Northern Ireland Multiple Deprivation Measures 2017

Jos IJpelaar
Tracy Power
Brian Green
Northern Ireland Statistics & Research Agency

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Abstract: Spatial relative deprivation measures have been developed in Northern Ireland since the 1970s. Most recently, the Northern Ireland Multiple Deprivation Measures 2017 was released last year. Whilst the suite was an update of the 2010 Measure, several new and innovative indicators were incorporated for the first time. The work also included a broad programme of public engagement to educate users at all levels on the use of deprivation measures, and several online tools to explore the wealth of information.

1. INTRODUCTION

Measures that describe the spatial distribution of deprivation or disadvantage have been developed and used by government and others in Northern Ireland since the 1970s. They have played a pivotal role in both informing the targeting of resources and the monitoring of the spatial impact of policy interventions. This paper will examine the 2017 update of the Multiple Deprivation Measure for Northern Ireland, detailing innovative changes in data sources which have been exploited to produce the results, and highlighting the new approach in terms of dissemination to the user base. This paper does not intend to repeat issues around the use of spatial deprivation measures, which are well-rehearsed in the academic literature. The emphasis of this paper is on the application of a given methodology, and the dissemination of its findings.

2. HISTORIC OVERVIEW

Spatial measures of deprivation have been used to inform policy and target areas of need in Northern Ireland since the 1970s. Over the years, while the measures have been similar in that they bring together multiple indicators which reflect deprivation, the methodology for combining the indicators has sometime varied.

The earliest study into areas of special social need in Northern Ireland was a pilot project in the Belfast Urban Area (ASSN, 1977). This study was based partly on the 1971 Census of the population, and partly on government departmental records. The methodology consisted of two steps. First, a set of indicators was identified, suggested by the literature and conforming to data quality criteria. Secondly, Principal Components Analysis (PCA) was used to create weighted combinations of indicators. This work was repeated once the 1981 Census results became available, albeit using fewer and slightly different indicators (DFP, 1987). There was a large degree of overlap in these two measures in that the relatively deprived wards were principally in the inner city and extending west and south west.

The first study which covered the whole of Northern Ireland was carried out by the Centre for Urban Policy Studies of Manchester University, but is better known as the 'Robson' deprivation index, named after its lead author (Robson, Bradford & Deas, 1994). Published in 1994, and based largely on 1991 Census statistics, it brought indicators together into a single measure of relative spatial deprivation. Unlike the earlier work, indicators were combined in an unweighted form. These measures were used by a wide variety of programmes and projects to help target social and economic deprivation under the 'Targeting Social Need' policy of the 1990s (Beatty, McCoy & Power, 2001).

Other measures of deprivation include the Townsend Index (Townsend, Phillimore & Beattie, 1988), which looked at material deprivation, and the Jarman Index, which was not strictly a measure of deprivation, but aimed to identify socio-economic conditions for resource allocation in the primary health service (Jarman, 1983). Also, the 2011 All-Island HP Deprivation Index (Haase, Pratschke, & Gleeson, 2015) used Confirmatory Factor Analysis, based on Census data taken around the same time from both jurisdictions. It should be noted however, that if their approach had been applied to areas within Northern Ireland alone, it would likely have resulted in different standardized coefficients (weights) of the indicators or even a different selection of indicators, thus returning a different ranking of areas.

Over the last 20 years, advances in the collection and use of administrative data have allowed analysis of deprivation at small area level in the inter-censal period. These have moved analysis away from using proxy Census indicators in favour of using more direct measures of deprivation. A team led by Professor Mike Noble from the Social Disadvantage Research Centre at the University of Oxford conceptualised multiple deprivation and its component parts (i.e. domains) and developed the 'Noble' Indices of Multiple Deprivation in England (2000), Wales (2000), Scotland (2003), and the Multiple Deprivation Measure in Northern Ireland (NIMDM). The first iteration of the latter was published in 2001 and based on the 1984 electoral ward administrative geography (Noble et al, 2001).

The second Northern Ireland Multiple Deprivation Measure was published in 2005 (NISRA, 2005). Specifically for this project, a new geography was created called Super Output Areas (SOA), which were based on 1992 wards or their sub-divisions and were designed to have more uniform population sizes. This geography has been used in the years since, with only minor changes following the 2011 Census.

Whilst the 2001 and 2005 MDMs were commissioned by NISRA from the Noble team, the construction of the 2010 Multiple Deprivation Measure was carried out 'in-house' by NISRA statisticians and overseen by a Steering Group (NISRA, 2010a). This approach was also taken in Scotland and Wales, and again in Northern Ireland for the NIMDM 2017.

Figure 2.1 shows the greater Belfast area, where darker colours represent more deprived areas according to the six historical deprivation measures. This area is selected, as the two studies on Areas of Special/Relative Social Need included only maps of this subsection of Northern Ireland.

Figure 2.1: Deprivation measures for Greater Belfast Area, 1977-2010

1977 (ASSN)   1987 (ARSN)   1994 (Robson)

2001 (Noble)   2005 (Noble)   2010 (Noble)

