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Review of Measures of Deprivation in Northern Ireland

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MDM 2001: The Background

- ◆ The Northern Ireland Measures of Multiple Deprivation – developed under commission from NISRA in 2000/01
- ◆ Designed following a series of face to face consultations in Northern Ireland
- ◆ Design identified seven ‘domains of deprivation’
- ◆ Drew on at least 45 different indicators
- ◆ Domain scores summed to the overall Multiple Deprivation Measures

MDM 2001: The Domains

- ◆ Income Deprivation
- ◆ Employment Deprivation
- ◆ Health Deprivation and Disability
- ◆ Education Skills and Training
- ◆ Housing Stress
- ◆ Geographical Access
- ◆ Social Environment

MDM 2001: Making the Overall Measures

- ◆ Electoral Wards as the building block
- ◆ Domain scores combined into overall MDM using weighted combination
- ◆ Exponential Transformation used to control for ‘cancellation effects’ between domains
- ◆ Series of aggregate measures to give each LGD a set of summary scores
- ◆ ‘Measures of Economic Deprivation’ created at Sub-Ward (ED) level
- ◆ Importance of ‘*Measures*’ as opposed to a single index

Revising the MDM, 2004 (1)

- ◆ Stage 1 Developing and Carrying Out the Consultation Process (March-October 2004)
 - ◆ Developing the Report for Consultation
 - ◆ Series of public consultations
 - ◆ (in parallel) – contacting data suppliers, testing out and assembling new data

Revising the MDM, 2004 (2)

- ◆ Stage 2: Building The New Measures (Sept –Dec 04)
 - ◆ Taking account of responses to consultation
 - ◆ Data assembled and combined into the new Measures (December 31st 2004)
- ◆ Stage 3: Final Reporting
 - ◆ Final Report and other documentation (e.g. ‘Guidance on How to Use the Measures’)

Possible Domains for New Measures

- ◆ Income Deprivation
- ◆ Employment Deprivation
- ◆ Health Deprivation and Disability
- ◆ Education, Skills and Training Deprivation
- ◆ Geographical Access to Services
- ◆ Crime
- ◆ Living Environment

Domains: Consultation Questions

- ◆ whether there are any additional domains which should be included
- ◆ whether there are any domains proposed which should be excluded
- ◆ the proposed Crime domain
- ◆ the proposed Living Environment domain
- ◆ whether issues such as Weak Community Infrastructure should be included in the new deprivation measures

Criteria for Indicators

- ◆ ‘domain specific’ and appropriate for the purpose (as direct as possible measures of that form of deprivation);
- ◆ measuring major features of that deprivation (not conditions just experienced by a very small number of people or areas);
- ◆ up-to-date;
- ◆ capable of being updated on a regular basis
- ◆ statistically robust; and
- ◆ available for the whole of Northern Ireland at a small area level in a consistent form

Income Deprivation: Purpose of Domain

This domain aims to capture the proportions of the population experiencing income deprivation in an area.

Income Deprivation: Possible Indicators

- ◆ Adults and children in Income Support (IS) households (2003, Source: DSD)
- ◆ Adults and children in Income Based Job Seeker's Allowance (JSA(IB)) households (2003, Source: DSD)
- ◆ Adults and children in Working Families Tax Credit (WFTC) households whose equivalised income (excluding housing benefits) is below 60% of median before housing costs (2003, Source: Inland Revenue and DSD)
- ◆ Adults and children in Disabled Person's Tax Credit (DPTC) households whose equivalised income (excluding housing benefits) is below 60% of median before housing costs (2003, Source: Inland Revenue and DSD)
- ◆ Adults and children living in households in rented accommodation in receipt of housing benefit who are not captured through IS, JSA(IB), WFTC or DPTC (2003, Source: NIHE)
- ◆ Adults and children living in households in owner occupied accommodation in receipt of rate rebate who are not captured through IS, JSA(IB), WFTC or DPTC (2003, Source: Northern Ireland Rate Collection Agency)

Income Deprivation: Consultation Questions

- ◆ whether there are any indicators not included which should be included
- ◆ whether there are any indicators proposed which should not be included
- ◆ the proposed method of combination
- ◆ the proposed Income Deprivation Affecting Children Measure
- ◆ the proposed Income Deprivation Affecting Older People Measure

Employment Deprivation: Purpose of Domain

This domain measures employment deprivation conceptualised as involuntary exclusion of the working age population from the world of work.

