



Indices of Deprivation

Mapping the spatial distribution of multiple deprivation at small area level and their uses for targeting area-based regeneration policies

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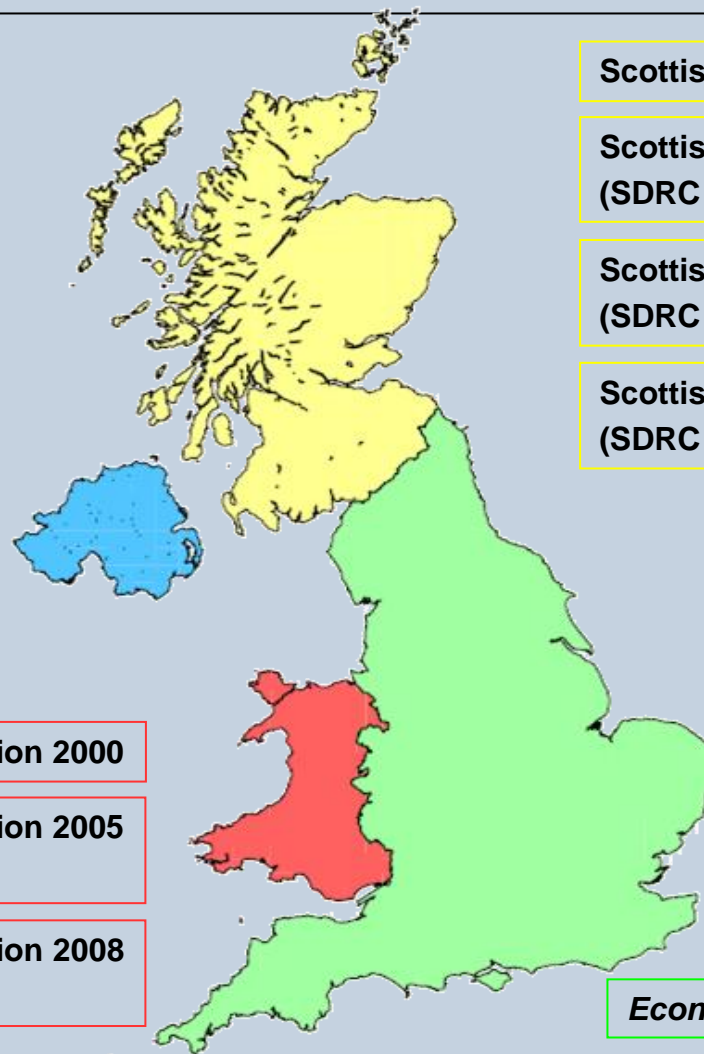
Introduction

Index of Multiple Deprivation

“A relative measure of multiple deprivation expressed at small area level and covering an entire country”

Primary purpose: target anti-poverty initiatives or allocating resources for poverty alleviation/regeneration

UK Indices of Deprivation since 2000



Northern Ireland Multiple
Deprivation Measures 2001

Northern Ireland Multiple
Deprivation Measures 2005

Northern Ireland Multiple
Deprivation Measures 2010
(SDRC peer review role)

Welsh Index of Multiple Deprivation 2000

Welsh Index of Multiple Deprivation 2005
(SDRC advisory / QA role)

Welsh Index of Multiple Deprivation 2008
(SDRC advisory / QA role)

Scottish Index of Multiple Deprivation 2003

Scottish Index of Multiple Deprivation 2004
(SDRC advisory / QA role)

Scottish Index of Multiple Deprivation 2006
(SDRC not directly involved)

Scottish Index of Multiple Deprivation 2009
(SDRC not directly involved)