164
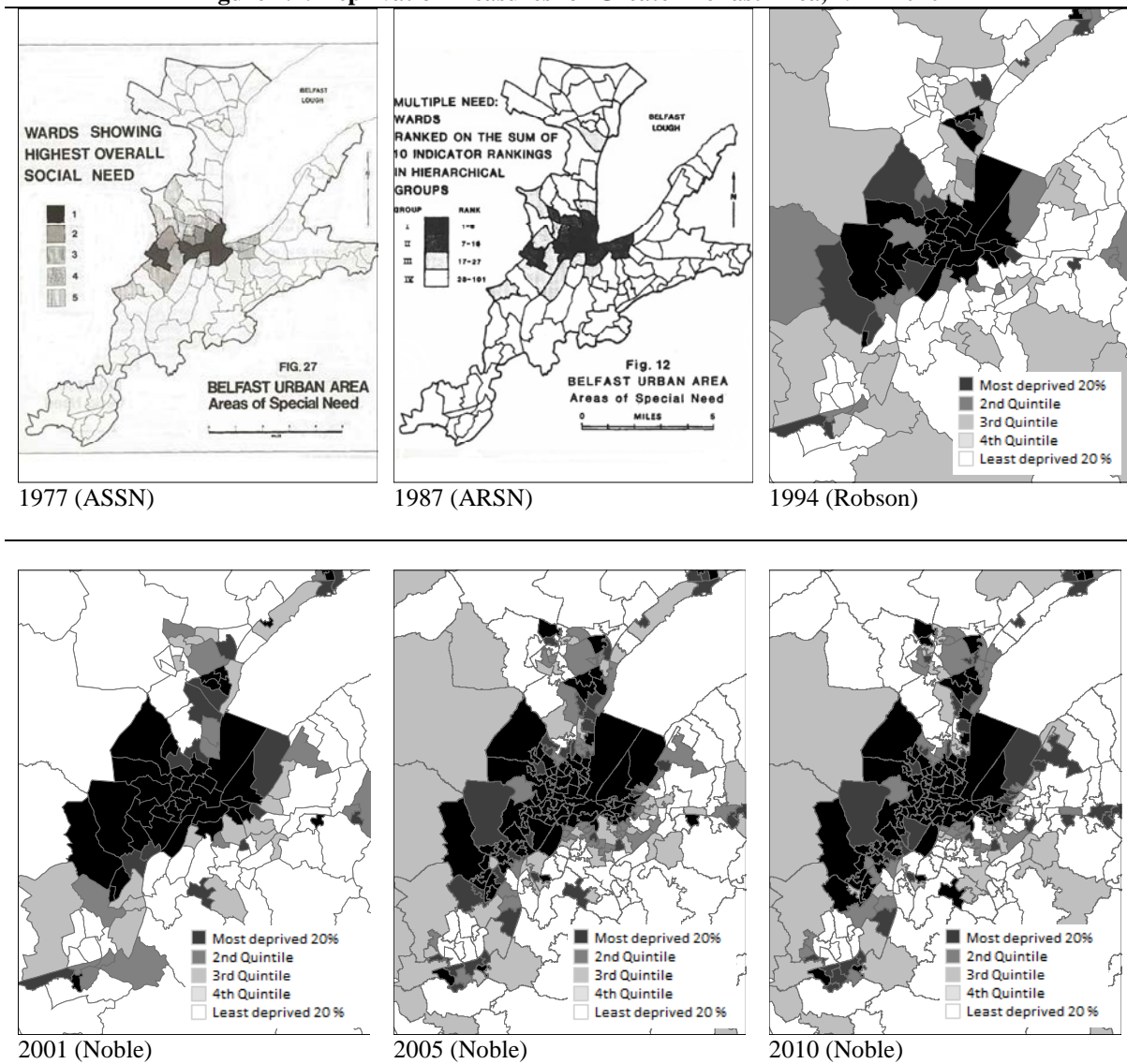
3. NIMDM 2017 – GOVERNANCE AND USER ENGAGEMENT

In Spring 2015, the Northern Ireland Statistics and Research Agency (NISRA) was commissioned to undertake an update of the 2010 Northern Ireland Multiple Deprivation Measure – NIMDM 2010 – by the Statistics Co-ordinating Group (SCG) of the Northern Ireland Civil Service, which comprises senior policy officials from all Government Departments. Key stakeholders had been pressing for quite some time to have the NIMDM2010 reviewed or updated in line with the other UK countries. In addition, the 11 new Councils formed in 2015 indicated their need for updated small area deprivation measures to inform their new Community Planning responsibilities. Also, the Agriculture and Rural Development Committee of the Northern Ireland Assembly had published a paper in 2015 expressing the need for the indicators to be updated (ARD, 2015).

The aims of the 2017 project were to (i) provide an updated measure of relative deprivation on a spatial basis, taking account of the multiple types of deprivation that are widely accepted to be important and (ii) advance the understanding of deprivation in Northern Ireland and how the measures might best be used.

The work was overseen by an authoritative Steering Group with the necessary breadth and depth of experience to provide the rigorous oversight that the project merited. Its wide membership included representatives from all NI Government Departments, Non-Departmental Public Bodies and District Councils. In particular, representatives from the Ulster Farmers' Union, the Rural Community Network and the NI Rural Development Council provided the Steering Group with a perspective on particular types of deprivation typically experienced in rural areas. The Steering Group, chaired by NISRA, was responsible for all key decisions associated with the update[1].

The remit of this work was to undertake an update rather than a full review. In other words, it maintains the general methodological framework in that one or more indicators feeds into each of the seven domains, which in turn feed into a single Multiple Deprivation Measure. As such, the main focus in the early stages was the identification of appropriate indicators in each of the domains.

In order to be considered for inclusion, each indicator had to conform to all of the following six criteria:
- It should be specific to one of the seven domains of deprivation;
- It should represent major features of that form of deprivation rather than deprivation affecting a small number of people or particular types of area in Northern Ireland;
- It should be available for all of Northern Ireland, collected in a consistent form and be free from spatially bias characteristics;
- It should represent either a direct measure or a good proxy of that particular form of deprivation;
- It should be statistically robust at the small area level, facilitating the identification of 'pockets' of deprivation; and
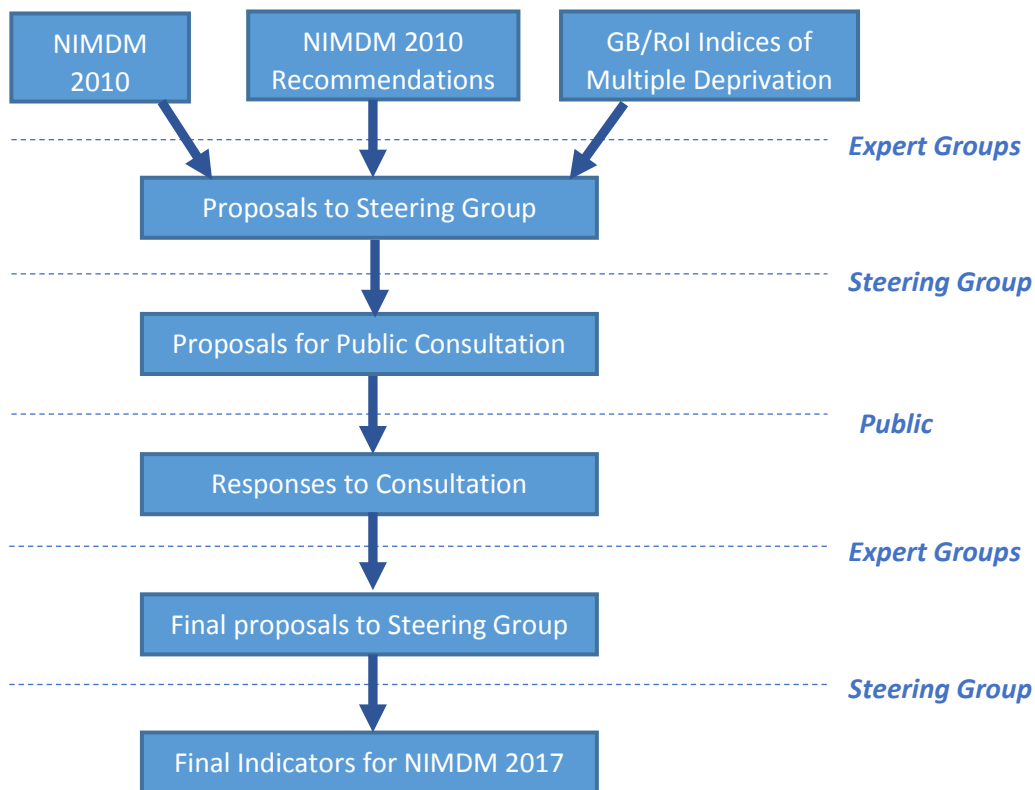- It should be as up to date as possible.

