Field Dynamics

ON-STREET HOUSEHOLDS

EV CHARGING REPORT FOR 2024

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A comprehensive report on the provision of nearby EV charging services for households that cannot park off-street.

THANK YOU FOR YOUR SUPPORT!

This study could not have been possible without the very generous support of our partners.

The UK's leading EV mapping service and the gold standard for EV charging sites. Zapmap provided access to the best source of charger locations available in the UK. They also provided very valuable insight and guidance.

The UK's national mapping service and the creator of the most detailed spatial data in the UK.

Ordnance Survey provide a unique licence for the use of their incredibly accurate OS MasterMap® product suite.

REPORT
CONTENTS

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DISCLAIMER

INTRODUCTION

This is the third iteration of our On Street Charging Report and the electric vehicle (EV) market has changed markedly over the last four years.

The number of EVs has continued to grow; the millionth battery electric vehicle was registered in January 2024, and new registrations were 21% higher than in January 2023 (SMMT). With the UK government signing the ZEV Mandate into law earlier this year (which stipulates that 80% of all new cars sold from 2030 must be zero emission), this trend is expected to continue, and the National Grid Electricity System Operator forecast 36.2 million electric cars and vans on the road by 2050 (FES 2024*).

All EV owners will need space and infrastructure to charge their batteries. Households with off-street parking (i.e. the ability to connect a charging cable to their vehicle without having to cross any public right of ways) can install a charge point and top-up overnight. In contrast, on-street households (some 9.3 million which comprises 32.7% of the housing stock) are reliant on public charge points. This infrastructure challenge cannot be underestimated with the UK government publishing targets to install 300,000 charge points by 2030. For context, current levels are 64,775 devices over 33,829 locations (Zapmap, June 2024).

These on-street households have a choice – charge remotely (driving to and from the charger), or park near their home, connect their car, and walk home. Field Dynamics explore this latter challenge here. Specifically, for each local authority in Great Britain, we calculate the percentage of on-street households that are within a 5-minute walk of a public charger. As well as setting out the results within this report we have made the data openly available, at local authority level, which you can access here.

** Future Energy Scenarios (FES 2024): Pathway = Electric Engagement, Fuel = Electricity*

KEY OBSERVATIONS

Local authorities have made steady progress.

The average coverage of LAs has increased from 17.2% in 2022 to 24.8% in 2024 – a relative increase of 44% (Fig. 1). This is similar to the growth rate in the last report (46.2% between 2020 and 2022).

We've also seen significant growth in the number of charger locations (over 60% increase between the 2022 and 2024 reports). This is higher than the observed improvement in coverage and suggests that, whilst many of the chargers are 'plugging gaps', others are servicing households that were already covered. Our new charger density metric supports this (Fig. 1). For every on-street household covered by at least one charger, this metric shows the average number of 'charging sites' that are within a five-minute walk. This has increased from 1.6 in 2022 to 2.0 in 2024, meaning on-street households are being covered by more charging sites.

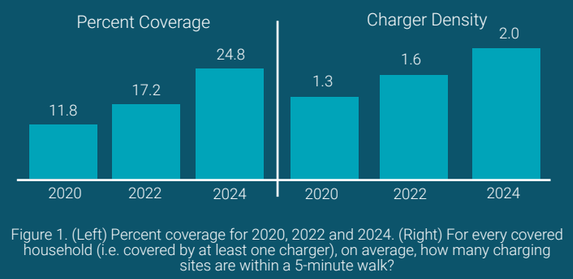
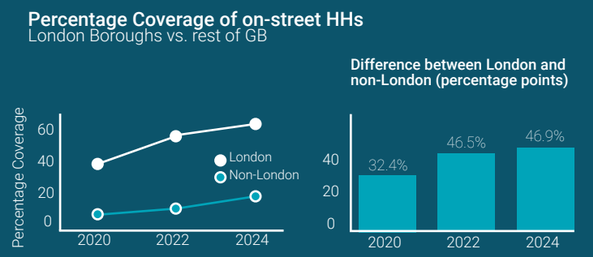


Figure 1. (Left) Percent coverage for 2020, 2022 and 2024. (Right) For every covered household (i.e. covered by at least one charger), on average, how many charging sites are within a 5-minute walk?