English Indices of Deprivation 2000

English Indices of Deprivation 2004

English Indices of Deprivation 2007

English Indices of Deprivation 2010

Child Wellbeing Index 2007

Economic Deprivation Index 1999-2009

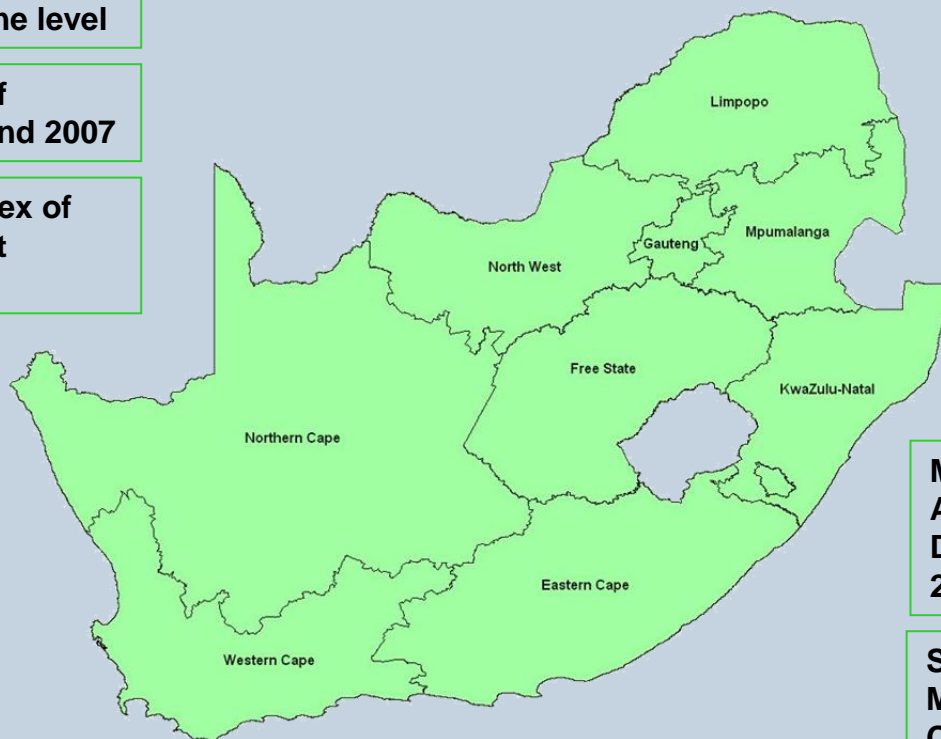
South African Indices of Deprivation

Provincial Index of Multiple Deprivation 2001 at ward level

South African Index of Multiple Deprivation 2001 at Datazone level

Municipality level Indices of Multiple Deprivation 2001 and 2007

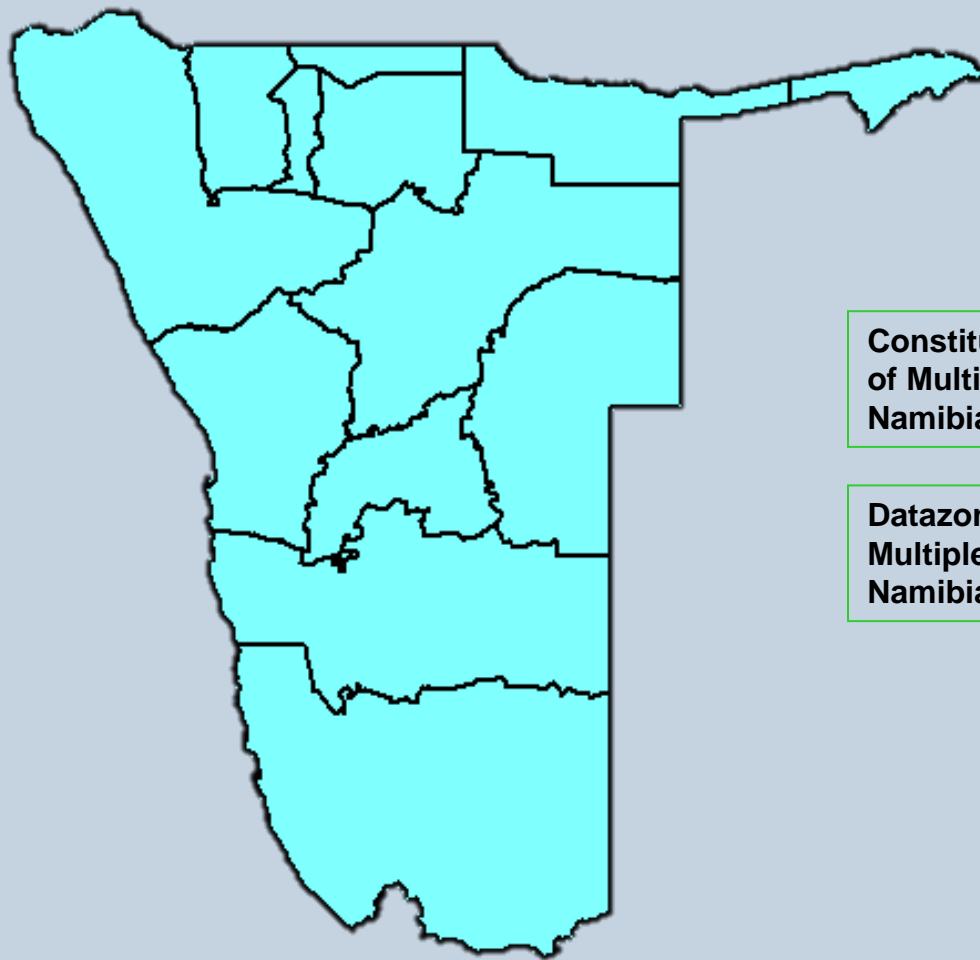
Modelled South African Index of Multiple Deprivation 2007 at Datazone level



Municipality level South African Index of Multiple Deprivation for Children 2001 and 2007

South African Index of Multiple Deprivation for Children 2001 at Datazone level

Namibian Indices of Deprivation



Constituency level Index of Multiple Deprivation for Namibia 2001

Datazone level Index of Multiple Deprivation for Namibia 2001

Model of multiple deprivation (or wellbeing) at small area level

1. Dimensions of deprivation (or wellbeing) must be clearly identified.
2. Dimensions must be measured as accurately as possible – **at small area level** - with indicators that pass certain tests of fitness.
3. Problems of unacceptable standard error must be dealt with.
4. Indicators must be combined to form domains in such a way as to best measure the construct in question.
5. Domain scores must be capable of being ranked to generate a relative picture of that form of deprivation (or wellbeing).
6. Domain ranks must be standardised and transformed in a way that allows their weighted combination into an overall index.
7. Appropriate domain weights should be selected.

Spatial scale

- Sub local authority level in UK (and equivalent elsewhere).
- Ideally approximate to 'neighbourhoods'.
- Small areas with similar characteristics and standardised population size.
- Preferably a standard statistical geography for which robust population estimates are readily available.
- Allow identification of 'pockets' of high deprivation (or low wellbeing) that might otherwise be missed if looking at larger aggregates, such as local authorities.

