Department for
Communities and
Local Government

The English Indices of Deprivation 2015

Research report

Contents

Preface

The Indices of Deprivation are an important tool for identifying the most deprived areas in England. Local policy makers and communities can also use this tool for the effective targeting of resources.

The English Indices of Deprivation 2015 is the fifth release in a series of statistics produced to measure multiple forms of deprivation at the small spatial scale. Following consultation with key stakeholders and users of the Indices, the Indices of Deprivation 2015 retain broadly the same methodology, domains and indicators as the earlier Indices of Deprivation 2010, 2007, 2004 and 2000.

This report outlines the main results from the Indices of Deprivation 2015, including the overall Index of Multiple Deprivation 2015, and provides examples and guidance on how to use and interpret the datasets. The accompanying technical report presents the conceptual framework of the new Indices of Deprivation 2015; the methodology for creating the domains and the overall Index of Multiple Deprivation; the quality assurance carried out to ensure reliability of the data outputs; and the component indicators and domains.

All of the supporting documents and datasets for the Indices of Deprivation 2015 are available from:
https://www.gov.uk/government/statistics/english-indices-of-deprivation-2015

We would like to thank all those who assisted in the production of the Indices of Deprivation 2015, in particular all those who responded to the consultation.

Acknowledgements

Chapter 1.   Introduction

1.1   Introduction

1.1.1   The Department for Communities and Local Government commissioned Oxford Consultants for Social Inclusion (OCSI) to review and update the English Indices of Deprivation 2010. The project remit was to:

- review the indicators included in the Indices of Deprivation 2010 to determine if they remain fit for purpose, and where there is a clear rationale for doing so, identify potential changes to the basket of indicators in each domain;
- assess the current data landscape, identify changes to (or outdatedness of) previously used sources, as well as any new sources;
- review whether the statistical methods used in the production of the Indices of Deprivation 2010 are still justified and assess if alternative methods are available and the strengths and weaknesses of any such alternatives;
- produce the updated Indices of Deprivation 2015.

1.1.2   Following engagement with users (see Appendix C) and a significant programme of work by the research team, the Indices of Deprivation 2015 have been produced using the same approach, structure and methodology used to create the previous Indices of Deprivation 2010. Changes to existing domains and sub-domains were outside the scope of the update, although there have been a modest number of changes to the basket of indicators used in the domains. Feedback from users was supportive of the decision not to make major changes to the Indices.

1.1.3   The updated Indices continue to be based on the Lower-layer Super Output Area geography, although the updated Indices use the new 2011 version of the Lower-layer Super Output Area geography.

1.2   Overview of the Indices of Deprivation 2015

1.2.1   The Indices of Deprivation 2015 provide a set of relative measures of deprivation for small areas (Lower-layer Super Output Areas) across England, based on seven different domains of deprivation:

- Income Deprivation
- Employment Deprivation
- Education, Skills and Training Deprivation
- Health Deprivation and Disability
- Crime
- Barriers to Housing and Services
- Living Environment Deprivation

1.2.2   Each of these domains is based on a basket of indicators. As far as is possible, each indicator is based on data from the most recent time point available; in practice most indicators in the Indices of Deprivation 2015 relate to the tax year 2012/13.

1.2.3   The Index of Multiple Deprivation 2015 combines information from the seven domains to produce an overall relative measure of deprivation. The domains are combined according to their respective weights as described in section 2.6. In

addition, there are seven domain-level indices, and two supplementary indices: the Income Deprivation Affecting Children Index and the Income Deprivation Affecting Older People Index.

1.2.4 The Indices of Deprivation are designed primarily to be *small-area* measures of relative deprivation. But the Indices are commonly used to describe relative deprivation for higher-level geographies. To facilitate this, a range of summary measures are available for higher-level geographies: local authority districts and upper tier local authorities, local enterprise partnerships and clinical commissioning groups. These summary measures are produced for the overall Index of Multiple Deprivation, each of the seven domains and the supplementary indices.

1.2.5 The Index of Multiple Deprivation 2015, domain indices and the supplementary indices, together with the higher area summaries, are collectively referred to as the Indices of Deprivation 2015.

1.3 Research leading up to publication of the Indices of Deprivation 2015

1.3.1 The development of the Indices of Deprivation follows extensive exploration of data sources, review of methodology, and testing and quality assurance of data sources and indicators. The development also takes into account the range of views gathered prior to and during the earlier phases of this project, including:

- feedback from users gathered during a session on the Indices at the DCLG Statistics User Engagement Day in November 2013
- the views of the Government Statistical Service Methodology Advisory Committee on a paper on methodology and indicators presented in November 2013[1]
- responses from almost 250 users to a survey which took place in July 2014
- the views of the department's Project Board and its Advisory Group, comprising representatives from central and local government and other interest groups, including the voluntary and community sector
- feedback from users on dissemination and outputs gathered during three user events held in November 2014, attended by over 125 people
- 100 responses to the consultation which took place in November and December 2014.

1.4 Uses of the Indices

1.4.1 Since their original publication in 2000 the Indices have been used very widely for a variety of purposes, including the following:

Targeting resources
- Use by national and local organisations to identify places for prioritising resources and more effective targeting of funding.

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[1] Government Statistical Service Methodology Advisory Committee 26 minutes and papers: http://www.ons.gov.uk/ons/guide-method/method-quality/advisory-committee/26th-meeting/index.html

- o For example, the Index of Multiple Deprivation 2010 was used by the Department for Communities and Local Government in conjunction with other data to distribute £448m of funding to local authorities for the Troubled Families Programme[2].
- o In another example, the most deprived 15 per cent of neighbourhoods have been eligible for insulation measures from energy companies.
- o The Indices have also been used by some local authorities to prioritise areas for long-term intervention.
- Distribution of funding or part of a funding formula for programmes.

Policy and strategy
- Development of the evidence base for setting a range of local strategies and service planning, including helping understand current need and model future demand for services.
- Supporting local growth through local economic assessment and growth strategies, for example policies related to the European Regional Development Fund where targeted intervention will be prioritised to address concentrated pockets of deprivation[3].
- Helping assure the equality of access to local health and other services.
- Research and analysis into the challenges and performance of different areas, and to support policy and delivery. For example, understanding the relationship between pupil attainment and neighbourhood deprivation, and analysing local deprivation as a risk factor for behaviours such as smoking.
- Assessment of programme reach and impact e.g. to identify whether the most disadvantaged areas are receiving more support under various programmes than others; and assessment of the impact of programmes, albeit at the neighbourhood rather than the individual level.

As an analytical resource to support commissioning by local authorities and health services, and in exploring inequalities
- Public Health England (PHE) has used the Indices to produce overarching indicators for the Government's Public Health Outcomes Framework (PHOF), examining recent trends in inequalities in life expectancy and healthy life expectancy between communities[4]. PHE has also used the Indices to illustrate inequalities in many of the other PHOF indicators and users of the PHOF data tool can now examine the relationship of every indicator with deprivation.
- PHE's Segment Tool uses the indices to provide information on the causes of death that are driving inequalities in life expectancy at local area level;

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[2] The Index of Multiple Deprivation 2010 was used in conjunction with the Index of Child Wellbeing 2009 and ONS population estimates. The Summary Report for the Child Wellbeing Index can be found at http://webarchive.nationalarchives.gov.uk/20120919132719/www.communities.gov.uk/documents/communities/pdf/1126232.pdf

[3] DCLG, 2015, European Regional Development Fund Operational Programme 2014-2020, see: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/342297/ERDF_Operational_Programme.pdf

[4] http://www.phoutcomes.info/

targeting these causes should have the biggest impact on reducing inequalities[5].

Funding bids
- The Indices are frequently used in bids for funding, and are recognised by commissioners as an authoritative, nationally comparable measure of deprivation. This includes bids made by councillors for their neighbourhoods, and from voluntary and community sector groups.

1.4.2 These examples of uses were confirmed by responses to the survey of nearly 250 users carried out in July 2014. Respondents reported using Indices data for a variety of purposes, often mentioning multiple uses. The most common uses were to inform the targeting of funding (43 per cent), targeting interventions and services (43 per cent) and strategic needs assessments (41 per cent) (see Table 1.1). A summary of the findings of the user survey is provided in Appendix C.

Table 1.1. Uses for the Indices of Deprivation data, reported by users in the survey	
What do you use the Indices of Deprivation data for?	Per cent
Targeting funding	43
Targeting services and interventions	43
Needs assessment – strategic	41
In preparing bids for funding / assessing or commissioning bids for funding	39
General research and analysis	24
Impact and policy assessments	7
Other	59
Total percentage	254
Base = 226 respondents opting to complete this section of the survey. Totals sum to more than 100 per cent as respondents could choose more than one response	

1.5 About this Research Report

1.5.1 This report outlines the main results from the Indices of Deprivation 2015, including the overall Index of Multiple Deprivation 2015, and provides examples and guidance on how to use and interpret the datasets. This presents a fuller and more detailed account than is presented in the Department for Communities and Local Government (DCLG) Statistical Release, and is aimed at specialist users and analysts, particularly those with an interest in specific domains of deprivation or the full range of summary statistics available for higher-level geographies.

1.5.2 There is a summary of points to consider in using and interpreting the Indices in the DCLG Statistical Release (under 'Further information') and in the short DCLG Guidance Note which is aimed at both specialist and non-specialist users of the Index of Multiple Deprivation.

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[5] http://www.lho.org.uk/LHO_Topics/Analytic_Tools/Segment/TheSegmentTool.aspx

1.5.3   The accompanying technical report presents the conceptual framework of the new Indices of Deprivation 2015; the methodology for creating the domains and the overall Index of Multiple Deprivation; the quality assurance carried out to ensure reliability of the data outputs; and the component indicators and domains[6].

1.5.4   All project outputs are available to download from www.gov.uk/government/statistics/english-indices-of-deprivation-2015

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[6] Department for Communities and Local Government (2015). The Indices of Deprivation 2015. Technical Report

Chapter 2.   Summary of the Indices of Deprivation 2015

2.1   Measuring deprivation at the small area level

2.1.1   The English Indices of Deprivation 2015 are relative measures of multiple deprivation at the small area level. The model of multiple deprivation which underpins the Indices is based on the idea of distinct dimensions of deprivation which can be recognised and measured separately[7]. Since these deprivations are experienced by individuals living in an area, an area-level measure of deprivation for each of the dimensions (or domains) can be produced if suitable data exists.

2.1.2   The overall Index of Multiple Deprivation 2015 is a measure of multiple deprivation based on combining together seven distinct domains of deprivation, which are described further in Section 2.5 below:

- Income Deprivation
- Employment Deprivation
- Education, Skills and Training Deprivation
- Health Deprivation and Disability
- Crime
- Barriers to Housing and Services
- Living Environment Deprivation.

2.1.3   The Index of Multiple Deprivation, and each of the domains, can be used to rank every small area in England according to the deprivation experienced by the people living there.

2.1.4   Data has been published for the overall Index of Multiple Deprivation and each of the domains. Chapter 3 describes in detail what has been published and how to use and interpret the data. Chapters 4 and 5 present analysis of the data.

2.1.5   The sections below outline the methods and indicators used to construct the datasets.

2.2   Constructing the Indices of Deprivation 2015

2.2.1   The construction of the Index of Multiple Deprivation 2015 and Indices of Deprivation 2015 broadly consists of seven stages, see Figure 2.1. The accompanying technical report gives further details under each of these stages[8].

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[7] Previous versions of the Indices of Deprivation 2015 followed the same framework and methodology for measuring multiple deprivation, including the Indices of Deprivation 2010, 2007, 2004 and 2000. See McLennan et al. (2011); Noble et al. (2008); Noble et al. (2004) and Noble et al (2000).
[8] Department for Communities and Local Government (2015). The Indices of Deprivation 2015. Technical Report.

Figure 2.1. Overview of the methodology used to construct the Indices of Deprivation 2015

Defining the Indices Data Processing Index of Multiple Deprivation & Summaries

1. Domains of deprivation are clearly identified

2. Indicators are chosen which provide the best possible measure of each domain of deprivation

3. 'Shrinkage estimation' is used to improve reliability of the small area data

4. Indicators are combined to form the domains and sub-domains

5. Domain scores are ranked and the domain ranks transformed to a specified exponential distribution

6. The exponentially transformed domain scores are combined using appropriate domain weights to form an overall Index of Multiple Deprivation

7. The overall Index of Multiple Deprivation, domains and supplementary indices are summarised for larger areas such as local authorities

2.2.2 Feedback from users during the consultation stages of this project was supportive of the decision not to make major changes to the Indices. Maintaining comparability with previous versions of the Indices is important to users. For this reason, the methods used in developing the Indices of Deprivation 2015 update have remained consistent with those used in 2010.

2.2.3 Changes since the Indices of Deprivation 2010 are therefore mainly confined to updates to the data used to create the indicators, and a small number of new, modified and dropped indicators. The complete set of indicators by domain is outlined in Section 2.5.

2.3 Data time point

2.3.1 As far as is possible, each indicator was based on data from the most recent time point available. Using the latest available data in this way means that there is not a single consistent time point for all indicators. However in practice most indicators in the Indices of Deprivation 2015 relate to the tax year 2012/13.

2.3.2 As with previous Indices, the Indices of Deprivation 2015 uses Census data only when alternative data from administrative sources is not available. Four such indicators were derived from the 2011 Census: adult skill levels and English language proficiency in the Education, Skills and Training Deprivation Domain;

household overcrowding in the Barriers to Housing and Services Domain; and houses without central heating in the Living Environment Deprivation Domain.

2.3.3   As a result of the time points for which data is available, the indicators do not take into account changes to policy since the time point of the data used. For example, the 2012/13 benefits data used do not include the impact of Universal Credit, which only began to replace certain income related benefits from April 2013.

2.4   Geography and spatial scale

2.4.1   The Indices of Deprivation 2015 have been produced at Lower-layer Super Output Area level, using the current (2011) Lower-layer Super Output Areas[9]. As was done for the Indices of Deprivation 2010, scores and ranks have been provided at Lower-layer Super Output Area level.

2.4.2   Summary measures for the Index of Multiple Deprivation, domains and supplementary Indices have been produced for the following higher-level geographies: local authority districts, upper-tier local authorities, local enterprise partnerships and clinical commissioning groups. These are based on the geographic boundaries for these areas at the time of publication.

2.4.3   Guidance is provided (Appendix A) on how to aggregate the Indices to other geographies such as wards or bespoke local areas.

2.5   The domains and indicators

2.5.1   Seven domains of deprivation are combined to produce the overall Index of Multiple Deprivation, each of which contains a number of component indicators. The criteria for inclusion of these indicators are that they should be 'domain specific' and appropriate for the purpose of measuring major features of that deprivation; up-to-date; capable of being updated on a regular basis; statistically robust; and available for the whole of England at a small area level in a consistent form.

2.5.2   The technical report which accompanies this report provides further details about the purpose of each domain, the indicators and denominators used and how the indicators are combined into the domains[10].

Income Deprivation Domain

2.5.3   The Income Deprivation Domain measures the proportion of the population in an area experiencing deprivation relating to low income. The definition of low income used includes both those people that are out-of-work, and those that are in work but who have low earnings (and who satisfy the respective means tests). A

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[9] Lower-layer Super Output Areas are homogenous small areas of relatively even size containing approximately 1,500 people. The Indices of Deprivation 2010 and earlier versions used the 2001 Lower-layer Super Output Area geography. The Office for National Statistics has since produced an updated version of the Lower-layer Super Output Area geography using population data from the 2011 Census. The changes made between the 2001 and 2011 versions were minimal: the boundaries of approximately 2.5% of the 2001 Lower-layer Super Output were modified.

[10] Department for Communities and Local Government (2015). The Indices of Deprivation 2015. Technical Report.

combined count of income deprived individuals per Lower-layer Super Output Area is calculated by summing the following six non-overlapping indicators:

- Adults and children in Income Support families [11]
- Adults and children in income-based Jobseeker's Allowance families
- Adults and children in income-based Employment and Support Allowance families
- Adults and children in Pension Credit (Guarantee) families
- Adults and children in Working Tax Credit and Child Tax Credit families not already counted, that is those who are not in receipt of Income Support, income-based Jobseeker's Allowance, income-based Employment and Support Allowance or Pension Credit (Guarantee) and whose equivalised income (excluding housing benefit) is below 60 per cent of the median before housing costs
- Asylum seekers in England in receipt of subsistence support, accommodation support, or both.

2.5.4   In addition an Income Deprivation Affecting Children Index and an Income Deprivation Affecting Older People Index were created, respectively representing the proportion of children aged 0-15, and people aged 60 and over, living in income deprived households.

Employment Deprivation Domain

2.5.5   The Employment Deprivation Domain measures the proportion of the working age population in an area involuntarily excluded from the labour market. This includes people who would like to work but are unable to do so due to unemployment, sickness or disability, or caring responsibilities. A combined count of employment deprived individuals per Lower-layer Super Output Area is calculated by summing the following five non-overlapping indicators:

- Claimants of Jobseeker's Allowance (both contribution-based and income-based), women aged 18 to 59 and men aged 18 to 64
- Claimants of Employment and Support Allowance, women aged 18 to 59 and men aged 18 to 64
- Claimants of Incapacity Benefit, women aged 18 to 59 and men aged 18 to 64
- Claimants of Severe Disablement Allowance, women aged 18 to 59 and men aged 18 to 64
- Claimants of Carer's Allowance, women aged 18 to 59 and men aged 18 to 64.

Education, Skills and Training Deprivation Domain

2.5.6   The Education, Skills and Training Domain measures the lack of attainment and skills in the local population. The indicators fall into two sub-domains: one relating to children and young people and one relating to adult skills. These two sub-domains are designed to reflect the 'flow' and 'stock' of educational disadvantage within an area respectively. That is, the 'children and young people' sub-domain

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[11] The word 'family' is used to designate a 'benefit unit', that is the claimant, any partner and any dependent children (those for whom Child Benefit is received).

measures the attainment of qualifications and associated measures ('flow'), while the 'skills' sub-domain measures the lack of qualifications in the resident working age adult population ('stock').

Children and Young People sub-domain
- Key Stage 2 attainment: The average points score of pupils taking reading, writing and mathematics Key Stage 2 exams[12]
- Key Stage 4 attainment: The average capped points score of pupils taking Key Stage 4
- Secondary school absence: The 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
- Entry to higher education: A measure of young people aged under 21 not entering higher education.

Adult Skills sub-domain

2.5.7   The Adult Skills sub-domain is a non-overlapping count of two indicators:

- Adult skills: The proportion of working age adults with no or low qualifications, women aged 25 to 59 and men aged 25 to 64
- English language proficiency: The proportion of working age adults who cannot speak English or cannot speak English well, women aged 25 to 59 and men aged 25 to 64.

Health Deprivation and Disability Domain

2.5.8   The Health Deprivation and Disability Domain measures the risk of premature death and the impairment of quality of life through poor physical or mental health. The domain measures morbidity, disability and premature mortality but not aspects of behaviour or environment that may be predictive of future health deprivation.

- Years of potential life lost: An age and sex standardised measure of premature death
- Comparative illness and disability ratio: An age and sex standardised morbidity/disability ratio
- Acute morbidity: An age and sex standardised rate of emergency admission to hospital
- Mood and anxiety disorders: A composite based on the rate of adults suffering from mood and anxiety disorders, hospital episodes data, suicide mortality data and health benefits data.

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[12] In 2012/13 the reading and writing components of English were assessed separately. Previously, the reading and writing components were assessed jointly.

Crime Domain

2.5.9　Crime is an important feature of deprivation that has major effects on individuals and communities. The Crime Domain measures the risk of personal and material victimisation at local level.

- Violence – number of reported violent crimes (18 reported crime types) per 1000 at risk population
- Burglary – number of reported burglaries (4 reported crime types) per 1000 at risk population
- Theft – number of reported thefts (5 reported crime types) per 1000 at risk population
- Criminal damage – number of reported crimes (8 reported crime types) per 1000 at risk population.

Barriers to Housing and Services Domain

2.5.10　This domain measures the physical and financial accessibility of housing and key local services. The indicators fall into two sub-domains: 'geographical barriers', which relate to the physical proximity of local services, and 'wider barriers' which includes issues relating to access to housing such as affordability.

Geographical Barriers sub-domain
- Road distance to a post office
- Road distance to a primary school
- Road distance to a general store or supermarket
- Road distance to a GP surgery.

Wider Barriers sub-domain
- Household overcrowding: The proportion of all households in a Lower-layer Super Output Area which are judged to have insufficient space to meet the household's needs
- Homelessness: Local authority district level rate of acceptances for housing assistance under the homelessness provisions of the 1996 Housing Act, assigned to the constituent Lower-layer Super Output Areas
- Housing affordability: Difficulty of access to owner-occupation or the private rental market, expressed as the inability to afford to enter owner occupation or the private rental market.

Living Environment Deprivation Domain

2.5.11　The Living Environment Deprivation Domain measures the quality of the local environment. The indicators fall into two sub-domains. The 'indoors' living environment measures the quality of housing; while the 'outdoors' living environment contains measures of air quality and road traffic accidents.

Indoors sub-domain
- Houses without central heating: The proportion of houses that do not have central heating

- Housing in poor condition: The proportion of social and private homes that fail to meet the Decent Homes standard.

Outdoors sub-domain
- Air quality: A measure of air quality based on emissions rates for four pollutants
- Road traffic accidents involving injury to pedestrians and cyclists: A measure of road traffic accidents involving injury to pedestrians and cyclists among the resident and workplace population.

2.6 Combining the domains

2.6.1 Each domain was constructed separately, from the component indicators, and each Lower-layer Super Output Area was assigned a domain score representing the combination of these indicators. Each area was then ranked according to this domain score.

2.6.2 The domain ranks were then ranked and transformed before combining into the overall Index of Multiple Deprivation[13]. Table 2.1 sets out the weights used to combine the domains, which are the same as in the Indices of Deprivation 2010[14].

Table 2.1. Domain weights used to construct the Index of Multiple Deprivation 2015	
Domain	Domain weight (%)
Income Deprivation Domain	22.5
Employment Deprivation Domain	22.5
Health Deprivation and Disability Domain	13.5
Education, Skills and Training Deprivation Domain	13.5
Barriers to Housing and Services Domain	9.3
Crime Domain	9.3
Living Environment Deprivation Domain	9.3

2.7 Summary of the domains, indicators and methods used to construct the Indices of Deprivation 2015

2.7.1 Figure 2.2 on the following page summarises the domains, indicators and methods used to construct the Indices of Deprivation 2015.

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[13] The accompanying technical report provides more detail on how the Indices of Deprivation are constructed, with information on the statistical methods that have been used, including how the weights were derived (see Chapter 3).
[14] Appendix B describes how users can combine the domains together using different weights for analytical purposes.

