

Southampton Summary Deprivation Trajectories Profile

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1. Introduction

This report provides statistical summaries of deprivation and deprivation trajectories in **Southampton** in the South East. Trajectories refer to the direction of change in deprivation. For example, one neighbourhood may have seen a consistent increase in deprivation while in another levels may have fluctuated or consistently decreased. Considering deprivation trajectories is, therefore, crucial in the design of effective policies and interventions aimed at reducing deprivation. This document is a summary version of a fuller report available for Southampton.

The report uses data which come from two sources: Census data for the period 1971 to 2021 and the English Indices of Deprivation (IoD) for 2004 to 2019. The report is intended to provide an overview of deprivation in Southampton compared to the South East and the rest of England, and to allow readers to assess how deprivation has changed in the area since 1971.

2. Townsend Deprivation Index

The Townsend deprivation index (TI) has been computed using Census data for multiple time points and it is used here to assess very long term (here, 1971 to 2021) deprivation trends. The TI is constructed using four sets of percentages which are each standardised and then combined with equal weights to form the overall composite index:

1. Unemployed persons (Emp)
2. Non owner-occupied households (Rnt)
3. Households without access to a car or van (Car)
4. Households with more than one person per room (Ovr)

Table 1 shows mean changes in indicator scores for the four constituent TI indicators; the average values are for all LSOAs in Southampton. In this case, an increase (a positive value) indicates an average absolute increase in deprivation on a given domain, while a decrease (a negative value) indicates an average absolute decrease in deprivation.

Table 1: Mean changes in TI indicator z-scores for all LSOAs

Period	Emp	Rnt	Car	Ovr
1971-1981	5.70	-9.81	-9.01	-2.16
1981-1991	1.69	-6.86	-7.24	-0.80
1991-2001	-6.89	4.45	-5.24	-1.35
2001-2011	-0.30	6.10	-0.86	2.59
2011-2021	-1.41	1.18	-2.68	1.51

As an example, for ease of interpretation, the indicator score which **increased** the most over the period 1971 to 1981 was **Employment**, with an average change of 5.7.

An alternative approach to assessing which indicators have changed the most is included in the full version of the Southampton Deprivation Trajectories Profile.

Figure 1 shows the TI scores in 2021 in Southampton. Note that, for all maps, the range of values included refer to Southampton specifically. As noted already, positive values indicate higher levels of deprivation, while negative values indicate lower than average levels of deprivation according to this measure.

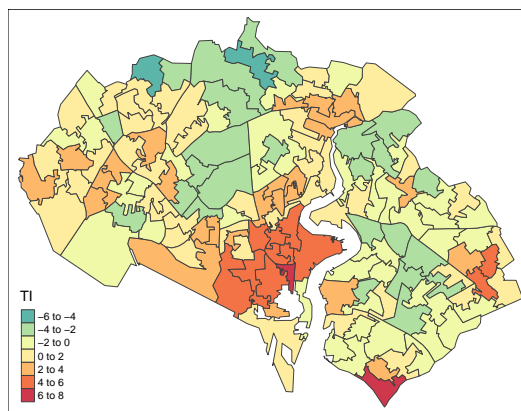


Figure 1: Townsend index score, 2021.

The ways in which the TI has changed in local areas - its trajectories - is the key focus in this report. The k -means clustering method was used to group the four constituent indicator scores for each TI calculated separately for each of the six Census years to generate area trajectory 'classes'.

Each of the five classes have been labelled as follows:

- A: Persistently deprived.
- B: Moderately deprived.
- C: Worsening deprivation.
- D: Less deprived.
- E: Persistently not deprived.

Figure 2 shows the median TI ranks by the five trajectory classes identified across all LSOAs in England and Wales (although the remainder of this report refers only to England). In this chart, trends in absolute deprivation are shown. In all but one case, median deprivation in 2021 is lower than it was in 1971. The exception is cluster C.

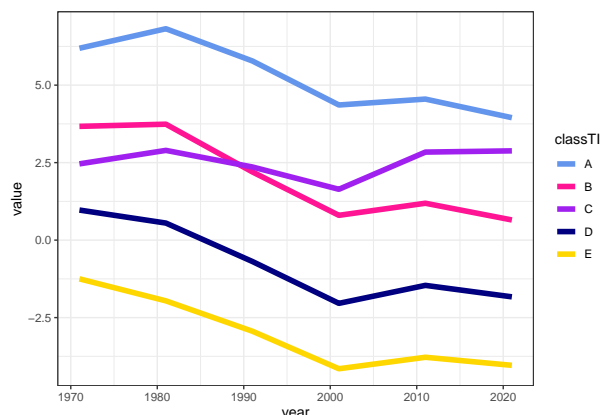


Figure 2: Median Townsend index scores by trajectory class

The particular interest here is in which classes are found in Southampton. Figure 3 shows the trajectory classes in the area using the same colours per class as for Figure 2.