2001 Census geography: England

England

9 Regions

354 Local Authority Districts

7,932 Wards*

32,482 Lower Layer Super Output Areas (LSOAs)

165,665 Output Areas (OAs)

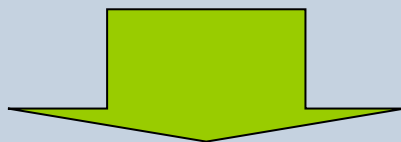
* 2001 Census 'Standard Table' Wards

Domains and indicators

- Domains and indicators can vary according to index.
- Each domain must measure a specific dimension of deprivation (or wellbeing), not other dimensions that may flow from it.
- Each domain consists of a number of indicators, each of which must be:
 - Domain specific
 - Measuring major features of that dimension of deprivation (or wellbeing)
 - Up-to-date
 - Ideally updateable on a regular basis
 - Statistically robust
 - Available for the whole country at small area level in consistent form

English ID 2010 domains and weights

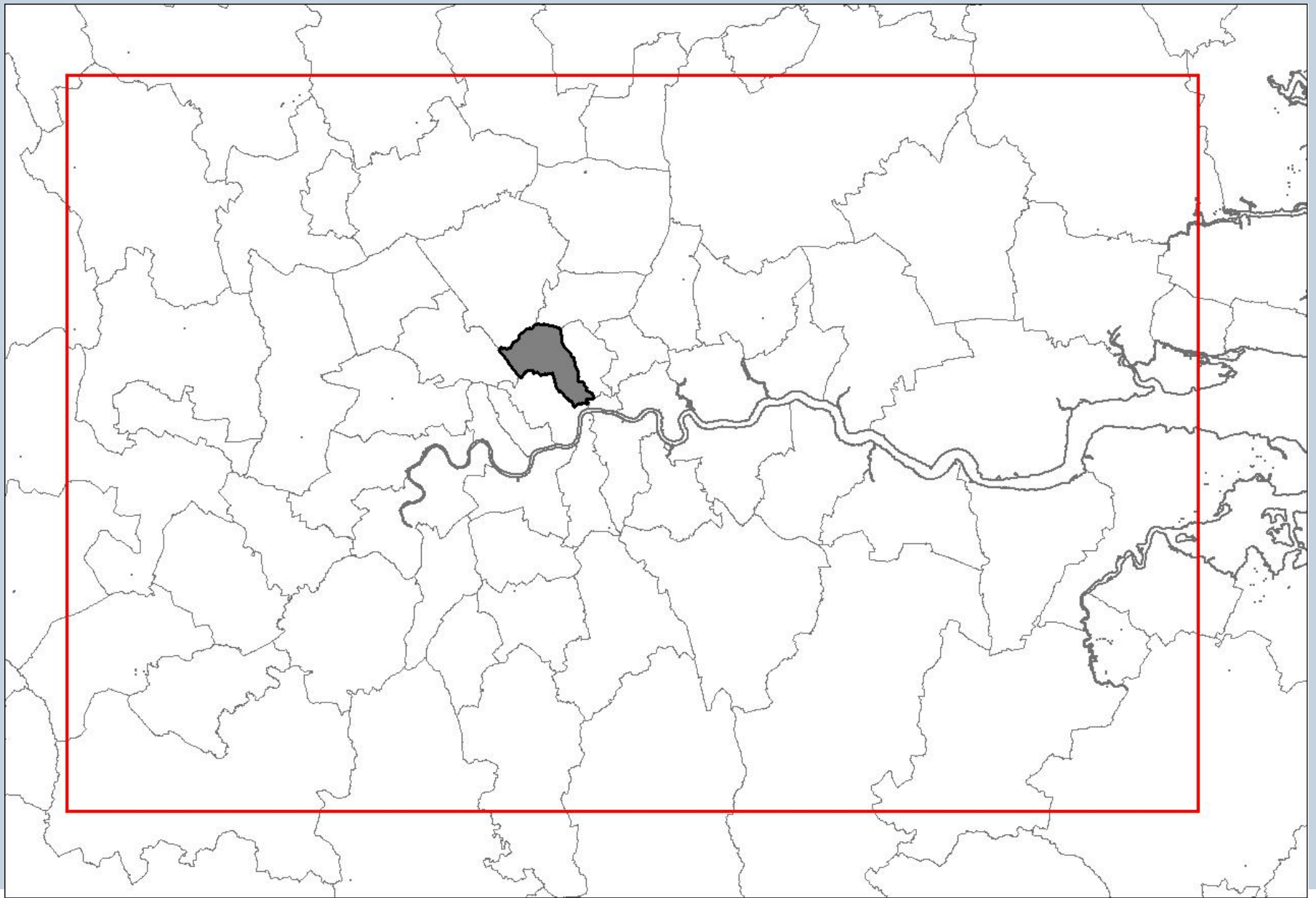
▪ Income Deprivation	22.5%
▪ Employment Deprivation	22.5%
▪ Health Deprivation & Disability	13.5%
▪ Education, Training & Skills Deprivation	13.5%
▪ Barriers to Housing & Services	9.3%
▪ Living Environment Deprivation	9.3%
▪ Crime	9.3%