Figure 2.2. Summary of the domains, indicators and statistical methods used to create the Indices of Deprivation 2015

Income Deprivation Domain	Employment Deprivation Domain	Health Deprivation & Disability Domain	Education, Skills & Training Deprivation Domain	Crime Domain	Barriers to Housing & Services Domain	Living Environment Deprivation Domain
Adults & children in Income Support families	Claimants of Jobseeker's Allowance	Years of potential life lost	**Children & young people:** Key stage 2 attainment	Recorded crime rates for: Violence	**Geographical barriers:** Road distance to: post office; primary school; general store or supermarket; GP surgery	**Indoors living environment** Housing in poor condition
Adults & children in Income-based Jobseeker's Allowance families	Claimants of Employment and Support Allowance	Comparative illness and disability ratio	Key stage 4 attainment	Burglary		Houses without central heating
Adults & children in Income-based Employment and Support Allowance families	Claimants of Incapacity Benefit	Acute morbidity	Secondary school absence	Theft	**Wider barriers:** Household overcrowding	**Outdoors living environment** Air quality
Adults & children in Pension Credit (Guarantee) families	Claimants of Severe Disablement Allowance	Mood and anxiety disorders	Staying on in education	Criminal damage	Homelessness	Road traffic accidents
Adults & children in Child Tax Credit and Working Tax Credit families not already counted	Claimants of Carer's Allowance		Entry to higher education		Housing affordability	
Asylum seekers in England in receipt of subsistence support, accommodation support, or both			**Adults skills:** Adults with no or low qualifications English language proficiency			

Income Deprivation Domain:
- SUM / LSOA total population
- Apply 'shrinkage' procedure to this rate
- **Income Deprivation Domain Index**

Employment Deprivation Domain:
- SUM / LSOA population aged 18-59/64
- Apply 'shrinkage' procedure to this rate
- **Employment Deprivation Domain Index**

Health Deprivation & Disability Domain:
- Apply 'shrinkage' procedure to all data
- Factor analysis used to generate weights to combine indicators
- **Health Deprivation & Disability Domain Index**

Education, Skills & Training Deprivation Domain:
- Apply 'shrinkage' procedure to all data
- Factor analysis used to generate weights to combine indicators in children sub-domain. Adult skills indicators combined as non-overlapping count
- Two sub-domains standardised, exponentially transformed and combined with equal weights
- **Education, Skills & Training Deprivation Domain Index**

Crime Domain:
- Constrain numerators to CDRP totals, create rates then apply 'shrinkage' procedure to the four rates
- Factor analysis used to generate weights to combine indicators
- **Crime Domain Index**

Barriers to Housing & Services Domain:
- Apply 'shrinkage' procedure to overcrowding
- Standardise indicators in sub-domains and combine with equal weights
- Two sub-domains standardised, exponentially transformed and combined with equal weights
- **Barriers to Housing & Services Domain Index**

Living Environment Deprivation Domain:
- Apply 'shrinkage' procedure (not to air quality)
- Standardise indicators in sub-domains and combine with equal weights
- Two sub-domains standardised, exponentially transformed and combine using weights (0.66 'indoors' and 0.33 'outdoors')
- **Living Environment Deprivation Domain Index**

Domain scores ranked and transformed to exponential distribution

| 22.5% | 22.5% | 13.5% | 13.5% | 9.3% | 9.3% | 9.3% |

Domain scores are weighted and combined in the proportions above
The resulting Index of Multiple Deprivation 2015 scores are then ranked

Chapter 3.   Using and interpreting the Indices of Deprivation 2015 data

3.1   The data that has been published

3.1.1   The Indices of Deprivation 2015 have been produced at Lower-layer Super Output Area or neighbourhood level, using the current (2011) version of the Lower-layer Super Output Area geography[15]. Ranks, deciles and scores have been published at neighbourhood level for:

- the Index of Multiple Deprivation 2015;
- the seven domains, which are combined to make the overall Index of Multiple Deprivation; and where relevant, the sub-domains that comprise the domains; and
- the two supplementary indices: the Income Deprivation Affecting Children Index and the Income Deprivation Affecting Older People Index.

These are collectively referred to as the neighbourhood-level Indices in this chapter.

3.1.2   Summary measures for the Index of Multiple Deprivation, domains and supplementary Indices have been produced for the following higher-level geographies: local authority districts, upper-tier local authorities, local enterprise partnerships and clinical commissioning groups. These summary measures are described in Section 3.3 below.

3.1.3   The Index of Multiple Deprivation 2015, domain indices and the supplementary indices, together with the higher-level geography summaries, are collectively referred to as the Indices of Deprivation 2015.

3.1.4   Appendix F lists the datasets that that have been published for Lower-layer Super Output Areas and higher-level geographies. These datasets are available from www.gov.uk/government/statistics/english-indices-of-deprivation-2015.

3.2   Interpreting the neighbourhood-level data

Ranks, deciles and scores

3.2.1   The 32,844 Lower-layer Super Output Areas in England are ranked according to their deprivation score. For each of the neighbourhood-level indices, the most deprived Lower-layer Super Output Area in England is given a rank of 1, and the least deprived a rank of 32,844.

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[15] Lower-layer Super Output Areas are small areas of relatively even size containing approximately 1,500 people. The Indices of Deprivation 2010 and earlier versions used the 2001 Lower-layer Super Output Area geography. The Office for National Statistics has since produced an updated version of the Lower-layer Super Output Area geography using population data from the 2011 Census. The changes made between the 2001 and 2011 versions were minimal: the boundaries of approximately 2.5% of the 2001 Lower-layer Super Output were modified.

3.2.2   The deciles are produced by ranking the 32,844 Lower-layer Super Output Areas and dividing them into 10 equal-sized groups. Decile 1 represents the most deprived 10 per cent of areas nationally and decile 10, the least deprived 10 per cent of areas nationally.

3.2.3   The ranks and deciles can straightforwardly be interpreted as showing broadly whether a Lower-layer Super Output Area is more deprived than any other such area in the country. The ranks (and deciles) are relative: they show that one area is more deprived than another but not by how much. For example, if an area has a rank of 1,000, it is not half as deprived as a place with a rank of 500.

3.2.4   The ranks and deciles are based on scores: the larger the score, the more deprived the area. In the case of the Income and Employment deprivation domains and the supplementary Indices, the scores are meaningful and relate to a proportion of the relevant population experiencing that type of deprivation (see relevant sections below for details). This means that in addition to the ranks which show *relative* deprivation, the scores for these domains can be used to compare areas on an absolute scale (although this does not mean that they can be used to identify real change over time, as discussed in paragraph 3.4.8).

3.2.5   The scores for the Index of Multiple Deprivation and the remaining five domains are less easy to interpret, as they do not relate straightforwardly to the proportion of the population experiencing deprivation. For example, an area with a score of 60 on the Index of Multiple Deprivation is not necessarily twice as deprived as an area with a score of 30. It is recommended that ranks and deciles, but not scores, are used in the case of the Index of Multiple Deprivation and these domains.

3.2.6   The purpose of Indices of Deprivation is to measure as accurately as possible the relative distribution of deprivation at a small area level, but this comes at the expense of 'backwards' comparability. When exploring changes in deprivation between the Indices of Deprivation 2015 and previous versions of the Indices, users should be aware that changes can only be described in relative terms, for example, the extent to which an area has changed rank or decile of deprivation.

3.2.7   Section 3.4 describes how users can make valid comparisons over time, and also sets out suggestions for how users might explore whether any changes seen in the Indices of Deprivation data can be attributed to real change over time.

Points to consider when using the data

3.2.8   The neighbourhood-level Indices provide a description of areas; but this description does not apply to every person living in those areas. Many non-deprived people live in deprived areas, and many deprived people live in non-deprived areas.

3.2.9   The Indices are designed to identify aspects of deprivation, not affluence. For example, the measure of income deprivation is concerned with people on low incomes who are in receipt of benefits and tax credits. An area with a relatively small proportion of people (or indeed no people) on low incomes may also have relatively few or no people on high incomes. Such an area may be ranked among the least deprived in the country, but it is not necessarily among the most affluent. It may also be the case that some highly deprived areas contain pockets of affluence; that is, an area might contain both deprived and affluent people.

3.2.10 In addition, the Indices of Deprivation methodology is designed to reliably distinguish between areas at the most deprived end of the distribution, but not at

the least deprived end. Differences between less deprived areas in the country are therefore less well defined than those between areas at the more deprived end of the distribution.

The Index of Multiple Deprivation 2015

3.2.11 The overall Index of Multiple Deprivation 2015 describes each Lower-layer Super Output Area by combining information from all seven domains: Income Deprivation, Employment Deprivation, Health Deprivation and Disability, Education Skills and Training Deprivation, Barriers to Housing and Services, Living Environment Deprivation, and Crime.

3.2.12 As outlined in Chapter 2, the domains were combined in two stages. First, each domain score was standardised by ranking, and then transformed to an exponential distribution. Then the domains were combined using the explicit domain weights chosen. The overall Lower-layer Super Output Area level Index of Multiple Deprivation score was then ranked and split into deciles.

3.2.13 As indicated in paragraph 3.2.5 above, it is recommended that the Index of Multiple Deprivation ranks and deciles are used rather than the score. The score, being the combined sum of the weighted, exponentially transformed domain rank of the domain scores, is less easy to interpret in its own right.

The domains and sub-domains

3.2.14 Each of the seven domain scores, and six sub-domain scores, describe each type of deprivation in a Lower-layer Super Output Area. These enable users to focus on particular types of deprivation and to compare across Lower-layer Super Output Areas.

3.2.15 Larger scores on any of domains or sub-domains correspond to more deprived areas. The scores for the Income Deprivation Domain and the Employment Deprivation Domain are rates, and can be interpreted as the proportion of the relevant population that is 'income deprived' or 'employment deprived' respectively. So, for example, if a Lower-layer Super Output Area scores 0.38 in the Income Deprivation Domain, this means that 38 per cent of the population is income deprived in that area.

3.2.16 As indicated in paragraph 3.2.5 above, for the remaining five domains it is recommended that ranks and deciles are used rather than the score, as the scores are less easy to interpret. Further, these domains have different minimum and maximum values and ranges and cannot be directly compared. The scores reflect the statistical methods used to derive them (as described in Chapter 2 and the technical report), for example the Crime Domain score is the combined weighted sum of the four indicators after they have been standardised by ranking and transforming to a normal distribution.

The Income Deprivation Affecting Children Index (IDACI) and Income Deprivation Affecting Older People Index (IDAOPI)

3.2.17 The Income Deprivation Affecting Children Index is a subset of the Income Deprivation Domain, with the Index showing the proportion of children in each Lower-layer Super Output Area that live in families that are income deprived; those

that are in receipt of Income Support, income-based Jobseeker's Allowance, Pension Credit Guarantee or Child Tax Credit below a given threshold.

3.2.18 The Income Deprivation Affecting Older People Index is similarly a subset of the Income Deprivation Domain, with the score showing the proportion of a Lower-layer Super Output Area's population aged 60 and over who are income deprived.

3.2.19 As with the Income and Employment Deprivation Domain scores, the Income Deprivation Affecting Children Index and Income Deprivation Affecting Older People Index scores are rates, so can be interpreted as the proportion of the relevant population that is 'income deprived'. For example a score of 0.24 on the Income Deprivation Affecting Children Index would mean that 24% of children in the area live in income-deprived families.

3.3   Interpreting the higher-level geography summaries

3.3.1 The neighbourhood-level Indices data described above provide a description of deprivation levels across each of the Lower-layer Super Output Areas in England. The summary measures described in this section help users identify and understand the patterns of deprivation for larger areas such as local authority districts.

3.3.2 The pattern of deprivation across large areas can be complex. In some areas, deprivation is concentrated in pockets, rather than evenly spread throughout. In some other areas the opposite picture is seen, with deprivation spread relatively evenly throughout the area, and with no highly deprived areas.

3.3.3 Higher-level areas such as local authority districts or local enterprise partnerships can also vary enormously in terms of geographical area and population size[16]. Accordingly, the volume of deprivation, for example how many people are experiencing income or employment deprivation, should also be taken into account, as well as the intensity of deprivation.

3.3.4 The set of summary measures have been carefully designed to help users understand deprivation patterns for a set of higher-level areas. The measures identify the overall intensity of deprivation, how deprivation is distributed across the larger area, and the overall volume, or 'scale', of deprivation:

- The average rank and average score summaries identify the average level of deprivation in the larger area, taking into account all Lower-layer Super Output Areas in the area;
- The proportion of Lower-layer Super Output Areas in the most deprived 10 per cent nationally and the extent measure are summaries of the degree to which the higher-level area is highly deprived. These two summary measures respectively identify the proportion of the Lower-layer Super Output Areas that are in the most deprived 10 per cent of areas, and a weighted-sum of the population living in the most deprived 30 per cent of areas;

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[16] Lower-layer Super Output Areas have been designed to cover roughly equal-sized populations, so direct comparisons of deprivation levels are appropriate.

- The local concentration summary identifies those higher-level areas with extreme levels of deprivation, by comparing the most deprived Lower-layer Super Output Areas in the higher-level area against those in other areas across the country;
- The income scale and employment scale summaries identify the volume of deprivation in the larger area according to the number of people who are, respectively, income deprived or employment deprived. As with the average rank and score, these summaries are based on all Lower-layer Super Output Areas in the larger area.

3.3.5 No single summary measure is the 'best' measure. Each highlights different aspects of deprivation, and each leads to a different ranking of areas. Comparison of the different measures is needed to give a fuller description of deprivation in a large area. In addition, it is important to remember that the higher-area measures are *summaries*; the Lower-layer Super Output Area level data provides more detail than is available through the summaries.

3.3.6 The summary measures have been produced for the following higher-level geographies for the Index of Multiple Deprivation, domains and supplementary indices: local authority districts, upper-tier local authorities, local enterprise partnerships and clinical commissioning groups[17]. As with the Lower-layer Super Output Area data, both ranks and scores are produced, with higher scores corresponding to higher levels of deprivation[18], and areas ranked so that a rank of 1 identifies the most deprived high-level area on that measure[19].

Average rank

3.3.7 The average rank measure summarises the average level of deprivation across the higher-level area, based on the ranks of the Lower-layer Super Output Areas in the area.

3.3.8 As all Lower-layer Super Output Areas in the higher-level area are used to create the average rank, this gives a measure of the whole area covering both deprived and non-deprived areas. The measure is population-weighted, to take account of the fact that Lower-layer Super Output Area population sizes can vary.

3.3.9 The nature of this measure – using all areas, and using ranks rather than scores – means that a highly polarised local authority or other higher-level area would not tend to score highly, because extremely deprived and less deprived Lower-layer

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[17] Appendix A describes how users can aggregate the Lower-layer Super Output Area data to different geographies such as wards.

[18] In order that higher scores can consistently be interpreted as corresponding to higher levels of deprivation, those summary measures that are based on Lower-layer Super Output Area *ranks* (the average rank and local concentration summary measures) use a reversed ranking - where 32,844 rather than 1 corresponds to the most deprived area - in the calculation of the summary measure score.

[19] The ranks were constructed separately for each higher-level geography, and are therefore not directly comparable between the different geographies. For example an area ranked 20th of the clinical commissioning groups is not necessarily more deprived than an area ranked 25th of the local authority districts. To compare between the different types of areas, the summary scores should be used rather than ranks.

Super Output Areas will 'average out'. Conversely, a higher-level area that is more uniformly deprived will tend to score highly on the measure.

Average score

3.3.10 The average score measure summarises the average level of deprivation across the higher-level area, based on the scores of the Lower-layer Super Output Areas in the area.

3.3.11 As all Lower-layer Super Output Areas in the higher-level area are used to create the average score, this gives a measure of the whole area covering both deprived and non-deprived areas. The measure is population-weighted, to take account of the fact that Lower-layer Super Output Area population sizes can vary.

3.3.12 The main difference with the average rank measure described above is that more deprived Lower-layer Super Output Areas tend to have more 'extreme' scores than ranks. So highly deprived areas will not tend to average out to the same extent as when using ranks; highly polarised areas will therefore tend to score higher on the average score measure than on the average rank.

Proportion of Lower-layer Super Output Areas in the most deprived 10 per cent nationally

3.3.13 The proportion of Lower-layer Super Output Areas in the most deprived 10 per cent nationally measures the proportion of the Lower-layer Super Output Areas in the higher-level area that are classified as among the most deprived 10 per cent in the country.

3.3.14 By contrast to the average rank and average score measures, which are based on all Lower-layer Super Output Areas in the higher-level area, this measure focuses only on the most deprived Lower-layer Super Output Areas. Higher-level areas which have no Lower-layer Super Output Areas in the most deprived 10 per cent of all such areas in England have a score of zero for this summary measure.

Extent

3.3.15 The extent measure is a summary of the proportion of the local population that live in areas classified as among the most deprived in the country. The extent measure is a more sophisticated version of the proportion of Lower-layer Super Output Areas in the most deprived 10 per cent nationally measure, and is designed to avoid the sharp cut-off seen in that measure, whereby areas ranked only a single place outside the most deprived 10 per cent are not counted at all.

3.3.16 The extent measure is designed to avoid such 'cliff edges', by using a weighted measure of the population in the most deprived 30 per cent of all areas:

- The population living in the most deprived 10 per cent of Lower-layer Super Output Areas in England receive a 'weight' of 1.0;
- The population living in the most deprived 11 to 30 per cent of Lower-layer Super Output Areas receive a sliding weight, ranging from 0.95 for those in the eleventh percentile, to 0.05 for those in the thirtieth percentile.

3.3.17 Higher-level areas which have no Lower-layer Super Output Areas in the most deprived 30 per cent of all areas in England have a score of zero for this summary measure.

Local concentration

3.3.18 The local concentration measure is a summary of how the most deprived Lower-layer Super Output Areas in the higher-level area compare to those in other higher-level areas across the country. This measures the average rank for the most deprived Lower-layer Super Output Areas in the higher-level area that contain exactly 10 per cent of the higher-level area population.

3.3.19 Similarly to the proportion of Lower-layer Super Output Areas in the most deprived 10 per cent nationally and extent measures, the local concentration measure is based on only the most deprived Lower-layer Super Output Areas in the higher-level area, rather than on all areas. By contrast to these measures however, the local concentration measure gives additional weight to very highly deprived areas.

3.3.20 An example may help: consider two local authority districts, the first having one-quarter of its Lower-layer Super Output Areas ranked in the most deprived *10 per cent* of all areas in England and the second with one-quarter of its Lower-layer Super Output Areas ranked in the most deprived *1 per cent* of all areas. The two districts would score identically on the proportion of Lower-layer Super Output Areas in most deprived 10 per cent nationally and extent of deprivation summary measures, as these do not differentiate between levels of deprivation within the most deprived decile. However the local concentration score would be much higher for the second area, due to the large proportion of extremely highly deprived areas.

Income scale and employment scale (two measures)

3.3.21 The two scale measures summarise the number of people in the higher-level area who are income deprived (the income scale) or employment deprived (the employment scale).

3.3.22 These measures are designed to give an indication of the number of people experiencing income deprivation and employment deprivation in the local area. For example, if two districts have the same percentage of income deprived people, the larger district will be ranked as more deprived on the income scale measure because more people are experiencing the deprivation.

3.3.23 It is important to note that the two scale measures do not pick up large populations, but large *deprived* populations. These measures will therefore identify districts with large numbers of people experiencing deprivation.

Using the higher-level geography summaries to understand deprivation patterns

3.3.24 The higher-level geography summaries can help users better understand the patterns of deprivation in a local area. As an example to illustrate this, consider the two local authority districts of North Norfolk and Swale. Both are rural coastal districts within large counties (Norfolk and Kent, respectively). Table 3.1 identifies how the two districts rank on the summary measures.

Table 3.1. Higher-level geography summary measures for two local authority districts		
Higher-level geography summary measures	Swale local authority district (ranks)	North Norfolk local authority district (ranks)
Average rank	88	93
Average score	87	128
Proportion of Lower-layer Super Output Areas in the most deprived 10 per cent nationally	52	* 200
Extent	91	206
Local concentration	31	214
Income scale	112	192
Employment scale	111	204
On each summary measure, the most deprived local authority district in England is ranked 1, and larger ranks correspond to lower levels of deprivation. * Local authority districts with no Lower-layer Super Output Areas in the most deprived 10 per cent nationally receive a score of zero, and a joint rank of 200, for the proportion of Lower-layer Super Output Areas in the most deprived 10 per cent nationally summary measure.		

3.3.25 The two districts are ranked very similarly across all local authority districts, when based on the *average rank* of the Lower-layer Super Output Areas in the districts. However, they differ on the other summaries, with Swale ranking significantly more deprived than North Norfolk on each of the other five measures. (Remember that smaller ranks correspond to higher levels of deprivation, with the most deprived area in England being ranked 1.)

- Swale has a similar ranking to the average rank measure, for both the average score and extent measures. By contrast, North Norfolk is significantly less deprived according to the average score, proportion of Lower-layer Super Output Areas in most deprived 10 per cent nationally, and extent measures than on the average rank measure.
- The difference between the two districts is most significant when using the local concentration scale, where Swale ranks in the most deprived 10 per cent of all local authority districts in the country, while North Norfolk ranks in the 40 per cent *least* deprived.
- The higher ranking for Swale than North Norfolk on the income and employment scale measures shows that Swale has a greater *volume* of deprivation than North Norfolk, with a larger number of people who are income deprived, or employment deprived.

3.3.26 Comparison of the summary measures can be used to draw out the differences in deprivation patterns between the two areas. The analysis identifies that deprivation in Swale is concentrated into smaller pockets of deprivation, picked up in the Local concentration measure. However, there are many non-deprived areas across Swale district which act to 'cancel' out these highly deprived areas in the average rank and average score measures. By comparison, there are fewer highly deprived areas in North Norfolk, with deprivation levels more spread-out across the district rather than concentrated in smaller pockets. As a consequence, North Norfolk scores significantly less deprived on those measures that highlight deprived areas, namely the extent and local concentration summaries.

3.4 Interpreting change over time

3.4.1 The Indices of Deprivation 2015 have been produced using the same approach, structure and methodology used to create the previous Indices of Deprivation 2010 (and the 2007 and 2004 versions). Feedback from users was supportive of the decision not to make major changes to the Indices, and changes to the basket of indicators used were made only where such changes strengthened the Indices.

3.4.2 As stated earlier, the purpose of the Indices is to measure as accurately as possible the relative distribution of deprivation at a small area level, and that this comes at the expense of 'backwards' comparability with previous versions of the Indices. However, keeping a consistent methodology allows some comparisons to be made over time between the Indices of Deprivation 2015 and previous versions, but only in terms of comparing the rankings as determined at the relevant time point by each of the versions. The versions of the indices should not be construed as a time-series. As described below, other changes limit the ability to make comparisons over time:

- Changes to the data used to construct the indicators, including changes to eligibility criteria for certain benefits used to measure income deprivation and employment deprivation;
- Revisions to the population denominator data;
- Changes to the area definitions[20].

3.4.3 This section outlines which types of comparisons over time are valid, and what users should consider when making comparisons over time.

Relative and absolute change

3.4.4 Changes in deprivation levels over time are relative to other areas. When exploring changes in deprivation between the Indices of Deprivation 2015 and previous versions of the Indices, users should be aware, and make clear in analysis, that such changes are relative to other areas.

3.4.5 For example, it would be valid to state that an area showed an increased level of deprivation, relative to other areas, if it was ranked within the most deprived 20 per cent of areas nationally based on the 2010 Indices but ranked within the most deprived 10 per cent according to the 2015 Indices. However, it would not necessarily be correct to state that the level of deprivation in the area had increased on some *absolute* scale, as it may be the case that all areas had improved, but that this area had improved more slowly than other areas and so been 'overtaken' by those areas.

3.4.6 Similarly, the overall rank of an area may not have changed between the 2010 and 2015 Indices, but this does not mean that there have been no changes to the level of deprivation in the area. For example, in the situation where the absolute levels of deprivation in all areas were increasing or decreasing at the same rate, the ranks would show no change.

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[20] For example, caution should be exercised when comparing ranks of the 2015 Indices with previous updates, since there were 32,844 Lower-layer Super Output Areas at the time of the 2015 Indices compared with 32,482 for previous updates.

3.4.7 Equally, when comparing the overall Index of Multiple Deprivation, if improvements in one domain are offset by a decline in another domain, the overall Index of Multiple Deprivation position may be the same even if significant changes have occurred in these two underlying domains.

3.4.8 As discussed in 3.2.15, on two domains, the Income Deprivation Domain and the Employment Deprivation Domain, and the supplementary Indices, the domain scores are simple proportions of the relevant population experiencing income or employment deprivation, respectively. Nevertheless, these domains and supplementary Indices are not comparable with previous versions of the Indices for the reasons outlined in 3.4.2 and measures of change over time are, again, relative.

Understanding changes in the Indices over time

3.4.9 Users should be aware of the following to understand why changes in the Indices of Deprivation data should be interpreted with care.

Changes to the indicators or data used to construct the indicators

3.4.10 Although the Indices of Deprivation 2015 have been produced using the same approach, structure and methodology as earlier versions, there are some changes to the basket of indicators used (although not to the domains themselves). As described in the accompanying technical report, a small number of new indicators have been included, indicators that are no longer relevant (or available) have been dropped, and some indicators have been enhanced. Each of these changes was introduced in order to strengthen the Indices as a robust measure of small area deprivation.

3.4.11 In addition, changes to the datasets underlying the indicators may have an effect on indicator values. These changes could include, for example, eligibility criteria changes for certain benefits, or the impact of Jobseeker's Allowance sanctions.

Revisions to the population denominator data

3.4.12 Following the Census 2011 publication, the mid-year population estimates stretching back to 2001 were revised to take into account the Census 2011 population data. These mid-year estimates are an important component of the Indices of Deprivation, and changes to the population estimates can result in changes to deprivation levels.

3.4.13 The earlier Indices of Deprivation 2010, 2007, 2004 and 2000 used mid-year population estimate data published prior to the Census 2011 revisions.