The starting point in the search for such indicators was (i) the existing NIMDM 2010 inputs, (ii) the 36 recommendations that accompanied the NIMDM 2010 (NISRA, 2010b); and (iii) indicators used in deprivation measures in Great Britain and the Republic of Ireland. In this work, the NISRA deprivation team was supported by expert groups, one for each domain and with an additional group to oversee this process from an urban/rural perspective. The expert groups were encouraged to consider and propose alternative or additional indicators only where there was a strong rationale to do so and the necessary underlying data were available. As with the Steering Group, expert group members were from a varied background and had particular expertise in both the availability and quality of the appropriate data sources.

From these maps, it appears that there are areas of deep-rooted deprivation, particularly in the North and West of Belfast, regardless of the changing methodology and geography, with 1972 Wards being replaced firstly by 1984 Wards, and subsequently by 2001 SOAs. However, this does not necessarily mean that levels of deprivation in these areas are unchanged as the deprivation measures are *relative* measures over space.

The NISRA deprivation team collated views from the expert groups into a set of proposals for the Steering Group, which became proposals for a public consultation held between November 2016 and January 2017 (NISRA, 2016a). Following the responses to the consultation, including the proposal of additional indicators, the expert groups, NISRA's Deprivation Team and the Steering Group carried out a sift to arrive at a final set of indicators (NISRA, 2016b). This process can be regarded as a succession of sieves or filters to arrive at a set of indicators that best fulfilled the selection criteria (see Figure 3.1).

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[1] Membership, terms of reference and minutes of meetings of the Deprivation Steering Group are available at: https://www.nisra.gov.uk/publications/northern-ireland-multiple-deprivation-measure-2017-steering-group

Figure 3.1: Process to identify final set of indicators

Following this process, the deprivation team proceeded with the acquisition and processing of data to create a final set of indicators.

4. METHODOLOGY

Pivotal to the methodology is the calculation of indicators, most of which are expressed as a (standardized) rate or a proportion of the population, in order to make a fair comparison between areas with a different size or age structure. Although SOAs were originally designed to be of similar populations, the range of sizes has increased over the years from 800 to 3,100 in 2001, and most recently from 400 to 5,800 in 2016. The only exceptions are the public and private travel times, which are expressed in minutes. Full details, including coverage, quality and methods of collecting and processing, are provided in the 'Description of Indicators' report (NISRA, 2017b).

Each Domain includes multiple indicators, with the exception of the Income Deprivation and Employment Deprivation Domains, which each have a sole indicator. For both the Living Environment Domain and the Crime & Disorder Domain, the relevant indicators were first combined into sub-domains, which are subsequently brought together. Full details are presented in the technical report (NISRA, 2017c).

To combine the indicators, they were measured on comparable scales in order to ensure that small values were not dominated unintentionally by large values. To this end, the indicator values were ranked from most deprived to least deprived and transformed to yield values between 0 and 1. In the next step, the transformed ranks were given a score converted from a normal distribution with average 0 and standard deviation 1. The effect of this standardised normal transformation is that for each indicator, the most deprived area has the same value. For those domains or sub-domains with multiple indicators, the normalised indicator scores can be combined using a weighting that is either set or derived through data driven methods such as factor analysis.

Maximum Likelihood Factor Analysis is a type of common factor analysis that has been selected to estimate weights for the indicator ranks in NIMDM 2017. Importantly, the method, which does not depend on the scale of measurement of the input indicators, is appropriate where indicators are not perfectly reliable and may contain measurement errors. Factor analysis can only be used when there are at least three indicators. As the deprivation indicators were agreed *a priori* of the analysis, a further condition on the use of factor analysis was that all resulting factors scores had positive values. The default for domains/ sub-domains where these conditions were not met was to use equal weights. The final step was to scale the scores from the first factor to turn them into weights which summed to one. In the NIMDM 2017, factor analysis was used in the Health Deprivation and Disability Domain, the Education, Skills and Training Deprivation Domain, the Housing Quality sub-domain and the Crime sub-domain.

The Multiple Deprivation Measure brings together the ranking of the seven domains into a single ranking. The ranks of each Domain were exponentially transformed, so that high ranking deprivation in one domain cannot be cancelled out by low levels of deprivation in another. As in previous iterations, this transformation gives a score of 100 to the most deprived, 50 to the tenth percentile, and zero to the least deprived area.

For each area, the exponentially transformed scores of the seven domains are aggregated by applying the following weights:
- Income Deprivation – 25 per cent
- Employment Deprivation – 25 per cent
- Health Deprivation and Disability – 15 per cent
- Education, Skills and Training Deprivation – 15 per cent
- Access to Services – 10 per cent
- Living Environment – 5 per cent
- Crime and Disorder – 5 per cent

Following consideration of responses to a specific consultation question regarding whether domain weights still reflect current priorities, the Steering Group took the decision that they should remain unchanged. Figure 4.1 summarises how indicators were combined into (sub)-Domains and the Multiple Deprivation Measure.

