Independent Commission on Neighbourhoods: *Hyper-local Need* measure

Technical Methodology Paper

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Introduction

The Independent Commission on Neighbourhoods (ICON) has been set up to provide advice to government and others on neighbourhoods policy. A key question to be answered by the Commission is "what do we know about how different socio-economic needs cluster and interact at the neighbourhood level?"

This technical paper introduces a '*Hyper-local Need* measure' that has been created in order to demonstrate the ways in which complex and multiple social and economic disadvantages cluster in particular communities around the country. This measure has been created based on an evidence review that was centred around datasets that relate to the achievement of the new government's five mission objectives https://labour.org.uk/change/mission-driven-government/.

These are:

1. Kickstart economic growth: to secure the highest sustained growth in the G7 – with good jobs and productivity growth in every part of the country making everyone, not just a few, better off.
2. Make Britain a clean energy superpower: to cut bills, create jobs and deliver security with cheaper, zero-carbon electricity by 2030, accelerating to net zero.
3. Take back our streets: by halving serious violent crime and raising confidence in the police and criminal justice system to its highest levels.
4. Break down barriers to opportunity: by reforming our childcare and education systems, to make sure there is no class ceiling on the ambitions of young people in Britain.
5. Build an NHS fit for the future: that is there when people need it; with fewer lives lost to the biggest killers; in a fairer Britain, where everyone lives well for longer.

Defining the *Hyper-local Need* measure

Identifying dimensions of *Hyper-local Need*

The conceptual framework underpinning the *Hyper-local Need* measure is the government's five mission objectives (as outlined above), with this measure of *Hyper-local Need* intending to provide a quantitative means of assessing the socio-economic challenges presented within these missions at a small area level.

In order to develop this measure, each of these missions has been constructed as a 'dimension' which have then been combined to create an overall measure of *Hyper-local Need*. The dimensions are as follows:

Figure 2: *Hyper-local Need* measure dimensions	
Kickstart economic growth	Employment and worklessness in the local economy, quality of jobs, economic productivity and local infrastructure
Make Britain a clean energy superpower	Carbon footprint, fuel poverty and energy efficiency in housing
Take back our streets	Crime deprivation and high crime rates in local areas
Break down barriers to opportunity	Child education and barriers to learning, educational opportunities, quality of education settings and adult skills outcomes
Build an NHS fit for the future	Disability and social care needs in local areas, general health, access to services and mortality

Selecting the geographic unit of analysis

This section explores the approach for selecting the geography to use as the building block in constructing the *Hyper-local Need* measure. In the absence of data at the level of individuals or households, a measure that identifies *Hyper-local Need* should be constructed from data on small geographic units of a standard population size. This measure has therefore been developed as an area-based indicator. An area can be characterised as having 'high need' relative to other areas on a particular dimension of *Hyper-local Need*, on the basis that a higher proportion of people in the area are experiencing the type of need in question or if the area as a whole is lacking in infrastructure (jobs, transport links etc.) to address the identified needs. In other words, both the experience of the people in an area and the areas' infrastructure gives the area its *Hyper-local Need* characteristics.

The selection of the unit of geography to use in an area-based analysis is important as it affects both the data we can draw from, and crucially, the focus areas for intervention and resource allocation which are identified as an outcome of the research. The following key principles have been considered when selecting the appropriate unit of geography for the measure:

- It should be possible to align the geography units to statistical geography boundaries in order to link key socio-economic indicators to the geography units.
- Geography units should be of sufficient size in order to ensure they are not smaller than the smallest standard statistical geographies (Output Areas), so that it is possible to obtain key socio-economic indicators to be used in the analysis.
- Geography units should be at a neighbourhood (sub-Local Authority) level in order to capture inequalities in social infrastructure provision and participation.
- Geography units should be relatively homogenous in population size so that it is possible to make direct comparisons between communities in terms of their relative needs and community and civic strength.
- Geography units should be meaningful and recognised as areas by the people residing in them.

LSOAs were identified as the preferred unit of measure for a number of reasons:

- They only change after every census, so they are more consistent over time. Even when changes are made following census updates, these changes are capped, with a minimum of 95% of boundaries remaining unchanged. They therefore represent a more stable geography than wards.
- LSOAs are designed to be fairly homogenous in size (averaging at 1,700 people). They also nest directly with smaller statistical geographies (Output Areas).
- To support the identification of rural pockets of need, which tend to be revealed at smaller geographical scales. By contrast, single MSOAs and wards can encompass multiple villages with very different characteristics.
- Finally, LSOAs are a more commonly used geography and are increasingly used to disseminate key statistics releases.

Producing the *Hyper-local Need* measure at LSOA level would therefore enable users to benchmark the performance of high need areas against a wider range of socio-economic measures. This should increase the utility and analytical value of the indicator.

Identifying indicators

This section outlines the key socio-economic indicators which have been selected for use in creating a measure of '*Hyper-local Need*' based on the governments five mission objectives. An evidence review has been completed for each of the five dimensions, exploring the available data relevant to each theme. Indicators were selected if they fulfilled the following criteria:

- Indicators have full national coverage and are collected on a consistent basis at national level
- Indicators are available at sufficient granularity in order to make meaningful comparisons between neighbourhoods
- Indicators represent the most up-to-date measure of this particular theme
- Indicators are non-disclosive and abide by the conditions of the data protection act and GDPR

- Indicators are relevant to the five Labour missions outlined above
- Indicators are sufficiently statistically robust to be included in a measure intended for use in resource allocation.

The table below provides an overview of each of these indicators with metadata concerning:

- Source
- Timepoints the data is available for
- Geographical unit at which the data is published
- Reasons for inclusion in the dimension
- Notes associated with the indicator – including robustness issues to take into account when incorporating the data

For context, Appendix A lists other sources that were considered as part of this stage but were not included in the proposed shortlist.

Indicator	Details	Source/Date	Spatial Coverage	Reason for inclusion	Notes/caveats
Dimension: Kickstart Economic Growth					
Sub-dimension: Employment					
Universal Credit - searching for work	Shows the proportion of people receiving Universal Credit who are not working, or with very low earnings. The claimant is required to take action to secure work - or more / better paid work. The Work Coach supports them to plan their work search and preparation activity.	Department for Work and Pensions (DWP), Sept-2024	Output Area	These benefits provide non-overlapping estimates of worklessness and the strength of the labour market at small area level. They cover people who are unemployed but actively seeking employment, preparing or planning for work and people with no work requirements or excluded from the labour force due to ill health or disability.	All new workless benefits claimants now receive Universal Credit when they make a new benefit claim or if their circumstances change. However, between 2022 and 2028 the remaining legacy benefit claimants are being moved onto Universal Credit in a process called 'Managed Migration'. There is a geographic dimension to the rollout of Managed Migration which means that people in some parts of the country will be moved onto Universal Credit earlier than in other parts – leading to the potential for
Universal Credit - planning for work	Shows the proportion of people receiving Universal Credit who are expected to work in the future. Lone parent / lead carer of child aged 1 (Aged 1 - 2, prior to April 2017). The claimant is required to attend periodic interviews to plan for their return to work.	DWP, Sept-2024	Output Area		
Universal Credit - preparing for work	Shows the proportion of people receiving Universal Credit who are expected to start preparing for future	DWP, Sept-2024	Output Area		

Indicator	Details	Source/Date	Spatial Coverage	Reason for inclusion	Notes/caveats
	work, even with limited capability for work at the present time or a child aged 2 (Aged 3 - 4, prior to April 2017), The claimant is expected to take reasonable steps to prepare for work including Work Focused Interviews.				inconsistent national data. However, we have included both legacy and Universal Credit claimants in the Employment dimension – to mitigate the impacts of this.
Universal Credit - no work requirements	Shows the proportion of people receiving Universal Credit who are not expected to work at present. Health or caring responsibility prevents claimant from working or preparing for work.	DWP, Sept-2024	Output Area		
Incapacity Benefit	Persons unable to work due to illness or disability. Incapacity Benefit (IB) claimants are people who are assessed as being incapable of work and who meet the appropriate contribution conditions. The dataset also includes Severe Disablement Allowance (SDA) claimants. SDA has not been available to new claimants since April 2001, and has been incorporated into the IB dataset statistics.	DWP, Feb-2024	LSOA		
Severe Disablement Allowance	Shows the proportion of people who are out of work and receiving Severe Disablement Allowance (SDA). SDA is a workless benefit payable to people who are out of work and have been assessed as being incapable of work due to illness or disability and who meets the appropriate contribution conditions. It was replaced by Incapacity Benefit in April 2001 for all new claimants. Note, Employment and Support Allowance replaced Incapacity Benefit for all new	DWP, Feb-2024	LSOA		

Indicator	Details	Source/Date	Spatial Coverage	Reason for inclusion	Notes/caveats
	claimants from 2008. Rate calculated as = (Incapacity Benefit claimants, benefit is Severe Disablement Allowance)/(Population aged 16-64)*100				
Income Support	Shows the proportion of working age people receiving Income Support. Income support is a means tested benefit payable to people of working age who are pregnant, or a carer, or a lone parent with a child under 5 or unable to work because of sickness or disability who have a low income and are living in a household which has no more than £16,000 in savings and are working less than 16 hours per week (and their partner is working less than 24 hours a week). Note, Universal Credit began to replace Income Support for new claimants as it began to be fully rolled out in Job Centres across the country from March 2016.	DWP, Feb-2024	LSOA		
Carers Allowance	Shows the proportion of working age people receiving DWP benefits due to caring responsibilities. Figures are derived from 100% sample of administrative records from the Work and Pensions Longitudinal Study (WPLS), with all clients receiving more than one benefit counted only by their primary reason for interacting with the benefits system (to avoid double counting). The majority of those receiving benefits will be eligible for Income Support or Carers Allowance.	DWP, Feb-2024	LSOA		

Indicator	Details	Source/Date	Spatial Coverage	Reason for inclusion	Notes/caveats
Jobseekers Allowance	Shows the proportion of people receiving Jobseekers Allowance (JSA). JSA is payable to people under pensionable age who are out of work and available for, and actively seeking, work of at least 40 hours a week. Universal Credit data is not currently included in the counts. Universal Credit began to replace JSA for new claimants as it began to be fully rolled out in Job Centres across the country from April 2013.	DWP, Sept-2024	LSOA		
Sub-dimension: Quality Jobs					
Jobs density (jobs as a percentage of the working age population)	Shows the number of jobs located in the local area as a percentage of the working age population in that area. Data is taken from the Business Register and Employment Survey (BRES) of approximately 80,000 businesses and weighted to represent all sectors of the UK economy. The BRES definition of an employee is anyone working on the BRES reference date who is aged 16 years or over that the contributor directly pays from its payroll(s), in return for carrying out a full-time or part-time job or being on a training scheme.	Business Register and Employment Survey (BRES), 2023	LSOA	The density of jobs per working-age population is a useful measure of job quality in a local area because it indicates the availability of employment opportunities, reflecting the strength and diversity of the local labour market.	
Gross Value Added (GVA) per head	Shows Gross Value Added (GVA) per head. Gross value added (GVA) is the value generated by any economic unit that produces goods and services. It reflects the value of goods and services produced, less the cost of any inputs	ONS, 2022	LSOA	GVA is a standard measure of the economic activity taking place in an area with a higher GVA per head suggesting a more efficient, productive economy where resources	GVA for the UK is measured by the UK National Accounts and published each year in the annual Blue Book. The GVA is then broken down to individual countries, regions, and local

Indicator	Details	Source/Date	Spatial Coverage	Reason for inclusion	Notes/caveats
	used up in that production process. GVA is a standard measure of the economic activity taking place in an area. It comprises the majority of gross domestic product (GDP), only excluding taxes and subsidies (such as Value Added Tax and duty on fuel or alcohol).			contribute significantly to value creation. It is therefore a useful measure to help identify areas that are relatively economically productive or lagging behind.	authority districts. These official statistics in development disaggregate local authority annual GVA figures to lower-layer super output areas (LSOA) in England and Wales, and data zones (DZ) in Scotland.
% change GVA per capita from 2012 to 2022	Shows the percentage change in Gross Value Added (GVA) per capita from 2012 to 2022. Calculated as: ((GVA per capita 2022-GVA per capita 2012)/GVA per capita 2012)*100.	ONS, 2022	LSOA	Changes in GVA per capita can be used as a measure of productivity and economic development, offering an insight into potential improvements or decreases in job quality and wages in an area over the decade.	
Jobs in 'high growth' industries	Shows the proportion of all employee jobs in 'high growth' industries. This is based on the UK government's 2024 'Industrial Strategy' whitepaper, which focuses on eight growth driving sectors including: advanced manufacturing; clean energy industries; creative industries; defence; digital and technologies; financial services; life sciences; and professional and business services. Data is taken from the Business Register and Employment Survey (BRES) of approximately 80,000 businesses and weighted to represent all sectors of the UK economy. Figures are broken down by industry group, with industry groups classified to the 2007 revision to the Standard Industrial	Business Register and Employment Survey (BRES) 2023	LSOA	This data captures local economic conditions in particularly growth driving industries, measuring where employees are more likely to be working in quality jobs in 'high growth' sectors.	

Indicator	Details	Source/Date	Spatial Coverage	Reason for inclusion	Notes/caveats
	Classification (SIC)[1]. Rate calculated as = (Employment in 'high growth' sector)/(Total employment)*100.				
Median net equivalised household income	Shows the median net equivalised household PAYE and benefits income for the tax year ending 2016. The data is sourced from Pay As You Earn (PAYE) employment and pension data and Tax Credits data from HM Revenue and Customs, and benefits data from the Department for Work and Pensions.	ONS, 2015/2016	MSOA	A measure of household income derived from tax contributions and benefits data which can be used as evidence of the quality of jobs held by people living in the local area.	Data is imported at MSOA level and apportioned down to LSOA and Output Area, meaning that data has been built from MSOA averages. Although data is only available for 2015/2016, it is the most recent small area income data that is available based on tax contributions and benefit recipients (rather than using modelled data from smaller surveys that can be less reliable at accurately reflecting local variations in income at a small area level).
Higher managerial, administrative and professional occupations (Census 2021)	Shows the proportion of people in employment (aged 16+) in the approximated Social grade (N-SEC) category: 1 Higher managerial, administrative and professional occupations. An individual's approximated social grade is determined by their response to the occupation questions in the 2021 census.	Census 2021	Output Area	This measure can be used to assess the quality of jobs in an area, as managerial, administrative and professional jobs are generally more likely to offer higher pay, stability and opportunities for advancement, all of which are key attributes of desirable and high-quality employment.	
People with no qualifications	Shows the proportion of adults (aged 16+) with no academic, vocational or professional qualifications. The highest level of qualification variable was derived	Census 2021	Output Area	Qualification levels are an important measure of the skills of people living in an area and can be a useful	

[1] See Appendix D for a full list of the SIC 2007 5-digit subclasses included in this measure of 'high growth' industries

Indicator	Details	Source/Date	Spatial Coverage	Reason for inclusion	Notes/caveats
	from responses in the 2021 census to both the educational and vocational qualifications question, and the professional qualifications question.			measure of job quality as an indication of the skills required for local jobs, the earning potential and the economic opportunities in an area.	
People with level 3+ qualifications	Shows the proportion of adults (aged 16+) with highest level of qualification at level 3 or above. Level 3 qualifications include 2+A levels,4+AS levels, Higher School certificate, NVQ level 3, Advanced GNVQ. Level 4+ qualifications include Level 4/5: First degree, Higher degree, NVQ levels 4 and 5, HNC, HND, Qualified Teacher status, Qualified Medical Doctor, Qualified Dentist, Qualified Nurse, Midwife, Health Visitor Other qualifications/level unknown: Other qualifications (e.g. City and Guilds, RSA/OCR, BTEC/Edexcel), Other Professional Qualifications.	Census 2021	Output Area	Qualification levels are an important measure of the skills of people living in an area and can be a useful measure of job quality as an indication of the skills required for local jobs, the earning potential and the economic opportunities in an area.	
Sub-dimension: Infrastructure					
Broadband Download Speed (Mb/s)	Shows the average broadband download linespeed (Mbit/s) for connections in the area. This data is collected from the Ofcom annual Connected Nations reports.	Ofcom, 2023	Output Area	The average broadband speed in an area is a useful indicator of the strength of the local infrastructure, with high-speed internet connectivity now a foundational requirement for supporting businesses, remote work, education, and general economic growth.	Due to variations in broadband performance over time, this data should not be regarded as a definitive and fixed view of the UK's broadband infrastructure. However, it is still a useful measure to help identifying variations in broadband performance between areas.

