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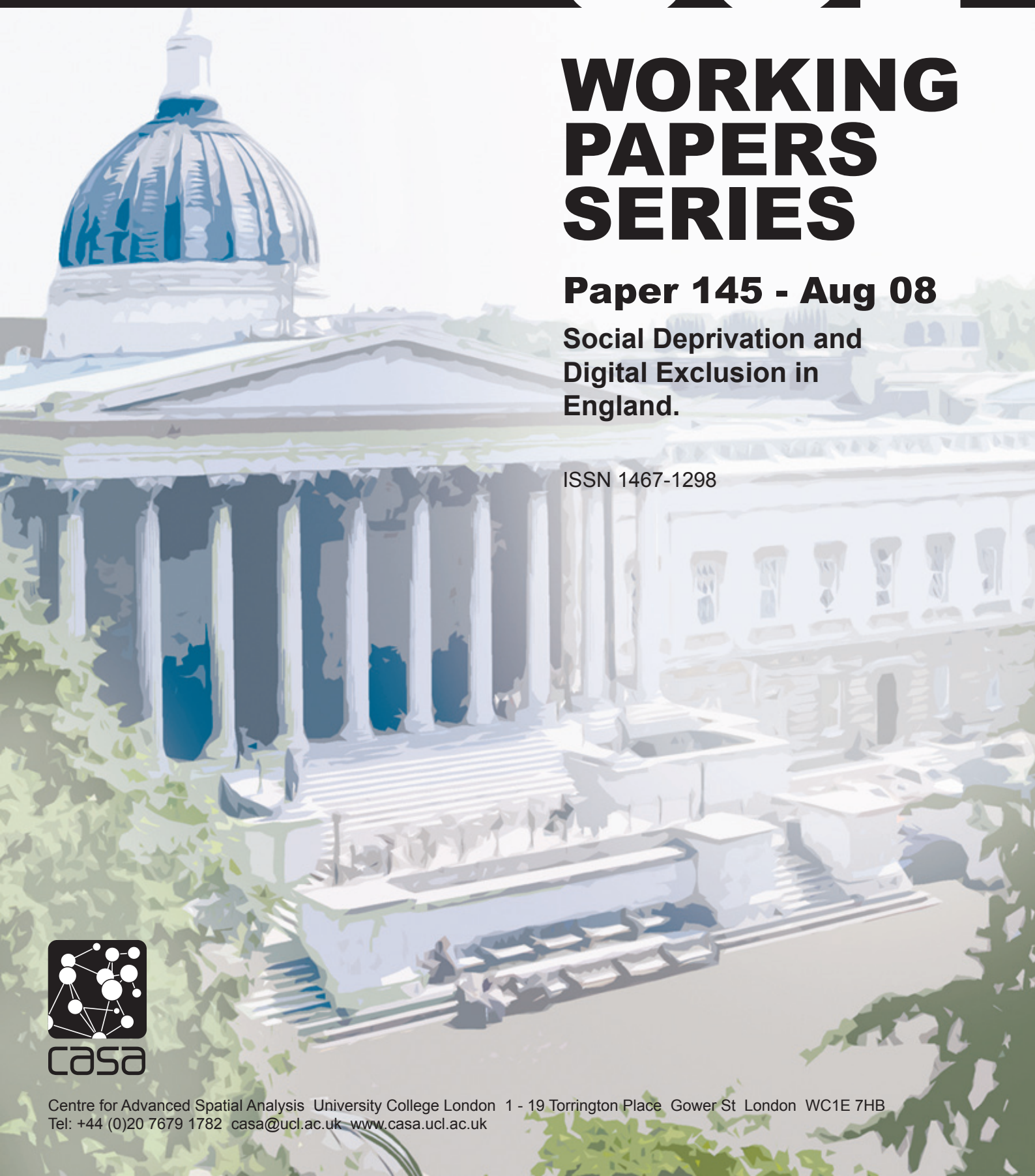

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Social Deprivation and Digital Exclusion in England.

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ABSTRACT

Issues of digital exclusion are now increasingly considered alongside those of material deprivation when formulating interventions in neighbourhood renewal and other local policy interventions in health, policing and education. In this context, this paper develops a cross classification of material deprivation and lack of digital engagement, at a far more spatially disaggregate level than has previously been attempted. This is achieved my matching the well known 2004 Index of Multiple Deprivation (IMD) with a unique nationwide geodemographic classification of access and use of new information and communications technologies (ICTs), aggregated to the unit postcode scale. This 'E-Society' classification makes it possible for the first time to identify small areas that are 'digitally unengaged', and our cross classification allows us to focus upon the extent to which the 2004 summary measure of material deprivation in England coincides with such lack of engagement. The results of the cross classification suggest that lack of digital engagement and material deprivation are linked, with high levels of material deprivation generally associated with low levels of engagement with ICTs and vice versa. However, some neighbourhoods are 'digitally unengaged' but not materially deprived, and we investigate the extent to which this outcome may be linked to factors such as lack of confidence, skills or motivation. Our analysis suggests that approximately 5.61 million people in England are both materially deprived and digitally unengaged. As with material deprivation, there are distinctive regional and local geographies to digital unengagement that have implications for digital policy implementation.

1. Introduction

The key distinction of the 1990s through which society was classified into the digital 'haves' and 'have-nots' is radically changing. Most people in the UK now have access to some digital technology, whether through devices that they own or simply through usage in public places (Burrows *et al*, 2005). In these changed circumstances, variation in awareness and usage is no longer best represented as the crisp and well-defined 'digital divides' that were posited a decade ago (Warschauer, 2004). Today's key issues, as in other developed countries, concern emergent patterns of digital differentiation within the population (Burrows, 2006). Such differentiation is becoming manifest in terms of access to different

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types of goods and services (Harris *et al*, 2005), in the speed and convenience of access, and the availability of new technologies in public and private domains. Thus high-speed networks, new hand-held and desktop devices, better interface and system design, and new ways of interacting using the Internet are all having important impacts upon productivity, work and social interaction. Yet there is little generalised understanding of the ways in which these new subtle divides match more conventional patterns of deprivation. In some countries, there has been an attempt to include indicators of 'digital engagement' – the Australian Census of Population, for example, includes a question on computer ownership – but even such (useful) measures fall short of presenting any detailed picture of the spectrum of uses to which the wide variety of available devices can be put.

