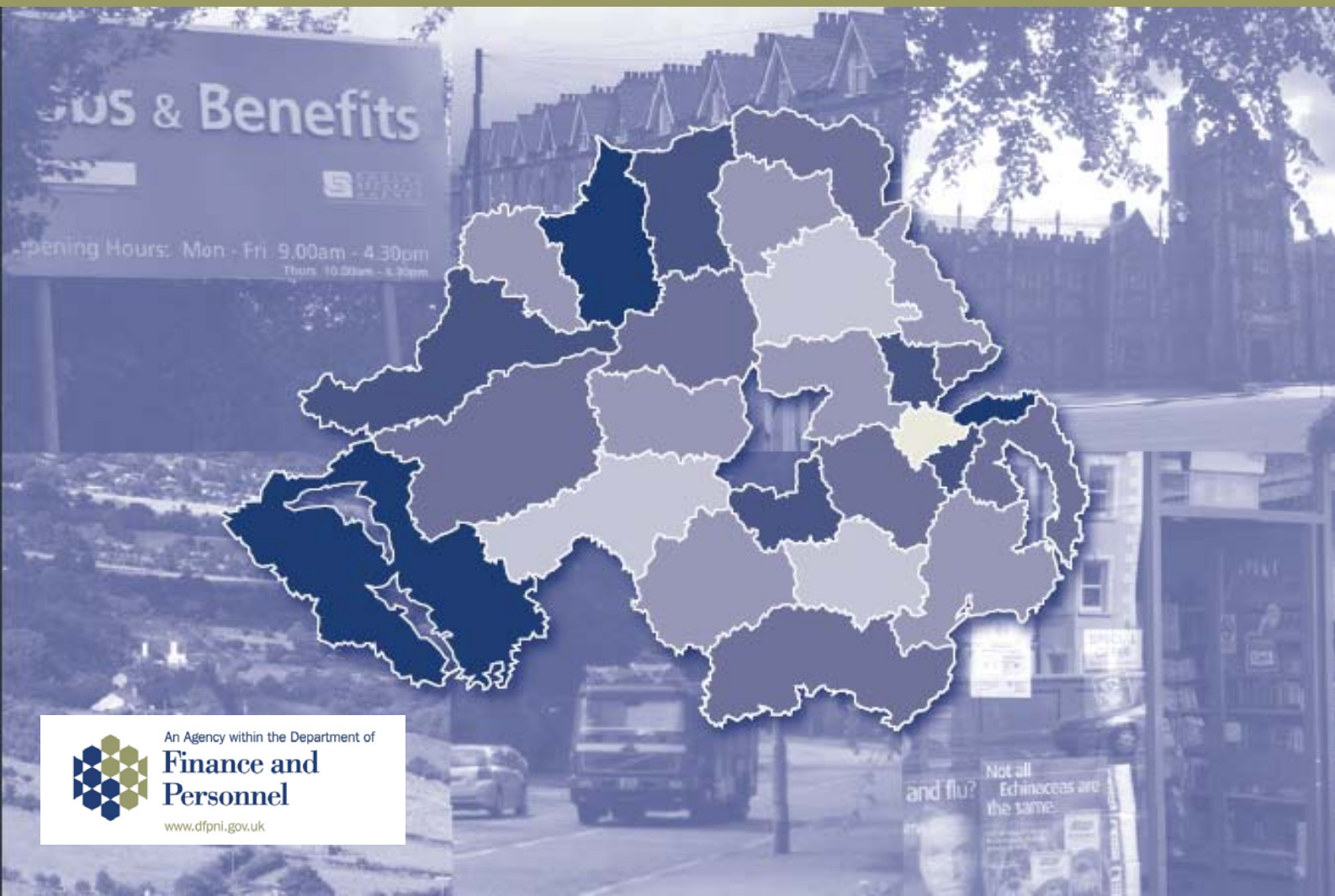Northern Ireland
Statistics &
Research
agency

Northern Ireland Multiple Deprivation Measure 2010:
Recommendations for Future Research into Spatial Deprivation

Background

The Northern Ireland Multiple Deprivation Measure (NIMDM) 2010 was published in March 2010, providing information on the distribution of deprivation at the small area level across Northern Ireland.