Indicator	Details	Source/Date	Spatial Coverage	Reason for inclusion	Notes/caveats
Digital Propensity Index Score	The Digital Propensity Index (DPI) Score shows the online share of responses from the Census 2021. The Census 2021 online share of returns is calculated as the number of household addresses within an LSOA that submitted a census questionnaire online as a percentage of all household addresses that submitted a census questionnaire.	Office for National Statistics (ONS), 2021	LSOA	This is a measure of the proportion of people who used the internet to complete the 2021 Census and can be used as an insight into access to digital infrastructure within a local area.	
Jobs access score	Shows the overall Job access score. This measure of connectivity developed by UK Onward includes the number of jobs accessible by car and public transport from every local area (LSOA) in the country across different time horizons. It incorporates TravelTime API and the metric provides the reachable number of jobs within 15 minutes, 30 minutes, 60 minutes and 90 minutes by both driving and public transport across Great Britain. A higher score indicates greater levels of job accessibility. For more information and a link to the research paper please see here: https://www.ukonward.com/reports/network-effects/	UK Onward, 2021	LSOA	This is a measure of the level of job accessibility in an area based on connectivity by car and public transport. It is a useful measure of local infrastructure with a higher jobs access score suggesting an area has better overall connectivity and public infrastructure.	
Dimension: Make Britain a clean energy superpower					
Total carbon footprint per person (kg)	This shows the total carbon footprint per person in units of kilogrammes of carbon dioxide equivalent. This is based on seven underlying sources of emissions data: Electricity, Gas, Other Heating, Car Driving, Van Driving,	PBCC, Morgan, Malcolm, Anable, Jillian, &	LSOA	Monitoring carbon footprints provides a clear baseline for assessing progress towards emissions reduction targets. In particular it can be used to help identify areas where	Some LSOAs with high carbon footprints may be subject to data issues, you can view which LSOAs may have potential data issues in the original source here:

Indicator	Details	Source/Date	Spatial Coverage	Reason for inclusion	Notes/caveats
	Flights, and Consumption of goods and services. This data is sourced from the place-based carbon calculator produced with funding from UK Research and Innovation through the Centre for Research into Energy Demand Solutions.	Lucas, Karen. (2021)		cleaner energy resources are required in order to reduce greenhouse gas emissions and achieve net zero.	https://www.carbon.place/data warnings/. Data is published at small area level, therefore the data showing at local authority or a higher level has been aggregated from smaller geographies.
Households in Fuel Poverty	Shows an estimate of the number of households in Fuel Poverty. The definition of fuel poverty is now based on the Low Income Low Energy Efficiency (LILEE) fuel poverty metric where a household is considered fuel poor if a) it is living in a property with an energy efficiency rating of band D, E, F or G as determined by the most up-to-date Fuel Poverty Energy Efficiency Rating (FPEER) Methodology; and b) its disposable income (income after housing costs (AHC) and energy needs) would be below the poverty line.	Department for Business, Energy & Industrial Strategy (BEIS), 2022	LSOA	A high proportion of households in fuel poverty indicates that a significant number of residents struggle to afford adequate heating and energy. Fuel poverty is also linked to poor quality housing and energy inefficient homes. This measure can therefore be used to identify areas in need of energy efficiency improvements and renewable energy solutions, which will in turn lower energy bills for residents.	The indicator is estimated using regional data from the English Housing Survey and modelling down to local areas based on characteristics of the local area.
Dwellings with low energy efficiency (F-G rating)	This indicator shows the proportion of Energy Performance Certificates (EPCs) in the F-G rating band (lowest energy efficiency) for a 10-year period, from March 2013 to January 2023. An Energy Performance Certificate (EPC) provides information on the energy efficiency of a building. Since 2007, an EPC is required when a building is constructed, sold or let and it is valid for 10 years. EPCs are based on data about a building's energy features (like the building materials	Department for Levelling Up, Housing and Communities (DLUHC), Jan-2023	LSOA	Dwellings with low energy efficiency are likely to cost a lot more to heat due to poor insulation and outdated heating systems. This is a useful measure to identify areas with a high proportion of homes in need of energy efficiency upgrades.	This data does not reflect all dwellings in England and Wales, because not every dwelling has an EPC. These are only required when a dwelling is constructed, sold or let. There can be multiple EPC lodgements for the same dwelling, but we analyse the latest lodgement only so we do not double count dwellings. The Individual EPC bands are

Indicator	Details	Source/Date	Spatial Coverage	Reason for inclusion	Notes/caveats
	used, heating systems and insulation, for example), which are collected by an accredited energy assessor and are entered into government-approved software to generate the EPC.				calculated based on the energy efficiency scores at the time the EPC lodgement was assessed. This means that our statistics do not necessarily reflect energy efficiency improvements as the majority of alterations don't require a new EPC to be generated.
Dimension: Take back our streets					
IoD 2019 Crime domain rank	Crime is an important feature of deprivation that has major effects on individuals and communities. The Indices of Deprivation (IoD) 2019 Crime Domain measures the risk of personal and material victimisation at local level in four ways. The following indicators are included: Violence: the number of recorded violent crimes (18 recorded crime types in 2016/17; 20 recorded crime types in 2017/18) per 1,000 at risk population; Burglary: The number of recorded burglaries (4 recorded crime types) per 1,000 at risk population; Theft: the number of recorded thefts (5 recorded crime types) per 1,000 at risk population; Criminal Damage: number of recorded crimes (8 recorded crime types) per 1,000 at risk population. Data shows Average LSOA Rank, a lower rank indicates that an area is experiencing high levels of deprivation.	Ministry of Housing Communities and Local Government (MHCLG), 2019	LSOA	An area experiencing high levels of crime deprivation based on the IoD 2019 crime domain will be experiencing high rates of the following crimes: violent crime, burglary, theft and criminal damage. Understanding crime rates is vital for effectively addressing the safety concerns of local residents and highlighting the areas where community engagement and targeted interventions are needed in order to "take back our streets."	In developing the IoD 2019 crime domain, the Police UK data used in constructing the domain was subject to thorough checks and processes in order to eliminate the risk of relying on miscounted or missing crime counts. For this reason, the IoD 2019 crime domain is the most reliable small area level measure of crime in a local area. See the tab 'Other indicators considered' for more details on why we do not recommend using raw data from Police UK (covering recorded crimes by type) in this domain.

Indicator	Details	Source/Date	Spatial Coverage	Reason for inclusion	Notes/caveats
Dimension: Break down barriers to opportunity					
Sub-dimension: Child education					
Childcare accessibility ratio	Childcare accessibility is a ratio of childcare places to number of children aged 7 and under in each administrative boundary. A higher number of places per 100 children indicates better access.	Ofsted, ONS 2023	LSOA	Access to early education and childcare fosters essential skills in children, helping to close achievement gaps and break down barriers to future educational opportunities.	
Children aged 0-19 in relative low-income families	Shows the proportion of children aged 0-19 in relative low-income families. Relative low income is defined as a family in low income Before Housing Costs (BHC) in the reference year. A family must have claimed one or more of Universal Credit, Tax Credits or Housing Benefit at any point in the year to be classed as low income in these statistics. Children are dependent individuals aged under 16; or aged 16 to 19 in full-time non-advanced education.	Department for Work and Pensions (DWP, 2023)	Output Area	This is a measure of children living in poverty and is a key area to address in order to ensure that children have the opportunity to reach their full potential, regardless of their economic background.	
IoD 2019 Children and Young People Sub-domain Rank	The Indices of Deprivation (IoD) 2019 Children and Young People sub-domain measures the lack of attainment in the local population. The following indicators are included: Key Stage 2 attainment: The scaled score of pupils taking Mathematics, English reading and English grammar, punctuation and spelling Key Stage 2 exams; Key Stage 4 attainment: The average capped points score of pupils taking Key Stage 4; Secondary school absence: The	Ministry of Housing Communities and Local Government (MHCLG), 2019	LSOA	The Children and Young People sub-domain provides a robust small area level measure of educational attainment within a local area. An area with high levels of deprivation on this domain will be experiencing greater challenges in ensuring that all children experience education equally. No alternative measures of educational	

Indicator	Details	Source/Date	Spatial Coverage	Reason for inclusion	Notes/caveats
	proportion of authorised and unauthorised absences from secondary school; Staying on in education post 16: The proportion of young people not staying on in school or non-advanced education above age 16 and Entry to higher education: The proportion of young people aged under 21 not entering higher education. Data shows Average LSOA Rank, a lower rank indicates that an area is experiencing high levels of deprivation.			attainment or absence at sub-Local Authority level have been published since 2014/15.	
Sub-dimension: Education opportunities					
% KS2 pupils meeting the expected standard in reading, writing and maths	Shows the percentage of KS2 pupils meeting the expected standard in reading, writing and maths (combined). These statistics cover attainment in assessments taken by pupils at the end of year 6, when most are age 11.	Dept for Education (DfE), 2022/2023	LA	Attainment at primary school is a key measure of the success of childcare and education systems. While the data is only available at Local Authority level, it provides a considerably more up to date measure of attainment than that provided by the Children and Young People domain, and is intended to compliment this measure.	Data is only available at Local Authority level.
% of KS4 pupils achieving grades 5 or above in Eng and maths GCSEs	Shows the percentage of KS4 pupils achieving grades 5 or above in English and mathematics GCSEs. This measure looks at the percentage of pupils achieving grade 5 or above in both English and maths GCSEs. To count for this measure a pupil would have to achieve a grade 5 or above in either	DFE, 2022/2023	LA	Attainment at secondary school is a key measure of the success of childcare and education systems. While the data is only available at Local Authority level, it provides a considerably more up to date measure of attainment than	Data is only available at Local Authority level.

Indicator	Details	Source/Date	Spatial Coverage	Reason for inclusion	Notes/caveats
	English literature or English language. There is no requirement to sit both.			that provided by the Children and Young People domain, and is intended to compliment this measure.	
Progress 8 scores	A Progress 8 score is a measure of how much a student has progressed between the end of primary school and the end of secondary school	DfE, 2022/2023	LA	Progress 8 scores are a useful measure of the quality of the education system. As a measure, it helps to identify how effectively the school supports students in making academic progress across a range of subjects, regardless of their starting points. This allows for a fair comparison between schools with different student demographics and abilities. While the data is only available at Local Authority level, it provides a considerably more up to date measure of attainment than that provided by the Children and Young People domain, and is intended to compliment this measure.	Data is only available at Local Authority level.
Schools inspected as "Good" or "Outstanding" by Ofsted	Shows the proportion of schools considered to be "Good" or "Outstanding" based on their most recent Ofsted inspection.	DfE, 2022/2023	LA	Ofsted school inspection data can be used as a measure of success of the education system by providing a comprehensive picture of school performance, whilst supporting the continuous improvement of education	Data is only available at Local Authority level. There is also considerable variation in Ofsted school assessment periods for different educational institutions, with a considerable time lag between assessment periods for some institutions. By

Indicator	Details	Source/Date	Spatial Coverage	Reason for inclusion	Notes/caveats
				settings to benefit students and communities.	contrast, new institutions may not yet have received an inspection
Dimension: Build an NHS fit for the future					
Sub-dimension: Disability and social care					
Disability benefit (DLA)	Shows the proportion of people who are disabled and receiving Disability Living Allowance (DLA). DLA is payable to children and adults who become disabled before the age of 65, who need help with personal care or have walking difficulties because they are physically or mentally disabled. People can receive DLA whether they are in or out of work. It is non-means tested and is unaffected by income or savings of the claimant. DLA provides support for paying with additional care or mobility requirements associated with a disability. Please note, from April 2013 Personal Independence Payment (PIP) has replaced DLA for all new claimants aged 16-64, while existing DLA claimants are being slowly moved on to PIP. Therefore, DLA no longer represents the total count of disability benefit claimants for those aged 16-64.	DWP, Feb-2024	LSOA	These measures give an overview of the disability and social care needs in a local area and provide an insight into the level of resources required to adequately support health and well-being at a small area level. They cover measures of both self-reported long-term illness and people receiving benefits due to ill health or disability.	
Personal Independence Payment (PIP)	Shows the proportion of working age people receiving Personal Independence Payment (PIP). PIP helps with some of the extra costs caused by long-term disability, ill-health or terminal ill-health. From 8th April 2013	DWP, Jul-2024	Output Area		

Indicator	Details	Source/Date	Spatial Coverage	Reason for inclusion	Notes/caveats
	DWP started to replace Disability Living Allowance (DLA) for working age people with PIP. Note only claims in payment are included in the indicator.				
People with a limiting long-term illness	Shows the proportion of residents with a limiting long-term illness. Figures are taken from responses to the 2021 Census, based on a self-assessment whether or not a person has a limiting long-term illness, health problem or disability which limits their daily activities or the work they can do, including problems that are due to old age.	Census 2021	Output Area		
Older people social care benefit (Attendance Allowance)	Shows the proportion of people aged 65+ who have social care needs and are receiving Attendance Allowance (AA). AA is payable to people over the age of 65 who are so severely disabled, physically or mentally, that they need a great deal of help with personal care or supervision.	DWP, Feb-2024	LSOA		
Sub-dimension: General health					
People with bad or very bad health (Census 2021)	Shows the proportion of people that reported to have not good health. Figures are self-reported and taken from the 2021 Census. As Census 2021 was during a unique period of rapid change, take care when using this data for planning purposes.	Census 2021	Output Area	Self-reported levels of bad or very bad health can be used to assess the general health of the population, providing an overview of where more support is needed to help people live well for longer.	
Sub-dimension: Access					

Indicator	Details	Source/Date	Spatial Coverage	Reason for inclusion	Notes/caveats
Travel time to nearest Hospital by public transport/walk	Travel times in minutes to a hospital by public transport/walking and cycling. These statistics are derived from the analysis of spatial data on public transport timetables; road, cycle and footpath networks; population and key local services. The data shows the average minimum travel time - the shortest travel time by walking and public transport, averaged over the LSOA. Where the shortest journey is by public transport, an average of five minutes is added to allow for a margin for catching the service, but if a quicker walking journey is available, this will be used with nothing added.	Dept for Transport (DfT), 2019	LSOA	Travel times to key health services are an important measure of accessibility and connectivity, providing insight into the areas where it may be harder to get the help that is needed to support better health outcomes.	
Travel time to nearest GP by public transport/walk	Travel times in minutes to a GP (general practitioner) by public transport/walking and cycling.	DfT, 2019	LSOA		
GP appointments per 1,000 patients	The number of patients per FTE GPS is a new measure introduced to capture connectivity in terms of the ability to access services based on service availability rather than location of services. NHS England provides data on the number of patients registered at the practice and the number Full-Time Equivalent (FTE) GPs. From NHS England it is also possible to identify the LSOA location of all patients registered at each GP. Using that information, it is possible to attribute GP/Patient ratio scores to each LSOA in England.	NHS England, Oct-2022	LSOA	This is a useful measure of the availability of GP appointments per patient and will highlight areas where lack of access to health services is a potential issue to improving people's health outcomes.	

