

Identifying “deprived individuals”: are there better alternatives to the Scottish Index of Multiple Deprivation (SIMD) for socioeconomic targeting in individually based programmes addressing health inequalities in Scotland?

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1. Background

The Scottish Index of Multiple Deprivation (SIMD) is a measure widely used in Scotland to describe small area concentrations of material deprivation. It is also been used to target programmes aimed at reducing socioeconomic inequalities in health. Targeting interventions towards individuals who live in the areas of the greatest material deprivation is intended to ensure that health improvement efforts are focussed on those at most social disadvantage. Programmes such as Keep Well¹ have used SIMD to identify deprived populations for health improvement interventions that fall under the heading of preventive or anticipatory care - intervening to prevent chronic diseases such as cardiovascular disease or diabetes. In some cases postal invitations for health checks have been sent to people chosen on the basis of the SIMD score of their address. In other cases general practices have been chosen on the level of deprivation of the areas they serve; these practices have then sent postal invitations to all those in a target age range.

SIMD provides a single consistent and nationally used measure of health inequalities: most measures used to monitor inequality in Scotland are defined in terms of SIMD.² Both of these factors point to the use of SIMD for targeting, but the implicit aim is to reduce inequalities between individuals with high and low levels of material disadvantage rather than between areas. Criticisms of the use of SIMD for targeting arise from the use of an area based measure to identify individuals. Many people who are materially disadvantaged as individuals live in areas that are not particularly deprived in terms of SIMD; equally, many people living in deprived areas (as identified by SIMD) may not be particularly disadvantaged. This limitation is particularly apparent in rural areas, where small populations may live in geographically large and socially heterogeneous areas. This paper addresses the question of whether there might be better ways to identify and target individuals for the purpose of these anticipatory care programmes.

This paper should be interpreted in the context of the wider discussion about how best to describe and understand poverty and disadvantage in Scotland’s remote and rural areas. The issues are well summarised by McKendrick et al (2011), who called for better use of existing data and the development of new measures. This however is a different and much larger programme of work than that set out in this short paper. In particular, measures that helpfully describe rural communities at higher geographical levels such as urban-rural classifications are not necessarily relevant to the concerns around targeting described in this paper.

The use of SIMD to allocate resources within Scotland is also conceptually different from its use for targeting and is beyond the scope of this paper.

¹ For more information see: <http://www.keepwellscotland.org.uk/>

² Long-Term Monitoring of Health Inequalities. Scottish Government, Edinburgh, 2012. Available from: <http://www.scotland.gov.uk/Publications/2012/10/3929/>

2. Purpose

This paper responds to a request to review the alternatives to SIMD for socioeconomic targeting of anticipatory care programmes. It summarises the limitations of SIMD, reviews possible alternatives and outlines further work that could be done to investigate these. Some of the alternatives described here are clearly not feasible, but they have been discussed in this paper so that they can be excluded from further consideration. As noted above, both the wider discussion about understanding rural poverty and the specific use of SIMD for resource allocation, while of importance and interest, are beyond the scope of this paper.

3. The Scottish Index of Multiple Deprivation (SIMD)

The SIMD identifies small area concentrations of multiple deprivation across Scotland by assigning a score to small areas (datazones) with a median population of around 750 people. The 2012 version of SIMD is made up of 38 indicators covering seven domains. The contribution of each indicator is weighted to reflect the importance that has been attached to that aspect of deprivation. The domains, numbers of indicators and weights are as follows: Income (7 indicators, given 28% of the total weighting), Employment (3 indicators, 28%), Health (7 indicators, 14%), Education, skills and training (5 indicators, 14%), Geographic Access to Services (8 indicators, 9%), Crime (6 indicators, 5%) and Housing (2 indicators, 2%). Using these weights, scores from each domain are combined into an overall score which is then expressed as a rank, where 1 is the most deprived datazone in Scotland and 6505 is the least deprived datazone. These scores are usually further grouped into quintiles or deciles or into those within or outside the most deprived 15% of datazones. Further detailed information is available on the SIMD website.³

4. Limitations of SIMD for targeting individuals

As noted above, the problem with the use of area-based measures to target individuals is essentially one of misclassification: specifically the extent to which the use of the SIMD datazone rank to identify deprived individuals wrongly classifies some individuals as “deprived” when they are not, or “not deprived” when in fact they are.

