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The 2016 Pobal HP Deprivation Index for Small Areas (SA)

Introduction and Reference Tables

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Introduction

This report provides an introduction to the 2016 Pobal HP Deprivation Index for Small Areas, which draws on data from the 2016 Census of Population. Building on the innovative and powerful approach to the construction of deprivation indices applied in previous versions of the Pobal HP Deprivation Index (Haase and Pratschke, 2004, 2005, 2008, 2010, 2011, 2012), the 2016 Index provides an up-to-date analysis of the geographical distribution of deprivation and permits comparisons with published deprivation scores for 2006 and 2011.

The Pobal HP Deprivation Index is based on Small Areas (SA), the new census geography developed jointly by the Ordnance Survey of Ireland (OSI) and the Central Statistics Office (CSO) for the publication of the 2011 Small Area Population Statistics (SAPS). Before 2011, the smallest spatial units for which consistent SAPS data were available were the electoral divisions (EDs). However, EDs do not provide a homogeneous coverage of all areas in the country, as they contain as few as 76 individuals in some rural areas, but over 32,000 in Blanchardstown-Blakestown, for example. This unevenness in population generates considerable difficulties when mapping social and economic data. The introduction of the Small Area (SA) geography for Ireland follows analogous revisions to the census geography in the UK and Northern Ireland, and yields a number of benefits. SAs are much more homogeneous in their social composition and have a uniform population size with a mean of just under 100 households.

The 2016 Pobal HP Deprivation Index is consistent with data published following the 2011 census, and all scores are computed in a consistent manner for the 2006, 2011 and 2016 waves. Users of the Pobal HP Deprivation Index data should be aware that index scores constructed from the SA level analysis cannot be compared with those emanating from an ED level analysis. All of the HP Deprivation Indices constructed for the period 2006-2016 are shown in Figure 1. The pink fields indicate the level at which each index was constructed, whilst the green fields represent population-weighted aggregates based on the small-area scores.

Figure 1:   HP Deprivation Indices, 2011 to 2016
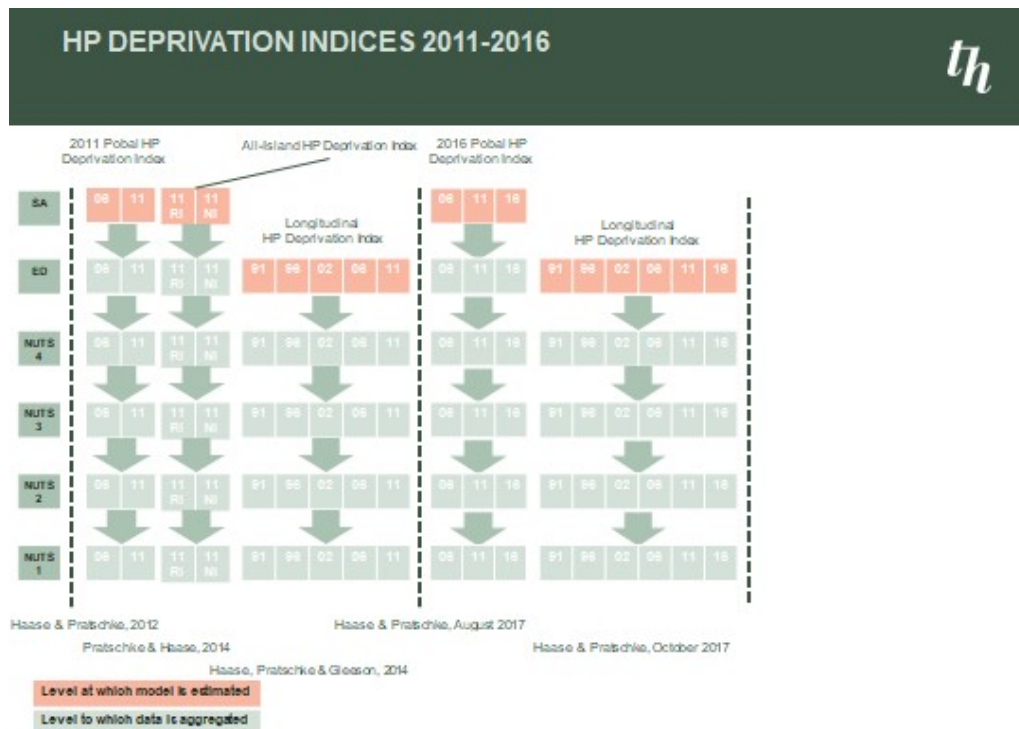
1   How is the 2016 Pobal HP Deprivation Index constructed?

Most deprivation indices are based on a factor analytical approach which reduces a larger number of indicators to a smaller number of underlying dimensions, factors or components. This approach is taken a step further in the Pobal HP Deprivation Index: rather than leaving the dimensions to be defined by data-driven techniques, the authors develop an *a priori conceptualisation* of these dimensions. Based on earlier deprivation indices for Ireland, as well as analyses from other countries, three dimensions of affluence/disadvantage are identified: **Demographic Profile, Social Class Composition** and **Labour Market Situation**.

Demographic Profile is first and foremost a measure of rural affluence/deprivation. Whilst long-term adverse labour market conditions tend to manifest themselves in urban areas in the form of unemployment blackspots, in rural areas the result is typically agricultural underemployment and/or emigration. Emigration from deprived rural areas is also, and increasingly, the result of a mismatch between education, skill levels and expectations, on the one hand, and available job opportunities, on the other. Emigration is socially selective, being concentrated amongst core working-age cohorts and those with post-secondary education, leaving behind communities with a disproportionate concentration of economically-dependent individuals as well as those with lower levels of education. Sustained emigration leads to an erosion of the local labour force, a decreased attractiveness for commercial and industrial investment and, ultimately, a decline in the availability of services.

Demographic Profile is measured by six indicators:
- the percentage change in population over the previous five years (positive association)
- the percentage of population aged under 15 or over 64 years of age (negative association)
- the percentage of population with a primary school education only (negative association)
- the percentage of population with a third level education (positive association)
- the percentage of households with children aged under 15 years and headed by a single parent (positive association)
- the mean number of persons per room (positive association)

Social Class Composition is of equal relevance to both urban and rural areas. Social class background has a considerable impact in many areas of life, including educational achievements, health, housing, crime and economic status. Furthermore, social class is relatively stable over time and constitutes a key factor in the inter-generational transmission of economic, cultural and social assets. Areas with a weak social class profile tend to have higher unemployment rates, are more vulnerable to the effects of economic restructuring and recession and are more likely to experience low pay, poor working conditions as well as poor housing and social environments.

Social Class Composition is measured by five indicators:
- the percentage of population with a primary school education only (negative association)
- the percentage of population with a third level education (positive association)
- the percentage of households headed by professionals or managerial and technical employees, including farmers with 100 acres or more (positive association)
- the percentage of households headed by semi-skilled or unskilled manual workers, including farmers with less than 30 acres (negative association)
- the mean number of persons per room (negative association)

Labour Market Situation is predominantly, but not exclusively, an urban measure. Unemployment and long-term unemployment remain the principal causes of disadvantage at national level and are responsible for the most concentrated forms of multiple disadvantage found in urban areas. In addition to the economic hardship that results from the lack of paid employment, young people living in areas with particularly high unemployment rates frequently lack positive role models. A further expression of social and economic hardship in urban unemployment blackspots is the large proportion of young families headed by a single parent.

