



## Measuring inequalities by deprivation over time in England – guidance on selecting the most appropriate Index of Multiple Deprivation to use

### Introduction

In order to measure the effect of deprivation on a particular indicator, areas are generally assigned a deprivation score, or rank, using the [English indices of deprivation](#). This is often done at the smallest geography for which the indices are available, Lower Super Output Areas (LSOAs).

LSOAs with similar levels of deprivation are frequently grouped together to form deprivation deciles or quintiles, for example, and we often wish to measure how the extent of inequality between these groups has changed over time.

There have been 6 versions of the English indices of deprivation released between 2000 and 2019, so any analysis needs to begin by choosing which is the most appropriate to use. This document provides guidance to inform selection of a version, or versions, of the indices to use for analysis in a particular time period, or over time. Its aim is to help provide consistency between outputs produced both within Public Health England, and by other organisations producing health-related indicators using the indices of deprivation.

[Guidance](#) is available elsewhere on how to group individual areas into categories such as deprivation quintiles or deprivation deciles.

### Guidance for measuring trends in inequality by deprivation

#### 1. Use the version of the indices which most closely aligns with the time period of the data

It is possible to measure trends in deprivation based inequality using a single version of the indices to define deprivation for the whole time period being looked at. This has the advantage of defining deprivation in a consistent way, which means that any change in trend cannot be an artefact related to a change of definition.

Doing this, however, is problematic in local areas where there have been significant changes in levels of deprivation within the area over time. For example, an apparent narrowing of inequality over time between deprivation quintiles, based on a single version of the indices, may reflect a genuine narrowing of inequality, but it could also mean that the quintiles are no longer made up of similarly deprived LSOAs, i.e. the deprivation quintiles have become less

homogenous over time, thereby masking inequality between more and less deprived areas. Measuring the inequality in each time period, using the version of the deprivation indices which most closely aligns with the time period of the data, reduces this issue and means the indicator more accurately reflects inequality within each area at a given time period.

## **2. Consider the time period of data used to construct the version of the indices**

The versions of the indices are named according to the year in which they were published, but they are not based on data for that year.

Since each version of the indices is made up of around 40 indicators, there is no single time period on which each version is based, as data availability for each indicator differs. This means that it is less clear which version should be used when.

The time period of data used to construct each of the indices should be taken into account when considering which version to use for trend analysis. Appendix 1 sets out the versions available since 2004, with the time period on which the majority of the data are based.

## **3. Use older versions of the indices with caution**

Using different measures of deprivation according to the time period being examined introduces the possibility that any changes observed in the indicator are due to differences in the way deprivation is measured.

The versions from 2010<sup>1</sup>, 2015 and 2019 are not identical in their construction, however the differences between them are small, and therefore they can be compared over time. The statistical release for the 2019 indices notes that “The Index of Deprivation 2019 has been produced using the same approach, structure and methodology for the Index of Deprivation 2015 and previous releases. Keeping a consistent methodology in this way does allow relative rankings between iterations to be compared over time.”

Older versions of the indices should be used with caution since there may be differences in the methods and indicators used in their construction, meaning they are not comparable with more recent versions. In addition, they may also be based on different geographical boundaries, e.g. 2001 LSOA boundaries rather than 2011 LSOA boundaries.

## **4. Use the same version of the indices within aggregated time periods**

When analysis is produced for 3 or 5 year aggregated time periods, data could be assigned to deprivation categories based on each single year, then aggregated to 3 or 5 year periods, potentially using the most appropriate version of the indices for each single year. However, doing this is potentially problematic for users of the data: for example, for local authorities who may need to identify and target the LSOAs in a particular quintile or decile.

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<sup>1</sup> IMD2010 was published based on 2001 LSOA geographies, however PHE have produced a set of IMD2010 figures adjusted to 2011 LSOA boundaries, but have not done this for earlier versions of IMD.

It is therefore recommended that data are aggregated into the 3 or 5 year period first, then deprivation categories assigned using a single version of the indices.

### Recommended approach

The principles set out above can be applied to any deprivation based groups, for example, those based on groups of LSOAs, and those based on groups of local authorities.