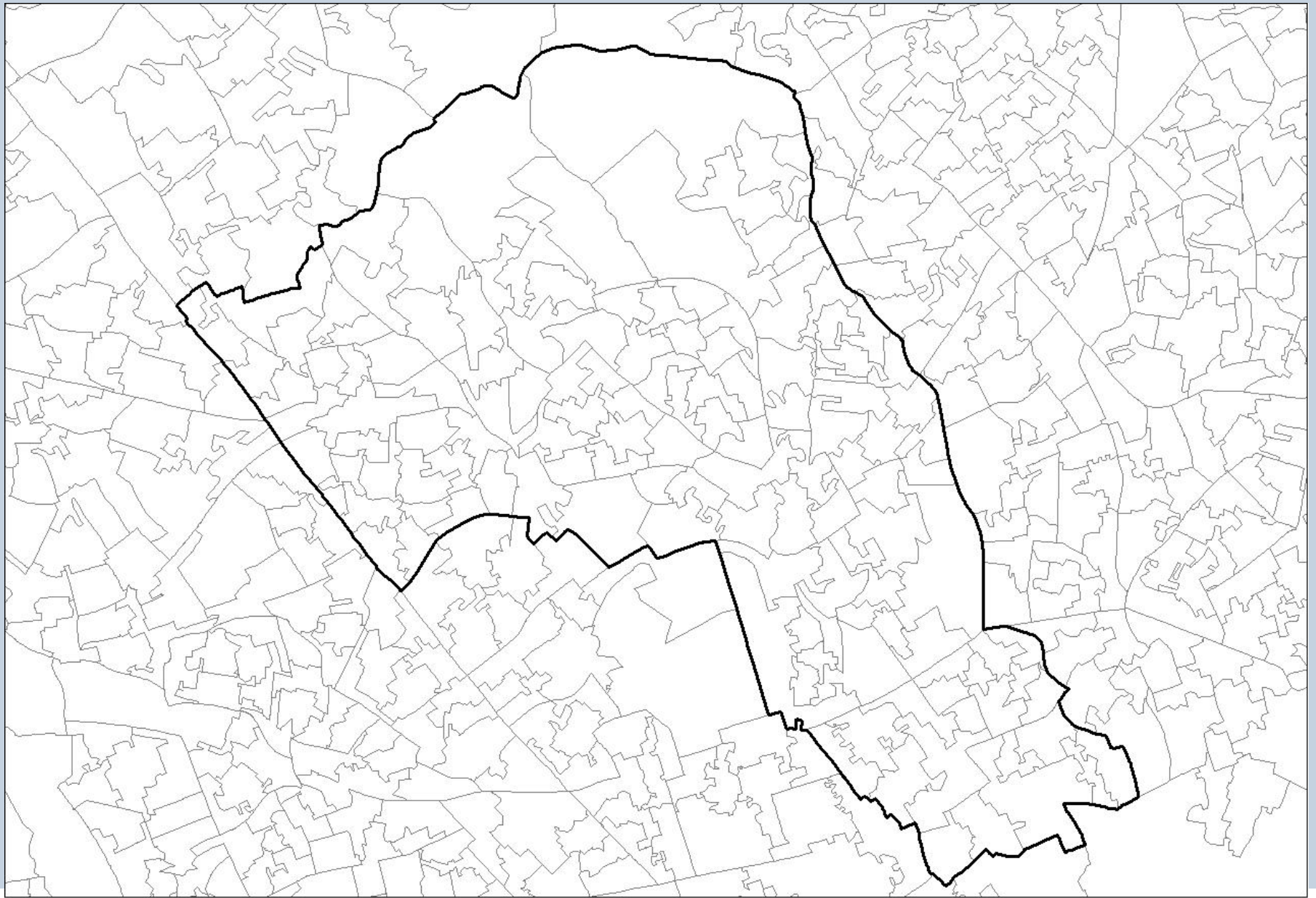


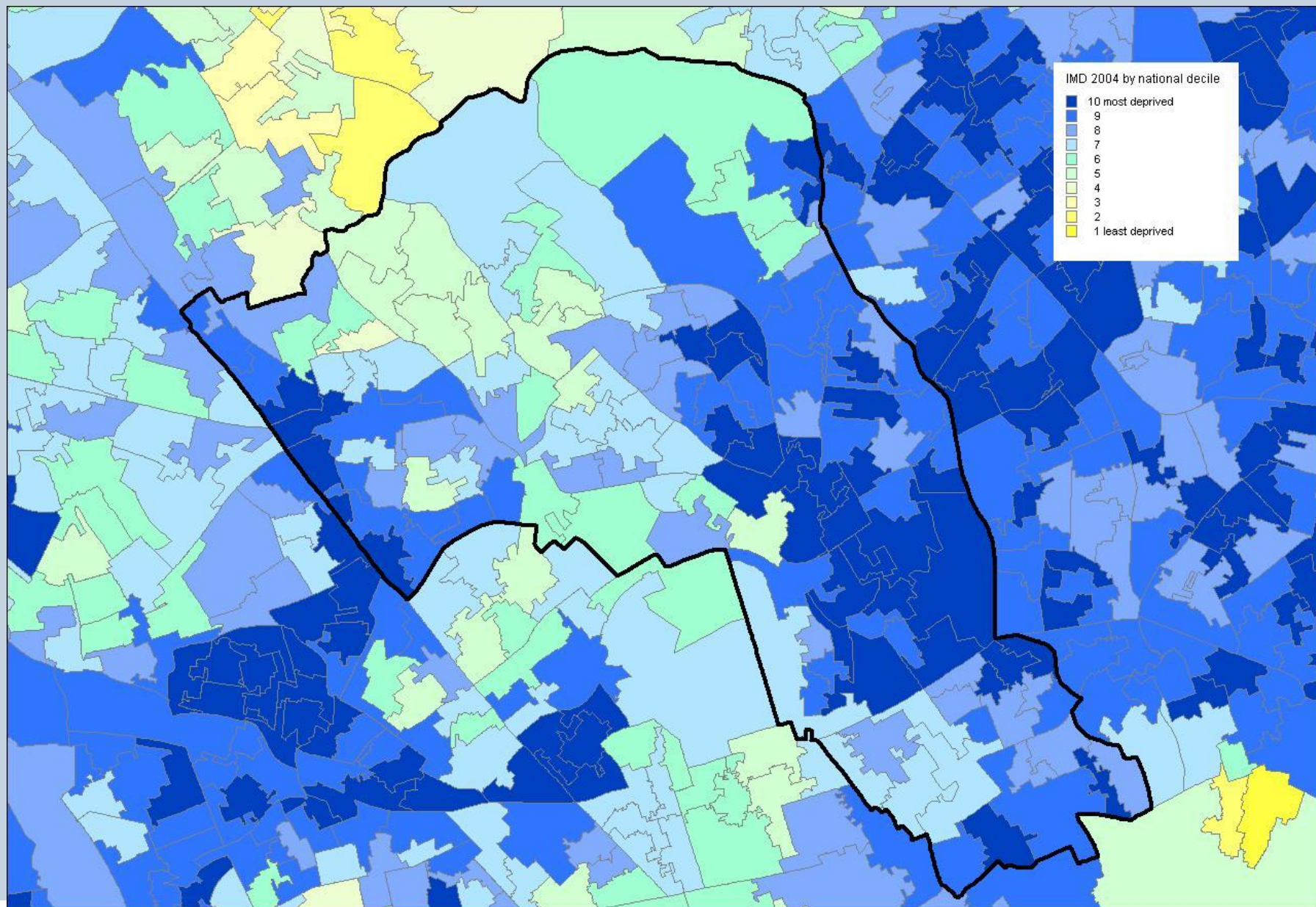
Index of Multiple Deprivation 2010 for England