The NIMDM 2010 was intended as an *update* to the previous multiple deprivation measures created by a team led by Professor Mike Noble in the University of Oxford and published in 2005. As such the scope of the NIMDM 2010 research was broadly limited to a temporal updating of the indicators used in the 2005 measures, revising statistical indicators only where explicitly recommended in the NIMDM 2005 report, where indicators were no longer available or where data had been significantly enhanced.

A Consultation Document[1] was published in July 2009 containing proposals for the content of the updated deprivation measures. The associated consultation period took place until November 2009, during which three public consultation events were held. Written and verbal responses to the consultation were considered and a Blueprint Document[2] containing the results of the consultation was published in February 2010.

A number of consultation responses provided suggestions for measuring small area deprivation that were outside the remit of the deprivation 2010 update as well as requests for information at the small area level not linked directly to measuring deprivation. The latter have been forwarded to relevant Departments as information and research requests. The former, along with the recommendations that could not be realised through the construction of the NIMDM 2010 and the experience of those involved in the creation of the deprivation measures, has been used to form recommendations for future measures of small area deprivation in Northern Ireland.

The recommendations were agreed by the Deprivation Steering Group, comprising representatives from each of the Northern Ireland Government Departments, NI Housing Executive, Rural Development Council, Northern Ireland Council for Voluntary Action, Society of Local Authority Chief Executives, and the Equality Commission, and subsequently forwarded to the Statistics Co-ordinating Group[3] for consideration. It is intended that the recommendations are considered in light of current and future research programmes and resources.

---

[1]http://www.nisra.gov.uk/deprivation/archive/Updateof2005Measures/NIMDM_2009_Consultation_Document.pdf

[2]http://www.nisra.gov.uk/deprivation/archive/Updateof2005Measures/NIMDM_2010_Blueprint_Document.pdf

[3] SCG are an inter-departmental group of senior officials across Northern Ireland Government that provides Ministers with advice on statistical and social research needs and manages the co-ordination of these requirements across government.

Introduction

The following document sets out the recommendations for future deprivation measures by type or 'domain' of deprivation. The recommendations are colour coded to allow identification of their source; unmet recommendations from the NIMDM 2005 <mark>are highlighted in yellow</mark>, recommendations stemming from the consultation responses <mark>are highlighted in green</mark>, and recommendations from those involved in the creation of the measures <mark>are highlighted in blue</mark>.

Income Deprivation

- *<mark>Creation of Small Area Income Estimates</mark>*

  The NIMDM 2005 report recommended that research should be carried out to create small area income deprivation estimates for Northern Ireland. This was completed with the publication of estimates of the percentage of households below 60% of the NI median income per Super Output Area in August 2008.[4] The calculation of the estimates required the results of the Family Resource Survey 2003/04 and 2004/05 to be modelled to the small area level based on individual characteristics reported in the 2001 Census. Due in part to the time lag since the 2001 Census the small area income deprivation estimates were not included in the NIMDM 2010. *In the absence of an income question on the 2011 Census it is recommended that further research on small area income deprivation estimates, using the small area results of the 2011 Census and the appropriate Family Resource Survey, is carried out.*
  Owner: DSD/OFMDFM/NISRA

- *<mark>Investigate the variation in benefit up-take rates</mark>*

  The NIMDM 2005 report recommended that 'a research programme should be undertaken to develop a model of small area take-up rates of all means tested benefits and in work support across Northern Ireland.' Such research was not possible at the small area level due to the small number of people that were likely to be identified in the Family

---

[4] Anderson, B (2008) Creating small area income deprivation estimates for Northern Ireland: spatial microsimulation modelling. NISRA Occasional Paper No.27
http://www.nisra.gov.uk/archive/demography/publications/IncEst_Model.pdf

Resource Survey as entitled to but not receiving benefits. *This recommendation is carried forward.*
Owner: DSD/NISRA

- ***Investigate alternative approaches to the measurement of income deprivation at the small area level***
  A number of consultation responses referred to the survey-based 'minimum income standard' research, as a potential alternative to the current benefits-based income deprivation domain. Demographic groups are the focus of the current 'minimum income standard' research, e.g. those living on their own/families/older people, rather than geographic areas, which are the focus of the deprivation measures. *For future deprivation measures it is recommended that the potential for applying/incorporating similar need based approaches to spatial measures of deprivation is considered.*
  Owner: OFMDFM

