

# Mapping the “hard edges” of disadvantage in England: Adults involved in homelessness, substance misuse, and offending

Glen Bramley  | Suzanne Fitzpatrick | Filip Sosenko

School of Energy, Geosciences,  
Infrastructure and Society, Heriot-Watt  
University, Edinburgh, UK

## Correspondence

Glen Bramley  
Email: g.bramley@hw.ac.uk

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There is growing policy interest in the UK in adults who exhibit severe and multiple disadvantage, combining homelessness, substance misuse, and offending. Triangulation of administrative datasets enables estimation of the scale and characteristics of these overlapping groups, and geographical mapping permits quantitative examination of the area types associated with these extreme forms of disadvantage. It is shown that measures from different data domain systems correlate well and that the geographical variance in prevalence is greater than for many comparable indicators. Emergent themes include the centrality of poverty, the legacy of deindustrialisation, the role of certain types of urban centre, and the spatial distribution of services and institutions. Wider implications for debates on the definition, measurement, and causation of poverty are drawn out, while the future prospects for the use and linkage of administrative data in this field are considered.

## KEYWORDS

administrative data, complex needs, disadvantage, poverty, triangulation

## 1 | INTRODUCTION

General measures of poverty and multiple deprivation are well established tools in Great Britain for use at local and small area levels to inform research, service development, and funding, albeit that the adequacy of local service funding relative to poverty has been called into question (Hastings et al., 2017). At the same time, increased policy attention is being given currently to particular forms of more extreme disadvantage, notably homelessness (Conservatives.com, 2017, p. 58; Mackie, 2015; Ministry of Housing, Communities, & Local Government, 2017; National Audit Office, 2017) and mental ill-health (Conservatives.com, 2017, p. 57; Department of Health with NHS England, 2015; Layard & Clark, 2014). There is also growing awareness in UK policy circles that groups experiencing problems such as homelessness, drug and alcohol misuse, poor mental health, and offending behaviours are often populated to a large extent by the same people (Bramley et al., 2015; Department for Work and Pensions (DWP), 2012; Fitzpatrick et al., 2011, 2013). Despite the fact that they make extensive and expensive demands on public services, notably in health (Aldridge et al., 2018; Waugh et al., 2018) and criminal justice (Measham & South, 2012), there is also concern that service responses are often inappropriate or insufficiently holistic for these vulnerable individuals (Cornes et al., 2011). While people with multiple, complex needs require support from effective, coordinated services (Making Every Adult Matter (MEAM), 2008, MEAM, 2009; Revolving Doors Agency & MEAM, 2011), this demands a robust evidence base, and current data on people at the extreme margins remain

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patchy (DWP, 2012; Duncan & Corner, 2012), while evidence on “what works” for these groups is mixed, to say the least (Luchenski et al., 2018).

These problems of service inadequacy and the lack of data both reflect key characteristics of this group of adults with complex needs, namely that they often display transgressive and/or chaotic behaviour, as discussed further in Sections 2 and 3. These patterns are particularly associated with those who have drug and/or alcohol addictions, and some involvement with crime (Bennett et al., 2001; Mcara & McVie, 2012; Roberts, 2003; Singleton et al., 1999), which may also be linked with homelessness amongst single people in particular (Mcnaughton Nicholls, 2009). Their living circumstances are often not contained within stable household settings, and they are likely therefore to be omitted from the main conventional household surveys, which are the principal UK source of evidence on poverty, living conditions, and wellbeing (Bramley et al., 2018). This would include rough sleepers, residents of various kinds of institution, absent or temporary household members (“sofa surfers”). Such groups, where they are contained within conventional households, may be disproportionately amongst the non-responders or sample attrition in household surveys. Although people with these sorts of “complex needs” often have problematic relationships with services, qualitative research indicates that they often have extensive contact with services of various sorts, willingly or otherwise, especially once one includes the criminal justice system as a “service” (Bramley et al., 2015). Hence we argue that service-based datasets, particularly where comprehensive and, in some measure, compulsory, may be a better basis for measurement and profiling, and especially for mapping, than household surveys.