Changes to the Lower-layer Super Output Area definitions

3.4.14 The Indices of Deprivation 2015 have been produced using the current (2011) version of Lower-layer Super Output Areas, while the previous Indices used the 2001 version. The changes made between the 2001 and 2011 boundaries affected 2.5 per cent of the 2001 Lower-layer Super Output Areas.

Considerations in assessing change over time

3.4.15 The changes described above make it difficult to determine real changes in deprivation from the Indices rankings and scores, such as those arising from

social, economic or demographic trends and the impact of specific policies or interventions. Users who wish to explore whether any changes seen in the Indices of Deprivation data can be attributed to real change over time may wish to:

- examine the impact of new or changed indicators in the areas that they are interested in. For example, using the published domain and indicator data to identify those changes that have an impact on the final output scores and ranks;
- examine whether changes observed between the Indices of Deprivation 2015 and the earlier indices could be, at least in part, due to revisions to the population estimates[21];
- check that changes in deprivation levels between the time-points are not in part driven by changes to the geographies; for example, where two 2001 Lower-layer Super Output Areas have been merged, the population-weighted average of their data could be compared with the resulting 2011 area. Where a 2001 Lower-layer Super Output Area has split, data for that area could be compared to the population-weighted average of the data for the resulting 2011 areas.

3.4.16 Users may also wish to examine trends seen in other datasets. There is an increasing amount of open (i.e. published) data available for users to explore social, economic and demographic trends at local level. Users may want to analyse trends seen in the Indices of Deprivation data in the context of these other datasets to understand what is likely to be driving changes. For example, benefit claimant data published by the Department for Work and Pensions[22] and economic and labour market data published by the Office for National Statistics[23] can be used to understand whether changes to the size of particular groups receiving benefits may be driving changes in the Income Deprivation Domain and Employment Deprivation Domain.

3.4.17 Other local knowledge of the area can be helpful when interpreting changes in the data. For example, knowing the impact of local business growth and job creation schemes would mean that changes in the Employment Deprivation Domain could be more confidently attributed to real change.

3.5 Comparing the English Indices of Deprivation 2015 with Welsh, Scottish and Northern Irish indices of deprivation

3.5.1 Indices of Deprivation data is published for each of the countries in the United Kingdom[24]. These datasets are based on the same concept and general

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[21] Note that the analysis of change in Chapter 5 is based on the published Indices of Deprivation data, and has not been adjusted for the revisions to the population estimates.

[22] Statistics published by the Department of Work and Pensions are linked from https://www.gov.uk/government/organisations/department-for-work-pensions/about/statistics.

[23] For example, labour market trends data from the Office for National Statistics is available at http://www.ons.gov.uk/ons/rel/lms/labour-market-statistics/index.html.

[24] Scottish Index of Multiple Deprivation 2012, http://www.gov.scot/Topics/Statistics/SIMD; Welsh Index of Multiple Deprivation 2014, http://gov.wales/statistics-and-research/welsh-index-multiple-deprivation/?lang=en; Northern Ireland Multiple Deprivation Measure 2010 http://www.nisra.gov.uk/deprivation/nimdm_2010.htm.

methodology, however there are differences in the domains and indicators, the geographies for which the indices are developed and the time points on which they are based. These differences mean that the ranks and scores for the English Indices of Deprivation published here should not be directly compared with those from the Indices produced in Wales, Scotland and Northern Ireland.

Chapter 4.　The geography of deprivation

4.1　Introduction

4.1.1　This and the following chapter present some key findings from analysis of the Indices of Deprivation 2015. Chapter 5 focuses on change over time, while this chapter focuses on the geography of deprivation across England, looking at:

- deprivation at local level, showing the most deprived Lower-layer Super Output Areas and local authority districts according to the Index of Multiple Deprivation;
- areas that are highly deprived on more than one domain; and
- local authority district summary measures, including maps of the set of summary measures.

4.1.2　In this analysis we have described patterns of deprivation using a variety of thresholds appropriate to the analysis carried out. There is no definite threshold above which an area can be described as 'deprived'; the Indices of Deprivation are a continuous scale of deprivation. Users often take the most deprived 10 per cent or 20 per cent of Lower-layer Super Output Areas (or local authority districts) as the group of highly deprived areas, however there is no reason that other thresholds could not be used instead.

4.1.3　The maps and charts in this and the following chapter show all areas, grouped into 10 per cent bands. In addition, the most deprived areas are analysed looking at the most deprived 1 per cent, 5 per cent, 10 per cent and 20 per cent of Lower-layer Super Output Areas. Where local authority districts are described, we illustrate the analysis by showing the most deprived 10 local authorities for the overall Index of Multiple Deprivation, and we present the most deprived 5 local authorities for each of the domains in Appendix E. Some of the analysis groups all Lower-layer Super Output Areas across the country into 10 per cent bands (*deciles*) and 20 per cent bands (*quintiles*), by their deprivation rank. Based on the published data, users can of course extend the analysis in this section to examine any of the areas or issues in more detail.

4.1.4　In addition to the analysis in this chapter, Appendix D presents summary measures for local enterprise partnerships and clinical commissioning groups, and Appendix E presents analysis of the domains and sub-domains.

4.2　Deprivation at local level

The Index of Multiple Deprivation

4.2.1　The patterns of deprivation across England are complex. The most deprived Lower-layer Super Output Areas and least deprived Lower-layer Super Output Areas are spread throughout England.

4.2.2　The following map shows the Index of Multiple Deprivation 2015 at Lower-layer Super Output Area level across England (Map 4.1). The areas have been ranked and divided into 10 equal groups (deciles). Areas shaded dark blue are the most deprived 10 per cent of Lower-layer Super Output Areas in England, while areas shaded bright yellow are the least deprived 10 per cent.

Map 4.1. The Index of Multiple Deprivation 2015

Greater London

Scilly

IRISH SEA

ENGLISH CHANNEL

Most deprived 10%

Least deprived 10%

Contains OS data © Crown copyright (2015)
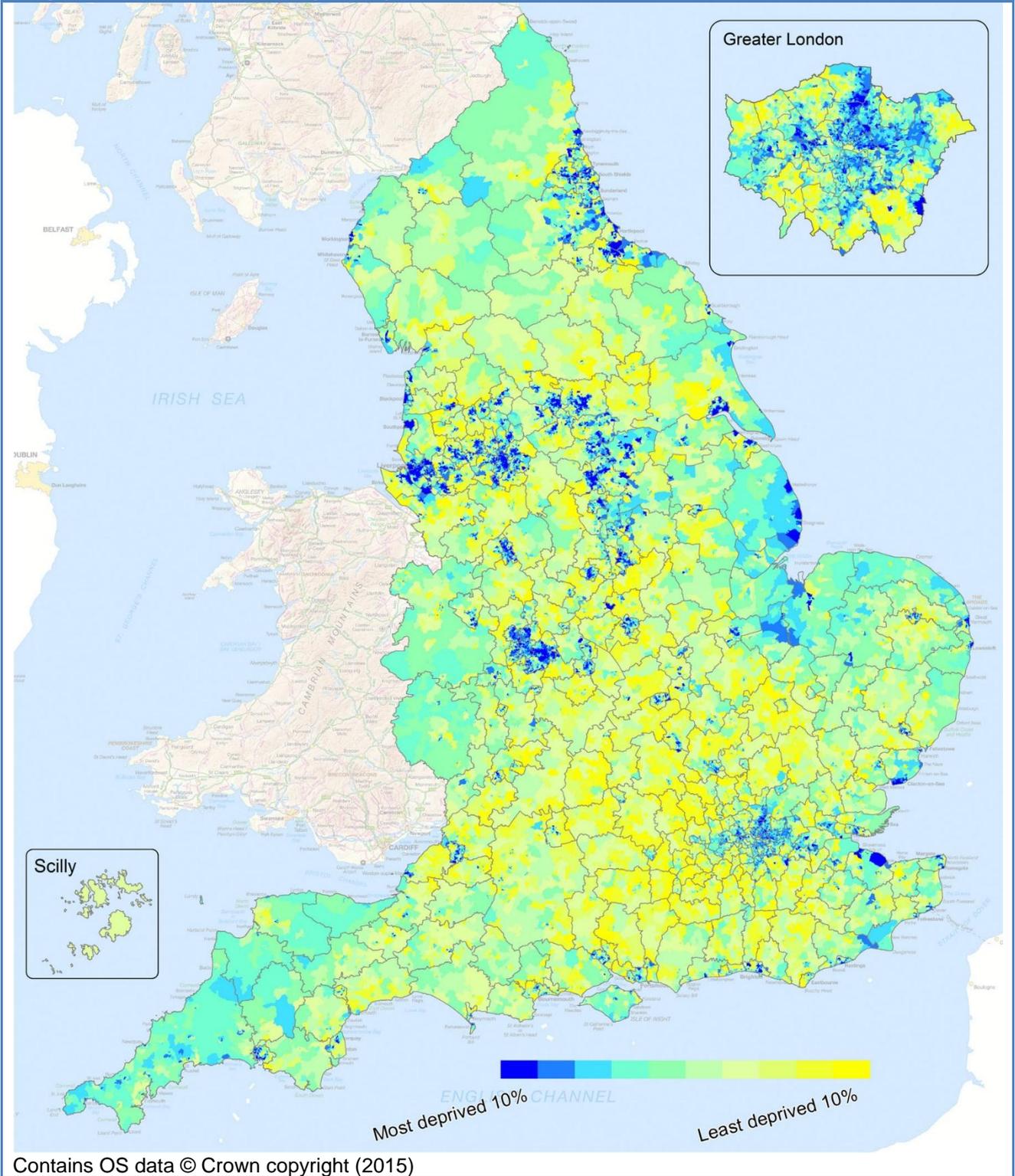
4.2.3   As was the case in previous Indices, there are concentrations of deprivation in
large urban conurbations, areas that have historically had large heavy industry,
manufacturing and/or mining sectors, coastal towns, and large parts of East
London.

The most deprived areas by local authority district

4.2.4   This section highlights which local authorities rank as most deprived, based on
those Lower-layer Super Output Areas that are ranked among the 20 per cent, 10
per cent, 5 per cent and 1 per cent most deprived areas nationally. (Section 4.4
looks in more detail at the full set of summary measures for local authority
districts.) As local authority districts vary considerably in size, the analysis here is
based on those areas with the highest proportion of deprived Lower-layer Super
Output Areas.

4.2.5   Tables 4.1 to 4.4 below show the ten local authorities with the highest proportion of
Lower-layer Super Output Areas in the most deprived 20 per cent, 10 per cent, 5
per cent, and 1 per cent nationally, respectively. Of the 326 local authority districts
in England:

- 73 have at least one Lower-layer Super Output Area in the most deprived 1 per
  cent nationally;
- 144 have at least one Lower-layer Super Output Area in the most deprived 5
  per cent;
- 199 have at least one Lower-layer Super Output Area in the most deprived 10
  per cent;
- 266 have at least one Lower-layer Super Output Area in the most deprived 20
  per cent.

Table 4.1. Local authority districts with the highest proportion of Lower-layer Super Output Areas in the most deprived 20 per cent of areas nationally based on the Index of Multiple Deprivation		
Local authority district	Number	Per cent
Knowsley	60	61.2
Liverpool	181	60.7
Nottingham	110	60.4
Barking and Dagenham	65	59.1
Manchester	165	58.5
Tower Hamlets	84	58.3
Middlesbrough	49	57.0
Hackney	80	55.6
Sandwell	102	54.8
Birmingham	350	54.8

Table 4.2. Local authority districts with the highest proportion of Lower-layer Super Output Areas in the most deprived 10 per cent of areas nationally based on the Index of Multiple Deprivation

Local authority district	Number	Per cent
Middlesbrough	42	48.8
Knowsley	45	45.9
Kingston upon Hull	75	45.2
Liverpool	134	45.0
Manchester	115	40.8
Birmingham	253	39.6
Blackpool	36	38.3
Nottingham	61	33.5
Burnley	20	33.3
Hartlepool	19	32.8

Table 4.3. Local authority districts with the highest proportion of Lower-layer Super Output Areas in the most deprived 5 per cent of areas nationally based on the Index of Multiple Deprivation

Local authority district	Number	Per cent
Middlesbrough	33	38.4
Kingston upon Hull	63	38.0
Liverpool	105	35.2
Knowsley	33	33.7
Blackpool	30	31.9
Manchester	70	24.8
Burnley	13	21.7
Birmingham	136	21.3
Hartlepool	12	20.7
North East Lincolnshire	21	19.8

Table 4.4. Local authority districts with the highest proportion of Lower-layer Super Output Areas in the most deprived 1 per cent of areas nationally based on the Index of Multiple Deprivation

Local authority district	Number	Per cent
Blackpool	19	20.2
Knowsley	13	13.3
Kingston upon Hull	20	12.0
Middlesbrough	10	11.6
Liverpool	26	8.7
Great Yarmouth	5	8.2
Barrow-in-Furness	4	8.2
Burnley	4	6.7
North East Lincolnshire	7	6.6
Manchester	18	6.4

Levels of income and employment deprivation in the most deprived areas

4.2.6   Table 4.5 shows, for the most deprived 1 per cent, 5 per cent, 10 per cent and 20 per cent of Lower-layer Super Output Areas according to the Index of Multiple Deprivation, the proportion of the population that is income or employment deprived, with additional detail for children and older people living in low income families. The table also shows the 20-40%, 40-60%, 60-80% and 80-100% quintiles for comparison, along with the average for all areas across England.

Table 4.5: The proportion of the population that are income or employment deprived, including the proportion of children and older people that are income deprived, for all Lower-layer Super Output Areas grouped by their Index of Multiple Deprivation 2015 rank

	Percentage of people who are income deprived	Percentage of working-age people who are employment deprived	Percentage of children who are income deprived	Percentage of older people who are income deprived
1 per cent most deprived areas	47.5	38.4	55.0	47.6
5 per cent most deprived areas	40.4	31.6	47.6	43.0
10 per cent most deprived areas	36.3	28.0	43.6	39.7
20 per cent most deprived areas	31.2	23.6	39.0	35.4
20-40 per cent areas	17.8	13.7	24.4	22.1
40-60 per cent areas	11.4	9.4	15.0	14.4
60-80 per cent areas	7.5	6.8	9.1	10.0
80-100 per cent (least deprived) areas	4.5	4.6	4.9	6.2
All areas in England	14.5	11.8	19.7	16.1

4.2.7   The most deprived 20 per cent of Lower-layer Super Output Areas in England, that is 6,496 of the 32,844 areas, account for 10.7 million people, representing almost exactly 20 per cent of the population of England[25]. The table shows that in these areas:

- on average, just under a third (31.2 per cent) of people are income deprived;
- just under one in four (23.6 per cent) of the working age population (women aged 18 to 59 and men aged 18 to 64) are employment deprived;
- almost two in five children live in families that are income deprived (39 per cent); and
- more than one-third (35.4 per cent) of older people are income deprived.

4.2.8   People living in the most deprived 1 per cent of areas are more than 10 times as likely to be income deprived as those in the least deprived 20 per cent of areas. In the most deprived 1 per cent of areas nearly half of all people, and more than half of all children, are income deprived.

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[25] As outlined in Section 3.2, it is important to remember that not all people living in deprived Lower-layer Super Output Areas are themselves deprived.

4.3 Areas that are highly deprived on more than one domain

4.3.1 Many of the most deprived areas in England face multiple issues. Taking the most deprived 10 per cent (decile) of Lower-layer Super Output Areas on the overall Index of Multiple Deprivation 2015, it is possible to ascertain the number of component domains on which each Lower-layer Super Output Area ranks within the most deprived 10 per cent of areas nationally.

4.3.2 Table 4.6 summarises this information and shows:

- Just three of the most deprived 3,284 Lower-layer Super Output Areas on the Index of Multiple Deprivation rank in the most deprived 10 per cent of Lower-layer Super Output Areas on all seven component domains.
- Over a quarter (26.7 per cent) of the 3,284 Lower-layer Super Output Areas rank in the most deprived 10 per cent of Lower-layer Super Output Areas on five or more domains.
- Nearly two-thirds (63.5 per cent) of the 3,284 Lower-layer Super Output Areas rank in the most deprived 10 per cent of Lower-layer Super Output Areas on four or more domains.
- Almost all (99 per cent) of the 3,284 Lower-layer Super Output Areas rank in the most deprived 10 per cent of Lower-layer Super Output Areas on two or more domains.
- All of the 3,284 Lower-layer Super Output Areas rank in the most deprived 10 per cent of Lower-layer Super Output Areas on at least one domain.

Table 4.6. Lower-layer Super Output Areas that are in the most deprived 10 per cent of areas nationally based on the Index of Multiple Deprivation, by the number of domains on which they are also in the most deprived decile

Number of domains	Number of Lower-layer Super Output Areas	Percentage of Lower-layer Super Output Areas
7	3	0.1
6	159	4.8
5	714	21.7
4	1,210	36.8
3	894	27.2
2	271	8.3
1	33	1.0
Total	3,284	100.0

4.3.3 Table 4.7 shows more detail for the 162 Lower-layer Super Output Areas in England that are in the 10 per cent most deprived areas on either six or seven domains of deprivation. These 162 Lower-layer Super Output Areas are not evenly distributed across England: the table lists the ten local authority districts that contain the highest proportion of Lower-layer Super Output Areas ranked among the 10 per cent most deprived on either six or seven domains. Two of the three Lower-layer Super Output Areas that are in the most deprived 10 per cent on *all seven* domains are located in Birmingham; the other is in Kingston upon Hull.

Table 4.7. Local authority districts with the highest proportions of Lower-layer Super Output Areas that are in the most deprived 10 per cent of areas nationally for at least six of the seven domains

Local authority district	Number of Lower-layer Super Output Areas	Percentage of Lower-layer Super Output Areas in the district
Blackpool	15	16.0
Barrow-in-Furness	5	10.2
Burnley	5	8.3
Great Yarmouth	4	6.6
Thanet	5	6.0
Kingston upon Hull	8	4.8
Bradford	13	4.2
Birmingham	26	4.1
Hyndburn	2	3.8
Liverpool	11	3.7

4.4 Local authority district summary measures

4.4.1 The pattern of deprivation across large areas such as local authority districts can be complex. In some areas, deprivation is concentrated in severe pockets, rather than evenly spread throughout. In some other areas the opposite picture is seen, with deprivation spread relatively evenly throughout the area, and with no highly deprived areas. The set of summary measures described in Section 3.3 have been designed to help users understand deprivation patterns for higher-level areas such as local authority districts. The measures identify the overall intensity of deprivation, how deprivation is distributed across the larger area, and the overall volume, or 'scale', of deprivation. For further detail on the set of summary measures, see Section 3.3.

4.4.2 Maps 4.2 to 4.8 on the following pages show each of the summary measures of the Index of Multiple Deprivation 2015 mapped for local authority districts across England. For each of the maps the local authority districts have been divided into 10 equal groups (deciles) according to the level of deprivation on the summary measure. Local authority districts in the most deprived decile are shaded dark blue, those in the next most deprived decile are shaded a lighter blue. Each successively less deprived decile is shaded through lighter blues and greens until the least deprived decile which is shaded bright yellow.

4.4.3 When interpreting maps, the eye is drawn to large swathes of colour. This can be misleading as geographically large local authority districts may have relatively small populations whereas geographically small local authority districts may contain larger populations. There is an inset for London where the 33 boroughs are geographically small and obscured on the large map.

Average rank

4.4.4 Map 4.2 shows the distribution of local authority districts on the average rank measure. The most deprived local authority districts (shaded dark blue) are widely distributed across the country. There is a concentration of local authorities in

London in the most deprived decile on this measure, and also in local authority districts in the midlands, the north east and north west of England.

Average score

4.4.5   Map 4.3 shows the distribution of local authority districts on the average score measure. Areas in the most deprived decile are again concentrated in London, the midlands and the north west. However there are somewhat fewer London local authority districts identified as being in the most deprived decile by this measure than the average rank measure; some of the areas taking their place are coastal areas such as Thanet, Barrow-in-Furness and North East Lincolnshire.

Proportion of Lower-layer Super Output Areas in the most deprived 10 per cent nationally

4.4.6   Map 4.4 shows the distribution of local authority districts based on the proportion of Lower-layer Super Output Areas in the most deprived 10 per cent nationally measure. This measure is based on only those Lower-layer Super Output Areas in the most deprived 10 per cent, rather than the average rank and score measures which are based on averages across all Lower-layer Super Output Areas. The measure shows a much greater concentration in the north of local authority districts in the most deprived decile, and to a lesser extent the midlands, with only a single London borough identified by this measure as being in the most deprived decile.

Extent of deprivation

4.4.7   Map 4.5 shows the distribution of local authority districts on the extent of deprivation measure. The distribution of the most deprived decile is similar to the average score measure described above. In contrast with the previous measure, the proportion of Lower-layer Super Output Areas in the most deprived 10 per cent nationally, there are six London boroughs identified as being in the most deprived decile on the extent measure.

Local concentration of deprivation

4.4.8   Map 4.6 shows the distribution of local authority districts on the local concentration of deprivation measure. This summary measure tends to highlight those local authority areas with very highly deprived Lower-layer Super Output Areas, and shows a different distribution of the most deprived decile to the measures above, in that there are no London boroughs in the most deprived decile and a larger number of local authority districts in the north west.

Income scale and employment scale

4.4.9   Maps 4.7 and 4.8 shows the distribution of local authority districts on the income and employment scale measures. As these measures are based on the scale, or number, of people who are income- and employment-deprived, the measures tend to highlight highly deprived and highly populated local authority areas. Some London boroughs and local authority districts in the north west feature in the most deprived decile on both of these measures. In addition there are clusters in the midlands and the new unitary authorities of Cornwall and County Durham are in the most deprived decile on both measures.

