framed by high quality public realm. Despite this, Poundbury has not yet reduced car usage targets as originally intended. The level of parking provision is still relatively high and there is good access to the strategic road network.

High density urban patterns, range of land uses

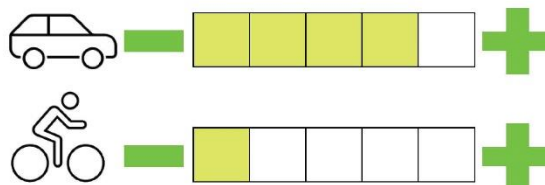
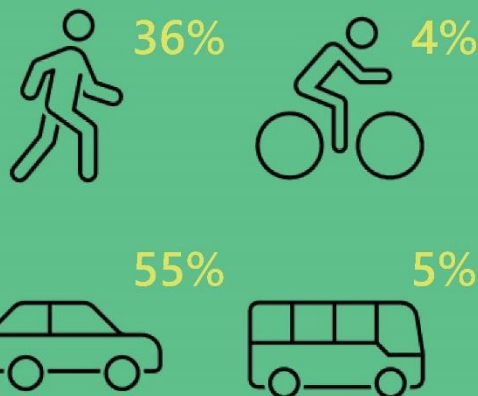
Quality public realm

High car parking and good road access



Dorset

Modal split



- On plot - driveway
- On plot - garage
- Off plot
- Undercroft
- Courts / barns

Parking provision

Theme	Example core measures / interventions which have led to low-car places	Example places
Cycling infrastructure	Additions and improvements to existing cycle infrastructure to create extensive, well connected and traffic free network . Add priority for cyclists at side road junctions and provide safe road crossings.	<ul style="list-style-type: none"> • Copenhagen • London • Cambridge • Delft • Utrecht • Colchester
	Development of sustainable transport corridors , integrating walking, cycling and public transport.	
	Establish mobility hubs at key points on, to provide secure storage and hire and interchange between travel modes.	
	Secure and convenient cycle storage at home and at key destinations and workplaces.	
	Ensure compatibility for adapted, cargo and family-orientated bikes that are typically larger than traditional bikes.	
Public transport	Enhancement to stations and transport hubs to include cycle parking and integration with local bus services.	<ul style="list-style-type: none"> • Stockholm • Warsaw • Oslo • Barcelona • Cambridge • Oxford
	A high-quality, high-frequency bus network to offer a 'turn up and go' service on key routes.	
	Key destinations must be served rapidly and directly .	
	Connections to existing or proposed Mass Rapid Transit routes .	
	Journey time must give an advantage over the private car . Especially important for Park & Ride.	
	Integrated ticketing across operators in a multi-operator scenario, or otherwise the use of simple fare structures using contactless technology .	
	Where buses share road space with cars, segregation/priority for buses on main roads provided.	

Case study

Cambridge (Northstowe)

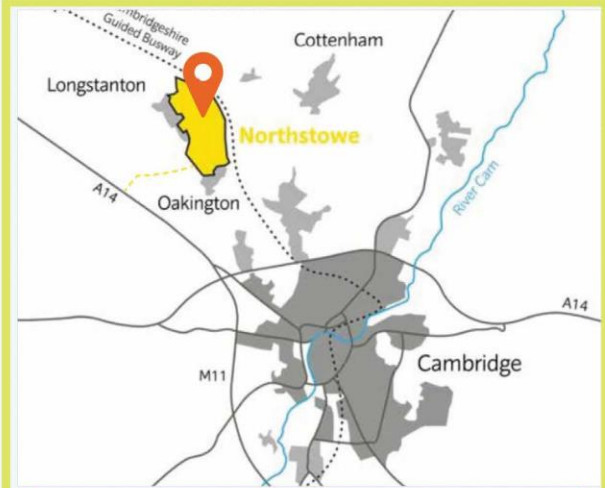


Key Details

Northstowe, based North of Cambridge, is a development bringing 10,000 new dwellings to the area with footpaths, outdoor seating areas, and cycleways to get residents outdoors and travelling actively. The centre of the town prioritises sustainable travel through a bus only link connecting the high street to employment areas and Cambridge North Station, as well as the extensive provision of bike parking and EV charging points. Cycling is made even more accessible through electric bike rental options. Northstowe further supports a low carbon lifestyle by providing buildings which offer electric vehicle charging points. The town is however in close proximity to the A14 with easy access to the M11, and parking has not been significantly restricted, and car dependency is therefore difficult to avoid.