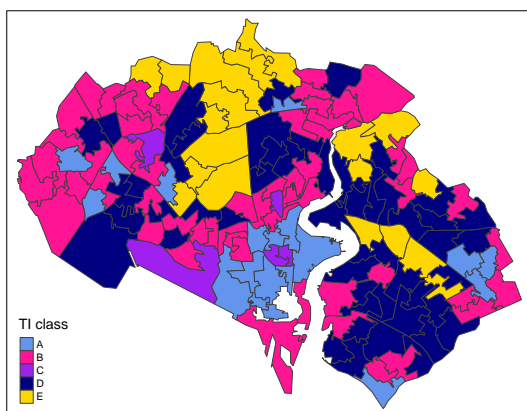


Figure 3: TI trajectory clusters.

3. Indices of Deprivation

The IoDs are based mainly on administrative data and so are not restricted to Census years. The indices can also draw upon a wider range of deprivation measures than are available in the Census. The IoD comprises seven domains, each based on a set of indicators. These seven domains are combined together into an overall composite Index of Deprivation (IoD; also termed the Index of Multiple Deprivation) using explicitly defined domain weights. The weights applied in creating the overall IoD measure are as follows:

1. Income Deprivation Domain (Inc) 22.5%
2. Employment Deprivation Domain (Emp) 22.5%
3. Health Deprivation and Disability Domain (Hea) 13.5%

4. Education, Skills and Training Deprivation Domain (Edu) 13.5%
5. Barriers to Housing and Services Domain (Bar) 9.3%
6. Crime Domain (Cri) 9.3%
7. Living Environment Deprivation Domain (Liv) 9.3%

In the IoD framework, the terminology ‘domain’ is used instead of indicator (as used for the TI). This reflects the basis of the IoD as comprising several distinct facets of deprivation, each of which may be analysed in their own right.

The IoD not only allows for assessment of change in the overall IoD (as shown above), but also each of the seven constituent domains that make up the IoD. A key interest in this profile is in LSOAs which have seen large changes in deprivation rank on particular domains - either a relative increase in deprivation, or a relative decrease. Like the overall IoD score, the IoD domain scores are relative, and thus a reduction in IoD domain ranks in a specific area would indicate that deprivation has declined in that area relative to other areas across the country.

Table 2 shows mean average changes in IoD domain rank percentiles for proximate time points; the averages are for all LSOAs in Southampton. A negative mean value indicates a relative *decrease* in average deprivation across Southampton compared to the country as a whole, while a positive mean value indicates an average *increase* in deprivation in Southampton compared to the country as a whole. This allows for the assessment of which domains have changed most over each time period in a given local authority.

Table 2: Change in IoD domain percentages: for all LSOAs

Period	Inc	Emp	Edu	Hea	Cri	Bar	Liv
2004-07	0.03	0.00	-0.01	0.02	-0.11	0.03	0.01
2007-10	-0.01	-0.01	0.01	-0.01	-0.03	0.13	-0.03
2010-15	-0.01	-0.02	-0.08	-0.01	0.30	-0.29	-0.03
2015-19	0.00	0.00	-0.02	0.01	0.03	-0.05	0.01

As an example (drawn from Table 2), for ease of interpretation, the domain score which **increased** the most over the period 2004 to 2007 was **Income**, with an average change of 0.03.

Figure 4 shows the IoD scores for 2019; this map is provided as context for the analysis of trajectories. The IoD values are shown as national deciles, where decile 1 is the least deprived 10% and decile 10 is the most deprived 10%; the map legends only include those decile values that are actually shown on the maps for the local authority in question.

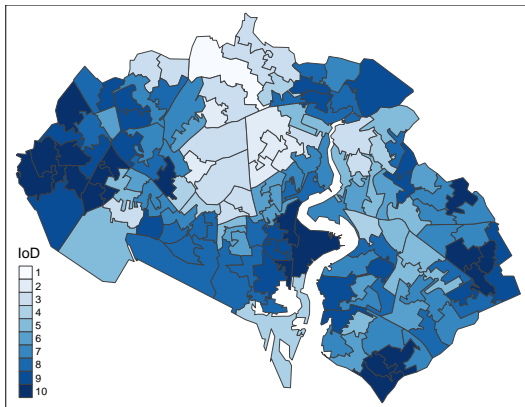


Figure 4: Index of deprivation national decile, 2019.

