

Paris, London, NYC: people, parks, and parking

August 2020

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This paper was first published in August 2020.

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Executive Summary



- Paris, London and New York City all allocate less than a fifth of their land area to public green space.
- In New York and Paris, there is around 20 square metres of public green space per resident – barely the size of a couple of mid-size cars.
 - London has the most public green space per resident (31 square metres), but because of its lower density, people may have to travel further to get there
- Around half of all households in all three metropolitan areas are car-free, yet each city must find room for 2-3 million cars, parked >90% of the time
 - Greater Paris has the most cars per square metre, yet also has the strongest recent trend towards car-free living, particularly in intramural Paris
 - If able-bodied people stopped owning private cars in the three cities, then even if all disabled people owned cars (most don't at present), and making allowance for substantial growth in shared cars (including taxis), the number of cars on the street would reduce by around 50%. The reduction is greatest (58%) in Greater Paris
 - The reduction would be much higher in all cities if only those disabled people who already own cars continue to do so – more like a 80% reduction
- Getting 42-58% of cars off our streets could increase green space by 10%
 - This would mean in New York, around four new Central Parks
 - In London, an area the size of the London Borough of Islington, or a combination of three of the city's largest parks
 - In Greater Paris, an area the size of three Bois de Vincennes.
- City authorities should step up programmes to convert car parking spaces into green spaces, spaces for activity and for active travel.

Introduction



Greater London, Greater Paris¹, and New York City are large, dense metropolitan areas where millions of people live in close proximity. With many residents living in flats and/or without private gardens, green space is at a premium. On average, the three cities provide around 20 square metres of public green space per inhabitant; around the area taken up by two mid-size cars. Access to, and size of, green spaces varies both within and between the cities, with some parts of all cities experiencing 'park deserts' and others located right next to very large open areas.

Each city must also find space for several million private cars. Typically sitting empty for over 95% of the time, when they finally move these cars carry on average fewer than two people in a space designed to hold at least four. Even with a much-needed shift to electric vehicles, scarce space will still be taken up which could be allocated to other more beneficial uses. A shift to more space-efficient forms of transport can help create more public greenspace, including 'parklets' in residential streets that directly replace car parking spaces. In all three metropolitan areas, around half of all households have no car, and so largely rely on active, public and/or shared transport already. Within the inner city areas (intramural Paris, Inner London, Manhattan) car ownership is a minority pursuit. Even many car owners regularly use other modes, especially for commute trips into central zones, where car parking is limited.

How much land would be freed up, if we did not have to make space for so many private cars? The scenario used here assumes, firstly, that all disabled people retain or gain access to a private car. At present, most do not, and many (like many non-disabled people) might well prefer not to own a private car in the city, particularly if active and public transport were made more accessible. So this figure is unrealistically high, but it sets a ceiling for an increase in cars if we prioritised disabled people's private motorised mobility while reducing overall car use. Secondly, we assume that non-disabled people stop owning private cars, instead (i) using active or public transport where possible and (ii) using a network of shared cars amounting to around one per fifteen

¹ The Métropole du Grand Paris

households, or taxi services, for trips where a private vehicle is needed.

Under this scenario (involving a substantial increase in car ownership among disabled people, alongside a shift to shared cars and other modes for non-disabled people), the number of private cars owned falls by 42–58% across the three metropolitan areas. The space freed up means green space could increase by 10%, the equivalent of gaining several very large parks; for instance, in London, the extra space would be equivalent to Richmond Park, Hampstead Heath, and Wimbledon Common combined. In practice, rather than creating new large parks, a ‘parking to parks’ programme could target on- and off-street parking lots in areas suffering from ‘park deserts’ to ensure more equitable access to green space.

Comparisons made are between Greater London (with around 9 million residents), New York City (around 8 million), and the Métropole du Grand Paris (henceforth, Greater Paris, with around 7 million people). Greater London has around twice the landmass of the other two metropolitan areas (around 1600 vs 800 square kilometres). As all areas have roughly similar proportions (16–19%) dedicated to public greenspace, this results in Londoners having more greenspace per person, at around 31 square metres per inhabitant compared to 18 in Paris and New York (although as London is less dense, accessibility in terms of walk time may be more similar than this suggests).

The report constructs a simple scenario for a shift away from private car ownership, while prioritising disabled people within each city. In all cities disabled people have long experienced relatively poor transport access (to all types of transport, from cars to buses to bikes). This suppresses their mobility and access to key facilities. Our scenario turns this around: all disabled people gain or retain a private car, while all non-disabled people stop owning private cars, instead using alternative transport, or shared cars.

While simplistic, this calculation gives a sense of the magnitude of the reduction in parked cars in all three cities if able-bodied residents stopped owning private cars, even with what would amount to a substantial growth in car ownership among disabled people. Under this scenario, the space occupied by residents’ cars would fall by around 50% in the three cities. In London, this would free up an area roughly the size of Richmond Park, Hampstead Heath, and Wimbledon Common, combined, equating to the size of the London Borough of Islington. In New York, this would be an area around the size of four Central Parks, or eight Prospect

Parks; in Paris, an area three times the size of the Bois de Vincennes.

Note that the Appendix contains details of methods and data sources, along with three additional figures showing real world changes in car ownership in each city.

Population and size of metropolitan areas in Greater London, Greater Paris, and New York



In this report we are comparing Greater London, Greater Paris², and New York City, which all have roughly comparable populations (7-9 million). Greater Paris and New York City are almost the same in terms of area (around 800 sq km), while Greater London is approximately double the size. We also compare an 'Inner' and an 'Outer' area, based on administrative boundaries. These vary more in population size but give a sense of the extent to which trends across each metropolitan region relate more to a 'core' or wider area.

Table 1 illustrates the populations of the different cities using the breakdown mentioned above, while Table 2 shows the comparative size of the various areas. Confusingly, there are two and possibly three definitions of the Inner/Outer London split. This report uses the 'statutory' definition, in which Inner London is the City of London, plus Camden, Greenwich, Hackney, Hammersmith & Fulham, Islington, Kensington & Chelsea, Lambeth, Lewisham, Southwark, Tower Hamlets, Wandsworth, and Westminster.

