

7.0 Change over Time

The NIMDM 2010 was created as an update to the NIMDM 2005. As such the methodology, and many of the indicators employed in the calculation of the NIMDM 2010 are the same as the 2005 measure. In addition, the main geographical units at which the measures were created, the Output Area and the Super Output Areas, are unchanged.

It should be noted however that the NIMDM is a relative measure and was not created to measure change in deprivation levels over time. More appropriate uses are to identify concentrations of deprivation in a given period or to allow the assessment and monitoring of inequality gaps. These uses are discussed in previous sections.

It is recognised however that the similarities in the measures and the consistent geography lead to a natural comparison between the NIMDM 2005 and NIMDM 2010 results. A number of factors, however, should be considered when comparing the NIMDM 2005 and 2010 results including;

- population changes
- similarity of domain components
- meaning of changes in ranks

7.1 Population Changes

Indicators within the NIMDM were calculated as rates of the population. For this purpose small area population estimates for 2001-2008 were created, and published separately. The population estimates show that over the period 2001-2008 the population of Northern Ireland increased by approximately 5%. This population change was not uniform across all areas.

Changing population has an effect on deprivation concentrations recorded between two periods if the characteristics of those entering (or leaving) an area differs from the existing (or remaining) population.

For example, in an area containing 2,000 people of which 200 are income deprived the proportion of the population experiencing income deprivation is 10%. If 500 people move into the area including 50 income deprived, the proportion of the population experiencing income deprivation in the area is $(200+50)/(2,000+500) = 250/2,500 = 10\%$.

However, if all of the 500 people moving into the area were income deprived the proportion of the population experiencing income deprivation in the area is $(200+500)/(2,000+500) = 700/2,500 = 28\%$.

The table below shows two areas that experienced large population increases over the period to which the deprivation measures relate.

SOA Name	LGD Name	Multiple Deprivation Measure 2005 Rank	Multiple Deprivation Measure 2010 Rank	Population Change 2003 to 2008¹
Derryaghy 1	Lisburn	349	140	59%
Enagh 2	Derry	481	529	51%

Derryaghy 1 in Lisburn LGD experienced a large increase in population and also became relatively more deprived moving over 200 ranks. In contrast Enagh 2 in Derry LGD, an area which also significantly increased in population over the period, moved less than 50 ranks.

It is important therefore to consider changes in the population alongside changes in the deprivation results. Local knowledge of an area and the characteristics of those moving into or out of an area is particularly useful.

7.2 Similarity of Domain Components

Although the NIMDM 2010 was created as an update to the NIMDM 2005, the composition of the two measures are not identical. This is as a result of changes in data availability between 2005 and 2010 (both improved and diminished), and the views received through the consultation process from users of the deprivation measures and statistical experts.

The degree of similarity between the 2005 and 2010 measures varies across domains. The components should be considered when comparing domain results for both years as changes in results may be attributed to a greater or lesser extent to the measurement method.

¹ The majority of data included in the NIMDM 2005 relates to 2003 while the majority of data in the NIMDM 2010 relates to 2008.

Income Deprivation

Income Deprivation Domain 2005	Income Deprivation Domain 2010
Adults and children in Income Support households	Adults and children in Income Support households
	Adults and children in State Pension Credit households
	Adults and children in income based Employment and Support Allowance households
Adults and children in income based Jobseeker's Allowance Households	Adults and children in income based Jobseeker's Allowance Households
Adults and children in Working Families' Tax Credit households	Adults and children in Working Tax Credit households
Adults and children in Disabled Person's Tax Credit households	Adults and children in Child Tax Credit households
	Adults and children in Housing Benefit households

The 2005 and 2010 Income Deprivation Domains were both based on a non-overlapping count of people living in households in receipt of income related benefits and tax credits. The Income Deprivation Scores are interpreted as the percentage of the population living in such households.

Changes in the benefits included in the domains occurred as a result of changes in the benefit system. In addition to this, those living in households in receipt of Housing Benefit were included in the domain. It would therefore be expected, all other things being equal, that the number of people identified as income deprived in 2010 would be greater than that in 2005.

As a result an increase in the income domain score between 2005 and 2010 does not necessarily equate to an increase in income deprivation in an area, as the change could be attributed to the addition of housing benefit claimants. This should be considered when comparing income deprivation scores.

As both income domains intended to measure income deprivation through benefits, the 2005 and 2010 *ranks* can be compared. An explanation of the problems associated with comparing ranks is given below.