4.1 Over-identification

If less deprived individuals are invited for health checks then the problem is one of *inefficiency* - while those invited may benefit from the intervention, resources intended to improve the health of the most deprived are not used efficiently. The cost of the inaccurate targeting includes the cost of sending out invitations and it may also include the cost of interventions provided to people who are not in the intended target population. If an appreciable proportion of those invited are less deprived, the programme may also widen rather than narrow health inequalities.

4.2 Under-identification

If the SIMD fails to identify the most deprived individuals then the problem is one of *limited reach* - the programme may be effective for those it contacts, but its impact is limited by its failure to identify and target those most in need.

4.3 Rural areas

Guidance on the SIMD website points out that rural datazones cover larger areas than urban ones, contain a greater mix of deprived and less deprived people and contain more geographically dispersed populations than in urban areas.⁴ As a result rural populations are less

³ see: www.scotland.gov.uk/Topics/Statistics/SIMD/.

⁴ <http://simd.scotland.gov.uk/publication-2012/how-to-use-the-simd-guidance/>

homogeneous than urban ones in terms of deprivation and SIMD is likely to be less accurate in identifying deprived individuals.

4.4 Population change

Another important limitation of SIMD relates to changes in populations over time which mean that some datazones now have no population while others have populations of up to 8000. This will be addressed by the planned reconfiguration of datazone boundaries, but the problem is likely to recur.

5. Possible alternative approaches

The problem could be summarised as that of identifying as many “deprived individuals” as possible in the most efficient manner. The questions then, particularly for rural NHS boards but also to some extent for urban ones, are (a) whether there are better area based measures than the SIMD, associated with less misclassification; (b) whether there are other available individual (or at least smaller area) measures or (c) whether a completely different approach is possible.

5.1 Modifications to the use of SIMD

Before considering alternative measures to SIMD, this section will consider a range of proposals which have been made to modify the existing SIMD or use it in a different way.

5.1.1 Use income, employment or access domains alone

The SIMD website includes a paper on identifying deprived rural areas.⁵ This suggests identifying deprived datazones based only on their income, employment or access domain scores. The arguments for doing this are that the income and employment domains include counts of individuals and so may reflect individual level deprivation more than other domains, and that the access domain is of particular importance in rural areas. Data from some individual indicators within SIMD domains are also available⁶ and could in theory be used to identify datazones that are “deprived” on the basis of individual indicators. A similar selective approach is taken by the long-term monitoring of health inequalities reports,⁷ which use the income-employment index decile rather than the full SIMD score.

This approach helps to highlight the components of rural deprivation. It also identifies different datazones as “deprived” compared to those identified by the overall SIMD rank. However the overall SIMD is highly correlated with the income domain, even in rural areas. Without some measure of “individual deprivation” to test this approach against, it is difficult to show that using individual domains or indicators would be more effective than an approach using the whole SIMD.

As mentioned above, the SIMD income domain includes a rounded figure for the number of people who are income deprived within the datazone. Work in Dumfries & Galloway has noted that only a minority (36%⁸) of all the “SIMD income deprived people”⁹ in the health board area

⁵ <http://www.scotland.gov.uk/Topics/Statistics/SIMD/deprivedruralpaper>

⁶ Data for indicators in the health domain can be downloaded from <http://simd.scotland.gov.uk/publication-2012/download-simd-2012-data/>. Data on individual indicators within the income and employment domains can be downloaded from the Scottish Neighbourhood Statistics website at www.sns.gov.uk under “Data Downloads”.