This article examines evidence from administrative data systems on the geographical incidence of adults with combinations of such “severe and multiple disadvantage” (SMD) at locality level across England. By triangulating views of this population from datasets rooted in the three domains of homelessness, offending and substance misuse, we derive unique new measures of the scale, profile, and geographical distribution of the group experiencing this more complex combination of disadvantages. We use this evidence to address a number of questions:

1. How consistent is the evidence on SMD distribution derived from datasets rooted in the domains of offending, substance misuse and homelessness?
2. How variable is the incidence of SMD among adults across different localities in England?
3. Based on geographical patterns and associations, what appear to be the main drivers or correlates of SMD? How closely does the distribution of SMD reflect the main measures of area deprivation used in England?
4. Can these patterns be seen to be related to the development of local and regional economies over recent decades?
5. Is there evidence for any tendency for incidence to reflect the supply of services or presence of institutions in particular localities?
6. Does the evidence suggest that particular types of locality play particular roles in the generation or concentration of SMD?

This article serves both a methodological purpose (through questions 1–3 above) and at the same time a substantive one, highlighting potential implications for policy approaches to SMD and wider poverty. We first address in Section 2 the specific definitions and measures of SMD used in this analysis, derived from both literature and key stakeholder interviews. Section 3 addresses some policy issues which the evidence of these measures may illuminate. Section 4 looks in a more descriptive way at the geographical patterns, addressing in particular questions of (1) “consistency” and (2) “variance,” and identifying subjectively obvious clusters of high or low values (question 6). Section 5 moves on to modelling to “explain” the patterns in terms of potential drivers or associated factors, testing a wide range of hypothesised factors, including particularly local economy trajectories and supply side influences (questions 3–5). Models based on individual variables and factor analysis approaches are compared, including examination of predictions for a standard typology of localities. The concluding discussion (Section 6) draws out some potential implications for wider debates in social policy, while also commenting on possible future developments in the measurement and policy response to SMD.

## 2 | DEFINING AND MEASURING SMD

UK governments have used the term “multiple disadvantage” to refer to a wide-ranging set of concerns in the realms of education, health, employment, income, social support, housing, and local environment (HM Government, 2010). This study is more specifically concerned with one particular formulation of the *extreme margins* of social disadvantage. This definition encompasses people who experience some combination of *homelessness*, *substance misuse*, *mental health problems*, and *offending*, which coincides with many uses of terms such as “multiple needs,” “complex needs,” or “chronic

exclusion” (Clinks et al., 2009; DWP, 2012; Duncan & Corner, 2012; Hampson, 2010; Joseph Rowntree Foundation, 2016; Rankin & Regan, 2004; Revolving Doors Agency & MEAM, 2011; Rosengard et al., 2007). Evidence shows that these experiences overlap in practice for many individuals (Fitzpatrick et al., 2013), but also that there appear to be causal inter-relationships (Fitzpatrick, 2005) that interact and tend to push people to the edge of mainstream society (McNaughton Nicholls, 2009).

In developing the definitional framework the authors undertook a qualitative scoping exercise, involving a wide-ranging literature and policy review, complemented by interviews with people with direct relevant experience ( $n = 12$ ) and senior stakeholders in the fields of homelessness, substance misuse, criminal justice, and mental health ( $n = 18$ ). These informants showed broad consensus that the extreme nature of the SMD experience often lay in the multiplicity of these issues, their connectedness and their overall impact (Bramley et al., 2015; see also Duncan & Corner, 2012, Revolving Doors Agency, 2012). They confirmed the inadequacy of household surveys in capturing this group, and also the departure from societal norms that these combined experiences represent. To varying degrees, these groups are seen to exhibit behavioural “deviance” or “transgression” (Mcnaughton Nicholls, 2009), increasing the degree of stigma associated with these groups (MEAM, 2008; Shelton et al., 2010). This tends to depend on the degree of *social harm* which might result from such behaviour and the perceived degree to which it lies within the person’s *locus of control*. Mental health was in the end excluded as a definitional parameter because of its wide reach, less distinctive character, and lack of a unified national administrative dataset on the delivery of MH services, particularly for the more common and less acute forms of mental disorder.<sup>1</sup>