London coverage (67%) remains far higher than rest of GB (20%).

Although there remains a high absolute difference in coverage, it is worth noting that London and non-London authorities have been increasing coverage at broadly the same rate (Fig 2).

What is clear, however, is that local authorities in London have continued to install at pace, and their charger density scores have increased as a result. This measure has grown by over 60% to an average of 6.4 in London, whilst across the rest of GB it has remained below 1.5 (Fig 2).



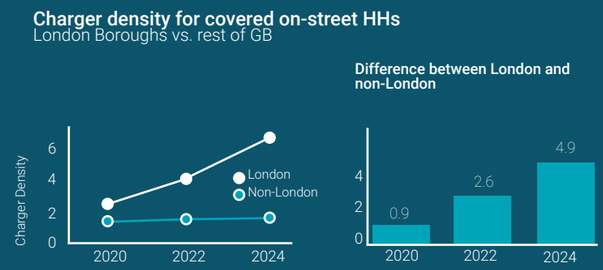


Figure 2. London vs. non-London figures for Percent Coverage and charger density.

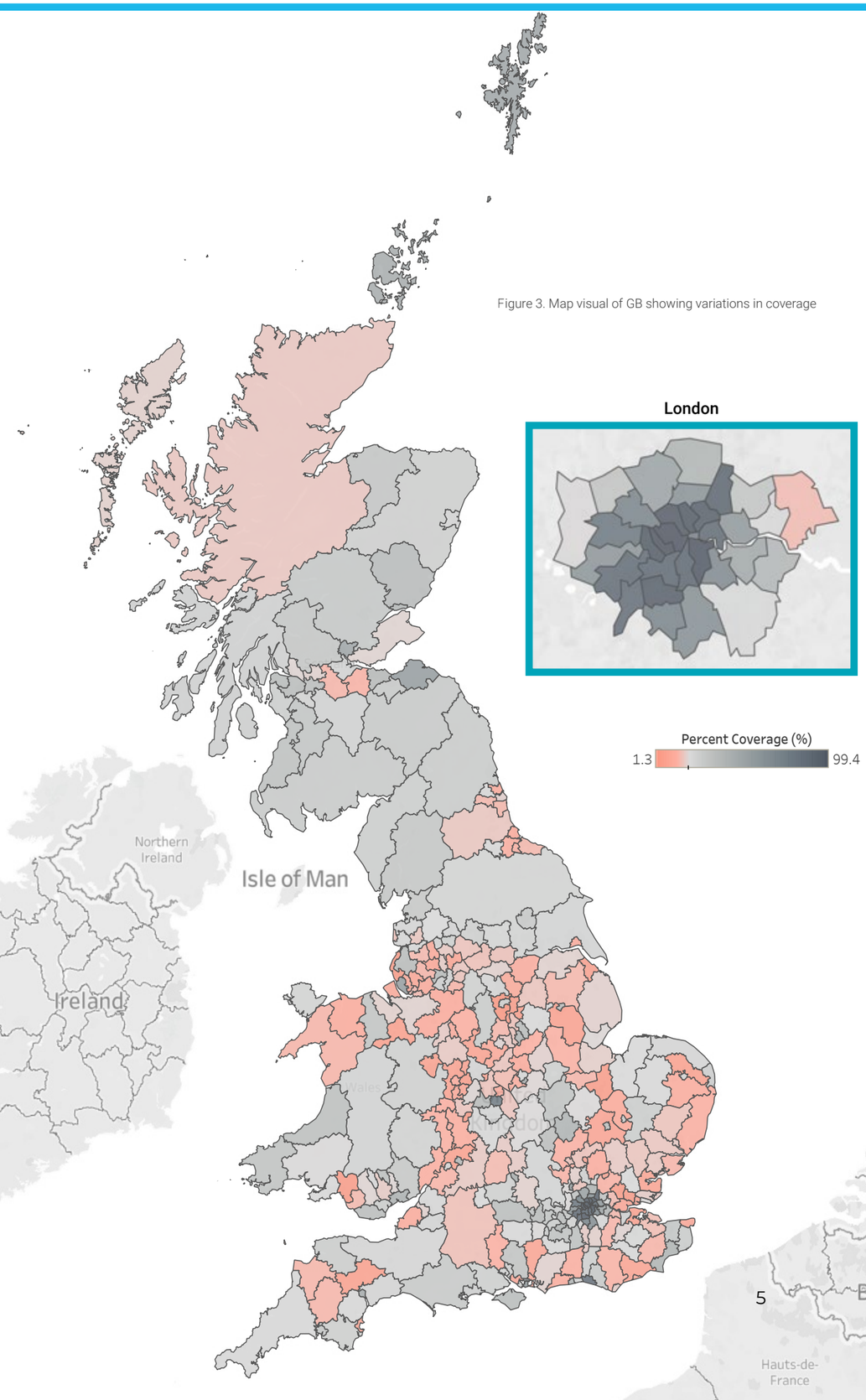


Figure 3. Map visual of GB showing variations in coverage

KEY OBSERVATIONS

Huge improvements have been made by many local authorities.

Whilst London is significantly further ahead in its delivery of charging infrastructure, there are many local authorities from the rest of Great Britain that are rapidly expanding their EV charging estate.

Indeed, eight of the ten fastest improving authorities (by percentage point increase in coverage) are from outside of London. Top of that list is Coventry; increasing coverage from c. 45% to over 75%, an increase of 30.7 percentage points, followed closely by the Shetland Islands who have increased coverage from 18.5% to 48.1% (+29.6 percentage points).