Labour Market Situation is measured by three indicators:

- the percentage of households with children aged under 15 years and headed by a single parent (negative association)
- the male unemployment rate (negative association)
- the female unemployment rate (negative association)

Figure 2:   Basic Model of the Pobal HP Deprivation Index
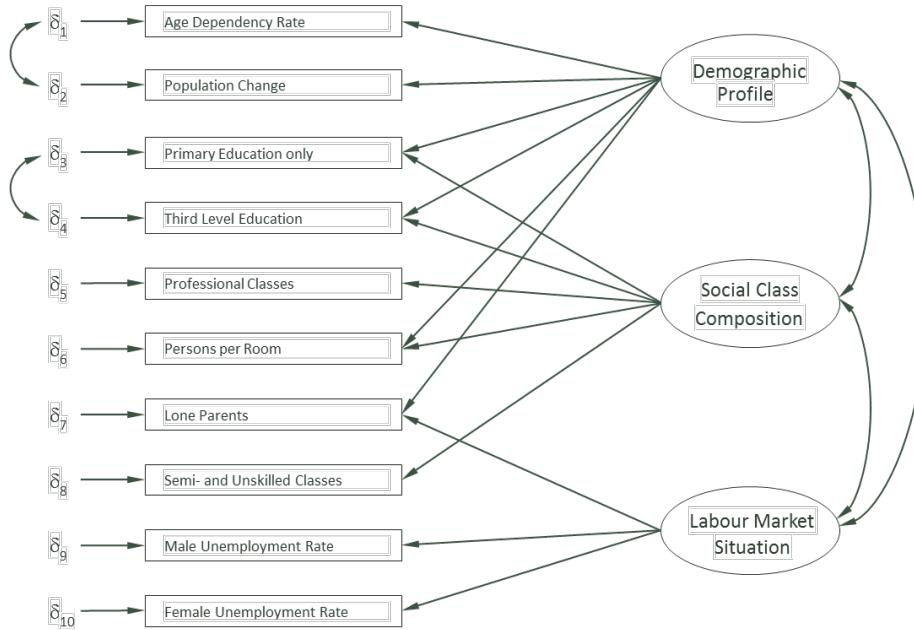
Each dimension is calculated in the same way for each census wave and then combined to form an Absolute Index Score and Relative Index Score. The **Absolute Index Scores** have a mean of zero and a standard deviation of ten in 2006, with varying means and standard deviations in 2011 and 2016 that reflect the underlying trends.

The **Relative Index Score** is specific to a given census wave, and does not capture trends over time. By removing the national trend from the index scores, this index highlights differences in their relative values. The standard deviation is set to ten for each wave, so that the Relative Index Scores provide a standardised measurement of relative affluence and deprivation.

2   Interpreting the 2016 Pobal HP Deprivation Index Data

What is the difference between the Absolute and Relative HP Index Score?

For each census wave, the Pobal HP Deprivation Index comprises an absolute and a relative score. The **Absolute Index Score** measures the affluence/deprivation of each small area on a **single scale which is fixed across all waves** and has a mean of zero and standard deviation of ten for 2006 only. The Absolute HP Deprivation Scores for 2011 and 2016 are constructed using the same measurement scale, which means that they reflect changes in the national economy. For example, if there is economic growth between two census waves, we would expect the deprivation scores to reflect the resulting increase in affluence. Table 1 shows that the mean of the Absolute HP Deprivation scores declined from 0.0 in 2006 to -6.6 in 2011. Thus, in 2011, the SAs had scores which were, on average, 6.6 points lower than in 2006, reflecting the catastrophic effects of the 2008 recession. By comparing the mean of the absolute HP Deprivation Index scores, we can say that between 2006 and 2011, the mean of the Absolute HP Deprivation Index scores declined by exactly two-thirds (0.66) of one standard deviation, or 6.6 points on the HP Deprivation scale).

However, most users of the Pobal HP Deprivation index are less interested in the performance of their area over the past two or three census waves, but want to know how it relates to all other areas **at that point in time, and by using the latest census data**. This information is provided by the **2016 Relative Pobal HP Deprivation Index Scores.** The Relative HP Deprivation Scores are derived by subtracting the underlying trend from the absolute HP Deprivation Scores and rescaling them so that they have a mean of zero and a standard deviation of ten *at each census wave*. Thus, for the development of a social inclusion plan, the targeting of resources towards the most disadvantaged areas, or the development of a formal resource allocation system, the appropriate deprivation measure to use is the **2016 Relative Index Score**. This shows the position of any given SA *relative to all other SAs* and is based on the latest available data from the 2016 Census of Population.

Table 1:   **Distribution of Absolute and Relative Pobal HP Deprivation Scores, 2006 to 2016**

HP Index	Number of SAs	Minimum	Maximum	Mean	Std. Deviation
2006 **Absolute** Index score	18,488	-41.5	38.3	0.0	10.0
2011 **Absolute** Index score	18,488	-35.6	30.5	-6.6	9.5
2016 **Absolute** Index score	18,488	-40.9	35.5	-4.2	9.9
2006 **Relative** Index score	18,488	-41.5	38.3	0.0	10.0
2011 **Relative** Index score	18,488	-30.8	40.0	0.0	10.0
2016 **Relative** Index score	18,488	-39.3	40.3	0.0	10.0

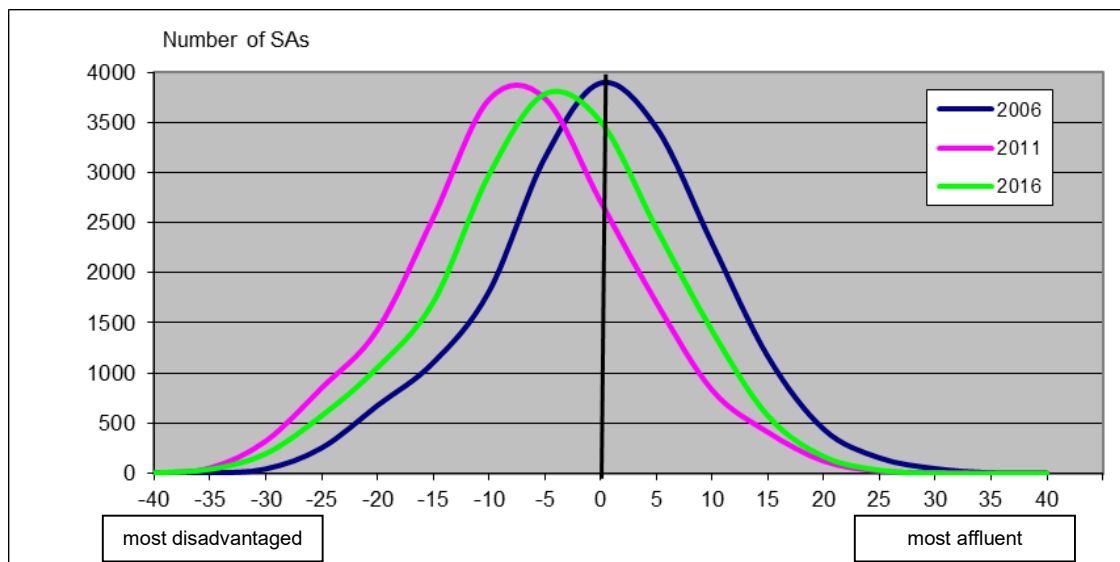**Figure 3:   Distribution of Absolute Index Scores, 2006 to 2016**

Figure 3 is based on the same data as summarised in Table 1, but shows the distribution of SA scores for each Census wave. Each line shows the number of SAs at each point of the distribution of Absolute HP Deprivation Scores[1]. The 2006 distribution is shown by the dark blue line. The recession in 2008 resulted in a significant decline in the Absolute HP Index Scores, as shown also in Table 1. In Figure 3, this effect is visible from the left-ward shift in the distribution of Absolute HP Index Scores between 2006 (dark blue) and 2011 (pink).

Between 2011 (pink) and 2016 (green), by contrast, the Irish economy partially recovered. This is reflected in the increase of the mean Absolute HP Deprivation scores from -6.6 in 2011 to -4.2 in 2016 (see Table 1) and in the right-ward shift of the distribution of SA-level Absolute HP Index Scores in Figure 3.

This demonstrates some of the key strengths of the Pobal HP Deprivation Index. Unlike other deprivation indices, which can only provide a ranking of areas, the Pobal HP Deprivation Index uses Confirmatory Factor Analysis (CFA) in its construction, which provides for a stable measurement scale across successive census waves. This is why we can make direct comparisons using both Absolute and Relative HP Deprivation Index scores.