Map 4.2. Average rank summary measure of the Index of Multiple Deprivation 2015, for local authority districts

Greater London

Scilly

Most deprived 10%
Least deprived 10%

Contains OS data © Crown copyright (2015)

Map 4.3. Average score summary measure of the Index of Multiple Deprivation 2015, for local authority districts

Greater London

Scilly
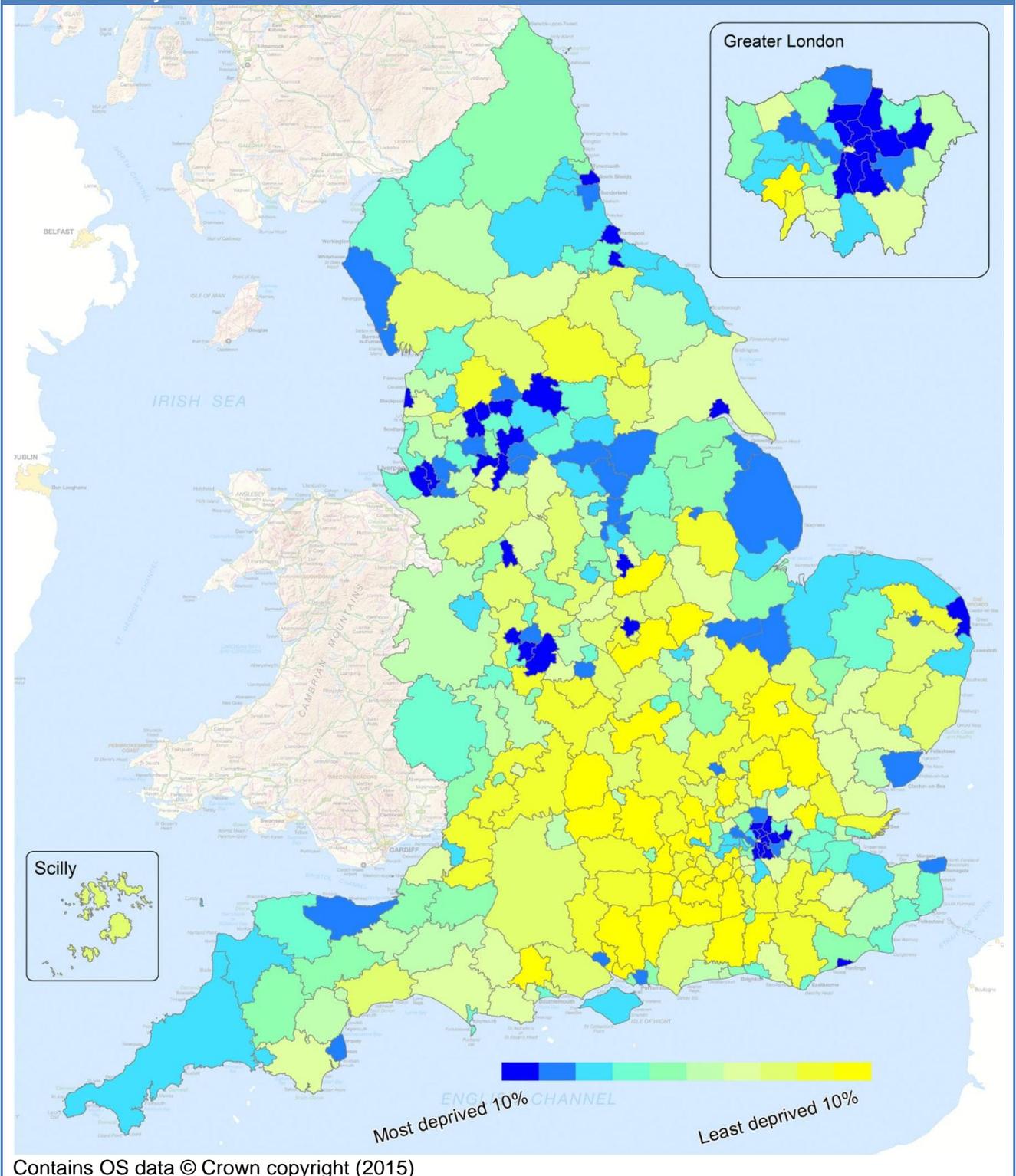
Most deprived 10%   Least deprived 10%
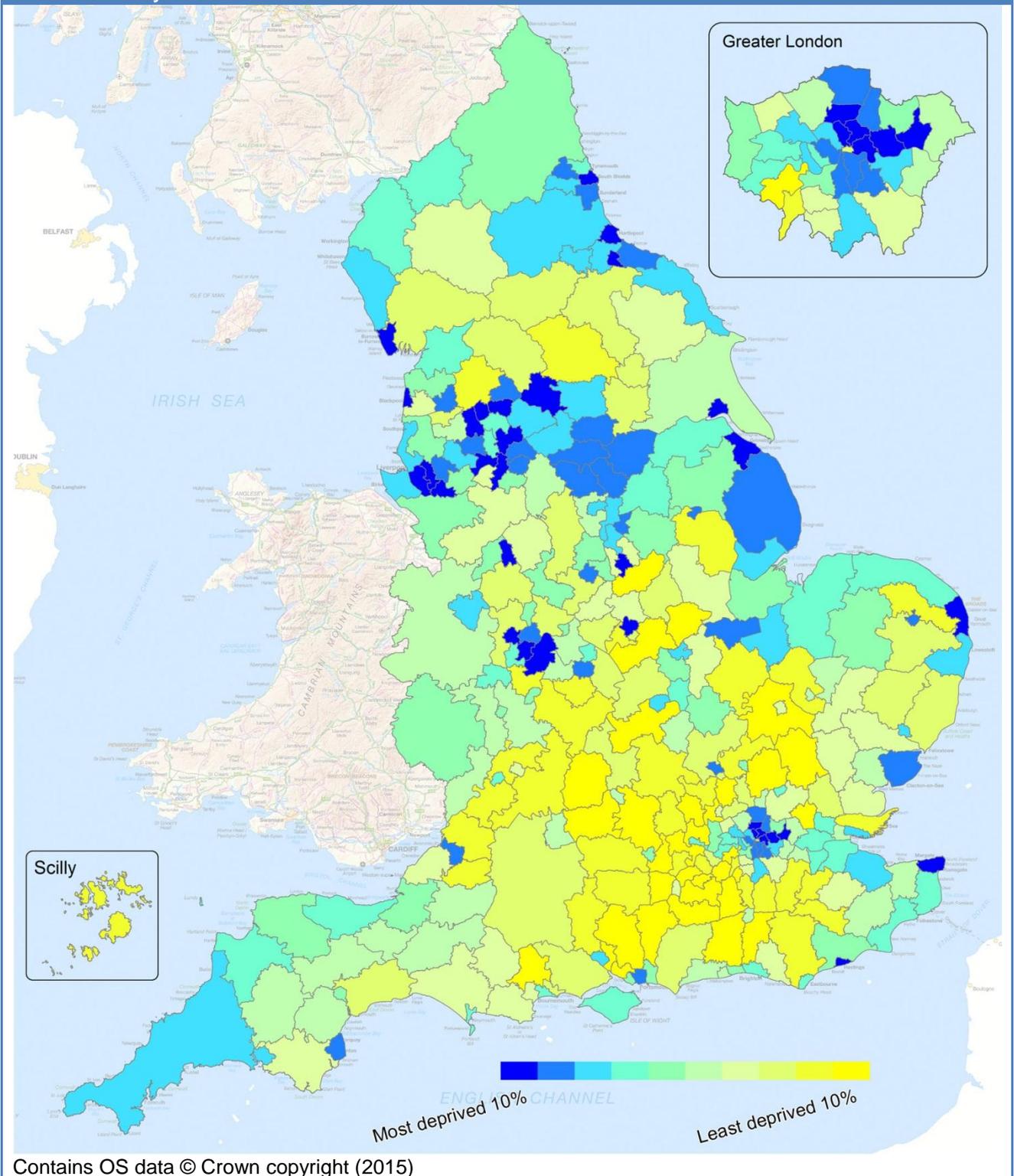
Contains OS data © Crown copyright (2015)

Map 4.4. Proportion of Lower-layer Super Output Areas in the most deprived 10 per cent nationally summary measure of the Index of Multiple Deprivation 2015, for local authority districts
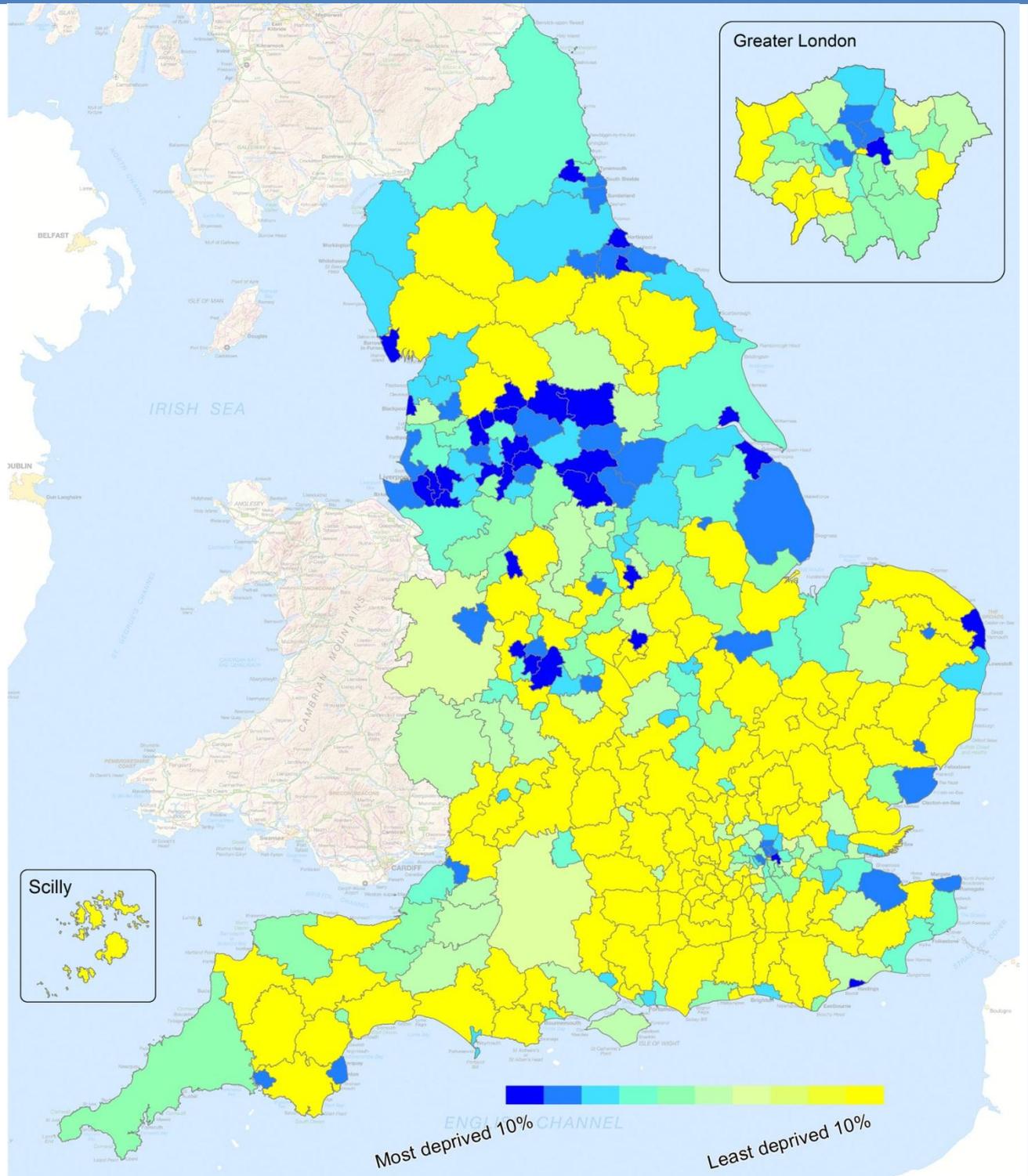
Note, there are 127 districts with no Lower-layer Super Output Areas in the most deprived 10 per cent of areas. These areas score zero on the summary measure, and are shown in the least deprived decile.
Contains OS data © Crown copyright (2015)

Map 4.5. Extent of deprivation summary measure of the Index of Multiple Deprivation 2015, for local authority districts
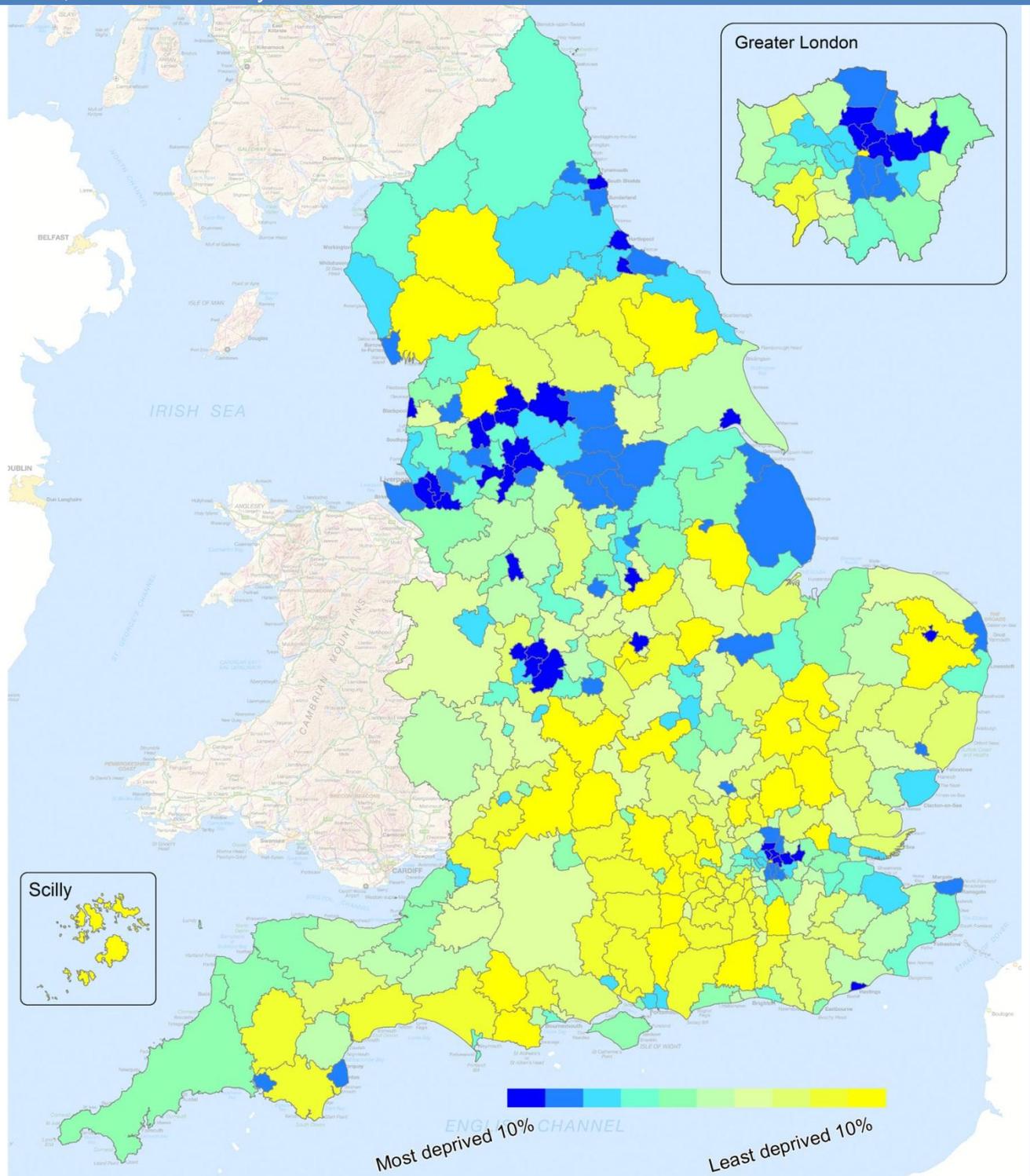
Note, there are 25 districts with no Lower-layer Super Output Areas in the most deprived 30 per cent of areas. These areas score zero on the extent measure, and are shown in the least deprived decile.
Contains OS data © Crown copyright (2015)

Map 4.6. Local concentration of deprivation summary measure of the Index of Multiple Deprivation 2015, for local authority districts

Greater London

Scilly

Most deprived 10%

Least deprived 10%

Contains OS data © Crown copyright (2015)
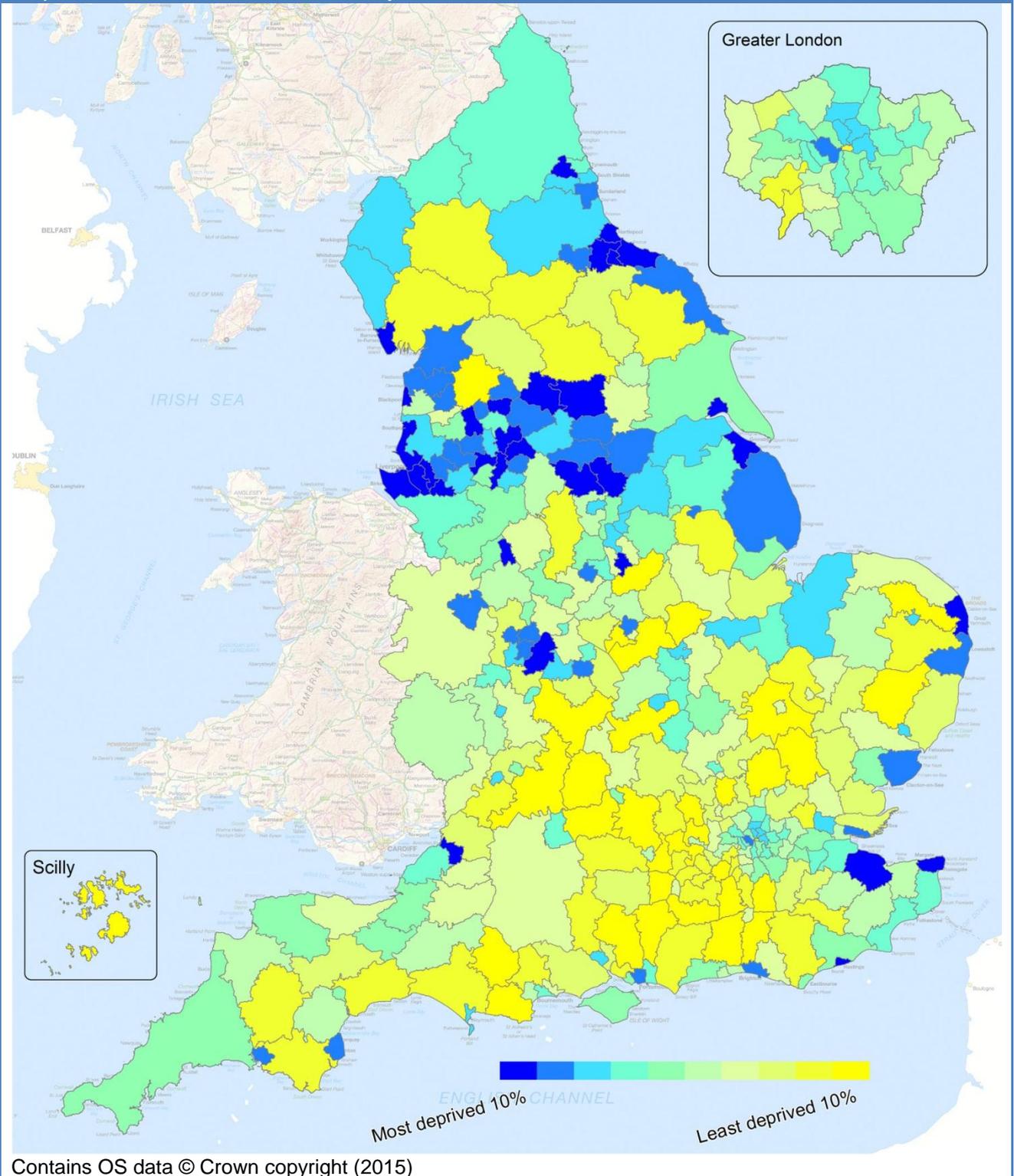
Map 4.7. Income scale summary measure for local authority districts

Greater London

Scilly

Most deprived 10%   Least deprived 10%

Contains OS data © Crown copyright (2015)
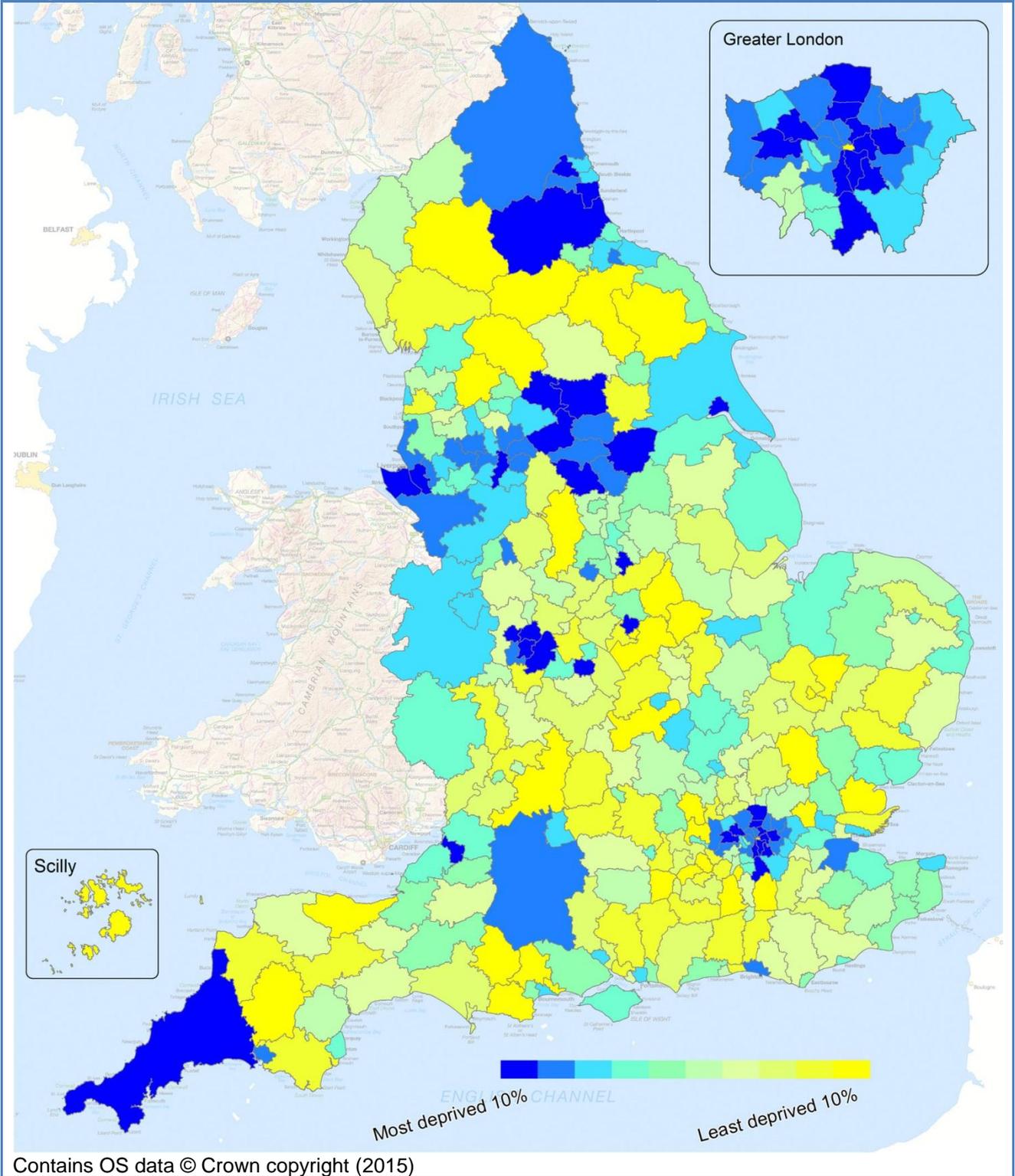
Map 4.8. Employment scale summary measure for local authority districts

Greater London

Scilly

Most deprived 10%   Least deprived 10%

Contains OS data © Crown copyright (2015)
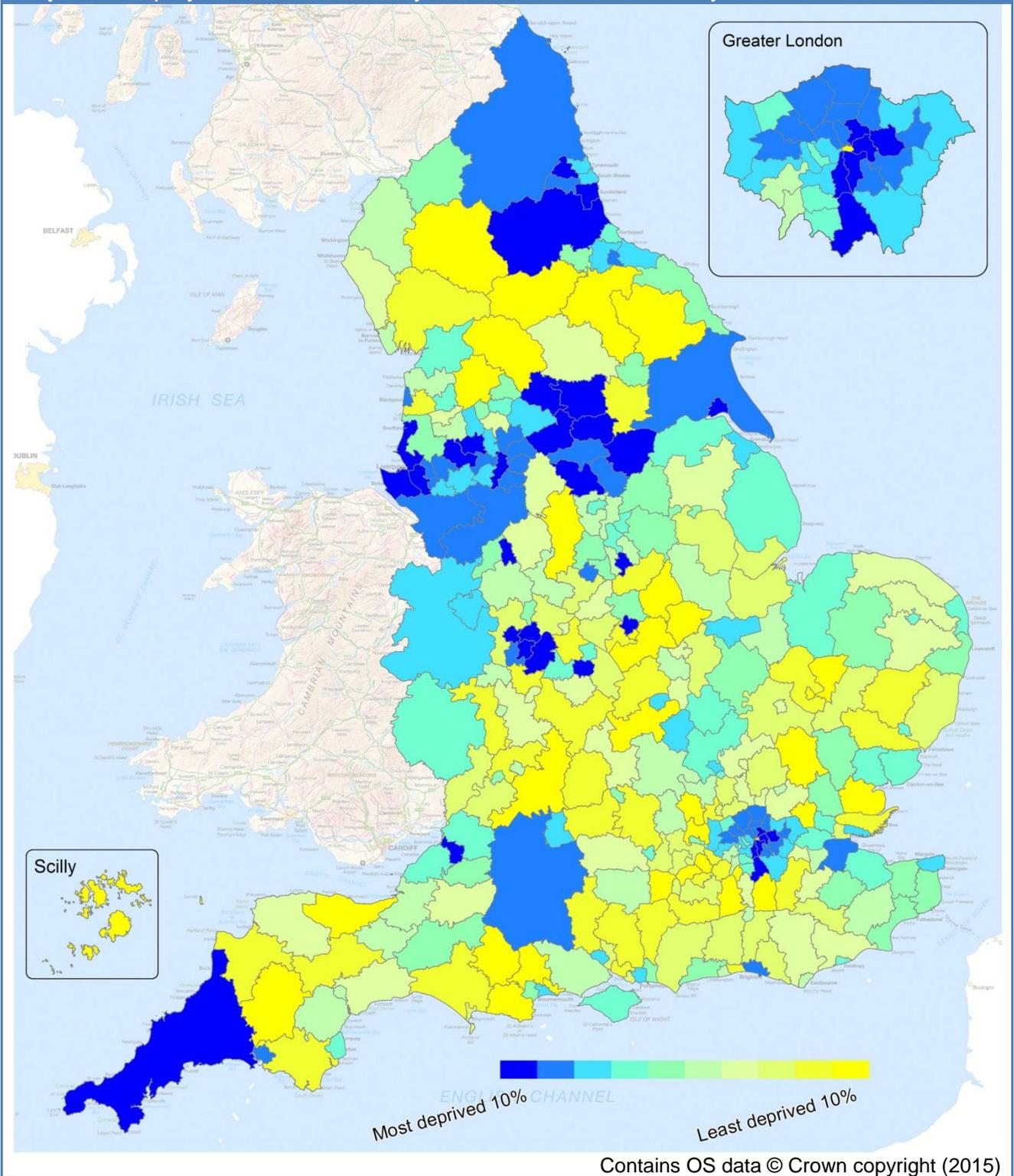
4.4.10 The tables below show the 20 local authority districts ranked as most deprived according to each of the summary measures (a rank of 1 being the most deprived). Appendix D shows the same data for clinical commissioning groups and local enterprise partnerships.