² While Paris is normally considered just to be intramural Paris, the contiguity of the metropolitan area and the need to examine comparable areas means that here we focus on the Greater Paris area..

Table 1: population of the three metropolitan areas and inner cores

Metropolitan Area	Inner region	Outer region	Whole region
Greater London (ONS 2019 projections)	3,298,996 (Inner London)	5,662,993 (Outer London)	8,961,989
Greater Paris (INSEE 2017)	2,187,526 (intramural Paris)	4,870,379 (Greater Paris exc. intramural Paris)	7,057,905
New York City (ACS 2019 projections)	1,628,706 (Manhattan)	6,708,111 (NYC exc. Manhattan)	8,336,817

Table 2: size of metropolitan areas³

Metropolitan Area	Inner region	Outer region	Whole region
Greater London (2016/7)	301 sqkm (Inner London)	1,273 sqkm (Outer London)	1,574 sqkm
Greater Paris (2017)	105 sqkm (intramural Paris)	710 sqkm (Greater Paris exc. intramural Paris)	815 sqkm
New York City (2018)	59 sqkm (Manhattan)	724 sqkm (NYC exc. Manhattan)	783 sqkm

London is the least dense, with Inner London’s density roughly the same as the whole of NYC. The density of NYC outside Manhattan (the boroughs of Bronx, Brooklyn, Queens, and Staten Island), is around the same as the density of the whole of the Greater Paris Metropolitan area. In all three urban areas, the density of the inner region is around three times higher than the density of the outer region, as defined here.

³ All these are derived from the GIS analysis looking at greenspace – calculated from GIS files provided by city/region/national authorities.

Table 3: thousands of residents per km²

Metropolitan Area	Inner region	Outer region	Whole region
Greater London	11	4	6
Greater Paris	21	7	9
New York City	28	9	11

Greenspace availability



This section looks at greenspace currently available in the three metropolitan areas, excluding private gardens and privately-run greenspace to which the public are not freely admitted (e.g. golf courses). While definitions used in the different datasets may not be exactly comparable (and some e.g. wildlife reserves may be publicly run but not always open to the public) the calculation and maps give a rough measure of the amount of public greenspace across the city, what proportion of total space this takes up, and how much greenspace is available per resident.

Individual parks vary widely in size. In Paris, we calculated the Bois de Vincennes and the Bois de Boulogne as respectively covering 8.8 and 7.3 square kilometres (excluding some private areas such as a race course). London's Richmond Park, at 9.5 square kilometres, is much larger than other parks - the second and third largest being Bushy Park and Hampstead Heath (3.5 and 3.2 square kilometres, respectively). New York City's iconic Central Park is 3.4 square kilometres.

Table 4: Greenspace per resident and as a % of land area

Metropolitan Area	Total greenspace	Greenspace as % of total land area	Greenspace per resident
Greater London	280 sqkm	18%	31 sqm
Greater Paris	130 sqkm	16%	18 sqm
New York City	146 sqkm	19%	18 sqm

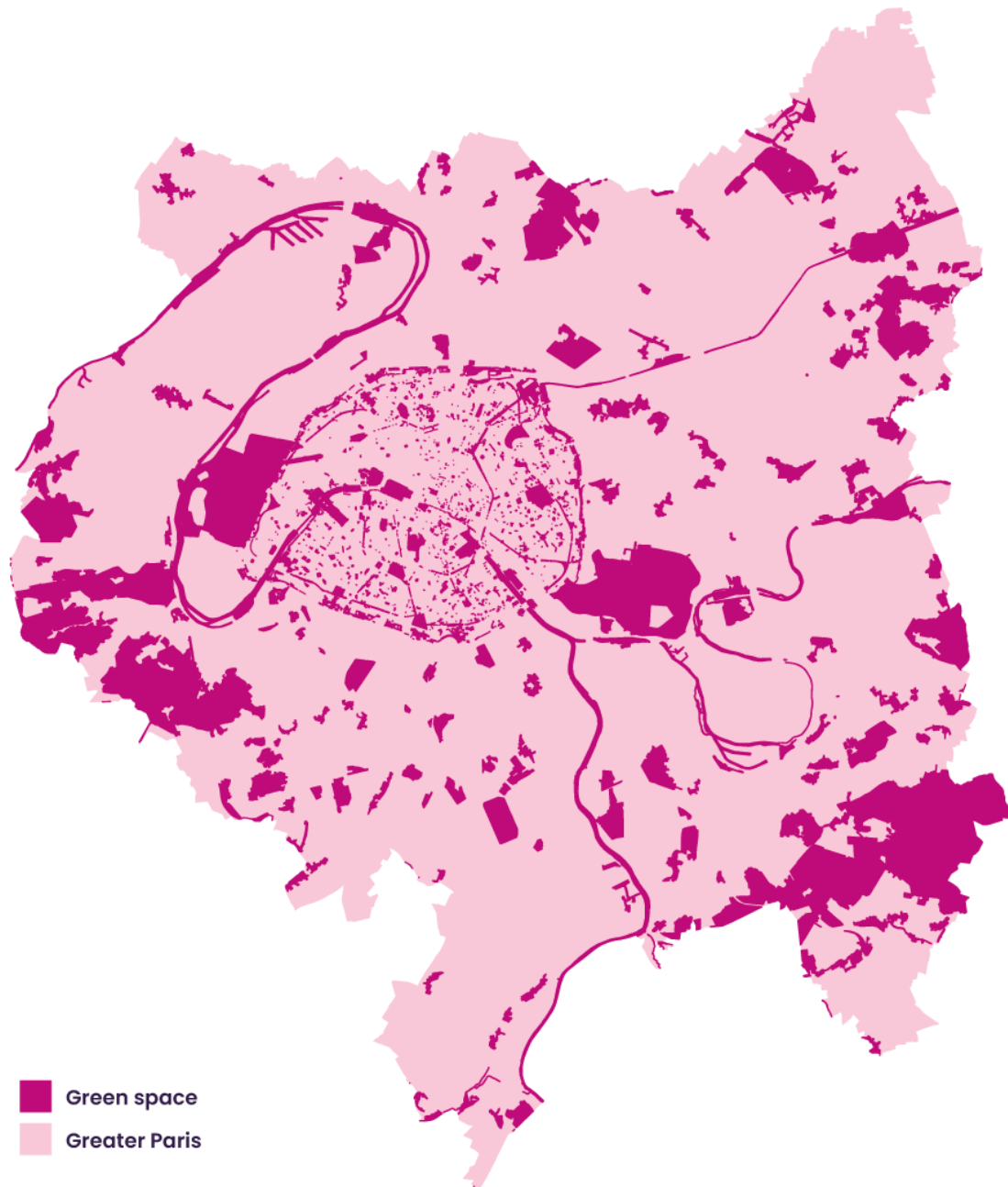
All three metropolitan areas have roughly comparable percentages of their landmass given over to public greenspace. Because Greater London is around twice the size of Greater Paris and New York, it has the largest amount of green space per resident (although the lower density means that people may be further away from their nearest green space).