In summary, the HP Deprivation scores can be used in different ways: (i) the Relative HP Deprivation Score provides a measurement of the affluence/deprivation of a given area relative to the national mean at a specific point in time, (ii) comparison of Absolute HP Deprivation scores from different census waves provides us with a measure of how much an area has improved or deteriorated in absolute terms, (iii) changes in the mean of the Absolute HP Deprivation scores indicates the underlying trend of how affluence/deprivation has changed over time, (iv) by comparing Relative HP Deprivation Index scores for a particular area at two different points in time, we can assess whether it has moved up or down in its position relative to the rest of the country.

Why are the Pobal HP Deprivation Index scores not expressed as decile rankings?

Decile rankings divide all geographical areas into ten equally-sized categories. This is frequently used for mapping purposes, or when comparing scores from indices that do not have a common measurement scale across successive waves of data. However, it is important to be aware that this use of decile rankings

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[1] The lines are constructed as a smoothed curve over a bar chart using intervals of one half standard deviation, or 5 points on the HP Index scale.

is problematic, as relatively large changes at the extremes of the affluence-to-deprivation spectrum may not be reflected in a change in decile ranking, whilst relatively minor changes at the middle of the distribution can easily result in a change of one or two deciles. In contrast, the 2016 Pobal HP Deprivation Index uses the same measurement structure and scale for successive census waves. As a result, the use of rankings is not required, and the Absolute and Relative HP Deprivation Index Scores can be compared over time. This approach pays greater attention to the actual level of deprivation experienced, reflected in the distance from the mean, and is superior to decile rankings.

How should the Index Scores be interpreted?

Table 1 and Figure 3 show the distribution of **Absolute Index Scores** for the 2006 to 2016 census waves and reveal a number of important attributes of the HP Deprivation Index. Firstly, the scores range from roughly -40 (most disadvantaged) to +40 (most affluent). As the standard deviation is roughly 10 in each case, this means that the most extreme observations are situated at 4 standard deviations from the mean. The measurement scale is identical for all census waves, allowing the direct comparison of scores from one wave to another.

As already pointed out, the 2011 curve had shifted by 6.6 points to the left compared to the corresponding curve in 2006, reflecting the dramatic downturn experienced by the Irish economy after 2008. The distributions follow a bell-shaped curve, with most areas clustered around the mean and comparatively fewer areas exhibiting extreme levels of affluence or deprivation. It is important to understand that the Absolute Index Score for a given area may change over time even if its position relative to other areas remains unchanged. The **Relative Index Scores** are rescaled to have a mean of zero and a standard deviation of ten at each census wave. This allows us to associate descriptive labels with the scores, grouping them by standard deviation units as follows:

Table 2:   Labelling of Relative Index Scores, 206 to 2016

Relative Index Score	Standard Deviation	Label	Colour Scheme in Maps	Number of SAs in 2011	Percentage of SAs in 2011
over 30	> 3	extremely affluent	dark blue	30	0.2
20 to 30	2 to 3	very affluent	medium blue	472	2.6
10 to 20	1 to 2	affluent	medium green	2,411	13.0
0 to 10	0 to 1	marginally above average	light green	6,234	33.7
0 to -10	0 to -1	marginally below average	light yellow	6,483	35.1
-10 to -20	-1 to -2	disadvantaged	medium yellow	2408	13.0
-20 to -30	-2 to -3	very disadvantaged	orange	448	2.4
below -30	< -3	extremely disadvantaged	red	2	0.0
Total				18,488	100.0

It is important to make consistent use of terminology when describing the position of an area on the spectrum from affluent to disadvantaged. The very fact that the HP Deprivation sores are approximately normally distributed means that the experience of people living in about two thirds of areas is not significantly different from the mean. On the other hand, where HP Deprivation scores are one or two standard deviations from the mean (equivalent to 10 or 20 points on the HP Deprivation Index scale), this indicates a different experience.

How are deprivation scores calculated for larger areas?

Both Absolute and Relative Index Scores can easily be derived for any area, such as Partnership areas, counties, Local Authority areas, Regions or for Ireland as a whole. This is done by calculating the population-weighted average for the area in question, defined using Small Areas. Thus, the affluence or deprivation of any SA contributes to the score for the larger area in proportion to the number of people residing within it.

3   Reading the Tables, Graphs and Maps

The Excel data files for the 2016 Pobal HP Deprivation Index for Small Areas (SA) include the following:

A.   Two composite index scores (the Absolute HP Index Score and the Relative HP Index Score)
B.   Ten key socio-economic indicators used to construct the index and which are critical for interpreting the scores
C.   Three additional indicators related to housing tenure which are not used in the HP Deprivation Index construction, but are nevertheless highly informative

The tables presented in the next section show the aggregate scores for the 34 Local Authority Areas (NUTS4), the 8 Regional Authorities (NUTS3), the two NUTS2 Regions (Southern & Eastern Region and Border, Midlands and Western Region) and Ireland as a whole (NUTS1). These provide important reference values when interpreting the relative affluence or deprivation of any specific area.

Excel data files containing data for NUTS5 (EDs) can be freely downloaded from the website www.trutzhaase.eu.

The full SA-level data are only available by signing a license agreement, but the scores can nevertheless be visualised using the interactive mapping tools provided by Pobal Maps (https://maps.pobal.ie/). All supporting material concerning the Pobal HP Deprivation Index can also be downloaded from www.trutzhaase.eu .

4   Reference Tables

The first three index scores in Table 3 show the absolute level of affluence and deprivation for 2006, 2011 and 2016. The weighted mean index score fell dramatically during this period, from 0.4 in 2006 to -6.4 in 2011. The partial recovery of the economy resulted in an increase in the weighted mean HP deprivation Index score to -3.6 in 2016. It is thus possible to say that the recovery in recent years has made up about two-fifths of the decline experienced during the recession.

One of the most interesting questions with regard to the most recent census data is how the economic downturn has affected different parts of the country. One important insight from a previously-published comparison of ED-level maps of Absolute Index Scores for 1991-2006 relates to the spatial distribution of growing affluence, and the overriding importance of Ireland's urban centres: *"The most affluent areas of the country are distributed in concentric rings around the main population centres, mainly demarcating the urban commuter belts. The measures show how rapidly these rings of affluence expanded during the 1990s, as large-scale private housing development took place in the outer urban periphery, generating high concentrations of relatively affluent young couples"* (Haase and Pratschke, 2008).

Looking at the maps in the accompanying Powerpoint presentations and in Table 3 below, we can see that urban areas have remained central to economic growth and development. In fact, the rings of affluence mentioned above, particularly around the Greater Dublin Region, were less affected by the crisis than more disadvantaged areas of the city and more isolated rural areas. Whilst Ireland as a whole saw a decline in mean Absolute HP Index Score by 6.6 points, Dublin City declined by just 3.8 points (Cork City by 4.1 points, Limerick City by 6.2, Galway City by 4.9 and Waterford City by 5.8). The counties coinciding with the most distant urban commuter belts – Kildare, Meath, Wexford, Roscommon, Cavan, Laois and Offaly – experienced the most significant decline, according to their Relative HP Index Scores. The housing estates that were developed in these counties towards the end of the boom experienced the greatest difficulties in terms of sustainability, due to inflated property values and the relative lack of local services and opportunities.