At the same time, both have increased their charger density scores: not only have they grown the numbers of households covered by a chargepoint, but they've also increased the numbers of charging sites available to those households.

38 local authorities still cover less than 10% of their on-street HHs.

This clearly indicates that some areas are either further behind in their installation of infrastructure or are focusing on alternative deployment options (i.e. supermarkets / car parks etc.). We do not advocate for any single approach, and we recognise that different regions will require different solutions.

However, more than half of all local authorities cover less than 20% of their on-street households (Table 1) and almost 90% cover less than 40%.

Moreover, if we took the 38 local authorities with less than 10% coverage and make the basic assumption that they'll continue to increase coverage at their latest rate (between 2022 and 2024), then by 2030, over 75% of these local authorities would remain below 20% coverage. Together, these suggest there are still significant gaps in coverage.

Local authorities that have increased their coverage the most (by percentage points)

Figure 4. Top 10 local authorities outside of London that have increased their charger coverage

Local Authorities grouped into coverage bands

Coverage band	2020	2022	2024
80% and above	0.8%	2.7%	4.3%
60% to <80%	1.9%	1.9%	2.3%
40% to <60%	1.6%	3.3%	4.6%
20% to <40%	7.9%	14.7%	38.7%
Below 20%	87.8%	77.4%	50.1%

Table 1. Matrix showing the grouped coverage bands i.e. < 20, 20-40 etc.