Figure 1: greenspace in Greater London



London has 280 square kilometres of green space, or around 31 square metres per inhabitant. Green space represents approximately 18% of the city's land mass.

Figure 2: Green space in Greater Paris



Greater Paris has 130 square km of greenspace, equating to around 18 square metres per inhabitant. This is around a sixth (16%) of the land mass.

Figure 3: Green space in Greater NYC



New York has 146 square km of greenspace, almost a fifth - 19% - of the land mass (note that this includes islands in Jamaica Bay that are recorded in national parks data, although they may not be accessible to the public), equating to around 18 square metres per inhabitant.

Car-free and car-owning households in Greater London, Greater Paris, and New York



All three metropolitan areas have similar profiles: an overall region where around half of households are car-free, but a notable split between an inner core where only a minority own cars, and an outer periphery where car ownership remains more normalised.

Table 5: Percentage of households without a car in London, Paris, and New York

Metropolitan Area	Inner region	Outer region	Whole region
Greater London (2016/7)	59.6% (Inner London)	32.0% (Outer London)	43.7%
Greater Paris (2017)	65.6% (intramural Paris)	34.6% (Greater Paris exc. intramural Paris)	45.7%
New York City (2018)	78.2% (Manhattan)	47.9% (NYC exc. Manhattan)	55.0%

Within the Paris city boundaries (intramural Paris), almost two-thirds of households were car-free in 2017⁴. This rate however is much lower in the rest of the Greater Paris Metropolitan Area. Hence, while in intramural Paris, car ownership is lower than in New York or London, if we look at Greater Paris with a more similar population size to the other two cities, somewhat under half of all households are car-free (45.7%).

⁴ <https://www.insee.fr/fr/statistiques/2011101?geo=DEP-75>

Figure 4: Inner and Outer London, and % living car free in each.

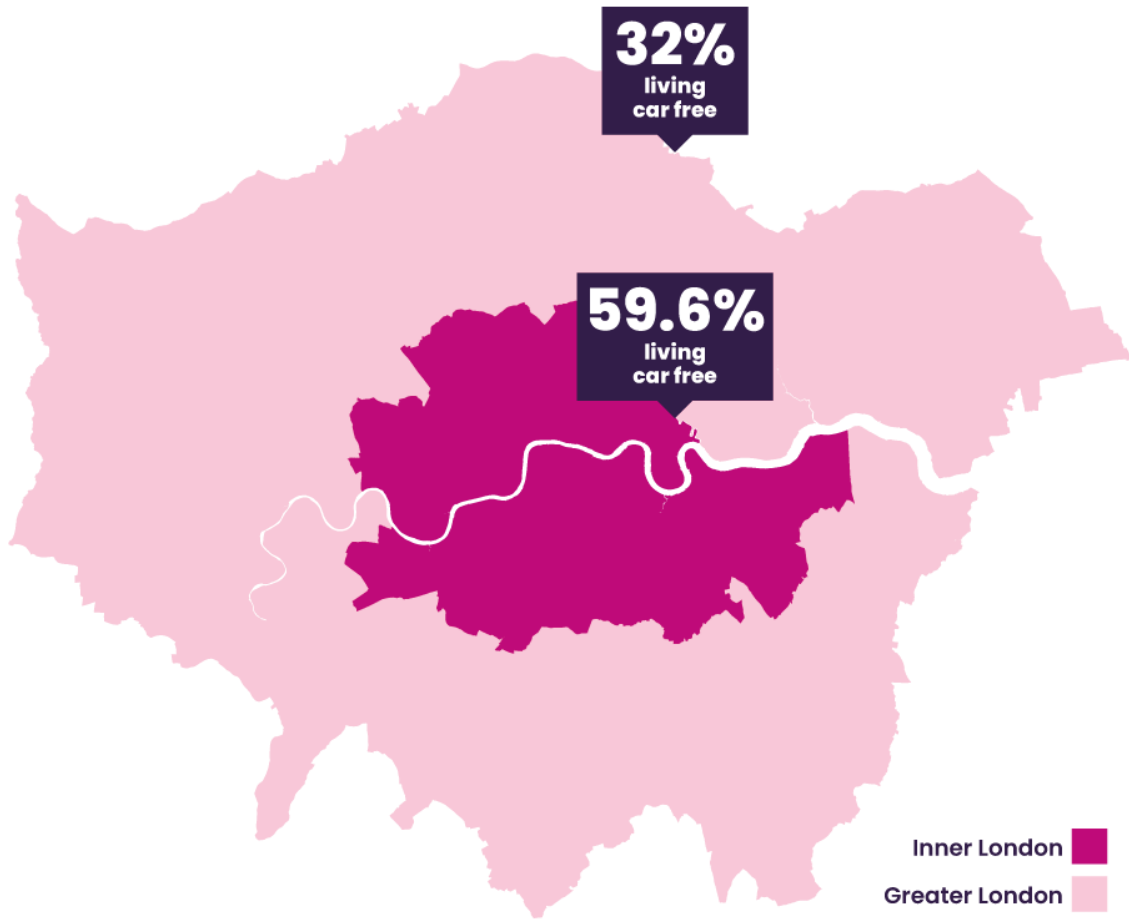


Figure 5: Intramural and extramural metropolitan Paris, and % living car free in each