Table 3:   Absolute and Relative HP Deprivation Index Scores*

Local Authority Area	Absolute HP Index Score 2006	Absolute HP Index Score 2011	Absolute HP Index Score 2016	Relative HP Index Score 2006	Relative HP Index Score 2011	Relative HP Index Score 2016	Relative HP Index Score 2006-16
Dublin City	-1.2	-4.5	-1.5	-1.2	2.2	3.1	4.3
South County Dublin	-.5	-6.7	-4.0	-.5	-.1	.3	.8
Dublin Fingal	4.6	-1.7	1.0	4.6	5.1	5.3	.7
Dun Laoghaire/Rathdown	7.8	3.6	6.1	7.8	10.6	10.0	2.2
Kildare	3.2	-4.4	-1.1	3.2	2.3	3.2	-.1
Meath	2.6	-5.7	-2.3	2.6	.9	1.8	-.8
Wicklow	1.1	-5.6	-2.7	1.1	1.0	1.4	.3
Carlow	-2.9	-9.8	-7.9	-2.9	-3.4	-3.7	-.7
Kilkenny	-.6	-7.5	-4.4	-.6	-1.0	-.3	.3
Wexford	-4.0	-11.4	-8.9	-4.0	-5.1	-4.8	-.8
Tipperary SR	-3.8	-9.9	-8.5	-3.8	-3.4	-4.4	-.7
Waterford City	-5.8	-10.7	-9.2	-5.8	-4.4	-4.8	1.0
County Waterford	-1.3	-7.6	-4.6	-1.3	-1.1	-.6	.7
Cork City	-4.2	-8.5	-5.1	-4.2	-1.9	-.4	3.7
County Cork	2.6	-3.9	-.7	2.6	2.9	3.4	.8
Kerry	-2.3	-8.3	-5.4	-2.3	-1.8	-1.3	1.0
Clare	-.2	-6.7	-4.3	-.2	-.2	-.2	.0
Limerick City	-7.4	-12.8	-10.8	-7.4	-6.5	-6.3	1.1
County Limerick	1.5	-5.7	-3.2	1.5	.9	.8	-.7
Tipperary NR	-1.8	-8.5	-6.1	-1.8	-2.0	-2.1	-.3
Galway City	2.7	-1.7	.0	2.7	5.2	4.9	2.2
County Galway	-.3	-6.6	-3.5	-.3	.0	.4	.8
Mayo	-4.1	-9.6	-7.7	-4.1	-3.1	-3.8	.3
Roscommon	-1.2	-8.7	-6.3	-1.2	-2.1	-2.4	-1.2
Louth	-3.8	-9.9	-7.2	-3.8	-3.5	-3.0	.9
Leitrim	-2.1	-9.0	-7.1	-2.1	-2.6	-3.2	-1.1
Sligo	-.7	-6.7	-5.6	-.7	-.1	-1.6	-.8
Cavan	-2.9	-10.3	-8.0	-2.9	-3.9	-3.9	-1.0
Donegal	-7.1	-12.5	-10.3	-7.1	-6.3	-6.4	.7
Monaghan	-3.1	-10.5	-7.3	-3.1	-4.0	-3.2	-.1
Laois	-1.4	-8.8	-6.7	-1.4	-2.3	-2.5	-1.2
Longford	-5.0	-11.4	-10.2	-5.0	-5.1	-6.0	-1.0
Offaly	-3.3	-11.0	-8.7	-3.3	-4.6	-4.6	-1.3
Westmeath	-1.4	-8.3	-6.2	-1.4	-1.9	-2.1	-.7
Region							
Dublin	1.6	-3.0	-.2	1.6	3.7	4.1	2.5
Mid East	2.5	-5.1	-1.9	2.5	1.5	2.3	-.2
South East	-3.0	-9.6	-7.3	-3.0	-3.2	-3.2	-.2
South West	.2	-5.7	-2.5	.2	1.0	1.7	1.5
Mid West	-1.1	-7.6	-5.2	-1.1	-1.1	-1.1	.0
West	-1.0	-7.0	-4.5	-1.0	-.3	-.4	.6
Border	-4.1	-10.4	-8.1	-4.1	-4.0	-4.0	.1
Midlands	-2.4	-9.6	-7.6	-2.4	-3.2	-3.4	-1.0
NUTS II Region							
SE	.4	-5.4	-2.5	.4	1.2	1.7	1.3
BMW	-2.6	-9.0	-6.7	-2.6	-2.5	-2.6	.0
Ireland	-.4	-6.4	-3.6	-.4	.2	.6	.9

*   Note: All scores shown in this and subsequent tables are population-weighted aggregates of the SA-level HP index.

Table 4: **Total Population and 5-Year Population Change**

Local Authority Area	Population 2002	Population 2006	Population 2011	Population 2016	Population Change 2006	Population Change 2011	Population Change 2016
Dublin City	496,500	506,233	527,612	554,554	2.0	4.2	5.1
South County Dublin	239,989	246,925	265,205	278,767	2.9	7.4	5.1
Dublin Fingal	196,556	239,855	273,991	295,799	22.0	14.2	8.0
Dun Laoghaire/Rathdown	190,237	193,643	206,261	218,239	1.8	6.5	5.8
Kildare	173,091	186,335	210,312	222,504	7.7	12.9	5.8
Meath	146,059	162,823	184,135	195,044	11.5	13.1	5.9
Wicklow	118,708	126,194	136,640	142,425	6.3	8.3	4.2
Carlow	47,945	50,349	54,612	56,932	5.0	8.5	4.2
Kilkenny	83,288	87,558	95,419	99,232	5.1	9.0	4.0
Wexford	121,552	131,749	145,320	149,722	8.4	10.3	3.0
Tipperary SR	80,848	83,221	88,432	88,271	2.9	6.3	-.2
Waterford City	44,016	45,748	46,732	48,216	3.9	2.2	3.2
County Waterford	59,330	62,213	67,063	67,960	4.9	7.8	1.3
Cork City	120,096	119,418	119,230	125,657	-.6	-.2	5.4
County Cork	340,517	361,877	399,802	417,211	6.3	10.5	4.4
Kerry	135,578	139,835	145,502	147,707	3.1	4.1	1.5
Clare	106,467	110,950	117,196	118,817	4.2	5.6	1.4
Limerick City	59,259	59,788	57,106	58,259	.9	-4.5	2.0
County Limerick	118,573	124,265	134,703	136,640	4.8	8.4	1.4
Tipperary NR	63,176	66,023	70,322	71,282	4.5	6.5	1.4
Galway City	66,722	72,414	75,529	78,668	8.5	4.3	4.2
County Galway	149,948	159,256	175,124	179,390	6.2	10.0	2.4
Mayo	119,744	123,839	130,638	130,507	3.4	5.5	-.1
Roscommon	55,388	58,768	64,065	64,544	6.1	9.0	.7
Louth	106,046	111,267	122,897	128,884	4.9	10.5	4.9
Leitrim	26,289	28,950	31,798	32,044	10.1	9.8	.8
Sligo	58,800	60,894	65,393	65,535	3.6	7.4	.2
Cavan	58,916	64,003	73,183	76,176	8.6	14.3	4.1
Donegal	141,313	147,264	161,137	159,192	4.2	9.4	-1.2
Monaghan	54,267	55,997	60,483	61,386	3.2	8.0	1.5
Laois	60,553	67,059	80,559	84,697	10.7	20.1	5.1
Longford	32,037	34,391	39,000	40,873	7.3	13.4	4.8
Offaly	66,549	70,868	76,687	77,961	6.5	8.2	1.7
Westmeath	75,091	79,346	86,164	88,770	5.7	8.6	3.0
Region							
Dublin	1,123,282	1,186,656	1,273,069	1,347,359	5.6	7.3	5.8
Mid East	437,858	475,352	531,087	559,973	8.6	11.7	5.4
South East	436,979	460,838	497,578	510,333	5.5	8.0	2.6
South West	596,192	621,130	664,534	690,575	4.2	7.0	3.9
Mid West	347,474	361,026	379,327	384,998	3.9	5.1	1.5
West	391,802	414,277	445,356	453,109	5.7	7.5	1.7
Border	445,631	468,375	514,891	523,217	5.1	9.9	1.6
Midlands	234,230	251,664	282,410	292,301	7.4	12.2	3.5
NUTS II Region							
SE	2,941,785	3,105,002	3,345,595	3,493,238	5.5	7.7	4.4
BMW	1,071,663	1,134,316	1,242,657	1,268,627	5.8	9.6	2.1
Ireland	4,013,448	4,239,318	4,588,252	4,761,865	5.6	8.2	3.8