5. INNOVATIVE IMPROVEMENTS – BIG CHANGES?

Several indicators were introduced for the first time in NIMDM 2017, primarily due to the availability in recent years of new high quality administrative data to better describe aspects of deprivation. Details on all of the Indicators used have been published by NISRA (2017b), but some of the main changes are highlighted below.

Income Deprivation Domain
One of the main improvements in the updated deprivation measures has been the availability of household income data. Up until now, income deprivation in the Multiple Deprivation Measure has been approximated by whether someone in the household is in receipt of means tested social security benefits. This remains the case in the most recent editions of the Indices of Multiple Deprivation in England, Wales and Scotland. From the earliest Noble measures, it was stated that "an 'ideal' indicator of income deprivation would be the proportion of households below a particular low-income threshold" (SDRC, 2001).

The deprivation team worked closely with colleagues in the Department for Communities (DfC), who have developed a database for individual household incomes. The DfC Database for Income Modelling and Estimation (DIME) contains income from employment; self-assessment (including self-employment and investment); work-related pension schemes; social security benefits; savings; and tax credits. It does not however include information on loans, expenditure or housing costs.

The indicator – the proportion of the population living in households whose equivalised income was below 60% of the median equivalised household income – was strongly aligned to the accepted definition of relative poverty, except that it used the NI median income from the dataset of around 700,000 NI households rather than the UK median income from the UK wide Family Resources Survey with a sample of 20,000 households (DfC, 2017). Household incomes were equivalised[2] to take into account variations in the size and composition of the households in which individuals live.

Figure 5.1 shows the impact of the change in indicator at a national level. In essence, there are four groups:
1. People living in households with equivalised household income **below** the threshold, where **at least one** household member is in receipt of income-related benefits;
2. People living in households with equivalised household income **below** the threshold, where **no** household member is in receipt of income-related benefits;
3. People living in households with equivalised household income **above** the threshold, where **at least one** household member is in receipt of income-related benefits; and
4. People living in households with equivalised household income **above** the threshold, where **no** household member is in receipt of income-related benefits.

In short, people in Group 3 would no longer be considered income deprived, whilst people in Group 2 will now be regarded as income deprived. This trade-off will be different in each Super Output Area and, as such, will affect the ranking.

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[2] See https://www.communities-ni.gov.uk/sites/default/files/publications/communities/hbai-2014-15-qualitymethodology-information-report.pdf#page=12

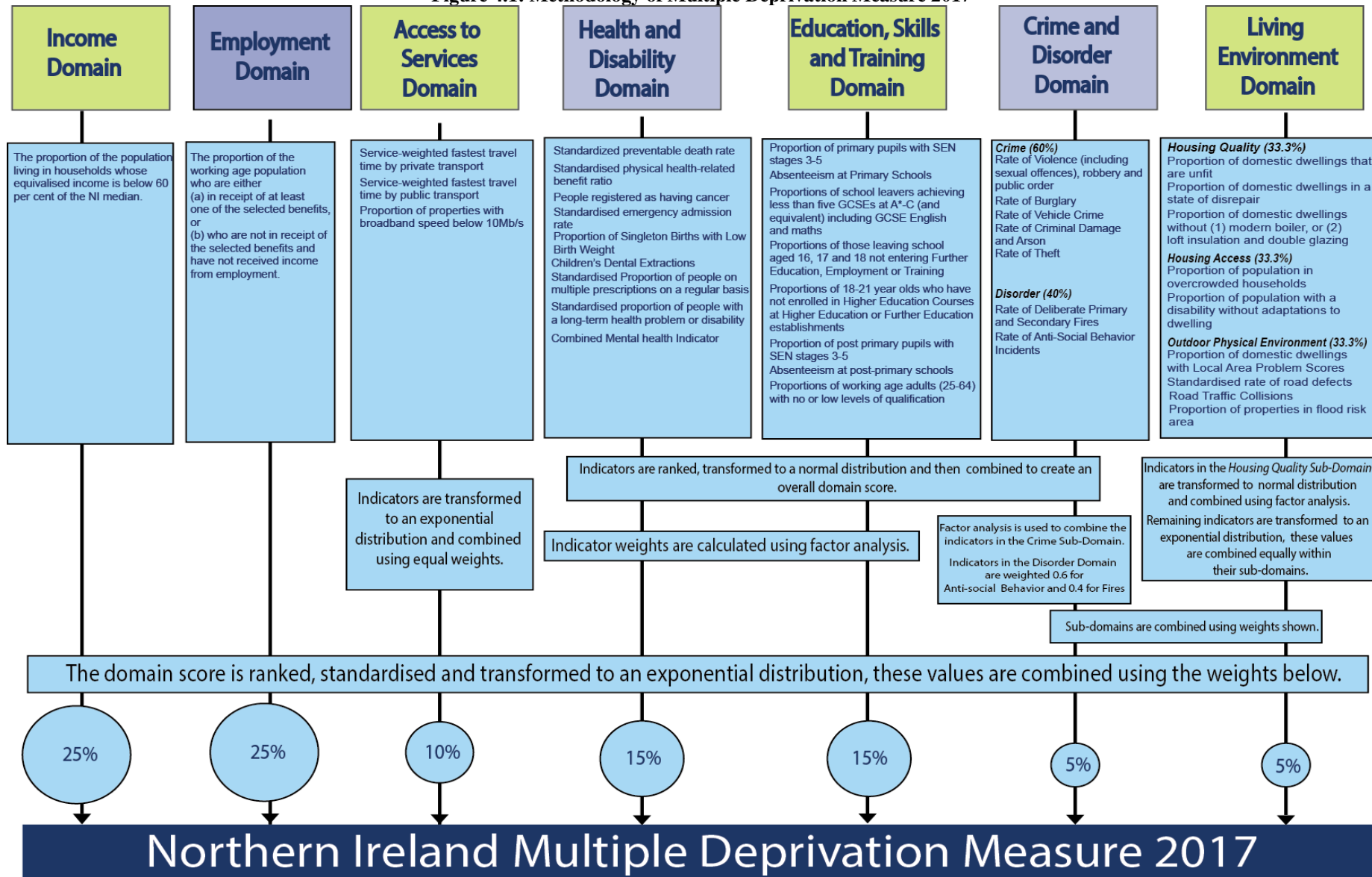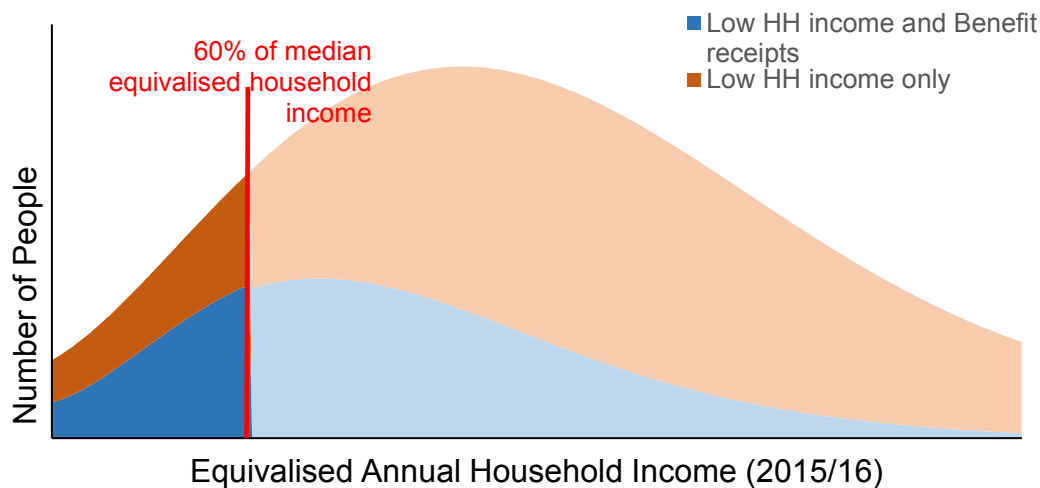Figure 4.1: Methodology of Multiple Deprivation Measure 2017