Employment Deprivation

Employment Deprivation Domain 2005	Employment Deprivation Domain 2010
Unemployment claimant count	Unemployment claimant count
Incapacity Benefit claimants women	Incapacity Benefit claimants women
Severe Disablement Allowance claimants	Severe Disablement Allowance claimants
Invalid Care Allowance claimants	Carer's Allowance claimants
Participants in New Deal for Young People (18-24 years) and in New Deal for 25+	Participants in Steps to Work or New Deal
	Employment and Support Allowance claimants

The 2005 and 2010 employment deprivation domains were both based on a non-overlapping count of people in receipt of employment related benefits or participating in government employment schemes. The employment deprivation domain scores were interpreted as the proportion of working age adults in an area that are employment deprived.

Changes in the information included in the domains occurred as a result of changes in the benefit system and government programmes. However the information included in the 2005 and 2010 employment domains were broadly equivalent.

As such changes in the measurement of employment deprivation are minimal and the employment domain score and ranks are therefore comparable.

Health Deprivation and Disability

Health Deprivation & Disability Domain 2005	Health Deprivation & Disability Domain 2010
Years of Potential Life Lost	Years of Potential Life Lost
Comparative Illness and Disability Ratio	Comparative Illness and Disability Ratio
A combined measure of two indicators: i) individuals suffering from mood and anxiety disorders, based on prescribing ii) suicides	A combined measure of three indicators: i) individuals suffering from mood and anxiety disorders, based on prescribing data ii) suicides iii) mental health inpatient stays
People registered as having cancer	People registered as having cancer (excluding non-melanoma skin cancers)
	Emergency Admission Rate
	Low Birth Weight
	Children's Dental Extractions

A number of significant changes occurred to the measurement of health deprivation and disability between the 2005 and 2010 measures.

The 2010 health deprivation and disability includes additional measures of health deprivation relating to children and a greater emphasis on those living with health deprivation and disability as measured through receipt of benefits.

The significant changes in measurement of health deprivation and disability should be noted when comparing ranks across years.

Education, Skills and Training

Education, Skills and Training Deprivation Domain 2005	Education, Skills and Training Deprivation Domain 2010
<i>Sub-Domain: Children/Young People</i>	<i>Sub-Domain: Primary School</i>
Proportions of Years 11 and 12 pupils not in grammar school	Key Stage 2 Teacher Assessments
	Special Education Needs
	Absenteeism at Primary Schools
	<i>Sub-Domain: Post Primary</i>
Key Stage 3 results	Key Stage 3 Teacher Assessments
GCSE/GNVQ points score	GCSE or equivalent qualifications points score
School Leavers not entering Further Education	School Leavers not entering Further Education, Employment of training or Training
17-20 year olds who have not successfully applied for Higher Education	18-21 year olds who have enrolled in Higher Education Courses at Higher Education or Further Education establishments
Absenteeism at secondary school level	Absenteeism at Secondary Schools
Special Education Needs	Special Education Needs
<i>Sub-Domain: Working Age Adults</i>	<i>Sub-Domain: Working Age Adults</i>
Working age adults (aged 25-59) in the area with no or low levels of qualification	Working age adults (25-59) with no or low levels of qualification

The 2005 Education Skills and Training domain comprised two equally weighted sub-domains; Children and Young People, and Working Age Adults. A third sub-domain focusing on Primary School age pupils was introduced in the 2010 domain. Equal weights were assigned to the three domains in 2010.

The addition and reweighting of domains resulted in two-thirds of the Education, Skills and Training Domain in 2010 relating to children compared to 50% in 2005.

The significant changes in measurement of education skills and training should be noted when comparing ranks across years.

Proximity to Services

Proximity to Services Domain 2005	Proximity to Services Domain 2010
GP premises	GP premises
Accident and Emergency hospital	Accident and Emergency hospital
Dentist	Dentist
Optician	Optician
Pharmacist	Pharmacist
Jobs Centre or Jobs and Benefits Office	Job Centre or Jobs and Benefits Office
Post Office	Post Office
Food shop	Supermarket / Food Store
Settlement of 10,000 or more people	Large Service Centre
	Council Leisure Centre
	Financial Services
	Other general services

Additional services were included in the 2010 Proximity to Services domain and 'proximity' was calculated based on travel time to a particular service rather than the road distance metric used in 2005.

As such the indicator scores cannot be meaningfully compared as in 2005 the scores referred to road distance to a service, while in 2010 they referred to travel time.

The above changes in measurement are likely to impact on the measurement of Proximity to Services and should be noted when comparing ranks.