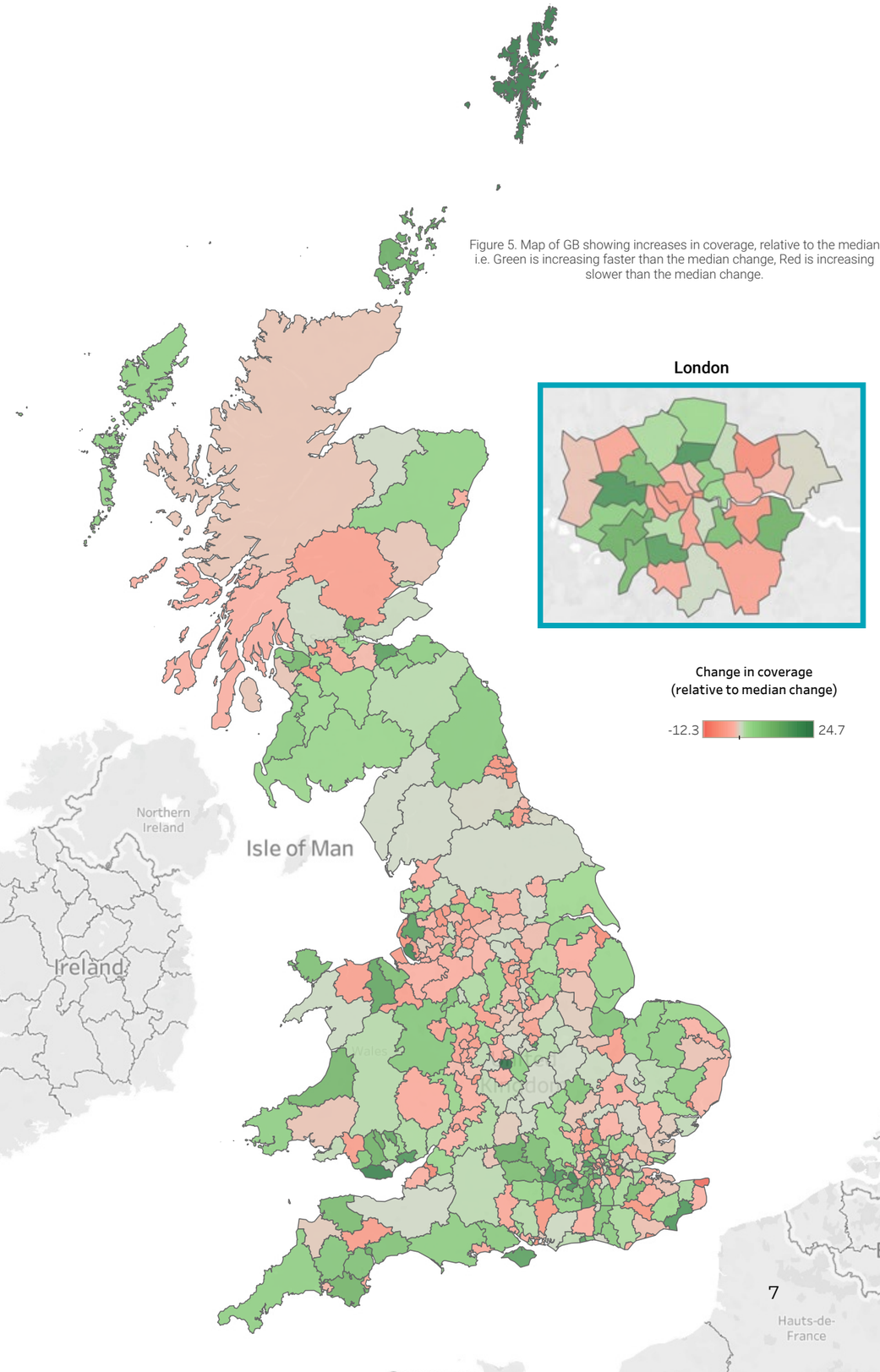


Figure 5. Map of GB showing increases in coverage, relative to the median i.e. Green is increasing faster than the median change, Red is increasing slower than the median change.

NATIONAL OVERVIEW

We've focused on the key messages so far but it's important to assess the overall picture across GB.

In our most recent analysis, of the 28.6 million mapped households, 9.3 million have no space to park a car, 3.6 million can park one car and 15.7 million can park two or more cars within the boundaries of their property.

We know that on average, local authorities cover 24.8% of these on-street households. However, when split by country (Fig. 6), Scotland has come out on top with the highest levels of coverage (28.7%) whilst England (24.5%) and Wales (21.9%) are slightly behind.

We've also split the data into regions within England, Scotland, and Wales (Fig. 6). Here coverage is far higher in London (67.2%) with it's nearest rival, some way behind, being Edinburgh and Lothians (32.7%). At the other end of the scale, the North East has the lowest coverage at 15.9%.