⁷ <http://www.scotland.gov.uk/Publications/2012/10/3929/>

⁸ Recalculated by the author of this paper, using SIMD09 version 2, national quintiles of the SIMD income for the national figure and local quintiles for the local figure.

live in the most deprived quintile of the SIMD income domain. This compares with 43% for Scotland as a whole, and makes the point that income deprivation is less concentrated in Dumfries & Galloway than in Scotland as a whole.

5.1.2 Adjust the SIMD income domain

It has been argued that living in rural areas is associated with a higher cost of living as a result of increased personal travel costs and the effect of transport costs on local commodity prices. It would be possible to adjust the income domain of SIMD to reflect the higher cost of living in rural areas (McKendrick et al, 2011). This would increase the SIMD score for rural datazones and reduce the gap between urban and rural SIMD scores, but since the change would affect all rural datazones in one area roughly equally,¹⁰ it is not clear that this would offer any particular advantage for targeting purposes within an individual rural area.

5.1.3 Give increased weight to the SIMD access domain

Remoteness and difficulties of accessing facilities and services are an important part of rural deprivation. It has been suggested that increase weighting be given to the access domain of SIMD in constructing the overall index (McKendrick et al, 2011). As with the income example above, this would increase the SIMD score for rural datazones relative to urban ones, but would not change the local ranking of datazones and so it is not clear that it would offer any particular advantage for targeting purposes.

5.1.4 Use locally calculated quantiles¹¹

Rural areas contain relatively few datazones in the 15% most deprived datazones nationally. If datazones were ranked within a rural NHS board (or CHP) many more would be identified as being in the most deprived 15% (or 20% etc) within the board. Local variation in SIMD is much more apparent than when national quantiles are used, and this approach is already used by a number of NHS boards. However while this approach highlights local variations more effectively than the use of national quantiles, it does not seem to offer any clear advantages in terms of improved targeting of individuals since the local ranking of datazones remains the same.

5.1.5 Extend the range of SIMD groups targeted

The SIMD income domain includes information on numbers of income-deprived individuals and can be used to illustrate the effects of different targeting approaches nationally and in more rural boards. As noted above, the most deprived SIMD income quintile nationally includes only around 43% of SIMD income deprived individuals.¹² If targeting was widened to include the lowest **two** SIMD income quintiles this figure would increase to 68% (61% in Dumfries & Galloway, a more rural board). However the number of people to be invited would increase from around 20% to around 40% of the whole population, while the proportion of those invited who were actually income deprived would fall from 34% to 26% (from 28% to 22% in Dumfries &

⁹ "SIMD income deprived people" indicating the total of the count of income deprived people for each datazone obtained from the SIMD income domain

¹⁰ It would be possible to relate the increase in costs to the degree of remoteness, but this information is already captured to some extent in the SIMD access domain.

¹¹ A quantile divides a dataset into equal groupings such as deciles, quintiles etc.

¹² The figure is approximate because the number of income deprived individuals in each datazone is rounded to the nearest 5 for disclosure control purposes. The figures in this paragraph have been calculated by the author using SIMD09 and Scottish mid 2009 small area population estimates. Because SIMD quintiles are based on the number of datazones rather than on the number of people, the proportion of the population in each quintile is only approximately 20%.

Galloway). To avoid inviting all for a check, an initial screening questionnaire (perhaps administered by telephone) could exclude those unlikely to be eligible for an intervention.

Screening 40% of the population is clearly not feasible, even with these approaches. However widening eligibility by raising SIMD cutoffs identifies more eligible individuals. Even though the approach is inefficient, it provides a “baseline” against which the case for other approaches needs to be made. For example, universal data collection in primary care (section 5.9) would need to be more cost-effective than this approach in order to be justified.

A further objection may be that even increasing the range of people contacted does not identify all “deprived individuals”. However, anticipatory care programmes that aim to address health inequalities will always be targeted and will never aim at comprehensive coverage. In addition, the concept of “deprivation” is a relative one, and the cut-offs that define some people as “deprived” are arbitrary; reaching every “deprived individual” is therefore not a particularly meaningful target.

