OFFICE OF THE
DEPUTY PRIME MINISTER

Review for The Neighbourhood Renewal Unit of

# Blueprint for the Index of Multiple Deprivation – at Small Area Level

Neighbourhood
Renewal Unit

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# Background by the Neighbourhood Renewal Unit

The Neighbourhood Renewal Unit (NRU) commissioned the University of Oxford Social Deprivation Research Centre to "investigate what new developments have arisen in the measurement of multiple deprivation, since the publication of the ID 2000, and to assess the potential for a general updating of current indicators and ward geography". The objectives were to

- Produce options for strengthening ID 2000,
- Assess how practical it will be to implement these options,
- Assess the potential to provide a general updating both to the indicators and the 1998, wards boundaries,
- Assess the potential of further developing the ID 2000 to sub-ward geographies and
- Revise the ID as appropriate.

This will be undertaken in three stages. Stage One will examine the conceptualisation of multiple deprivation. Stage Two will assess the availability of data, after which a decision will be made about whether to proceed to Stage Three, the updating of the data.

The purpose of this review is to provide an independent academic assessment of the 'Blueprint document' arising from Stages One and Two. The brief was to provide a critical evaluation of all aspects of the report but focusing particularly on

- The conceptualisation of multiple deprivation,
- The number of proposed domains and indicators and the
- Proposed weighting assigned to each domain.

The academic assessment was done by Professor Jonathan Bradshaw from the University of York.

This document is made up of two sections which reflect the nature of the process. This first section is an assessment of the final Blueprint which was published by ODPM on 26 August 03. The second section is a discussion of the initial proposals which sets out the academic assessor's comments and suggestions for further work together with actions that followed from these points in the 'greyed out' response boxes. The initial proposals are not a published document as they refer to work in draft. However this report has been designed to enable readers to understand what the initial proposals were and how Professor Bradshaw's work has been taken forward.

In addition to the Blueprint and the initial proposals Professor Bradshaw had access to the *Stage 1: Consultation Report* (NRU 2002), the 204 responses to the Stage 1 consultation and a summary of these provided by NRU staff.

We are very grateful for Professor Bradshaw's input, which has enabled the ODPM to develop a stronger product for consultation. Although his formal input has been time constrained he has provided support to the review process over a number of months.

# Section 1: Overall review of the final Blueprint

The revised Blueprint is a substantial improvement on the initial proposals. The team have not only taken account of my comments but they have also improved on their initial proposals in ways that I did not think about. I think that it is a really excellent and resourceful plan. In my earlier comments I was uncertain whether the revised index would be a small development or a substantial improvement. I am now much more confident that it will be a substantial improvement.

## Detailed comments on the Blueprint document

- I agree that it is sensible to include access to housing in the barriers to access to services domain.
- What is going to be feasible in the Crime and Disorder domain is now much clearer.
- I agree with the proposal for Income Deprivation Affecting Children and Older People Indices.
- There are a number of elements in the proposal that rest on how successful the associated work will be. For example the work being undertaken on take-up; the work trying to match an in-work threshold with out-of-work benefit levels; the work on affordability; and the feasibility of getting data on all areas for the crime domain. These are all important as the Blueprint recognises but may not be successful. My assessment is that the first two projects are especially important because of the salience of the income domain in the overall IMD.
- I am glad to see that there is also to be a good deal of sensitivity testing of different weighting regimes for the domains to derive the overall index. Special attention should be paid to outliers.
- Super Output areas are very important in this process so ONS needs to do everything possible to ensure that they can be delivered within the timescale for the ID update.

In addition to the comments on the current process I think the following work packages are important for the future measurement of deprivation.

- Further thought should be given to a more comprehensive deprivation indices for special groups – children, women, older people, lone parents etc.
- There is still a great deal of work to be done on the feasibility of the methods for modelling indicators from one research area to another. I suggested in my earlier comments that some experimental work might be undertaken to assess its feasibility.

# Section 2: Overall review of the initial proposals

The initial proposals are a very impressive document and the Oxford team deserve to be congratulated. There is no other group in the UK who knows more about local indices, and through their work they have become a vital national resource. Their work in developing the original index was extraordinarily thoughtful, undertaken in the most open and collaborative manner, and amazingly resourceful in seeking out new data, particularly from administrative sources. There is evidence of all these qualities in these initial proposals. My general conclusion is that they certainly represent an improvement and it may well turn out to be a major advance.

It is not possible to be certain whether it will be an improvement or a major advance until a good deal more work is undertaken. In particular the Crime and Social Order and the Living Environment domains call for a very substantial data gathering and analysis exercise (see more below), and while the changes to Income and Employment look feasible, the changes proposed to all the other domains may not work. Only further rigorous work will tell whether the changes proposed for the other domains will be feasible.

The Oxford team were asked

> *"to produce options for strengthening the ID 2000. This will be based on a conceptualisation of how multiple deprivation should be measured. It needs to build on proposed areas for further development identified in the 1999 review. It should include a review of literature on the measurement of deprivation since 1999".*

They have produced the options and they have built on the areas for further development. However there is very little in the initial proposals on the conceptualisation of deprivation and the review of the literature is implicit rather than explicit. The team had conceptualised deprivation very admirably in the original index and they have developed that conceptualisation in their proposals here – but the process of achieving this is not set out. We can assume that they are aware of the ways in which deprivation has been dealt with in the literature since 1999, as this is set out in previous reports and in the Stage 1 report, and no doubt they have taken account of it in their proposals, but the draft report of initial proposals that I have had sight of was not a review of the literature as conventionally understood.

It may be a too mechanistic approach but it might have been a useful exercise to explicitly take some of the more recent studies that have sought to operationalise concepts such as poverty, deprivation, social exclusion and so on, in empirical research and assess to what extent they were covered in the existing domains, and whether it was feasible or desirable

to cover them at neighbourhood level if they were not. For example Gordon et al (2000) sought to operationalise social exclusion in the *Poverty and Social Exclusion Survey of Britain* using the following dimensions:

**Exclusion from employment** – covered in the initial proposals.
**Exclusion from services**, including utility disconnections (not covered), public services eg libraries, hospitals and post offices (some covered, some not), private services eg corner shops, banks and pubs (some covered, some not).
**Exclusion from social relations** – participation in common social activities, level of social contact with family friends (not covered).
**Lack of support** in seven situations (not covered).
**Disengagement** – from civic activities (not covered).
**Confinement** – because of fears of safety (covered).

It could be argued that social exclusion is not the same as deprivation and indeed some of the dimensions of social exclusion were found not to be related to deprivation – social support for example. Further NRU might not have wanted such a review after the Oxford Group had already produced the Stage 1 report. However it may have been helpful to have reviewed this literature more explicitly.