The 2004 Index of Multiple Deprivation (IMD: ODPM, 2004) is an attempt to identify neighbourhoods where poor physical and social conditions coincide (Smith *et al*, 2005). The widely-used summary measure is an aggregation of seven domains - income, employment, health deprivation and disability, education skills and training, barriers to housing and services, crime, and the living environment. Policy analysis often focuses upon the single or two most deprived deciles, as identified by the summary measure. Hitherto, there has not been any common framework through which local patterns of digital exclusion and material deprivation might be systematically compared across England. This paper develops such a comparison, using a bespoke classification of ICT usage, created under the UK Economic and Social Research Council's (ESRC) 'E-Society' programme.

2. Objectives and Methodology

The motivation for the analysis developed in this paper is to understand the interrelationship between social exclusion, as measured by the IMD, and what is often described as 'digital inclusion' (Milner, 2007), as a precursor to formulation of digital inclusion policy. There is an extensive literature on the nature and characteristics of material deprivation (e.g. Harris and Longley, 2004; Lee, 1999; Noble *et al*, 2006) which we will not review in detail here, except to emphasise the importance of viewing deprivation as the outcome of a range of dynamic social processes rather than a static state, and the need to formulate areal action policies in this context. The terms 'digital divide' and 'digital exclusion' are similarly dynamic in terms of neighbourhood trajectory, but the terms are in some senses vague in that they describe states that may be the outcome of quite different processes and behaviours (Nettleton *et al*, 2004). Although not eloquent, we advocate the term 'digital unengagement' to the more pejorative 'digital exclusion' when describing the outcome of processes that fail to engage significant proportions of the population in the use of ICTs. There are likely to be

many causes of digital unengagement, and there is good reason to anticipate that it has predominantly negative consequences for the unengaged – in terms of core workplace skills, access to public goods and services (such as health and, increasingly, education), and the ability to obtain best prices for many privately consumed goods and services (Parayil, 2005).

The unique contribution of this paper lies in its focus upon the coincidence of material deprivation, as measured by the 2004 IMD at Super Output Area level, and lack of digital engagement, as measured by the UCL 'E-Society' classification at the scale of the unit postcode. The results of this analysis are of potential importance to a very wide range of policy makers concerned with improving the life chances of local residents (e.g. Dorling et al, 2007), as well as those concerned to engage the private sector in addressing the likely future needs of those that are yet to embrace ICTs. In addition to examining the relationship between the summary measure of deprivation and different types of 'digital exclusion', we also examine the somewhat diverse associations between digital exclusion and the different constituent domains of the summary measure.

The UCL 'E-Society' classification is based upon a detailed nationwide analysis of consumer access to new ICTs, and a classification of households in terms of the nature of their use of and access to these digital technologies (Longley *et al*, 2007). It is best thought of as a specialised geodemographic classification (Harris *et al*, 2005), the likes of which are used by almost every significant private sector customer-facing organisation in the UK today, and which are attracting increasing attention and use within public sector applications (Longley 2005; Ashby *et al* 2006). Such classifications are usually presented at the scale of the unit postcode, and for this reason are often referred to as 'neighbourhood classifications'. Most geodemographic classifications seek to assign people to groups that share similar characteristics or behaviours, although there is rarely if ever any clear theoretical rationale as to why shared characteristics in terms of newspaper readership, credit card usage, or vulnerability to particular health problems should account for observed variations in behaviour with respect to social attitudes or consumption of a very wide range of private and public goods. The elements of this debate have been rehearsed in Singleton and Longley (2007) and are not reproduced here: however, a central argument is that it may be more appropriate to create bespoke, or application-specific, geodemographic classifications for clearly specified purposes, rather than rely upon general purpose classifications. This argument may be centrally relevant in the case in public sector applications, if the weighting

schemes that largely govern classification outcomes are commercially secret, thereby severely inhibiting scientific reproducibility and hence public accountability.

Table 1: The E-Society classification

E-Society Groups	E-Society Types
Group A : E-unengaged	Type A01 : Low technologists
	Type A02 : Cable suffices
	Type A03 : Technology as fantasy
	Type A04 : Mobile's the limit
	Type A05 : Too old to be bothered
	Type A06 : Elderly marginalised
Group B : E-marginalised	Type B07: The Net; What's that?
	Type B08 : Mobile Explorers
	Type B09 : Cable TV heartland
Group C : Becoming engaged	Type C10 : E-bookers and communicators
	Type C11 : Peer group adopters
Group D : E for entertainment and shopping	Type D12 : Small time net shoppers
	Type D13 : E for entertainment
Group E : E-independents	Type E14 : Rational utilitarians
	Type E15 : Committed learners
	Type E16 : Light users
Group F : Instrumental E-users	Type F17 : Computer magazine readers
	Type F18 : E for financial management
	Type F19 : On-line apparel purchasers
	Type F20 : E-exploring for fun
Group G : E-business users	Type G21: Electronic orderers
Group H : E- experts	Type H22 : E-committed
	Type H23 : E - professionals

The UCL 'E-Society' classification is specifically concerned with people's engagement with new information and communications technologies. It was devised to provide context to the various projects that make up the UK Economic and Social Research Council's 'E-Society' research programme, which remains the biggest ever research initiative to ascertain the

impacts of new ICTs upon society. In this classification, every unit postcode in England is assigned to one of eight Groups each characterised by distinctive behaviours, and these Groups are in turn divided into a total of 23 Types. A summary of the Groups and Types that make up the classification is shown in Table 1. Longley *et al* (2007) describe how the classification was devised by combining a series of technology and other surveys with other socio-economic and demographic data, using an industry standard profiling procedure. The classification was initially devised at the level of the individual citizen, but has been aggregated to English unit postcodes for use in analysis reported in this paper. In general terms, it is helpful to think of the classification as suggesting increasing engagement in usage of information and communications technologies as one moves from Type A01 ('Low technologists') to Type H23 ('E professionals').