Table 4.8: The most deprived local authority districts on each of the summary measures of the Index of Multiple Deprivation 2015 and on the income and employment scale measures

	Average Rank	Average Score	Proportion of Lower-layer Super Output Areas in the most deprived 10 per cent nationally	Extent	Local Concentration	Income Scale	Employment Scale
1	Manchester	Blackpool	Middlesbrough	Manchester	Blackpool	Birmingham	Birmingham
2	Hackney	Knowsley	Knowsley	Liverpool	Middlesbrough	Manchester	Liverpool
3	Barking and Dagenham	Kingston upon Hull	Kingston upon Hull	Tower Hamlets	Knowsley	Leeds	Leeds
4	Blackpool	Liverpool	Liverpool	Knowsley	Great Yarmouth	Liverpool	Manchester
5	Knowsley	Manchester	Manchester	Middlesbrough	Kingston upon Hull	Bradford	County Durham
6	Tower Hamlets	Middlesbrough	Birmingham	Birmingham	Thanet	Sheffield	Bradford
7	Liverpool	Birmingham	Blackpool	Nottingham	Liverpool	County Durham	Sheffield
8	Newham	Nottingham	Nottingham	Kingston upon Hull	Burnley	Cornwall	Cornwall
9	Kingston upon Hull	Burnley	Burnley	Barking and Dagenham	North East Lincolnshire	Sandwell	Bristol, City of
10	Nottingham	Tower Hamlets	Hartlepool	Sandwell	Barrow-in-Furness	Leicester	Nottingham
11	Birmingham	Hackney	Bradford	Hackney	Manchester	Bristol, City of	Kirklees
12	Sandwell	Barking and Dagenham	Blackburn with Darwen	Blackpool	Wirral	Nottingham	Sandwell
13	Islington	Sandwell	Stoke-on-Trent	Blackburn with Darwen	Newcastle upon Tyne	Newham	Kingston upon Hull
14	Leicester	Stoke-on-Trent	Hastings	Wolverhampton	Hartlepool	Enfield	Leicester
15	Waltham Forest	Blackburn with Darwen	North East Lincolnshire	Stoke-on-Trent	Redcar and Cleveland	Tower Hamlets	Wirral
16	Middlesbrough	Rochdale	Salford	Burnley	Salford	Kirklees	Sunderland
17	Burnley	Wolverhampton	Rochdale	Hartlepool	Hastings	Kingston upon Hull	Wakefield
18	Stoke-on-Trent	Hartlepool	Pendle	Bradford	Bradford	Wirral	Wigan
19	Wolverhampton	Bradford	Halton	Halton	Rochdale	Croydon	Doncaster
20	Hastings	Hastings	Great Yarmouth	Walsall	Blackburn with Darwen	Wolverhampton	Wolverhampton

Chapter 5.   Changes in relative deprivation

5.1 Introduction

5.1.1   The purpose of the Indices of Deprivation is to measure as accurately as possible the relative distribution of deprivation at a small area level, but they are not designed to provide 'backwards' comparability with previous versions of the Indices and the versions of the Indices should not be used as a time-series. However, because there is a broadly consistent methodology between the Indices of Deprivation 2015 and previous versions (using the same approach, structure and methodology), this does allow some comparisons to be made over time, but only in terms of comparing the rankings as determined at the relevant time point for each of the versions of the Indices.

5.1.2   This means that, when exploring changes in deprivation between versions of the Indices, users should be aware that changes can only be described in relative terms, for example, the extent to which an area has changed rank or decile of deprivation between the current and previous Indices. It would not necessarily be correct to state that the level of deprivation in the area has increased on some absolute scale, as it may be the case that all areas had improved, but that some areas had improved more slowly than others. In the situation where the absolute levels of deprivation in all areas were increasing or decreasing at the same rate, the ranks would show no change. Further guidance on how to interpret changes in relative deprivation is given in Section 3.4.

5.1.3   The aim of this chapter then is to describe how the areas identified as most deprived according to the latest Index of Multiple Deprivation compare with areas identified as most deprived based on previous versions. The chapter focuses on change in relative deprivation over time, looking at:

- changes at Lower-layer Super Output Area level;
- changes at local authority district level; and
- persistent deprivation: those areas that have been ranked consistently as highly deprived according to the Index of Multiple Deprivation 2015 and earlier versions of the Index.

5.2 Changes at Lower-layer Super Output Area level

5.2.1   Chart 5.1 shows for each decile on the Index of Multiple Deprivation 2015, the proportion of Lower-layer Super Output Areas that were in the same decile on the 2010 Index.

Chart 5.1. Lower-layer Super Output Areas on the Index of Multiple Deprivation 2015 that were in the same decile of the 2010 Index

The values show the percentage of Lower-layer Super Output Areas for the Index of Multiple Deprivation 2015 that were in the same decile on the 2010 Index.
Based on 31,672 Lower-layer Super Output Areas that have not changed boundaries between 2001 and 2011 versions of the geography.
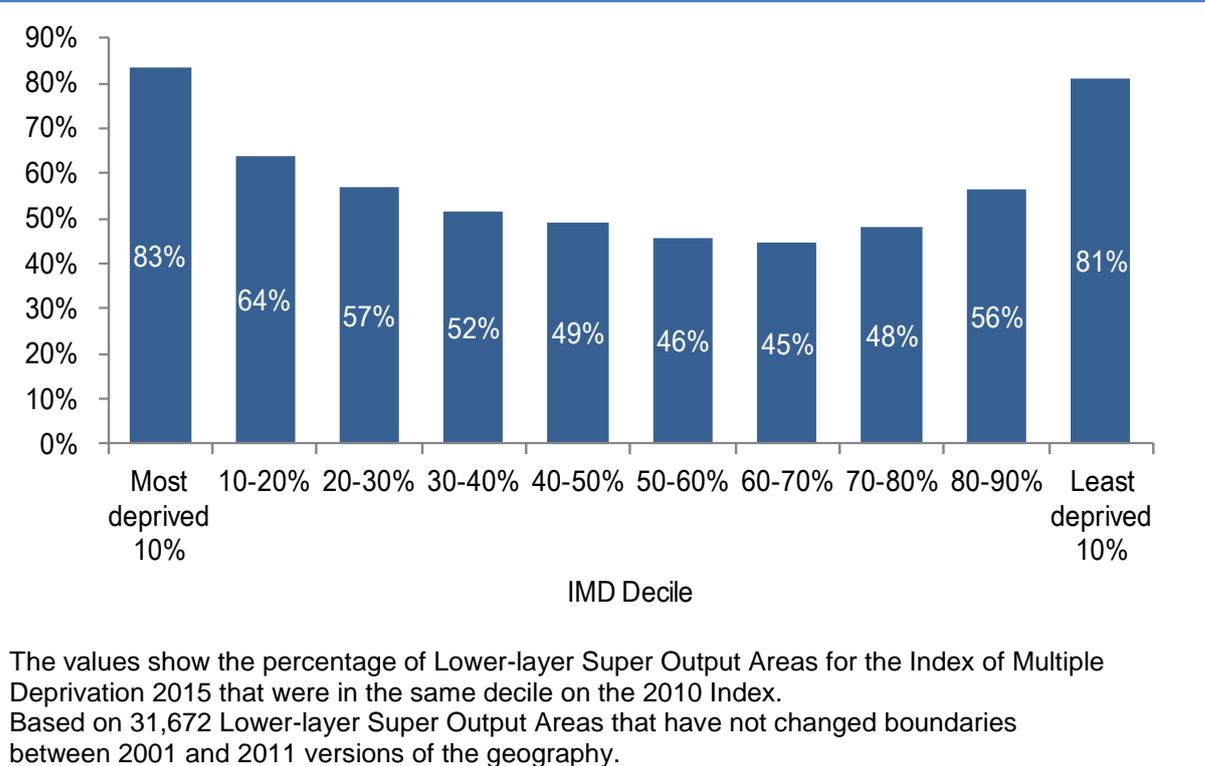
5.2.2 Overall, 58 per cent of Lower-layer Super Output Areas[26] in the 2015 Index were in the same decile as in the 2010 Index. There was less movement at the extreme ends of the distribution; 83 per cent of the most deprived 10 per cent of areas on the 2015 Index were in the same decile on the 2010 Index, as were 81 per cent of the least deprived areas.

5.2.3 A more detailed analysis of movement across deciles is shown in Table 5.1, which cross-references all 2015 Index deciles against the 2010 Index. Comparing the distributions in this way shows the extent of changes in relative rankings, and how large the changes are for those areas that have moved. Although 85 per cent of the areas in the most deprived decile of the 2010 Index are now in the most deprived decile of the 2015 Index, 471 areas (15 per cent) are no longer so; 449 of these have shifted one decile to the 10-20 per cent most deprived of areas, however 22 areas have moved further, to the 20-30 per cent decile.

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[26] 31,672 of the 32,844 Lower-layer Super Output Areas used in the Index of Multiple Deprivation 2015 analysis (2011 census based Lower-layer Super Output Areas) had boundaries which were unchanged from the boundaries used in the previous Indices of Deprivation (2004, 2007 and 2010 which used census 2001 boundaries). All Lower-layer Super Output Area level change analysis in this section is based on the 31,672 unchanged Lower-layer Super Output Areas only.

Table 5.1. Lower-layer Super Output Areas by level of deprivation on the Index of Multiple Deprivation 2010 and 2015

Number of Lower-layer Super Output Areas	Index of Multiple Deprivation 2015									
	Most deprived 10%	10-20%	20-30%	30-40%	40-50%	50-60%	60-70%	70-80%	80-90%	Least deprived 10%
Most deprived 10%	2618	449	22	0	0	0	0	0	0	0
10-20%	511	2015	575	47	2	0	0	0	0	0
20-30%	15	666	1797	624	62	2	0	0	0	0
30-40%	1	25	709	1637	681	116	7	0	0	0
40-50%	0	0	46	768	1558	683	114	13	0	0
50-60%	0	0	1	86	744	1454	735	149	12	1
60-70%	0	0	0	3	110	803	1426	720	119	3
70-80%	0	0	0	0	7	113	783	1515	712	49
80-90%	0	0	0	0	0	5	122	703	1791	557
Least deprived 10%	0	0	0	0	0	0	4	50	542	2590

(Left axis: Index of Multiple Deprivation 2010)

The 31,672 Lower-layer Super Output Areas that have not changed boundaries between 2001 and 2011 versions of the geography are shown

5.2.4 The table also shows that some Lower-layer Super Output Areas have experienced a considerable change in their relative level of deprivation since the 2010 Index, with a small number of areas moving by up to three deciles, and one area moving four deciles to the least deprived decile of the 2015 Index.

5.3 Changes at local authority district level

5.3.1 Table 5.2 shows the ten local authority districts with the highest proportion of Lower-layer Super Output Areas in the most deprived 10 per cent of areas, based on the Index of Multiple Deprivation 2015. The table also shows the proportion of Lower-layer Super Output Areas in each local authority district that were in the most deprived 10 per cent on the 2010 Index, and the percentage point change between the updates.

Table 5.2. Local Authorities with the highest proportion of Lower-layer Super Output Areas in the most deprived 10 per cent of areas nationally based on the Index of Multiple Deprivation 2015, and relative change since the 2010 Index

	Index of Multiple Deprivation 2015		Index of Multiple Deprivation 2010		Percentage point change from the 2010 Index
	Number	Per cent	Number	Per cent	
Middlesbrough	42	48.8	41	46.6	2.2
Knowsley	45	45.9	45	45.5	0.5
Kingston upon Hull	75	45.2	70	42.9	2.2
Liverpool	134	45.0	148	50.9	-5.9
Manchester	115	40.8	118	45.6	-4.8
Birmingham	253	39.6	251	39.2	0.4
Blackpool	36	38.3	35	37.2	1.1
Nottingham	61	33.5	45	25.6	7.9
Burnley	20	33.3	20	33.3	0.0
Hartlepool	19	32.8	21	36.2	-3.4

Based on all Lower-layer Super Output Areas. Due to boundary changes, the numbers of Lower-layer Super Output Areas should not be directly compared across the Indices of Deprivation 2015 and 2010; relative changes should be compared based on the percentage point change shown in the final column.

5.3.2 Middlesbrough is the local authority district with the highest proportion of Lower-layer Super Output Areas in the most deprived 10 per cent of the Index of Multiple Deprivation 2015, with just under half of all Lower-layer Super Output Areas (48.8 per cent) ranked among the most deprived 10 per cent. Liverpool had the highest proportion of Lower-layer Super Output Areas ranked among the most deprived 10 per cent on the 2010 Index, but saw a fall in this proportion from 2010 to 2015, from 50.9 per cent to 45.0 per cent, and now ranks fourth on the measure. By contrast, Nottingham experienced a significant increase in the proportion of Lower-layer Super Output Areas ranked among the most deprived 10 per cent (from 25.6 per cent to 33.5 per cent) between the 2010 and 2015 Index. Birmingham is the local authority district with the largest number of Lower-layer Super Output Areas that are amongst the most deprived in the 2015 Index, which was also the case in 2010, driven by the larger size of Birmingham.

Changes in ranks of multiple deprivation at the local authority level since the Index of Multiple Deprivation 2004

5.3.3 In this subsection the most deprived 10 per cent of local authority districts according to each of the summary measures of the Index of Multiple Deprivation 2015 (see Section 3.3 for details) are examined as regards their position on those measures for the Index of Multiple Deprivation 2004, 2007 and 2010.

Interpreting the charts

5.3.4 Charts 5.2 to 5.6 show the 33 local authority districts representing the most deprived 10 per cent of districts on each of the set of summary measures of the Index of Multiple Deprivation 2015. For each summary measure, the chart shows how the most deprived districts according to the 2015 Index ranked in previous versions of the Index (noting that the versions are not a time series). Where a local

authority district's relative deprivation has changed by five or more rank positions since the 2010 Index of Multiple Deprivation, it is highlighted on the chart.

5.3.5 **It is also important to note that any change in rank position represents *relative* change only. In other words it is possible that a local authority district may have become *less* deprived in real terms since the previous index, but *more* deprived relative to all other local authority districts, or vice versa (see Section 3.4). Furthermore, a change in rank – even of five places – may not actually represent a large increase or decrease in absolute levels of deprivation. Further guidance on how to interpret changes in relative deprivation is given in Section 3.4.**

5.3.6 The districts are listed on the right-hand vertical axis, ranked from 1 to 33 where 1 represents the most deprived local authority district on that particular measure. So, for example, in the first chart (Chart 5.2) which presents the average rank summary, Manchester is ranked 1 signalling that Manchester is the most deprived local authority district in England on this measure of the 2015 Index. The districts are then ordered in descending rank with East Lindsey being ranked 33rd most deprived on this measure out of all 326 local authority districts in England.

5.3.7 The left-hand vertical axis lists the local authority districts that are among the 10 per cent most deprived based on the particular summary measure of the Index of Multiple Deprivation 2015 that were also among the 10 per cent most deprived districts on this measure of the 2004 Index. These local authority districts are named on the left-hand axis, showing their 2004 summary measure rank. So again taking the example of the average rank chart, Manchester (which is ranked 1 on the 2015 Index) was ranked 3 based on the 2004 Index. The gaps therefore correspond to local authority districts that were in the most deprived 10 per cent on that measure of the 2004 Index that are no longer the most deprived on this measure of the 2015 Index. As an example, again from the average rank chart, East Lindsey (which is ranked 33 on the 2015 Index) did not appear among the most deprived local authorities according to the 2004 Index.

5.3.8 The rank of each local authority district on the 2007 Index and 2010 Index is given by the intermediate points on the chart. The lines connecting these points for each local authority district show the trajectory of the particular district on the summary measure in question from the 2004 Index to the 2015 Index. To give an example, again from the average rank chart (Chart 5.2); Blackpool was ranked fourth most deprived on this measure on the 2015 Index. On the 2010 Index it was ranked 10th, on the 2007 Index it was ranked 18th, and on the 2004 Index it was ranked 26th.

5.3.9 The names of the local authority districts are highlighted in dark blue to indicate that the district has become relatively more deprived by at least five rank places than it was on the Index of Multiple Deprivation 2010. Conversely, names are highlighted in light blue where the local authority district has become relatively less deprived by at least five rank places than it was on the Index of Multiple Deprivation 2010. To aid interpretation, the lines connecting the points for each local authority district are also slightly thicker for those areas that have moved by at least five rank places in either direction.

Average rank

5.3.10 Chart 5.2 shows the change in local authority district rank on the average rank measure according to the four updates of the Index of Multiple Deprivation (2015, 2010, 2007 and 2004). Of the most deprived 10 per cent of districts based on this measure of the 2015 Index, eleven districts (highlighted in dark blue) have experienced an increase in relative deprivation of at least five rank places since the 2010 Index.

5.3.11 On this measure, nine districts have ranked as progressively more deprived, in relative terms, with each update since the 2004 Index. On the other hand, local authority districts such as Kingston upon Hull and Middlesbrough have had a different trajectory: an initial decrease in relative deprivation on this measure from the 2004 Index followed by an increase by the 2015 Index, as shown by the 'U' shape of the line.

5.3.12 There are six local authority districts in the most deprived 10 per cent of local authority districts on the 2015 Index which have experienced a decrease in relative deprivation on this measure of at least five rank places since the 2010 Index (highlighted in light blue).

5.3.13 Hackney, Tower Hamlets, Manchester, Liverpool and Newham are consistently ranked as among the most highly deprived ten local authority districts in terms of average rank across all four updates of the Index of Multiple Deprivation.

Average score

5.3.14 Chart 5.3 shows the change in rank of local authority districts on the average score measure over the four updates of the Index of Multiple Deprivation. Of the most deprived 10 per cent of districts based on this measure of the 2015 Index, twelve (highlighted in dark blue) have experienced an increase in relative deprivation of at least five rank places since the 2010 Index. Of these, Nottingham, Great Yarmouth, Thanet, North East Lincolnshire and South Tyneside have had the greatest rank changes.

5.3.15 There are four local authority districts in the most deprived 10 per cent of local authority districts on this measure of the 2015 Index which have experienced a decrease in relative deprivation of at least five rank places since the 2010 Index. They are all London boroughs: Hackney, Newham, Islington and Haringey. In addition, Islington and Salford have shown continuous decrease in relative deprivation since their position on this measure on the 2004 Index.

Proportion of Lower-layer Super Output Areas in most deprived 10 per cent nationally

5.3.16 Chart 5.4 shows the change in local authority district rank on the proportion of Lower-layer Super Output Areas in the most deprived 10 per cent nationally measure over the four updates of the Index of Multiple Deprivation. Of the most deprived 10 per cent of districts based on this measure of the 2015 Index, twelve (highlighted in dark blue) have experienced an increase in relative deprivation of at least five rank places since the 2010 Index. Nottingham saw the greatest movement, with an increase in relative deprivation on this measure of 17 rank places since the 2010 Index.

5.3.17 There are three local authority districts in the most deprived 10 per cent of local authority districts on the 2015 Index which have experienced a decrease in relative deprivation on this measure of at least five rank places since the 2010 Index (highlighted in light blue).

Extent of deprivation

5.3.18 Chart 5.5 shows the change in local authority district rank on the extent of deprivation measure over the four updates of the Index of Multiple Deprivation. Of the most deprived 10 per cent of local authority districts based on this measure of the 2015 Index, seven districts (highlighted in dark blue) have experienced an increase in relative deprivation on this measure of at least five rank places since the 2010 Index. Of these, Nottingham, Barking and Dagenham, South Tyneside and Norwich have had the greatest rank changes, with each experiencing an increase of at least 10 rank places since the 2010 Index.

5.3.19 There are five local authority districts in the most deprived 10 per cent of local authority districts on the 2015 Index which have experienced a decrease in relative deprivation on this measure of at least five rank places since the 2010 Index. Apart from Hastings, they are the four London boroughs which showed a similar reduction in relative deprivation on the average score measure.

Local concentration of deprivation

5.3.20 Chart 5.6 shows the change in local authority district rank on the local concentration measure over the four updates of the Index of Multiple Deprivation. Of the most deprived 10 per cent of local authority districts based on this measure of the 2015 Index, eleven districts (highlighted in dark blue) have experienced an increase in relative deprivation on this measure of at least five rank places since the 2010 Index. Of these, six districts have moved at least twenty places since the 2010 Index: Swale, Great Yarmouth, Bristol, Rotherham, Thanet and Leeds.

5.3.21 There are five local authority districts in the most deprived 10 per cent of local authority districts on the 2015 Index which have experienced a decrease in relative deprivation on this measure of at least five rank places since the 2010 Index. These are all in the north of England.

Chart 5.2. The most deprived local authority districts according to the average rank summary measure of the Index of Multiple Deprivation 2015, showing changes in rank since earlier versions of the Index

| 2004 | 2007 | 2010 | 2015 |

Hackney, 1 — Manchester, 1
Tower Hamlets, 2 — Hackney, 2
Manchester; 3 — Barking and Dagenham, 3
Islington, 4 — Blackpool, 4
Liverpool, 5 — Knowsley, 5
Newham, 6 — Tower Hamlets, 6
Liverpool, 7
Knowsley, 8 — Newham, 8
Nottingham, 9 — Kingston upon Hull, 9
Haringey, 10 — Nottingham, 10
Kingston upon Hull, 11 — Birmingham, 11
Southwark, 12 — Sandwell, 12
Lambeth, 13 — Islington, 13
Sandwell, 14 — Leicester, 14
Waltham Forest, 15
Birmingham, 16 — Middlesbrough, 16
Salford, 17 — Burnley, 17
Hartlepool, 18 — Stoke-on-Trent, 18
Middlesbrough, 19 — Wolverhampton, 19
Stoke-on-Trent, 20 — Hastings, 20
Barking and Dagenham, 21 — Haringey, 21
Lambeth, 22
Southwark, 23
Blackburn with Darwen, 24
Waltham Forest, 25 — Rochdale, 25
Blackpool, 26 — Lewisham, 26
Salford, 27
South Tyneside, 28 — Hyndburn, 28
Leicester, 29 — Great Yarmouth, 29
Bradford, 30
South Tyneside, 31
Hartlepool, 32
East Lindsey, 33

Increase in rank of 5 or more since the 2010 Index   Decrease in rank of 5 or more since the 2010 Index

Note that any change in rank position represents *relative* change only. It is possible that a local authority district may have become *less* deprived in real terms since the previous index, but *more* deprived relative to all other local authority districts, or vice versa. Furthermore, a change in rank – even of five places – may not represent a large increase or decrease of deprivation.

Chart 5.3. The most deprived local authority districts according to the average score summary measure of the Index of Multiple Deprivation 2015, showing changes in rank since earlier versions of the Index

	2004	2007	2010	2015

Left side (2004):
Liverpool, 1
Manchester, 2
Knowsley, 3
Tower Hamlets, 4
Hackney, 5
Islington, 6
Nottingham, 7
Kingston upon Hull, 9
Middlesbrough, 10
Newham, 11
Salford, 12
Haringey, 13
Hartlepool, 14
Birmingham, 15
Sandwell, 16
Stoke-on-Trent, 18
Halton, 21
Blackpool, 24
Rochdale, 25
South Tyneside, 27
Barrow-in-Furness, 29
Bradford, 30
Leicester, 31

Right side (2015):
Blackpool, 1
Knowsley, 2
Kingston upon Hull, 3
Liverpool, 4
Manchester, 5
Middlesbrough, 6
Birmingham, 7
Nottingham, 8
Burnley, 9
Tower Hamlets, 10
Hackney, 11
Barking and Dagenham, 12
Sandwell, 13
Stoke-on-Trent, 14
Blackburn with Darwen, 15
Rochdale, 16
Wolverhampton, 17
Hartlepool, 18
Bradford, 19
Hastings, 20
Leicester, 21
Salford, 22
Newham, 23
Islington, 24
Great Yarmouth, 25
Hyndburn, 26
Halton, 27
Thanet, 28
Barrow-in-Furness, 29
Haringey, 30
North East Lincolnshire, 31
South Tyneside, 32
Walsall, 33

Increase in rank of 5 or more since the 2010 Index

Decrease in rank of 5 or more since the 2010 Index

Note that any change in rank position represents *relative* change only. It is possible that a local authority district may have become *less* deprived in real terms since the previous index, but *more* deprived relative to all other local authority districts, or vice versa. Furthermore, a change in rank – even of five places – may not represent a large increase or decrease in absolute levels of deprivation.