There are other similar sources. Burchardt (2000) has also sought to operationalise social exclusion. There are the *Opportunity for All* indicators (DWP 2002) (which are referenced in the initial proposals) and slightly different *Social Justice Milestones* in Scotland (Scottish Executive 2002) and similarly variants in Wales and Northern Ireland. The Children and Young People's Unit has been working up a long list of *Strategic National Objectives for Children and Young People*, indicators covering well-being and well-becoming, some of which are included in the initial proposals for domains and others which might have been considered (see below). Then there is the review of well-being domains produced in Bradshaw (2002). Or the National Action Plan for Social Inclusion indicators produced as a result of the work of Atkinson et al (2002).

RESPONSE: The Blueprint is intended to set out detailed proposals for updating the Indices of Deprivation 2000. The Stage 1 report has addressed the development in literature since 1999 but we recognise the need to provide a more detailed and comprehensive review in the final report which will support the publication of any updated Indices of Deprivation.

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This review was subject to a time constraint of four days and so it has not been possible to engage in much new research and scholarship – some suggestions have been made for where such work might be useful. I have a better knowledge of some domains and the sources of their indicators than others. The result is there is some unevenness in the length of the comments on the different domains. I have tried to make it clear when I have limited competence to comment.

## The domains

I now begin to comment on the initial proposals section by section. In order to make sense of this document references are made to the initial proposals throughout the text.

The proposed domains were

- Income,
- Employment,
- Health and Disability,
- Education Skills and Training,
- Barriers to Services,
- Crime and Social Order; and
- Living Environment

There are arguments against the inclusion of Barriers to Services – mainly on the grounds that it (or at least the Access Domain in ID 2000) correlates negatively (see Table A1) with all the other domains and thus in the Index of Multiple Deprivation might be expected to act against the thrust and direction of the IMD[1]. Nevertheless lack of access to services is an element of deprivation and one that people in rural areas suffer from more and, unless there is going to be a separate rural index, it ought to be taken into account. There remain questions about whether the indicators actually capture Barriers to Services (see below).

There are also some arguments against the neighbourhood elements of the Living Environment Domain. Clearly the housing elements represent a real deprivation but some would argue (see McCullough 2000) that there are no elements of deprivation in a neighbourhood qua neighbourhood – they are all the product of the people who live there.

[1] Counter-intuitively it does not have this effect. Table A.3 presents a stepwise regression with the domains explaining variation in the IMD. The sign for Access is positive after controlling for the other domains.

In my opinion (Burrows and Bradshaw 2001) the jury is still out over this and, as most of the indicators are housing indicators, it is justified. Whether they can be satisfactorily measured is an other matter (see below).

The initial proposals contain a brief discussion of other domains that were suggested for inclusion and all are rejected on the grounds that either they are covered by existing elements – child welfare and transport – or because there is no appropriate data to represent them – social breakdown and lack of wealth. The Oxford Team has agreed to produce an older person's poverty index analogous to the child poverty index (presumably to be based on claims for Minimum Income Guarantee).

I think the claims for an index of child welfare (well-being) at neighbourhood level and indeed for other specialist client/age-based indices need further consideration, either by the Oxford Team or in parallel with their work. To take children as an example: they are a particular focus of government policy; there are neighbourhood based initiatives in train to reduce child poverty (Sure Start, Children's Fund, Neighbourhood Nurseries Initiative); as well as child poverty there are already quite a few child based indicators in the proposed domains (most of the education domain, road accidents involving children). One can think of others that might be added – for example child claims for DLA and child morbidity to the health and disability domain; access to play space for the barriers to service domain; child victims of crime for the crime and social order domain. One can think of many others (and the Children and Young People's Unit has (C and YP 2002).

Such specialist client group indices may not be a priority now, but it is conceivable that separate indices could be developed for children, women, older people and so on. There is a good conceptual justification for it as well – why should we expect neighbourhoods that are deprived or depriving for children to be as deprived or depriving for adults or older people? Conceivably a child friendly neighbourhood might be a nightmare neighbourhood for older people. A new journal *Children's Geographies* has just started in order to explore this and related issues.

RESPONSE: The final Blueprint contains proposals for a child and older persons income deprivation index. The Indices of Deprivation are essentially an area based measure focusing on dimensions of deprivations, however, we can see the value in more focused client group measures and will consider how this work may be taken forward into the future.

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The statement on the lack of undisputed evidence as to the existence of an additional 'neighbourhood effect' is one that we recognise. In designing the Living Environment domain we were aiming to measure the direct deprivation that individuals experience by living in a poor environment. This is identified as being of increasing importance in current policy thinking. We have not included this element as a potential measure of an additional cause of other aspects of deprivation.

## Indicators

The criteria for inclusion of the indicators are excellent. However there are problems in relation to the two criteria

- "capable of being updated on a regular basis" – in relation to using the census for denominator data and administrative benefit data which has changed and is changing. These problems will be discussed further below in the appropriate sections.
- "Statistically robust and available ….at small area level". From time to time in the initial proposals there is speculation that it might be possible to model an indicator to an area on the basis of our knowledge from national sources of the socio-economic characteristics of those deprived on an indicator. So for example, fear of crime might be modelled to local areas using data on the characteristics of the population who fear crime from the National Crime Survey[2]. However I have only seen one example of this being done.

  Burrows and Rhodes (1998) in their report on the geography of misery used national level estimates of neighbourhood dis/satisfaction from the SEH. These were segmented (using CHAID in SPSS Answertree) using analogues of variables found in the Census (tenure/type of accommodation/social class of Head of Household /employment status of Head of Household etc.). Complex crosstabs of ward populations using elements that combined to form the segments were commissioned and then the national level estimates were used in order to construct ward level estimates – the numbers in the cells in each ward essentially functioning as weights. The only way of testing the

[2] The initial proposals considered a measure of fear of crime and ONS are doing work on the feasibility of modelling such an indicator. However as the Blueprint acknowledges this work is unlikely to be ready in time for this update.

feasibility of using such an approach – which assumes no local specificity in variation over and above that accounted for by variations in the characteristics of populations – is to carry out some primary research in wards following such estimates. The value of such estimates – if indeed they have any value – are likely to decrease the further we move away from the 2001 Census.

Some fundamental work needs to be done on this technique. It would be of substantial benefit to the whole exercise to know that it is possible to model indicators reliably and validly. On the other hand it is as well to know now if it is not feasible. Perhaps it would be a good idea to start by modelling an indicator that we know a great deal about. For example we know from the Family Resources Survey the odds of children with different characteristics living in families in receipt of Income Support. So we could use this information to model their ward level prevalence and then check the results against administrative data on the actual numbers of children on Income Support in each ward.

RESPONSE: Wherever possible the Indices use direct measures of deprivation. While other potential modelled indicators were considered, as the Blueprint sets out there are plans to model only one indicator from national survey datasets, that is social and private housing in poor condition. Modelling of a different type is proposed in work to support the take up of benefits and tax credits, affordability (if it can be achieved) and if necessary to support the measures of recorded crime. Having said this the importance of continually improving – and testing – small area modelling techniques is acknowledged and we would look to work closely with ONS and others on this issue into the future.