Average coverage for each country and region

Scotland	**Total**	**28.7**
	Edinburgh and Lothians	32.7
	Tayside, Central and Fife	31.5
	Highland and Islands	30.2
	Scotland South	26.9
	Glasgow and Strathclyde	26.0
	Aberdeen and North East	25.3
England	**Total**	**24.5**
	London	67.2
	South East	23.6
	South West	19.9
	North West	19.0
	East Midlands	18.6
	Yorkshire and The Humber	17.6
	East of England	16.5
	West Midlands	16.1
	North East	15.9
Wales	**Total**	**21.9**
	Mid Wales	28.0
	South East Wales	25.1
	South West Wales	18.5
	North Wales	16.8

Figure 6. Average percent coverage across regions within Scotland, England, and Wales. N.B. To group LAs into regions for Scotland, we've used the mapping supplied by Public Contracts Scotland and for Wales, we've used the Corporate Joint Committees for regions.

75.2%

of on-street households aren't within a five minute walk of an EV charger. This is the average of all local authorities in GB.

TOP LOCAL AUTHORITIES

Lastly, we wanted to highlight some of the regions with highest levels of coverage.

We've shown the top 20 local authorities with greatest coverage of on-street households (Fig. 7). Local authorities from London have been excluded from the visual.

In summary, Brighton and Hove have the highest coverage in England (outside of London), although they are now closely followed by Coventry. East Lothian has the highest coverage in Scotland and Newport is the only Welsh local authority to make it into the top 20.

The top 20 local authorities (outside of London) are not concentrated in one single region of Great Britain. Instead, they're geographically spread over mid/southern England as well as Scotland. Liverpool is the only local authority from north England to make it into the top 20.