In order to conduct the analysis reported here, spatial coordinates (Easting & Northing) for every English unit postcode were obtained using the Ordnance Survey lookup tables that link unit postcodes to various 'higher level' or aggregated area units. This procedure makes it possible to identify the IMD status of every unit postcode. The IMD classification is disseminated at the scale of Super Output Areas (SOA), which are geographical aggregations of contiguous 2001 Census of Population Output Areas (see www.statistics.gov.uk/geography/soa for full details). The IMD summary score presents a measure of the level of overall deprivation of every SOA, and is derived from a series of sub domains concerning health, employment, income, education, crime, the living environment and barriers to housing and services. Both the summary scores and those of each of the constituent domains are commonly divided into deciles.

Public policy usually focuses upon the most materially deprived quintile (20%) or decile (10%), and the main analysis that we will develop here examines the associations between the most deprived quintile of the deprivation measures and the neighbourhoods that are least engaged with ICTs. Conception of a phenomenon clearly impacts upon the ways in which it is measured and subsequently analysed, and the conception of 'digital unengagement' set out at the beginning of this paper suggests at least three possible ways in which the Groups and Types of the UCL 'E-Society' classification shown in Table 1 might be used in comparison with the IMD measures: (a) Type A01 ('low technologists') which comprises approximately 9.2% of all Super Output Areas; (b) Group A (the 'e-unengaged'), which comprises approximately 31.4% of areas; and (c) Groups A and B combined (the 'e-unengaged' plus 'e-marginalised'), which together comprise approximately 39.6% of areas. In our analysis we

have experimented with each of these groupings. Our emergent view, guided by a Social Exclusion Unit (2000) and Scottish Office report (2000) was that combination of Groups A and B offered the most useful operational definition of 'digital unengagement', consistent with the likely scale of the problem. Therefore for the purposes of this analysis the digitally unengaged consisted of the neighbourhood types shown in Table 2.

Table 2: The E-Society neighbourhood Types that define 'digital unengagement'

- GROUP A: E-UNENGAGED
  - Type A01 : Low technologists
  - Type A02 : Cable suffices
  - Type A03 : Technology as fantasy
  - Type A04 : Mobile's the limit
  - Type A05 : Too old to be bothered
  - Type A06 : Elderly marginalised

- GROUP B: E-MARGINALISED
  - Type B07 : The Net: what's that?
  - Type B08 : Mobile explorers
  - Type B09: Cable TV heartland

It is important to be emphasise that this definition of 'digital unengagement' does not only comprise neighbourhoods that are 'digitally deprived' through lack of means to access or acquire information and communications technologies. Rather, the richness of the E-Society classification also makes it possible to identify neighbourhoods where residents feel unwilling to become engaged under their prevailing circumstances. It is also important to note that this definition relates not only to Internet usage, but also inability or reluctance to use a wide range of ICT tools for day-to-day tasks that are increasingly commonplace. These aspects of the definition are made clear in the detailed 'pen portraits' of the different neighbourhood types that were developed as an intrinsic part of the classification and that are available at http://www.spatial-literacy.org/esocietyprofiler/eclassification.php.

3. Results and Analysis

A four way cross tabulation of digital unengagement, as defined in Section 2, and material deprivation, as defined by the bottom quintile of the 2004 summary index, is shown in Table 3. This suggests that approximately 5.61 million people in England are both materially deprived and unengaged with respect to ICT usage in general. More people (an estimated 17,780,513) are digitally unengaged, as defined using our preferred measure, than fall into the bottom quintile of the IMD (9,782,511).

Table 3: The pattern of material deprivation and e-engagement

	Materially deprived	**Not materially deprived**
Not e-engaged	Group 1 (5,608,318 - 11.4%)	Group 2 (12,172,195 - 24.8%)
e-engaged	Group 3 (4,174,193 - 8.5%)	Group 4 (27,117,876 - 55.3%)

Figure 1 shows the cumulative frequency of unit postcodes (as a proxy for population size) that falls into each of the E-Society Types, ordered from the most engaged to the least. The straight line presents the 'equal share' trend that would prevail if each of the 23 Types accounted for the same share of the population. The path of the 'Postcodes' line shows that most of the Types that make up Group A are larger in population size than the average Type. Type A01 ('Low technologists') account for a particularly high proportion of all postcodes, consistent with Longley and Singleton's (2008) observation that this may have been a 'catch all' category in the classification.