## Income deprivation

The proposals for this domain are generally straightforward and it is an excellent proposal to try to include NASS vouchers (though as this is an additive domain they will not have much impact). There are four main issues to comment on:

1. **WFTC and DTC**. Clearly it is important to include low paid workers in the domain and receipt of WFTC and DTC are good proxies, at least for families with children and people with disabilities. The problem with these tax credits is that they have a less severe taper than Family Credit did and so are received by people some way up the distribution. So it is proposed to have a cut-off for those whose equivalised income is

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below 60 per cent of the median. It is not clear how that assessment will be made, but assuming it is feasible, what is the justification for 60 per cent, how does it relate to the income of people on IS or JSA or MIG? If 60 per cent of the median is much above the level of out of work benefits then it will include more working households and advantage neighbourhoods with many low paid workers. If it is much below the level of out of work benefits then it will disadvantage such areas. It may also matter whether equivalisation is BHC or AHC, especially as results vary so much across tenures. Also will HBAI include or exclude the self-employed? If they use the usual figures excluding self-employed then small areas with higher than average numbers of the petty bourgeoisie (plumbers, builders, self-employed workers of various sorts, small business owners…) will become problematic on this measure (and there is evidence of spatial clustering in this group). Could they not experiment with a range of HBAI measures. It would be interesting to see how results vary using 40, 50 and 60% of mean and 50, 60 and 70% of median including/excluding self-employed equivalisations.

There is a more general problem of comparability here and it is not restricted to WFTC and DTC. As a result of differential upratings since 1999 a larger gap has emerged in the equivalent incomes of beneficiaries of means-tested benefits. MIG recipients are at the top of the hierarchy, families with children next and singles and childless couples a long way behind, having experienced no real increases in their benefit levels. The domain treats them all as income deprived but some are certainly more income deprived than others.

RESPONSE: This point is well made and work is being undertaken with the DWP HBAI Unit to ascertain where the threshold should be set. We have accepted the Stage 1 consultation desire that we should maintain – as a minimum – consistency with the national measure of 60% of median income. Consequently the work with the HBAI Unit will be to assess whether the threshold should be set at a higher level. Though after housing costs would be the most desirable threshold to use, the WFTC data do not contain information on housing costs. A modified before housing costs measure is proposed. This will exclude income from Housing and Council Tax Benefits which will mitigate the adverse impact of BHC measures in high rent/council tax areas. On the general issue of comparability within this domain, the measure is essentially a numeric count of those below the threshold even if there is a difference in degree in the depth of income deprivation that is experienced.

2. **Take-up:** The proposals acknowledge non take-up is a flaw in both the current and proposed Income Domain. If one assumes that the level of means-tested benefits is a good measure of income poverty, then entitlement to such benefits ought to be a good measure of poverty. The Income Domain is however based on receipt of, and not entitlement to, benefits. These are not synonymous because take-up of means-tested benefits is far from complete. The Department for Work and Pensions produce estimates of take-up for key means tested benefits, the latest are reproduced in Table 1:

**Table 1: Caseload take-up rates**

| Benefit | Category | Take-up range |
|---|---|---|
| Council tax benefit (1999/2000) | Pensioner | 64:70 |
| | Couple with children | 78:88 |
| | Lone parents | 94:100 |
| | Others | 78:88 |
| Housing benefit (1999/2000) | Pensioner | 85:93 |
| | Couple with children | 87:98 |
| | Lone parents | 98:100 |
| | Others | 86:95 |
| Income Support (1999/2000) | Non-pensioners with children | 94:99 |
| | Non-pensioners without children | 79:89 |
| Minimum Income Guarantee (1999/2000) | Couples | 59:72 |
| | Single males | 59:79 |
| | Single females | 66:80 |
| Job Seekers Allowance (1999/2000) | Couples with children | 81:93 |
| | Single men | 70:81 |
| | Single women | 50:64 |
| Working Families Tax Credit (2000/2001) | Couples with children | 49:53 |
| | Lone parents | 77:83 |

*Source, DWP, 2001; Inland Revenue 2002.*

*Caseload take-up is a measure of the proportion of persons assessed as entitled to a benefit who are in receipt of it. True take-up is presented in a range, which accounts for difficulty in estimation.*

The results are rather old, mostly calculated from data collected about three years ago. However it is unlikely that take-up will have improved substantially. There has been much recent policy change (particularly affecting Minimum Income Guarantee and Working

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Families Tax Credit) and when this occurs take-up tends to fall. For instance the last estimates of take-up for Family Credit suggests a take-up rate in 1998/99 of between 66 and 70 per cent (DSS, 2000). In 2000/01 this was between 62 and 65 per cent (Inland Revenue, 2002). This fall in WFTC take-up is probably explained by newly entitled persons not receiving their entitlement. The Inland Revenue suggest that those who would have had entitlement under **both** Family Credit and WFTC had the highest take-up rates (2002).

Incomplete take-up of means tested benefits is a problem when receipt of benefits is used as a proxy for exploring income deprivation. Given that we know the numbers claiming in each ward and the national take-up rate (albeit with wide confidence limits) we could increase the numbers claiming by a fraction representing national non take-up. It is important to at least do this since those areas with many recipients of means tested benefits are also areas with many eligible non claimants. Further there is also a risk of double effect: first areas may lose, or gain, through unclaimed benefit, and then they may also lose or gain from initiatives designed to combat income deprivation, which rely on data derived from the Income Deprivation domain.

However it is not as simple as that. There is evidence that take-up varies by population mix and type of area.

Analysis of survey data has shown systematic differences between the probability of take-up of entitlements by different groups in the population and where such groups are over-represented in particular areas this will inevitably affect the take-up rate. Those living in social housing are more likely than homeowners to take-up their entitlement. Blundell *et al* have shown this for Housing Benefits using the Family Expenditure Survey (1987, p.16) and this conclusion has been extended to Supplementary Benefit (the predecessor to Income Support) by both Fry and Stark (1987, p.9) and Duclos (1997, p.90). Take-up varies with age; the old are the least likely to take-up their benefit as Duclos has shown with the Family Expenditure Survey (1997, p.90). The DWP add to this by showing that most entitled non-recipients of MIG are aged above 75 (2001, p.20).

So if we are to adjust the claiming population for non take-up we ought to try to take account of differential take-up by population characteristics.

However there is also evidence suggesting that there are *spatial* differences. Noble *et al.* report this as far back as 1992 where they found systematic differences in take-up of Family Credit between Oxford and Oldham (1992). Dornan used the Family Resources Survey to find lower take-up rates of Income Support by pensioners in Wales, Scotland

and non-metropolitan England than in metropolitan England and London which he suggested might be put down to lower rural take-up rates (2000, p.54, Table 4.10). Bramley et al found similar results using the Scottish House Condition's Survey. They found that take-up rates of Income Support by pensioners were lowest in affluent and rural areas (2000, p.510-511). They used statistical methods to illustrate that of these, area affluence has the greatest effect on take-up and may itself explain much of the differences observed between urban and rural take-up, with richer areas also often being rural (2000, p.511).

As the initial proposal highlights, better understandings of this spatial patterning of take-up could improve the accuracy of the Income Domain as a measure of income deprivation. Though to some extent this could already be done, drawing on the research discussed above, by using census data to weight take-up rates to account for local differences in demography, tenure and population density, the research evidence to back this up is limited.