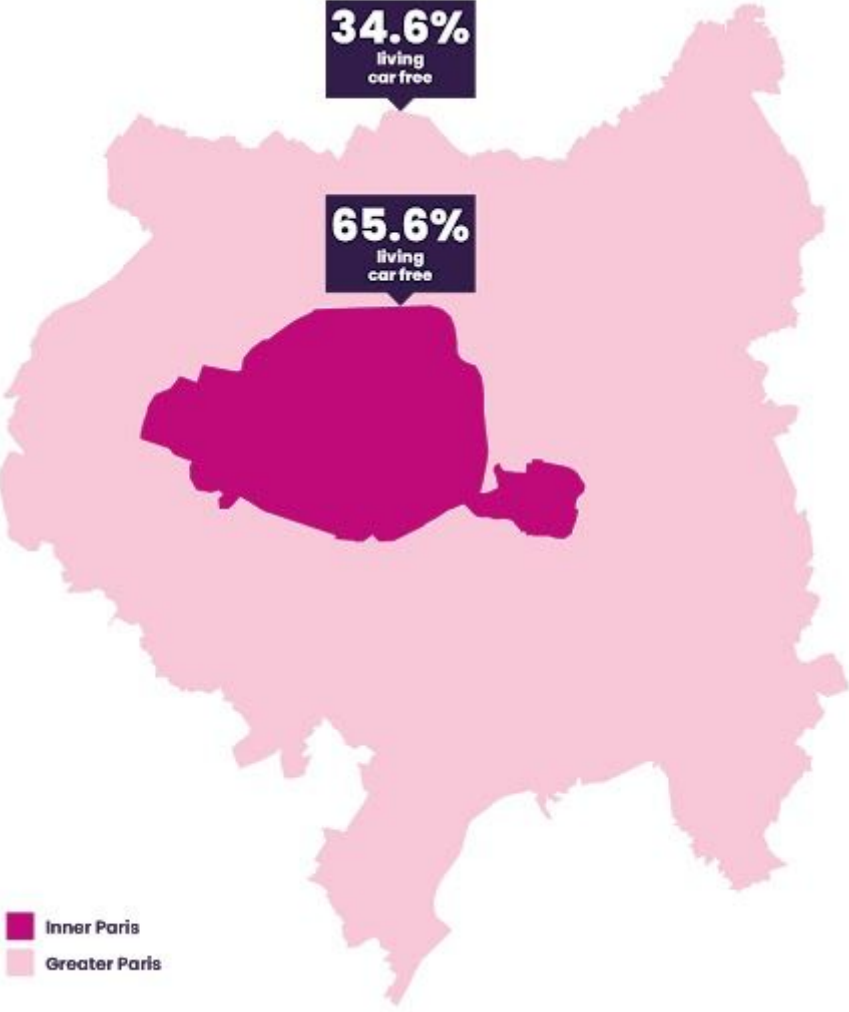
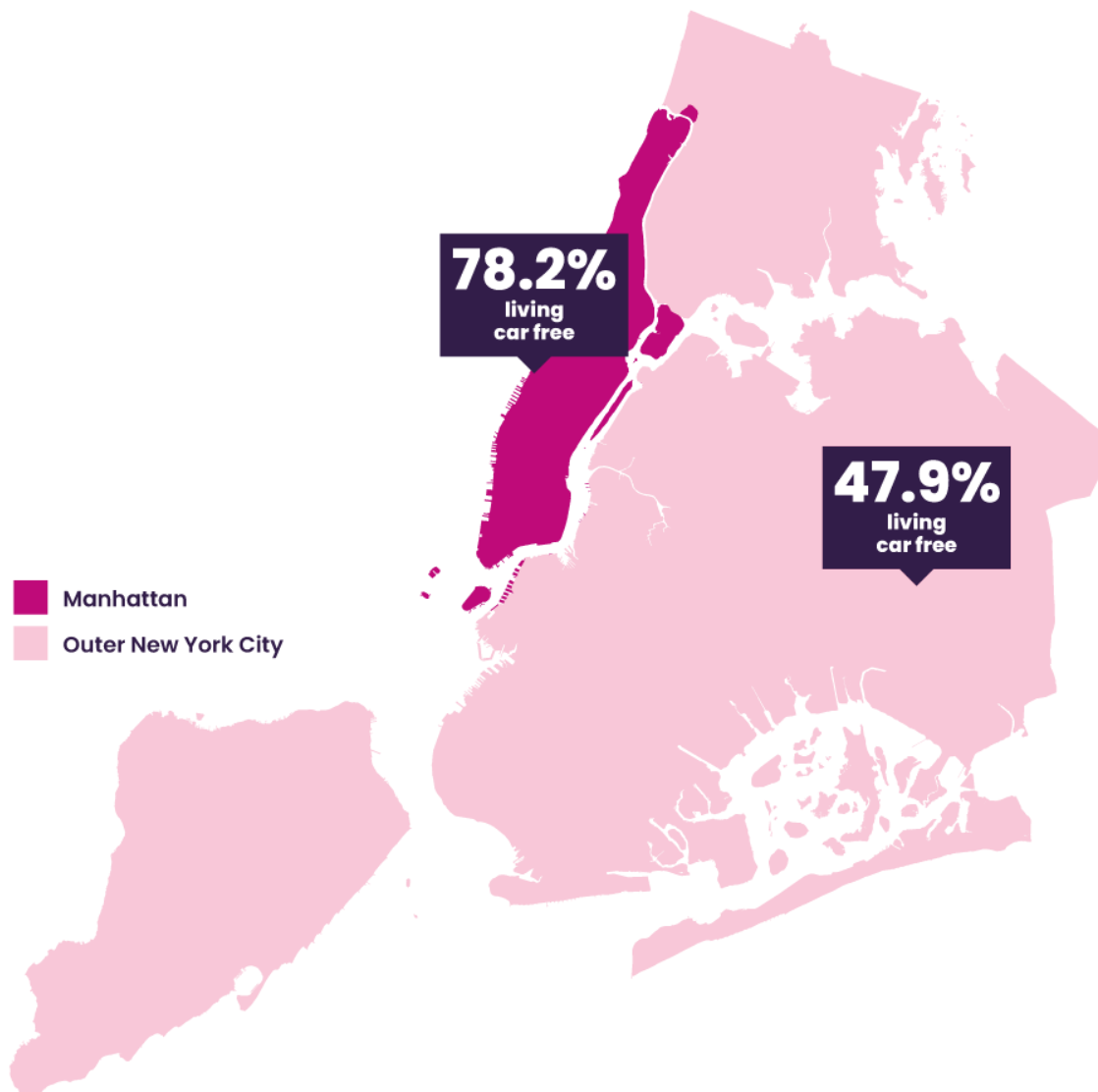