Employment Deprivation

- ***Investigate alternative sources (other than benefit data) for information on hidden unemployment***

  The current Employment Deprivation Domain defines employment deprivation as involuntary exclusion of the working age population from work. This includes those who are not working and are available to work; unable to work due to an illness or disability; unable to work due to caring responsibilities; or are participating in government training programmes. The above groups of employment deprived people are measured through benefit and training programme data in the Employment Deprivation Domain.

  In addition to those listed are those who are not working who would like to work but are not in receipt of the above benefits. This group of people are often referred to as the 'hidden unemployed' as they are not picked up in traditional unemployment statistics. An example of a group of the 'hidden unemployed' are mothers who are not working due to restrictive child care costs but would otherwise like to work.

  The NIMDM 2005 report recommended investigating the Labour Force Survey and the Family Resource Survey as possible sources of information on the hidden unemployed. Information from these sources was not included in the NIMDM 2010 due to the small number of people who would be identified as the 'hidden unemployed' at the small area level. Using individual characteristics from the 2011 Census it may be possible to model the results of the Labour Force Survey and/or the Family Resource Survey to the small area level. *It is recommended that the potential for modelling the results of the Labour Force Survey and/or the Family Resource Survey is investigated for future measures of employment deprivation.*
  Owner: DETI/DSD/DEL/NISRA

- ***Investigate 2011 Census as an alternative source for information on employment deprivation***

In addition to the provision of information on individual characteristics for use in modelling, the 2011 Census is likely to include questions on employment, including caring responsibilities, which could be used as a fuller source of information on the employment deprived.

It is recommended that the small area results from the 2011 Census are fully investigated as an alternative source of information on employment deprivation.
Owner: DETI/DEL/NISRA

Health deprivation and disability

- ***Greater use of prescription data in the identification of health deprivation and investigations into data recorded for the Quality Outcomes Framework***

  In the NIMDM 2010 Health Deprivation and Disability Domain the Electronic Prescription and Eligibility System contributed to the measurement of mental health by identifying areas with relatively high concentrations of those prescribed drugs for mood and anxiety disorders. Those suffering from cancer were identified through Northern Ireland Cancer Registry data.

  The Quality and Outcomes framework contains information on disease prevalence for a range of illnesses, collected at GP practice level. The attribution of the GP practice prevalence rates to small areas should be considered.

  It is recommended that the further use of prescription data in the Health Deprivation and Disability Domain should be investigated with the aim of identifying areas with high concentrations of drug and alcohol misuse, as well as those suffering from limiting life long illnesses such as heart disease, stroke and Parkinson's disease. The Quality and Outcomes Framework data should also be investigated as a source of disease prevalence at the small area level.
  Owner: DHSSPS

- ***Research into the improved measurement of disability at the small area level***

  The current measure of disability in the Health Deprivation and Disability Domain is based on the proportion of the population in an area in receipt of disability related benefits. The 2011 Census is likely to provide detailed small area information on the prevalence of a range of disabilities including deafness, blindness, mobility and learning

difficulties. *The inclusion of the small area 2011 Census results on disability as an alternative to benefit data is recommended. Furthermore it is recommended that the potential for a separate Disability Sub-Domain is investigated.*
Owner: DHSSPS/NISRA

- **Inclusion of community dentist data in any future dental extraction indicators**
  The children's dental indicator in the NIMDM 2010 Health Deprivation and Disability Domain included information on extractions taking place in Dental Practices and under anaesthetic in Hospitals. It was not possible to obtain data from a third source; Community Dentists. *It is recommended that future dental health indicators include information from Community Dentists as well as Dental Practices and Hospitals.*
  Owner: DHSSPS

- **Review potential years of life lost indicator**
  The Potential Years of Life Lost indicator measured the number of years of life lost prematurely, as defined by death before the age of 75. With average life expectancy at birth in 2006-2008 at 76 and 81 years for males and females respectively and with life expectancy increasing markedly, *it is advised that the indicator is revised in future updates of the measures.*
  Owner: NISRA