Dornan suggests what is perhaps a better alternative through the use of geo-demographic classifications (forthcoming). Currently there are several geo-demographic models in use. Such models combine existing data to classify small areas (often based around the postcode) into a particular group representing the local geo-demographic make up. The Family Resources Survey already contains within it an Acorn classification into which each participating individual falls, though this is not made available with the data, which could be used to test the extent to which take-up of various benefits differs by area type. This procedure might allow the Income Domain to be weighted to account for differential take-up, and this would provide a truer representation of deprivation than simply the proportion actually in receipt.

RESPONSE: The University of York are investigating the possibility of deriving sub-regional take up estimates from the Family Resources Survey using Acorn ward classification information. If sufficiently robust estimates can be generated using this technique then some or all of the out of work means tested benefits will be adjusted accordingly. If this is not possible, the one option remaining would be to weight the claimant – and dependent – numbers by national client group take up rates. We remain concerned about this without some clear sub-regional evidence on small area variation. In any event many groups' take up rates are relatively high. The exception to this is older people's claiming of IS (the Minimum Income Guarantee). This group's take up rate is so low that it is proposed that some adjustment should be contemplated, notwithstanding this possibility of small area variation.

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3. **Price variations:** I agree that it is probably not worth taking account of price variation given the unreliability of the data. But last time I looked at the data (for the whole of the UK) the main driver of difference was the cost of domestic heating and in particular whether the consumer had access to piped gas or not. It would be worth doing some work on cost of living variations using the RPI data and if it was domestic heating costs that was the driver, it might be worth collecting data from the utilities on what areas were and were not covered by the gas network.

RESPONSE: Collecting information on domestic heating costs is very complex because of the competing suppliers in some geographical areas which would mean that you would need to know which supplies are being accessed at the individual level.

These issues are of increased importance because the Income Domain contributes to 93 per cent of the variation in the IMD (see Table A3).

## Employment deprivation

The proposals for this domain are also straightforward. I agree with the case for including participants of the New Deal for Lone Parents assuming that by participants they mean those who are required to attend an interview. Their argument against using long-term unemployment is convincing.

RESPONSE: The employment domain measures those who are involuntarily out of work, this could be regarded as contentious for those who have been called to the compulsory interview therefore the proposal is to include only those who have proceeded beyond the interview into the full programme.

I have one query about the denominator. It is an empirical question whether it makes any difference, but I was surprised that they took the denominator from age 16. Though they are of working age the proportion working at 16, 18 and 21 has been falling. More are in education and training and that is not considered a deprivation. Have they tested the sensitivities of using denominators with an older start age?

RESPONSE: Further work on this issue has resulted in an amended proposal to have both the numerator and denominator beginning at age 18 for both men and women. The reason, as set out above, is that the proportions of young people working at 16 – 18 is limited because they are mostly in education and training. This is a positive outcome which could not be considered to be employment deprivation.

## Health deprivation and disability

I am not an expert on this topic.

- The Combined Mortality Factor seems straightforward.
- The Comparative Illness factor is based on benefit data. The issue of non take-up and area variations in take-up discussed earlier apply to DLA and Attendance Allowance. Are there not also people on IS with a disability premium that should be included?
- Mental illness. The indicator here is very vaguely specified. There is work to be done on the feasibility of this. But it would certainly be an asset to include it if it works.
- Factor analysis is to be used to generate weights (see below).

I believe that there has been much work done on these issues by the various Public Health Observatories as well. In this area perhaps more than in others modelling down to small areas from national level estimates might also be worth doing.

RESPONSE: People on the disability premium are included in the Blueprint.

The Blueprint now gives more detail on how mental illness is proposed to be represented.

We will ensure that the Blueprint will be circulated to Public Health Observatories so that they are given an opportunity to comment on the proposals. We are trying to avoid modelling data in the future and have achieved these health measures using administrative sources. As set out earlier the Department recognises the importance of a programme of work to improve techniques of modelling from national survey data sets to the small area level.

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## Education, skills and training

Again I am not an expert on education indicators. The Children and Young Persons' Unit is proposing

- Proportion of children below a given level in numeracy and literacy at key stage 2
- Ditto key stage 3
- Proportion of young people who gain no GCSE or vocational equivalents at year 11
- Proportion of 19 year olds not in education, employment or training.

slightly different to the Oxford proposals.

I am slightly surprised to see the proportion of under 20 not entering university as a deprivation indicator. While there is evidence that University has an impact on lifetime earnings on average this does not mean that it is a good indicator of *deprivation.*

It is proposed to give equal weight to the children/young person sub domain and the adult sub domain. It is difficult to justify this and, for the same reasons, difficult to challenge it. The adult sub domain will inevitably improve more slowly and thus it may be more difficult to pick up, for example, the impact of a "turning around" of a failing school.

RESPONSE: The inclusion of proportion of those not entering University has been retained as it is a measure of educational deprivation. The proposal to give equal weights to the sub-domains has been made because there is no evidence to support another conclusion. It will be interesting to hear consultation responses on this issue.

## Barriers to service

In terms of geographical barriers the move to use road distances to services rather than crow flies distances is welcome. Crows can fly over rivers and motorways, which present barriers to humans. However road distances do not tell us much about the ease that people have in moving along the roads by public transport and I assume that such data is not available. I also wonder whether it is possible to include other access points – cinema/theatre, library/art galleries/museums, sporting venues.

The other barriers domain seems a curious collection of indicators. The modelled ratio of preschool children to childcare places needs work done on it to test its feasibility. I suspect it will be very difficult to allocate childcare places to wards sensibly – parents cross-ward boundaries to access childcare (see for example Skinner 2003).

Again the decision to give equal weights to the two sub-domains is difficult to justify – or contest.

REPONSE: The Blueprint proposes a focus on key services that to as great a degree as possible reflect the other proposed domains. Equal weights have been proposed for the sub-domains as it has not been possible to recommend otherwise from the current evidence base; again it will be instructive to get consultation responses on this issue. The point about ratio of preschool children to childcare places is well made and the proposal is to measure this at local authority district level. It is proposed that the district level average will be given to the constituent small areas.

## Crime and social order

This is the major innovation in this index and though there is a broad consensus that crime and social order should be in an index of deprivation it is fraught with difficulties and, in the end, I suspect they will end up with a great deal less than is proposed here. Many of the difficulties are mentioned in the proposals.

- The fact that many crimes take place in public spaces and are therefore difficult to attribute to wards.
- The underreporting of crime.

However I know from experience in undertaking research on police data in York (Bradshaw and Williams 2000 and 2002) that there are also major practical difficulties to be overcome in

- Obtaining the data in useable format from police forces.
- In the record there is data on crimes, victims and offenders (where they have been identified). It is not easy to allocate any of these to wards. Often postcodes have not been recorded and although it is possible to use software to allocate addresses to

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wards the software demands that the addresses are in a standard format In the end the proportion of crimes, victims and offenders successfully postcode varies by the type of crime.