Figure 6: Manhattan and Outer NYC, and % living car free in each



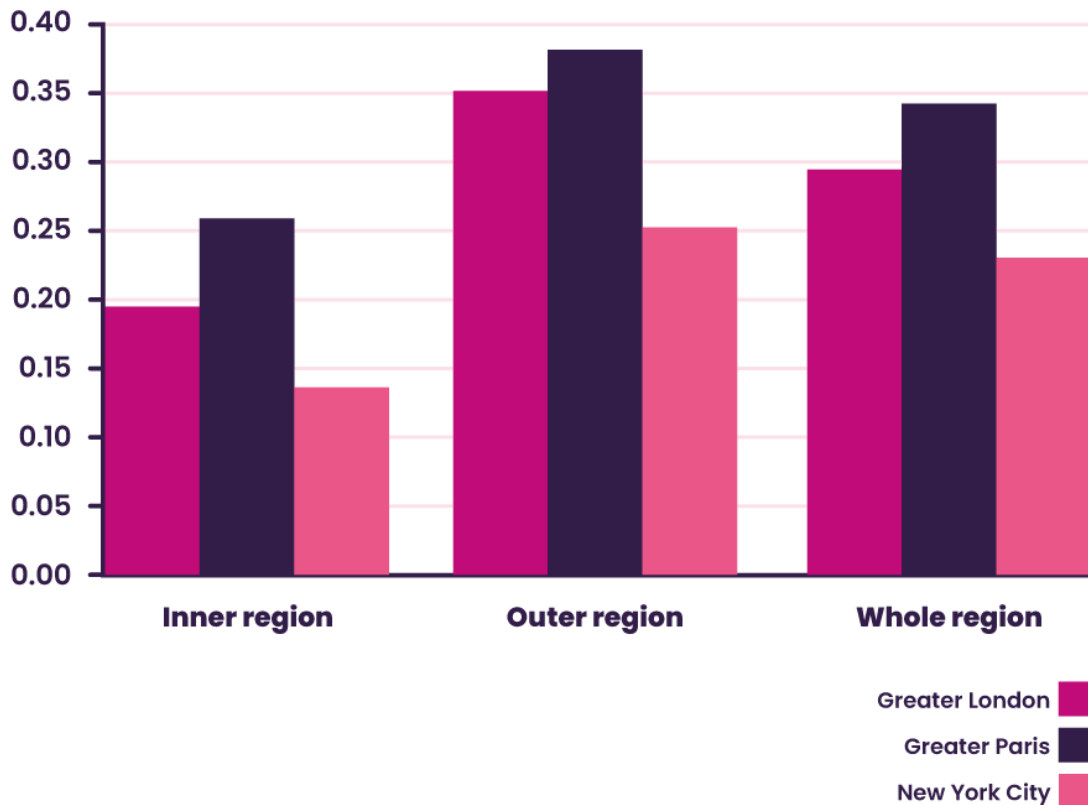
New York has the highest percentage of households living without a private car, among the three comparably sized metropolitan areas. In its inner core, Manhattan, this figure is almost four in five. However, New York has not been improving its position. The proportion of households living carfree there is stable, while Greater Paris and Greater London have seen around a 2.5 percentage point increase between 2007 and 2017. The strongest growth in car free households was in intramural Paris, with the proportion living without a car rising from 59.4% in 2007 to 65.6% in 2017. (See Appendix for graphs showing these changes).

Cars owned by residents of London, Paris, and New York



Greater London has the most cars owned by residents, at 2.7 million. Greater Paris is slightly behind at 2.4 million, while New York has 1.9 million. This allows us to work out cars per person, needed for the scenario. The figure below shows the comparison between inner and outer regions, and metropolitan regions as a whole. In Greater London, there are 0.30 cars per person, New York has 0.23, and Greater Paris 0.34.

Figure 7: cars per person: Greater London, Greater Paris, NYC



The scenario: if all disabled people owned private cars, but no one else did



How many cars might there be, by contrast, in the three metropolitan areas, if only disabled people owned private cars and non-disabled people made use of a shared car system or taxis, when they needed a private vehicle for a trip?

At present, a minority of disabled people own private vehicles: in London, only 42% live in car-owning households, while 38% hold a full drivers' licence⁵. In 2019, 2.5% of Londoners held a 'Blue Badge'⁶, providing them or another driver with exemption from the Congestion Charge, and enhanced access to parking. (Not all disabled people are entitled to a Blue Badge, which has traditionally been seen as for people specifically with mobility impairments; although criteria have recently been widened to include 'invisible disabilities' such as autism).