Table 5:   **Age Dependency and Lone Parent Rates**

Local Authority Area	Age Dependency Rate 2006 %	Age Dependency Rate 2011 %	Age Dependency Rate 2016 %	Lone Parent Rate 2006 %	Lone Parent Rate 2011 %	Lone Parent Rate 2016 %
Dublin City	27.7	27.8	28.1	31.5	30.4	27.6
South County Dublin	28.9	31.8	34.1	25.9	26.1	23.4
Dublin Fingal	28.1	31.5	33.7	21.6	21.1	19.0
Dun Laoghaire/Rathdown	31.6	32.7	34.3	17.8	16.9	14.9
Kildare	29.9	32.4	34.0	18.7	18.0	16.9
Meath	31.4	34.1	35.7	14.3	15.3	15.3
Wicklow	31.4	33.8	35.7	20.7	20.7	18.9
Carlow	31.5	33.6	35.1	21.2	20.6	20.3
Kilkenny	32.9	34.5	36.1	16.7	17.5	17.6
Wexford	33.8	35.4	36.7	21.2	22.7	22.2
Tipperary SR	33.9	34.7	36.3	21.8	22.5	22.8
Waterford City	31.3	32.8	34.2	31.8	31.9	31.4
County Waterford	34.2	35.8	37.4	16.9	18.1	18.9
Cork City	29.3	29.7	30.0	29.8	30.4	27.9
County Cork	32.3	34.1	35.9	16.0	16.3	15.5
Kerry	33.3	34.6	36.4	18.3	18.9	18.7
Clare	33.3	34.6	36.4	17.0	17.2	17.6
Limerick City	29.8	31.1	32.2	35.7	36.6	35.5
County Limerick	30.9	33.1	35.3	15.7	16.5	15.2
Tipperary NR	34.1	35.4	37.0	17.1	18.0	17.9
Galway City	23.9	25.9	28.1	28.0	24.7	22.3
County Galway	34.1	35.2	37.2	13.5	14.3	14.4
Mayo	34.9	35.9	37.9	15.8	17.7	18.0
Roscommon	35.2	35.9	37.8	14.0	16.2	15.8
Louth	32.5	34.3	35.5	22.6	23.7	22.7
Leitrim	34.9	36.4	38.5	15.5	15.7	15.4
Sligo	33.1	33.9	36.5	18.4	19.7	19.9
Cavan	34.8	35.7	36.9	14.7	16.0	15.6
Donegal	35.2	36.3	37.7	21.0	22.3	20.9
Monaghan	33.2	34.6	36.7	15.9	17.1	17.1
Laois	33.2	34.8	35.9	16.0	17.9	18.1
Longford	34.3	35.7	37.5	20.8	21.4	20.4
Offaly	33.5	35.0	36.3	18.4	18.8	19.2
Westmeath	32.9	33.9	35.1	19.8	19.6	18.9
Region						
Dublin	28.7	30.2	31.5	26.1	25.3	22.8
Mid East	30.8	33.4	35.0	17.7	17.8	16.9
South East	33.2	34.7	36.2	20.9	21.7	21.6
South West	31.9	33.4	34.9	19.2	19.4	18.4
Mid West	32.0	33.7	35.5	19.7	20.0	19.5
West	32.7	33.9	35.9	16.8	17.4	17.0
Border	34.0	35.2	36.8	19.2	20.4	19.7
Midlands	33.3	34.7	36.0	18.5	19.1	19.0
NUTS II Region						
SE	30.7	32.4	33.9	21.9	21.8	20.4
BMW	33.4	34.6	36.3	18.2	19.0	18.6
Ireland	31.4	33.0	34.5	20.9	21.0	19.9

Table 6:   **Percentage With Primary Education only and with a Third Level Education**

Local Authority Area	Low Education 2006 %	Low Education 2011 %	Low Education 2016 %	Third Level Education 2006 %	Third Level Education 2011 %	Third Level Education 2016 %
Dublin City	21.9	18.1	14.3	35.8	37.7	44.3
South County Dublin	16.3	14.5	12.4	30.5	29.6	34.8
Dublin Fingal	10.8	9.2	8.0	39.5	37.8	42.7
Dun Laoghaire/Rathdown	9.7	8.1	6.4	50.8	51.6	57.4
Kildare	14.0	11.9	10.1	33.4	33.2	38.6
Meath	15.4	13.1	11.2	30.4	29.2	34.1
Wicklow	16.2	14.0	11.6	32.9	31.8	37.1
Carlow	19.7	16.9	14.4	24.6	24.5	28.5
Kilkenny	18.2	14.8	12.7	26.6	27.1	32.0
Wexford	22.5	18.9	16.3	21.5	21.7	25.7
Tipperary SR	20.0	16.9	14.5	21.9	22.3	26.0
Waterford City	19.3	16.5	14.6	26.0	26.1	29.8
County Waterford	18.1	15.4	12.7	27.1	27.4	32.5
Cork City	20.2	17.4	14.4	29.7	30.1	36.6
County Cork	15.4	12.4	10.3	31.9	31.7	36.6
Kerry	20.7	17.1	14.2	26.3	26.6	31.3
Clare	17.3	14.4	11.8	29.6	29.7	34.0
Limerick City	21.8	19.7	17.5	24.2	23.1	27.7
County Limerick	16.8	14.5	12.3	30.9	30.1	34.8
Tipperary NR	18.9	15.8	13.2	24.4	24.4	29.8
Galway City	11.1	9.8	8.6	44.7	44.7	49.6
County Galway	21.9	17.8	14.6	28.4	30.2	35.2
Mayo	24.6	20.9	17.1	23.2	24.2	28.9
Roscommon	21.7	17.8	15.1	23.6	24.9	29.6
Louth	21.3	18.2	15.4	26.1	25.7	30.5
Leitrim	22.5	18.2	15.5	25.6	26.7	30.9
Sligo	20.1	16.5	14.1	29.3	30.1	34.4
Cavan	25.4	20.2	17.4	23.4	22.4	26.1
Donegal	29.3	25.7	21.6	22.9	23.8	28.3
Monaghan	25.0	21.1	17.8	21.5	21.7	26.5
Laois	20.2	16.1	13.8	23.7	24.5	28.3
Longford	24.1	20.2	17.5	22.2	22.2	26.0
Offaly	21.9	18.6	16.1	21.9	21.6	25.5
Westmeath	19.5	16.4	13.9	26.9	27.0	31.8
Region						
Dublin	16.5	13.8	11.3	37.9	38.3	44.1
Mid East	15.1	12.9	10.9	32.3	31.5	36.6
South East	20.0	16.8	14.4	24.1	24.3	28.6
South West	17.6	14.3	11.9	30.2	30.3	35.5
Mid West	18.2	15.5	13.1	28.2	27.9	32.6
West	20.8	17.3	14.4	29.0	30.1	35.1
Border	24.7	21.0	17.7	24.6	24.8	29.2
Midlands	21.0	17.4	15.0	24.0	24.2	28.3
NUTS II Region						
SE	17.2	14.4	12.0	32.3	32.4	37.7
BMW	22.5	18.9	15.9	26.1	26.6	31.1
Ireland	18.6	15.6	13.0	30.6	30.8	35.9