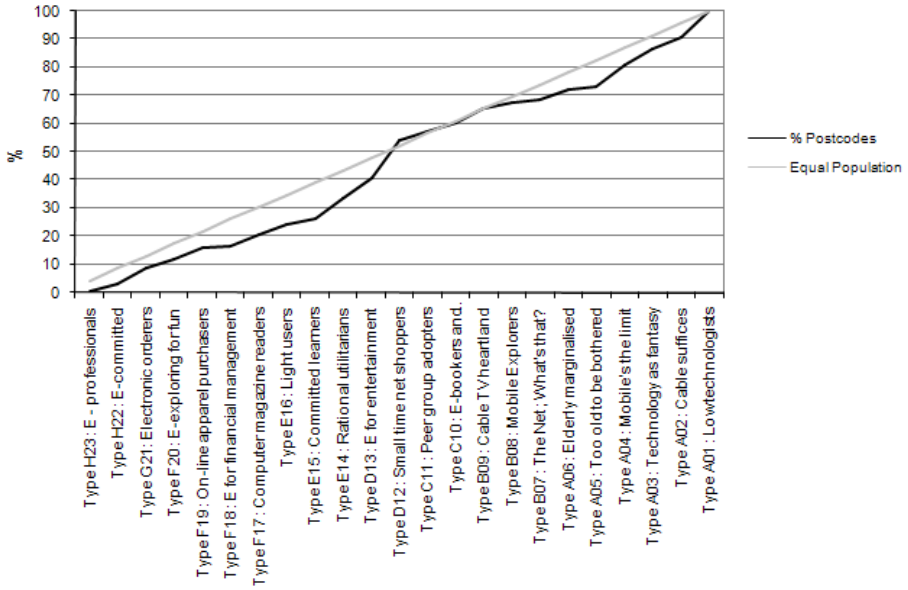

Figure 1: The distribution of the English population between E-Society Types

Figure 2 (in which D10 is the most deprived decile, and D1 the least deprived) shows a high level breakdown of E-Society Groups across the deciles of the summary IMD measure. The general picture is that as one moves from low levels of engagement with information and communication technologies towards more engaged Groups, so the incidence and degree of material deprivation declines. The pattern of usage of Group A (the E-unengaged) is

anomalous, however, in that it occurs in some numbers across the material deprivation distribution. We suggest below that this reflects motivations as well as material circumstances, notwithstanding the issues of ambiguity in the assignment of neighbourhoods to this Group noted above.