- Then there are commonly more than one offender per crime and even more commonly more than one crime per offender. Not all crimes have a specific victim or the victim may be an institution.

The proposal is to collect data on

- burglary in a dwelling and attempted burglary,
- violence against the person,
- theft of a vehicle,
- attempted vehicle theft,
- theft from a vehicle,
- criminal damage,
- burglary other than in a dwelling,
- disorder.

Left out of this list are

- sexual offences (on the grounds that they are rare and suffer from reporting problems),
- cycle thefts (these are very common and an offence particularly effecting children and young people),
- shop theft and other theft (both large groups),
- fraud and drug offences.

It would be useful to have a justification as to why these (if not the crimes then the offenders) are disregarded. In addition total crime is to be modelled from centrally collected BCU data – total *recorded* crimes can also be estimated from police data.

REPONSE: Since the initial draft substantial progress has been made in getting access to geo-coded crime data. The types of crime to be included has been revised (disorder is no longer included). Some other categories of crime were considered but not thought to be appropriate to investigate further. For instance, relatively minor crimes such as shoplifting, have not been pursued as they are concentrated in retail centres and are subject to local differences in reporting. Although crime related to drugs is potentially very serious the vast majority of specific drug offences are minor

and the number of reported drug crimes are not necessarily a reflection of different drug levels, but more about police activity levels. Serious sexual assault has not been pursued due to sensitivity issues, low reporting, influence of victim-offender issues and difficulty of ascertaining the incidence. Cycle thefts have been excluded as they are relatively minor and fraud because very difficult to locate geographically. A measure of total crime has not been included because it would include these excluded categories.

Decisions will need to be made in each case about whether it is the crime, the offender or the victim that is allocated to an area or all three. In our study we explored the relationship between the distribution of all three and indicators of social deprivation at enumeration district level. Table 2 below provides a summary of the correlation coefficients obtained. The overall crime rate and criminal damage are highly correlated with indicators of local area deprivation but the other types of crime have much weaker relationships. The residence of offenders is much more consistently related to deprivation (except burglars) and victims of violence also tend to live in the more deprived areas. This analysis suggests that the location of offenders and/or their victims might be important elements to record.

**Table 2: Relationships between the spatial distribution of crimes, offenders and victims at deprivation at ED level: York. Correlation coefficients.**

| Crimes | % of ED households receiving IS/JSA | ED Unemployment rate |
|---|---|---|
| Overall crime rate | 0.70 | 0.45 |
| cycle theft | 0.16 | 0.12 |
| Theft from car | 0.11 | 0.01 |
| Theft of car | 0.21 | 0.21 |
| Criminal damage | 0.50 | 0.40 |
| Violent crime | 0.10 | 0.07 |
| Burglary | 0.16 | 0.10 |
| *Offenders* | *0.68* | *0.59* |
| Violent offenders | 0.61 | 0.53 |
| Burglars | 0.17 | 0.20 |
| Thieves | 0.57 | 0.49 |
| *Victims* | *0.07* | *0.27* |
| Victims of violence | 0.46 | 0.31 |

*Figures in italics are not statistically significant.*

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The aspiration to model fear of crime using the British Crime Survey in the initial proposals is a good one. There is also data in the PSE survey on the proportions of respondents who feel unsafe walking alone after dark (and in the Survey of English Housing). The overall proportion is 30 per cent but it is higher among over 65s (38%), females (42%), and the poor females (49%). This kind of data gives the basis of a model of fear of crime but it does not tell us about the local ward level factors (including crime) that might have an impact on fear of crime over and above any population characteristics. There is a good deal of work to be done testing the reliability and validity of these modelled estimates.

RESPONSE: The final Blueprint sets out that we are unlikely to be able to include a measure of fear of crime. An ONS feasibility study to determine the possibility of modelling BCS to the small area level is due to report to the Home Office in January 2004. It is unlikely that the results of any possible model will be ready in time for this update.

## Living environment

- Initial proposals for this domain explored (re)introducing lack of basic amenities that were from as a Housing Domain indicator in previous versions on the grounds that very few dwellings now lacked them.
- It is sensible to add central heating from the census – though using census data for this (and overcrowding[3]) presents problems in future updating.
- It is proposed to try modelling poor conditions using the English House Conditions Survey and this will be easier now it is going annual.
- On neighbourhood health I wonder whether they could make use of the work of Burrows and Rhodes (1998) and in particular his finding that dogs and neighbours were a major source of distress in local neighbourhoods.
- It is a good idea to use air quality and they might also consider using HES data on asthma and other pollution related conditions.
- It is also excellent to try to include road accidents to children – they are the principle cause of child mortality and injury and highly related to social class and deprivation. I suspect that they will only be able to use admissions data from HES and will need to combine years.

[3] The Blueprint proposals are for this to be included in the proposed Barriers to Housing and Services domain as it more of an issue of access to decent housing.

- If they are modelling down from national data sets then I think SEH has more robust measures than BCS – everything from dog shit, neighbours, litter, lighting, feelings of security, drug dealers etc. and 20,000 cases per year since 1993/4 to today.

RESPONSE: The Blueprint reflects the further consideration on this domain and key differences between this and the initial proposals are that the release of the Census has shown that only 1% of households experience a lack of basic amenities so it is proposed in the Blueprint not to include this indicator. Also, it is only proposed to model an indicator of poor conditions in social and private housing from the EHCS which is a better source of this information.

## Other issues

### Affordability

It is a very important issue and worth exploring more. Is it not possible to obtain data on rents, rents restriction, house prices, repossessions, Notices to Quit, Eviction Orders, and Administration Orders? Even if these were obtainable only at District level they could be used as proxies at ward level or even used to model to wards. I understand that Steve Wilcox is doing work for the LGA on new measures of affordability and it is worth asking him what he is coming up with and how applicable it might be to small areas.

RESPONSE: A scoping study has been undertaken by Professor Glen Bramley about possible measures of housing affordability that might be included in a future index. This indicates that a feasible first step could be to create an indicator of 'Difficulty of Access to Owner-occupation', based on house prices and incomes/earnings at local authority level. Further possibilities for broadening the scope and disaggregating the level of this indicator would require further work. The Blueprint proposes that an indicator of 'Difficulty of Access to Owner-occupation' be included in this domain.

## Children in unsuitable accommodation

I have already commented that there is case for thinking more about a child-oriented index. This indicator might be appropriate for that.

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RESPONSE: the Blueprint proposes not to include this measure following responses to the Stage 1 consultation which argued that it could reflect local authority practice rather than a standard deprivation across the country. Its inclusion in any separate child-oriented index would need to be considered in any work that took forward this recommendation.

## Vacant dwellings and low demand

This is important. Bramley et al (2000) have reviewed measures in this area and again they could look at that in more detail. Also perhaps they could use results from all continuous government surveys to begin to build up a post-coded picture of all addresses that interviewers designate as empty or not occupied – these are not deleted from the files usually. The point is they could use this form of non-contact as an ongoing way of building up picture of vacant dwellings. An alternative would be to go to the commercial sector and get post-coded data on dwellings that have been 'boarded up' and 'secured' – only 3 or 4 companies in whole country do this I understand.