01 Brighton and Hove
83.1% coverage

02 Coventry
75.7% coverage

03 Portsmouth
57.5% coverage

04 East Lothian
54.2% coverage

05 Watford
53.5% coverage

06 Liverpool
52.5% coverage

07 Clackmannanshire
49.2% coverage

08 Shetland Islands
48.1% coverage

09 Exeter
44.1% coverage

10 Orkney Islands
44.0% coverage

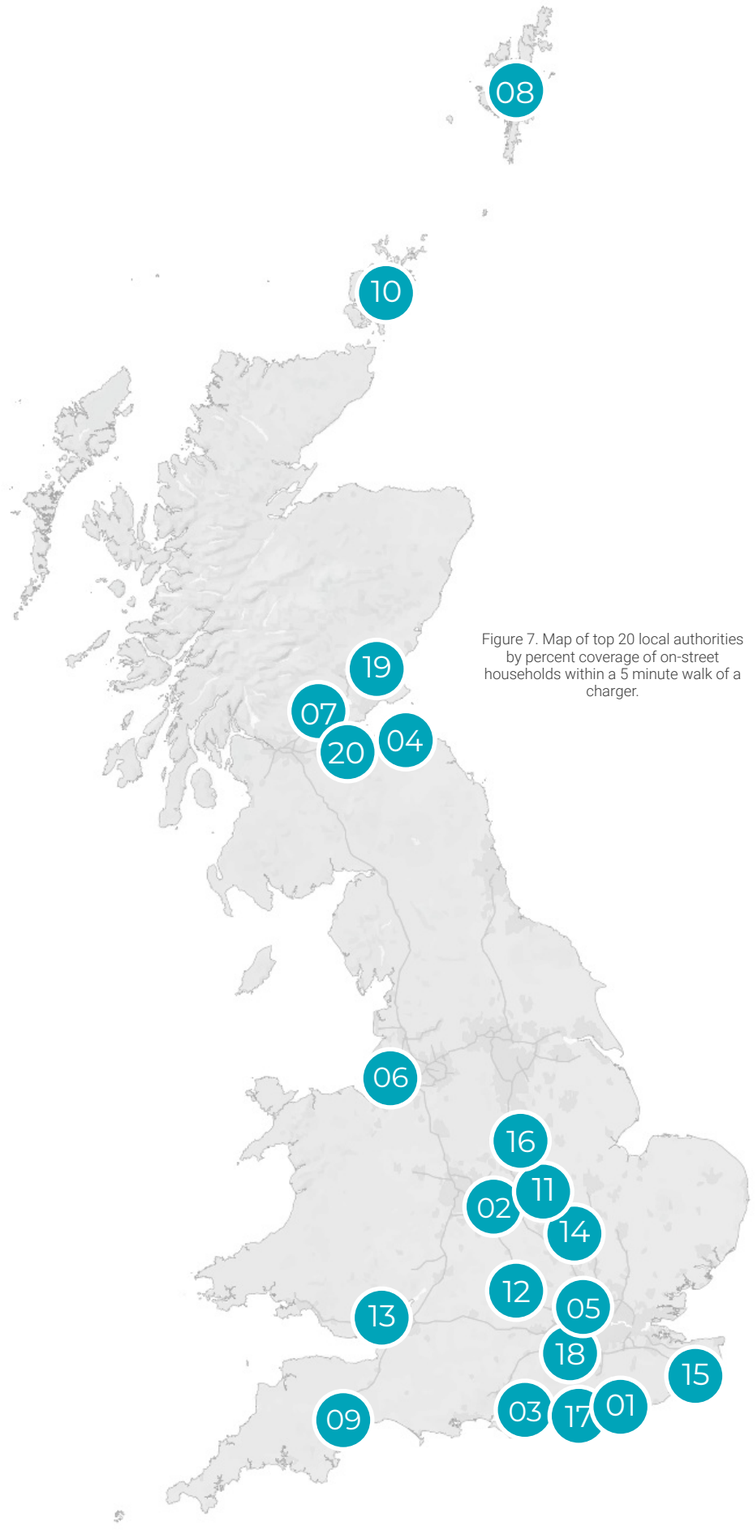


Figure 7. Map of top 20 local authorities by percent coverage of on-street households within a 5 minute walk of a charger.

11 Oadby and Wigston
42.9% coverage

12 Oxford
42.4% coverage

13 Newport
41.1% coverage

14 Bedford
40.1% coverage

15 Folkstone and Hythe
39.6% coverage

16 Nottingham
39.2% coverage

17 Worthing
38.7% coverage

18 Woking
38.2% coverage

19 Dundee City
36.5% coverage

20 City of Edinburgh
36.3% coverage

METHODOLOGY

DETERMINING ON-STREET HOUSEHOLDS (EV MAP)

For residential charging, property owners require enough space to park an EV within the boundaries of their property such that a charge cable can be connected without crossing a public right of way.

Field Dynamics have created a robust dataset to determine households that do (or do not), have enough space to park and charge within the boundaries of their property. Using Ordnance Survey's OS MasterMap Topography and AddressBase datasets, Field Dynamics have identified the properties and adjacent land parcels for all 28+ million households in Great Britain.

Each property has been assessed using Field Dynamics advanced algorithms to provide the parking propensity score of 0, 1 or 2 for each individual UPRN. Segments adjacent to a road are considered as parkable and if one or more of these segments is within a property's boundary, that property will be given an off-street flag (i.e. 1 or 2). We then use business logic to cater for flats, complex cases etc.

We have supported the technical analysis with over 1000 field surveys to validate and improve our modelling. However, whilst the analysis identifies households that have parkable space, we are unable to determine how that space is used or whether local bylaws would enable the space to be used for parking.

DETERMINING COVERAGE OF THE ON-STREET HOUSEHOLDS

We use recent data supplied by Zapmap to identify the locations of all charge points - this was correct as of 31/03/2024, although any subsequent updates will not be reflected in this analysis. We have focused on charging locations as opposed to devices or connectors, as different devices and sites can provide different numbers of connectors at any one time.

Once all chargepoint locations have been loaded, Field Dynamics determined how far someone could walk in five minutes in each direction from the charge point. These journey end points are joined together to create a polygon called an isochrone. If an on-street household falls within one of these isochrones, we consider it to be covered by the charger.

Visual of 5 minute walk isochrone

DETERMINING COVERAGE OF THE ON-STREET HOUSEHOLDS

We recognise that there are differing views on the best parameters (i.e. walking time) to use when calculating the isochrones. We have used five minutes for this study as it allows us to compare the results with previous iterations of this report, generating valuable insights into the progress of local authorities. However, as we consider alternative ways to disseminate this information, we'll review whether additional walk time isochrones should be included.