So we arrived at an approach to quantification and profiling of SMD based primarily on administrative datasets for people using relevant services in the three key domains:

1. *Offender services* – Offender Assessment System (OASys). This dataset covers a substantial part of the prison population and also of those undertaking community service punishments.<sup>2</sup>
2. *Substance misuse services* – National Drug Treatment Monitoring System (NDTMS); a subset of this dataset covers alcohol services.
3. *Homelessness services* – Supporting People (Client Records and Outcomes for Short-Term Services) (SP).

A key condition enabling this approach was that each domain dataset should contain adequate indicators for the involvement of subjects in the other key domains – for example, indicators of homelessness or related housing problems within the OASys dataset. Our approach may therefore be characterised as one of “triangulation,” where for any one sub-group or segment (for example homeless offenders) we have at least two and generally three estimates of their number and profile, based on two or more distinct datasets. We judged that in each case the above datasets gave an adequate identification of experiences/disadvantages in the other relevant domains.

More broadly, this administrative-based approach assumes that most of the target group are in contact with some service(s) in one or more of these domains at some stage. While this may mean some under-representation of the SMD phenomenon, it offers much better coverage than an approach based on conventional household surveys for reasons discussed above. Overall this approach is likely to give a conservative estimate of numbers, particularly in respect of alcohol misuse. Although not all parts of the offender population were covered by OASys, we used published criminal justice statistics to gross up to appropriate totals. We use Supporting People data for 2010/11, the most recent year for which all authorities and all services grant-aided by the SP programme were included, and believe that this gave very good coverage of single homelessness services.

We would underline that this approach should be distinguished from that of administrative *data linkage*, a focus of growing interest in academic and policy research including impact and evaluation studies. While such research offers substantial potential advances in terms of stronger evidence of causality and/or policy effectiveness when interventions are made with particular groups, it is characterised by significant, onerous and time-consuming data governance procedures as well as technical problems in matching substantial proportions of cases (Harron et al., 2017), particularly in countries such as the UK which do not have long-established population registers.

### 3 | POLICY ISSUES AND THE SMD PROFILE

Arguably the SMD group which is the focus of this paper has not been a major focus of policy in UK until recently, perhaps because of perceived marginality and small overall numbers as well as poor/absent data and the “unpopularity” of the group, owing to their often transgressive, chaotic, or antisocial behaviour (Mcnaughton Nicholls, 2009). However, there are signs that this is changing, with rising policy concern about issues of mental health, street homelessness, addictions, crime

reduction, and rehabilitation of offenders (Luchenski et al., 2018). Such concerns are motivated both by concerns that existing policies and services are not working effectively and by recognition of the excessive public costs across sectors, including health and criminal justice associated with a relatively small population of heavy/frequent users. We estimated that in England in 2010/11 the 220,000 adults experiencing two or more of the three key domains of SMD were generating public service costs five times those of comparable working age adults, a total of £4.3 bn (Bramley et al., 2015, p. 41). Recent policy initiatives targeting this group include a Rough Sleepers Initiative in England, the introduction of “Housing First” programmes in England and Scotland, and the promotion of “Psychologically Informed Services” (Keats et al., 2012).