RESPONSE: as the Blueprint discusses the variation in practice in reporting and measuring low demand and vacants mean that it is not being proposed as an indicator. Current barriers to combining Government Survey data would mean that there is no potential to do the suggested linking.

## Data, denominators and scale

There are obviously strong arguments to use the Census for denominators on the grounds that it is up-to-date. But the results of the Census are still being strongly contested by some local authorities and, over time, the Census based data will lose its advantage of being up-to-date. Is it not worth sticking with non Census denominators where good quality ones are available – for example Child Benefits as the denominator for children at ward level?

I had assumed that Super Output Areas would have been established by now and it is disappointing that they are not yet available.

RESPONSE: It is proposed that denominators be drawn from the 2001 Census as this is the best current source. While for some particular indicators such as receipt of benefits for children alternatives, such as the children registered on the Child Benefit system, such denominators could not be consistently used across the domains. In future and outside of Census years small area population estimates will need to be estimated and ONS's small area population estimates exercise is leading the way on this area.

The Blueprint raises the options on geography including the use of Super Output Areas if available and if no concerns about disclosure. The alternative is 2003 wards.

## Methodology

The use of the logit transformation (Appendix 1) seems to be an appropriate way to deal with the data.

I have some reservations about the use of factor analysis, in order to derive weights to combine the variables. Factor analysis is used to identify latent variables – that is variables that are hypothesised to exist, but which it is not possible (either practically or theoretically) to measure precisely. Instead, the latent variables are measured using indicators. Factor analysis relies on these indicators being "effect indicators" (sometimes reflective indicators) – that is that the latent variable effects the measured variable. The measured variables which are indicators of the same latent variable will be correlated, because they are caused by that latent variable. However, in some circumstances the indicator variables may be causal indicators (sometimes formative indicators). One example of a causally indicated variable may be SES. Education and income are indicators of social class, but they are not caused by social class, rather they are causes of social class. The indicators of deprivation may similarly be causal, rather than effect indicators. This raises problems for the use of factor analysis. First, the indicators may not necessarily be correlated when the indicators are causal. This is an issue for some types of measurement, although it is less likely for measures of deprivation. Second, and more serious, is that the partial correlation between any two measured variables, controlling for the factors, should be equal to (or very close to) zero in a factor analysis model. However, when the variables are causal indicators, there is no reason that the latent variable should account for all of the covariance between two measured variables. Again, to return to SES, which is indicated by education and income, there are a number of reasons that education and income will

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covary, controlling for SES will not reduce that covariance to zero. If this is the case, the factor loadings will tend to be biased upwards for those items (Bollen 2003).

There is not a very satisfactory answer to this challenge except that the results from the factor analysis should be examined to ensure that they are sensible.

The initial proposals states that ML extraction will be used. Although this is usually recognised as the 'best' method of extraction in factor analysis, it does not always manage to converge to a 'proper' solution, hence other methods of factor extraction should possibly be employed.

RESPONSE: Factor Analysis is only used in domains where 'latent variables' are hypothesised to exist and where the indicator variables are 'effect indicators'. A one factor solution will be extracted and the results examined carefully. This will itself inform the exact mechanics of the methodology and though ML extraction is the preferred method it might be that alternatives will need to be explored.

## Weights

This is the part of the process of the Index of Deprivation, which is most problematic. The argument in the initial proposals is that the proposed weights are based on theoretical considerations – evidence that deprivation is driven by two key domains low income and unemployment.

There is evidence that low income and unemployment are associated with most other deprivations. But there is also evidence that:

- it is not just low income but inequalities in income that effect health and well-being (Wilkinson 1996);
- some unemployment (of mothers) may be beneficial for children's educational outcomes (Ermisch and Francesconi forthcoming);
- the relationship between income/employment and other forms of deprivation are not one way – the health of lone parents and their children is an important determinant of their employment and income (for example Marsh 2001);
- that income is only weakly associated with lack of social perceived necessities and, most important of all to subjective feeling of being poor (Bradshaw and Finch forthcoming).

- The fact that people live in neighbourhoods with lots of poor and unemployed people may be an important factor in determining their sense of being deprived but a more important concern may be personal safety, dog shit, out of control youth, lack of public transport, drug dealing, bullying at school, relations with parents and peers (on this see Scott forthcoming).

There is not enough evidence on the hierarchy of multiple deprivation to contest the proposed weightings given to the domains, but I do think there is a strong case for undertaking further research including sensitivity analysis of the results of the weightings.The kind of analysis I have in mind is illustrated in the appendix using ID 2000 data. Table A1 presents a Pearson correlation matrix of domain scores which show the negative relationship between access and multiple deprivation, and that housing and education and skills are more weakly correlated to multiple deprivation (and to each other – is this because the education weights children and health weights the elderly?) than the other domains. I have then plotted ward score on multiple deprivation and each of the domains, identifying outliers. There are questions to be asked about these outliers. For example why does Rampton/Bassetlaw have such a low income deprivation score compared with its multiple deprivation score. One obvious possibility is that the data is wrong (is this the Rampton Hospital and if so does the income numerator exclude patients while the denominator includes them?). An alternative explanation is that the weighting might be generating these results.

In the multiple regression table A3 we see that 93 per cent of variance is explained by the Income Domain, a further 3 per cent is added by employment, 1.5 per cent by education and 1 per cent by access. Next to nothing is added by housing, child poverty and health – after taking account of the other domains. This suggest that whatever weight is given to these latter three domains it is not going to make a difference to the multiple deprivation score.

RESPONSE: The weights proposed in the Blueprint are based on an assessment of the theoretical evidence to date and it will be interesting to get the views from consultees on this area. We will consider for the future how a longer term work package may be considered to provide evidence for any future updates but this is by no means a straightforward analytical task. In the meantime the call to do more sensitivity testing is recognised and this will be done alongside consideration of the consultation responses to come up with the final weighting schema.

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## Backwards and sideways compatibility

I agree that it would be a very good idea to replicate the 2000 index or parts of it and to use this data to observe changes over time. It would be good to have an indication of which indicators (or domains) are consistent over time.

# Summary and Conclusion

- The initial proposals present a good agenda for further work to develop the Index of Deprivation.
- Only after that work is undertaken will anyone know whether the next index will be a small development or a substantial improvement.
- The proposed domains are fine but there is a case for starting to develop separate indices for different social groups – perhaps starting with children.
- Income Domain: more work needs to be done to adjust for take-up and housing costs and consideration needs to be given to the fact that there is now a hierarchy of income deprivation between social groups. Housing costs are a priority for more attention either here or in the Access Domain.
- Employment Domain: This is fine though perhaps more thought needs to be given to the denominator age span.
- Health and Disability needs a lot more work on feasibility.
- So does Education, Skills and Training. Is the decision to give equal weights to children and adults appropriate?
- So does the Barriers to Service domain.
- Crime and Social Order is the major new challenge in this iteration of the index and is highly problematic.
- Living environment also needs feasibility work.
- It is recommended to continue to use administrative data rather than the Census where it available.
- There are technical comments on factor analysis (but no good solutions).
- The weighting of the domains in the IMD is the key. There is a great deal more research needed before this can be put on a sound empirical basis. Meanwhile there is scope for a programme of sensitivity analysis of the existing weights.