Employment Deprivation: Possible Indicators

- ◆ Unemployment claimant count (JUVOS) of women aged 18-59 and men aged 18-64 averaged over 4 quarters (2003, Source: DETI)
- ◆ Incapacity Benefit claimants women aged 18-59 and men aged 18-64 (2003, Source: DSD)
- ◆ Severe Disablement Allowance claimants women aged 18-59 and men aged 18-64 (2003, Source: DSD)
- ◆ Participants in New Deal for the 18-24s who are not included in the claimant count (2003, Source: DEL)
- ◆ Participants in New Deal for 25+ who are not included in the claimant count (2003, Source: DEL)
- ◆ Participants in New Deal for Lone Parents aged 18 and over (2003, Source: DEL)

Employment Deprivation: Consultation Questions

- ◆ whether there are any indicators not included which should be included
- ◆ whether there are any indicators proposed which should not be included
- ◆ the proposed method of combination

Health and Disability Deprivation: Purpose of Domain

This domain identifies areas with relatively high rates of people who die prematurely or whose quality of life is impaired by poor health or who are disabled, across the whole population.

Health and Disability Deprivation: Possible Indicators

- ◆ Years of Potential Life Lost (1999 to 2003, Source: Mortality data, NISRA)
- ◆ Comparative Illness and Disability Ratio (2003, Source: IS, AA, DLA, SDA, IB from DSD)
- ◆ Measures of emergency admissions to hospital, derived from Hospital Inpatient System records (2001/2002 to 2003/2004, Source: DHSSPS)
- ◆ Measure of individuals suffering from mood or anxiety disorders, based on prescribing (2003, Source: CSA), Hospital Inpatient System records (2000/2001 to 2003/2004, Source: DHSSPS) and suicides (1999 to 2003, Source: NISRA)

Health and Disability Deprivation: Consultation Questions

- ◆ whether there are any indicators not included which should be included
- ◆ whether there are any indicators proposed which should not be included
- ◆ the proposed method of combination

Education, Skills and Training Deprivation: Purpose of Domain

The purpose of the domain is to capture the extent of deprivation in education, skills and training in a local area. In the previous MD 2001, Education, Skills and Training Deprivation was treated as a single domain that included a measure of *adult skills* as well as those of *young people of school age*. There are strong reasons for changing this and treating these two elements as *separate* parts of a single domain.

Education, Skills and Training Deprivation: Possible Indicators

Sub Domain: Children/young people

- ◆ GCSE/GNVQ points score (1999/2000 to 2001/2002, Source: School Leavers Survey, DE)
- ◆ Key Stage 3 data (2003 if available, Source: DE)
- ◆ Proportions of those leaving school aged 16 and not entering Further Education (1999/2000 to 2001/2002, Source: School Leavers Survey, DE)
- ◆ Absenteeism at secondary level (all absences) (2002/2003 Source: School Performance Survey, DE)
- ◆ Proportions of 17-20 year olds who have not successfully applied for Higher Education (1999/2000 to 2002/2003, Source: UCAS and DEL)
- ◆ Proportions of Years 11 and 12 pupils not in a grammar school (2003, Source: School Census, DE)

Sub Domain: Working age adults

- ◆ Proportions of working age adults (aged 25-59) in the area with no or low levels of qualification (2001, Source: Census, NISRA)

Education, Skills and Training Deprivation: Consultation Questions

- ◆ the proposals to create two separate sub-domains
- ◆ whether there are any indicators not included which should be included
- ◆ whether there are any indicators proposed which should not be included
- ◆ the proposed method of combination
- ◆ the proposed weights for combining the sub-domains

Geographical Access to Services Deprivation: Purpose of Domain

The purpose of this domain is to measure the extent to which people have poor geographical access to certain key services. This is relevant to people wherever they live in Northern Ireland as poor access to services can be experienced in urban as well as rural areas. Such deprivation may however be felt more acutely in rural areas, especially if access to public transport is poor.

Geographical Access to Services Deprivation: Possible Indicators

- ◆ Road distance to a Post Office (2003, Source: Post Office Ltd)
- ◆ Road distance to a GP premises (2003, Source: CSA)
- ◆ Road distance to an Accident and Emergency hospital (2003, Source: DHSSPS)
- ◆ Road distance to a general food store (2003, Source: Census of Employment, DETI)
- ◆ Access to transport (2003, Source: DVLNI Vehicle Registrations; 2004, Translink bus stop audit)

Geographical Access to Services Deprivation: Consultation Questions

- ◆ whether there are any indicators not included which should be included
- ◆ whether there are any indicators proposed which should not be included
- ◆ the proposed method of combination
- ◆ the proposed weights

Living Environment Deprivation: Purpose of Domain

The purpose of this domain is to identify deprivation relating to the living environment.