A major and growing focus of concern in both health and education policy has been the phenomenon of Adverse Childhood Experiences (ACEs) (Couper & Mackie, 2016; Felitti et al., 1998; McEwan, 2019; Theodorou & Johnsen, 2017). Arguably these are closely related to adult SMD. Individual survey data on the background experiences of people who have suffered SMD (Bramley et al., 2015, pp. 28–30) show a strong story of “adverse childhood experiences” (trauma, abuse, neglect), the incidence of which rises markedly as you move from one SMD disadvantage up to cases experiencing two or three SMD disadvantages. There was also a strong link with failure and detachment from the education system and of poor employment record.

However, this also brings into focus recent wider debates about the definition of poverty and the policies responding to it. In a particularly significant intervention, the Centre for Social Justice (2012, p. 4) argued against the established UK child poverty definition and targets on the grounds that “the key drivers of poverty are ‘family breakdown, educational failure, economic dependency and worklessness, addiction and serious personal debt ...’” This intervention contributed to the UK government dropping the main child poverty targets, although it was widely criticised at the time on grounds of logic (confusing definition and causes, or the direction of causality) and evidence (Bailey et al., 2018; Bradshaw, 2013; Gordon, 2018). The specific suggestion that “addiction” is one of the key causes of poverty tends to imply that this is very common and that for most people in poverty this is a factor. Yet this is simply not true. The roughly quarter of a million adults with SMD2/3 compare with about 5–7 million working age adults (150–210 per 1,000) in relative low-income poverty (DWP, 2015, pp. 64–65). So only 2.7%–3.8% of the adult population living in poverty<sup>3</sup> experience the forms of severe and multiple disadvantage that are the focus of this paper, and featured so prominently in the accounts of the “root causes of poverty” as claimed by the Centre for Social Justice (2012, 2014).

As the SMD group become a clearer target for policy attention, the evidence on their socio-demographic profile as well as their potential geographical concentration become more important. First, SMD as defined here is predominantly a male phenomenon, with the “homeless only” group being the only segment with a (small) female majority, while combinations involving offending tend to have the greatest male bias. Second, the age profile is dominated by the range 25–34 and, to a lesser extent, 35–44; over-65s are very rare – hence the focus on working age as the demographic base. In line with previous research (Fitzpatrick et al., 2011; McNaughton Nicholls & Quilgars, 2009), the ethnic composition at the national level is predominantly white British, in line with the working-age population, although with some variation between segments (black and mixed race groups being somewhat over-represented in some cases). This characterisation may, however, be affected by uneven access to services across minority or migrant groups.

The predominant profile is of a “single” adult household status, and indeed many will be staying in institutions, hostels, other temporary accommodation, or sleeping rough. The SMD group have a relatively adverse profile in terms of economic inclusion, with the proportion in work ranging between 6% (SMD3) and 34% (offender only) – most are unemployed or unavailable for work (Bramley et al., 2015, p. 36). However, health indicators in more specialised surveys<sup>4</sup> confirm that poor health, physical as well as mental, is a very common factor within the SMD group (Bramley et al., 2015, pp. 34–35), accounting for much of the low participation in work.

#### 4 | THE GEOGRAPHY OF SMD: CONSISTENCY, VARIANCE, CLUSTERING

In this section we examine afresh the geographical distribution, based on the administratively derived indicators, focusing on our first two research questions: how consistent and how variable? We look in particular at the relationship with poverty, while through mapping and the identification of more extreme localities we also gain some intuitive insights into the nature of the problem and potential answers to some of the other questions.

All three main administrative datasets could generate SMD numbers to the local authority level, with some moderate amount of missing data in each case. Supporting People could be analysed down to the level of 152 “social services” authorities (London, Metropolitan and Unitary councils, and Shire Counties) while the other two main datasets could be analysed to the level of local authority district (LAD,  $n = 324^5$ ). For the fuller analysis at district level we use a statistical imputation model to generate rates of SMD2/3 from Supporting People for “shire” districts, included the following

variables: ID2015 low-income score; % aged 16–24; % single person households aged under 65; % social renting (-ve); % students (-ve); mental health institution residents per 1,000; criminal justice institutions per 1,000; hotel and holiday accommodation per 1,000; ID2015 geographical barriers index (rurality). The predictions from this regression model as calibrated on the 152 social services authorities were generated for non-metropolitan districts in areas with two-tier local government and controlled to the upper social services authority level rates for the relevant counties.<sup>6</sup> With this in place, all three components of our overall composite measure are comparable in terms of variance at the district level.