Chart 5.4. The most deprived local authority districts according to the proportion of Lower-layer Super Output Areas in the most deprived 10 per cent nationally measure of the Index of Multiple Deprivation 2015, showing changes in rank since earlier versions of the Index

	2004	2007	2010	2015

Manchester, 1
Liverpool, 2
Tower Hamlets, 3
Knowsley, 4
Middlesbrough, 6
Kingston upon Hull, 8
Nottingham, 9
Hartlepool, 10
Birmingham, 11
Salford, 12
Newcastle upon Tyne, 14
Halton, 15
Bradford, 16
Stoke-on-Trent, 17
Blackpool, 22
Rochdale, 24
St. Helens, 26
North East Lincolnshire, 28
Barrow-in-Furness, 29
Oldham, 30
Sandwell, 31
Burnley, 32

Middlesbrough, 1
Knowsley, 2
Kingston upon Hull, 3
Liverpool, 4
Manchester, 5
Birmingham, 6
Blackpool, 7
Nottingham, 8
Burnley, 9
Hartlepool, 10
Bradford, 11
Blackburn with Darwen, 12
Stoke-on-Trent, 13
Hastings, 13
North East Lincolnshire, 15
Salford, 16
Rochdale, 17
Pendle, 18
Halton, 19
Great Yarmouth, 20
Wolverhampton, 21
Hyndburn, 22
Leicester, 23
Tower Hamlets, 24
St. Helens, 25
Sheffield, 26
Oldham, 27
Sandwell, 28
Barrow-in-Furness, 29
Newcastle upon Tyne, 30
Leeds, 31
Barnsley, 32
Redcar and Cleveland, 33

Increase in rank of 5 or more since the 2010 Index   Decrease in rank of 5 or more since the 2010 Index

Note, Hastings and Stoke-on-Trent are equally ranked as 13th most deprived on this measure.
Note that any change in rank position represents *relative* change only. It is possible that a local authority district may have become *less* deprived in real terms since the previous index, but *more* deprived relative to all other local authority districts, or vice versa. Furthermore, a change in rank – even of five places – may not represent a large increase or decrease in absolute levels of deprivation.

Chart 5.5. The most deprived local authority districts according to the extent of deprivation summary measure of the Index of Multiple Deprivation 2015, showing changes in rank since earlier versions of the Index

2004 2007 2010 2015

Hackney, 1
Tower Hamlets, 2
Islington, 3
Manchester, 4
Liverpool, 5
Newham, 6

Knowsley, 8
Nottingham, 9
Haringey, 10
Middlesbrough, 11
Kingston upon Hull, 12

Birmingham, 14
Hartlepool, 15
Sandwell, 16
Salford, 17
Halton, 18
Stoke-on-Trent, 19
South Tyneside, 20

Blackburn with Darwen, 25
Wolverhampton, 26

Rochdale, 29

Bradford, 31

Leicester, 33

Manchester, 1
Liverpool, 2
Tower Hamlets, 3
Knowsley, 4
Middlesbrough, 5
Birmingham, 6
Nottingham, 7
Kingston upon Hull, 8
Barking and Dagenham, 9
Sandwell, 10
Hackney, 11
Blackpool, 12
Blackburn with Darwen, 13
Wolverhampton, 14
Stoke-on-Trent, 15
Burnley, 16
Hartlepool, 17
Bradford, 18
Halton, 19
Walsall, 20
Rochdale, 21
Salford, 22
South Tyneside, 23
Hyndburn, 24
Newham, 25
Islington, 26
Leicester, 27
Haringey, 28
Oldham, 29
Hastings, 30
Pendle, 31
Norwich, 32
North East Lincolnshire, 33

Increase in rank of 5 or more since the 2010 Index   Decrease in rank of 5 or more since the 2010 Index

Note that any change in rank position represents *relative* change only. It is possible that a local authority district may have become *less* deprived in real terms since the previous index, but *more* deprived relative to all other local authority districts, or vice versa. Furthermore, a change in rank – even of five places – may not represent a large increase or decrease in absolute levels of deprivation.

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Chart 5.6. The most deprived local authority districts according to the local concentration summary measure of the Index of Multiple Deprivation 2015, showing changes in rank since earlier versions of the Index

| 2004 | 2007 | 2010 | 2015 |

Knowsley, 1 — Blackpool, 1
Liverpool, 2 — Middlesbrough, 2
Manchester, 3 — Knowsley, 3
Middlesbrough, 4 — Great Yarmouth, 4
Newcastle upon Tyne, 5 — Kingston upon Hull, 5
Kingston upon Hull, 6 — Thanet, 6
Salford, 7 — Liverpool, 7
Wirral, 8 — Burnley, 8
Nottingham, 9 — North East Lincolnshire, 9
Blackpool, 10 — Barrow-in-Furness, 10
Bradford, 11 — Manchester, 11
Rochdale, 12 — Wirral, 12
Hartlepool, 13 — Newcastle upon Tyne, 13
Redcar and Cleveland, 14 — Hartlepool, 14
Birmingham, 15 — Redcar and Cleveland, 15
Barrow-in-Furness, 16 — Salford, 16
Stockton-on-Tees, 17 — Hastings, 17
— Bradford, 18
— Rochdale, 19
Halton, 20 — Blackburn with Darwen, 20
Burnley, 21 — Birmingham, 21
— Halton, 22
— Rotherham, 23
Leeds, 24 — Leeds, 24
Blackburn with Darwen, 25 — Stoke-on-Trent, 25
Oldham, 26 — Nottingham, 26
St. Helens, 27 — Stockton-on-Tees, 27
— Oldham, 28
— Sheffield, 29
Sheffield, 30 — Sefton, 30
North East Lincolnshire, 31 — Swale, 31
— Bristol, 32
Stoke-on-Trent, 33 — St. Helens, 33

Increase in rank of 5 or more since the 2010 Index   Decrease in rank of 5 or more since the 2010 Index

Note that any change in rank position represents *relative* change only. It is possible that a local authority district may have become *less* deprived in real terms since the previous index, but *more* deprived relative to all other local authority districts, or vice versa. Furthermore, a change in rank – even of five places – may not represent a large increase or decrease in absolute levels of deprivation.

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5.4 Persistent deprivation

5.4.1 The charts above showed that, while there is some variation in the ranking of local authority districts between updates of the Indices, some districts have been ranked consistently among the most deprived according to the four updates of the Indices of Deprivation (2015, 2010, 2007 and 2004).

5.4.2 This section explores the extent to which the most deprived Lower-layer Super Output Areas according to the Index of Multiple Deprivation 2015 have been persistently ranked as deprived. Table 5.3 shows the Lower-layer Super Output Areas ranked among the most deprived 1 per cent of areas in England based on the Index of Multiple Deprivation in each of the four updates of the Indices of Deprivation. [27]

Local authority district	Number of Lower-layer Super Output Areas	Area codes for consistently deprived Lower-layer Super Output Areas
Table 5.3. Lower-layer Super Output Areas that are consistently in the most deprived 1 per cent of areas nationally based on the Index of Multiple Deprivation 2015, 2010, 2007 and 2004, by local authority district		
Liverpool	16	E01006700, E01006699, E01006703, E01006778, E01006558, E01006562, E01006779, E01006560, E01006540, E01006563, E01006647, E01006760, E01006674, E01006679, E01006677, E01006630
Knowsley	9	E01006448, E01006493, E01006494, E01006417, E01006436, E01006467, E01006470, E01006442, E01006444
Manchester	8	E01005205, E01005203, E01005228, E01005257, E01005261, E01005067, E01005088, E01005090
Kingston upon Hull	5	E01012875, E01012879, E01012895, E01012897, E01012855
Wirral	5	E01007122, E01007127, E01007128, E01007133, E01007293
Blackpool	4	E01012681, E01012720, E01012721, E01012678
Bradford	4	E01010730, E01010735, E01010739, E01010819
Middlesbrough	4	E01012041, E01012090, E01012091, E01012019
Birmingham	3	E01009364, E01009365, E01009379
Newcastle	3	E01008380, E01008291, E01008427
North East Lincolnshire	3	E01013136, E01013137, E01013139
Rochdale	3	E01005482, E01005568, E01005466
Salford	3	E01005683, E01005658, E01005729
St. Helens	3	E01006873, E01006874, E01006817
Doncaster	2	E01007532, E01007544

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[27] The analysis is based on the 31,672 Lower-layer Super Output Areas that have not changed boundaries between 2001 and 2011 versions of the geography.

Table 5.3. Lower-layer Super Output Areas that are consistently in the most deprived 1 per cent of areas nationally based on the Index of Multiple Deprivation 2015, 2010, 2007 and 2004, by local authority district

Local authority district	Number of Lower-layer Super Output Areas	Area codes for consistently deprived Lower-layer Super Output Areas
Leeds	2	E01011662, E01011667
Mansfield	2	E01028276, E01028263
Nottingham	2	E01013818, E01013948
Redcar and Cleveland	2	E01012114, E01012170
Stockton-on-Tees	2	E01012252, E01012266
Sunderland	2	E01008702, E01008836
Blackburn with Darwen	1	E01012655
Bolton	1	E01004823
County Durham	1	E01020909
Coventry	1	E01009585
Great Yarmouth	1	E01026625
Hartlepool	1	E01011994
Oldham	1	E01005350
Plymouth	1	E01015155
Sefton	1	E01007007
Sheffield	1	E01008011
Tendring	1	E01021988

5.4.3   There are 98 Lower-layer Super Output Areas that have been ranked among the most deprived 1 per cent on each of Index of Multiple Deprivation updates (2015, 2010, 2007 and 2004). The highest numbers of these are in the Merseyside area (including 16 in Liverpool, nine in Knowsley, five in Wirral, three in St Helens and one in Sefton) and in Greater Manchester (including eight in Manchester, three in Rochdale, three in Salford and one each in Bolton and Oldham). By contrast, there were no Lower-layer Super Output Areas in London that were ranked among the most deprived 1 per cent on each of the Index of Multiple Deprivation updates.

Appendix A. How to aggregate to different geographies

A.1.1.   The Indices of Deprivation 2015 have been produced at Lower-layer Super Output Area level, using the current (2011) Lower-layer Super Output Areas. As was produced for the Indices of Deprivation 2010, ranks and scores have been provided at Lower-layer Super Output Area level.

A.1.2.   Summary measures for the Index of Multiple Deprivation, domains and supplementary Indices have been produced for the following higher-level geographies: Local authority districts, upper-tier local authorities, Local Enterprise Partnerships and Clinical Commissioning Groups.

A.1.3.   Guidance is provided in this Appendix on how to aggregate the Indices to other geographies such as wards or bespoke local areas, using the 'average score' summary measure[28] for the Index of Multiple Deprivation[29]. Users should follow a three-step process:

1. Identify the lookup table from Lower-layer Super Output Areas (for which data is published) to the areas of interest (for which data is required);
2. Sum the population-weighted scores from Lower-layer Super Output Areas to the areas of interest (using the published population denominators);
3. Rank the resulting scores across the areas of interest.

A.1.4.   These steps are outlined below.

1. Identify the lookup table from Lower-layer Super Output Areas (for which data is published) to the areas of interest (for which data is required)

A.1.5.   This lookup can be obtained in a number of ways:

-   In some cases the lookup table may be published. For example, the Office for National Statistics produces a number of lookup tables for different geographies, published on their open geography portal (footnote: https://geoportal.statistics.gov.uk/geoportal/catalog/main/home.page) or available on request.
-   In other cases, the lookup table may be available to the user. For example local authorities often define local service delivery areas, or priority neighbourhoods, based on clustering together Lower-layer Super Output Areas.

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[28] 'Average score' is one of a range of possible summary measures described in Chapter 3. It is recommended for use here because it gives a measure of the whole area, covering both deprived and non-deprived areas whilst being designed so that highly deprived areas do not tend to average out. It is also one of the more straightforward summary measures to calculate and interpret.
[29] This summary measure could be produced for any of the other neighbourhood-level Indices e.g. the income deprivation domain, following the same principles. The Index of Multiple Deprivation is used here since it is anticipated that it will be the most frequently aggregated.

- Otherwise, users may need to develop their own lookup tables. This can be done in number of ways, for example: using a Geographical Information Systems application to identify what proportion of each Lower-layer Super Output Area geographical area 'sits' within each of the areas of interest; or comparison of residential addresses to identify what proportion of each Lower-layer Super Output Area's residential population (as approximated by the residential addresses) 'sits' within each of the areas of interest. Once identified, each Lower-layer Super Output Area can be assigned to an area of interest based on where the majority of the Lower-layer Super Output Areas sits: the end result should be a lookup table that assigns each Lower-layer Super Output Area to one of the areas of interest.

A.1.6. In cases where Lower-layer Super Output Area boundaries do not exactly fit the boundaries of the area of interest, this will involve approximation. In other words, the lookup table will not be exact. This approximation will tend to have more of an impact when aggregating to small geographies that have boundaries that do not match Lower-layer Super Output Area boundaries.

2. Sum the population-weighted scores from Lower-layer Super Output Areas to the areas of interest

A.1.7. Where the areas of interest are larger than Lower-layer Super Output Areas, the approach is to sum together the Lower-layer Super Output Area scores. In order to give each Lower-layer Super Output Area the appropriate weight into the sum, the Lower-layer Super Output Area scores should be weighted by the Lower-layer Super Output Area population size. This means that each of the Lower-layer Super Output Area scores should be multiplied by the relevant Lower-layer Super Output Area population before summing, and the final scores for the areas of interest should be divided by the sum of the relevant Lower-layer Super Output Area populations in that area.

A.1.8. Population denominators can be found in File 6 (see Appendix F). To calculate the average Index of Multiple Deprivation, score, the 'total population' should be used.

A.1.9. Where the areas of interest are smaller than Lower-layer Super Output Areas, users will need to decide whether to use the Lower-layer Super Output Area scores directly for the smaller areas, or use small area estimation techniques to model the scores down to the smaller areas.

Worked example

A.1.10. A user wishes to calculate the Index of Multiple Deprivation average score for an area A in her local authority district. Having compared the boundaries for A against the Lower-layer Super Output Area boundaries, she has identified that A can be approximated as five Lower-layer Super Output Areas. These five Lower-layer Super Output Areas have populations of 1,200, 1,800, 1,400, 1,500 and 1,700, giving a total population of 7,600, and have Index of Multiple Deprivation scores of 44.81, 26.75, 64.58, 59.43 and 14.34 respectively.

A.1.11. To calculate the average score for A, each Lower-layer Super Output Area score is multiplied by the Lower-layer Super Output Area population. These values are then summed, before dividing by the population for A to create the average score for A. Thus the average score for area A would be calculated as:

Average score for A =   (44.81 x 1,200 + 26.75 x 1,800 + 64.58 x 1,400 +
59.43 x 1,500 + 14.34 x 1,700) / 7,600

Average score for A =   40.24

3. Rank the resulting scores across the areas of interest

A.1.12. In order to interpret the resulting scores, it is recommended that they are ranked across the areas of interest, where a rank of 1 (most deprived) is assigned to the area with the highest score.

A.1.13. In addition, users may want to identify where the resulting scores would lie in the distribution of all Lower-layer Super Output Area scores. This would enable the user to say for example "when compared to deprivation levels across England, the deprivation level for the X area shows that it would lie in the most deprived 10 per cent of all Lower-layer Super Output Areas nationally".

Appendix B. Combining the domains together using different weights

B.1.1. The overall Index of Multiple Deprivation 2015 is produced by combining together the seven standardised domain scores, using the weights in the following table.

Table B.1. Domain weights used to construct the Index of Multiple Deprivation 2015	
Domain	Domain weight (%)
Income Deprivation Domain	22.5
Employment Deprivation Domain	22.5
Health Deprivation and Disability Domain	13.5
Education, Skills and Training Deprivation Domain	13.5
Barriers to Housing and Services Domain	9.3
Crime Domain	9.3
Living Environment Deprivation Domain	9.3

B.1.2. It is possible to use the component domains to produce alternative measures of deprivation at Lower-layer Super Output Area, based on different domain weights than are used in the Index of Multiple Deprivation.

B.1.3. Users would typically do this for analytical purposes where they want to exclude the effect of one or more domains. For example health researchers may want to use the Index of Multiple Deprivation as a factor to help explain the variation in health outcomes across a sample of areas or individuals. To exclude the effect of the health domain, they may want to use a modified measure of deprivation in their statistical analysis, with the health domain weight set to zero.

B.1.4. To combine the domains using different weights to create a modified deprivation ranking, users should follow a three-step process:

1. Use the standardised domain scores[30], which are provided in the file 9 (see Appendix F for details of published data and spreadsheets);
2. Combine the seven standardised domain scores together with the desired weights to create the modified measure of deprivation. This can be achieved in the Excel spreadsheet containing the standardised scores, or any standard statistical application, using the following equation:
    Income Deprivation Domain x domain-weight
    + Employment Deprivation Domain x domain-weight
    + Health Deprivation and Disability Domain x domain-weight
    + Education, Skills and Training Deprivation Domain x domain-weight
    + Barriers to Housing and Services Domain x domain-weight

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[30] The standardised domain scores have been standardised by ranking, and then transformed to an exponential distribution. These standardised domain scores have been published to be used as the basis for users to combine the domains together using different weights.

+ *Crime Domain x domain-weight*

+ *Living Environment Deprivation Domain x domain-weight.*

3. Rank the output, to produce the ranked scores to be used in analysis by users.

Appendix C. Users and uses of the Indices

C.1.1. Julia Griggs and Kirby Swales at the National Centre for Social Research carried out the user survey and engagement for the Indices of Deprivation 2015, and summarised their findings from the user survey in this Appendix.

C.1.2. This Appendix focuses on how the survey informed our understanding of the users of the Indices, what they use the Indices for, and of potential improvements to outputs and dissemination. The survey also invited comments and suggestions on the availability of suitable data for measuring deprivation, and on the statistical techniques underpinning the methodology. Those responses were considered in the development of the Indices of Deprivation 2015 and shaped the proposals that were put to consultation in November 2014[31]. The process of engagement is a continuous one and users are encouraged to continue to provide feedback to DCLG. The Statistical Release outlines the ways in which users can do this, and how the learning from this round of engagement with users will be revisited prior to future updates.

Summary of findings from the user survey

C.1.3. The Indices of Deprivation 2015 user survey took place in summer 2014 as part of a wider update and review of the Indices. It attracted 248 submissions, primarily from those working within Local Authority (67 per cent) and central government departments (10 per cent) although voluntary and private sector organisations were also represented.

C.1.4. The majority of respondents were frequent users of the Indices, 63 per cent having used the data more than 25 times in the last three years, and most had used multiple versions of the data (for example, 78 per cent had used both the 2010 and 2007 versions). Whilst almost all had used the Index of Multiple Deprivation (99 per cent), many had also used the Income Deprivation Affecting Children Index, Income Deprivation Affecting Older People Index and/or individual domains.

C.1.5. Most frequently, users accessed Indices data via the Department for Communities and Local Government Indices webpage (61 per cent), or used files downloaded to their own organisation's information system (57 per cent). The most commonly used geographies were Lower-layer Super Output Areas and local authority districts.

C.1.6. Indices data was used for a variety of purposes, and often respondents mentioned multiple uses. The most common uses were to inform the targeting of funding (43 per cent), targeting interventions and services (43 per cent) and strategic needs assessments (41 per cent). A large majority of respondents found the data easy to use (90 per cent) and easy to interpret (83 per cent).

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[31] https://www.gov.uk/government/consultations/updating-the-english-indices-of-deprivation

Background - data users

C.1.7. Of the 248 responses included in the analysis dataset, almost all respondents used Indices data as part of their paid work (98 per cent). Survey respondents predominantly held research and analysis roles within their organisations (64 per cent), with the remaining contributors split between roles in policy (5 per cent); information management (5 per cent); service management (4 per cent); and academia (4 per cent). Three per cent of submissions were made collectively by organisations.

C.1.8. The majority of respondents worked within Local Authorities (67 per cent), followed by central government departments or arm's length bodies (10 per cent) (Table C.1).

Table C.1. Which of these best describes the organisation you work or volunteer for?	
	Per cent
Local authority	67
Central Government Department or arm's length body	10
Educational institution (school, college, university)	4
Housing Association	4
Local voluntary sector organisation/Social enterprise	2
National or regional voluntary sector organisation	2
Consultancy	2
Private company	2
Research agency	1
Other	3
Total	100
Base = 246 respondents using the data for work or as a volunteer	

C.1.9. The majority (66 per cent) of respondents' organisations were very large, employing more than 1,000 people, which is consistent with the fact that most of them are from local or central government. Fifteen per cent of respondents belonged to small organisations of 100 or less (Table C.2).

Table C.2. Approximately, what size is your organisation or group (include employees and volunteers)?	
	Per cent
More than 1,000 people	66
Between 101 and 1,000 people	20
Between 51 and 100 people	4
Between 10 and 50 people	8
Fewer than 10 people	3
Total	100
Base = 246 respondents using the data for work or as a volunteer	

Data use

C.1.10. Section 2 of the online survey explored respondents' use of Indices data. Tables C.3 to C.6 summarise responses from the 233 participants opting to complete questions in this section on frequency of use, the versions of the Indices they have used, which of the Indices they used and their methods of accessing Indices data.

C.1.11. Table C.3 shows that the majority of respondents (63 per cent) were frequent users, having used Indices data more than 25 times in the last three years, while a further quarter used it between 10 and 25 times.

Table C.3. In the last three years how often have you used or referred to findings from the Indices of Deprivation?	
	Per cent
Very often (more than 25 times)	63
Often (between 10 and 25 times)	23
Occasionally (more than once, but fewer than 10 times)	12
Rarely (once)	2
Total	100
Base = 232 respondents opting to complete this section of the survey	

C.1.12. The majority of respondents had used both the 2010 and the 2007 Indices (78 per cent), and over half had used the 2004 Indices (55 per cent) (Table C.4).

Table C.4. Which versions of the Indices of Deprivation have you used?	
	Per cent
2010	100
2007	78
2004	55
2000	30
Total percentage	262
Base = 232 respondents opting to complete this section of the survey. Totals sum to more than 100 per cent as respondents could choose more than one response	

C.1.13. Of the three Indices, the Index of Multiple Deprivation was the most frequently used (99 per cent). However very substantial proportions of respondents reported

using the Income Deprivation Affecting Children Index (69 per cent), the Income Deprivation Affecting Older People Index (50 per cent), and the domain indices on their own (64 per cent) (Table C.5), suggesting many users are interested in deprivation affecting children and older people, and specific dimensions of deprivation.

Table C.5. Which of the Indices have you used?	Per cent
The Index of Multiple Deprivation (IMD)	99
The Income Deprivation Affecting Children Index (IDACI)	69
The Income Deprivation Affecting Older People Index (IDAOPI)	50
One or more of the Domain Indices on their own	64
Total percentage	281
N = 232 respondents opting to complete this section of the survey. Totals sum to more than 100 per cent as respondents could choose more than one response	

C.1.14. In terms of access, the majority of respondents (61 per cent) obtained Indices data from the Department for Communities and Local Government's Indices webpage on gov.uk and/or via their organisation's own information system (Table C.6). A further 42 per cent obtained data from the Neighbourhood Statistics website. Less frequently, respondents accessed data via the Public Health England Health Profiles (20 per cent) and the Local Government Association's LG Inform system (8 per cent).