For Greater Paris, Greater London, and NYC, the scenario assumes that private car ownership rises to 100% among disabled people (assuming 11% prevalence; see Appendix). This represents more than a doubling on current levels of car ownership in London among disabled people. It then assumes that non-disabled people start using shared car services, along with active and public transport, to replace trips they would previously have made by private car. A Transport and Environment briefing⁷ suggests that between five and fifteen private cars are replaced for every shared car added to the fleet. For simplicity, we divide the total number of currently owned private cars by 10 (the mid-point), although not all those cars would be replaced under the scenario (only those currently owned by non-disabled people).

The scenario is somewhat arbitrary; and many disabled people (like many non-disabled people) living in cities would prefer not to own and use their own cars, provided accessible

⁵ Figures here come from London, with more data available on characteristics of car owners. However, given the similar patterns otherwise across the metropolitan areas, we have assumed that these patterns are similar in the other two cities.

<http://content.tfl.gov.uk/disabled-people.pdf>

⁶ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/850086/blue-badge-scheme-statistics-2019.pdf

⁷ <https://www.transportenvironment.org/sites/te/files/publications/Does-sharing-cars-really-reduce-car-use-June%202017.pdf>

and safe alternatives were available. This report is not making a judgement that universal car ownership by all disabled people would be positive or desirable, particularly in a city which has been radically reoriented away from private car use overall. Shared cars and taxis (see below) would be important too, and would be widely available in our scenario. The true share of disabled city dwellers who would depend on private car ownership to meet mobility needs would in practice likely be much smaller than the figures used here.

However, the results do illustrate the scope for substantial reduction in car use, if non-disabled people were no longer to own private cars and instead switched to using shared cars, taxis, public, and active forms of transport. In this case then even if every single disabled person owned a private car (a more than doubling on current levels in London), then overall there would be a very substantial reduction in privately owned cars.

Across all three cities, car ownership would fall by half, with the drop largest in Greater Paris (due to an initially higher number of cars). This is despite assuming a large growth both in car ownership among disabled people, and in the shared car fleet.

Table 6: change in car use, the three metropolitan areas

	Private cars (now)	Private cars (scenario)	Shared cars (scenario)	Total cars (scenario)	Decline in cars (number)	Decline in cars (%)
Greater London	2,659,878	985,819	265,988	1,251,807	1,408,071	53%
Greater Paris	2,430,737	776,370	243,074	1,019,443	1,411,294	58%
New York City	1,923,041	917,050	192,304	1,109,354	813,687	42%
All three combined	7,013,656	2,679,238	701,366	3,380,604	3,633,052	52%

How much space would be freed up by this reduction? Private cars are typically parked over 95% of the time. A standard European parallel parking space might be 6m by 2m. By contrast, a US space might be more like 7m by 2.6m⁸.

⁸ The UK parking standard of 4.8x2.4 works out a similar area. <https://www.dimensions.com/element/parallel-parking-spaces-layouts>

At present, the total amount of space taken up by one parking space for every private car represents 31.9 square kilometres in Greater London, 29.2 square kilometres in Greater Paris, and 35.0 square kilometres in New York City. Achieving the scenario changes would mean freeing up 16.9 square kilometres of space in both Greater London and Greater Paris, and 14.8 square kilometres in New York City. For comparison, in New York this would be eight Prospect Parks, or four Central Parks. For Paris, this would be equivalent to three Bois de Vincennes.

Conclusions



Private car ownership takes up a great deal of space in these three metropolitan areas simply through storing these vehicles, even though around half of all households already live car-free. Were we to reduce the amount of cars by around half (enough private cars for every disabled person to have one, plus plentiful shared cars for able-bodied people to use when making trips that couldn't easily be made in other ways), we would free up space in each metropolitan area several times larger than the largest existing park. As the space would be spread out across the city, this could mean many new parklets along streets, and small parks replacing part or all of existing car parks. It could substantially increase the everyday greenspace accessible to residents. As has been shown by the London mini-Hollands programme, creating new local greenspace by re-allocating space originally given over to motor traffic increases the amount of cycling and walking that local people do.

While we can't reallocate all this land at a stroke, local authorities should be developing plans to incrementally re-allocate under-used car parking, with the benefit of creating nicer and more welcoming places to walk and cycle instead.

- City authorities should step up programmes to convert car parking spaces into green spaces, spaces for activity and for active travel. Paris has so far taken a lead on this. Restaurants have been allowed to turn car parking spaces into terraces, and residents are able to apply for a 'permit to garden' in unloved corners of the city. New active travel corridors include the emblematic Rue de Rivoli, and the ongoing summer programme Paris-Plages turns the banks of the Seine (once an urban motorway) into a beach resort.
- Cities should create programmes to convert car parking spaces in neighbourhoods, focusing their initial efforts on urban and suburban streets with a majority of households car-free. In London and other cities, parklets initiatives are inspiring but piecemeal. If less than half the households in a local street own a car, why not take out car parking from one side of the street, creating space for sitting, playing, cycling, gardening, or whatever else the residents choose to prioritise?
- Programmes to reposition car parking space for community benefit should go beyond restaurants and

cafes, encouraging other businesses and organisations to make the change (e.g. a housing association seeking to turn part of an under-used car park into a neighbourhood garden). Where - as in Greater London - many front yards have been turned into concrete car parks, programmes could support individuals to turn these back into small wildlife gardens.

- Cities also need to plan their trajectories towards a low-car future. Paris's 15-minute city concept provides a vision of the future where many activities are localised, rather than requiring travel to the city centre. Creating cities where most trips are not driven means we need to go beyond just thinking about bus priority and bike tracks, important as those are, to think about what the city does and how it might work differently.

Appendix



Methods, definitions and sources

Data used here derives largely from the main mapping and statistical agencies of the city/country in question. Parks data for NYC comes from the NYC Open Data Portal, alongside additional information from the National Parks Agency. For Paris, parks data comes from APUR and from the City of Paris Open Data Portal. London data comes from Ordnance Survey, with the OS Open Data supplemented with Mastermap (because the open data does not include for instance woodland areas). In comparing green space, it should be remembered that definitions are not exactly comparable, although efforts have been made to improve this. Private golf courses and several other similar examples of large private commercial uses (e.g. race courses) initially defined as 'green space' have been removed.