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# Appendix

**Table A1: Indices of Deprivation: Correlations (Pearson test): Ward level**

| | Multiple deprivation | Incomes | Employment | Health | Education and skills | Housing | Access | Child Poverty |
|---|---|---|---|---|---|---|---|---|
| Multiple deprivation | | 0.97 | 0.96 | 0.87 | 0.77 | 0.67 | –0.43 | 0.93 |
| Incomes | 0.97 | | 0.93 | 0.84 | 0.73 | 0.66 | –0.54 | 0.97 |
| Employment | 0.96 | 0.93 | | 0.90 | 0.64 | 0.56 | –0.48 | 0.88 |
| Health | 0.87 | 0.84 | 0.90 | | 0.64 | 0.48 | –0.44 | 0.81 |
| Education and skills | 0.77 | 0.73 | 0.64 | 0.64 | | 0.55 | –0.38 | 0.74 |
| Housing | 0.67 | 0.66 | 0.56 | 0.48 | 0.55 | | –0.47 | 0.68 |
| Access | –0.43 | –0.54 | –0.48 | –0.44 | –0.38 | –0.47 | | –0.52 |
| Child Poverty | 0.93 | 0.97 | 0.88 | 0.81 | 0.74 | 0.68 | –0.52 | |

**Table A2.1 Outliers Employment**

**Low employment outliers**

| Local Authority | Ward | MD | Employment |
|---|---|---|---|
| Reading | Whitley | 40.6 | 10.2 |
| Forest Heath | Iceni | 17.3 | 1.0 |
| Oldham | St. Marys | 68.6 | 21.9 |
| Oxford | Blackbird Leys | 46.1 | 12.9 |
| Crawley | Broadfield | 32.3 | 7.3 |
| Boston | Holland Fen | 38.1 | 9.8 |
| Richmondshire | Colburn | 25.1 | 5.2 |
| Cambridge | Abbey | 35.4 | 9.4 |
| Harlow | Hare Street and Town Centre | 42.8 | 12.4 |
| Milton Keynes | Woughton | 49.7 | 15.2 |

**High employment outliers**

| Local Authority | Ward | MD | Employment |
|---|---|---|---|
| Liverpool | Everton | 82.1 | 50.9 |
| Bassetlaw | Rampton | 52.0 | 37.0 |
| Knowsley | Longview | 79.7 | 48.0 |
| Liverpool | Vauxhall | 81.5 | 46.7 |
| Knowsley | Princess | 80.8 | 46.4 |
| Newcastle upon Tyne | Moorside | 50.7 | 33.6 |
| Easington | Deneside | 72.2 | 41.7 |
| Liverpool | Granby | 79.8 | 43.4 |
| Knowsley | Northwood | 77.3 | 41.9 |
| Thanet | Pier | 70.6 | 39.1 |

# Appendix

**Table A2.2: Outliers Income**

**Low income outliers**

| Local Authority | Ward | MD | Income |
|---|---|---|---|
| Bassetlaw | Rampton | 52.0 | 9.8 |
| Castle Morpeth | Hebron, Hepscott and Mitford | 32.3 | 9.0 |
| Easington | Haswell | 62.3 | 33.4 |
| Forest Heath | Iceni | 17.3 | 1.7 |
| Bolsover | Glapwell | 34.3 | 14.4 |
| Broadland | Plumstead | 23.5 | 6.9 |
| East Lindsey | Ingoldmells | 61.4 | 34.3 |
| Tendring | Golf Green | 65.0 | 37.3 |
| South Holland | Deeping St. Nicholas | 34.3 | 15.6 |
| East Lindsey | Theddlethorpe St. Helen | 43.3 | 22.2 |

**High income outliers**

| Local Authority | Ward | MD | Income |
|---|---|---|---|
| Knowsley | Longview | 79.7 | 74.2 |
| Liverpool | Everton | 82.1 | 74.3 |
| Knowsley | Princess | 80.8 | 72.0 |
| Ashford | Stanhope | 55.7 | 54.0 |
| Burnley | Daneshouse | 71.5 | 65.0 |
| Wellingborough | Hemmingwell | 28.2 | 33.9 |
| Lichfield | Chadsmead | 30.9 | 35.2 |
| Blackburn with Darwen | Bastwell | 64.1 | 58.7 |
| Boston | Central | 32.5 | 36.3 |
| Liverpool | Vauxhall | 81.5 | 70.8 |

**Table A2.3 Outliers Education**

**Low Education Outliers**

| Local Authority | Ward | MD | Education |
|---|---|---|---|
| Hambleton | Rudby | 6.8 | –2.9 |
| Teesdale | Streatlam with Whorlton | 34.3 | –1.6 |
| Stockton-on-Tees | Yarm | 8.6 | –2.6 |
| East Lindsey | Chapel St. Leonards | 44.2 | –1.0 |
| Teesdale | Romaldkirk | 22.1 | –2.0 |
| Three Rivers | Moor Park | 2.9 | –2.8 |
| Congleton | Astbury | 13.9 | –2.3 |
| Wycombe | Lacey Green and Hampden | 5.2 | –2.6 |
| Craven | Grassington | 10.4 | –2.4 |
| Caradon | St. Ive | 25.2 | –1.7 |

**High Education Outliers**

| Local Authority | Ward | MD | Education |
|---|---|---|---|
| Richmondshire | Colburn | 25.1 | 2.3 |
| Basildon | Fryerns East | 46.4 | 2.9 |
| Crawley | Tilgate | 21.0 | 1.8 |
| Basildon | Vange | 46.9 | 2.8 |
| Cambridge | Abbey | 35.4 | 2.3 |
| Great Yarmouth | Yarmouth North | 42.8 | 2.6 |
| Maldon | The Maylands | 18.2 | 1.5 |
| Thurrock | Aveley | 37.5 | 2.3 |
| Braintree | Witham Silver End and Rivenhall | 20.2 | 1.5 |
| Epping Forest | Shelley | 30.8 | 1.9 |

# Appendix

**Table A2.4: Health Outliers**

**Low health outliers**

| Local Authority | Ward | MD | Health |
|---|---|---|---|
| Forest Heath | Iceni | 17.3 | –2.8 |
| Oxford | Central | 10.5 | –3.0 |
| Westminster | Knightsbridge | 6.1 | –3.0 |
| Cambridge | Newnham | 5.3 | –3.0 |
| Kensington and Chelsea | Brompton | 9.8 | –2.6 |
| Winchester | Micheldever | 9.0 | –2.6 |
| Wokingham | Barkham | 3.9 | –2.9 |
| Guildford | Pirbright | 6.5 | –2.7 |
| Rutland | Cottesmore | 5.4 | –2.7 |
| Test Valley | Over Wallop | 11.4 | –2.4 |