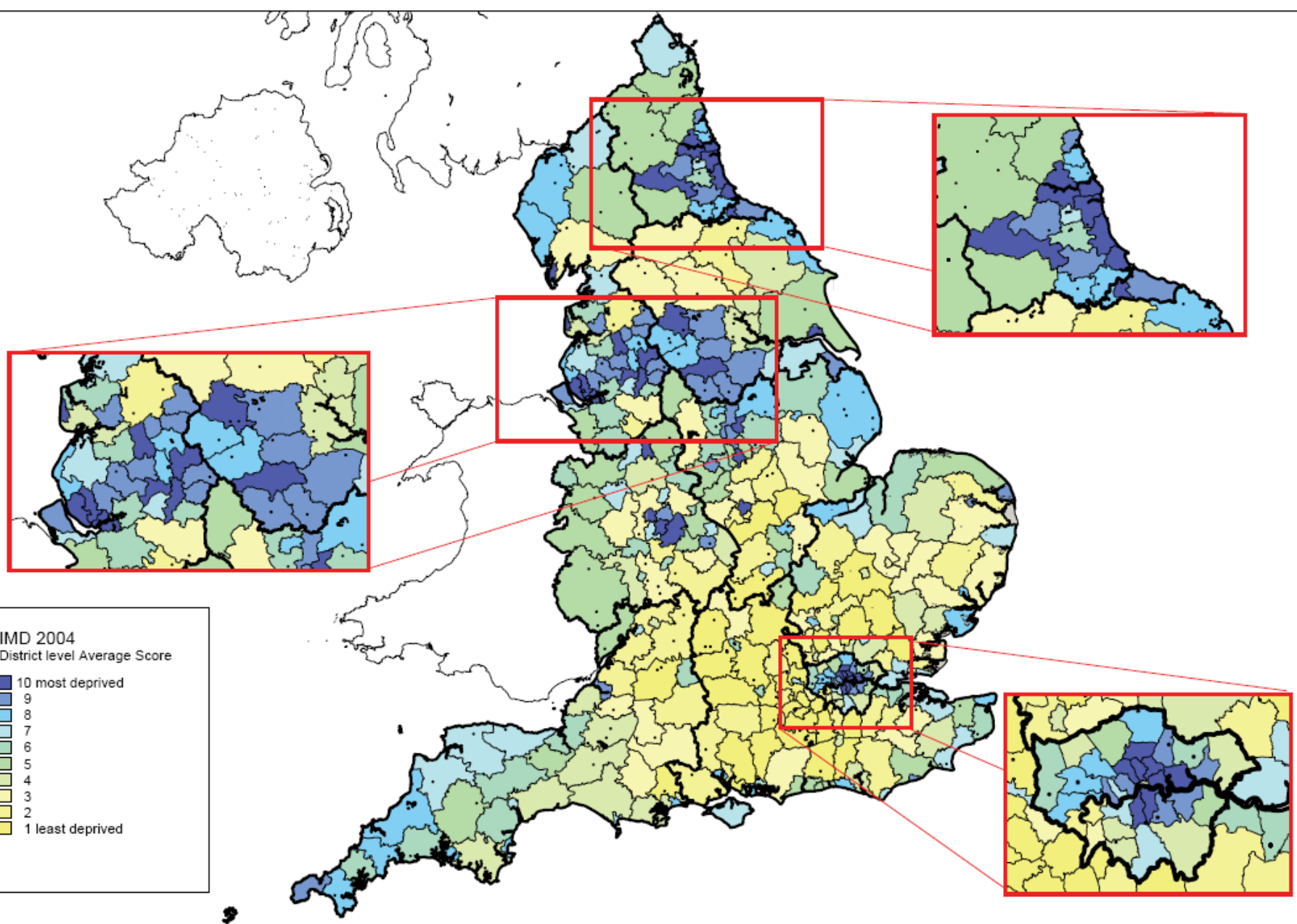












Uses of the English indices (page 1 of 3)

- From 2001/02 to 2010/11, approximately £500 million per year allocated directly to most deprived local authorities through the Neighbourhood Renewal Fund in England and Working Neighbourhoods Fund.
- Feeds into many other government funding formulae (e.g. health, police, housing etc).
- Used to identify neighbourhoods suitable for area-based regeneration initiatives. For example,
 - Sure Start
 - Neighbourhood Nurseries
 - Children's Centres
 - Neighbourhood Management Pathfinders