Income Domain

The proportion of the population living in households whose equivalised income is below 60 per cent of the NI median.

Employment Domain

The proportion of the working age population who are either
(a) in receipt of at least one of the selected benefits, or
(b) who are not in receipt of the selected benefits and have not received income from employment.

Access to Services Domain

Service-weighted fastest travel time by private transport
Service-weighted fastest travel time by public transport
Proportion of properties with broadband speed below 10Mb/s

Health and Disability Domain

Standardized preventable death rate
Standardised physical health-related benefit ratio
People registered as having cancer
Standardised emergency admission rate
Proportion of Singleton Births with Low Birth Weight
Children's Dental Extractions
Standardised Proportion of people on multiple prescriptions on a regular basis
Standardised proportion of people with a long-term health problem or disability
Combined Mental health Indicator

Education, Skills and Training Domain

Proportion of primary pupils with SEN stages 3-5
Absenteeism at Primary Schools
Proportions of school leavers achieving less than five GCSEs at A*-C (and equivalent) including GCSE English and maths
Proportions of those leaving school aged 16, 17 and 18 not entering Further Education, Employment or Training
Proportions of 18-21 year olds who have not enrolled in Higher Education Courses at Higher Education or Further Education establishments
Proportion of post primary pupils with SEN stages 3-5
Absenteeism at post-primary schools
Proportions of working age adults (25-64) with no or low levels of qualification

Crime and Disorder Domain

Crime (60%)
Rate of Violence (including sexual offences), robbery and public order
Rate of Burglary
Rate of Vehicle Crime
Rate of Criminal Damage and Arson
Rate of Theft

Disorder (40%)
Rate of Deliberate Primary and Secondary Fires
Rate of Anti-Social Behavior Incidents

Living Environment Domain

Housing Quality (33.3%)
Proportion of domestic dwellings that are unfit
Proportion of domestic dwellings in a state of disrepair
Proportion of domestic dwellings without (1) modern boiler, or (2) loft insulation and double glazing

Housing Access (33.3%)
Proportion of population in overcrowded households
Proportion of population with a disability without adaptations to dwelling

Outdoor Physical Environment (33.3%)
Proportion of domestic dwellings with Local Area Problem Scores
Standardised rate of road defects
Road Traffic Collisions
Proportion of properties in flood risk area

Indicators are ranked, transformed to a normal distribution and then combined to create an overall domain score.

Indicators are transformed to an exponential distribution and combined using equal weights.

Indicator weights are calculated using factor analysis.

Factor analysis is used to combine the indicators in the Crime Sub-Domain.
Indicators in the Disorder Domain are weighted 0.6 for Anti-social Behavior and 0.4 for Fires

Indicators in the *Housing Quality Sub-Domain* are transformed to normal distribution and combined using factor analysis.
Remaining indicators are transformed to an exponential distribution, these values are combined equally within their sub-domains.

Sub-domains are combined using weights shown.

The domain score is ranked, standardised and transformed to an exponential distribution, these values are combined using the weights below.

25% 25% 10% 15% 15% 5% 5%

Northern Ireland Multiple Deprivation Measure 2017

168

Figure 5.1: Population by equivalised household income and receipt of income-related benefits

Health Deprivation & Disability Domain

The Health & Disability Domain has always included a number of indicators, covering different aspects of health. Commonly used indicators are those representing (a) mortality or life expectancy, (b) receipt of health-related benefits, (c) emergency admissions and (d) mental health. Regarding the latter, data on prescriptions for anxiety, depression or psychosis have been commonly used, alongside suicide rates and mental health emergency admissions. It was therefore a logical step to consider how other prescription data might constructively be utilised.

On advice from clinicians, people with prolonged complex health needs were defined as those in receipt of 5 or more prescriptions, for 3 out of 4 quarters of the year (including the first and last). Again, this indicator had not been used in Northern Ireland before, nor in Great Britain. Residents of nursing homes were excluded from the analysis, as it could have a large effect in a small geographical area thus introducing bias.

Despite this innovation, the contribution of the new indicator to the Domain was relatively modest. Factor analysis returned a weight of 0.06, which was around half the weight for self-reported limiting long term illness from the 2011 Census (0.11), and around a fifth of claimants of health-related benefits (0.32). This suggests that the additional prescription indicator provides a similar ranking to existing indicators. Indeed, 85 of the 100 most health deprived areas, according to the NIMDM 2010, remain in the 100 most health deprived areas in NIMDM 2017.