Table 7: **Percentage of Population in Professional and Semi/Unskilled Classes**

Local Authority Area	Professional Classes 2006 %	Professional Classes 2011 %	Professional Classes 2016 %	Semi/unskilled Classes 2006 %	Semi/unskilled Classes 2011 %	Semi/unskilled Classes 2016 %
Dublin City	30.4	33.9	36.2	21.1	19.1	17.7
South County Dublin	32.0	34.0	35.7	17.3	16.4	16.3
Dublin Fingal	38.2	40.4	41.8	14.2	14.2	14.0
Dun Laoghaire/Rathdown	51.6	54.8	56.0	8.9	8.2	7.6
Kildare	35.5	37.9	40.0	17.8	16.1	15.9
Meath	35.3	37.2	38.1	17.0	16.2	16.5
Wicklow	36.7	39.1	40.4	17.4	16.3	16.3
Carlow	28.3	29.4	30.2	22.6	21.0	21.0
Kilkenny	34.2	34.9	37.2	18.7	18.0	17.3
Wexford	29.5	30.0	30.9	22.1	21.5	21.5
Tipperary SR	28.7	28.9	30.1	23.7	23.9	23.7
Waterford City	24.4	26.8	27.1	26.2	24.2	24.6
County Waterford	34.3	35.5	37.1	20.4	19.5	18.8
Cork City	25.1	27.5	29.7	24.8	23.1	22.0
County Cork	36.3	37.1	39.1	17.7	17.3	16.9
Kerry	30.4	30.8	31.6	19.6	18.7	19.0
Clare	33.6	34.6	35.9	17.5	16.8	17.6
Limerick City	22.4	23.5	24.5	28.6	25.6	25.6
County Limerick	34.4	35.3	37.5	19.5	18.2	17.5
Tipperary NR	32.0	32.6	33.9	19.7	19.2	18.3
Galway City	31.6	34.7	35.6	21.1	19.0	20.0
County Galway	33.9	35.9	37.3	18.4	17.2	18.7
Mayo	29.6	30.2	31.7	21.2	20.7	20.6
Roscommon	32.5	32.1	33.1	18.2	17.5	18.6
Louth	29.1	31.1	32.1	22.3	20.4	20.0
Leitrim	30.2	31.7	33.6	19.0	17.9	17.7
Sligo	33.3	32.7	34.6	19.4	18.4	18.2
Cavan	28.3	28.2	29.4	20.7	20.6	20.9
Donegal	27.5	28.8	29.9	23.7	21.8	21.0
Monaghan	28.8	27.9	29.3	21.7	22.5	22.1
Laois	29.7	31.2	32.2	20.5	19.6	19.4
Longford	27.2	27.7	27.7	21.8	20.6	22.3
Offaly	27.9	28.7	29.9	22.4	21.5	21.5
Westmeath	31.1	32.8	33.6	19.1	18.5	18.6
Region						
Dublin	35.8	38.7	40.5	16.9	15.7	15.0
Mid East	35.8	37.9	39.5	17.4	16.2	16.2
South East	30.3	31.1	32.4	22.0	21.2	20.9
South West	32.8	34.0	35.8	19.5	18.7	18.3
Mid West	31.7	32.8	34.4	20.4	19.1	18.9
West	32.0	33.5	34.8	19.7	18.6	19.4
Border	29.0	29.8	31.1	21.9	20.7	20.3
Midlands	29.3	30.5	31.4	20.8	19.9	20.1
NUTS II Region						
SE	33.9	35.9	37.5	18.7	17.6	17.1
BMW	30.2	31.3	32.5	20.8	19.8	20.0
Ireland	32.9	34.6	36.2	19.3	18.2	17.9

Table 8:   Unemployment Rates

Local Authority Area	Male Unemployment 2006 %	Male Unemployment 2011 %	Male Unemployment 2016 %	Female Unemployment 2006 %	Female Unemployment 2011 %	Female Unemployment 2016 %
Dublin City	12.5	23.2	14.9	9.5	15.1	12.1
South County Dublin	9.6	23.5	14.3	9.1	16.2	12.9
Dublin Fingal	7.7	17.9	10.3	8.0	14.1	10.6
Dun Laoghaire/Rathdown	5.8	13.1	8.1	5.0	9.6	7.2
Kildare	6.0	20.6	11.9	7.1	15.3	11.2
Meath	6.3	21.1	11.3	7.4	14.6	11.4
Wicklow	8.8	22.8	13.8	7.5	15.0	11.5
Carlow	9.4	26.6	17.5	9.7	19.1	16.9
Kilkenny	8.4	23.4	14.1	7.0	14.6	11.3
Wexford	9.7	28.7	18.0	9.2	18.1	15.2
Tipperary SR	9.1	24.8	16.9	8.2	15.7	14.2
Waterford City	14.1	30.3	21.3	11.6	20.6	17.8
County Waterford	8.9	23.1	14.0	7.3	14.3	11.1
Cork City	12.8	26.9	17.5	10.6	17.6	13.7
County Cork	5.9	17.5	9.8	6.1	11.8	8.9
Kerry	9.2	23.5	13.8	8.2	14.8	11.3
Clare	7.8	22.1	13.6	7.9	15.0	11.5
Limerick City	16.7	33.1	23.6	13.3	24.6	20.3
County Limerick	6.8	20.7	12.3	7.0	14.3	11.2
Tipperary NR	7.6	22.0	14.5	7.9	15.5	12.7
Galway City	12.0	22.7	14.5	10.1	15.8	12.2
County Galway	8.3	21.8	13.1	7.4	13.8	10.4
Mayo	9.8	23.6	16.5	8.8	14.6	12.3
Roscommon	6.2	22.6	14.0	6.6	14.3	12.2
Louth	11.8	28.0	18.0	11.1	19.2	15.5
Leitrim	8.3	25.1	16.5	7.9	14.5	12.1
Sligo	9.0	22.7	16.2	5.9	13.1	12.2
Cavan	8.0	24.3	15.2	8.6	17.2	15.0
Donegal	14.7	31.7	20.2	11.0	19.4	15.9
Monaghan	8.0	24.4	13.6	7.4	15.6	12.4
Laois	6.9	25.1	15.7	8.4	16.8	15.3
Longford	10.5	27.9	20.2	12.9	20.7	19.0
Offaly	8.3	26.4	16.3	9.2	19.4	15.9
Westmeath	8.2	25.0	16.6	9.0	17.3	15.5
Region						
Dublin	9.8	20.5	12.6	8.4	14.2	11.1
Mid East	6.9	21.3	12.2	7.3	15.0	11.4
South East	9.6	26.2	16.8	8.6	16.8	14.2
South West	8.0	20.5	12.0	7.5	13.5	10.3
Mid West	8.9	23.2	14.8	8.5	16.3	12.9
West	9.1	22.6	14.4	8.2	14.5	11.5
Border	11.2	27.4	17.4	9.4	17.5	14.6
Midlands	8.2	25.8	16.8	9.4	18.2	16.0
NUTS II Region						
SE	8.9	21.8	13.3	8.1	14.8	11.6
BMW	9.8	25.3	16.2	9.0	16.6	13.8
Ireland	9.1	22.7	14.1	8.3	15.3	12.2