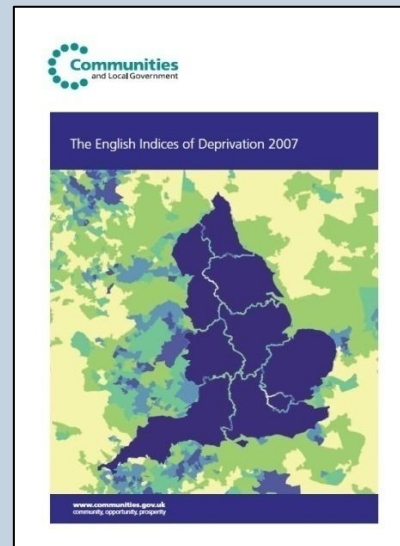
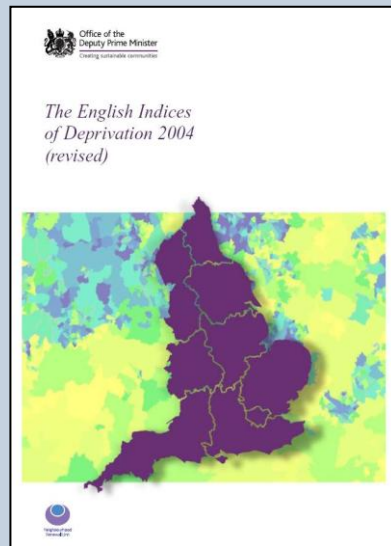
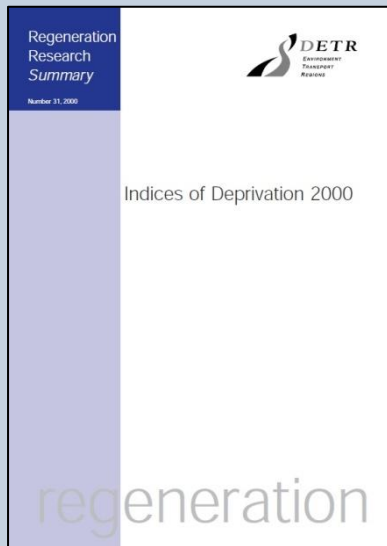
Uses of the English indices (page 2 of 3)

- Used to help identify areas for the Local Enterprise Growth Initiative (LEGI).
- Used by Department for Education as means to identify pupils from deprived areas.
- Used in calculating a disadvantage uplift in 16-18 funding by the former Learning and Skills Council (now Young People's Learning Agency).

Uses of the English indices (page 3 of 3)

- Used in the coalition government's strategies to tackle 'troubled families'.
- Used to determine funding support for 'Community Organisers'.
- Used to determine eligibility for matched-funding support under the 'Communities First' initiative.
- Used in the Community Energy Saving Programme.
- Multitude of other uses by numerous charities, voluntary/ community organisations, academics, businesses and general public.

English ID 2000, 2004, 2007 and 2010 outputs



Final report and data tables, plus all interim reports and consultation papers available to download from:

<http://www.communities.gov.uk/publications/corporate/statistics/indices2010>

Equivalent publications can also be downloaded from Welsh National Assembly, Scottish Executive and Northern Ireland Statistics and Research Agency websites

Economic Deprivation Index (EDI) for England, 1999-2009

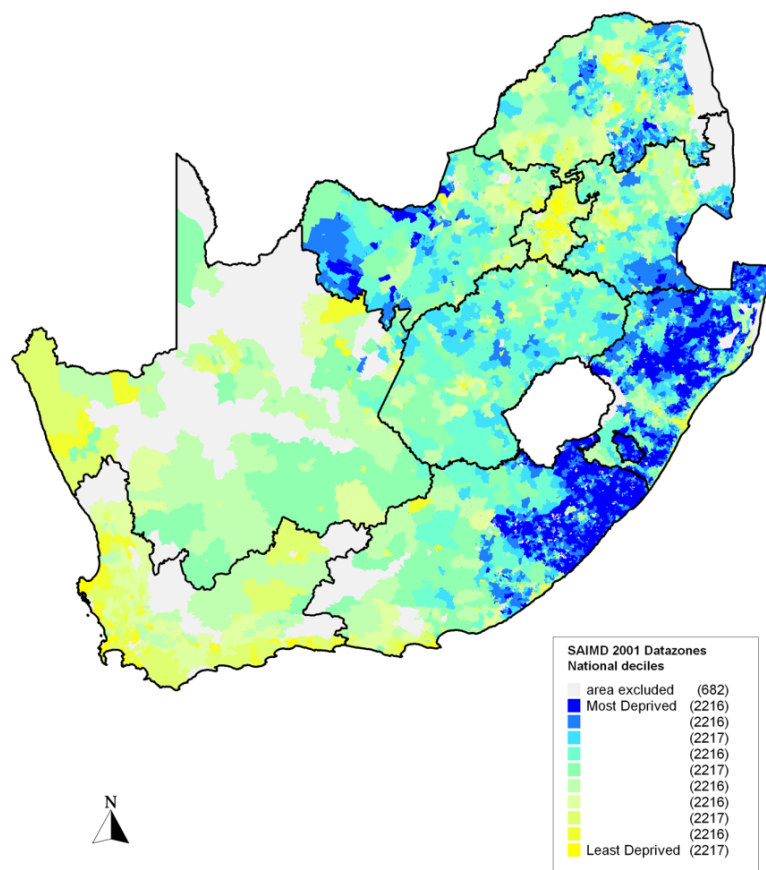
- Follows same methodological principles as the indices of deprivation
- Consists of two component domains:
 - Income Deprivation Domain
 - Employment Deprivation Domain
- Produced on a consistent basis for each year from 1999 to 2009
- Correlates highly with the overall indices of deprivation at equivalent time points
- Provides a sound empirical basis for **tracking change over time** (both relative and absolute) at neighbourhood level