Access to Services Domain

In the previous three Noble measures, the Access (or Proximity) to Services domain was based solely on the drive time or distance by private transport to a selection of key services. The number of services has more than doubled since the first Noble measures, from 9 in 2001 and 2005, to 16 in 2010 and 20 in 2017, but always with a core set of Post Offices, Jobs & Benefit Offices, and several health services (GP, A&E, pharmacy and dentist). A selection of key services were put forward for consultation, with final set agreed by the Steering Group.

The NIMDM 2017 introduced additional indicators to the Access to Services Domain. The Service-weighted fastest travel time by public transport indicator includes the same services as the private transport with the exception of A&E, schools and petrol stations. Public transport includes bus, train and ferry. Modelling assumptions include a journey to the service between 6am and 10am on a Tuesday and a maximum 20 minute walk to the public transport access point, as well as additional rules for connecting public transport.

The third indicator in the Access to Services is the proportion of properties with broadband speed below 10Mb/s. Based on data from Ofcom, this indicator measures the proportion of properties which are unable to access a broadband speed of at least 10Mb/s. Ofcom states that 'a connection speed of 10Mbit/s is required to deliver an acceptable broadband user experience for a typical household' (Ofcom, 2016, p.136).

The addition of these two indicators has been welcomed, particularly by rural representatives. Having said that, it is rural areas that generally have poor public transport and broadband speed. Indeed, there is a high correlation (0.946) between the Access to Services domain ranks and the private transport indicator ranks. The additional indicators had a relatively small effect on the ranking for roughly 30 per cent most deprived areas.

6. SAME METHOD – NEW MESSAGE

The general approach to developing the Northern Ireland Multiple Deprivation Measure has not changed: it consists of seven domains, each with one or more indicators. Out of the 30 indicators included in NIMDM 2010, 23 have remained in NIMDM 2017. An additional 15 have been introduced for the first time. Out of the 100 most deprived SOAs in 2010, 80 SOAs remained in the top 100. Of the new entries, all but one were ranked in the latter part of the 100 most deprived areas; of those who left the 100 most deprived SOAs, all but one were still in the 20 per cent most deprived SOAs.

Figure 6.1 show maps of SOAs in Northern Ireland according to the Multiple Deprivation Measure, with the darkest colours relating to the most deprived SOAs.

Figure 6.1: Multiple Deprivation Measure by Super Output Areas – Northern Ireland

Belfast

Derry
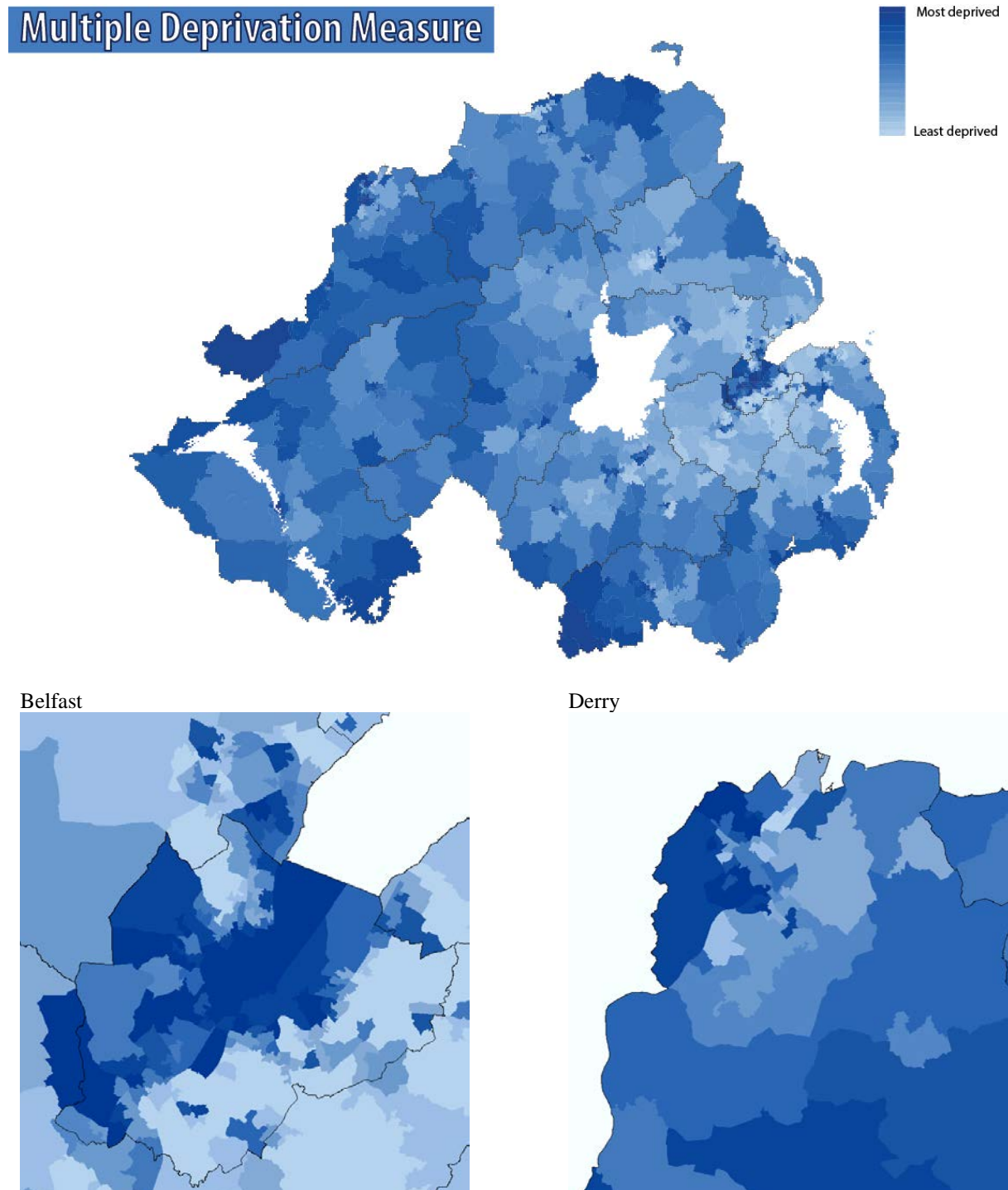
In terms of the combination of domains to form the multiple measure, the public consultation did not provide a robust rationale for changing the domain weights from those previously deployed in the 2005 and 2010 measures. Instead of amending weights, the Steering Group wanted to encourage users to better use the domain information for particular policy needs.