Indicator	Details	Source/Date	Spatial Coverage	Reason for inclusion	Notes/caveats
Sub-dimension: Mortality					
Life Expectancy at birth by gender	Life Expectancy data is calculated using mortality rates by single age bands and is a measure of the age a person being born today can expect to live until.	ONS, 2016-2019	MSOA	Life expectancy reflects the average number of years a person is expected to live based on current mortality rates, providing a broad summary of health outcomes and mortality trends across a population.	Data is published at MSOA level and apportioned down to LSOA and Output Area before being aggregated to other areas using a population weighted aggregation method
Deaths from all causes (age-standardised)	Shows age standardised estimates of deaths from all causes. The data is presented as a standardised mortality ratio of calculated by dividing the observed total deaths in the area (by five-year age and gender band) by the expected deaths (applying age-specific death rates for England) and multiplying by 100.	ONS, 2016-2020	MSOA	Age-standardised rates are used to allow comparison between populations which may contain different proportions of people of different ages. Without standardisation, areas with a larger elderly population would appear to have a higher mortality rate simply due to age differences, rather than reflecting underlying health disparities or causes of early death. By adjusting for age, these rates can highlight whether certain areas experience higher premature death rates relative to others in order to help identify regions with significant health challenges, such as higher rates of chronic diseases, poor healthcare access, or socio-	Data is published at MSOA level and apportioned down to LSOA and Output Area before being aggregated to other areas using a population weighted aggregation method

Indicator	Details	Source/Date	Spatial Coverage	Reason for inclusion	Notes/caveats
				economic issues that contribute to early mortality.	

About this Technical Report

This report presents the conceptual framework behind the *Hyper-local Need* measure; the methodology for creating the dimensions and the overall composite measure; the component indicators and dimensions and the decisions taken to inform the methodological approach. It also includes an analysis of the results, using visualisations to identify the neighbourhoods with the highest needs on each of the mission areas and the overall measure of *Hyper-local Need*.

Overview of the methodology used to construct a measure of *Hyper-local Need*

This section provides an overview of the methodology used to construct the measure of *Hyper-local Need*, which has been developed following a data driven evidence review guided by the government's five mission objectives.

The construction of the *Hyper-local Need* measure broadly consists of the following seven stages. These stages fulfil the purposes of defining the data inputs and data processing procedures, and producing the final measure. Each of these stages is described in more detail in the following sections of this report.

- Dimensions of *Hyper-local Need* are identified.
- The unit of geography is selected.
- Indicators are chosen to provide the best possible measure of each dimension of *Hyper-local Need* at the specified unit of geography.
- 'Shrinkage estimation' is used to improve reliability of the small area data[2].
- Indicators are combined to form the dimensions, generating separate dimension scores. These can be regarded as measures in their own right – the dimension scores[3].
- Dimension scores are ranked and the dimension ranks are transformed to a specified exponential distribution[4].
- The exponentially transformed dimension scores are combined using appropriate dimension weights to form an overall *Hyper-local Need* measure at small area level. This stage completes the construction of the *Hyper-local Need* measure.

A note on the *Hyper-local Need* measure

The *Hyper-local Need* measure has been developed as a proof of concept using the best available open data sources. It should not be directly compared to other multi-dimensional measures such as the government's Indices of Deprivation. There are a number of key differences in approach:

[2] See Methods for data processing: Applying shrinkage to improve the robustness of indicators and Appendix C for description of the shrinkage technique.
[3] In dimensions where there are sub- dimensions, this stage involves first combining the indicators into a sub- dimensions score. The sub- dimensions scores are then ranked and transformed to an exponential distribution before being combined into their respective dimensions scores.
[4] See Methods for data processing: Step 9 Weighting domains and Appendix D for description of the exponential transformation.

1) The *Hyper-local Need* measure is derived exclusively from open data sources. Researchers were not able to make use of special access internal administrative data sources managed by government departments and held in protected research environments such as the UK Data Service or the Office for National Statistics Secure Research Service.
2) The indicators incorporated into the measure have been selected on the basis of relevance to the five Labour mission objectives. As such, they do not attempt to measure all aspects of socio-economic need or deprivation.

Methodology for Data Processing

This section provides a breakdown of the steps taken in processing the data detailed above and creating the dimensions and overall measure of *Hyper-local Need*.

Step 1: Convert all indicators to LSOA geography

The *Hyper-local Need* measure has been produced at Lower-Layer Super Output Area (LSOA) geography (using the updated 2021 version of the LSOA boundaries which were developed as part of the Census 2021 outputs). However, a number of the indicators in the measure are not published at 2021 LSOA level. It is therefore necessary to convert these indicators to 2021 LSOA geographies. The table below outlines our approach to converting indicators to 2021 LSOA level:

Geography	Indicators	Approach to conversion
2021 Output Area	Universal Credit - searching for work Universal Credit - planning for work Universal Credit - preparing for work Universal Credit - no work requirements Higher managerial, administrative and professional occupations Broadband Download Speed (Mb/s) Children aged 0-19 in relative low-income families Personal Independence Payment (PIP) People with a limiting long-term illness People with bad or very bad health People with no qualifications People with level 3+ qualifications	Use the Output Area to LSOA level lookup table from the ONS Census 2021 geography products to aggregate to LSOA.

MSOA	Median net equivalised household income Life Expectancy at birth by gender Deaths from all causes (age-standardised)	Use the 2011 Output Area to 2011 MSOA Look-up table to apportion data to 2011 Output Area. Overlay the 2011 and 2021 Output Area boundaries with individual residential postcode data from the ONS Postcode directory. Apply a point-in-polygon method to calculate the number of postcodes that fall within each 2011 and 2021 Output Area boundaries. Use this to weight the extent of overlap between 2011 and 2021 Output Areas. Apply this weighting to generate 2021 Output Area estimates. Aggregate from 2021 Output Area to 2021 LSOA using the Output Area to LSOA level lookup table from the ONS Census 2021 geography products.
Lower Tier Local Authority	% KS2 pupils meeting the expected standard in reading, writing and maths (combined) % KS4 pupils achieving grades 5 or above in English and mathematics GCSEs Progress 8 scores	Use the Lower-Layer Super Output Area (2021) to LAD (April 2023) look-up table to apportion data to 2021 LSOAs, generating a value for each LSOA based on the value for the Local Authority it falls within.
Upper tier Local Authority	% schools inspected as "Good" or "Outstanding" by Ofsted	Use the Lower-Layer Super Output Area (2021) to Upper Tier Local Authorities (April 2023) look-up table to apportion data to 2021 LSOAs, generating a value for each LSOA based on the value for the Local Authority it falls within.

Step 2: Quality assurance of the data

The next step was to comprehensively check the distributions of all the indicators at LSOA level to ensure that all indicators have passed the relevant fitness tests and are “fit for purpose”. These tests include excluding indicators with high numbers of zeros or equal upper limits (for example where a large number of areas have values of 100%) which would distort the measure. All of the indicators selected above passed these quality assurance tests.[5]

Step 3: Producing composite indicators

[5] Note: data is missing/suppressed for Isles of Scilly for all time points of the KS2 attainment and Ofsted outcomes datasets. For this reason, we have excluded Isles of Scilly from the analysis on the grounds of missing data.

A small subset of the indicators have been amalgamated to provide composite indicators before combining with the other indicators to create dimension scores. The purpose of creating composite indicators is to produce more robust data that captures multiple facets of what the indicator is intending to measure. The following indicators are grouped together:

Dimension	Sub-dimension	Composite indicator	Indicators combined
Kickstart economic growth	Employment	Worklessness benefits	Universal Credit - searching for work Universal Credit - planning for work Universal Credit - preparing for work Universal Credit - no work requirements Incapacity Benefit Severe Disablement Allowance Income Support Carers Allowance Jobseekers Allowance
Build an NHS fit for the future	Disability and social care	Disability and social care benefits	Disability benefit (DLA) Personal Independence Payment (PIP) Older people social care benefit (Attendance Allowance)

Each of the indicators in these composite measures are benefit claimant counts. Because the receipt of each benefit is dependent on the time of roll out of the benefit, benefit conditionality criteria and the age of the claimant - these indicators provide non-overlapping counts.

These composite indicators were therefore created by summing the counts of each non-overlapping benefit, creating a numerator that could then be used alongside population denominators when applying shrinkage in the next step.

Step 4: Applying shrinkage to improve the robustness of indicators

Where a rate or other measure of *Hyper-local Need* for a small area is based on small numbers, the resulting estimate may be unreliable, with an unacceptably high standard error. The technique of shrinkage estimation is used to 'borrow strength' from larger areas to increase the reliability of small area data; the impact of shrinkage will tend to move an LSOA's score towards that of their parent higher-level area. Shrinkage moderates the levels of unreliability in the dataset and reduces the impact of chance fluctuations from year to year. Such scores occur most commonly where numbers are small at LSOA level and the event is thus relatively rare. This may be the case for the indicator as a whole or only for particular LSOAs. In shrinkage estimation the score for a small area is estimated as a weighted combination of that small area's score and the mean value for a larger area from which the smaller areas within the larger area borrow strength. We have used the

most up to date set of Local Authority Districts as the larger area in the shrinkage calculation for this measure. LSOAs within a single Local Authority District share issues relating to local governance. To a certain extent, they may also share issues relating to labour market sub-climates. Shrinkage has been applied to all indicators in the measure, other than the educational attainment indicators in the 'Break down barriers to opportunity' dimension, as these are already based on Local Authority District data. Further details about the shrinkage technique are given in Appendix B.

Step 5: Ensuring that all indicators are "pointing in the same direction"

In order to combine the indicators into dimensions, it is necessary for each of the indicators to be orientated in the same direction. However, for some of the indicators included in the *Hyper-local Need* measure, a high value indicates low levels of need – for example an area with high Gross Value Added (GVA) per head would be measured as having lower levels of need. By contrast, for other indicators, a high score denotes high levels of need – for example areas with high benefit claimant rates. It is necessary therefore to 'reverse the polarity' for some scores to ensure that a high value is negative for all indicators – so they can be consistently combined.

Step 6: Standardisation

When combining measures, it is important to ensure that indicator scores are comparable and that the weighting of dimensions is not distorted by the variation in distribution across different indicators. The indicators in the *Hyper-local Need* measure are based on different metrics and each indicator in the measure needs to be standardised to ensure that they have a common distribution, so that indicators can be combined without a single indicator dominating due to having a wide distribution. Indicators in the *Hyper-local Need* measure have been standardised by ranking each of the indicators and then transforming to a normal distribution.

Step 7: Weighting

Because the *Hyper-local Need* measure is a composite measure, decisions have to be made as to the weight given to the various indicators and dimensions of the measure. There are a number possible approaches to weighting the indicators in a dimension. Option 1 is to provide equal weightings to each of the indicators in a dimension. Option 2 is to apply different weights depending on theoretical judgements regarding the suitability of indicators in the model. Examples of this approach include applying higher weightings to indicators which are constructed from more robust administrative data sources and lower weightings to data from modelled data sources. Alternatively, higher weightings can be applied to indicators which more closely match the issue that is being captured – this can be ascertained through a Discrete Choice Experiment (DCE) – a survey of key stakeholders and people from impacted communities identifying the relative importance of indicators. Option 3 is to introduce a statistical technique called Maximum Likelihood Factor Analysis to determine the weights of the indicators within each dimension. Factor analysis works most effectively where there is a single overwhelming factor which explains the performance on a set of indicators within a dimension and where indicators within a dimension exert an influence on one another. A key

advantage of using factor analysis is that it takes into account 'double-counting' within dimensions. However, if there is no underlying factor common among the indicators in a dimension, factor analysis is less effective. Factor analysis is also not statistically robust with very few indicators (e.g. only two within a sub-dimension).

Having reviewed the indicators in each dimension, it was determined that an equal weighting would be applied to all of the indicators in each of the sub-dimensions. This is largely due to the simplicity and transparency of applying equal weightings and because there is no clear rationale for assigning differential weightings within each sub-dimension. Equal weights also reflect the equal importance afforded to each of the indicators within each dimension. It was deemed less appropriate to apply factor analysis to any of the sub-dimensions for a number of reasons: 1) In most cases there were two or fewer indicators in a sub-dimension – so factor analysis was not appropriate, 2) indicators within a sub-dimension did not sufficiently correlate, suggesting that while the sub-dimensions were conceptually coherent, the individual indicators did not measure the same underlying factor.

Weightings were also applied to each of the sub-dimensions and dimensions so that they could be combined to produce the overall composite measure.

The table below provides details of the weightings applied to each dimension and the reasoning behind this:

Dimension	Sub-dimensions	Weighting and explanation
Kickstart economic growth	Employment Quality jobs Infrastructure	Equal weighting is applied for simplicity and transparency and with no clear rationale for assigning differential weights – affording equal importance to each of the measures.
Make Britain a clean energy superpower		Equal weighting is applied for simplicity and transparency and with no clear rationale for assigning differential weights – affording equal importance to each of the measures.
Take back our streets		Dimension based on one indicator; no weighting required

Break down barriers to opportunity	Child education Education opportunities	Equal weightings applied to all indicators within sub-dimensions and in constructing of overall dimension based on sub-dimension scores. Equal weighting applied for simplicity and transparency and with no clear rationale for assigning differential weights – affording equal importance to each of the measures.
Build an NHS fit for the future	Disability and social care General health Access Mortality	Equal weightings applied to all indicators within sub-dimensions and in constructing of overall dimension based on sub-dimension scores. Equal weighting applied for simplicity and transparency and with no clear rationale for assigning differential weights – affording equal importance to each of the measures.

The weighted and standardised indicators are combined to form sub-dimension scores[6] and dimension scores. The combination process involves summing each of the standardised indicator scores together for all of the indicators within a dimension/sub-dimension. The sub-dimensions are then standardised (using the exponential transformation method outlined in step 8 below) and added together to form dimension scores.

Step 8: Standardising dimensions

The five dimension scores are then combined to produce the overall *Hyper-local Need* measure. However, each of the dimensions will be on a different scale to one another, with three of the five dimensions produced from combined sub-dimension scores, one dimension produced from combined indicators and one based on a single standardised measure. It was therefore necessary to standardise the dimension scores before combining. The method of standardisation was to transform the dimensions to a specified exponential distribution using an exponential transformation function (see Appendix C for details). The exponentially transformed sub-dimension/dimension scores were then combined to form an overall '*Hyper-local Need*' measure at LSOA level. The exponential transformation method of standardisation differs from the normal distribution method as it gives more emphasis on the top end of the distribution (the areas with the highest scores) and so facilitates identification of the areas with the highest levels of need, in order to control cancellation effects (e.g. high levels of deprivation in one dimension are not completely cancelled out by low levels of deprivation in a different dimension) and ensures that areas that perform

[6] With the exception of *Take back our streets* and *Make Britain a clean energy superpower* dimensions, as these do not contain any sub-dimensions.