AGGREGATING DATA TO LOCAL AUTHORITIES

We then aggregate the results of individual households up to local authority level. The final metric for each local authority is:

Percent Coverage = On-street households (covered by a charger) / On-street households (total)

Another output of the analysis is charger density. This is more nuanced, but in essence, for every 'covered' household, we calculate the average number of charging sites they are covered by.

ON STREET CHARGING REPORT 2024

METHODOLOGY

CHANGES TO EV MAP

We constantly review and improve the technical modelling that underpins our identification of on-street / off-street households, allowing us to grow our understanding of EV charging infrastructure.

However, this means there are slight variations in the underlying dataset between this report and previous iterations. Since our 2022 report, we've made the following improvements:

- Enhanced classification and attribution of 'parkable' spaces in complex areas like cul-de-sacs.
- Smarter modelling of accessible routes, i.e. some alleyways may technically fit a car but, in practice, these are unusable.
- Improved modelling of large properties that are potentially set back a considerable distance from the road.
- Added pavement widths into our model.

At a national level, the count of on-street households has decreased by c. 430k from 9.8 million to 9.3 million. Whilst this is significant change, the new data represents our most accurate picture of on-street households to date.

LEVI: WHAT DOES SUCCESS LOOK LIKE?

One of the most significant developments in government support since the release of our last report has been the implementation of the Local Electric Vehicle Infrastructure (LEVI) fund.