Through pre-engagement with policy makers, data providers, community groups, voluntary organisations and other stakeholders, the deprivation team found that the use of deprivation measures was commonly restricted to the Multiple Deprivation Measure, as well as fixed cut-offs of 10% or 20% most deprived areas. Of course, there is an appeal in simplifying deprivation to a single number and using a rounded cut-off. However, this could be seen as a broad-brush approach that may not be responsive enough to specific policy needs and/or examining all aspects of Deprivation.

These messages were prominent in the reporting of the NIMDM 2017 results and user engagement events. For example, the statistical report focussed on the 100 most deprived areas and their geographical distribution. This differs from the top decile (89 SOAs) or quintile (178 SOAs), with the added advantage that sub-sections of the 100 most deprived areas can be expressed as percentages, e.g. 29% of the 100 most deprived area are in Belfast, 5% of the 100 most deprived areas are rural. Figure 6.2 also uses this concept to illustrate the overlap between Multiple Deprivation Measure and individual domains. The level of overlap is a function of the domain weights and the correlation between individual domains.

Figure 6.2: Overlap between Multiple Deprivation Measure and individual domains - 100 most deprived areas
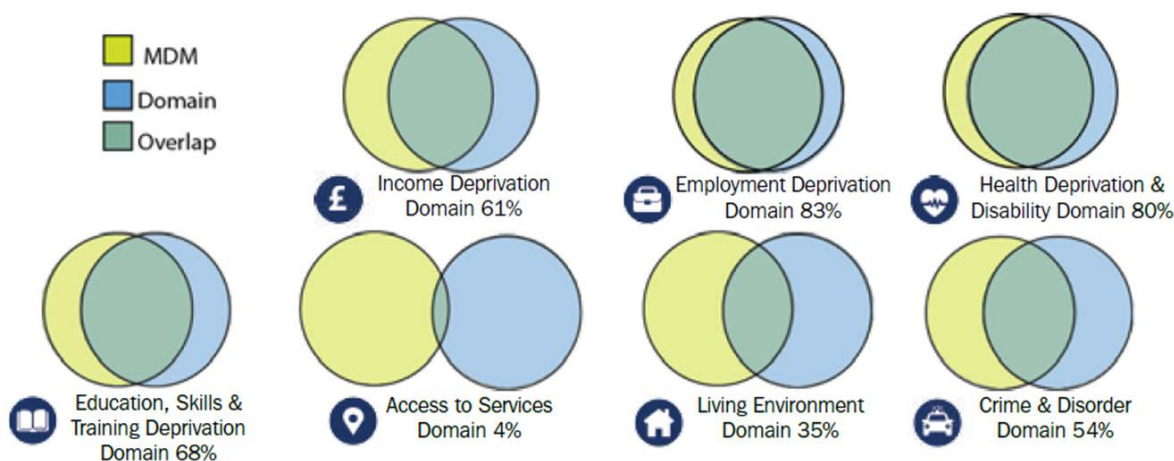
Also, the deprivation team has been more explicit in terms of how the NIMDM 2017 can be used. This message has been highlighted throughout the consultation, in all reports and guidance papers, and during the many interactions with users as part of the dissemination. It particularly warns against using the deprivation measures to:
- Identify deprived individuals or groups of people – these are area based spatial Measures;
- Quantify the extent to which a small geographical area is deprived, or quantifying the extent to which one area is more or less deprived than another – they provide relative rankings of areas;
- Assess how absolute deprivation in a small geographical area has changed over time – they provide a spatial ranking at a single point in time;
- Measure affluence – lack of deprivation is not the same as being affluent; and
- Undertake UK comparisons – each UK country has a different set of indicators, time periods, domains and domain weights.

The re-enforcement of these three messages – the holistic use of all available information, the choice of an appropriate cut-off, and the explicit dos and don'ts – has compelled policy makers to re-assess their current uses and develop potential future uses of the deprivation measures. It has also educated those at the receiving end of government interventions such as community groups, to challenge these policies and build a case for their own area using the available data.

7. PUBLIC ENGAGEMENT

User engagement is an integral part of the statistical production process. The Code of Practice for Official Statistics (UKSA, 2017) has 'Meeting user needs' as its first principle and states in protocol 1 that 'Effective user engagement is fundamental both to trust in statistics and securing maximum public value'.