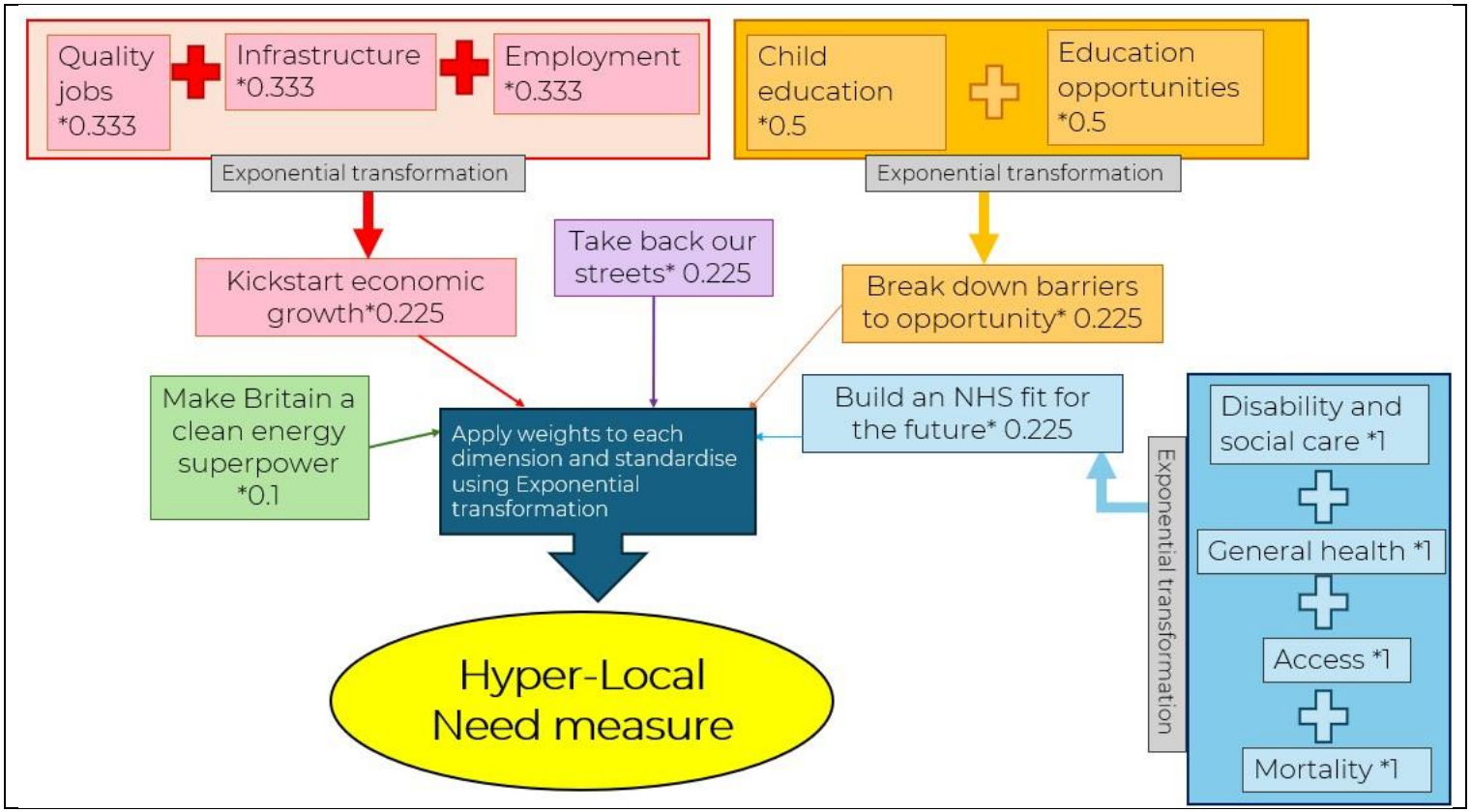
particularly badly on one aspect of *Hyper-local Need* are moved closer to the high end of the *Hyper-local Need* spectrum even when they show positive outcomes on other indicators.

Step 9: Weighting dimensions

The final stage for producing the *Hyper-local Need* measure is to assign weights to the five dimensions that have been created – to apply to the dimension scores before importing. It is important to note that all potential combinations of dimensions involve weights. If, after standardisation, the dimensions are simply added together, this gives each dimension an equal weight. It is intended that the weights should be explicit and based on clear criteria. Part of this commitment to transparent weights involves the standardisation of the dimension as outlined above. This ensures that the dimensions can be combined without 'hidden' weights. Having standardised the dimensions, it is then necessary to choose explicit weights.

Higher weightings have been applied to four dimensions: 'Kickstart economic growth', 'Take back our streets', 'Break down barriers to opportunity' and 'Build an NHS fit for the future' (*0.225) and a lower weighting has been applied to the 'Make Britain a clean energy superpower' dimension (*0.1) This is largely a policy driven decision - based on the relative prominence of these missions within the government's policy agenda.

Once each dimension was weighted, the dimensions were combined to produce the overall *Hyper-local Need* measure. The combination process involves summing each of the weighted standardised dimension scores (the exponentially transformed dimension scores * weight) together to produce an overall *Hyper-local Need* measure score (see flow chart below).


Quality jobs *0.333
Infrastructure *0.333
Employment *0.333
Exponential transformation
Child education *0.5
Education opportunities *0.5
Exponential transformation
Kickstart economic growth*0.225
Take back our streets* 0.225
Break down barriers to opportunity* 0.225
Make Britain a clean energy superpower *0.1
Apply weights to each dimension and standardise using Exponential transformation
Build an NHS fit for the future* 0.225
Exponential transformation
Disability and social care *1
General health *1
Access *1
Mortality *1
Hyper-Local Need measure

Analysis and outcomes

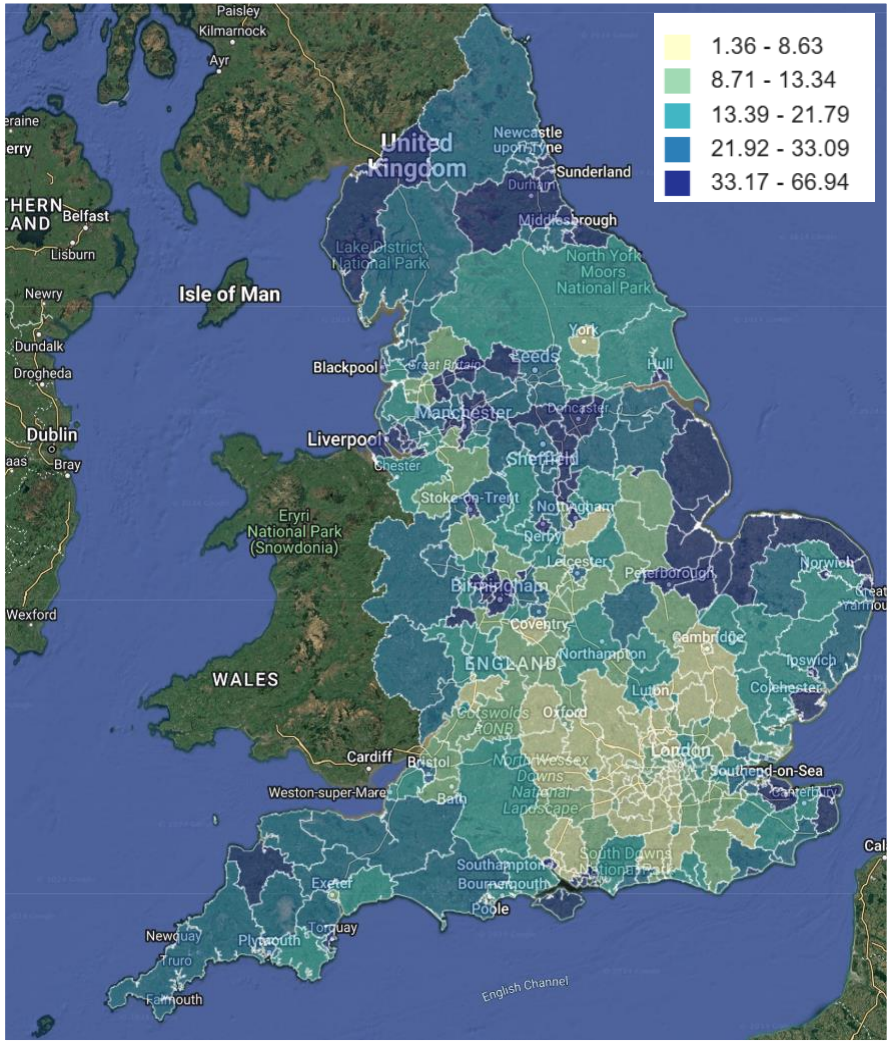
The maps below show the outcome of the *Hyper-local Need* measure at Local Authority level, presenting the overall score followed by a breakdown of each of the five domain scores (a higher score = higher levels of need). For each of the visualisations below, the map on the left shows the dimension score as a comparison across all Local Authorities in England. The 'Hotspots' map on the right is based on the top 20% of areas across England only, specifically highlighting the Local Authorities with the highest level of need on each dimension.

Hyper-local Need Measure

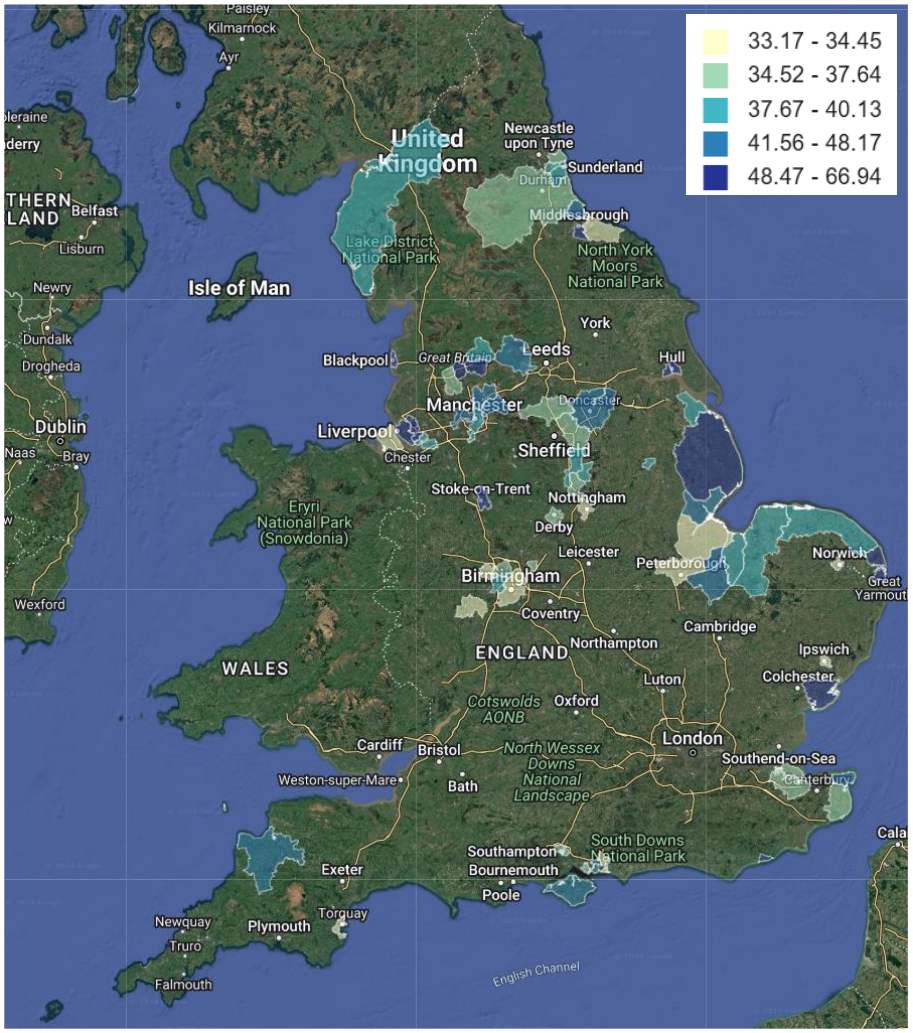
Local Authority analysis

As highlighted in the maps below, there are notable regional differences in the overall levels of *hyper-local need* across Local Authorities in England. The areas with the highest *hyper-local need* (shaded darker blue on the map) are largely concentrated in the North of England (around cities such as Manchester, Liverpool, Sunderland and Newcastle), as well as other post-industrial regions around the West Midlands (such as Birmingham). Coastal areas also feature prominently amongst the Local Authorities with the highest levels of *hyper-local need*, with particular concentrations around the Lincolnshire, Norfolk, Kent and Essex coastlines. These areas will be facing the greatest challenges across all five of the government's new missions, meaning the combined impact of tackling economic growth, ensuring accessibility to clean energy, lowering crime, increasing education opportunities and reducing health pressures on the NHS.

Hyper-local Need Measure by Local Authority

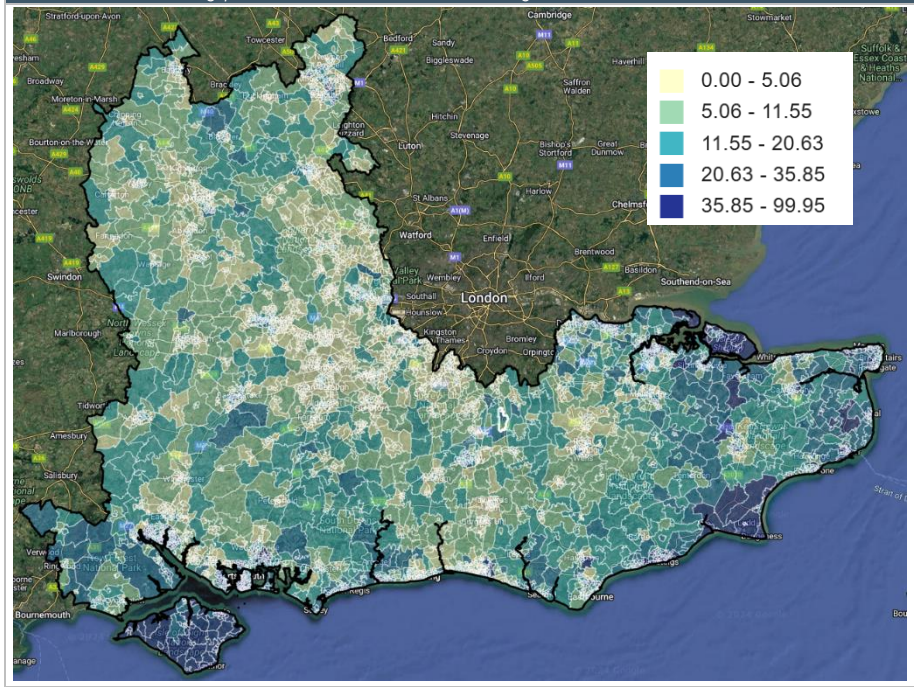
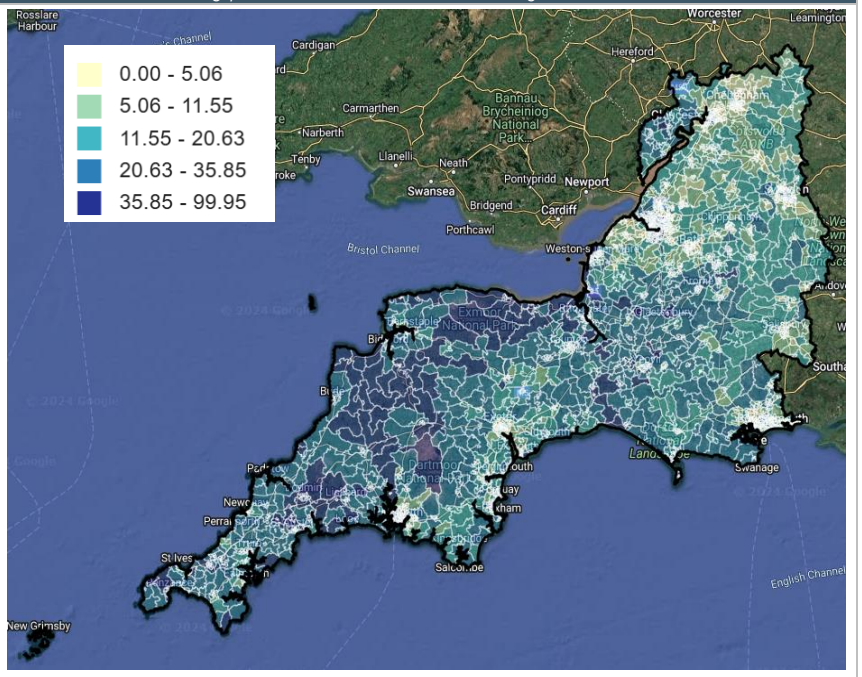