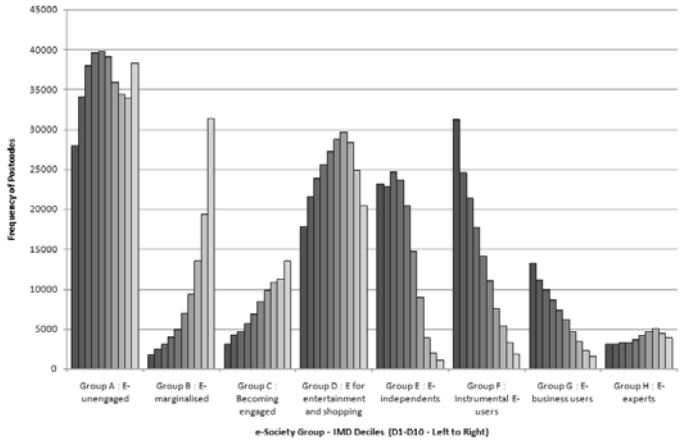

Figure 2: Levels of ICT engagement across IMD deciles at E-Society Group level

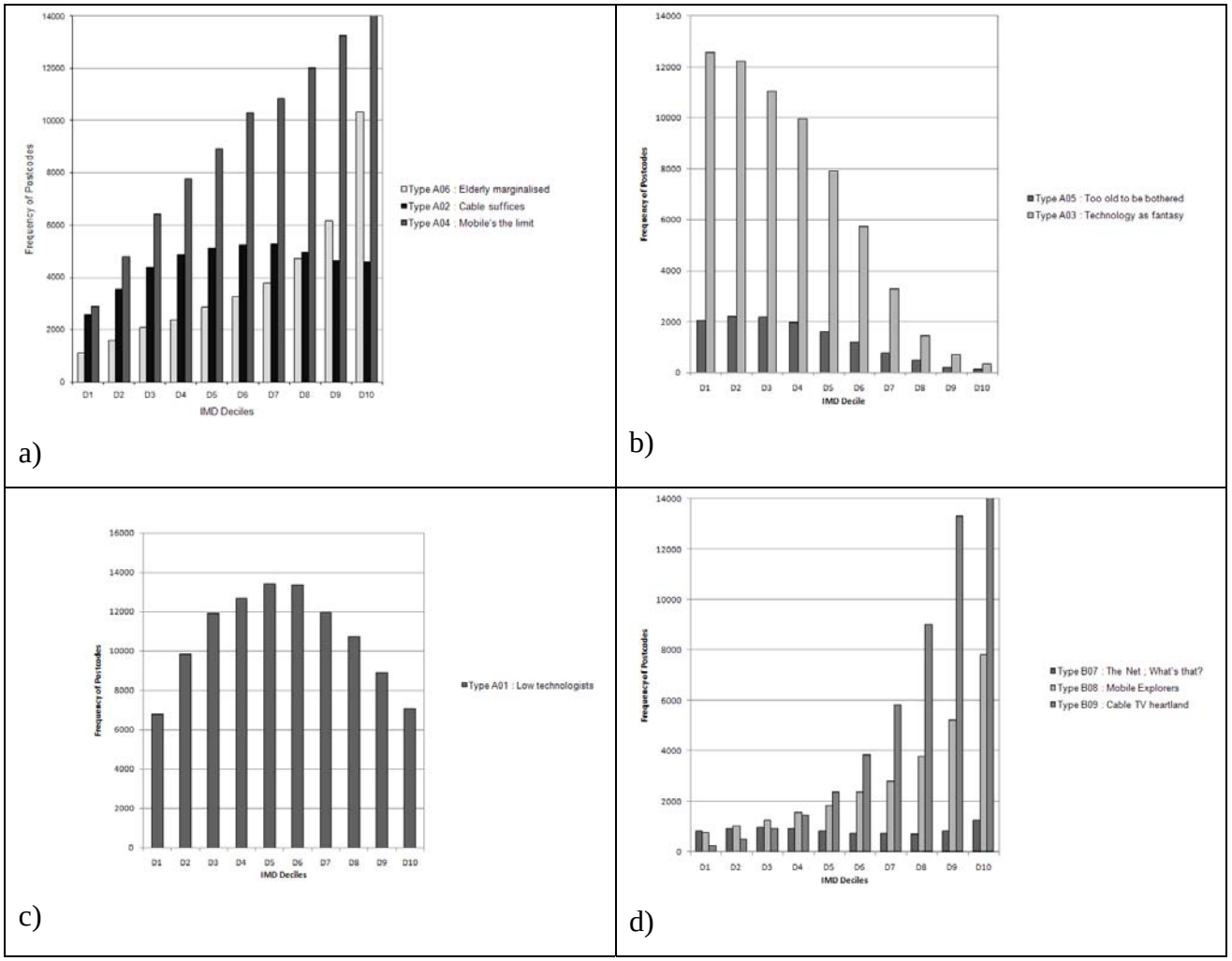

Figure 3: Distribution of E-Society Groups A and B across IMD summary score deciles

Within this broad picture, Table 3 shows the distribution of E-Society Types across the deciles of deprivation (where again D1 is the least and D10 the most deprived decile), and Figure 3 presents bar graphs of the distribution of the Types that make up E-Society Groups A and B across IMD summary score deciles. Figure 3 shows that the Types that make up Groups A and B fall into the five broad aggregations. First, Types A02, A04 and A06, of which the distributions are skewed *towards* materially deprived neighbourhoods, and where lack of digital engagement is likely to reflect advanced age, low income and lack of skills. Together, these Types represent 48.9% of the digitally unengaged (Figure 3(a)). Second, Types B08 and B09 are, like A02, A04 and A06, strongly skewed *towards* materially deprived neighbourhoods, demonstrating only very limited engagement with mature technologies such as mobile phones and cable television (Figure 3(b)). Third, the distributions of Types A03 and A05 (accounting for 21.6% of the digitally unengaged), are skewed *away from* materially deprived neighbourhoods, suggesting that lack of engagement may reflect lack of motivation. Fourth, the Types extracted from Group B are also skewed towards materially deprived neighbourhoods, although Type B07 shows no discernible trend (Figure 3(d). Finally, Type A01, shows no over-all trend across IMD deciles (Figure 3(c)): the problems with this Type as representing a 'catch all' category have been noted above and by Longley and Singleton (2008), and require more detailed analysis of the classification that lies beyond the scope of this paper.

Taken together, the stark variations in these results suggest a polarity amongst the digitally unengaged found in different E-Society neighbourhood Types. For some Types, the outcome of digital unengagement appears to arise for reasons closely linked to the causes of material deprivation as conventionally understood; however, the cross classification also identifies neighbourhoods that appear to be unengaged principally because of lack of motivation. The composition of A01 is of concern here, and it remains for further research to investigate its detailed composition and how it has developed in the period since the E-Society classification was completed (Longley and Singleton, 2008).

In common with many deprivation studies, this analysis focuses only upon the 2004 summary measure, which is a summary of the separate domains pertaining to: income deprivation; employment deprivation; health deprivation and disability; education, skills and training deprivation; barriers to housing and services; living environment deprivation; and crime. Although high levels of correlation are often observed between these constituent measures, it is perfectly possible that the over-all relationships between the summary

measure of material deprivation and digital unengagement may not uniformly reflect patterning of these constituent measures. It is thus appropriate not only to disaggregate the E-Society Groups into their constituent Types, but also to examine the profile of each Type across the different IMD domains. The breakdown of the 23 E-Society Types across the most deprived decile of each of the constituent domains of the IMD, plus the summary measure, is shown in Table 5.

Table 5: The distribution of E-Society Types (and Group A totals) across IMD domains.

	IMD	**Crime**	**Education**	**Employment**	**Health**	**Housing**	**Income**	**Living**
Type A01 : Low technologists	6.3	5.7	9.4	8.0	7.7	5.0	5.5	5.2
Type A02 : Cable suffices	4.1	3.3	6.0	4.7	4.5	0.8	3.8	2.6
Type A03 : Technology as fantasy	0.3	0.8	0.4	0.6	0.5	7.5	0.3	0.6
Type A04 : Mobile's the limit	14.1	10.5	15.9	15.7	15.6	4.3	13.1	8.2
Type A05 : Too old to be bothered	0.1	0.4	0.1	0.2	0.1	1.3	0.1	0.4
Type A06 : Elderly marginalised	9.2	7.0	7.8	9.4	9.1	2.4	8.9	5.8
Total Group A	**34.1**	**29.7**	**39.7**	**38.6**	**37.5**	**22.3**	**31.7**	**22.8**
Type B07 : The Net ; What's that?	1.1	1.0	0.9	1.1	1.1	1.0	1.2	0.9
Type B08 : Mobile Explorers	7.0	5.6	6.3	6.0	5.8	2.9	8.0	3.9
Type B09 : Cable TV heartland	19.8	14.9	16.3	16.5	16.7	4.2	21.7	16.0
Total Group B	**27.9**	**21.5**	**23.5**	**23.6**	**23.6**	**8.1**	**30.9**	**20.8**
Total Groups A & B	**62.0**	**49.2**	**63.1**	**62.2**	**61.1**	**29.4**	**62.6**	**43.6**
Type C10 : E-bookers and communicators	4.3	6.3	2.0	3.8	3.8	4.7	4.5	7.3
Type C11 : Peer group adopters	7.8	8.3	4.7	7.1	7.3	2.3	7.4	9.3
Type D12 : Small time net shoppers	4.6	8.5	5.2	5.2	5.5	7.2	4.4	9.3
Type D13 : E for entertainment	13.7	11.1	20.4	13.7	13.3	2.5	14.0	10.8
Type E14 : Rational utilitarians	0.4	0.8	0.5	0.7	0.6	21.4	0.3	0.6
Type E15 : Committed learners	0.2	0.5	0.2	0.3	0.3	1.9	0.2	0.4
Type E16 : Light users	0.4	1.0	0.5	0.5	0.5	3.0	0.3	0.8
Type F17 : Computer magazine readers	0.1	0.7	0.1	0.2	0.2	4.9	0.1	0.5
Type F18 : E for financial management	0.2	0.4	0.1	0.1	0.1	0.8	0.2	0.6
Type F19 : On-line apparel purchasers	0.9	1.7	1.0	1.1	1.1	4.8	1.0	1.5
Type F20 : E-exploring for fun	0.5	1.6	0.2	0.4	0.5	6.4	0.5	3.0
Type G21: Electronic orderers	1.4	3.1	1.1	1.6	1.7	5.3	1.4	3.0
Type H22 : E-committed	3.2	5.9	1.0	3.0	3.5	4.2	2.8	7.8
Type H23 : E – professionals	0.3	0.9	0.0	0.2	0.3	1.2	0.2	1.4