5.2 Use smaller area census data

SIMD is currently only available at datazone level, but data from the Census are available at smaller areas such as census output area. Suitable data from the 2011 will become available within the next 12-18 months and some plans have been made to produce small area measures of deprivation (see section 5.8 below). A disadvantage of this approach is that it will not be possible to update the data until there is a further national census and so they will become less relevant over time.

5.3 Use additional data from HM Revenue and Customs (HMRC) on tax and income

HMRC data (eg adults and children in tax credit families) are already used within the income domain of the existing 2012 SIMD. A much wider range of HMRC data are available in a dataset called the Public Use Tape, which can be obtained from the Economic and Social Data Service (ESDS).¹³ These data are derived from the Survey of Personal Incomes (SPI), a stratified random sample taken periodically from individual tax records. The SPI includes information on a wide range of variables including age, sex, total income by income type, taxable benefits etc. However, the data are not available below Scotland level and informal discussions suggest that they are not likely to be available at appreciably smaller geographies because of concern about disclosure of personal data. In addition, even if the data were made available at small area level it is not clear whether they would offer appreciable advantages over the existing SIMD income domain.

5.4 Use additional data from the Department of Work and Pensions (DWP) on income and benefits

Data from DWP is already extensively used within the SIMD employment domain (for example incapacity benefit and disability allowance) and the income domain (for example adults receiving income support, guaranteed pension credit, children dependent on individuals receiving income support and adults receiving job seekers allowance). These data are provided at datazone level. In principle these data could be provided at a lower level than datazone, but informal discussions suggest that because of concerns about disclosure of personal data it is very unlikely that this would be made available.

5.5 Use Council tax valuation band (CTVB) data

Residential properties are valued for the purposes of council tax by 14 local valuation boards in Scotland. Properties are classified on the basis of their value as at April 1991 into 8 council tax bands, from A, the lowest, to H, the highest. The band can change if a property undergoes

¹³ HMRC Public Use Tape: <http://www.esds.ac.uk/findingData/snDescription.asp?sn=7160>

extensive change and is then sold, but there has been no general revaluation of properties in Scotland since April 1993.

CTVB is associated with health behaviours, health status and mortality. Beale found significant differences in all cause mortality between CTVB bands (Beale et al, 2002). Fone reported that associations with smoking status were stronger for CTVB (OR 3.80) than for occupational social class (OR 3.00) or Townsend quintile (OR 1.61) (Fone et al, 2006).

In Scotland, Findlay and colleagues used data from the “Have a Heart Paisley” project to examine the association between SIMD of area of residence and CTVB of the individual’s property on the one hand and incidence of coronary heart disease (CHD) on the other (Findlay et al, 2006). They reported that CTVB showed a stronger correlation with CHD than SIMD: the correlation coefficient was 0.71 for SIMD and 0.89 for CTVB. However this difference was less apparent when the analysis was restricted to those aged 45-60 years (0.90 and 0.98 respectively).

Data from the same project were used to examine the association between CTVB and cardiovascular risk (Harkins, 2012). CTVB was inconsistently associated with a range of traditional cardiovascular risk factors. CTVB was associated with global cardiovascular risk (the Framingham score) but when SIMD was included, it added independent predictive power only in men.

CTVB has a number of disadvantages. Properties may have changed in value but there has been no general revaluation since April 1993 and it is thought unlikely that there will be such a revaluation in Scotland in the foreseeable future. There are concerns that valuation of new properties may not be applied consistently across Scotland. Harkins concluded that there was “significant potential to misclassify the socioeconomic position of individuals who are renting property, particularly homes of multiple occupation” (Harkins 2012).

The available evidence suggests that CTVB is associated with health outcomes. However the evidence that it provides additional information over and above SIMD is less clear and the measure has some disadvantages. Nevertheless, further investigation may be justified.