South African Indices of Multiple Deprivation (SAIMD) 2001

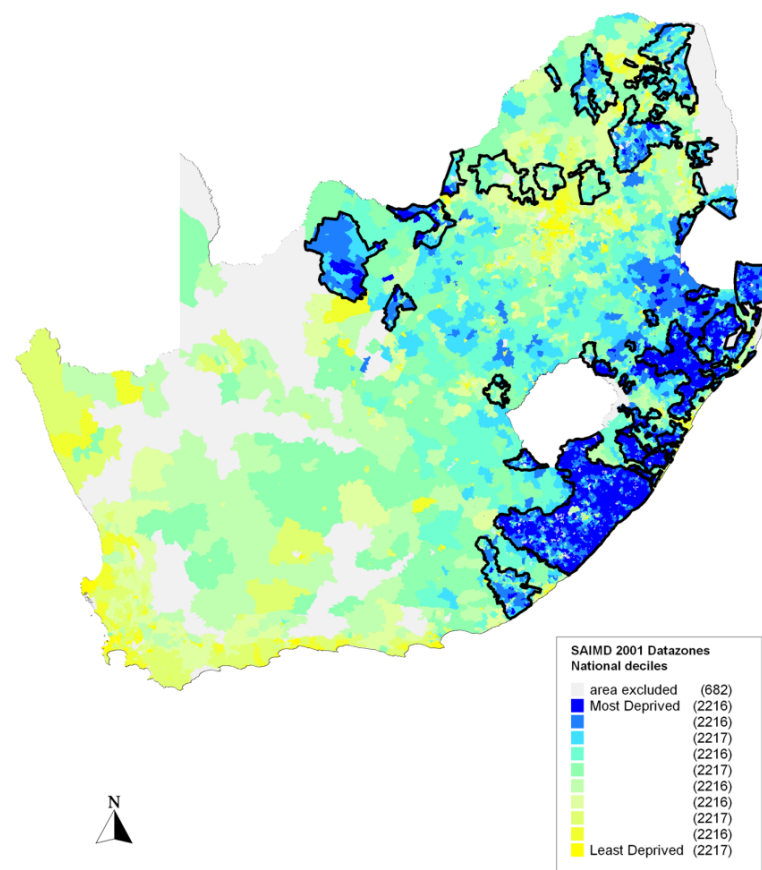
- Initially based on 2001 Census data only: SAIMD 2001
- Five component domains:
 - Income and material deprivation domain
 - Employment deprivation domain
 - Education deprivation domain
 - Health deprivation domain
 - Living environment deprivation domain
- Produced at Datazone level (mean pop=2000; min=1000; max=3000)
- Subsequently updated using the 2007 Community Survey to produce a modelled Datazone-level index: SAIMD 2007

Datazone South African Index of Multiple Deprivation 2001 and with boundaries of Former Homelands overlaid

South African Index of Multiple Deprivation 2001 at Datazone Level



South African Index of Multiple Deprivation 2001 at Datazone Level showing boundaries of Former Homelands



Policy uses of the South African indices

National government

- 'War on Poverty' (The Presidency)
- Increasing take-up of social grants (Department of Social Development)
- Informing the Expanded Public Works programme (Department of Social Development)

Local government

- Informing local government 'Integrated Development Plans'
- A key component of the City of Johannesburg's poverty index for determining eligibility for the municipality's Expanded Social Package of poverty relief

Southern Africa Development Community

- Informing the African Peer Review Mechanism

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Additional slides to accompany presentation

1. Historical developments in the UK
2. Establishing a clear theoretical framework
3. Full list of domains and sub-domains from the ID 2010
4. Example of two domains from the ID 2010:
 - a) Employment Deprivation Domain
 - b) Crime Deprivation Domain
5. Small numbers problem
6. Combining the domains into an Index of Multiple Deprivation
7. Weighting the domains

Historical developments in the UK

- From 1960s onwards: indices at local level for targeting purposes, some with broad focus, others relating to specific policy areas.
- 1983, Department of the Environment: multidimensional index identifying groups 'at risk' of deprivation across England (8 indicators, of which 7 from 1981 Census).
- 1991 Index of Local Conditions, DoE: retained multidimensional approach but moved away from 'at risk' groups to include more direct measures (7 small-area indicators from 1991 Census, 6 non-Census at higher levels).
- 1998 Index of Local Deprivation, DETR: update of 1991 index (no new indicators but some removed).
- Mid-late 1990s saw advent of administrative data as alternative source.

Establishing a clear theoretical framework

- Townsend's formulation of multiple deprivation (1979, 1983):
 - Relative concept
 - Deprivation is multidimensional
 - Experienced by individuals
- An Index of Multiple Deprivation conceptualises multiple deprivation as a composite of different dimensions or domains of deprivation experienced by individuals and expressed at area level using relative measures.
- E.g. It is often possible to state that a % of the population experiences a particular form of deprivation and a % experiences another form.
- However, limited data available on 'deep exclusion' at individual level, so an index says little about the *individual* experiences of *multiple* deprivation.

Domains in the ID 2010 for England

- Income Deprivation
- Employment Deprivation
- Health Deprivation and Disability
- Education, Training and Skills Deprivation
 - Children and young people sub-domain
 - Adult skills sub-domain
- Barriers to Housing and Services
 - Geographical barriers sub-domain
 - Wider barriers sub-domain
- Living Environment Deprivation
 - Indoors environment sub-domain
 - Outdoors environment sub-domain
- Crime

Index of
Multiple
Deprivation
2010

Employment Deprivation Domain of ID 2010

Dimension of deprivation:

“Involuntary exclusion from the labour market”

- Claimants of **Jobseekers Allowance**
 - Claimants of **Incapacity Benefit**
 - Claimants of **Severe Disablement Allowance**
 - Claimants of **Employment Support Allowance**
 - Participants in the **New Deal for the 18-24s** who are not in receipt of JSA
 - Participants in the **New Deal for 25+** who are not in receipt of JSA
 - Participants in the **New Deal for Lone Parents** (after initial interview)
-
- Non-overlapping numerator relates to people of working age (18-59/64) in 2008.
 - Indicator expressed as a rate, using denominator of working age (18-59/64) population in mid 2008.