When the figures for the 'digitally unengaged' Types in Group 1 are summed (shown in row 7 of Table 5), it is very apparent that the coincidence of deprivation and lack of digital engagement is far more pronounced in some deprivation domains than in others. High (38 – 40%) percentages of the lowest decile of deprivation are found in the education, employment and health domains; moderate (30 – 34%) percentages are found for the crime and income domains; and lower (22 – 23%) percentages are found for the housing and living environment domains. The high percentages in the first of these aggregations (education,

employment and health) arise throughout the Types in the 'e-unengaged' Group, with a small number of exceptions (e.g. the elderly marginalised are under-represented in the education deprivation domain). The high figures in these domains are of particular concern to digital inclusion policy, in that improved education, employment and health are obvious levers to empower the residents of deprived communities to improve their personal circumstances. The second of these aggregations (that is, of the crime and income domains) generally mirrors the summary IMD percentages, although the 'Mobile's the limit' Type is under-represented in the crime domain of deprivation. The lower percentages in the third of these aggregations occur principally because of low representation of the 'Mobile's the limit' and 'Elderly marginalised' categories in the housing and living conditions domains, which may in part reflect the low preponderance of elderly people in such neighbourhoods. However, the 'Technology as fantasy' Type is very heavily concentrated in the housing deprivation domain.

Although it is not the intention of this paper to detail policy recommendations for digital inclusion policy, the results of this analysis do broadly indicate a number of different interventions that might be considered to address the causes of low levels of e-engagement. For example, Type A02 neighbourhoods might become more digitally and socially engaged through e-learning initiatives and implementation of health care reforms, including services such as NHS Direct. Second, Type A03 neighbourhoods might become engaged through technology applications linked to housing, given the heavy concentration of this Type in this domain of deprivation. Initiatives might include the deployment of electronic tenant services to find properties, pay rent, or report maintenance problems. These neighbourhoods have low uptake of cable services, and may be amenable to initiatives involving distribution of set top boxes or private sector initiatives. Third, Type A04 neighbourhoods are heavily represented in the education, employment and health domains of deprivation. Their limited engagement with ICTs, specifically using mobile phones, suggests that they might be invited to subscribe to messaging services relating to job alerts, availability of preventive health services (e.g. 'flu injections), and so forth. Fourth, Type A05 neighbourhoods are more in evidence because of lack of engagement with ICTs than because of high levels of material deprivation. It therefore seems likely that engagement to further policy initiatives may be best fostered through private sector initiatives. Fifth, Type A06 neighbourhoods appear more likely to be beset by problems of public service delivery than poor physical environments. Relevant policy initiatives might include: crime and safety applications that report anti-social behaviour or crime via digiTV; education applications based in ICT suites in day centres; or health applications such as Telecare. And sixth, Type B07, B08 and B09 neighbourhoods might become more engaged in ICT usage through marketing initiatives that package essentially passive technologies such as cable television with more active applications, such as broadband Internet.

Figures 4 and 5 put these findings into a spatial context, by identifying the Super Output Areas in which material deprivation and digital unengagement do not coincide. Figure 4

presents the areas that fall into the lowest quintile of the IMD but which are not classed as falling into Groups A or B of the E-Society classification. Broadly speaking, this illustrates the predominantly urban picture of the material deprivation summary measure, with greatest representation in North West and North East England.