High public transport accessibility through bus only link through town

Good access to strategic road network locks in car dependency



Cambridge, England

Modal Split



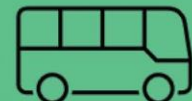
22%



4%

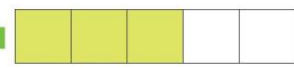
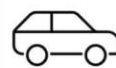


65%



5%

4% allocated to other modes



- On plot - driveway
- On plot - garage
- Off plot
- Undercroft
- Courts / barns

Parking provision

Theme	Example core measures / interventions which have led to low-car places	Example places
Traffic management	<p>Filtered permeability in new and existing areas to ensure travel is quicker, more direct and convenient by active or public transport modes than by the private car.</p>	<ul style="list-style-type: none"> • London • Amsterdam • Houten • Stockholm • BedZed
	<p>Speed limits of 20mph (or lower), implemented on new and existing streets.</p>	
	<p>Conscious design of low-car / car-free streets through the prevention of through movements, geometric design and parking / access restrictions.</p>	
Management and governance	<p>Infrastructure delivery and mode share targets enshrined in policy and fostering a commitment to the vision for the place.</p>	<ul style="list-style-type: none"> • Brighton • Freiburg • Antwerp • Waltham Forest • Houten • Cambridge
	<p>Robust and well-funded Travel Plans and behaviour change continuing post-construction, including measures such as free cycle hire membership, cycle training and PTP.</p>	
	<p>Hypothecated taxes or levies such as congestion charging and Workplace Parking Levy.</p>	
	<p>Alternative development and stewardship models which combine public and private sector funding and resources to maximise and future-proof outcomes.</p>	

Case study

BedZed



Key details

BedZed is an environmentally friendly zero emissions housing development in Wallington, London. Completed in 2002, the proposal was to develop a zero carbon eco village, with one of its primary goals to have residents rely less on private cars. Rather than cars, BedZed residents are encouraged to rely on public transport, cycling, and walking. This is further encouraged by the limited parking space available. There are a number of car free streets. A car club scheme was introduced in partnership with the UK's leading car sharing operator, City Car Club, to decrease single occupancy private vehicle usage, and with the reliable and efficient public transport and rail links nearby the resident's car mileage is 65% less.

Reliable public transport links

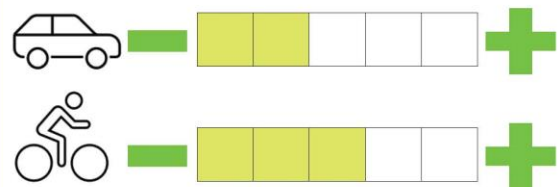
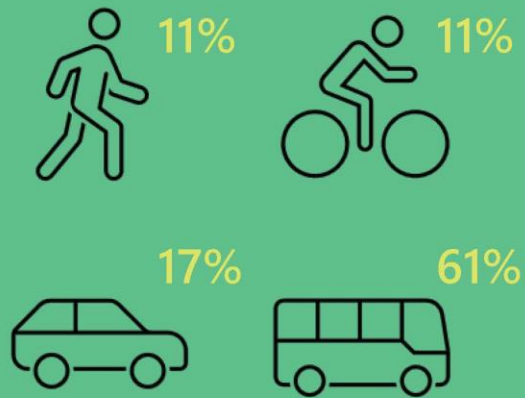
Several car free streets

Car share scheme



BedZed, England

Modal split



- On plot - driveway
- On plot - garage
- Off plot
- Undercroft
- Courts / barns

Parking provision

- 6.16 This case study research, and indeed much of this report, has demonstrated that quantification of modal shift as a result of any one intervention in isolation is inexact and multi-faceted. It is therefore not practical or accurate to suggest that a specific or single intervention – such as parking restraint – will genuinely transform a place or deliver sustainable mobility outcomes at new development. Instead, parking restraint should be considered as one of the key ingredients needed to effect change when delivered in combination, comprehensively across an area, and in conjunction with the other interventions listed above.