Table C.6. How do you currently access the Indices of Deprivation?	Per cent
From Department for Communities and Local Government Indices webpage on gov.uk	61
The data has been uploaded to my organisation's information system	57
From the Neighbourhood Statistics website	42
Public Health England Health Profiles	20
Local Government Association LG Inform	8
Other	18
Total percentage	206
Base = 232 respondents opting to complete this section of the survey. Totals sum to more than 100 per cent as respondents could choose more than one response	

C.1.15. Eighteen per cent of respondents reported accessing Indices data in another way. Of these responses, the greatest proportion referred to downloading data (e.g. from the Department for Communities and Local Government or Office for National Statistics website) and saving it locally in Excel. A small number of respondents said they accessed linked data from the Open Data Communities website.

C.1.16. Other sources included:

- The Greater London Authority (GLA) Datastore:

> "*The Greater London Authority has produced London specific spreadsheets drawing out key ID data, supplemented by ward measures. It has also produced summary reports for London which we use regularly (London Datastore)*";

- Income Deprivation Affecting Children Index data, accessed via the Department for Education website
- Map-based data, accessed via the Community Insight programme.

C.1.17. A very large majority of respondents used Indices data at the Lower-layer Super Output Area level (94 per cent). However, large numbers of respondents combined this with local authority district level data, reflecting the fact that most are from local or central government. Smaller numbers used Indices data published for local authority counties and the, then, primary care trusts.

Table C.7. Which levels / geographies of data have you used?	
	Per cent
Lower-layer Super Output Area (small-area/neighbourhood) level data	94
Local authority district summary data	78
County level summary data	23
Primary care trusts level summary data	16
Other summary data for larger areas	18
Total percentage	229
Base = 232 respondents opting to complete this section of the survey. Totals sum to more than 100 per cent as respondents could choose more than one response	

C.1.18. Of the 18 per cent of respondents who reported using other geographies, around half said this was ward level. The need for, or the creation of, ward-level data was a topic that came up in response to a number of open questions throughout the survey.

C.1.19. Other geographies that respondents reported using included:

- Clinical Commissioning Groups;
- Children's Centre catchment areas;
- Local Enterprise Partnerships;
- Parliamentary constituencies;
- Bespoke geographies for specific projects.

What Indices data is used for

C.1.20. As part of the user survey respondents were asked to describe what they used Indices data for in their own words. Responses were then coded into multiple categories as set out in Table C.8.

C.1.21. The majority of respondents used Indices data in multiple ways, often citing two or more of the examples offered in the survey question (i.e. targeting funding, services or interventions to specific places; needs assessments; in preparing bids for funding or in assessing bids for funding or commissioning).

C.1.22. As Table C.8 demonstrates, Indices data was used most frequently for a combination of assessing needs and targeting resources – both funding and services. Many also used Indices data for their own analysis, in some cases to assess policy impacts, in others, for funding bids or supplying data to others for these purposes. A large proportion (59 per cent) of respondents used Indices data for 'other purposes' instead of, or in addition to, the reasons listed. These other purposes were varied and are described in paragraph C.1.30.

Table C.8. What do you use the Indices of Deprivation data for? (coded)	
	Per cent
Targeting funding	43
Targeting services and interventions	43
Needs assessment – strategic	41
In preparing bids for funding / assessing or commissioning bids for funding	39
General research and analysis	24
Impact and policy assessments	7
Other	59
Total percentage	254
Base = 226 respondents opting to complete this section of the survey. Totals sum to more than 100 per cent as respondents could choose more than one response	

C.1.23. While Table C.8 offers an overview of data use, the open text responses themselves offer a more in-depth picture of how the Indices are used. These responses have been summarised below and examples used to illustrate topics as appropriate.

C.1.24. The most commonly reported use of indices data was some form of **targeting of resources to areas of greatest need**. For some respondents this targeting applied only to financial resources, ensuring that priority areas identified using Indices data were allocated additional financial support. For others, the Indices were seen as a tool for targeting services and/or selecting areas for particular interventions. In most cases, however, respondents used data to target both financial resources and services to particular areas. Individual open responses applied to a variety of different settings and contexts, such as education, for example, in allocating school funding and locating children's centres, and health services:

> *The Index of Multiple Deprivation 2010 is used to identify areas with the greatest level of multiple deprivation allowing targeting of funding services and interventions in conjunction with health-based outcomes.*

C.1.25. For many respondents Indices data was used as way of **strategically assessing local needs**, often as part of statutory needs assessments, for example, Joint Strategic Needs Assessments; Child Poverty Needs Assessments and Crime and Community Safety Strategic Assessments.

> *Identifying areas of most need for commissioning partners, particularly when services are being reviewed.*

C.1.26. This was often a step in the process towards targeting resources and, as with targeting, in some cases referred to needs assessments within specific contexts, for example, assessing the health needs of local populations.

C.1.27. A large minority of respondents also reported using Indices data in **preparing or informing funding bids** (39 per cent). This was done directly by the organisation as a way to attract funding or support services to an area, or prepared for a partner organisation/department to include in their own funding proposals.

> *When applying for funding for voluntary groups it can be very useful to provide a full explanation of the local area and why funds should be allocated.*

C.1.28. Another commonly reported use was **general research and analysis**, which was then used to inform reports, create summary documents and for briefing colleagues. This was often discussed in terms of developing a better understanding of areas and populations. Analysis of local deprivation levels was described in terms of feeding into other purposes, such as targeting, and also reflected the role of the respondent within their organisation, for example, those in research, data and intelligence roles.

> *[Purposes are] wide ranging but predominantly evidence to support local intelligence and anecdotal neighbourhood deprivation to inform policy.*

C.1.29. Less prevalent was the use of Indices data within **impact and policy assessments**; essentially the use of Indices data to better understand how or why a policy is needed, whether it will work or has worked (although of course the Indices measure area-level deprivation rather than individual deprivation). In some cases this was referred to in terms of assessment of performance as well as the impact of policies, services or interventions, for example, the creation of socio-economic baselines for an intervention evaluation:

> *They are used to understand how policies affect groups with different levels of deprivation, and to understand how well services are performing for people living in areas with different levels of deprivation.*

C.1.30. A large number of the responses received did not fall into the above themes, but referred instead to other uses. The range of responses varied considerably, but included:

- Area profiling;
- Writing blogs;
- Setting targets;
- Assessing the representativeness of staff / volunteers within organisations;
- Using Indices data as a teaching tool;
- In equity audits, and
- To stimulate discussions about trajectory of areas/gap of inequality.

C.1.31. Responses also included those reporting very specific types of research and analysis, such as understanding inequalities in sexual health outcomes and exploring access to health care services among cancer survivors, as well as those offering relatively little detail about data use, e.g. 'publishing equality data'.

Ease of use

C.1.32. The majority of respondents found it easy to use the Indices data and to understand or interpret it (Figure C.1 and Table C.9):

- 90 per cent of respondents found Indices data very or quite easy to use; 10 per cent finding it 'quite difficult' to use
- 84 per cent of respondents found Indices data very or quite easy to understand or interpret; 16 per cent found it 'quite difficult' to understand or interpret and less than 0.5 per cent found it 'very difficult'.

C.1.33. As might be anticipated, those who reported using the data more frequently were less likely to find the data difficult to use: 7 per cent of very frequent users reported finding it 'quite difficult' compared to 17 per cent of 'occasional' users. This was also true in terms of understanding and interpreting Indices data, where12 per cent of very frequent users reported finding it difficult, compared to 24 per cent of 'occasional' users.

Figure C.1. How easy or difficult do you find it to (a) use and (b) understand / interpret Indices data?
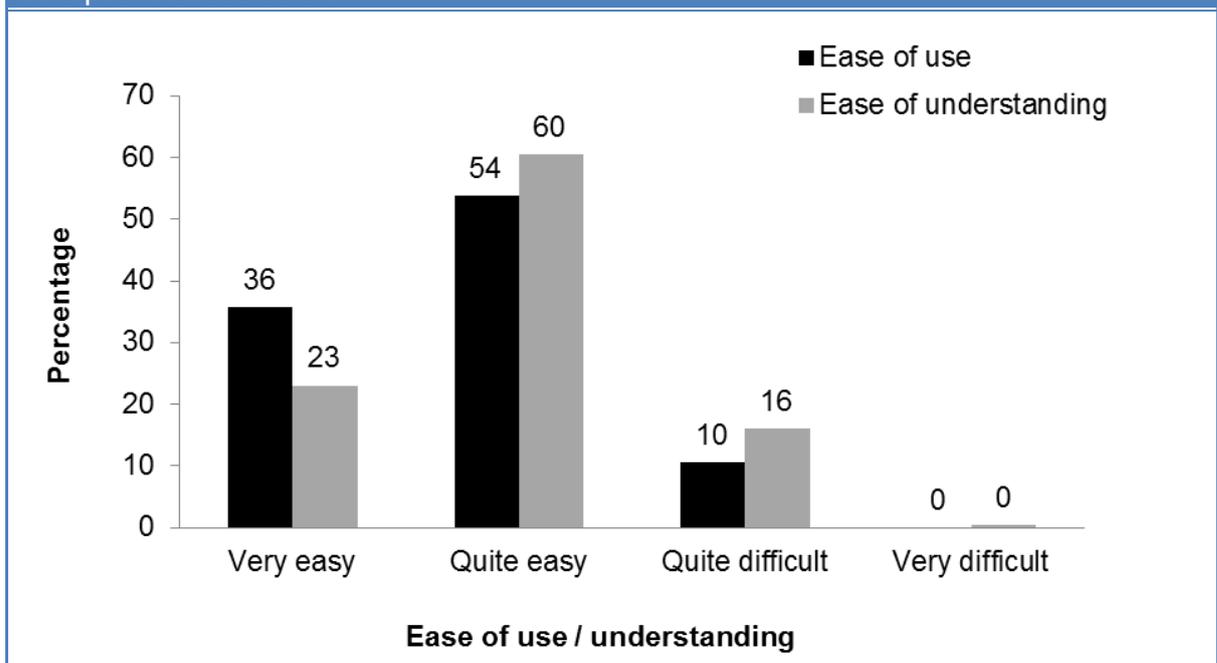
Table C.9. How easy or difficult do you find it to (a) use and (b) understand or interpret the Indices of Deprivation data?				
	Ease of use			
	Very easy	Quite easy	Quite / very difficult	Total
Ease of understanding and interpretation	Per cent	Per cent	Per cent	Per cent
Very easy	58	4	0	23
Quite easy	40	81	29	61
Quite / very difficult	2	15	71	16
Total	100	100	100	100
Base	81	123	24	228
Base = All respondents opting to complete this section of the survey				

C.1.34. Because only 24 of the 228 respondents opting to complete this section of the survey reported difficulties using the data, further analysis is limited. Although they spanned a range of organisations, respondents who experienced difficulty were more often found in the 'voluntary sector' and 'research agency' groupings than in the local government or central government groups. These differences were broadly replicated for the 38 respondents who reported finding Indices data difficult to understand or interpret.

Comments on ease of use and interpretation

C.1.35. Around two-thirds of respondents used the opportunity to comment on ease of use and interpretation of Indices data. Responses were wide-ranging with a small number simply confirming that they found the data easy to use and understand.

C.1.36. **Problems communicating Indices data to other (non-technical) users** were very commonly cited within responses, sometimes qualifying a lack of difficulties using the data personally e.g. communicating to colleagues who are not familiar with the dataset / do not use it themselves, as well as to the public.

As an analyst, the indices are relatively straightforward to use, but do require a fair amount of explanation to make clear to other users what they are or are not saying. We would not however wish to see the data simplified as this would be to the detriment of the overall dataset.

C.1.37. Respondents highlighted elements of the Indices that they felt non-users had particular difficulties understanding, for example:

- The use of Lower-layer Super Output Area geography;
- Reverse rankings;
- The relative nature of the Index of Multiple deprivation (versus the absolute measures within some of the component domains); and
- The limitations of Indices data to make comparisons over time.
  Most members of the public, users in small organisations or even many in larger organisations do not understand Lower-layer Super Output Area

geography and nearly everyone finds the summary measures at higher geographies difficult to understand and use appropriately.

C.1.38. Some comments expressed the importance of equipping those less familiar with the data, the geographies and the way the scores are constructed, to use the Indices. However, one respondent viewed this lack of technical understanding as an advantage as it would prevent misuse of the data.

C.1.39. A further group of respondents discussed **issues with definitions** used within the Indices, and the importance of ensuring transparency and ease of understanding:

I always find that what people think the data shows them is actually something different to what it actually measures. It would be useful if you could provide a set of clear and concise definitions which I could use to ensure that everyone knows exactly what they are looking at.

C.1.40. Alongside this were respondents who were comfortable using Indices data, but expressed some reservations or **specific areas of difficulty**, for example:

- Conducting comparisons (of areas and/or over time) using Indices data;
- The use of ranks in headline figures;
- Reconciling differences in weightings and domains across the UK nations.

C.1.41. This was connected in some accounts to **limitations of the accompanying guidance**, rather than the Indices data itself, e.g. a lack of clarity on when to use average rank or average score when comparing areas.

C.1.42. Other respondents who were comfortable using the data reported needing to invest time when starting to use the Indices to fully understand it, and for a shift in mindset when using the data:

It takes a reasonable amount of effort and background reading to initially understand what the indices are, how they can be used and what they mean. However, once this initial time has been invested… they are relatively easy to use.

C.1.43. In response to difficulties, some respondents made **suggestions for ways to make data easier to use and interpret**, for example:

- A more user-friendly way of accessing the Index of Multiple Deprivation data to allow bespoke selections e.g. the ONS's Nomis;
- A user-friendly interface;
- Mapping facilities;
- Links to other relevant data sources.

C.1.44. There were also a small number of requests for an easy to download (single) spreadsheet containing all domain scores and ranks.

C.1.45. Connected to this were comments about the **presentation of data**, e.g. difficulties with rankings and deciles/ other percentiles as part of the Indices, and guidance for data users. For example, more transparent guidance on producing and using summary measures for custom geographies (such as one recommended method

for local authority aggregation) including information about the limitations of such measures, as well as for the comparison of Indices across countries within the UK:

[It] would be useful to have a comparison summary between the separate nation's methodologies and scores. Perhaps a smaller methodology document, or an executive summary.
Use is made easier by (i) formatting data so that it is easy to import into a local database, (ii) including local authority codes as well as Lower-layer Super Output Area codes, (iii) providing the whole dataset (Index of Multiple Deprivation, domains, sub-domains, underlying indicators) as a single spreadsheet so we don't have to import multiple spreadsheets.

C.1.46. Respondents also made requests for more, clear information about how the Indices were constructed (i.e. the method used and description of its composite parts), and on how this construction has changed between Indices. There were calls for this to be accessible for non-data experts:

Simpler, [more] easily accessible guidance/ definitions would be a welcome addition.

C.1.47. Open responses received from those who found Indices data difficult to use or to interpret did not appear to differ in any substantive way from the wider group. (Eighteen of the 24 respondents who reported finding data 'quite difficult' to use and 28 of the 38 respondents who found data 'quite or very difficult' to understand or interpret also completed the follow-up question.)

Appendix D. Summary measures for local enterprise partnerships and clinical commissioning groups

D.1.1. The tables below show the 20 higher-level areas ranked as most deprived according to each of the summary measures (a rank of 1 corresponds with the most deprived area). Table D.1 shows the clinical commissioning groups, and D.2 shows local enterprise partnerships.

Table D.1: The most deprived Clinical Commissioning Groups on each of the summary measures of the Index of Multiple Deprivation 2015 and on the income and employment scale measures

	Average Rank	Average Score	Proportion of Lower-layer Super Output Areas in most deprived 10 per cent nationally	Extent	Local Concentration	Income Scale	Employment Scale
1	NHS Bradford City	NHS Bradford City	NHS Bradford City	NHS Bradford City	NHS Blackpool	NHS Birmingham CrossCity	NHS Birmingham CrossCity
2	NHS North Manchester	NHS North Manchester	NHS North Manchester	NHS North Manchester	NHS North Manchester	NHS Sandwell and West Birmingham	NHS Liverpool
3	NHS Central Manchester	NHS Blackpool	NHS Knowsley	NHS Liverpool	NHS Knowsley	NHS Liverpool	NHS Northern, Eastern and Western Devon
4	NHS Barking and Dagenham	NHS Knowsley	NHS Hull	NHS Central Manchester	NHS Hull	NHS Northern, Eastern and Western Devon	NHS Sandwell and West Birmingham
5	NHS Sandwell and West Birmingham	NHS Hull	NHS Liverpool	NHS Sandwell and West Birmingham	NHS Thanet	NHS Sheffield	NHS Sheffield
6	NHS Blackpool	NHS Liverpool	NHS Leeds South and East	NHS Tower Hamlets	NHS Liverpool	NHS Cambridgeshire and Peterborough	NHS Newcastle Gateshead
7	NHS City and Hackney	NHS Central Manchester	NHS Blackpool	NHS Knowsley	NHS South Tees	NHS Newcastle Gateshead	NHS Cambridgeshire and Peterborough
8	NHS Knowsley	NHS Sandwell and West Birmingham	NHS Birmingham CrossCity	NHS Nottingham City	NHS North East Lincolnshire	NHS Dorset	NHS Dorset
9	NHS Tower Hamlets	NHS Birmingham South and Central	NHS Central Manchester	NHS Birmingham CrossCity	NHS Leeds South and East	NHS Kernow	NHS Kernow
10	NHS Liverpool	NHS Nottingham City	NHS South Tees	NHS Hull	NHS Bradford City	NHS Nene	NHS Nene
11	NHS Newham	NHS Birmingham CrossCity	NHS Birmingham South and Central	NHS Barking and Dagenham	NHS Great Yarmouth and Waveney	NHS Southern Derbyshire	NHS Bristol
12	NHS Hull	NHS Leeds South and East	NHS South Manchester	NHS Blackpool	NHS Wirral	NHS Leicester City	NHS Southern Derbyshire
13	NHS Birmingham South and Central	NHS Tower Hamlets	NHS Nottingham City	NHS Leeds South and East	NHS Birmingham South and Central	NHS Bristol	NHS Nottingham City
14	NHS Nottingham City	NHS South Manchester	NHS Sandwell and West Birmingham	NHS City and Hackney	NHS South Sefton	NHS Nottingham City	NHS Cumbria
15	NHS Islington	NHS City and Hackney	NHS Blackburn with Darwen	NHS Blackburn with Darwen	NHS Salford	NHS Coventry and Rugby	NHS East Lancashire
16	NHS Birmingham CrossCity	NHS Barking and Dagenham	NHS South Sefton	NHS Wolverhampton	NHS Heywood, Middleton and Rochdale	NHS Newham	NHS Hull
17	NHS South Manchester	NHS South Tees	NHS Stoke on Trent	NHS Birmingham South and Central	NHS Bradford Districts	NHS Bradford Districts	NHS Leicester City

18	NHS Leicester City	NHS Blackburn with Darwen	NHS North East Lincolnshire	NHS South Manchester	NHS Blackburn with Darwen	NHS Enfield	NHS South Tees
19	NHS Waltham Forest	NHS Heywood, Middleton and Rochdale	NHS Salford	NHS Stoke on Trent	NHS Hartlepool and Stockton-on-Tees	NHS Tower Hamlets	NHS Gloucestershire
20	NHS Wolverhampton	NHS Stoke on Trent	NHS Heywood, Middleton and Rochdale	NHS South Tees	NHS Swale	NHS Hull	NHS Coventry and Rugby

Table D.2: The most deprived Local Enterprise Partnerships on each of the summary measures of the Index of Multiple Deprivation 2015 and on the income and employment scale measures

|	Average Rank	Average Score	Proportion of Lower-layer Super Output Areas in most deprived 10 per cent nationally	Extent	Local Concentration	Income Scale	Employment Scale
1	Liverpool City Region	Liverpool City Region	Liverpool City Region	Liverpool City Region	Liverpool City Region	London	London
2	Black Country	Black Country	Tees Valley	Black Country	Tees Valley	South East	Greater Manchester
3	Greater Manchester	Tees Valley	Greater Birmingham and Solihull	Greater Birmingham and Solihull	Humber	Greater Manchester	South East
4	Greater Birmingham and Solihull	Greater Birmingham and Solihull	Humber	Tees Valley	Greater Manchester	Leeds City Region	Leeds City Region
5	Cornwall and Isles of Scilly	Greater Manchester	Greater Manchester	Greater Manchester	Lancashire	Greater Birmingham and Solihull	North Eastern
6	Tees Valley	Humber	Black Country	Sheffield City Region	Greater Birmingham and Solihull	North Eastern	Liverpool City Region
7	Sheffield City Region	Sheffield City Region	Sheffield City Region	North Eastern	Sheffield City Region	Liverpool City Region	Greater Birmingham and Solihull
8	London	North Eastern	Lancashire	Humber	Leeds City Region	Derby, Derbyshire, Nottingham and Nottinghamshire	Derby, Derbyshire, Nottingham and Nottinghamshire
9	North Eastern	Lancashire	Leeds City Region	Leeds City Region	North Eastern	Sheffield City Region	Sheffield City Region
10	Lancashire	Leeds City Region	North Eastern	Lancashire	Black Country	Black Country	Lancashire
11	Humber	London	Greater Lincolnshire	London	Greater Lincolnshire	Lancashire	Black Country
12	Leeds City Region	Cornwall and Isles of Scilly	Derby, Derbyshire, Nottingham and Nottinghamshire	Derby, Derbyshire, Nottingham and Nottinghamshire	Derby, Derbyshire, Nottingham and Nottinghamshire	Coast to Capital	Coast to Capital
13	Greater Lincolnshire	Derby, Derbyshire, Nottingham and Nottinghamshire	Cumbria	Greater Lincolnshire	Cumbria	Heart of the South West	Heart of the South West
14	Derby, Derbyshire, Nottingham and Nottinghamshire	Greater Lincolnshire	Leicester and Leicestershire	Stoke-on-Trent and Staffordshire	West of England	South East Midlands	South East Midlands
15	Cumbria	Cumbria	Stoke-on-Trent and Staffordshire	Northamptonshire	Stoke-on-Trent and Staffordshire	New Anglia	New Anglia
16	The Marches	Stoke-on-Trent and Staffordshire	Coventry and Warwickshire	Cumbria	Coventry and Warwickshire	Humber	Humber
17	Heart of the South West	Coventry and Warwickshire	West of England	Leicester and Leicestershire	Leicester and Leicestershire	Greater Lincolnshire	Stoke-on-Trent and Staffordshire
18	New Anglia	New Anglia	Northamptonshire	Coventry and Warwickshire	Northamptonshire	Solent	Greater Lincolnshire

| 19 | Stoke-on-Trent and Staffordshire | Heart of the South West | New Anglia | Solent | Solent | Stoke-on-Trent and Staffordshire | Greater Cambridge and Greater Peterborough |
| 20 | Solent | The Marches | Solent | West of England | New Anglia | Greater Cambridge and Greater Peterborough | Solent |

Appendix E. Domain summaries

E.1.1. This Appendix presents analysis of the Indices of Deprivation 2015 domains and sub-domains.

Income deprivation domain

E.1.2. The chart below shows the range of income deprivation for Lower-layer Super Output Areas grouped into 10 per cent bands, or 'deciles', based on their Income Deprivation Domain rank.