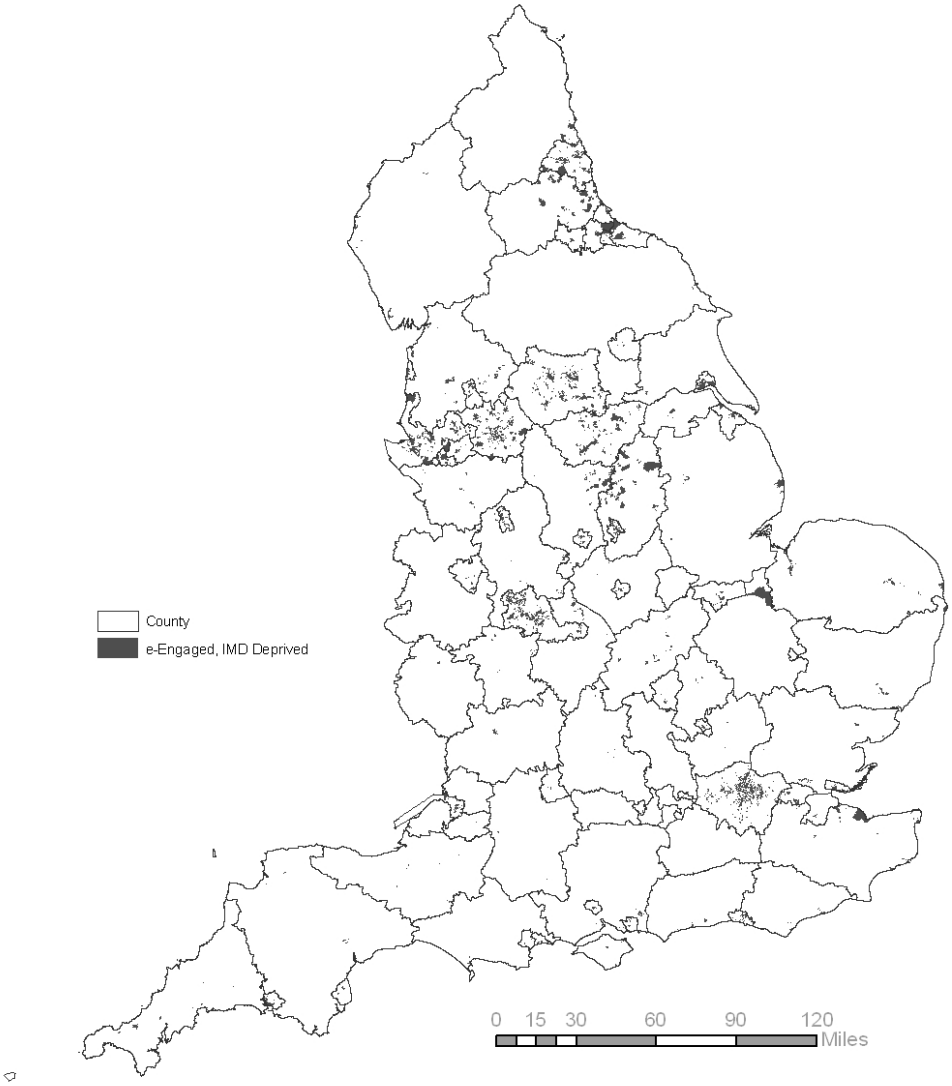

Figure 4: Areas falling into the lowest quintile of the IMD, but that are 'e-engaged'

Figure 5 presents the England-wide picture of areas that are unengaged with the E-Society, but which are not deprived in material terms. This shows a less spatially concentrated pattern, and significant but scattered areas of 'unengagement' in rural and coastal locations. Many of the latter in particular are likely to be retirement areas, but the broader implications for rural development and service provision should not be underestimated.

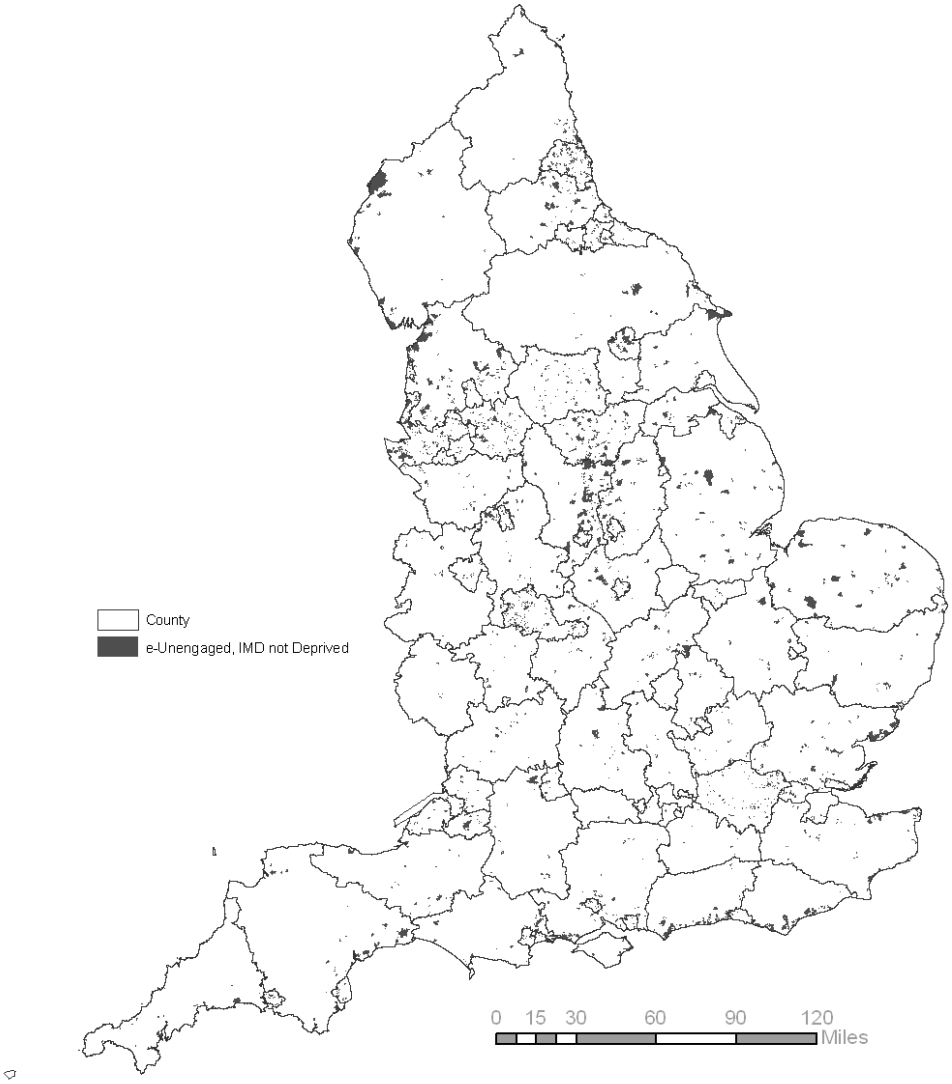

Figure 5: Areas that are not 'e-engaged', but which do not fall into the lowest quintile of the IMD.