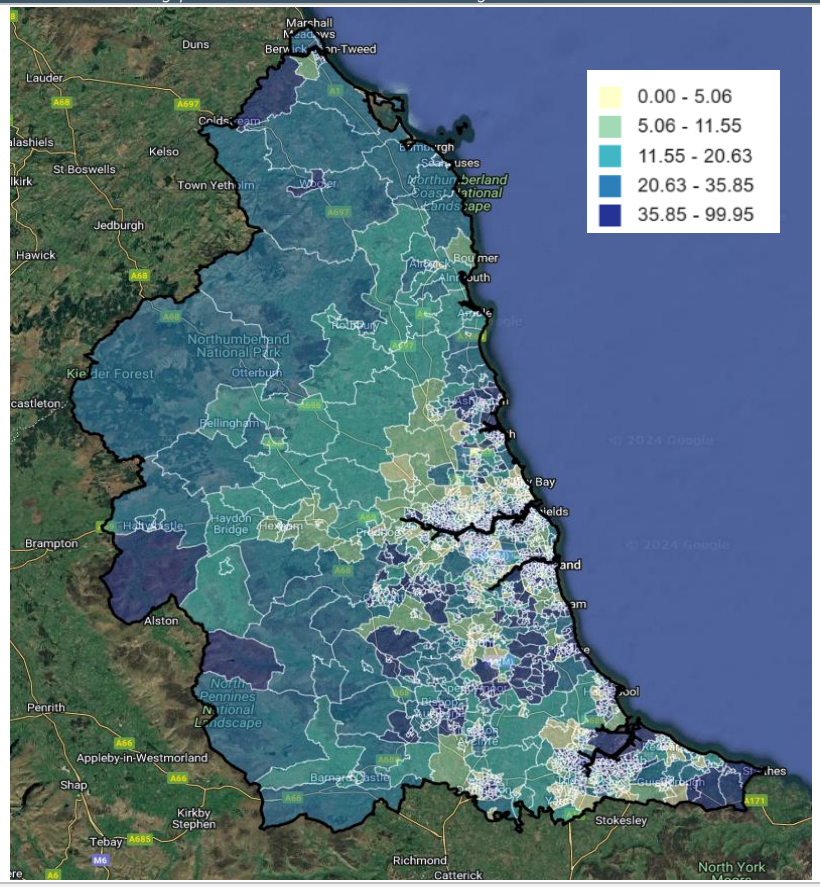
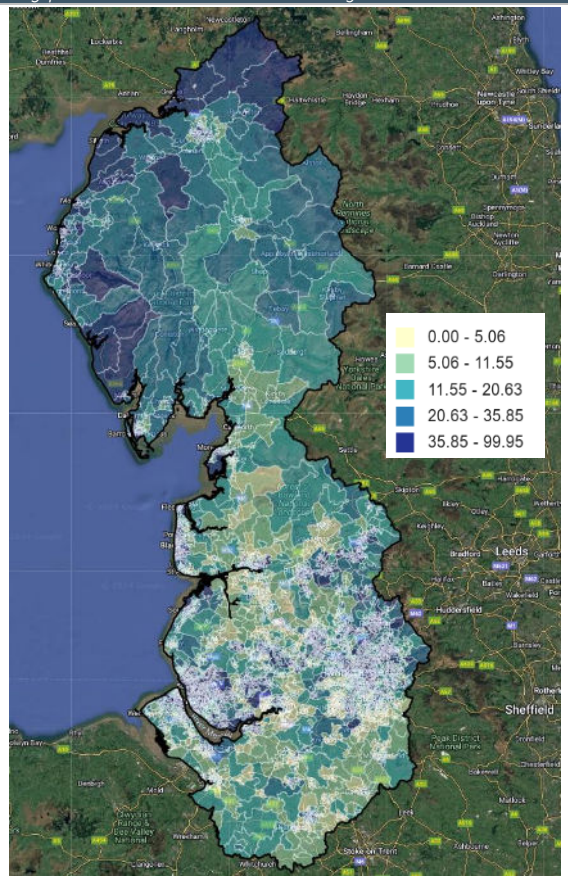
Hotspots - *Hyper-local Need* Measure by Local Authority

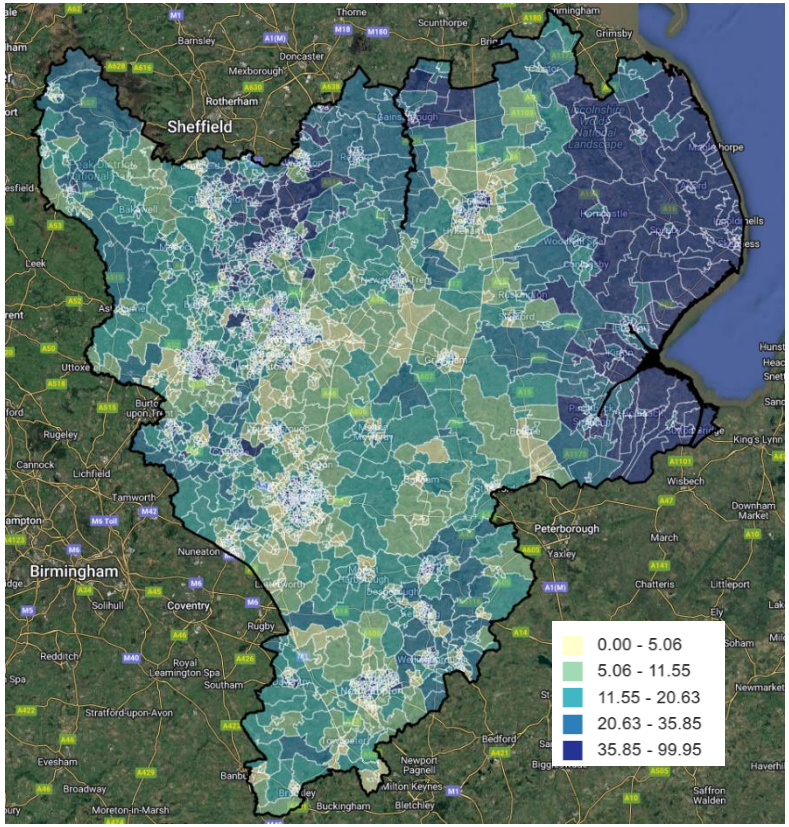
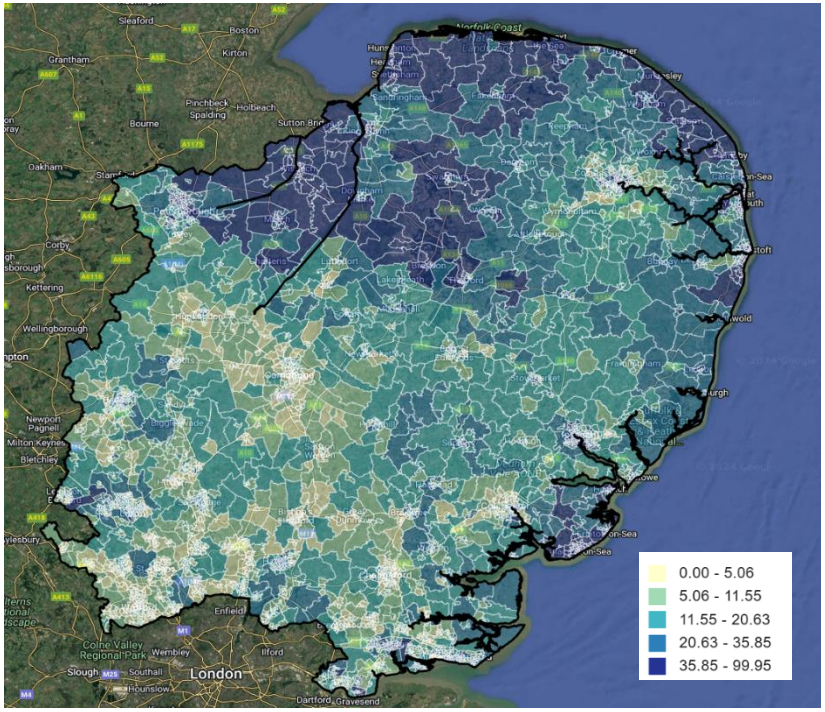


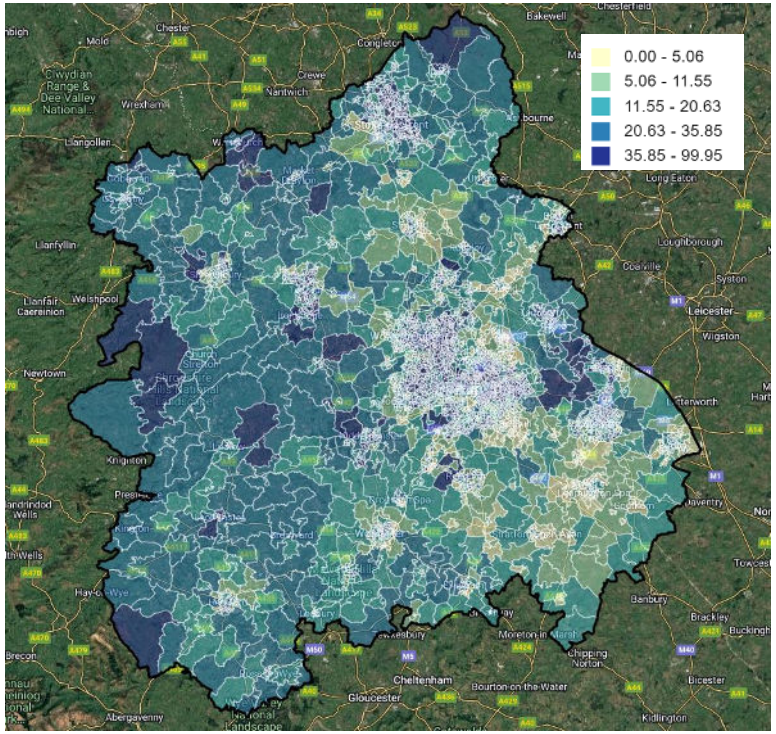
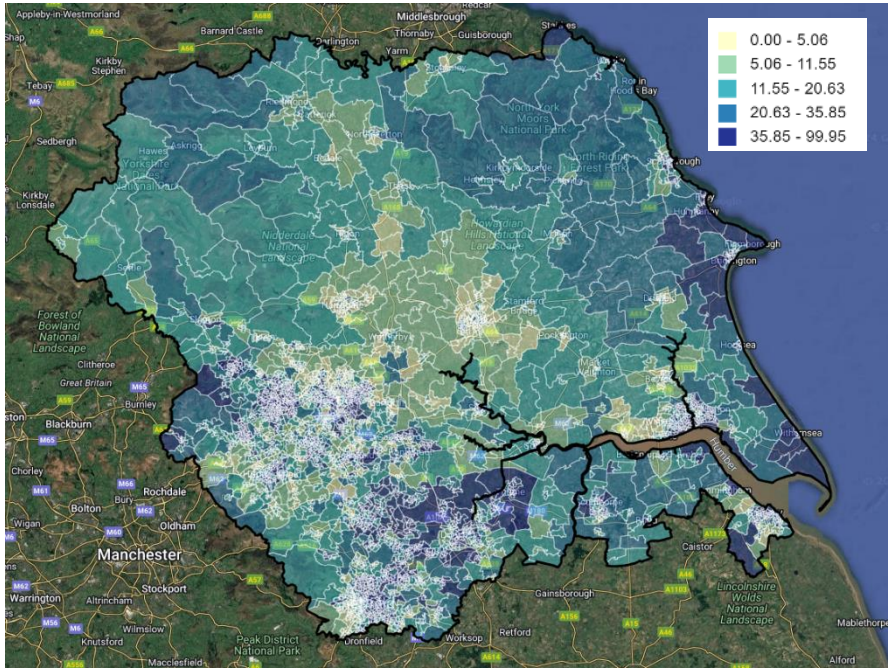
LSOA analysis by region

The visualisations below show the *hyper-local need* measure mapped at LSOA level by region across England.

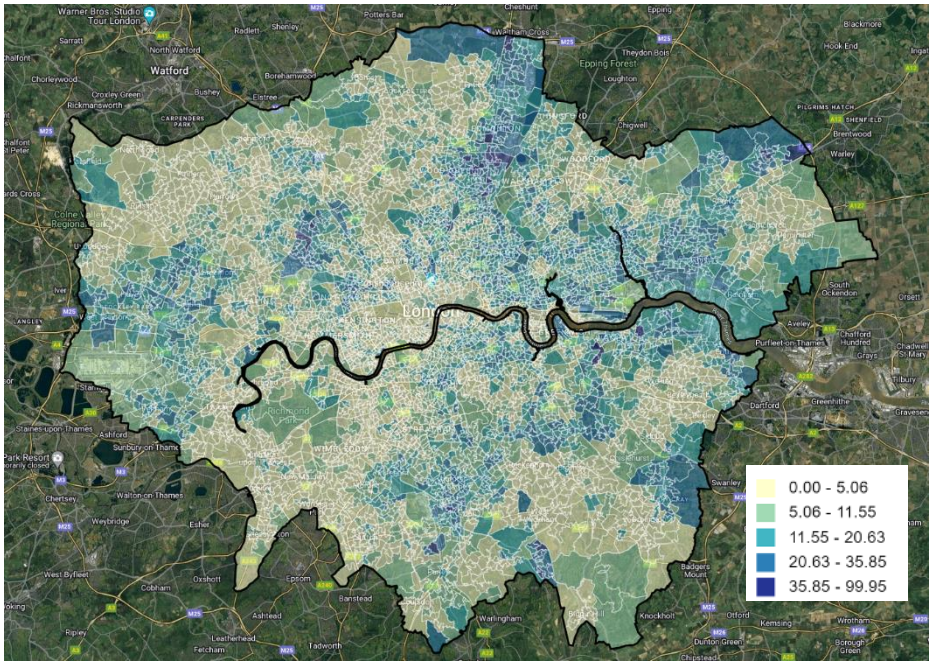
South East – *Hyper-local Need* score by LSOA	South West – *Hyper-local Need* score by LSOA
	
The South East shows higher need across coastal areas, particularly in areas of East Kent (such as Margate, Ramsgate and the Isle of Sheppey), South-East Sussex (in Hastings), as well as parts of Hampshire near Portsmouth, Southampton and the Isle of Wight. Some urban centres also show higher need around Reading, Crawley and medway towns across Kent. Additionally, there are patches of need in more rural areas in Ashford (Kent) and some smaller rural communities in East Sussex and West Kent.	The South West map highlights a similar trend of *hyper-local need*, with higher needs concentrated in coastal and rural areas around Cornwall, Plymouth and Torquay in Devon and parts of Somerset (particularly in and around Minehead and Exmoor National Park).

North East – *Hyper-local Need* score by LSOA	North West – *Hyper-local Need* score by LSOA
	
Hyper-local need in the North East is predominantly concentrated in urban centers, particularly in Newcastle upon Tyne and the surrounding areas such as Gateshead and parts of Sunderland, as well as Middlesbrough, Hartlepool and Stockton-on-Tees. Again, coastal areas also display higher need, such as Redcar on the Yorkshire coast, South Shields and Tynemouth in the Tyne and Wear region and Blyth and Ashington in South-East Northumberland.	In the North West, high levels of *hyper-local need* are concentrated around urban industrial centres such as Manchester, Liverpool, Blackburn, Burnley, Rochdale and Preston. There are also areas of high need in coastal Blackpool and the Fylde Coast region, as well as other coastal/rural areas across Cumberland such as Copeland and Allerdale. Areas around Carlisle and Eden, further to the North, also show high levels of *hyper-local need*.

East Midlands – *Hyper-local Need* score by LSOA	East of England – *Hyper-local Need* score by LSOA
	
The eastern coastline of Lincolnshire shows significant areas of higher need, particularly in towns such as Skegness, Mablethorpe and Grimsby – these coastal regions stand out as having some of the highest needs in the East Midlands region. Urban and inner city areas around Nottingham, Derby and Leicester also show some of the highest scores on the *hyper-local need* measure.	In the East of England, the highest levels of need are concentrated along the northern and eastern coastlines of Norfolk, including areas such as Great Yarmouth, King's Lynn and Cromer. There are also pockets of high need along the coastlines of Suffolk (Lowestoft) and Essex (Clacton-on-Sea). Fenland and other rural areas across Suffolk and Norfolk also show pockets of high need.

West Midlands – *Hyper-local Need* score by LSOA	Yorkshire and the Humber – *Hyper-local Need* score by LSOA
	
The West Midlands has higher *hyper-local need* around Birmingham, Wolverhampton, Stoke-on-Trent and Coventry, in largely urban areas. There are also isolated pockets of need in rural areas across Shropshire and Herefordshire, as well as towns across the Black Country and the wider West Midlands area, such as Sandwell, Walsall and Dudley.	There are notable pockets of need in Yorkshire and the Humber around large urban centres such as Sheffield and Leeds, as well as the former industiral towns of Doncaster, Barnsley, Huddersfield, Bradford and Scunthorpe. Coastal areas are also prominent amongst the areas with the highest *hyper-local need*, particularly along the coast of East Riding of Yorkshire, Scarborough (North Yorkshire) and Grimsby (North East Lincolnshire).