- **Review of Hospital Emergency Admissions indicator**
  A measure of emergency admission to a hospital was included in the NIMDM 2010. After research carried out by the DHSSPS into the possible rural bias in such an indicator, only hospital emergency admissions resulting in a stay of at least four nights were included in this indicator. *It is recommended that any future hospital emergency admissions indicators are tested and corrected for rural bias.*
  Owner: DHSSPS

Education, Skills and Training

- ***Development of Year Group Snapshots for school leavers***
  The NIMDM 2005 report recommended that a school leavers database was developed to allow comparison of school leaver results and destinations for a given *year group* rather than a given *year*. Currently school leaver information is analysed by year of leaving rather than year group, and pupils leaving school in a given year may be from different year groups, typically years 12, 13 and 14 depending on when pupils decide to leave. The development of such a database may allow a more accurate comparison of pupils and areas. *It is recommended that an investigation is undertaken into the benefits that a database capable of providing year group snapshots of school leavers may provide.*
  Owner: DE

- ***Investigation into the inclusion of attainment data for young children***
  The NIMDM 2010 included a Primary School Age sub-domain comprising Key Stage 2 attainment, absenteeism at schools and a special education needs indicator. Responses to the consultation indicated a need for a measurement of education attainment for early school years, for example Key Stage 1.

  Key Stage 1 assessments provide information on children's attainment in the early school years. Provided that such data have a suitable degree of variability across areas it may be an important addition to the Primary School Age Education Skills and Training sub-domain. *It is recommended that research is undertaken into the viability of a small area Key Stage 1 indicator to measure attainment of pupils in the first years of Primary School.*
  Owner: DE

- ***Future Key Stage 2 attainment indicators to be based on pupil rather than school level results***

  The NIMDM 2010 included information on Education for Primary School Age Pupils for the first time. Information on Key Stage 2 attainment was collected at the school level and applied to areas based on the school each pupil attended. To improve the accuracy of this indicator Key Stage 2 information should be measured at the individual pupil level. *It is recommended that future Key Stage 2 information is based on pupil rather than school level information.*
  Owner: DE

- ***Modification of attainment data at GCSE level to focus on English and Mathematics***

  The measurement of attainment at GCSE level was based on a range of GCSEs and qualifications. *In future measures it is recommended that attainment indicators focus on key skills needed for employment such as attainment in English and Mathematics.*
  Owner: DE

- ***Consideration of the measurement of special education needs***

  The measurement of pupils with special education needs at Primary and Post Primary School Level in the Education Skills and Training Domain included only those pupils at stages 3-5 on the Special Education Needs Code of Practice.

  The Special Education Needs review 'Every School a Good School' is currently at the consultation stage. *It is recommended that the Special Education Needs indicator is revised in line with the results of the consultation.*
  Owner: DE

- ***Adult literacy and numeracy measures***

  The measurement of Education, Skills and Training for adults was

It is recommended that the working age adult sub-domain is developed to include a measure of those without basic literacy and numeracy skills.

Owner: DEL

Proximity to Services

- ***Public Transport and Car Travel Sub-domains***

  The current Proximity to Services domain is based on travel times from each small area in Northern Ireland to key services, based on car travel time. *It is recommended that future research should investigate the feasibility of creating a measurement of proximity to services based on the frequency, timing and destination of bus and train services held by Translink, with the aim of producing a 'public transport' sub-domain.*
  Owner: DRD

- ***Weighting of sub-domains***

  Meaningful sub-domain weights for car travel and public transport sub-domains could be developed on an area by area basis based on car ownership as recorded in the 2011 Census or perhaps by the DVLNI. Such a measure of car ownership should relate to car ownership by household rather than a simple measure of number of cars in an area. It will be important to assess whether a measure of car ownership by household can be obtained from the DVLNI to ensure it is possible to update the measure when the 2011 Census results become dated. *It is recommended that the development of weights for public transport and car travel sub-domains is based on car ownership rates.*
  Owner: DRD/NISRA