Summary

- 6.17 The review presented in this chapter reaffirms many of the key findings set out earlier:

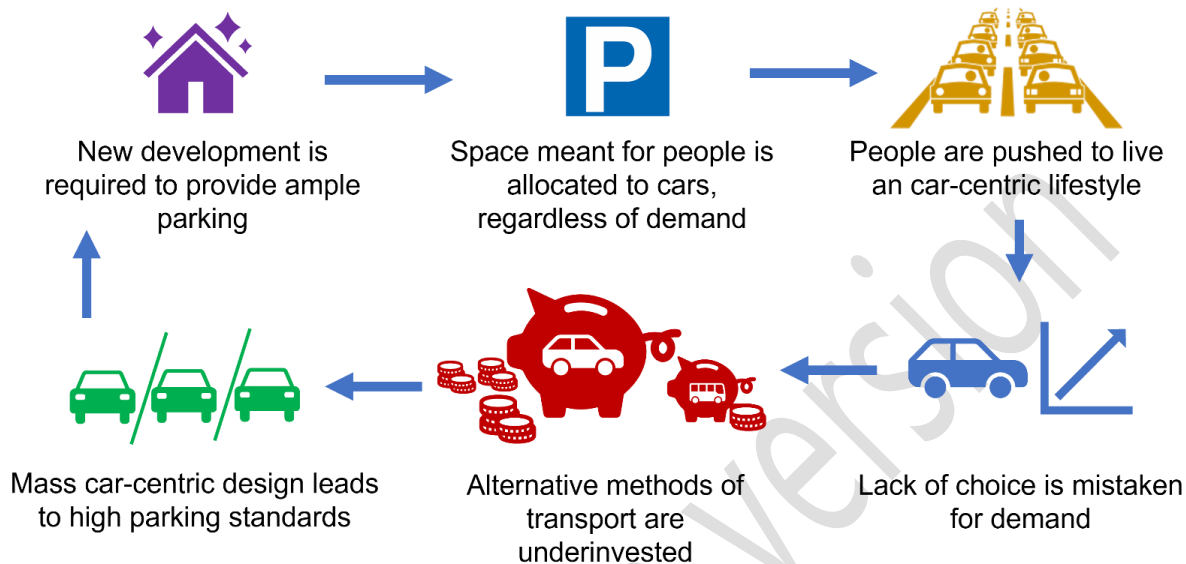
- **National policy and guidance advocates for a holistic approach** to parking management, although few local authorities have genuinely adopted such an approach in recent years.
- **A combination of push and pull measures are needed to achieve sustainable mobility outcomes**, with parking restrictions representing a push measure.
- **Other considerations aside from transport will still come into play**, for example demographics, tenure and costs.
- **The context, design, scale and location of a place has significant bearing on whether it can achieve a low vehicle mode share**, and there is nothing intrinsic about other European countries which mean they are predisposed to doing this well.

Recommendations for the next stages of this study

- 6.18 The findings from this chapter will be used to inform the next stages of the guidance preparation as follows:

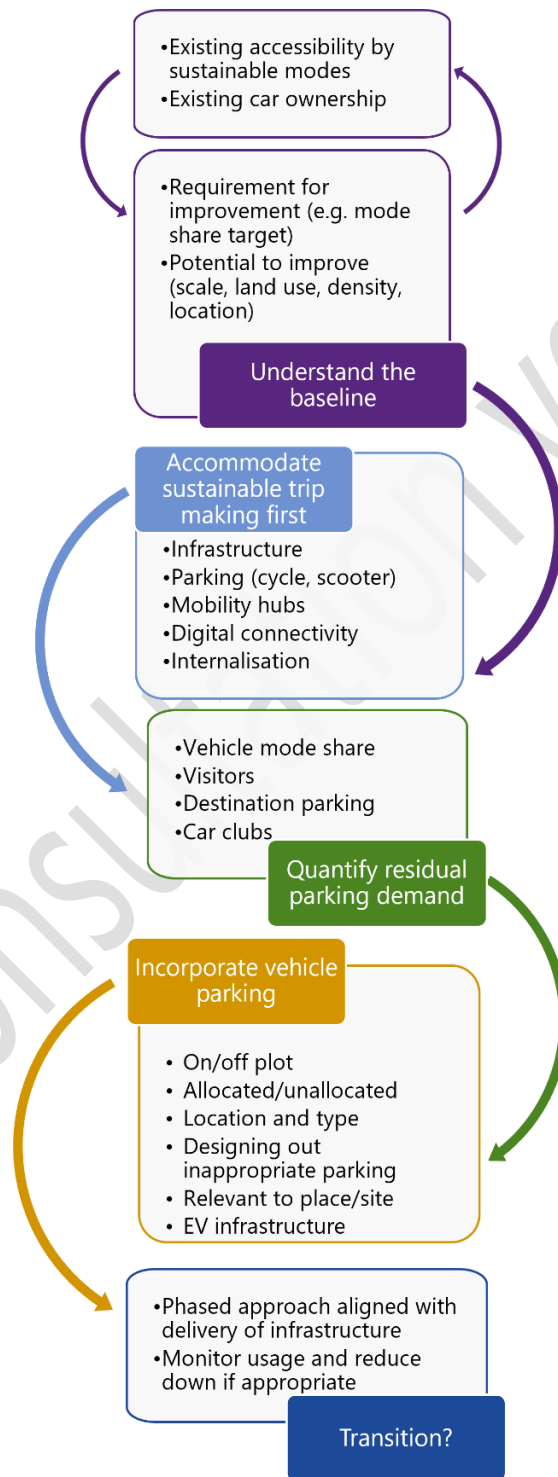
- 1) Whilst the guidance will focus on parking management and restraint, it should build in an assessment of the scale, location, design and accessibility of a development site in order to establish the likely vehicle mode share and resultant ownership, so far as is possible.
- 2) The guidance should also however acknowledge that predicting the impact of one single factor on parking demand is almost impossible to do accurately, and so a range of parking standards applicable to different contexts / levels of accessibility is likely to be more appropriate.

7. Towards a new approach



- 7.1 This report has highlighted that there is a 'parking demand cycle' that many UK authorities are trapped in. It starts with an over-provision of parking in response to high demand. This reduces the need for alternative choices and fosters car-centric lifestyles, which leads to higher levels of car ownership. Consequently, higher parking standards have been set to accommodate this perceived 'need'.
- 7.2 This may have been playing out in Essex up to now; car ownership has been increasing over time and at a higher rate than population growth, and this is coupled with a car driver mode share in some districts which is higher than the national average.
- 7.3 This cycle draws parallels with the 'predict and provide' approach, which has conventionally dominated transport planning more widely. Instead of consistently providing for demand which has historically been there, perhaps an alternative approach should initially consider what the target car ownership and mode share need to be, and then providing only for the residual demand. This is particularly relevant to GCs, which are aiming for a vehicle mode share target for all trips of 40% and much higher than average levels of walking, cycling and public transport use.
- 7.4 In response to these findings, the remaining stages of this commission focus on developing the accessibility-led, outcome-led and design-led approaches to the guidance, though this report has demonstrated that each of these approaches is effectively inseparable from the others. As a result, it is likely that the approach taken will combine these considerations into a single toolkit that can take a holistic view on

the propensity of a site to support reduced car ownership based on: its accessibility; the local conditions and context; the land use, scale and density; the potential to incorporate well-designed, efficient parking space; and the development’s potential overall to improve these metrics, either during masterplanning or over its lifetime. This potential, emerging approach is summarised below and will be explored further in the next stages of the guidance preparation:



Appendix A

Comparison between 2009 and 2021 parking standards for non-residential use classes