London – *Hyper-local Need* score by LSOA



London generally has lower levels of *hyper-local need* than the other regions explored above, but there are some pockets of high need across Haringey and Enfield (North London); Havering, Barking and Newham (East London); Bromley, Lewisham, Greenwich and Croydon (South London) and Brent in West London.

LSOAs with the highest *hyper-local need*

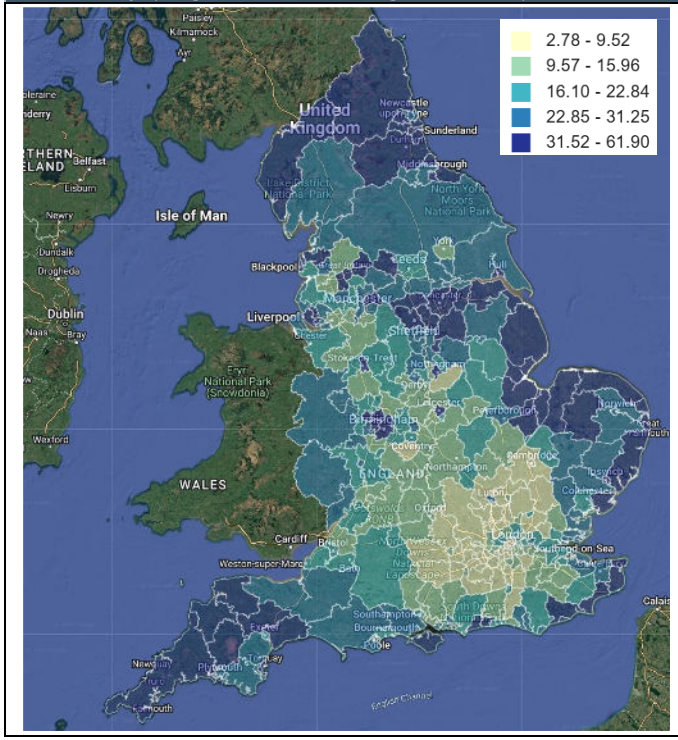
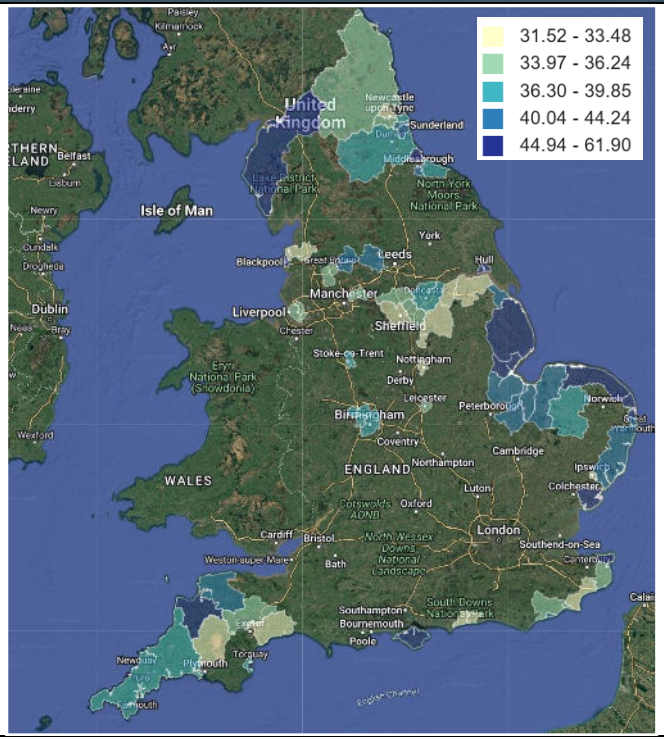
The table below shows the 20 LSOAs with the highest scores on the overall measure of *Hyper-local Need*. The majority of these areas are coastal (17 out of 20) with nine of the top ten LSOAs with the highest levels of *hyper-local need* based in Blackpool and one in Tendring in Essex (Jaywick).

LSOA Name (2021 LSOAs)	Local Authority	Hyper Local Need (Overall Score)
South Promenade & Seasiders Way - Blackpool 013A	Blackpool	99.95
Central Blackpool - Blackpool 010A	Blackpool	99.90
Jaywick & St Osyth - Tendring 018A	Tendring	99.84
South Promenade & Seasiders Way - Blackpool 013D	Blackpool	99.79
North East Centre - Blackpool 008D	Blackpool	99.74
Central Blackpool - Blackpool 010E	Blackpool	99.69
South Promenade & Seasiders Way - Blackpool 013B	Blackpool	99.64
North Shore - Blackpool 006B	Blackpool	99.59
North Shore - Blackpool 006A	Blackpool	99.54
Central Blackpool - Blackpool 010D	Blackpool	99.49
South Promenade & Seasiders Way - Blackpool 013C	Blackpool	99.44
Clacton Central - Tendring 016B	Tendring	99.38
Holme Wood - Bradford 052B	Bradford	99.33
North East Centre - Blackpool 008B	Blackpool	99.28
Park Road - Blackpool 011A	Blackpool	99.23
Sheppey East - Swale 006A	Swale	99.18
Holme Wood - Bradford 052C	Bradford	99.13
Little Layton & Little Carleton - Blackpool 007D	Blackpool	99.08
Yarmouth Parade - Great Yarmouth 006C	Great Yarmouth	99.03
Gainsborough West - West Lindsey 004E	West Lindsey	98.98

Dimension level analysis

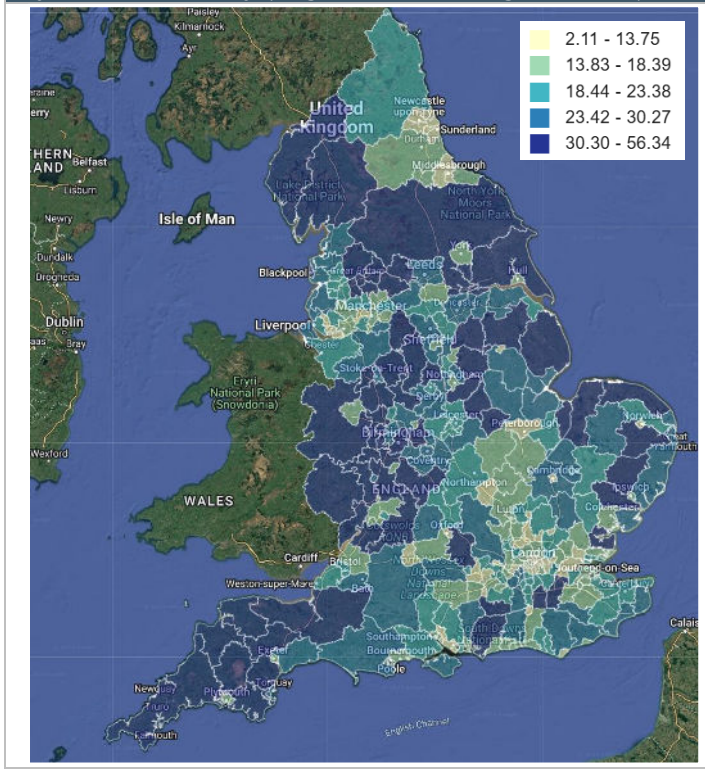
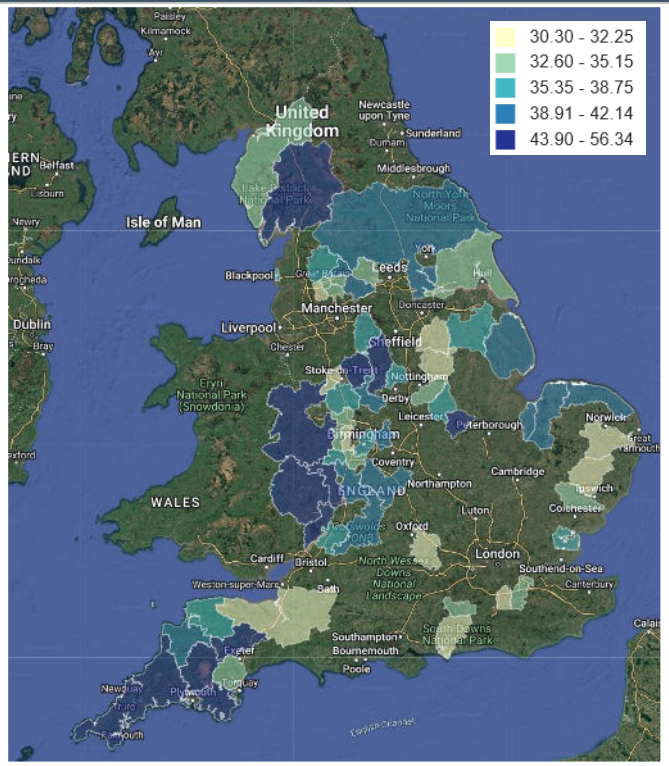
Kickstart economic growth

The maps below show that economic growth is a greater challenge in Local Authorities in the North of England (around cities such as Liverpool, Manchester, Newcastle, Sunderland and Middlesbrough). There are also hotspots of economic need across parts of Yorkshire (in cities such as Sheffield, Leeds and Hull), other urban and industrialised areas around Birmingham, Stoke-on-Trent, Leicester and Nottingham, as well as evidence of rural need across Cumberland. Other areas where there is a need for further support in generating economic growth include coastal authorities around Blackpool, Great Yarmouth, Skegness, Grimsby, Clacton in Essex and areas across Kent and the South East coast (such as Margate, Sheppey, Dover and Hastings). These areas face particular challenges around kickstarting economic growth, with high proportions of worklessness, low-income and low-skilled jobs and greater challenges around economic infrastructure and job access.

Kickstart economic growth (Dimension Score) by Local Authority (Higher score = Higher need)	Hotspots - Kickstart economic growth dimension score
	

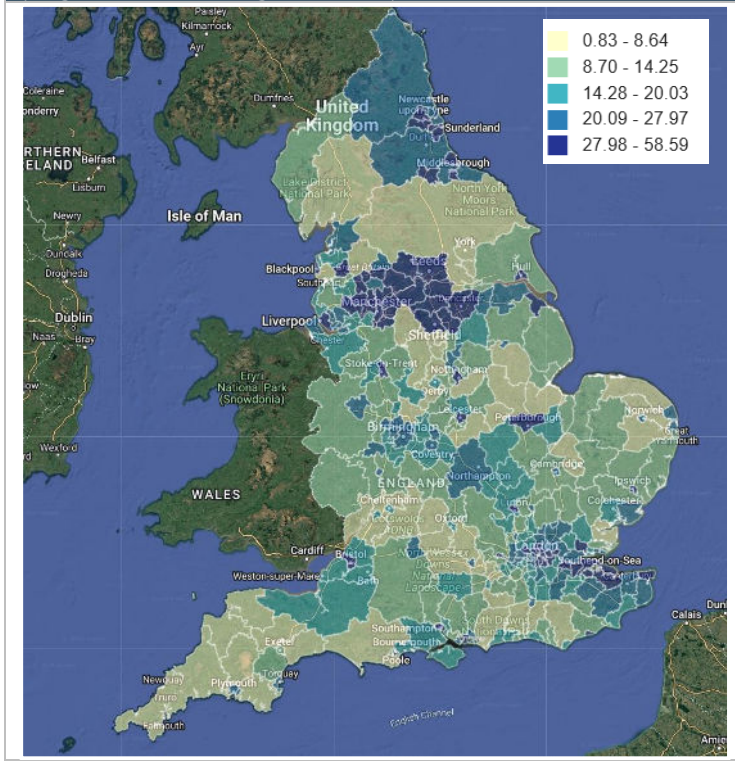
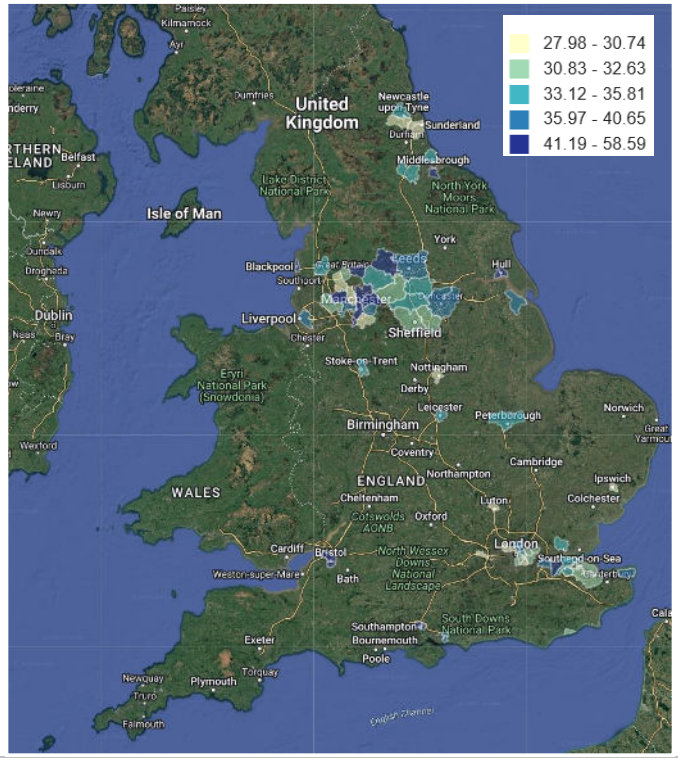
Make Britain a clean energy superpower

The maps below show the Make Britain a clean energy superpower dimension, by Local Authority across England. They show that the areas with the highest levels of need on this measure are again based around Northern cities such as Liverpool, Manchester, Leeds, Sheffield, and Hull. Areas across the Midlands (around Birmingham, Wolverhampton, Coventry, Stoke-on-Trent and the Black Country) also display high levels of need, as do coastal and rural areas around Blackpool, Grimsby, Great Yarmouth, East Lindsey and the South West coast. These areas may need greater support around developing clean energy, including improving energy efficiency in homes, tackling fuel poverty and measures to support affordable warmth.