Table 9:   Housing

Local Authority Area	LA Rented 2006 %	LA Rented 2011 %	LA Rented 2016 %	Privately Rented 2006 %	Privately Rented 2011 %	Privately Rented 2016 %
Dublin City	13.1	12.2	12.8	24.5	32.8	32.9
South County Dublin	10.7	11.2	11.8	10.5	17.8	18.2
Dublin Fingal	5.9	5.7	6.5	12.3	21.6	22.7
Dun Laoghaire/Rathdown	5.8	6.0	6.0	13.2	19.9	21.0
Kildare	5.3	5.5	6.2	11.6	17.5	18.0
Meath	4.5	4.6	5.0	7.8	13.5	15.0
Wicklow	8.9	9.1	9.6	9.8	14.7	14.9
Carlow	7.5	8.8	10.7	13.1	16.9	17.2
Kilkenny	6.0	6.9	8.3	9.8	14.0	14.9
Wexford	7.7	8.3	9.1	10.5	14.5	15.0
Tipperary SR	8.2	9.0	10.3	9.7	14.3	14.8
Waterford City	14.1	16.4	17.5	18.0	21.6	23.4
County Waterford	5.9	7.2	7.7	7.7	10.8	11.7
Cork City	16.3	16.3	17.6	20.9	27.4	28.5
County Cork	4.8	5.2	6.1	10.7	16.0	16.4
Kerry	6.7	7.4	7.9	11.5	15.0	15.7
Clare	4.8	5.4	6.2	10.4	14.5	15.3
Limerick City	13.4	12.5	15.1	19.6	25.0	25.6
County Limerick	4.2	4.7	5.3	11.8	15.8	17.1
Tipperary NR	6.6	7.3	8.5	9.3	13.3	13.9
Galway City	8.5	9.6	10.8	35.1	39.8	38.9
County Galway	3.6	4.1	4.3	9.5	13.3	14.1
Mayo	4.6	4.6	5.3	10.9	14.7	15.5
Roscommon	4.4	5.4	6.0	8.5	12.9	13.8
Louth	7.9	8.9	9.9	10.2	15.6	16.6
Leitrim	7.3	7.4	7.3	10.2	14.6	15.0
Sligo	7.7	8.0	9.4	12.6	17.6	17.3
Cavan	6.0	6.3	7.7	9.5	15.0	15.9
Donegal	7.4	8.2	8.8	9.3	13.0	13.3
Monaghan	5.2	6.6	7.4	9.4	13.0	14.3
Laois	6.3	7.7	9.1	8.3	13.9	15.1
Longford	11.2	13.1	13.4	11.8	16.9	19.0
Offaly	6.0	7.1	8.3	8.8	13.7	14.5
Westmeath	5.5	6.7	7.7	12.2	17.5	18.9
Region						
Dublin	9.9	9.6	10.1	17.3	25.2	25.7
Mid East	6.0	6.1	6.7	9.8	15.4	16.2
South East	7.8	8.8	10.0	10.9	14.8	15.6
South West	7.5	7.7	8.6	12.9	17.8	18.5
Mid West	6.3	6.6	7.6	12.2	16.3	17.2
West	4.9	5.4	6.0	14.2	18.2	18.7
Border	7.1	7.8	8.7	10.0	14.6	15.2
Midlands	6.6	8.0	9.1	10.2	15.4	16.6
NUTS II Region						
SE	8.1	8.2	9.0	13.7	19.6	20.3
BMW	6.2	7.0	7.8	11.6	16.0	16.8
Ireland	7.6	7.9	8.7	13.1	18.7	19.4

5   Key Features of the Pobal HP Deprivation Index

The Pobal HP Deprivation Index permits the longitudinal study of affluence and deprivation between 2006 and 2016, as well as allowing a precise analysis of relative scores at each census wave. The index was designed by Trutz Haase and Jonathan Pratschke and funded by Pobal Ltd. In this section, we highlight some of the key features of the Pobal HP Deprivation Index which set it apart from other deprivation indices.

❑ **no double-counting**

The techniques used to calculate the index scores avoid the double-counting that typically results when indicators are summed together.

❑ **indicator selection**

The choice of indicators for the Pobal HP Deprivation Index is based on the principle that at least three indicator variables should be specified for each dimension, and that additional indicators should be included only if they are consistent with the hypothesised model.

❑ **a range of statistical tests and alternative fit indices can be used to test model adequacy**

The dimensions identified in exploratory factor analyses can be unstable and even counter-intuitive. By contrast, in confirmatory factor analysis models, statistical tests and alternative fit indices provide a systematic way of assessing whether the theoretical model (i.e. our ideas about the key dimensions of deprivation and their relationship with a set of indicator variables) is consistent with the empirical evidence.

❑ **stable measurement scales across multiple waves**

When exploratory techniques are used, the factor structure varies with each new dataset, and cannot be fixed across multiple waves. This means that the scores from a series of Exploratory Factor Analyses cannot be compared across successive waves of census data. Because it relies on a confirmatory approach, the HP Index has a stable factor structure and measurement scale, and its scores can be compared over time and across different jurisdictions.

❑ **true distances from mean are maintained**

Deprivation indices based on exploratory techniques typically rely on a ranking of areas to compare results from one census wave to another. However, rankings contain much less information than scores, and typically over-emphasise the importance of small differences, particularly at the centre of the distribution. The HP Index, by contrast, maintains true comparability of actual deprivation scores from one census to another. It is the first deprivation index to achieve this goal at international level, and this is one of the most important advances pioneered by Haase and Pratschke in the construction of composite deprivation indices.

❑ **distinction between absolute and relative deprivation scores**

As the measurement scale of the HP Index is invariant across successive census waves, it is possible to derive both absolute and relative deprivation scores. Absolute scores are fixed to a particular reference point (e.g. the 2006 census) and reveal patterns of change over time. Relative deprivation scores are de-trended and focus on the relative distribution of affluence and deprivation at a single point in time.

❑ **normal distribution of scores from affluence to deprivation**

Unlike other deprivation indices (including, in particular, those which attempt to estimate the number of poor people in a given area), the HP Index is approximately normally distributed, with scores ranging across the full spectrum from extreme affluence to extreme deprivation. This is of considerable importance when using the index to explore inequalities such as the "social gradient" in health outcomes, or the health needs of a population.

Close examination of the HP Index by the Central Statistics Office during early 2012 led the CSO to adopt this measure as the main stratification tool for the sampling design of all future CSO household surveys (QNHS, EU-SILC, the future wealth survey and future general household survey). In a recent study, conducted by Haase and Pratschke for the CSO, the aforementioned statistical properties of the index were shown to be a major asset when conducting aggregate-level analyses.

❑ **The new census geography of small areas**

Since 2011, the Small Area Population Statistics (SAPS) are published at the level of Small Areas (SAs). SAs are standardised in size, with a minimum of 50 households and a mean of just under 100, thus effectively providing street-level information on the Irish population. The move away from Electoral Divisions (EDs) – which could range in population from under 100 to over 32,000 – marks a major advance, particularly where a census-based deprivation index is used as a proxy for individual-level social position.

❑ **Consistent coverage over successive census**

In 2011, the SAPS comprised 18,488 SAs. To maintain confidentiality, the CSO had to amalgamate some of these SAs in 2016, which leads to difficulties when looking at data across multiple census waves. The 2016 Pobal HP Deprivation Index is constructed using the 2011 Small Area definitions of the CSO, so as to maintain comparability and to avoid unnecessary changes in units. In this way, data relating to any one area – be it at the SA level or any subsequent spatial aggregation – can be compared across the three census waves from 2006 to 2016. The 2016 Pobal HP Deprivation Index is the only dataset in Ireland to have adopted the new Small Area census geography using the 2006, 2011 and 2016 census data in a consistent manner.

6   Questions and Answers

❑ **Q: What concept of deprivation does the HP Derivation Index aspire to quantify?**

The fundamental concept of deprivation that lies at the heart of the Pobal HP Deprivation Index is the concept of relative deprivation advanced by Coombes et al. (UK – Department of the Environment, 1995), namely that "The fundamental implication of the term deprivation is of an absence – of essential or desirable attributes, possessions and opportunities which are considered no more than the minimum by [that] society."

Whilst indicators relating to attributes and possessions are used in a wide number of deprivation indices, the novel aspect of this definition lies in the inclusion of opportunities, and hence opportunity deprivation, as a key aspect of deprivation. Opportunity deprivation lies at the heart of much of rural deprivation, which is of relevance to many areas in Ireland. In this respect, the Pobal HP Deprivation Index has a different conceptual basis to other indices and is able to provide a robust measure of relative affluence and deprivation across both urban and rural areas.