Consultation version

Use Class	Category	Use	Private car		Cycles		Comments
			2009 standards	Part 1 Review	2009 standards	Part 1 Review	
A1/F2	Shops	Shops (exc. food stores)	1 per 20 sqm	No change	1 space per 400 sqm for staff and 1 space per 400 sqm for customers	No change	Post offices, hairdressers and food stores, in particular, are likely to generate frequent trips from residential developments. By making it less convenient to park at these locations and more attractive to cycle or walk, car dependency can be reduced.
		Food stores	1 per 14 sqm				
B1/ E(g)	Business use	Offices light industry	1 per 30 sqm and disabled parking for each member of disabled staff + 5% of total capacity up to 200 spaces (6% if over 200 spaces) or 2 bays, whichever is larger.	No change	1 space per 100 sqm for staff and 1 space per 200 sqm for visitors	No change	Employers may be resistant to make parking too competitive, as difficulty parking for persistent drivers may lead to persistent lateness and friction. Travel Plans and policies may complement parking standards.
C2	Residential institutions	Residential care home	1 per full time staff and 1 visitor bay per 3 beds	0.25 per full time staff and 1 visitor bay per 6 beds	1 space per 5 staff	1 space per 5 staff plus 0.05 per bedroom	The current maximums are average, though some local authorities, such as North Somerset, suggest lower averages e.g., 1 space for every 4 beds. The proposed changes are progressive. Employers may be resistant to make parking too competitive, as difficulty parking for persistent drivers may lead to persistent lateness and friction in a sector that is currently facing recruitment challenges. The new proposed standard balances staff and visitor needs without overprovision.
		Hospital	Case by case basis	No change	1 space per 4 staff plus visitors	No change	Depends on hospital size etc.
D1 / E(e), E(f), F1(a), F1 (f)	Non residential institutions	Medical centre	1 per full time staff and 3 per consulting room	0.25 per full time staff and 1 per consulting room	1 space per 4 staff plus 1 space per consulting room	1 space per 4 staff plus 1 space per consulting room Short stay - Greatest of: 1 space per 50m ² or 1 space per 30 seats/capacity Long stay – 1 space per 5 employees	The current standard for medical centres is quite generous with some local authorities, such as Derby City Council, providing lower maximums, such as 1 or 2 per consulting room. The proposed standards, reduce parking provision considerably. Consideration should be given to whether reducing parking could unintentionally discourage people from attending appointments, particularly if alternative transport options are limited.
		Creche/ childcare	1 per full time staff	0.25 space per full time equivalent staff	1 space per 4 staff plus 1 space per 10 child places	No change	
		Education Primary/ Secondary	1 per 15 students. Disabled parking 1 bay or 5% of capacity, whichever is larger.	1 per 30 students	1 space per 5 staff plus 1 space per 3 pupils	1 space per 5 staff plus 1 space per 10 pupils At primary schools 1 scooter parking space should be provided for every 20 pupils Separate provision for staff and students	

Use Class	Category	Use	Private car		Cycles		Comments
			2009 standards	Part 1 Review	2009 standards	Part 1 Review	
						Based on Travel Plan mode share targets, minimum: Staff: 1 space per 20 staff Students: 1 space per 10 students	
		Education further/higher	1 per 15 students for staff and 1 per 15 students for student parking. Disabled parking 1 bay or 5% of capacity, whichever is larger.	1 per 30 students for staff and 1 per 30 students for student parking		1 space per 5 staff plus 1 space per 3 students	
		Places of worship/libraries	1 per 10 sqm	No change	1 space per 4 staff plus visitor parking	No change	
D2 / Other/ F2(c)/ F2(d)	Assembly and leisure	Cinema	1 per 5 seats Disabled parking for 6% of total capacity or 3 bays, whichever is larger.	1 per 10 seats	10 spaces plus 1 space per 10 vehicle spaces	No change	Class D2 has been revoked by the Town and Country Planning (Use Classes) Order 1987. Class D2 is now divided between Classes E and F2. Derby City Council is one example of an authority with lower standards than the current ECC ones, at 1 space per 25sqm.
		Outdoor sport pitches	20 per pitch and 1 per 10 spectators. Disabled parking for 6% of total capacity or 3 bays, whichever is larger.	No change		No change	
		Swimming pools gyms sports halls	1 per 10 sqm. Disabled parking for 6% of total capacity or 3 bays, whichever is larger.	No change		No change	



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