Make Britain a clean energy superpower (Dimension Score) by Local Authority (Higher score = Higher need)	Hotspots – Make Britain a clean energy superpower dimension score
	

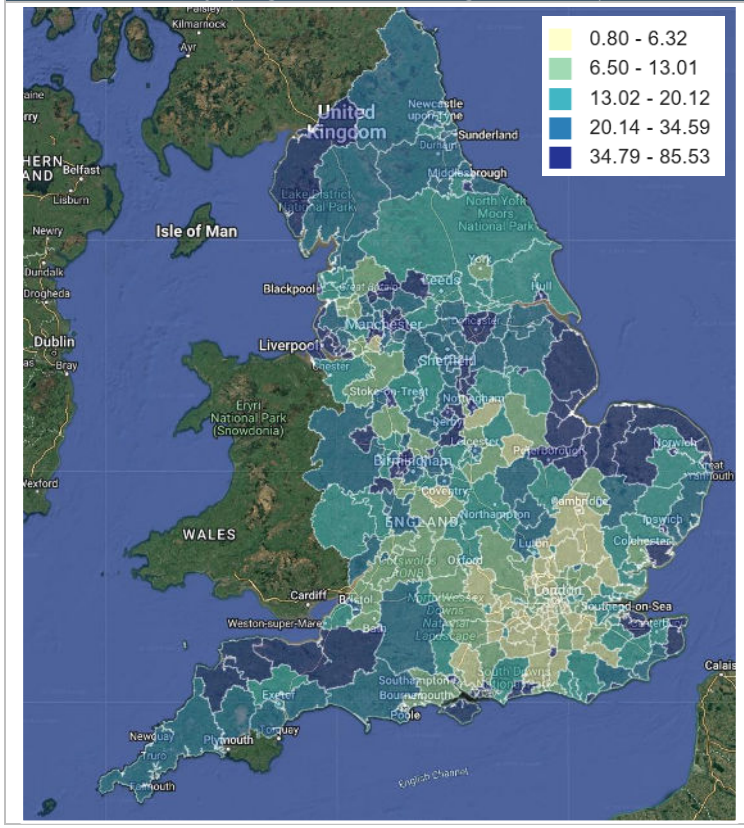
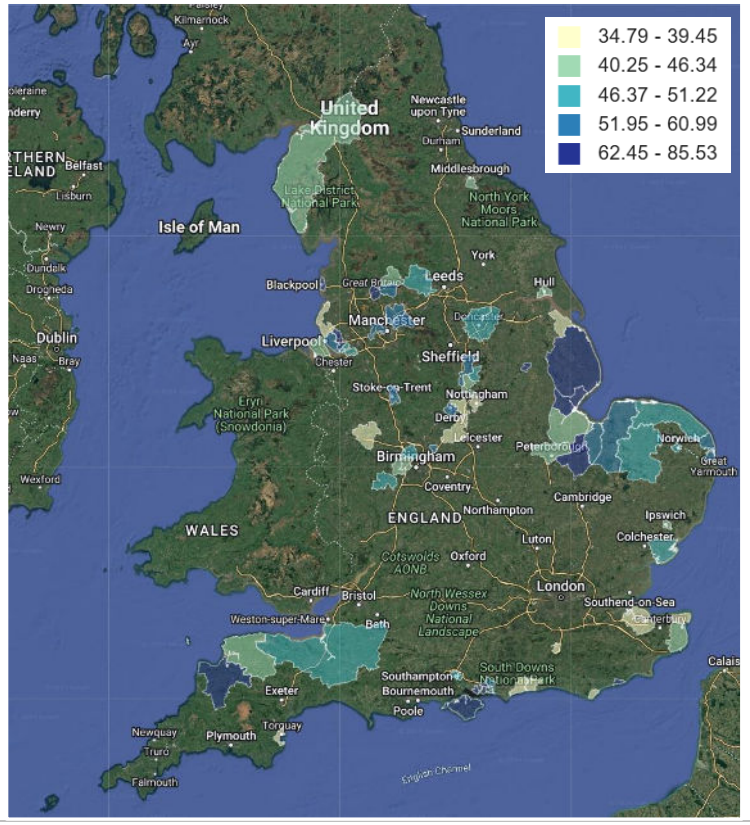
Take back our streets

The maps below show the Take back our streets dimension score, by Local Authority across England. On this measure, there is considerably higher levels of need around Northern cities such as Manchester, Leeds and Hull, as well as the coastal towns of Blackpool, Sunderland and Hartlepool. There are also higher levels of need in London and the South East (including Margate, Gravesend, Dartford and Southampton), as well as Bristol in the South West. These areas have significant crime deprivation, with a high number of crimes per 1,000 population.

Take back our streets (Dimension Score) by Local Authority (Higher score = Higher need)	Hotspots – Take back our streets dimension score
	

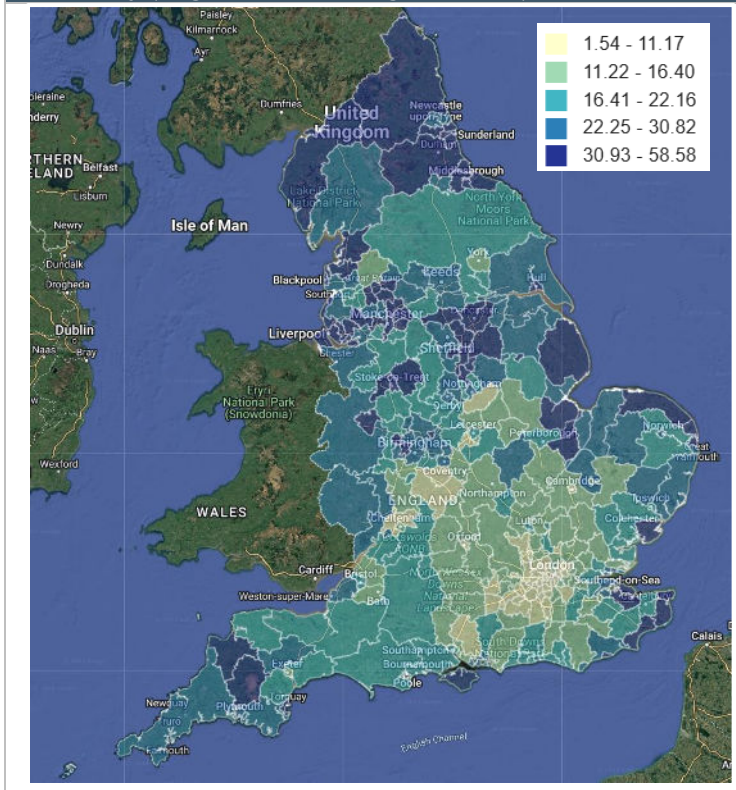
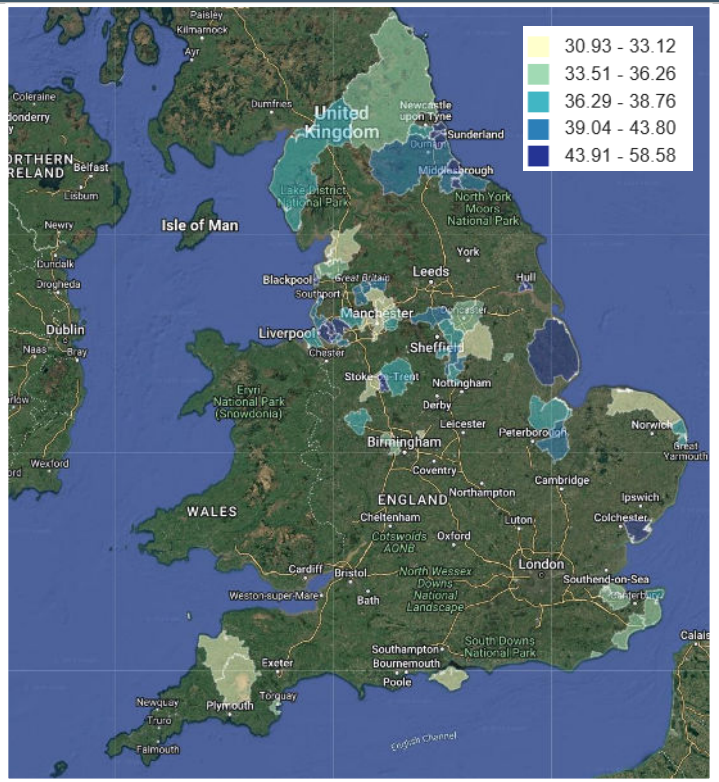
Break down barriers to opportunity

The maps below show that barriers to opportunity is a greater challenge for Local Authorities in the North West (including Blackpool, Knowsley and Hyndburn), as well as those in the East Midlands (such as Lincoln, East Lindsey, Boston and Fenland). There are also pockets of high need on this measure in the far North (rural Cumberland) and coastal areas in the East and South of the country (around Norfolk, Essex, Kent, Devon and the Isle of Wight). These areas face barriers relating to access to early years learning, educational opportunities and quality of education settings.

Break down barriers to opportunity (Dimension Score) by Local Authority (Higher score = Higher need)	Hotspots – Break down barriers to opportunity dimension score
	

Build an NHS fit for the future

The maps below show the Build an NHS fit for the future dimension score, by Local Authority across England. On this measure, the areas with high levels of need are based in the East Midlands (including East Lindsey and Fenland) and the far North of England (including Northumberland, Cumberland and County Durham, as well as coastal areas such as Redcar on the Yorkshire coast and parts of South Tyneside in Newcastle). However, cities and their outskirts in the North West have the highest levels of need on this measure, including Blackpool, Knowsley and Stoke-on-Trent. These areas generally have higher disability and social care needs, as well as a lack of access to supporting services.

Build an NHS fit for the future (Dimension Score) by Local Authority (Higher score = Higher need)	Hotspots – Build an NHS fit for the future dimension score
	

Conclusion

The *Hyper-local Need* Index is beneficial for identifying and understanding the specific socio-economic challenges faced by communities at a granular level. By integrating robust open data sources and aligning with the government's five mission objectives, the measure provides a comprehensive tool to pinpoint areas requiring targeted interventions.

Key findings underscore the stark disparities in socio-economic conditions across England, with coastal regions, post-industrial towns, and urban centres in the North and Midlands emerging as hotspots of compounded need. These areas are characterised by challenges such as economic stagnation, energy inefficiency, high crime rates, educational barriers, and critical health disparities. Conversely, less pronounced levels of need were observed in other regions, though localised issues persist.

Appendix A: Other Indicators considered but not included

Dimension	Dataset/Measure	Description/Reason for exclusion	Time coverage	Spatial coverage
Kickstart economic growth	Annual Survey of Hours and Earnings (ASHE)	The ONS Annual Survey of Hours and Earnings (ASHE) collects information on actual wage/salary payments made to an individual employee and the number of hours worked for this amount of pay. The sample consists of 1% of employees in the UK, drawn from HMRC's PAYE database, and weighted according to totals derived from the Labour Force Survey (region, occupation, etc). Although the ASHE data are a valuable resource for assessing income from employment at national and regional levels, these data are not robust down to LSOA level, and so would require modelling to small geographies.	Office for National Statistics (ONS), 2024	Local Authority
	Small area income estimates	ONS publish estimates of median household income at MSOA level for the whole of England and Wales, based upon a synthetic modelling methodology which uses data from the Family Resources Survey, 2011 Census and certain administrative datasets. As these statistics are model-based estimates, they must be considered alongside the respective confidence intervals. Although it is technically possible to estimate median household income down to LSOA level using the same methodological framework, associated confidence intervals would inevitably be larger and it is this data is therefore not recommended for use in this domain.	Office for National Statistics (ONS), 2019/2020	Middle-Layer Super Output Area (MSOA)
	Annual Population Survey (APS) Labour Market Statistics	The Annual Population Survey (APS) is a continuous household survey, covering the UK. The topics covered include employment and unemployment, as well as housing, ethnicity, religion, health and education. The purpose of the APS is to provide information on important social and socio-economic variables at local levels. The published statistics enable monitoring of estimates between censuses for a range of policy purposes and provide local area information for labour market estimates. However, the sample size for this data source is insufficient to provide robust estimates at LSOA level. There are relatively wide confidence intervals associated with these data, even at Local Authority level.	Office for National Statistics (ONS), 2023/2024	Local Authority
	Households Below Average Income (HBAI) (including food bank use)	The Households Below Average Income (HBAI) report presents information on UK living standards based on household income measures for financial year ending (FYE) 2023. Estimates are provided for average incomes, income inequality, and for the number and percentage of people living in low-income households. The statistics are the UK's primary source of poverty estimates and, with a larger sample size, are also the main source on household incomes. Although the source FRS survey is relatively large (with around 19,000 households surveyed before the coronavirus (COVID-19) pandemic), estimates for smaller sub-groups and geographical areas need to be produced by combining multiple survey	Department for Work and Pensions (DWP), 2023	Region

Dimension	Dataset/Measure	Description/Reason for exclusion	Time coverage	Spatial coverage
		years together and/or will be subject to wide confidence intervals. We therefore do not recommend including these measures in the domain.		
	Proportion of children claiming free school meals	Eligibility for free school meals is based upon receipt of means-tested benefits, tax credits with incomes below a specified threshold, or asylum seeker support. As such, there would be no added value over the current indicators recommended for use. Indeed, there is evidence that free school meals are not always taken up by eligible families.		Local Authority
	People employed on zero hours contracts.	Those on zero hours contracts would be potentially included in the Universal Credit conditionality measures already included in the domain. There are also no robust measures or administrative data sources that exist to officially capture all people on zero hours contracts.		
	Short-term, temporary or contract-based employment	Those on short-term contracts would be potentially included in the Universal Credit conditionality measures already included in this domain. We understand that no administrative data source exists to officially capture all people on temporary or short-term contracts.		
Make Britain a clean energy superpower	Source of energy for heating the home	There are measures in the 2021 Census which cover households with central heating and source of heating and there is Department for Energy Security & Net Zero (DESNZ) data on the domestic gas network. However, the EPC-based indicator that has been included in this domain takes account of central heating source as one of the many input factors, there is therefore a risk of 'double-counting' and we do not recommend including these additional measures.	Census, 2021	Output Area
	Age of the housing stock and ability to sufficiently insulate	The age of dwelling stock is available at LSOA level from the Valuation Office Agency (VOA) based on the year in which a dwelling was built. However, the EPC data recommended for inclusion in this domain contains a field indicating the age of the building (in bands). We do not therefore recommend pursuing a separate indicator of housing stock age, as this would potentially lead to double-counting within the domain.	Valuation Office Agency (VOA), 2024	Lower-Layer Super Output Area (LSOA)
	Water poverty	Although arguably not as high-profile as fuel poverty, water poverty can also impact upon households' finances. A recent study by CEPA, funded by Water UK, presented modelled estimates of water poverty down to MSOA level. However, the CEPA authors note that their modelled estimates are not direct measures derived from actual household level data on bills and incomes, but rather are derived using a 'top-down' approach, based on bill and income distributions. This is an acknowledged weakness in their approach and in the absence of suitable administrative data, we do not recommend using this indicator in the domain.		

Dimension	Dataset/Measure	Description/Reason for exclusion	Time coverage	Spatial coverage
Take back our streets	Police UK crimes by type	Neighbourhood-level incidents of crimes recorded by police by crime type as a rate per 1,000 residents. The incidents were located to the point at which they occurred and allocated to the appropriate lower super output area (LSOA). Although this data is available at LSOA level, there are often known issues with crime data that lead to missing data for some areas. For example, currently Devon and Cornwall & Greater Manchester Police have not provided crime data due to ongoing IT system challenges. You can visit https://data.police.uk/changelog/ for further details of known issues with Police UK crime data.	Police UK, Sep-2023 to Aug-2024	
	ONS Crime Survey for England and Wales (CSEW)	Whilst potentially providing a 'fuller' picture of certain types of crime at national level than police recorded crime data, the CSEW results are not representative below regional level, and so are not suitable in their raw form for measuring crime at LSOA level.	Office for National Statistics (ONS), 2023/2024	Police Force Area
	Measures of police trust/confidence	Trust and confidence in the police plays an important role in people's feelings of personal and community safety, as well as can impacting on the under-reporting of crimes. However, any measures of trust/confidence would have to be derived from the Crime Survey for England and Wales, and so would require modelling down from national level to LSOA level using some form of synthetic estimation, which we would not recommend for this domain.	Office for National Statistics (ONS), 2023/2024	Police Force Area
	Feelings of community safety	The Crime Survey for England and Wales contains some questions that relate to people's feelings of community safety. In addition, the Home Office commissioned IPSOS UK to undertake public polling on community safety via an online survey. However, we do not recommend pursuing modelled survey-based estimates.	Office for National Statistics (ONS), 2023/2024	Police Force Area
	Fear of crime	We are aware of academic research into the modelling of fear of crime down to small area level, drawing upon a combination of crime survey microdata and small area level covariates from the census and administrative sources, including the Index of Multiple Deprivation. For instance, Whitworth (2012) use the 2008/09 British Crime Survey and selected covariates to estimate fear of crime down to Middle layer Super Output Area (MSOA) level. However, we do not recommend using a modelled estimate of fear of crime, due to sampling error and the likely wide confidence intervals at small area level.		
Break down barriers to opportunity	Early Years Foundation Stage (EYFS) assessments	The DfE collect data on early years progress through the Early Years Foundation Stage assessments. These assessments are based primarily on the teacher's professional knowledge of what the child knows, remembers and can do, but should also take account of contributions from a range of perspectives including the child, their parents and/or carers,		