- ***Development of measures of 'Access' to Services***

  The current Proximity to Services domain is based on travel time to services which does not take account of *access* issues such as waiting lists, problems faced by elderly or disabled, cost of services, cross-community movement, public transport provision and traffic congestion. *It is recommended that research is conducted into access issues and how these could be incorporated at the indicator level into an 'Access to Services' domain.*
  Owner: NISRA

- ***Inclusion of additional service indicators***

  The NIMDM 2010 Proximity to Services domain measures travel time to a range of services (12) including A&Es and leisure centres. Consultation responses expressed the need for additional indicators such as access to childcare facilities, public libraries, internet and schools. *It is recommended that consideration is given to whether the additional indicators are measures of Proximity to Services, best placed in other domains, or sit outside the measurement of deprivation.* *Owner: NISRA*

Living Environment

- ***Homeless information***

  The NIMDM 2005 report included a recommendation concerning the discrepancies between a person's last place of residence and where they present as homeless. At the time of the NIMDM 2010 creation research had not been undertaken in this area. *It is again recommended that research is carried out concerning the discrepancies between a person's last place of residence and where they present as homeless to improve the accuracy of this the homeless indicator.*
  Owner: DSD (NIHE) /NISRA

- ***Road Quality***

  The NIMDM 2005 report included a recommendation to investigate data sources for road quality. DRD's Road Service currently report on road quality at 'Section Office' Level. Provided that the measurement is consistent across areas and can be reported at the small area level in a meaningful way, such information would add another dimension to the measurement of living environment. *It is recommended that the robustness and availability of Road Service road quality is investigated for inclusion in the Living Environment Domain.*
  Owner: DRD

- ***Accidents in the home***

  It was recommended in the NIMDM 2005 report that a measure of accidents in the home was included in the Living Environment domain as an indicator of housing quality. In the absence of a home accidents indicator, information from the House Conditions Survey based on defects in dwellings and their health and safety risk to occupants were modelled to the small area level and included in the Living Environment Domain.

Business Services Organisation and the Health and Social Care Board are currently developing a system to collect information on all A&E attendances which may allow the extraction of attendances resulting from accidents in the home. *It is recommended that the data are investigated (considering the potential for rural – urban bias) as a source of information on accidents occurring in the home for inclusion in the Housing Quality sub-domain.*
Owner: DHSSPS

- **Measurement of Overcrowding**

    A suitable up to date small area measure of overcrowding did not exist at the time of the calculation of the NIMDM 2010. It is likely that the 2011 Census will include household questions to create a measure of household overcrowding. *It is recommended that overcrowding information from the 2011 Census is considered for inclusion in future measures of Housing Access.*
    Owner: NISRA

- **Measurement of Energy Efficiency**

    The NIMDM 2005 included a measure of central heating as a measure of housing quality. A suitable up to date small area measure of central heating did not exist at the time of the calculation of the NIMDM 2010.

    Moreover a central heating question will not be included in the 2011 Census due to the high proportion of households with central heating. Measurement of energy efficiency may be a more appropriate measure of housing quality for future living environment measures.
    It is recommended that the House Conditions Survey, and Energy Certificate records are investigated as sources of information on energy efficiency for future measures of Housing Quality.
    Owner: NISRA

- ***Suitability of houses for the Disabled***

  The NIMDM 2010 consultation responses included a call for the Lifetime Homes Standard to be included as a measure of Housing Quality to take account of houses equipped for the disabled. It is likely that the 2011 Census will provide information on the (self reported) suitability of accommodation for those with disabilities, for example wheelchair usage. *It is recommended that the inclusion of 2011 Census information on suitability of households for the disabled is considered as a measure of housing quality.*
  Owner: NISRA

- ***Additional Indicators***

  The measurement of the physical environment in the Living Environment Domain was based on information from the House Conditions Survey modelled to the small area level. The indicator included measures of graffiti, litter, dog fouling and vacant buildings. Alternative and additional sources of information exist on factors affecting the quality of the physical environment such as Local Council Surveys on litter and perceptions of an area. *It is recommended that consideration is given to the inclusion of further indicators regarding litter, broadband, vacant properties, quality of open space, interface areas and perception of safety for a fuller measurement of the physical environment.*
  Owner: NISRA