Table 1 provides guidance on which version of the indices should be used for which time periods of data, taking into account the principles set out above, It is based on the general assumption that each version of the indices will be mostly based on data from two years before the year of its release. This is largely consistent with the ONS approach for measuring trends by deprivation over time.<sup>2</sup> There are many different ways in which time periods could be assigned to versions of the indices, and this table provides guidance only. In some situations, it may be appropriate to select alternative versions of the indices for measuring trends.

**Table 1: Guidance on the version of the English indices of deprivation to use for particular time periods**

Time period/Time period type				Recommended version of the indices
5 year aggregate	3 year aggregate	Single year	Financial year	
2001-05	2001-03	2001	2001/02	2010
2002-06	2002-04	2002	2002/03	
2003-07	2003-05	2003	2003/04	
2004-08	2004-06	2004	2004/05	
2005-09	2005-07	2005	2005/06	
2006-10	2006-08	2006	2006/07	
2007-11	2007-09	2007	2007/08	
2008-12	2008-10	2008	2008/09	
2009-13	2009-11	2009	2009/10	
2010-14	2010-12	2010	2010/11	
2011-15	2011-13	2011	2011/12	2015
2012-16	2012-14	2012	2012/13	
2013-17	2013-15	2013	2013/14	
2014-18	2014-16	2014	2014/15	
2015-19	2015-17	2015	2015/16	
2016-20	2016-18	2016	2016/17	2019
2017-21	2017-19	2017	2017/18	
2018-22	2018-20	2018	2018/19	

<sup>2</sup> The table aligns with the approach generally used by ONS for use of the 2015 and 2019 versions of the indices. PHE have proposed using the version 2010 for all time periods back to 2001, which is different from the ONS approach, which generally also uses the 2004 and 2007 versions in their trend analysis.

The use of older versions of the indices is not recommended. Although the approach to production of all these versions of the indices are similar, the older versions have not been published on 2011 LSOA boundaries.

Analysis may already have been published by PHE where this recommended approach has not been taken. It is not necessarily recommended that previously published data should now be adjusted, as long as the version of the indices used is clear.

Boundary changes also need to be considered, particularly for groups of local authorities. Trends should not be presented where there have been boundary changes. For example, deciles based on pre-April 2019 boundaries for one time period should not be presented as a trend with deciles based on April 2019 boundaries.

### Appendix 1: Versions of the available English indices of deprivation

Version	Publication date	Time period of data	Lowest geography	URL
IMD 2019	September 2019	Around 2015-16	LSOA11	<a href="https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019">https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019</a>
IMD 2015	September 2015	Around 2012-13	LSOA11	<a href="https://www.gov.uk/government/statistics/english-indices-of-deprivation-2015">https://www.gov.uk/government/statistics/english-indices-of-deprivation-2015</a>
IMD 2010	March 2011	Around 2008	LSOA01	<a href="https://www.gov.uk/government/statistics/english-indices-of-deprivation-2010">https://www.gov.uk/government/statistics/english-indices-of-deprivation-2010</a>
IMD 2007	December 2007	Around 2005	LSOA01	<a href="https://webarchive.nationalarchives.gov.uk/20100411141238/http://www.communities.gov.uk/communities/neighbourhoodrenewal/deprivation/deprivation07/">https://webarchive.nationalarchives.gov.uk/20100411141238/http://www.communities.gov.uk/communities/neighbourhoodrenewal/deprivation/deprivation07/</a>
IMD 2004	May 2007	Around 2001	LSOA01	<a href="https://webarchive.nationalarchives.gov.uk/20100407164233/http://www.communities.gov.uk/archived/general-content/communities/indicesofdeprivation/216309/">https://webarchive.nationalarchives.gov.uk/20100407164233/http://www.communities.gov.uk/archived/general-content/communities/indicesofdeprivation/216309/</a>

The 2000 version of the indices is also available via the National Archives, but this version was only released at ward level, not for LSOAs. A link is available from the collection on gov.uk: <https://www.gov.uk/government/collections/english-indices-of-deprivation>

### Appendix 2: Analysis of impact of using a different version of the indices for measuring trends in inequalities

In order to help assess the impact of moving from using one version of the indices to another, an analysis was undertaken using the slope index of inequality in life expectancy as an example. Data for 2016-18 were calculated using both the Index of Multiple Deprivation (IMD2015) and the Index of Multiple Deprivation 2018 (IMD2018) and the results compared.

A summary of the findings of this analysis can be found [here](#)

A set of charts showing the impact in each area can be found [here](#)