Dimension	Dataset/Measure	Description/Reason for exclusion	Time coverage	Spatial coverage
		and other relevant adults. Within each school, teachers can informally agree assessment judgements with others, for example, discussing knowledge and understanding about a child's development with other EYFS teachers or a Year 1 teacher. However, these assessments are not externally moderated and there is a degree of flexibility in the approaches taken. It is therefore not possible to develop a nationally consistent indicator of early years attainment and it is not recommended that this indicator is included		
	Digital literacy for children and adults	There is no robust data at small area level on digital literacy. The ONS produced an audit of sources of digital literacy and digital inclusion in 2019. Data on digital skills was drawn from national surveys including the Labour Force Survey and the Opinions and Lifestyle Survey. Neither source provides data at a sufficient sample size to produce robust estimates of digital literacy at a sub-regional level.		
	Inclusion of data from students outside of the state sector	The National Pupil Database does not contain data for independent sector pupils. It is therefore not possible to produce comparative data for these pupils. There is no equivalent database which contains information of pupil's home postcode for those attending independent schools.		
	Pupils meeting the expected KS1 standards in reading, writing and maths.	Key Stage 1 assessments are not comprehensively externally moderated. Local Authorities are responsible for moderating KS1 teacher assessments to ensure that they are appropriate and consistent with national standards. They must ensure that at least a quarter of their schools receive external moderation visits each year and that all schools are moderated at least once in a four-year cycle. Schools where assessment is felt to be at particular risk of inaccuracy will be moderated more frequently. If the moderator judges that a school's assessments are not consistent with national standards, the head teacher will ensure that the assessments are reconsidered by the teachers concerned. If the moderator's judgements continue to differ from the schools, the LA will substitute their assessments for those of the school. Given there is only partial external moderation at Key Stage 1, we do not recommend pursuing this indicator due to the risk of nationally inconsistent approaches to moderation.		
	'Key to success' dataset from the DfE capturing KS1 performance.	This dataset is only available down to school level so is unsuitable for inclusion in a small area measure.		
Build an NHS fit for the future	Behavioural data such as physical	Data covering these measures is generally based on modelled survey-based data which is not available at small area level (see notes on the Annual Population Survey above). The types of risks involved in these behavioural datasets may also be covered by Census self-		

Dimension	Dataset/Measure	Description/Reason for exclusion	Time coverage	Spatial coverage
	inactivity, smoking and obesity	assessment questions on general health that are already recommended for inclusion in this domain.		
	Chronic illnesses, such as asthma, chronic obstructive pulmonary disease, heart disease, hypertension, diabetes	NHS digital data on GP reporting records provide some estimates of chronic illness by condition at MSOA level. However, these measures are sensitive to the accuracy of GP data reporting. Some differences between areas may reflect differences in the way that GP practices operate, measure and record, rather than genuine differences in prevalence. People with chronic illness will also be included in the disability and ill-health measures already recommended for inclusion in this domain.	NHS Digital, 2022/2023	Middle-Layer Super Output Area (MSOA)
Care Quality Commission (CQC) local health data	Locations regulated by CQC	We explored the use of CQC data on the available health and social care options in local areas. However the only available data is based on the location of the services and not the residential location of service users. It was therefore not possible to produce a representative small area measure to use in the index.	CQC, 2024	Postcode

Appendix B: Shrinkage estimation

Improving the reliability of small area data values using shrinkage estimation

The shrinkage technique is designed to deal with the problems associated with small numbers in an LSOA. In some areas – particularly where the at-risk population is small – data may be 'unreliable', that is more likely to be affected by sampling and other sources of error. The technique of shrinkage estimation (in other words empirical Bayesian estimation) is used to 'borrow strength' from larger areas to avoid creating unreliable small area data. Shrinkage estimation involves moving LSOA scores towards another more robust score, often relating to a higher geographical level. All LSOA scores will move somewhat through shrinkage, but those with large standard errors (in other words the most 'unreliable' scores) will tend to move the most. The LSOA score may be moved towards a 'higher need' or 'lower need' score through shrinkage estimation. Without shrinkage, some LSOAs would have scores which do not reliably describe the community need in the area due to chance fluctuations from year to year.

It could be argued that shrinkage estimation is inappropriate for administrative data which are, in effect, a census. This is not correct. The problem exists not only where data are derived from samples but also where scans of administrative data effectively mean that an entire census of a particular group is being considered. This is because such censuses can be regarded as samples from 'super-populations', which one could consider to be samples in time. All the data from administrative sources and the 2021 Census are treated as samples from a super-population in this way, and the shrinkage technique was applied to indicators which use this data. The exceptions are the indicators supplied at Local Authority District level.

Selecting the larger areas from which unreliable small area data can borrow strength

The principle for selecting the larger area should be that the LSOAs within them share characteristics. In the current shrinkage methodology, Local Authority Districts are used. The LSOAs within a single district share issues relating to local governance and possibly to economic sub-climates. To a certain extent, they may also share issues relating to labour market sub-climates.

The shrinkage calculation

The actual mechanism of the shrinkage procedure is to estimate deprivation in a particular LSOA using a weighted combination of (a) data from the LSOA, and (b) data from another more robust score (in the case of the Indices, this is the Local Authority District score). The weight attempts to increase the efficiency of the estimation, while not increasing its bias. All LSOA scores are adjusted to some degree through the

shrinkage process, but the magnitude of the adjustment will be greatest for areas with the least reliable scores. The amount of movement depends on both the size of the standard error and the amount of heterogeneity amongst the LSOAs in a Local Authority District.

The 'shrunk' estimate of a LSOA level proportion (or ratio) is a weighted average of the two 'raw' proportions for the LSOA and for the corresponding District. The weights used are determined by the relative magnitudes of within-LSOA and between-LSOA variability.

If the rate for a particular indicator in LSOA j is r_j events out of a population of n_j, the empirical logit for each LSOA is:

$$m_j = \log\left[\frac{(r_j + 0.5)}{(n_j - r_j + 0.5)}\right]$$

whose estimated standard error s_j is the square root of:

$$s_j^2 = \frac{(n_j + 1)(n_j + 2)}{n_j(r_j + 1)(n_j - r_j + 1)}$$

The corresponding counts r out of n for the district in which LSOA j lies gives the district-level logit:

$$M = \log\left[\frac{(r + 0.5)}{(n - r + 0.5)}\right]$$

The 'shrunk' LSOA level logit is then the weighted average:

$$m_j^* = w_j m_j + (1 - w_j)M$$

where w_j is the weight given to the 'raw' LSOA-j data and (1-w_j) the weight given to the overall rate for the district. The formula used to determine w_j is:

$$w_j = \frac{1/s_j^2}{1/s_j^2 + 1/t^2}$$

where t^2 is the inter-LSOA variance for the k LSOAs in the district, calculated as:

$$t^2 = \frac{1}{k-1}\sum_{j=1}^{k}(m_j - M)^2$$

Thus large LSOAs, where precision $1/s_2^j$ is relatively large, have weight w_j close to 1 and so shrinkage has little effect. The shrinkage effect is greatest for small LSOAs in relatively homogeneous districts.

The final step is to back-transform the shrunk logit m_j^* using the 'anti-logit', to obtain the shrunk LSOA level proportion for each LSOA:

$$z_j = \frac{\exp\left(m_j^*\right)}{1+\exp\left(m_j^*\right)}$$

Appendix C: Exponential transformation

In order to combine the dimensions into an overall measure of need, the dimension scores first need to be standardised. Any standardisation and transformation should meet the following criteria:

- Standard distribution. It must ensure that each dimension has a common distribution, so that dimensions can be combined, without one dimension dominating due to a much larger distribution.
- Identify areas of need. It must facilitate the easy identification of the areas with highest levels of need.
- Scale independent. It must not be scale dependent (in other words confuse population size with level of need).

One possible standardization approach involves each of the dimension scores being ranked, and then the ranks are transformed to an exponential distribution. The exponential distribution has a number of properties that satisfy the criteria above.

Standard distribution

The exponential distribution transforms each dimension so that they each have a common distribution, the same range and identical maximum / minimum values. The process starts by ranking the scores in each dimension to standardise the dimension scores (from 1 for the lowest need to 33,755 for the most highest need), before applying the exponential transformation procedure to create a standardised dimension score ranging from 0 (lowest need) to 100 (highest need).

Cancellation

The exponential transformation procedure gives control over the extent to which lack of need in one dimension cancels or compensates for high need in another dimension. It allows precise regulation, although not elimination, of these cancellation effects. The scaling constant (23) used produces roughly 10 per cent cancellation. This means that in the extreme case, an LSOA which was ranked most deprived on one dimension but least deprived on another would overall be ranked at the 90th percentile in terms of levels of need. This compares to the 50th percentile if the untransformed ranks or a normal distribution had been used instead.

Identify deprived areas

The exponential transformation effectively spreads out that part of the distribution in which there is most interest - that is the 'tail' which contains the areas with the highest levels of need in each dimension. The scaling constant ensures that the most deprived 10 per cent of areas cover 50 per cent of the distribution of scores (in other words, scores between 50 and 100 after exponential transformation).

Scale independent

The transformation is not affected by the size of the LSOA's population.

The exponential transformation calculation

The transformation used is as follows:

For any LSOA, denote its rank on the dimension R, scaled to the range [0,1]. R=1/N for the least deprived and R=N/N (in other words R=1) for the most deprived, where N=the number of LSOAs in England.

The transformed dimension score X is given by:

$$X = -23 \ln\left(1 - R\left(1 - \exp^{-100/23}\right)\right)$$

where 'ln' denotes natural logarithm and 'exp' the exponential or antilog transformation

Appendix D: ‘High growth’ industries

The table below lists the full list of SIC 2007 subclass (5 digit) codes included in the construction of this measure of ‘high growth’ industries:

SIC 2007 subclass (5 digit)
21100: Manufacture of basic pharmaceutical products
21200: Manufacture of pharmaceutical preparations
26110: Manufacture of electronic components
26120: Manufacture of loaded electronic boards
26200: Manufacture of computers and peripheral equipment
26301: Manufacture of telegraph and telephone apparatus and equipment
26309: Manufacture of communication equipment (other than telegraph and telephone apparatus and equipment)
26400: Manufacture of consumer electronics
26511: Manufacture of electronic instruments and appliances for measuring, testing, and navigation, except industrial process control equipment
26512: Manufacture of electronic industrial process control equipment
26513: Manufacture of non-electronic instruments and appliances for measuring, testing and navigation, except industrial process control equipment
26514: Manufacture of non-electronic industrial process control equipment
26520: Manufacture of watches and clocks
26600: Manufacture of irradiation, electromedical and electrotherapeutic equipment
26701: Manufacture of optical precision instruments
26702: Manufacture of photographic and cinematographic equipment
26800: Manufacture of magnetic and optical media
25400: Manufacture of weapons and ammunition
28110: Manufacture of engines and turbines, except aircraft, vehicle and cycle engines
28120: Manufacture of fluid power equipment
28131: Manufacture of pumps
28132: Manufacture of compressors

28140: Manufacture of other taps and valves
28150: Manufacture of bearings, gears, gearing and driving elements
28210: Manufacture of ovens, furnaces and furnace burners
28220: Manufacture of lifting and handling equipment
28230: Manufacture of office machinery and equipment (except computers and peripheral equipment)
28240: Manufacture of power-driven hand tools
28250: Manufacture of non-domestic cooling and ventilation equipment
28290: Manufacture of other general-purpose machinery nec
28301: Manufacture of agricultural tractors
28302: Manufacture of agricultural and forestry machinery (other than agricultural tractors)
28410: Manufacture of metal forming machinery
28490: Manufacture of other machine tools
28910: Manufacture of machinery for metallurgy
28921: Manufacture of machinery for mining
28922: Manufacture of earthmoving equipment
28923: Manufacture of equipment for concrete crushing and screening roadworks
28930: Manufacture of machinery for food, beverage and tobacco processing
28940: Manufacture of machinery for textile, apparel and leather production
28950: Manufacture of machinery for paper and paperboard production
28960: Manufacture of plastics and rubber machinery
28990: Manufacture of other special-purpose machinery nec
27110: Manufacture of electric motors, generators and transformers
27120: Manufacture of electricity distribution and control apparatus
27200: Manufacture of batteries and accumulators
27310: Manufacture of fibre optic cables
27320: Manufacture of other electronic and electric wires and cables
27330: Manufacture of wiring devices
27400: Manufacture of electric lighting equipment
27510: Manufacture of electric domestic appliances
27520: Manufacture of non-electric domestic appliances

27900: Manufacture of other electrical equipment
29100: Manufacture of motor vehicles
29201: Manufacture of bodies (coachwork) for motor vehicles (except caravans)
29202: Manufacture of trailers and semi-trailers
29203: Manufacture of caravans
29310: Manufacture of electrical and electronic equipment for motor vehicles
29320: Manufacture of other parts and accessories for motor vehicles
30110: Building of ships and floating structures
30120: Building of pleasure and sporting boats
30200: Manufacture of railway locomotives and rolling stock
30300: Manufacture of air and spacecraft and related machinery
30400: Manufacture of military fighting vehicles
30910: Manufacture of motorcycles
30920: Manufacture of bicycles and invalid carriages
30990: Manufacture of other transport equipment nec
32500: Manufacture of medical and dental instruments and supplies
38210: Treatment and disposal of non-hazardous waste
38220: Treatment and disposal of hazardous waste
35110: Production of electricity
35120: Transmission of electricity
35130: Distribution of electricity
35140: Trade of electricity
35300: Steam and air conditioning supply
42220: Construction of utility projects for electricity and telecommunications
58110: Book publishing
58120: Publishing of directories and mailing lists
58130: Publishing of newspapers
58141: Publishing of learned journals
58142: Publishing of consumer, business and professional journals and periodicals
58190: Other publishing activities

58210: Publishing of computer games
58290: Other software publishing
59111: Motion picture production activities
59112: Video production activities
59113: Television programme production activities
59120: Motion picture, video and television programme post-production activities
59131: Motion picture distribution activities
59132: Video distribution activities
59133: Television programme distribution activities
59140: Motion picture projection activities
59200: Sound recording and music publishing activities
61100: Wired telecommunications activities
61200: Wireless telecommunications activities
61300: Satellite telecommunications activities
61900: Other telecommunications activities
62011: Ready-made interactive leisure and entertainment software development
62012: Business and domestic software development
62020: Computer consultancy activities
62030: Computer facilities management activities
62090: Other information technology and computer service activities
63110: Data processing, hosting and related activities
63120: Web portals
63910: News agency activities
63990: Other information service activities nec
64110: Central banking
64191: Banks
64192: Building societies
64205: Activities of financial services holding companies
64301: Activities of investment trusts
64303: Activities of venture and development capital companies

64910: Financial leasing
64921: Credit granting by non-deposit taking finance houses and other specialist consumer credit grantors
64922: Activities of mortgage finance companies
64929: Other credit granting (not including credit granting by non-deposit taking finance houses and other specialist consumer credit grantors and activities of mortgage finance companies) n.e.c.
64999: Other financial service activities, except insurance and pension funding, (not including security dealing on own account and factoring) n.e.c.
65110: Life insurance
65120: Non-life insurance
65201: Life reinsurance
65202: Non-life reinsurance
65300: Pension funding
69101: Barristers at law
69102: Solicitors
69109: Activities of patent and copyright agents; other legal activities (other than those of barristers and solicitors) nec
69201: Accounting, and auditing activities
69202: Bookkeeping activities
69203: Tax consultancy
71111: Architectural activities
71112: Urban planning and landscape architectural activities
71121: Engineering design activities for industrial process and production
71122: Engineering related scientific and technical consulting activities
71129: Other engineering activities (not including engineering design for industrial process and production or engineering related scientific and technical consulting activities)
71200: Technical testing and analysis
74100: Specialised design activities
74201: Portrait photographic activities
74202: Other specialist photography (not including portrait photography)
74203: Film processing

74209: Other photographic activities (not including portrait and other specialist photography and film processing) nec
74300: Translation and interpretation activities
74901: Environmental consulting activities
74902: Quantity surveying activities
74909: Other professional, scientific and technical activities (not including environmental consultancy or quantity surveying)
78101: Motion picture, television and other theatrical casting
78109: Activities of employment placement agencies (other than motion picture, television and other theatrical casting) nec
78200: Temporary employment agency activities
78300: Other human resources provision
73110: Advertising agencies
73120: Media representation
73200: Market research and public opinion polling
72110: Research and experimental development on biotechnology
72190: Other research and experimental development on natural sciences and engineering
72200: Research and experimental development on social sciences and humanities
70100: Activities of head offices
70210: Public relations and communication activities
70221: Financial management
70229: Management consultancy activities (other than financial management)
80100: Private security activities
80200: Security systems service activities
80300: Investigation activities
84220: Defence activities
90010: Performing arts
90020: Support activities to performing arts
90030: Artistic creation
90040: Operation of arts facilities