Crime and Disorder

- *Variation in reporting rates*

  It was recommended in the NIMDM 2005 report that the reporting rates of different population groups were explored, including the effect of deprivation itself on reporting rates by crime type. Initial analysis carried out by the DoJ (formerly NIO) using the NI Crime Survey gave inconclusive results on the relationship between deprivation and reporting rates. *It is recommended that the DoJ carry out further investigations into the relationship between reporting rates and deprivation when more Crime Survey data are available.*
  Owner: DoJ[5]

- *Additional Community Safety indicators*

  It was recommended in the NIMDM 2005 report that additional community safety indicators were included in future measures. Unfortunately due to the inconsistencies in recording of locational information across Local Council Areas it was not possible to include the noise complaint information in the NIMDM 2010. *It is recommended that the Local Council noise nuisance complaints data are investigated for future inclusion in the Crime and Disorder domain.*
  Owner: NISRA

- *Measurement of Domestic Violence*

  As in the NIMDM 2005 report *it is recommended that investigations are undertaken to develop a robust small area level measure of domestic violence based on data other than police recorded crimes*.
  Owner: DoJ[5]

- *Hate Crimes Indicator*

  A number of consultation responses called for a separate hate crimes indicator in the Crime and Disorder Domain. Although a separate hate

---

[5] Owner was changed from 'DoJ (PSNI)' to 'DoJ' on 19/10/2011.

crimes indicator is not included, any crimes motivated by 'hate' resulting in, for example, violence or criminal damage will be captured in the domain through the list of recorded crimes forming the domain. *It is recommended that the possibility of a separate hate crimes indicator is investigated, taking into account the impact it has on the domain over and above the recorded crimes currently included.*

Owner: PSNI[6]

---

[6] Owner was changed from 'DoJ (PSNI)' to 'PSNI' on 19/10/2011.

Recommendations not linked to specific domains

- ***Child Specific Multiple Deprivation Measure***

  The NIMDM 2005 report contained a recommendation to consider creating a child specific Multiple Deprivation Measure. Although it was thought the development of a child specific Multiple Deprivation Measure was outside the remit of the NIMDM 2010 the consultation responses gave support for a child specific measure alongside future deprivation measures.

  When considering the calculation of a child specific measure multiple issues should be examined as not all types of deprivation relate to children or affect children in the same way as adults; for example Employment Deprivation or Proximity to Services. Also careful consideration should be given to the geographical units at which the results would be published, as areas with equal populations may vary in the number of children they contain.

  The creation of a child specific measure may warrant a separate consultation exercise to examine issues effectively and develop an appropriate methodology.

  It is recommended that the creation of a child specific multiple deprivation measure is considered alongside the creation of future deprivation measures considering the issues above.

  Owner: OFMDFM

- ***Additional domains***

  The Multiple Deprivation Measure is based on seven types of deprivation measuring deprivation in income, employment, health, education, proximity to services, living environment, and crime and disorder.

  Alongside the deprivation measures small area population estimates were developed. The results show that although the population of

Northern Ireland increased over the period 2001-2008, the population declined in the most deprived decile, while population increases occurred in all other deciles.

Given these results the relationship between deprivation and population decline should be investigated, in particular to assess whether population decline is itself a measure of deprivation.

It is recommended that research is undertaken into the relationship between population decline and deprivation, and consideration given to whether population decline is an indicator of deprivation.
Owner: NISRA

- **Review of domain weights**
  The weights used when combining the individual domains of deprivation into the overall multiple deprivation measure in the NIMDM 2010 were the same as in the NIMDM 2005 and are similar to domain weights in deprivation indices in England, Scotland and Wales.

  In future deprivation measures the domain weights should be considered in light of the interactions between types of deprivation and to reflect current priorities.
  Owner: NISRA

- **Alternative methodological approaches**
  The NIMDM 2001, 2005 and 2010 were based on the 'domain' methodology developed by a team led by Professor Mike Noble in the Social Disadvantage Research Centre, University of Oxford. Within this methodology separate types of deprivation are considered (e.g. Health, Employment) and then combined to form an overall multiple deprivation measure. Each domain attempts to measure the concentration of people in an area experiencing a distinct form of deprivation. (Suggested indicators such as 'fuel poverty' which result from an

interaction from income and housing quality were not included in the NIMDM as the separate components of income and housing quality were measured in individual domains.)