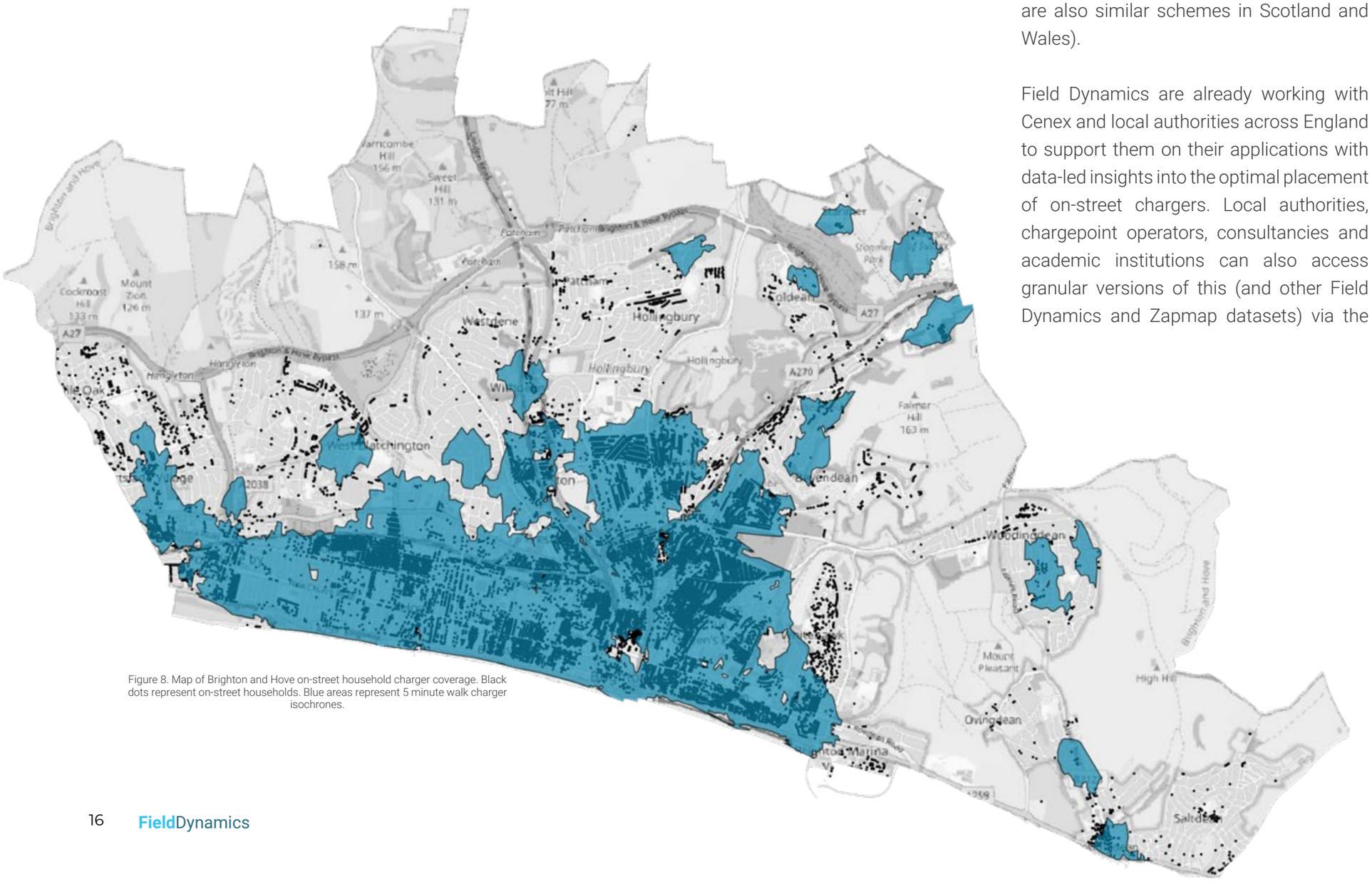


Figure 8. Map of Brighton and Hove on-street household charger coverage. Black dots represent on-street households. Blue areas represent 5 minute walk charger isochrones.

This provides local authorities within England the support and funding to deliver EV charging infrastructure for households without access to off-street charging (there are also similar schemes in Scotland and Wales).

Field Dynamics are already working with Cenex and local authorities across England to support them on their applications with data-led insights into the optimal placement of on-street chargers. Local authorities, chargepoint operators, consultancies and academic institutions can also access granular versions of this (and other Field Dynamics and Zapmap datasets) via the Cenex NEVIS suite. However, there remains an open question – what does success look like?

We know that LEVI is looking to support fair and equitable provision - we believe that part of this assessment should include the proportion of households within walking distance of a charger.

Using Brighton and Hove as an example (Fig. 8), we show what this means in practice. Each dot represents an on-street household, whilst areas shaded blue are covered by a public charger (within a 5-minute walk). Under the current provision in Brighton and Hove, the vast majority of on-street households are within a 5-minute walk of a charger.

As the LEVI program picks up momentum and more chargers are installed, we would expect this situation to improve further; i.e. the blue shaded regions expand with more households covered. We believe that this is a clear, trackable outcome from the LEVI funding. As such, we will monitor the progress of local authorities as they build up their public charging infrastructure, and report on this in further iterations of this publication.

ON STREET CHARGING REPORT 2024

IN SUMMARY

Our unique insight into the coverage of on-street households reveals a mixed picture across Great Britain, with local authorities in London covering far higher percentages of their on-street households than those outside.

There are, however, clear and positive steps being taken by many local authorities across GB to support their residents with the installation of EV charging infrastructure, and some authorities have significantly closed the gap to those in London.

We expect this trend to continue, and to be well supported by government funding packages, most notably the LEVI fund.

We intend to release these statistics on a more regular basis moving forward and will also consider alternative forms of sharing our outputs.

If you would like to hear more about how Field Dynamics could support you or your region's journey to net zero, you can contact us at info@field-dynamics.co.uk

Field Dynamics is a leading net zero data analytics consultancy we help organisations make the most efficient move to net zero. We use advanced data science, spatial analysis, and bespoke modelling solutions to help our clients make a direct and measurable impact to their business and the environment.

Our projects span both the public and private sector with a focus on electric vehicles, heat, energy generation and land use. Our clients include leading management, strategy and transport consultancies, Distribution Network Operators, Charge Point Operators, government departments and local authorities.

Discover more about Field Dynamics at
www.field-dynamics.co.uk