**High health outliers**

| Local Authority | Ward | MD | Health |
|---|---|---|---|
| Ribble Valley | Whalley | 16.7 | 1.4 |
| Castle Morpeth | Hebron, Hepscott and Mitford | 22.0 | 1.8 |
| Blackpool | Anchorsholme | 13.1 | 1.3 |
| Barrow-in-Furness | Hawcoat | 12.1 | 1.0 |
| Fylde | Ashton | 14.4 | 1.2 |
| Broadland | Plumstead | 15.0 | 1.2 |
| Wyre | Duchy | 12.8 | 0.9 |
| Macclesfield | Plumley | 13.4 | 1.2 |
| Hyndburn | St. Oswald's | 12.7 | 1.2 |
| Fylde | Heyhouses | 10.6 | 0.8 |

**Table A2.5: Housing Outliers**

**Low housing outliers**

| Local Authority | Ward | MD | Housing |
|---|---|---|---|
| Rother | St. Stephens | 11.2 | –3.3 |
| Darlington | Hummersknott | 7.05 | –3.2 |
| Castle Morpeth | Ponteland South | 7.5 | –3.0 |
| Macclesfield | Sutton | 12.6 | –2.8 |
| Castle Morpeth | Hebron, Hepscott and Mitford | 32.3 | –2.0 |
| Fylde | Heyhouses | 16.8 | –2.5 |
| Vale Royal | Frodsham East | 8.3 | –2.8 |
| Surrey Heath | Windlesham | 3.2 | –3.0 |
| Macclesfield | Knutsford South | 2.6 | –3.0 |
| Castle Morpeth | Ponteland North | 21.4 | –2.2 |

**High housing outliers**

| Local Authority | Ward | MD | Housing |
|---|---|---|---|
| Westminster | Lancaster Gate | 18.7 | 2.6 |
| Ealing | Northcote | 40.7 | 3.3 |
| Kensington and Chelsea | Brompton | 9.8 | 2.0 |
| Kensington and Chelsea | Courtfield | 8.3 | 1.8 |
| Ealing | Glebe | 39.4 | 3.0 |
| Westminster | Hyde Park | 18.2 | 2.2 |
| Kensington and Chelsea | Abingdon | 11.7 | 1.9 |
| Kensington and Chelsea | Queen's Gate | 8.4 | 1.7 |
| Westminster | Bryanston | 17.4 | 2.0 |
| Westminster | Bayswater | 24.4 | 2.3 |

# Appendix

**Table A2.6: Access Outliers**

**Low Access Outliers**

| Local Authority | Ward | MD | Access |
|---|---|---|---|
| Kensington and Chelsea | Royal Hospital | 7.1 | –2.5 |
| Cotswold | Stow-on-the-Wold | 5.9 | –2.5 |
| Hammersmith and Fulham | Sherbrooke | 24.5 | –2.8 |
| Kensington and Chelsea | Courtfield | 8.3 | –2.3 |
| Westminster | Cavendish | 13.1 | –2.4 |
| Westminster | Victoria | 26.0 | –2.7 |
| Hammersmith and Fulham | Colehill | 17.4 | –2.4 |
| Westminster | Bryanston | 17.6 | –2.4 |
| Kensington and Chelsea | Church | 19.9 | –2.5 |
| Hammersmith and Fulham | Town | 13.9 | –2.3 |

**High Access Outliers**

| Local Authority | Ward | MD | Access |
|---|---|---|---|
| Alnwick | Elsdon | 19.8 | 3.0 |
| Boston | Holland Fen | 38.1 | 2.3 |
| South Shropshire | Stoke St. Milborough | 19.1 | 2.8 |
| Tynedale | Upper North Tyne | 20.9 | 2.7 |
| North Cornwall | Ottery | 27.8 | 2.5 |
| South Shropshire | Newcastle | 18.6 | 2.7 |
| Alnwick | Craster and Rennington | 27.4 | 2.4 |
| Berwick-upon-Tweed | Cheviot | 22.0 | 2.5 |
| Malvern Hills | Kyre Vale | 20.9 | 2.6 |
| Alnwick | Hedgeley | 20.8 | 2.5 |

**Table A2.7: Child Poverty Outliers**

**Low Child Poverty Outliers**

| Local Authority | Ward | MD | Child poverty |
|---|---|---|---|
| Bassetlaw | Rampton | 52.0 | 14.6 |
| Easington | Shotton | 64.9 | 43.5 |
| Easington | Haswell | 62.3 | 42.6 |
| Castle Morpeth | Hebron, Hepscott and Mitford | 32.3 | 11.9 |
| Tendring | St. James | 58.1 | 38.6 |
| Macclesfield | Plumley | 22.6 | 2.6 |
| Shepway | St. Mary in the Marsh | 42.0 | 22.7 |
| Newcastle-under-Lyme | Holditch | 47.0 | 28.7 |
| New Forest | Netley Marsh | 27.8 | 9.0 |
| Easington | Easington Colliery | 64.6 | 47.0 |

**High Child Poverty Outliers**

| Local Authority | Ward | MD | Child Poverty |
|---|---|---|---|
| Charnwood | Ashby | 18.3 | 53.8 |
| Newark and Sherwood | Winthorpe | 29.1 | 62.6 |
| Medway | Twydall | 39.2 | 70.3 |
| Leeds | Headingley | 16.2 | 46.0 |
| Portsmouth | Charles Dickens | 49.1 | 79.6 |
| Lichfield | Chadsmead | 30.9 | 60.4 |
| Charnwood | Woodthorpe | 33.3 | 62.8 |
| Boston | Central | 32.5 | 61.1 |
| South Lakeland | Kendal Underley | 16.4 | 44.5 |
| Ashford | Ashford Bockhanger | 28.6 | 56.6 |

# Appendix

**Table A.3: Stepwise regression of multiple deprivation against the domains**

| | Unstandardized Coefficients | Std. Error | Standardized Coefficients | t | Sig. | R-square improvement |
|---|---|---|---|---|---|---|
| (Constant) | –0.362 | 0.085 | | –4.277 | >0.000 | – |
| Income domain score | 0.535 | 0.009 | 0.393 | 62.123 | >0.000 | 0.932 |
| Employment domain score | 1.226 | 0.010 | 0.517 | 119.638 | >0.000 | 0.959 |
| Education domain score | 2.813 | 0.033 | 0.159 | 84.241 | >0.000 | 0.973 |
| Access domain score | 2.216 | 0.027 | 0.125 | 83.558 | >0.000 | 0.982 |
| Housing domain score | 1.768 | 0.030 | 0.105 | 59.596 | >0.000 | 0.987 |
| Child poverty index score | –1.987E-02 | 0.004 | –0.022 | –4.417 | >0.000 | 0.987 |
| Health domain score | –0.112 | 0.049 | –0.007 | –2.291 | >0.022 | 0.987 |

*Dependent Variable: Indices of Deprivation 2000, index of multiple deprivation score*

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