Data on population and car ownership were derived from the American Community Survey/US Census for New York, the statistical agency INSEE for Paris⁹, and the Office for National Statistics/Department for Transport, for London. New York and London publish estimates of the number of disabled residents, being around 11% of the population, and this was used across all three cities. While there are conflicting estimates and competing definitions even within one city, it seemed reasonable to use a somewhat conservative estimate as (i) the same figure was given for two of the three cities, and (ii) the scenario conversely assumes a very large proportional increase in car ownership among disabled people¹⁰.

Car ownership figures can come from various sources: we chose to use registration statistics. Using DfT figures, there were 654,291 cars owned by Inner Londoners as of 2019, and 2,005,587 owned by Outer Londoners, a total of 2,659,878¹¹. In NYC, vehicle registration statistics¹² show that in 2017 there were 1,923,041 cars registered in New York City as a whole,

⁹ For Greater Paris, data is here:

<https://www.insee.fr/fr/statistiques/2011101?geo=FPCI-200054781> and for intramural Paris, <https://www.insee.fr/fr/statistiques/2011101?geo=DEP-75>

¹⁰ At present, car ownership and use are strongly associated with income rather than with need. This paper envisages private cars being seen as mobility aids for those who most need them, with other people using alternative types of transport, including shared cars as needed.

¹¹ These figures are lower than those in TfL's borough reporting, which is based on travel survey data and hence may capture additional non-licensed vehicles. Source: VEHO105 <https://www.gov.uk/government/statistical-data-sets/all-vehicles-veh01>

¹² <https://dmv.ny.gov/statistic/2017reginforce-web.pdf>

comprised of 225,179 in Manhattan, 457,980 in Brooklyn, 249,216 in the Bronx, 725,906 in Queens, and 264,760 in Staten Island. Finally, Parisian vehicle registration data¹³ show that Intramural Paris alone had 573,270 cars in 2019, the rest of the Greater Paris Metropolitan Area had 1,857,467, and the area in total had 2,430,737. (Note that the Parisian data includes only vehicles 15 years old or newer, however, these figures are used in official reporting and in Eurostat comparisons, as well as in this report¹⁴).

Assumptions about green space being freed up is based on the size of a typical (European or North American) mixed use parking space. Some cars are stored off street; for instance, in London TfL report this is 57% of all residents' cars. What about those cars stored off street at home? However, (i) many off street car parking spaces will be in estate car parks, for instance, rather than being fully 'private', and they could be partially converted to communal gardens if freed up, (ii) cars stored off street at home will still be used, driven, and parked, generating demand at destinations where parking could similarly be freed up, and (iii) freeing up some 'front yard' space could help reverse the environmentally damaging trend whereby front gardens in more suburban areas have been paved over.

Estimates of how many disabled people live in the cities vary. In London and New York, a figure of 11% of all residents has been used by city authorities. Other estimates have been higher: for instance, in London the Life Opportunities Survey¹⁵ estimated a figure of 21% of adults (although this would be somewhat lower if as here, children were included). The LOS automatically included anyone protected by the Disability Discrimination Act (e.g. anyone with cancer), not all of whom will necessarily identify as disabled. The Family Resources Survey¹⁶ by contrast estimates that 13% of Londoners (all ages) are disabled. In this report, we use a figure of 11% for all cities; being the estimate cited both by Accessible NYC and Transport for London, and assuming also that this is similar in Paris. We assume that levels of car ownership among disabled people in Greater Paris and NYC are similar to the levels in London; this data being most easily available for

¹³

<https://www.statistiques.developpement-durable.gouv.fr/donnees-sur-le-parc-des-vehicules-au-1er-janvier-2019>. These figures don't give the breakdown for the GPMA, so the Petite Couronne was used with an extrapolation to account for the small areas within the Grand Couronne also included within the GPMA.

¹⁴ It is possible that the correct figure is c. 13% higher based on <https://www.statistiques.developpement-durable.gouv.fr/sites/default/files/2018-12/methodologie-parc-vehicules-routiers-v2.pdf> - however, Eurostat has used uncorrected figures, so we follow this here.