5.6 Use additional data on housing type or quality

The housing domain within the existing 2012 SIMD consists of two indicators (both derived from the 2001 Census), related to overcrowded households and households without central heating. The relevance of these indicators will be greatly improved once more up to date data are available from the 2011 Census. There is a lack of data at small area level on housing type or quality. Information on house sale prices is available from the Registers of Scotland.¹⁴ This is limited by the lack of information on properties that have not recently been sold, but it might be worth investigating further.

5.7 Free school meals entitlement

The Scottish Government holds individual level data on entitlement to free school meals. In principle it would be possible to explore whether this could be used to identify concentrations of material deprivation below datazone level. A disadvantage is that it is not relevant to households without school-age children.

5.8 Use of Carstairs index in addition to SIMD

The Carstairs index is an area based measure of material deprivation that was widely used prior to the introduction of the SIMD. It is based on four census-derived indicators: low occupational social class, lack of car ownership, overcrowding (one or more persons per room) and male

¹⁴ <http://www.ros.gov.uk/>

unemployment.¹⁵ Carstairs index data are available at datazone level for Scotland and it is possible that it may add information to the SIMD in terms of predicting mortality or morbidity. This point could be fairly readily investigated for urban and rural areas using existing data. However it should be noted that the use of the Carstairs index in rural areas has the disadvantage that car ownership is more likely to be viewed as a basic necessity and so may be an unreliable indicator of a less deprived status.

The MRC Social and Public Health Sciences Unit have plans to develop a Carstairs 2011 index, which might be produced at Census output area.¹⁶ This has the potential to provide useful data at a much smaller geography and would be an important development.

5.9 Routine collection of data on individual socioeconomic measures in primary care

Some markers of socioeconomic position (such as unemployment, occupation or educational level) may already be recorded in primary care, but this is likely to be very incomplete. In principle, it would be possible for primary care staff to collect this kind of information in a more systematic way when new patients register with the practice or when people consult the practice. Income level, home ownership and receipt of benefits may be too sensitive to collect routinely in primary care, but it might be possible to ask routinely about other items such as employment, occupation or highest educational level achieved. In the case of occupation, additional processing would be needed to allocate occupational information to suitable social class categories.¹⁷ It is likely that practices would expect the additional workload to be recognised, for example through an incentive scheme such as the Quality and Outcomes Framework or a Directly Enhanced Service.

This approach has the potential to provide useful information with a high level of coverage and completeness and is likely to be much less expensive than dedicated surveys. In addition it is likely to provide information that will be useful beyond the needs of anticipatory care targeting. However it is still likely to involve significant cost and negotiation at a local or national level.

5.10 Use the fragile rural area index

As part of work for the Rural Development Council Working Group Scottish Government produced a paper in 2010 on work to identify fragile rural areas.¹⁸ These were defined as areas that were particularly fragile as a result of factors such as population decline. The report investigated the possibility of producing a population domain (including indicators of population change and decline) to be combined with the existing SIMD. The report concluded that producing a population domain was not technically feasible. It was also not clear that rural areas as a whole were experiencing greater population decline than urban ones. However, the report suggested that the individual indicators in the population domain could be published together with SIMD income and employment domain ranks. A suggested alternative was to publish the four indicators in the Highlands and Islands Fragile Areas measure (population decline, population density, drive time to services and household income) for all datazones in Scotland.

¹⁵ Carstairs V, Morris R. Deprivation and health in Scotland.: Aberdeen University Press, 1991.

¹⁶ In the 2001 Census there were 6,505 datazones, but 42,064 output areas, with populations ranging from 55 to 2,357.

¹⁷ Occupational information on its own would not be useful and the data would need to be processed to allocate a suitable classification. Previously the Registrar General's Social Class (RGSC) was used but the currently used classification is the National Statistics Socio-economic Classification (NS-SeC).