The results of the NIMDM 2010 show a high correlation between six of the seven separate domains of deprivation, indicating that areas that have high concentrations of one form of deprivation are likely to also have other types of deprivation. The corollary of this is areas are likely to contain people who experience multiple forms of deprivation or are 'multiply' deprived.

It may be possible using the results of the 2011 Census to identify areas where concentrations of 'multiply' deprived people exist. For example people who have low or no qualifications, are unemployed and suffer from a health condition.

It is recommended that alternative approaches to the 'domain' methodology are considered for the development of future measures of spatial deprivation.
Owner: NISRA

- ### Urban - Rural Deprivation
  The NIMDM 2010 is designed to identify small area concentrations of deprivation. The geographies used as the main unit of analysis are Super Output Areas (SOAs) which have populations of approximately 2,000 people. Although SOAs were designed to have similar population sizes to aid comparisons across Northern Ireland, due to the smaller geographical size and the relatively homogenous populations of urban areas compared to rural areas, small area concentrations of deprivation are more readily identified in urban areas than rural areas.

  To aid the identification of deprivation in rural areas, an Output Area Multiple Deprivation Measure was developed in 2010, based on areas with approximate populations of 350 people.

The NIMDM 2010 results showed that rural areas did not feature in the top 10% most deprived SOAs in Northern Ireland while 15 rural output areas featured in the most deprived 10% of Output Areas indicating that a smaller geographical unit aided the identification of deprivation in rural areas.

It may also be the case that in part deprivation in rural areas takes a different form than deprivation in urban areas. That being the case alternative measures to the current indicator set may be more appropriate in identifying rural specific and urban specific deprivation.

It is recommended that further research is taken into the identification of rural deprivation, giving consideration to the geographical unit of analysis and suitability of indicators employed.
Owner: DARD

- **Time trend data**
  The Northern Ireland Multiple Deprivation Measure is a *relative* measure of spatial deprivation, comparing small areas at a given point in time across Northern Ireland. The majority of results of the NIMDM are presented as ranks from most deprived Super Output Area (rank 1) to least deprived Super Output Area (rank 890).

  As the NIMDM 2005 and 2010 were based on the same geographical unit (Super Output Area), it encouraged comparisons between the 2005 and 2010 results. However, assessing the ranks alone it is not possible to ascertain whether deprivation in an area has increased, decreased or remained the same.

  Indicator data for key indicators within the deprivation measures would shed light on absolute changes in area based deprivation. In addition, in years when the full deprivation results are not created, the release of key indicator data would allow analysis of deprivation trends. In

England, Scotland and Wales income and employment deprivation domains are released each year. The determination of 'key' indicator data could be determined by user consultation and current data availability.

It is therefore recommended that 'key' indicator data are released in years between deprivation updates.
Owner: All data suppliers.

Furthermore to add context to the results and aid meaningful comparisons between areas, *it is recommended that small area population estimates are produced each year*.
Owner: NISRA

Glossary

DARD   Department of Agriculture and Rural Development

DE   Department of Education

DEL   Department for Employment and Learning

DETI   Department of Enterprise, Trade and Investment

DVLNI   Driver and Vehicle Licensing Northern Ireland

DHSSPS   Department of Health, Social Services and Public Safety

DoJ   Department of Justice

DRD   Department for Regional Development

DSD   Department for Social Development

GCSE   General Certificate of Secondary Education

GP   General Practitioner

NIHE   Northern Ireland Housing Executive

NIMDM   Northern Ireland Multiple Deprivation Measure

NIO   Northern Ireland Office

NISRA   Northern Ireland Statistics and Research Agency

OFMDFM   Office of the First Minister and Deputy First Minister

PSNI   Police Service of Northern Ireland

SOA   Super Output Area

For Further Information:

Contact Point: Cathryn McBurney

Phone: 02890 348112

Email: deprivation.nisra@dfpni.gov.uk

Mail: Neighbourhood Statistics

     NISRA

     McAuley House

     2-14 Castle Street

     Belfast

     BT1 1SA

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