Figure 6 maps the areas that fall into E-Society Group A as well as the most deprived quintile according to IMD. Overlaying digital unengagement with material deprivation reveals a 'north-south divide', with remarkably few areas identified in London. In general terms, this suggests that local and regional authorities working in some northern areas are likely to find it helpful to think of digital exclusion as an adjunct to material deprivation, while in most all of England south of a line from the Wash to the Severn, digital exclusion may be best addressed independently of policies designed to alleviate material deprivation. The most deprived areas in material terms are still concentrated in parts of some of the conurbations that were worst ravaged by deindustrialisation in the 1980s (Byrne, 1995).

Figure 6: Areas that are not 'e-engaged', and which also fall into the lowest quintile of the IMD.

The composite picture is presented in Figure 7. We believe that this is the first time that the incidence of digital and material deprivation has been compared in such detail. It raises a number of issues that are worthy of further investigation. The areas where digital and material deprivations coincide by no means dominate the map. Such areas are by no means exclusively concentrated in the major conurbations. Areas which are not engaged in use of ICTs occur in some (but not all) National Parks and a number of other very rural areas, but also in seaside retirement areas. There is merit in investigating these trends in greater detail, perhaps in consultation with local authorities.

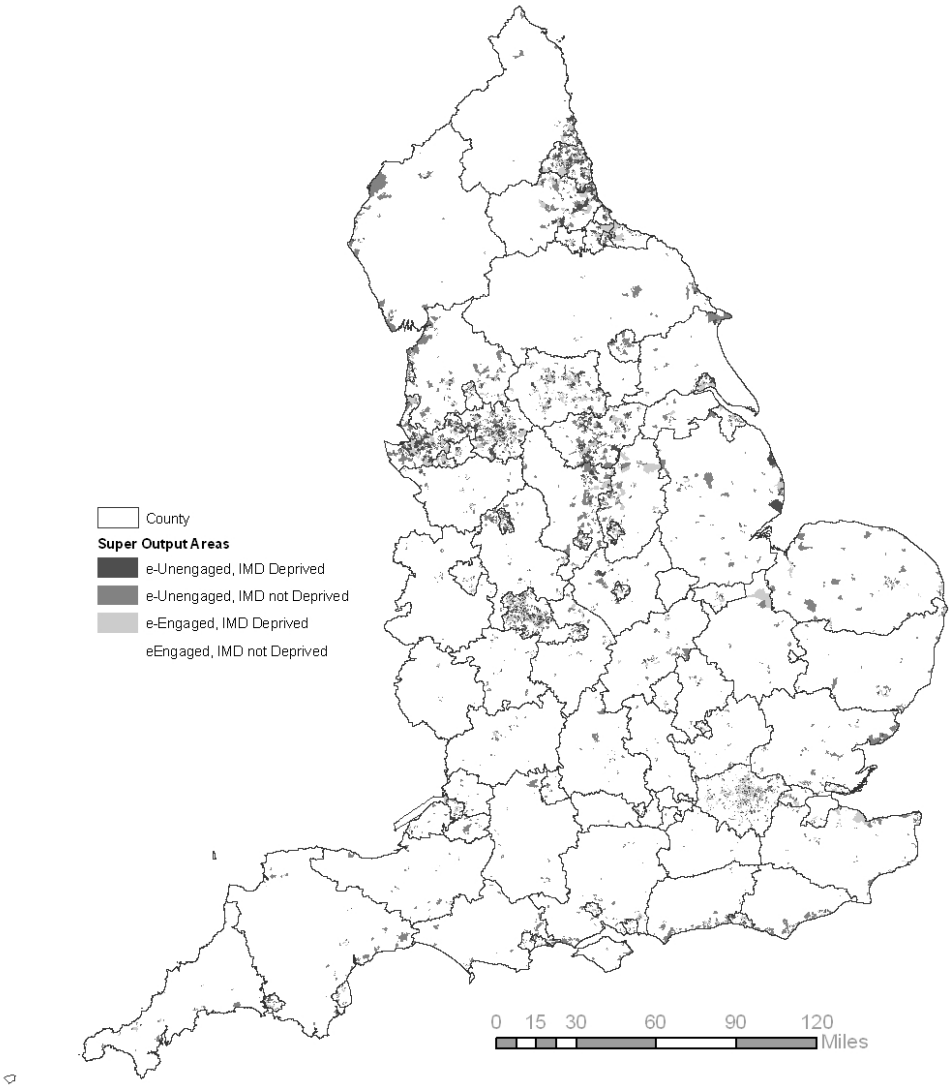

Figure 7: Composite map of material deprivation and the digitally unengaged.

4. CONCLUSIONS

This report has used a novel dataset to demonstrate that the nationwide patterns of digital exclusion and material deprivation are linked, and that high levels of material deprivation are generally associated with low levels of engagement with ICTs and vice versa. Yet it is clear that many neighbourhoods are 'digitally unengaged' but not materially deprived. 'Digital unengagement' is an outcome that turns out to have a number of different causes: unengagement with likely causal links to material deprivation; lack of motivation to use information and communication technologies under prevailing circumstances; and other causes that are likely only to have become apparent in the period following completion of the UCL E-Society classification. This has implications for the range of policy initiatives (e.g. see Burrows *et al*, 2005; Devins et al 2002) – public and private – that might be adopted to address the negative implications of 'digital unengagement' for society as a whole.

Approximately 1.15 million people in England fall into the bottom decile of the IMD and Group A of the E-Society classification. As with material deprivation, there are distinctive regional and local geographies to lack of e-engagement. The two are coincident in parts of Northern England, and areas of low e-engagement are often adjacent to areas that are materially deprived. But elsewhere, notably in coastal and rural areas, the geographies are quite different. This has implications for the way in which policy initiatives are implemented at both the regional and the local levels. The nature and extent of 'digital unengagement' also varies across the different domains of material deprivation. There is a range of ways in which these that might be developed in the light of these findings, most obviously with regard to the education, employment and health domains of deprivation which are very strongly related to digital unengagement.

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