Crime Deprivation Domain of ID 2010

Dimension of deprivation:

“Risk of personal and material victimisation”

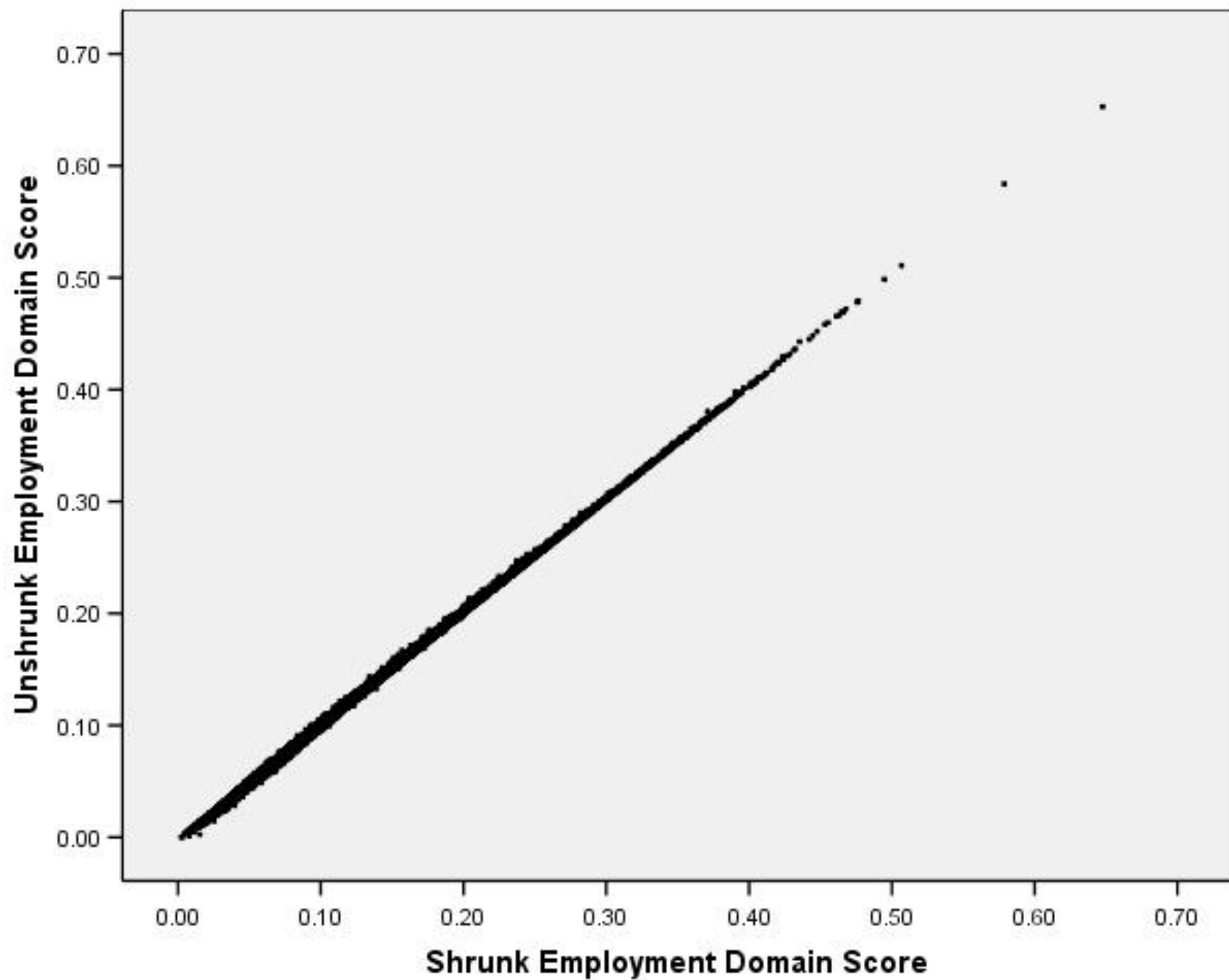
- Rate of **violence**
- Rate of **burglary**
- Rate of **theft**
- Rate of **criminal damage**

- Numerator of each indicator = count of crime per area
- Denominator for violence, theft and criminal damage = ‘at-risk population’
- Denominator for burglary = ‘at-risk properties’

- Each indicator ranked and normalised. Indicators combined using weights derived via Maximum Likelihood Factor Analysis to create Crime Domain Score

Small numbers problem

- ‘Shrinkage Estimation’ (empirical Bayesian estimation):
 - In some small areas, indicators may be ‘unreliable’, particularly where populations at risk are small.
 - Level of ‘unreliability’ measured by calculating standard error.
 - Shrinkage adjusts small area indicator scores by ‘borrowing strength’ from a more robust score.
 - Local authority district level average score used as ‘more robust’ figure.
 - All small area scores move, but only those with a large standard error move substantially.



Combining the domains into an Index of Multiple Deprivation

- Rank each small area from least deprived to most deprived on each Domain Score.
- Transform each Domain Rank to exponential distribution:
 - Generates common distribution
 - Is not scale-dependent
 - Controls for cancellation between domains
 - Facilitates the identification of deprived small areas
- Combine exponentially transformed domains using explicitly stated domain weights.

Weighting the domains

Weighting can be:

- driven by theoretical considerations
- empirically driven
- determined by policy relevance
- determined by consensus
- entirely arbitrary