Living Environment

Living Environment Domain 2005	Living Environment Domain 2010
<i>Sub-Domain: Housing quality</i>	<i>Sub-Domain: Housing quality</i>
SOA level housing stress	SOA level Decent Homes Standard
Houses without central heating	
	SOA level Housing Health and Safety Rating System
<i>Sub-Domain: Housing Access</i>	<i>Sub-Domain: Housing Access</i>
Household overcrowding	
LGD level homelessness acceptances	SOA level homelessness acceptances
<i>Sub-Domain: Outdoor physical environment</i>	<i>Sub-Domain: Outdoor physical environment</i>
SOA level local area problem score	SOA level local area problem score

The Living Environment domains in 2005 and 2010 comprised three equally weighted sub-domains. Significant changes have been made to the indicators included and the methodology employed to create the components in each sub-domain.

Due to the implications of the change in measurement of living environment deprivation between 2005 and 2010 the domains are not comparable.

Crime and Disorder

Crime and Disorder Domain 2005	Crime and Disorder Domain 2010
<i>Crime Sub-Domain</i>	<i>Crime Sub-Domain</i>
Violence, robbery and public order	Violence, robbery and public order
Burglary	Burglary
Vehicle Theft	Vehicle Theft
Criminal Damage	Criminal Damage
<i>Disorder Sub-Domain</i>	<i>Disorder Sub-Domain</i>
Malicious and deliberate Primary Fires	Deliberate Primary and Secondary Fires
Disturbances	Anti Social Behaviour Incidents

The Crime and Disorder domains 2005 and 2010 were based on two sub-domains; Crime and Disorder.

There have been minimal changes to the indicators within each of the domains and the weightings given to indicators and sub-domains have remained constant.

As such the Crime and Disorder Domain ranks can be compared.

Multiple Deprivation Measure

The effects of the changes in domains are emphasised or diminished in the overall Multiple Deprivation Measure according to the varying weights assigned to component domains. The Income, Employment and Crime & Disorder Domains, which experienced minimal changes, account for over half of the Multiple Deprivation Measure, while the Living Environment which has seen significant changes accounts for only 5% of the measure. As such it is recommended that the Multiple Deprivation Measure ranks are compared with caution between years.

Summary

The Employment Deprivation Domain contains the most similar components of all the domains in the 2005 and 2010 measures and as such the ranks and scores can be compared between years.

The Income Deprivation Domain and Crime & Disorder Domains contain minimal changes that should be noted when assessing changes in ranks between years.

The Proximity to Services, Health Deprivation and Disability, Education, Skills and Training Domains 2010 contain significant changes from their 2005 equivalents which are likely to effect the measurement of deprivation.

The Living Environment Domain should not be compared between years.

The Multiple Deprivation Measure ranks should be compared with caution between years.

7.3 Comparing Ranks across Years

The NIMDM and domain ranks reflect how deprived areas are *relative* to each other within a given year. The ranks do not give an indication of how deprived an area is in absolute terms or the difference in deprivation levels between areas.

It therefore cannot be ascertained whether an area has improved in absolute terms from the ranks alone.

The employment domain can be used to illustrate the problems associated with comparing ranks between 2005 and 2010. As above, the employment deprivation domain is the most suitable domain when comparing absolute measures of deprivation within and between years, due to the calculation of the domain as a count of the employment deprived and as the measurement of employment deprivation was relatively consistent between 2005 and 2010.

The table below shows three areas that are *relatively* more deprived in 2010 as measured by the employment deprivation domain than in 2005. In each of the three areas the employment deprivation rank was closer to rank 1 (most deprived) in 2010 than in 2005.

SOA NAME	Employment Domain Score 2005	Employment Domain Score 2010	Change in rank 2005 to 2010	Change in score 2005 to 2010 (percentage point change)
Killycrot	0.18 (289)	0.16 (213)	- 76	- 0.02
Portavogie 2	0.12 (610)	0.12 (436)	- 174	0.00
Craigy Hill	0.20 (184)	0.21 (88)	- 96	+ 0.01

Although the three areas are more deprived *relatively* in the employment domain 2010 than in 2005, only one of the three areas listed above (Craigy Hill in Larne LGD) is also more deprived in *absolute* terms. This is shown by the increase in the employment domain score (the percentage of the working age population that are employment deprived) in Craigy Hill from 20% to 21% in 2005 and 2010 respectively.

This can be compared to Portavogie 2 in Ards LGD where the proportion of the population identified as employment deprived in the 2005 and 2010 measures remained at 12%. Although the area has the same absolute level of deprivation in both years, it has become relatively more deprived, as shown by the change in rank from 610 to 436.

Finally, Killycrot in Carrickfergus LGD, an area that is relatively more deprived in 2010 at rank 213 than rank 289 in 2005, is less deprived in 2010 in absolute terms.