Chart E.1. Proportion of the population living in income deprived households, for all Lower-layer Super Output Areas grouped into 10 per cent 'deciles' by Income Deprivation Domain rank
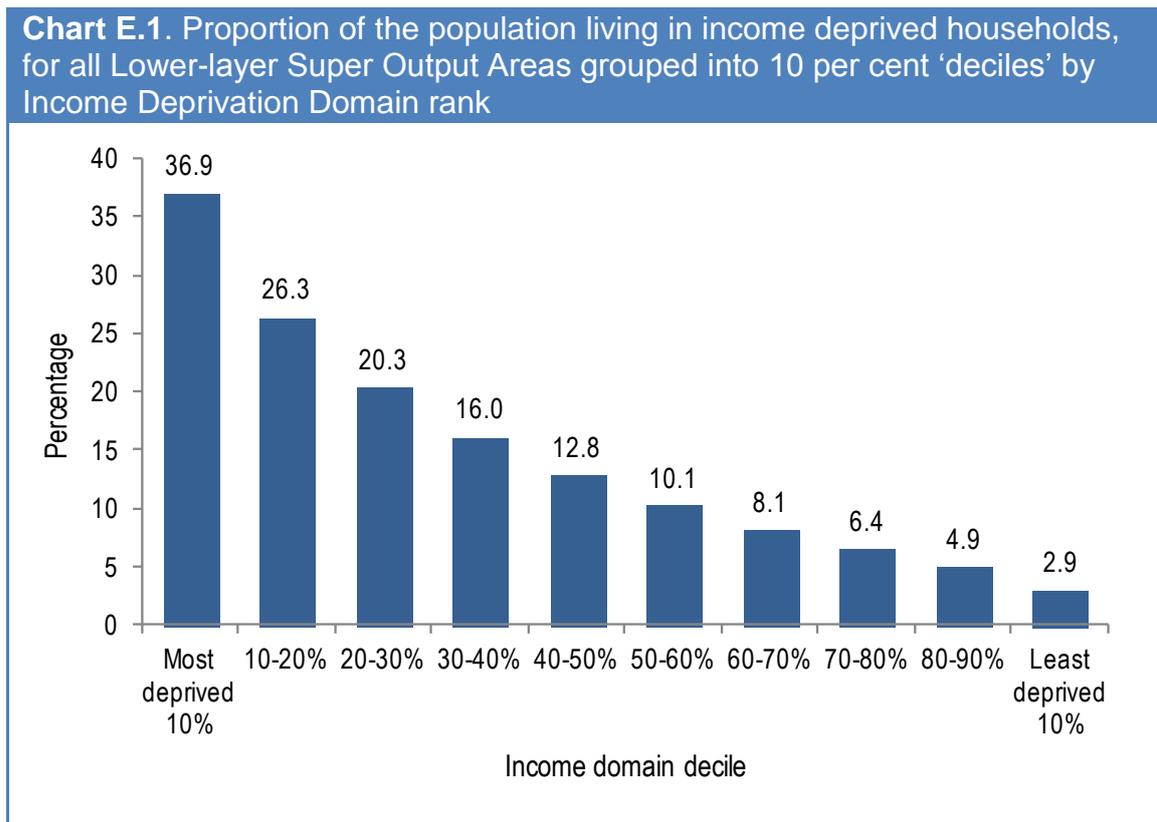
E.1.3. In the most income deprived decile of Lower-layer Super Output Areas in England, an average of 36.9 per cent of the population are income deprived[32]. Within this decile, the range is from 63.9 per cent to 30.2 per cent, showing the high rates of deprivation that exist in the most deprived Lower-layer Super Output Areas. The least income deprived decile of Lower-layer Super Output Areas has on average only 2.9 per cent of people living in income deprived households.

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[32] The decile averages shown for the Income Deprivation Domain, the Income Deprivation Affecting Children Index, the Income Deprivation Affecting Older People Index and the Employment Deprivation Domain are calculated by (a) generating the decile level numerator by summing the numerators of the Lower-layer Super Output Areas contained in that decile (b) generating the decile level denominator by summing the denominators of the areas contained in that decile and (c) dividing the numerator by the denominator and multiplying by 100 to obtain a percentage.

E.1.4. There are 107 Lower-layer Super Output Areas in England where more than half of all people live in income deprivation. The local authority districts with the highest numbers of these Lower-layer Super Output Areas are Middlesbrough (10 Lower-layer Super Output Areas), Blackpool (9 areas), Knowsley (8 areas) and Wirral (7 areas). There are 2,226 Lower-layer Super Output Areas (7 per cent of the total) where more than one-third of people live in income deprivation.

E.1.5. The table below shows the five local authority districts with the highest average score on the Income Deprivation Domain[33]. In all five districts, more than one in four people are income deprived.

Table E.1. Local authority districts with the highest average score on the Income Deprivation Domain	
Local authority district	Average score
Knowsley	0.276
Middlesbrough	0.268
Blackpool	0.257
Kingston upon Hull	0.257
Liverpool	0.256

E.1.6. The table below shows the five local authority districts with the highest proportion of Lower-layer Super Output Areas in the most deprived 10 per cent of Lower-layer Super Output Areas nationally on the Income Deprivation Domain. Just under half of all Lower-layer Super Output Areas in Middlesbrough are ranked among the most deprived 10 per cent on the Income Deprivation Domain, while more than 40 per cent of Lower-layer Super Output Areas in Knowsley, Kingston upon Hull and Liverpool are in the most deprived decile

| Table E.2. Local authority districts with the highest proportion of Lower-layer Super Output Areas in the most deprived 10 per cent of areas nationally on the Income Deprivation Domain	
Local authority district	Percentage of Lower-layer Super Output Areas
Middlesbrough	48.8
Knowsley	45.9
Kingston upon Hull	41.6
Liverpool	40.6
Manchester	37.6

Income Deprivation Affecting Children Index

E.1.7. The chart below shows that in the most deprived decile of Lower-layer Super Output Areas on the Income Deprivation Affecting Children Index, on average 46.6 per cent of children aged less than 16 are living in income deprived families[34]. Within this decile, the range is from 91.6 per cent to 38.6 per cent, showing the

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[33] This can be interpreted as the proportion of people in the local authority district experiencing income deprivation.
[34] The word 'family' is used to designate a 'benefit unit', that is the claimant, any partner and any dependent children (those for whom Child Benefit is received).

extreme range of deprivation that exists in the most deprived Lower-layer Super Output Areas. On average, in the least deprived decile of Lower-layer Super Output Areas in terms of the Income Deprivation Affecting Children Index, only 2.2 per cent of children aged less than 16 live in income deprived families.

Chart E.2. Proportion of children living in income deprived families, for all Lower-layer Super Output Areas grouped into 10 per cent 'deciles' by Income Deprivation Affecting Children Index rank

Income Deprivation Affecting Children Index decile	Percentage
Most deprived 10%	46.6
10-20%	34.4
20-30%	27.0
30-40%	21.3
40-50%	16.6
50-60%	12.7
60-70%	9.6
70-80%	7.0
80-90%	4.8
Least deprived 10%	2.2
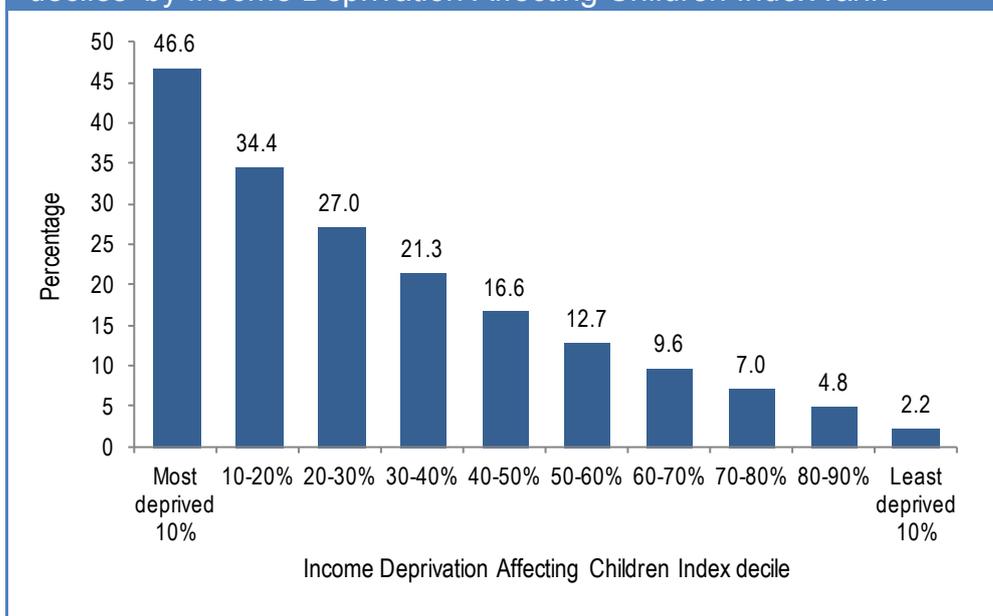
E.1.8. In England there are 48 Lower-layer Super Output Areas where more than two thirds of children live in income deprived families. Half (24) of these Lower-layer Super Output Areas are contained within six districts (Blackpool, Knowsley, Birmingham, Tendring, Middlesbrough and Coventry).

E.1.9. There are 776 Lower-layer Super Output Areas (2 per cent of the total) where more than half of all children live in income deprived households.

E.1.10. The table below shows the five local authority districts with the highest average score on the Income Deprivation Affecting Children Index[35]. In all five districts, more than one in three children are income deprived.

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[35] This can be interpreted as the proportion of children in the local authority district living in families experiencing income deprivation

Table E.3. Local authority districts with the highest average score on the Income Deprivation Affecting Children Index	
Local authority district	Average Score
Tower Hamlets	0.393
Middlesbrough	0.357
Islington	0.353
Nottingham	0.345
Manchester	0.343

E.1.11. The table below shows the five local authority districts with the highest proportion of Lower-layer Super Output Areas in the most deprived 10 per cent of Lower-layer Super Output Areas nationally on the Income Deprivation Affecting Children Index. More than half of all Lower-layer Super Output Areas in Tower Hamlets are among the most deprived 10 per cent nationally on this measure.

Table E.4. Local authority districts with the highest proportion of Lower-layer Super Output Areas in the most deprived 10 per cent of areas nationally on the Income Deprivation Affecting Children Index	
Local authority district	Percentage of Lower-layer Super Output Areas
Tower Hamlets	54.2
Middlesbrough	44.2
Liverpool	40.3
Islington	39.8
Knowsley	39.8

Income Deprivation Affecting Older People Index

E.1.12. The chart below shows that the most deprived decile of Lower-layer Super Output Areas on the Income Deprivation Affecting Older People Index has on average 46.1 per cent of older people affected by income deprivation. Within this decile, the range is from 98 per cent to 36.8 per cent, again showing the extreme range of deprivation that exists in the most deprived Lower-layer Super Output Areas. The least deprived decile of Lower-layer Super Output Areas in terms of this Index has on average only 3.8 per cent of older people affected by income deprivation.

Chart E.3. Proportion of older people living in income deprived households, for all Lower-layer Super Output Areas grouped into 10 per cent 'deciles' by Income Deprivation Affecting Older People Index rank
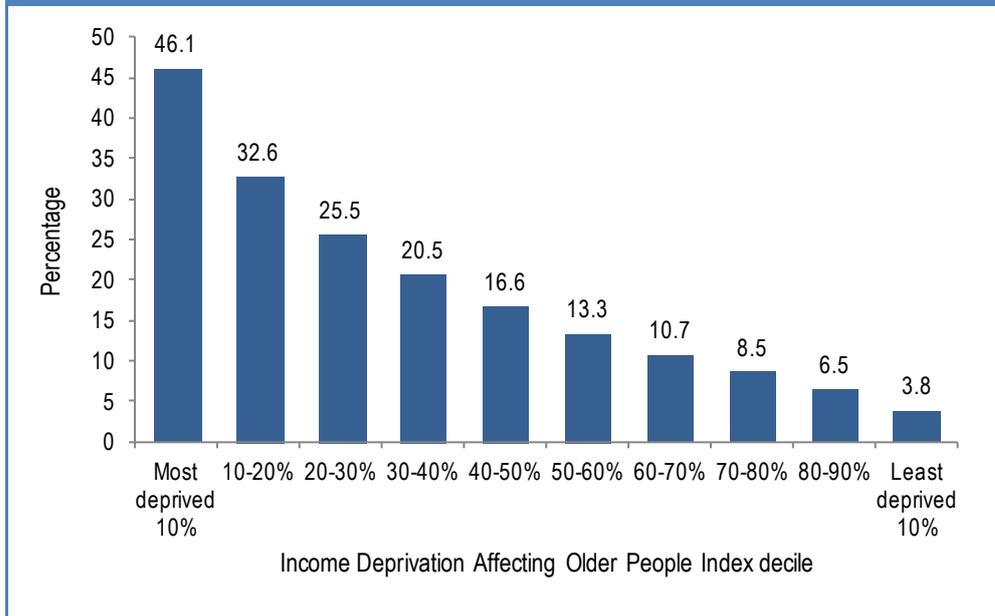
E.1.13. In England there are 106 Lower-layer Super Output Areas where more than two thirds of older people are affected by income deprivation. Twenty-four of these Lower-layer Super Output Areas are located in Birmingham, with a further 15 in Tower Hamlets, 12 in Bradford and 9 in Manchester.

E.1.14. There are 819 Lower-layer Super Output Areas (2 per cent of the total) where more than 50 per cent of older people are income deprived.

E.1.15. The table below shows the five local authority districts with the highest average score on the Income Deprivation Affecting Older People Index[36]. In all five districts, more than one in three older people are income deprived. In Tower Hamlets, approximately half of all older people are income deprived.

Table E.5. Local authority districts with the highest average score on the Income Deprivation Affecting Older People Index

Local authority district	Average score
Tower Hamlets	0.497
Hackney	0.431
Newham	0.410
Manchester	0.363
Islington	0.361

E.1.16. The table below shows the five local authority districts with the highest proportion of Lower-layer Super Output Areas in the most deprived 10 per cent of Lower-layer Super Output Areas nationally on the Income Deprivation Affecting Older People

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[36] This can be interpreted as the proportion of older people in the local authority district experiencing income deprivation

Index. In four of the five districts presented in the table, 50 per cent or more of the Lower-layer Super Output Areas are in the 10 per cent most deprived Lower-layer Super Output Areas nationally on this measure. In Hackney and Tower Hamlets more than three-quarters of Lower-layer Super Output Areas (77.8 per cent) are in the most deprived 10 per cent nationally.

Table E.6. Local authority districts with the highest proportion of Lower-layer Super Output Areas in the most deprived 10 per cent of areas nationally on the Income Deprivation Affecting Older People Index

Local authority district	Percentage of Lower-layer Super Output Areas
Hackney	77.8
Tower Hamlets	76.4
Newham	65.9
Manchester	50.0
Islington	48.0

Employment Domain

E.1.17. The chart below shows employment deprivation in England by decile. In the most employment deprived decile of Lower-layer Super Output Areas, an average of 28.8 per cent of working-age adults (women aged 18 to 59 and men aged 18 to 64) are employment deprived. Within this decile, the range is from 58.0 per cent to 23.1 per cent, showing the high rates of deprivation that exist in the most deprived Lower-layer Super Output Areas. This compares with 3.1 per cent in the least employment deprived decile of Lower-layer Super Output Areas in England.

Chart E.4. Proportion of working-age adults in employment deprivation, for all Lower-layer Super Output Areas grouped into 10 per cent 'deciles' by Employment Deprivation Domain rank
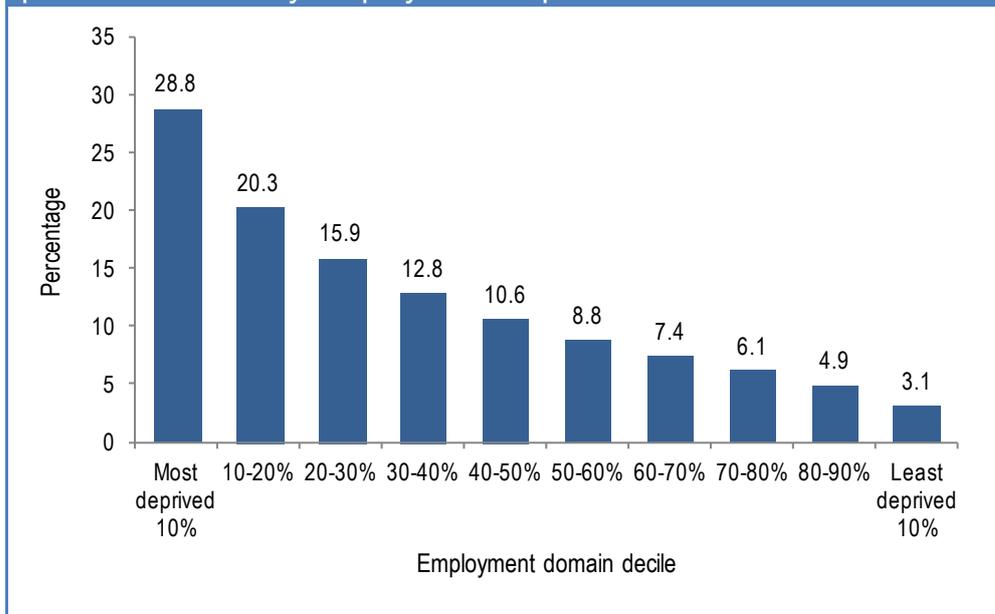
E.1.18. There are 516 Lower-layer Super Output Areas in England (2 per cent of the total) where more than one third of working-age adults experience employment deprivation.

E.1.19. The table below shows the five local authority districts with the highest average score on the Employment Deprivation Domain[37]. In each of these local authority districts more than one in five working-age adults is employment deprived.

Table E.7. Local authority districts with the highest average score on the Employment Deprivation Domain

Local authority district	Average Score
Knowsley	0.233
Blackpool	0.228
Middlesbrough	0.216
Hartlepool	0.211
Liverpool	0.207

E.1.20. The table below shows the five local authority districts with the highest proportion of Lower-layer Super Output Areas in the most deprived decile of Lower-layer Super Output Areas nationally on the Employment Deprivation Domain. Almost half of the Lower-layer Super Output Areas in Knowsley, Middlesbrough, and Liverpool are in the 10 per cent most deprived nationally on this measure.

Table E.8. Local authority districts with the highest proportion of Lower-layer Super Output Areas in the most deprived 10 per cent of areas nationally on the Employment Deprivation Domain

Local authority district	Percentage of Lower-layer Super Output Areas
Knowsley	49.0
Middlesbrough	47.7
Liverpool	47.7
Kingston upon Hull	45.2
South Tyneside	42.2

Health Deprivation and Disability Domain

E.1.21. The table below shows the five local authority districts with the highest proportion of Lower-layer Super Output Areas in the most deprived decile of Lower-layer Super Output Areas nationally on the Health Deprivation and Disability Domain. In all five districts presented, over half the Lower-layer Super Output Areas are in the 10 per cent most deprived Lower-layer Super Output Areas nationally on this measure. In Manchester, Knowsley and Liverpool, over 60 per cent of Lower-layer Super Output Areas are in the 10 per cent most deprived nationally.

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[37] This can be interpreted as the proportion of working age people in the local authority district experiencing employment deprivation

Table E.9. Local authority districts with the highest proportion of Lower-layer Super Output Areas in the most deprived 10 per cent of areas nationally on the Health Deprivation and Disability Domain

Local authority district	Percentage of Lower-layer Super Output Areas
Manchester	65.6
Knowsley	64.3
Liverpool	63.1
Blackpool	58.5
Middlesbrough	55.8

Education, Skills and Training Deprivation Domain

E.1.22. The table below shows the five local authority districts with the highest proportion of Lower-layer Super Output Areas in the most deprived decile of Lower-layer Super Output Areas nationally on the Education, Skills and Training Deprivation Domain. In all five districts presented, over one in three Lower-layer Super Output Areas are in the 10 per cent most deprived Lower-layer Super Output Areas nationally on this measure.

Table E.10. Local authority districts with the highest proportion of Lower-layer Super Output Areas in the most deprived 10 per cent of areas nationally on the Education, Skills and Training Deprivation Domain

Local authority district	Percentage of Lower-layer Super Output Areas
Middlesbrough	44.2
Kingston upon Hull	42.2
Knowsley	41.8
Norwich	36.1
Nottingham	34.1

Barriers to Housing and Services Domain

E.1.23. The table below shows the five local authority districts with the highest proportion of Lower-layer Super Output Areas in the most deprived decile of Lower-layer Super Output Areas nationally on the Barriers to Housing and Services Domain. In Newham, more than four in five (83.5 per cent) of Lower-layer Super Output Areas are in the 10 per cent most deprived nationally.

Table E.11. Local authority districts with the highest proportion of Lower-layer Super Output Areas in the most deprived 10 per cent of areas nationally on the Barriers to Housing and Services Domain	
Local authority district	Percentage of Lower-layer Super Output Areas
Newham	83.5
Tower Hamlets	61.8
Waltham Forest	56.3
Hackney	53.5
Brent	49.7

Crime Domain

E.1.24. The table below shows the five local authority districts with the highest proportion of Lower-layer Super Output Areas in the most deprived decile of Lower-layer Super Output Areas nationally on the Crime Domain. In Lambeth, more than half (53.9 per cent) of Lower-layer Super Output Areas are in the 10 per cent most deprived nationally.

Table E.12. Local authority districts with the highest proportion of Lower-layer Super Output Areas in the most deprived 10 per cent of areas nationally on the Crime Domain	
Local authority district	Percentage of Lower-layer Super Output Areas
Lambeth	53.9
Newham	47.0
Islington	46.3
Hackney	43.8
Tower Hamlets	43.1

Living Environment Deprivation Domain

E.1.25. The table below shows the five local authority districts with the highest proportion of Lower-layer Super Output Areas in the most deprived decile of Lower-layer Super Output Areas nationally on the Living Environment Deprivation Domain[38]. More than three quarters of Lower-layer Super Output Areas in Kensington and Chelsea and Westminster are ranked as deprived on this measure.

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[38] The local authority districts of City of London and the Isles of Scilly have been excluded as they contain only a very small number of Lower-layer Super Output Areas. As the single Lower-layer Super Output Area in the Isles of Scilly falls within the most deprived 10% of areas on the Living Environment Deprivation Domain, the Isles of Scilly is technically the local authority with the highest proportion of Lower-layer Super Output Areas in the most deprived 10%, i.e. 100%.

Table E.13. Local authority districts with the highest proportion of Lower-layer Super Output Areas in the most deprived 10 per cent of areas nationally on the Living Environment Deprivation Domain	
Local authority district	Percentage of Lower-layer Super Output Areas
Kensington and Chelsea	78.6
Westminster	77.3
Camden	48.9
Torridge	48.6
Cornwall	47.9

Appendix F.   What data has been published?

F.1.1.   The Indices of Deprivation 2015 datasets are available to download at
www.gov.uk/government/statistics/english-indices-of-deprivation-2015.

Lower-layer Super Output Area data

F.1.2.   Nine sets of data have been published for Lower-layer Super Output Areas:

1. Index of Multiple Deprivation: The rank and decile for each area, on the overall Index of Multiple Deprivation.
2. Domains of deprivation: The rank and decile for each area, for each of the seven domains, as well as the Index of Multiple Deprivation
3. Supplementary Indices - Income Deprivation Affecting Children Index and Income Deprivation Affecting Older People Index: The rank and decile for each area, for the Income Deprivation Affecting Children Index and the Income Deprivation Affecting Older People Index, as well as the Index of Multiple Deprivation.
4. Sub-domains of deprivation: The rank and decile for each area, for each of the six sub-domains, as well as their respective domains.
5. Scores for the Indices of Deprivation: The scores for each area, for the overall Index of Multiple Deprivation, the seven domains, the supplementary indices, and the six sub-domains.
6. Population denominators: The primary population denominators (all people, children, working age, and older people) used in the Indices of Deprivation 2015. These can be used for aggregating the datasets, weighted by population, to other geographies such as wards (see Appendix A).
7. All ranks, deciles and scores for the Indices of Deprivation, and population denominators (CSV file): A single text file containing all of the datasets listed above.
8. Underlying indicators. The indicators used to construct the seven domains, for those that are able to be published.
9. Transformed domain scores: The seven domain scores in this file have been standardised by ranking, and then transformed to an exponential distribution. These transformed domain scores can be used as the basis for users to combine the domains together using different weights (see Appendix B).

Higher-level geography files

F.1.3.   Four sets of data have been published for higher-level geographies:

10. Local Authority District Summaries.
11. Upper-tier Local Authority Summaries.
12. Local Enterprise Partnership Summaries.
13. Clinical Commissioning Group Summaries.

F.1.4. To summarise the level of deprivation in larger areas, a range of summary measures of the Index of Multiple Deprivation 2015, the domains and the two supplementary indices (Income Deprivation Affecting Children Index and Income Deprivation Affecting Older People Index) have been created [39]. For each of the larger areas the following measures have been published:

Table F.1. The summary measures published for the Index of Multiple Deprivation, the domains and supplementary indices

	Average rank	Average score	Proportion of Lower-layer Super Output Areas in most deprived 10 per cent nationally	Extent	Local concentration	Scale
Index of Multiple Deprivation	x	x	x	x	x	
Income	x	x	x			x
Employment	x	x	x			x
Education	x	x	x			
Health	x	x	x			
Crime	x	x	x			
Living	x	x	x			
Barriers	x	x	x			
IDACI	x	x	x			
IDAOPI	x	x	x			

F.1.5. These measures are described in section 3.8 of the Technical Report and advice on their interpretation is provided in section 3.3 of the Research Report.

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[39] For the Indices of Deprivation 2010 and previous versions, the majority of summary measures published were for the Index of Multiple Deprivation only. In response to demand from users, additional summary measures for the domains and supplementary indices have been published here.