❑ **Q: How is the HP Deprivation Index constructed?**

The figure below shows a graphical representation of how the concepts of Demographic Growth, Social Class Composition and Labour Market Situation are measured by ten key socio-economic indicators from the Census of Population.
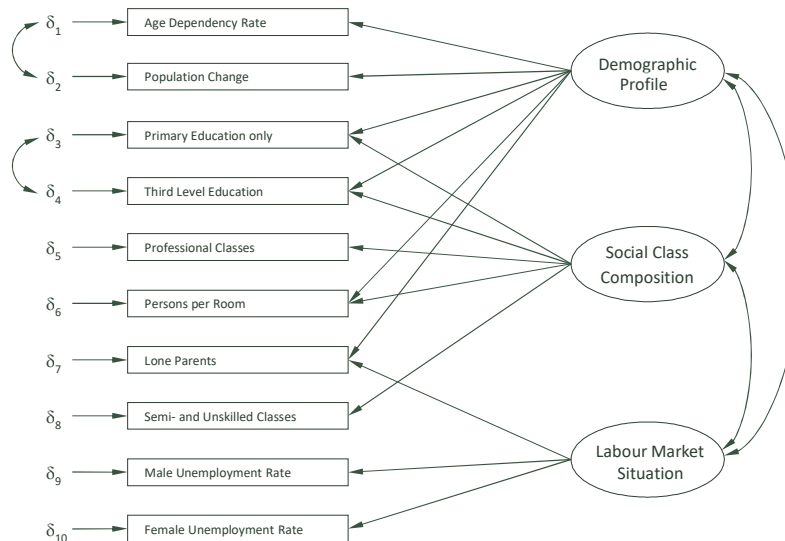
❑ **Q: What about other deprivation-related indicators which are not included in the Pobal HP Deprivation Index?**

A number of other indicators related to poverty and deprivation could potentially be used to measure deprivation, but are deliberately not included in the Pobal HP Deprivation Index for reasons which will be explained below. Such indicators could capture various aspects of the domains of health, wealth, housing, environment and crime, for example. One reason for this is the decision to rely exclusively on the census of population for indicators:

- Ireland is in a unique position in that it is the only European country that is committed to carry out a Census of Population every five years, and each new wave of data is quickly released. Policy makers can therefore feel assured that by using the Pobal HP Deprivation Index they are basing their decision on very up-to-date information. In jurisdictions where the Census is carried out every ten years (such as the UK and Northern Ireland), doubts about the accuracy and timeliness of information reduce reliance on the census when making policy-relevant decisions.

- Using Census data, and census data only, ensures the development of robust and stable concepts which maintain their validity and comparability over time and space. This is evidenced by the development of an All-Island HP Deprivation Index, using identical census variables for both jurisdictions.

Data Requirements:

A crucial element of the Pobal HP Deprivation Index is that it is a truly multidimensional measure constructed at the level of census Small Areas (SAs). This means that all of the information used in its construction must be available at the Small Area level. By contrast, the Northern Ireland Multiple Deprivation Measures (NIMDM) are not multidimensional at this level, as the Small Area component is centred on income measures, with other dimensions being incorporated at higher levels of spatial aggregation only.

Constructing a truly multidimensional deprivation index at the level of Small Areas requires very large datasets like the Census. By definition, this excludes indicators derived from survey data, as these would not be available for each of the 18,488 small areas in the country. Although it is, in theory, possible to draw on large administrative databases when developing indicators for Small Areas, this raises a number of difficulties regarding the stability of definitions and estimates, uniformity of treatment and the accuracy of data.

Health:

Health indicators are deliberately not included in the Pobal HP Deprivation Index because deprivation indices are frequently used to predict/explain health and health-related outcomes. The inclusion of health-related indicators (such as those provided by the census) in the construction of the Pobal HP Deprivation Index itself would create a circularity in relation to one of its principle applications.

Income and Wealth:

Data on income and wealth could potentially be accessed from the Revenue Commissioners, although there would be major challenges regarding data protection.

Income data also fluctuate considerably over time, across the life cycle and in accordance with family composition, which makes it more difficult to obtain stable and interpretable deprivation scores. Several studies point to the superior performance of a multi-dimensional measurement of income and wealth – preferably using Confirmatory Factor Analysis – rather than relying on a direct measurement of income or wealth (see e.g. Tomlinson, Walker, Williams, 2008). Research on health and well-being in the US, where income data are routinely available, increasingly relies on composite indicators of deprivation, as these provide more powerful insights into socio-economic influences.

Housing:

Housing data could potentially be derived from the Census, or from very large administrative datasets such as the CSO's Residential Property Price Index (RPPI) or commercial datasets. However, the RPPI uses the Pobal HP Deprivation Index as a key element in its construction, which would, once again, give rise to circularity.

Secondly, the very meaning of housing indicators can change over time and space. Many questions have been posed recently with regard to the inclusion of housing indicators within the Pobal HP Deprivation Index, with a view to understanding the impact of the 2008 recession. This includes problems of negative equity, inflated house prices and the affordability of rental accommodation. However important these

issues may be, they vary quite rapidly over time, and it would be impossible to ensure the continuing validity of any related indicators over coming years and decades.

High levels of deprivation are generally observed in areas with high levels of local authority housing, which can be demonstrated by comparing the distribution of social housing with the Pobal HP Deprivation Index scores. It is for this reason that we typically supply information from the Census on the percentage of Local Authority rented accommodation alongside the Pobal HP Deprivation Index, and this indicator is also included within Pobal Maps.

At the same time, the inclusion of a measure of social housing within the Pobal HP Deprivation Index itself would give rise to a number of risks, and would again reduce the range of potential applications of the index itself. This is because the provision of social housing represents a type of benefit or social good. If this variable were included in the index, the level of deprivation in certain areas would appear to decline if the supply of social housing were reduced. This would be a contradictory and counter-intuitive result, as housing needs would actually increase in this case.

For this reason, the authors have argued strongly against the use of benefit data and housing data in the construction of deprivation indices and are critical of their inclusion in the Northern Ireland Multiple Deprivation Measures (NIMDM) and the UK Indices of Multiple Deprivation (IMD).

Environment:

A number of environmental indicators could potentially be considered as indicators of deprivation. For example, there has been discussion about whether an urban-rural classification should be incorporated into deprivation indices (for a detailed discussion of this question, see Haase & Walsh, 2007). The authors have decided against this, as they believe that the way in which deprivation interacts with functional space and population density should be studied over time using sensitive multi-dimensional measures that capture specific types of deprivation.

In many applications, it may nevertheless be useful to combine the Pobal HP Deprivation Index with the CSO classification of area types. A good example for this kind of approach is the LEADER Resource Allocation Model, which places an additional weighting on more rural areas. Analogously, the Resource Allocation Model for Drugs and Alcohol Task Forces assigns an additional weighting to more urban locations. By maintaining the distinction between deprivation and the urban-rural spectrum, these kinds of decisions can be made in a context-sensitive way.

Another important aspect of the environmental context relates to transport. The National Transport Authority already uses the Pobal HP Deprivation Index to evaluate alternative transport routes. Inclusion of transport data within the index would lead, once again, to confounding and circularity. This is another example of how conceptual clarity is a virtue when designing deprivation indices, which are applied and used in many different ways and contexts, many of which cannot be determined in advance.

Another interesting aspect of the environmental context relates to the quality of the local area, including potential hazards such as noise, water and air pollution and access to amenities and services. As in the case of health, housing and transport, the authors believe that the association between deprivation and the local environment should be studied empirically, rather than incorporating this within the definition of deprivation itself.

Crime:

Crime data have been used in deprivation indices in other countries, but we do not believe that their inclusion would be beneficial to the Pobal HP Deprivation Index. One reason for this is the lack of consistent data and persisting doubts about the validity and stability of Small Area crime-related indicators over time and space. Policing is sensitive to political perceptions, operational decisions, public debate and local initiatives, which leads to systematic variations in how (and which) crimes are detected at the local level. In addition, it could be argued (as before) that one of the useful aspects of measuring deprivation at local level is that you can then explore how crime rates and the experience of crime and victimisation vary systematically across different kinds of neighbourhoods.

❑ **Q: How can one demonstrate the validity of the Pobal HP Deprivation Index?**

A: The validity and usefulness of the Pobal HP Deprivation Index ultimately lies in its ability to predict and explain the socio-economic differentials observed in relation to health, well-being, education, financial position, housing, environment and crime. It is precisely because the Pobal HP Deprivation Index does not include indicators of these domains in its construction that one can use the Pobal HP Deprivation Index to empirically explain and predict outcomes. Its ability to do so with high explanatory power provides the ultimate demonstration of the validity of the Pobal HP Deprivation Index and underlines its primary role in shaping, guiding and monitoring public policies for an inclusive and sustainable society.