¹⁸ Socio-Economic Briefing on Rural Scotland: Identifying Fragile Rural Areas. Available from: <http://www.scotland.gov.uk/Publications/2010/07/30101940/0>

However it is not clear whether there is a consensus that datazones identified as “fragile” from these measures would better identify “deprived individuals” for anticipatory care programmes.

5.11 Use location based targeting methods

One approach that has been used by some NHS boards is to identify locations where it would be possible to reach people in the lowest income groups. For example, potential participants have been recruited at low-wage workplaces, at sites where particular services are provided (such as job centres) or at other sites such as bingo halls. Some local experience suggests that a large proportion of people identified in this way turn out to be from low income groups. The disadvantages of such an approach are that it is resource intensive and likely to identify only a small proportion of those in the lowest socioeconomic groupings. The cost of this approach needs to be weighed against the cost of inviting larger numbers of people for health checks, as outlined in section 5.1.5.

5.12 Target specific social groups

A number of NHS boards have targeted specific social groups, such as those of South Asian ethnicity, gypsy travellers, ex-prisoners, other offenders, homeless people, those affected by illegal substance misuse, carers and those with learning disability. All of these groups are likely to suffer from some kind of socio-economic or health disadvantage. However this approach has a number of disadvantages. Each group is likely to require a separate targeting and recruitment strategy, which makes the approach more resource intensive and complex. Secondly, these groups are heterogeneous in terms of their disadvantage; for example Indians are at moderately increased risk of cardiovascular disease, but in terms of socioeconomic position are on average better off than the White Scottish group. Furthermore, even if all of these groups are reached, the approach would identify only a small proportion of all those in the lowest socioeconomic position, and so could only ever offer a partial solution to the issue of targeting people with high levels of material deprivation.

6. Potential further work

None of the options discussed above emerge as clearly better than the SIMD for targeting purposes, but some may have potential. This section outlines the areas most likely to be worthy of further investigation.

6.1 Investigate additional benefit of Council Tax Valuation Band (CTVB) data using “Have a Heart Paisley” data

The dataset used by Harkins and colleagues to investigate the use of CTVB data in Paisley is still available. It would be worthwhile to analyse this further to quantify the impact of adding CTVB information to SIMD - specifically on the number of additional people who would be correctly identified and the number of inappropriate invitations avoided. Initial discussions indicate that there would be interest in carrying out this analysis and that the additional work needed (at the University of Glasgow) would require only a small amount of resource- perhaps one or two days work for a statistician. Such work would have the disadvantage of having less applicability to rural areas of Scotland.

6.2 Investigate additional benefit of Council Tax Valuation Band (CTVB) data in both rural and urban areas

CTVB data is publicly available at the level of individual addresses. These could be linked to addresses on hospital admission and mortality data held by ISD. Morbidity and mortality could be compared across CTVB levels and its value over and above SIMD information could be assessed in both urban and rural health boards in Scotland. CTVB data is available in electronic form from Joint Valuation Boards at around £600 per valuation board or £10,000 for the whole of Scotland. The work would be dependent on it being feasible to carry out probabilistic data linkage using only address - and there is some anecdotal evidence that this may be technically

difficult. Funding would be required for the CTVB data, for linkage work at ISD and for some analyst time, but subject to these points this work is potentially feasible and would be worthwhile if there was interest in pursuing the use of CTVB for targeting.

6.3 Consider whether collection of socioeconomic data could be incorporated into the national GP contract

Those responsible for negotiating the national GP contract could consider whether it would be worthwhile to include additional data collection as part of the Quality and Outcomes Framework, a national Directly Enhanced Service agreement or some other arrangement. This depends on whether the additional cost of obtaining the information is justified by its priority and usefulness for targeting and whether the proposal would be acceptable to GPs. This approach may be expensive, and the cost would need to be compared with the cost of simply screening larger numbers of people, as discussed in section 5.1.5.