Similarly it is possible that an area with the same rank in both years has increased, decreased or remained the same in terms of absolute levels of deprivation, and that an area that has become relatively less deprived has increased, decreased or remained the same in terms of absolute deprivation.

It is therefore important when comparing ranks between years to emphasise the relative nature of the measure, indicating that an area has become *relatively* more deprived, or *relatively* less deprived.

Case Study – Change over time in Neighbourhood Renewal Areas

When assessing change over time for Neighbourhood Renewal Areas (NRAs), *relative* and *absolute* change over time can be assessed at the Census Output Area level.

Relative change

Relative change over time can be examined by assessing the change in deprivation ranks. From this it can be ascertained if areas within an NRA have become relatively more deprived, relatively less deprived, or remained the same.

The table below presents results for Andersonstown NRA which comprises 28 Census Output Areas. The Census Output Areas have been grouped into deprivation deciles, where the 10% most deprived Census Output Areas are grouped in decile 1, and the least deprived 10% of Census Output Areas are in decile 10.

Andersonstown NRA

		Decile 2010										
Decile 2005		1	2	3	4	5	6	7	8	9	10	All OAs
	(most deprived) 1	7	4	1	1					Relatively more deprived in 2005		
2	4		3									7
3		1	1	2								4
4												
5							1					1
6		1			1							2
7					1							1
8												
9		Relatively more deprived in 2010										
(least deprived) 10												
All OAs		11	6	5	3	2		1				28

The table above shows that 11 Census Output Areas in Andersonstown NRA are in the most employment deprived decile, six Census Output Areas are ranked in the second most deprived decile and five are in the third least employment deprived decile according to the Employment Deprivation Domain 2010. The remaining six Census Output Areas rank within the fourth, fifth and seventh most deprived deciles.

The information above can be examined to provide an overview of the *relative change* in deprivation within the NRA. The table shows that eight Census Output Areas are ranked in the same deprivation decile in 2005 and 2010. Specifically, seven Census Output Areas that were ranked in the most deprived decile in 2010 were also in the most deprived decile in 2005, while

one Census Output Area was ranked in the third most deprived decile in both 2005 and 2010.

Twelve Census Output Areas were ranked in a relatively less deprived decile in 2010 than in 2005. Four Census Output Areas moved from the most deprived decile in 2005 to the second most deprived in 2010, and two Census Output Areas moving to the third and fourth most deprived decile. Three Census Output Areas were ranked in the second most deprived decile in 2005 and the third most deprived decile in 2010, two were ranked in the third most deprived decile in 2005 and the fourth most deprived in 2010, and one moved from the fifth most deprived decile in 2005 to the seventh most deprived decile in 2010.

Eight deciles were ranked in a relatively more deprived decile in 2010 than in 2005.

Absolute Change

Absolute change over time can be assessed from the Employment Deprivation Domain score. Although caution should be taken when comparing the percentage of the working age population that are employment deprived between two years in small areas as the rate presented can fluctuate with changes in the number of employment deprived or the size of working age population.²

The table below shows the 10 Census Output Areas in Bangor NRA and the corresponding Employment Domain Scores in 2005 and 2010. From the table it can be seen that the percentage of the population that are employment deprived in Census Output Area 95XX100001 within Clandeboye 1 SOA has decreased slightly from 19% to 18%, while it has increased in Census Output Area 95XX150002 within Dufferin SOA from 18% of the working age population in 2005 to 21% of the working age population in 2010. Overall the employment deprivation score increased in 3 of the 10 Census Output Areas and decreased in 7 Census Output Areas.

OA Code	SOA Name	Employment Score 2005	Employment Score 2010	Change (Percentage points change)
95XX100012	Clandeboye 3	0.1	0.14	0.04
95XX150002	Dufferin	0.18	0.21	0.03
95XX150009	Dufferin	0.28	0.3	0.02
95XX100008	Clandeboye 3	0.09	0.08	-0.01
95XX100001	Clandeboye 1	0.19	0.18	-0.01
95XX100007	Clandeboye 1	0.23	0.21	-0.02
95XX150008	Dufferin	0.2	0.18	-0.02
95XX150001	Dufferin	0.22	0.17	-0.05
95XX100010	Clandeboye 1	0.2	0.14	-0.06
95XX150006	Dufferin	0.34	0.28	-0.06

² For example in an area with 200 people of working age an increase of 10 in the number of employment deprived people will increase the employment deprived rate by 5 percentage points.

Contact Point

Cathryn McBurney

Neighbourhood Statistics

NISRA

McAuley House

2-14 Castle Street

Belfast BT1 1SA

Tel: 028 90 348 112

Email: deprivation.nisra@dfpni.gov.uk

Website: www.nisra.gov.uk/deprivation.htm