Clusters of trajectories were computed for the IoD ranks for each of the seven domains and for each IoD release (2004, 2007, 2010, 2015, 2019). The clusters for the IoD were generated using a variant of k -medians classification adapted for longitudinal (time series) data. Figure 5 shows the median IoD ranks by the ten trajectory classes identified. Ten IoD clusters were identified through this process, each showing identifiable patterns across the data. These are summarised below. Detailed descriptions are found in the full report. The term declining indicates that deprivation levels are now (relatively) lower. The term worsening indicates that deprivation levels are now (relatively) higher.

- A: Persistently highest and worsening deprivation.
- B: Higher deprivation, markedly declining.
- C: Higher deprivation, worsening.
- D: Moderately high deprivation, markedly declining.
- E: Moderately high deprivation, worsening.
- F: Moderate deprivation, persistently worsening.
- G: Moderately low deprivation, persistently declining.
- H: Lower deprivation, gradually worsening.
- I: Persistently lower deprivation.
- J: Persistently lowest deprivation.

The IoD trajectory classes in **Southampton** are mapped in Figure 6 showing the trajectory classes in the area. The map uses the same colours per class as in Figure 5.

4. Combined analysis

Table 3 shows membership of both sets of trajectory clusters. This provides a summary of the ways in which LSOAs have changed according to both TI and IoD trajectory clusters. Linking both sets of clusters

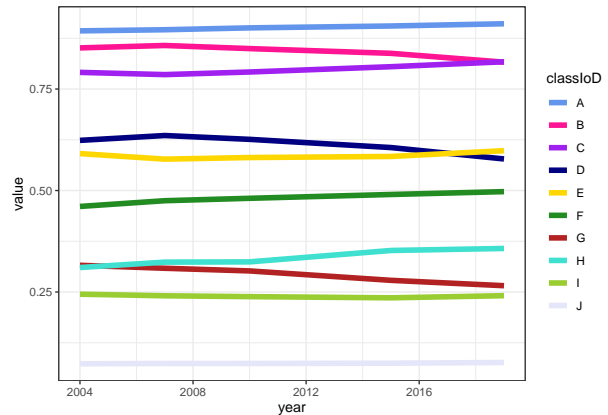


Figure 5: Median IoD ranks by trajectory class

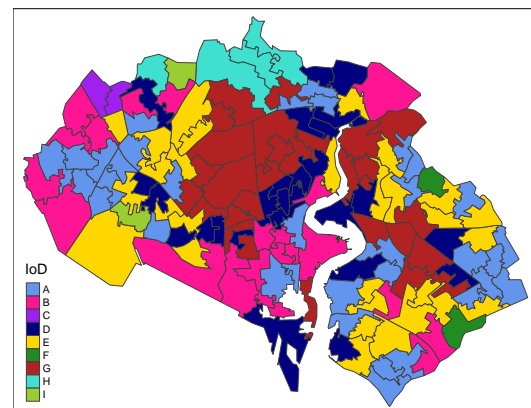


Figure 6: IoD trajectory clusters.

help to identify, for example, LSOAs which have had high deprivation levels by both measures as distinct from, as an example, LSOAs which may have seen increasing deprivation levels in recent years (as judged using the IoD), but which do not have long histories of deprivation (as judged using the TI).

For more on the IoD see: [English indices of deprivation 2019 website](#)

Table 3: TI trajectory clusters and IoD trajectory clusters.

	IoD cluster								
	A	B	C	D	E	F	G	H	I
TI cluster									
A	12	6	0	0	0	0	0	0	0
B	21	8	2	16	5	0	4	0	0
C	0	3	0	1	1	0	0	0	0
D	1	4	0	9	23	1	10	0	1
E	0	0	0	0	0	1	13	4	1

5. Conclusions and recommendations

The objectives for this report were to illustrate how different datasets can be used to track neighbourhood deprivation trajectories over extended time periods to provide new insights into the changing levels and composition of socio-economic disadvantage. The analyses show that different geographical areas are characterised by different patterns of change, both in terms of the speed and direction of overall deprivation change, and the relative contributions of the constituent indicators and domains to this overall change. The key recommendation emanating from this research project is that local level policy design should not only be informed by the most up-to-date deprivation statistics, but should also reflect areas' deprivation trajectories over the short-, medium- and long-term.

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More information

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Please see the [project website](#) for more details.