6.4 Consider further investigation of measures of rural fragility

If the fragility index described in section 5.10 above is thought to be sufficiently credible as a guide to rural targeting it could be investigated further. For the purposes of anticipatory care an important question is whether the risk of chronic disease (including cardiovascular disease) is higher in such “fragile” areas - and it is not clear that this is the case. The population data required for the fragility index might be available from the National Records of Scotland (NRS). The household income measure for the index was provided commercially by CACI Paycheck, although this in itself is derived from modelling rather than from data at an individual level. The six other indicators investigated by the report could all be obtained from NRS. Resources would be needed to purchase the commercial data and for analytic and project management time. The caveats in the Scottish Government report¹⁹ should be considered before a decision is made to pursue further investigation of this approach.

6.5 Other possible exploratory work

As outlined above, data on **Carstairs index** is available at datazone level. A relatively small amount of analytical time would be sufficient to examine its predictive value over and above SIMD if there was interest in pursuing this approach. If Carstairs data at output area is produced from the 2011 Census (see section 5.8 above) it would be worth waiting for this to become available. In principle, there is interest from Scottish Government education colleagues in further exploration of the value of **free school meals** data; this might require resource for some initial analyses within the education department. Further investigation of the value of data on **house sales** would require resources to purchase the data from the Registers of Scotland as well as support for analytic time.

7. Conclusions

As an area measure of concentrations of material deprivation, SIMD is not ideal as a proxy for individual level deprivation. The issue is relevant to all NHS boards, but particularly important for rural NHS boards where deprivation is less concentrated and SIMD-based approaches are less efficient. However there are at present no obvious alternatives to SIMD for targeting purposes. The result is to reduce the efficiency and reach of anticipatory care programmes, particularly in rural areas. However, imperfect targeting is not the only or (arguably) even the main issue faced by such programmes and needs to be set in the context of other challenges include limited response rates, differential response rates (typically lower in those least in need), loss to follow up and limited evidence of effectiveness.

¹⁹ Socio-Economic Briefing on Rural Scotland: Identifying Fragile Rural Areas. Available from: <http://www.scotland.gov.uk/Publications/2010/07/30101940/0>

Modifications to the way that SIMD data are used may help the wider problem of describing local socioeconomic patterns, but have very limited usefulness in helping to target individuals within a local area. Development of a new Carstairs score at output area level might be substantially improve targeting. At present it seems very unlikely that DWP or HMRC would be willing to provide individual or even small area data. Targeting specific locations or social groups is resource intensive and likely to be only a partial solution. The use of council tax band is an interesting but unproven approach that may merit further investigation. Other approaches are less promising. Collection of a defined set of socioeconomic data in primary care might be seen as an ideal long-term solution and would have benefits beyond the requirements of targeting for anticipatory care. However it is not a cheap or easy solution and is likely to be more expensive than the inefficiencies in targeting that it avoids.

In the meantime SIMD offers a reasonable approach to targeting in urban areas, while rural areas are likely to continue to use a combination of SIMD data and locally developed approaches based on targeting specific groups or use of council tax band. Decisions about pursuing the further exploratory work outlined in section 6 should be guided by the level in interest in these approaches and by the availability of the necessary resources.

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9. Acknowledgements

A number of individuals have provided useful advice and comments during the writing of this report. I would like to thank Ananda Allan (NHS Dumfries and Galloway), James Boyce (SG ASD), Alison Burlison (ISD), Andrew Carnon (NHS Dumfries and Galloway), Tricia Couper (NRS), Catherine Dickie (SIMD), Jim Doig (Dumfries and Galloway Council), Christopher Harkins (University of Glasgow), Celia Macintyre (NRS), David McAllister (NHS Fife), Gerry McCartney (NHS Health Scotland), Gordon McLaren (NHS Fife), Fiona Murphy (ISD), David Rodger (Scottish Government), Diane Stockton (ISD) and Alexander Stannard (NRS). **These acknowledgements do not imply any endorsement of the content or conclusions, which are my own.**

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