¹⁵ <https://data.london.gov.uk/dataset/disability-and-mobility-london>

¹⁶

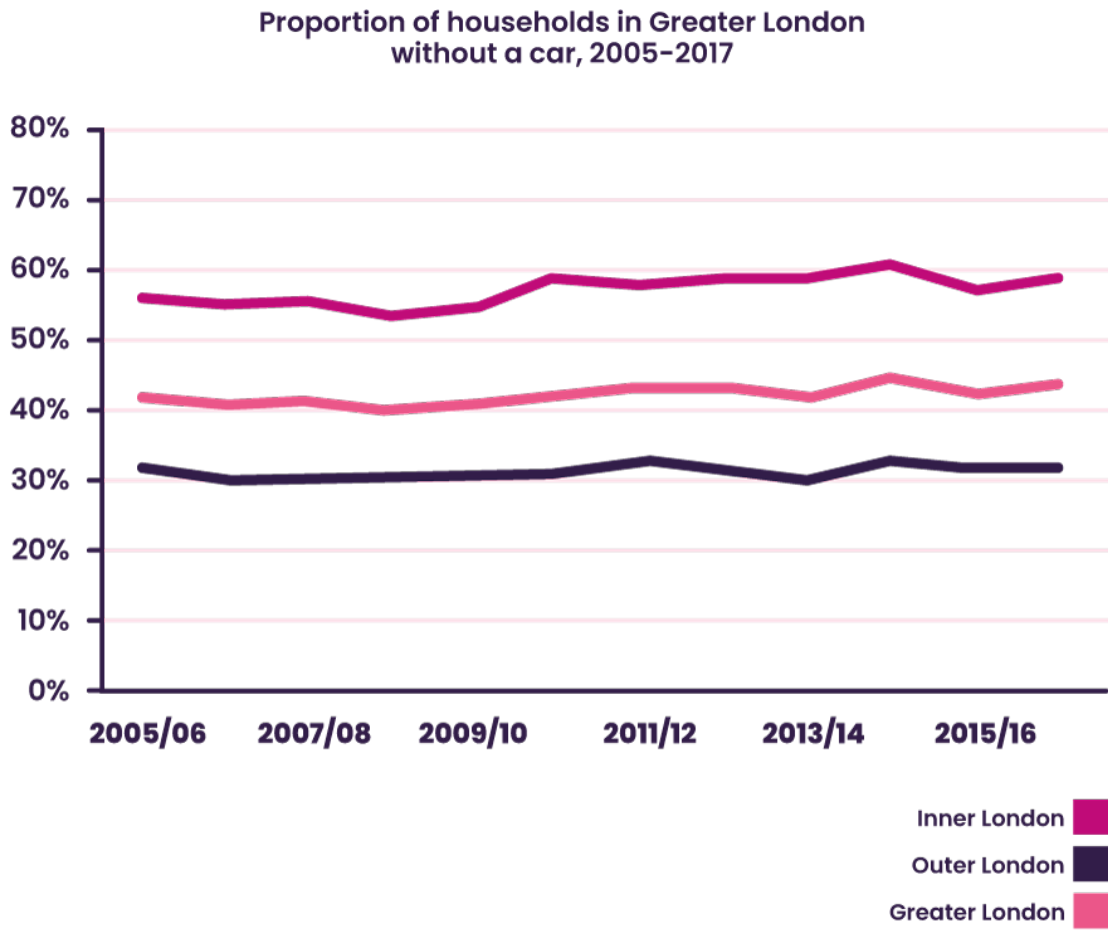
<https://www.gov.uk/government/statistics/family-resources-survey-financial-year-201819>

London, and levels of wider car ownership being broadly similar in Greater Paris and New York.

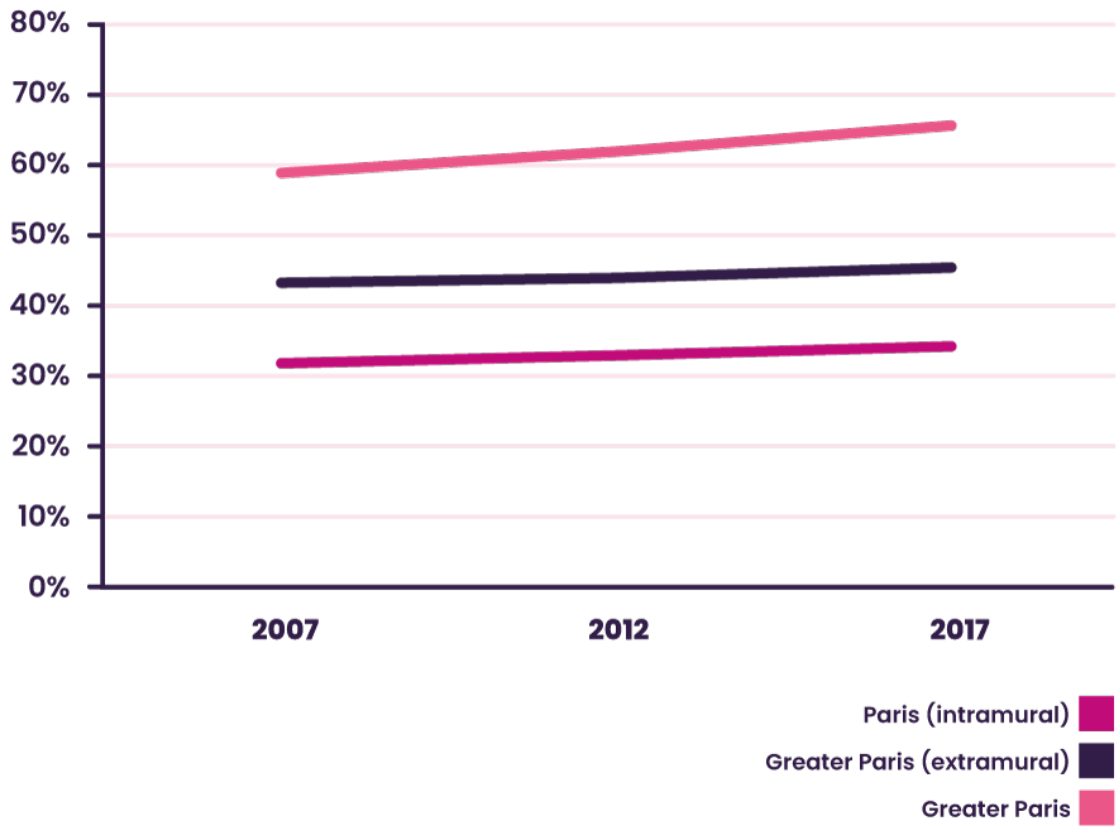
We have assumed that non-disabled car owners across the three metropolitan areas are able to shift their currently motorised trips to walking, cycling, public transport, or shared cars. In London, Transport for London estimates that around two-thirds of all car trips could potentially be cycled (some of the shorter trips could alternatively be walked or partly walked)¹⁷. Where walking or cycling is not preferred or not possible, other options include public transport, pedal or traditional taxi services, or shared car services. In calculating space freed up, we have assumed a dense network of shared car services replacing many car trips. In practice, this many shared cars might not be wanted or needed, as local areas become more pleasant, with new pocket parks encouraging local walking, local walking supporting local high streets, and shopping becoming more localised. Hence we might expect many trip lengths and destinations to change, particularly over the medium term, rather than simply a change in how they are made.

¹⁷ <http://content.tfl.gov.uk/analysis-of-cycling-potential-2016.pdf>. E-bikes (not considered in the report) could increase this potential.

Figures 8, 9 and 10: Change in car ownership over time



Proportion of households in Greater Paris without a car, 2007-2017



Proportion of households in New York City without a car, 2010-2018