The deprivation team has recognised that there are different types of users. It has therefore developed multiple channels by which to access the information. The statistical report was replaced by a more accessible booklet, with a separate technical report and description of indicators for the more advanced user. Detailed tables that provide the ranks of each SOA based on the MDM and the individual domains, now include all indicators, both in terms of their ranking and the absolute value. Finally, in addition to an interactive map[3] (Figure 7.1), there is an analysis package[4] that allows even novice users to explore the data through a series of drop-down menus (Figure 7.2).
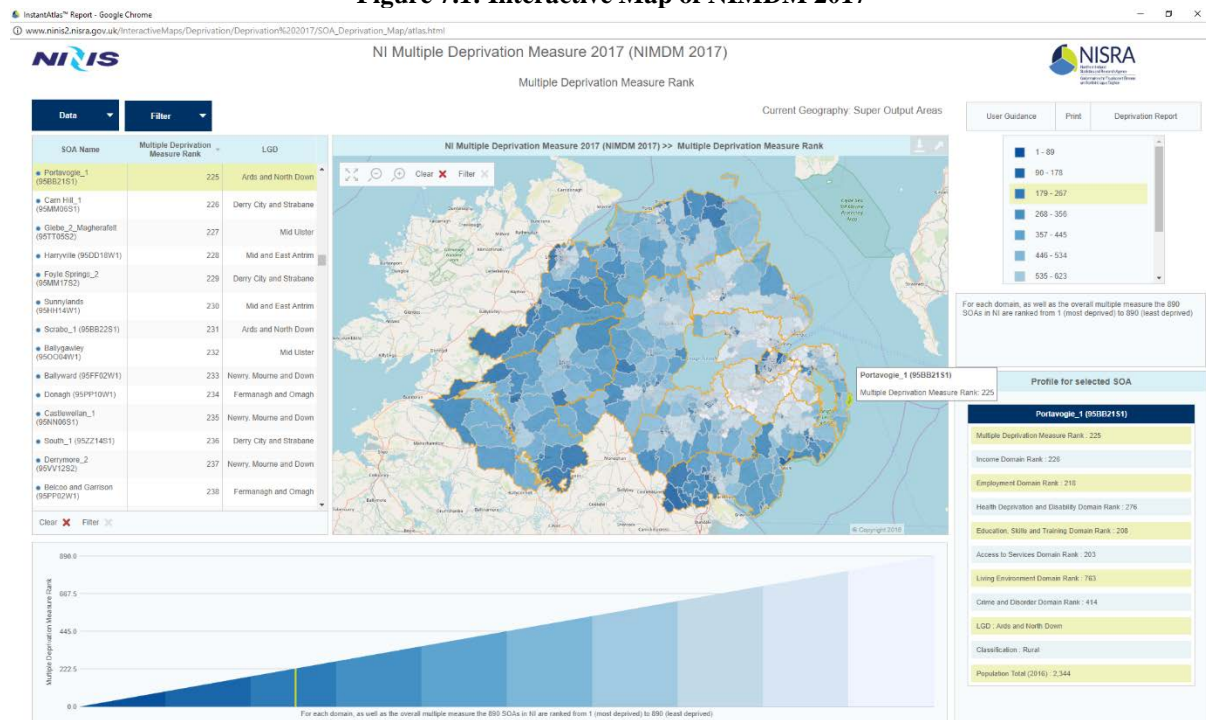
Figure 7.1: Interactive Map of NIMDM 2017

Figure 7.2: Analysis Package for the NIMDM 2017

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[3] http://www.ninis2.nisra.gov.uk/InteractiveMaps/Deprivation/Deprivation%202017/SOA_Deprivation_Map/atlas.html
[4] https://www.nisra.gov.uk/publications/nimdm-2017-analysis-package

Following the main publication in November 2017, results for the 4,537 Small Areas were made available in April 2018. On average, there are roughly 5 Small Areas within each Super Output Area. Their average population in mid-2016 was 410 people, but this ranged from 100 to 3,900 people. The methodology and data sources used to create Small Area Deprivation Measures were identical to the SOA-level Measures. Unlike previous measures[5], rankings were published for all domains. Drilling down into a smaller geography allows for the identification of pockets of deprivation. Future outputs from NIMDM 2017 will include measures for the new Electoral Wards (on an approximate basis) and possibly child-specific multiple deprivation measures.

During February and March 2018, the deprivation team visited each of the 11 Local Government Districts to disseminate the findings of NIMDM 2017 and to inform users as to how to use this information. Over 500 people attended these dissemination events. NISRA also delivered computer-based training sessions from April to June 2018, guiding users to access and investigate the various online resources.

8. CONCLUSION

Deprivation measures for Northern Ireland have been created over the last 40 years. Each new release has introduced further innovation to better reflect the different aspects of deprivation. The Northern Ireland Multiple Deprivation Measure 2017 work has addressed recommendations from previous measures, introduced new indicators, and has stressed key messages on how the measures can be used.

The NIMDM 2017 is the first spatial deprivation measure in the UK and Ireland to use household income data to form an indicator for income deprivation. It can be regarded as the most important innovation but this release has been more than just a new set of results. It has included an expansive public engagement that re-enforced key messages on how the measures can be used, and the importance of considering all domains and indicators as well as the Multiple Deprivation Measure.

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DISCUSSION

Jillian Delaney: The U.K. produces estimates of unemployment counts and rates at local authority level using small area estimation techniques. I ask if such estimates were available for Northern Ireland, and if so, if they had been considered as indicators in the calculation of the Multiple Deprivation Measures. I am also interested in the differences mentioned in the paper between the results of the Multiple Deprivation Measures and the previously published All-Island HP Deprivation Index. In particular, the authors of the HP Deprivation Index found that while long-term adverse labour market conditions tended to result in unemployment blackspots in urban areas, in rural areas they were associated with high levels of emigration. For this reason, measures of emigration were used in the construction of the HP index, and so I ask if emigration had been considered by NISRA in the development of their measures of deprivation. I congratulate the speakers on a very interesting and worthwhile project.

Paul Morrin: Congratulations on the level of consensus you have built up for the deprivation measure, it really is very impressive. You mentioned that the weights for the domains will need to be re-examined for the next revision, how will you tee up this discussion for the political system?

Frances Ruane: Delighted to have this paper by Tracey and Brian delivered in Cork and so positive to see NISRA here in the CSO. Your delivering the paper here is very much appreciated by the CSO statisticians based here at CSO who have interests in the study you have undertaken in Northern Ireland (NI). It was very informative to hear about the process you used to engage with groups across NI - and the importance in settling on the approach ahead of generating the data. I am stuck by the emphasis here on spatial dimensions which is very absent in Ireland. I think this reflects data availability but also the much smaller role played here by local relative to central government. Policies dealing with deprivation are conceptualised at a national rather na a local level. And yet many policies would be better informed and targeted by indicators at a local level which lead to focused interventions.

The message I have taken from your paper is that you want people to make use of specific indicators and not simply reference the Multiple Deprivation Measure. I can see your reason for this and I think that the big challenge is that many people are looking for a simple and single measure and will use it as long as it suits them. Hopefully they will see the value of using more relevant indicators which can better inform policy choices. You presented indicators of how the data are being used - I wonder if you have plans to look later at how and where they have been used - perhaps by engaging further with the bodies and individuals you liaised with during the process of agreeing the approach.

The final issue which I noted is that you did not reference the media in your presentation. I wondered whether the media paid much attention to the publication of the Multiple Deprivation Measures. I was also caused to wonder whether you have any concerns about the potential misuse of the data produced either by the media or by the bodies who might use them in the context of seeking policy changes. Do you monitor their use?

Again, let me say how pleased I am to be here for this presentation.

Brian Cahill: How important, for the successful outcome of the project, was the communication strategy and outreach before commencement of the project and after the publication?