Living Environment Deprivation: Possible Indicators

◆ **Sub Domain: Housing quality**

- ◆ Ward level housing stress (2001, Source: SDRC and NIHE, modelled NI House Conditions Survey)
- ◆ Houses without central heating (2001, Source: Census, NISRA)

◆ **Sub Domain: Housing access**

- ◆ Household overcrowding (2001, Source: Census, NISRA)
- ◆ District level rate of acceptances under the homelessness provisions of the Housing (Northern Ireland) Order 1988 and the Housing (Northern Ireland) Order 2003, assigned to the constituent SOAs (2001 to 2003, Source: NIHE)

◆ **Sub Domain: Outdoor physical environment**

- ◆ Pedestrian and cyclist casualties resulting from road traffic accidents (2001 to 2003, Source: PSNI)
- ◆ Local area problem score (2001, Source: SDRC and NIHE, modelled NIHCS)

Living Environment Deprivation: Consultation Questions

- ◆ whether there are any indicators not included which should be included
- ◆ whether there are any indicators proposed which should not be included
- ◆ the proposed method of combination
- ◆ the proposed weights for combining the sub domains

Crime Deprivation: Purpose of Domain

This domain measures the rate of recorded crime for four major crime themes - burglary, theft, criminal damage and violence - representing the risk of personal and material victimisation at a small area level. Crime inflicts particular forms of deprivation on individuals and communities which merit inclusion in a measure of multiple deprivation, irrespective of the incidence of other forms of deprivation.

Crime Deprivation: Possible Indicators

- ◆ Burglary (2002/2003 and 2003/2004, Source: PSNI)
- ◆ Violence (2002/2003 and 2003/2004, Source: PSNI)
- ◆ Theft (2002/2003 and 2003/2004, Source: PSNI)
- ◆ Criminal damage (2002/2003 and 2003/2004, Source: PSNI)

Crime Deprivation: Consultation Questions

- ◆ whether there are any indicators not included which should be included
- ◆ whether there are any indicators proposed which should not be included
- ◆ the proposed method of combination

Data Time Point, Denominators, Geography and Spatial Scale

◆ Data time point

- ◆ Where possible, it is proposed that data will refer to 2003, although for some indicators it will be necessary to use data from more than one year

◆ Denominators

- ◆ It is proposed that denominators will, in general, be estimated for 2003 from the 2001 Census

◆ Geography and Spatial Scale

- ◆ It is proposed to use Super Output Areas

Methodology: Purpose

- ◆ to ensure indicators are as reliable as possible
- ◆ to enable combination of indicators within domains to describe the domain of deprivation in question
- ◆ to allow combination of domains into an overall Multiple Deprivation Measure in such a way as to
 - ◆ allow domains of different metrics to be combined together on a single metric
 - ◆ to control cancellation effects between domains
 - ◆ to retain information at the most deprived end of the distribution
 - ◆ to allow explicit weighting of domains while reducing the impact of implicit weights

Methodology: Techniques

Preparing the indicators for combination: dealing with small numbers

- ◆ Shrinkage Estimation

Combining the indicators: Factor Analysis (where necessary)

- ◆ All variables will be converted to the standard normal distribution based on their ranks
- ◆ These new scores will be factor analysed using the Maximum Likelihood method to derive a set of weights
- ◆ The variables will be combined using these weights

Combining domains into a Multiple Deprivation Measure

- ◆ Rank the domain scores and then transform the ranks to an exponential distribution
- ◆ Construct weights with which to combine these new scores (see below)

Weighting the domains

- ◆ Testing out variables weights in this combination process
- ◆ Importance of avoiding uncontrolled or 'implicit' weighting

Proposed Weights

Since the publication of the previous measures, some have argued for a more equal weighting of Geographical Access to Services and Housing. Weights B would reflect this position while still giving prominence to the Income and Employment domains.

	Weights A	Weights B
Income deprivation	25%	25%
Employment deprivation	25%	25%
Health deprivation and disability	15%	10%
Education, skills and training deprivation	15%	10%
Geographical access to services	10%	10%
Crime	5%	10%
Living environment	5%	10%

Methodology: Consultation Questions

- ◆ the proposed methodology
- ◆ the proposed weighting principles
- ◆ the proposed weights