In fact, one of the most important findings is the relatively high level of agreement between the three datasets about the pattern of geographical variation in SMD2/3. This can be seen from Table 1, which shows the “top 10” authorities for SMD2/3, where the same authorities tend to be high on all three measures. It is also confirmed by correlations at the level of LADs (OASys and NDTMS 0.84; SP and OASys 0.69; SP and NDTMS 0.67). It is also quite clear that the measures from all three sources concur in showing a strong relationship with poverty as measured by the standard IMD low-income score (Bramley et al., 2015, p. 25), with an overall correlation of 0.80 with the contemporaneous measure, and similarly high with the overall IMD score (0.83) as well as with a recent index of “ACE” incidence (Lewer et al., 2019). However, correlations are lower with survey or proxy-based measures of relative low income, suggesting that there is a stronger link with poverty associated with worklessness and benefit reliance than with poverty associated with lower earnings.

This concurrence between the three components is helpful in countering one potential line of challenge, that the level of utilisation of services in an area may depend in part on the supply of relevant services/agencies there – an argument that has often been used, and sometimes institutionalised, in contexts like housing and healthcare (Carr-Hill et al., 1994). While this was a possible line of criticism of the former Supporting People system data, it is more difficult to claim that this is the case in relation to the OASys offender data, in particular, where clearly the criminal justice system is largely operating in responsive mode. Nevertheless, mindful of this point, when setting up statistical explanatory models, we do control for “supply” variables where available (e.g., measures of hostel populations).

Table 1 shows the local authorities with the highest scores on the combined SMD indicator, confirming that in general they have high scores on all three components. Authorities at the top of the list in Table 1 have SMD prevalence rates two to three times the average (5.7 per 1,000), while those near the bottom have rates of one-fifth of the national mean, making an overall range of more than 10 times. This level of variance may be characterised as relatively high compared with certain other socio-demographic phenomena. With a coefficient of variation of 55% and a maximum range of 292% of the mean value, this index is much more variable than most of the general socio-demographic and disadvantage indicators one might compare it with, including aged under 30 (23%/108%), single person households (23%/197%), lone parents (27%/179%), unemployment (38%/184%), low income (36%/170%), bad health (25%/124%), or no car (45%/237%). Two comparators which did show higher variance were statutory homeless acceptances (84%/423%) and mixed/other ethnicity (89%/413%).

Furthermore, this pattern points to SMD concentrations in specific types of locales: northern urban areas, both “core” cities (Manchester, Nottingham) and former manufacturing towns (Lincoln, Middlesbrough, Rochdale); some coastal areas,

**TABLE 1** Top 10 local authorities for SMD prevalence based on three national administrative data sources for England, 2010/11 (number of case of SMD2/3 per 1,000 working age residents)

Rank	Local authority	Supporting people	Offender assessment	Drug/Alcohol treatment	Overall SMD2/3
1	Blackpool	21.36	17.01	13.95	17.27
2	Lincoln	19.37	12.46	17.33	16.22
3	Middlesbrough	8.61	17.45	22.11	15.90
4	Liverpool	14.98	11.45	14.27	13.43
5	Rochdale	17.54	10.45	10.55	12.72
6	Manchester	13.81	12.12	12.44	12.66
7	Hull	14.20	10.88	13.25	12.65
8	Bournemouth	15.02	10.13	12.46	12.41
9	Norwich	12.29	12.69	12.38	12.33
10	Nottingham	14.71	11.39	10.35	12.03

*Note:* Italic indicates imputed value for Non-Met District in SP analysis, controlled to county-level actual.

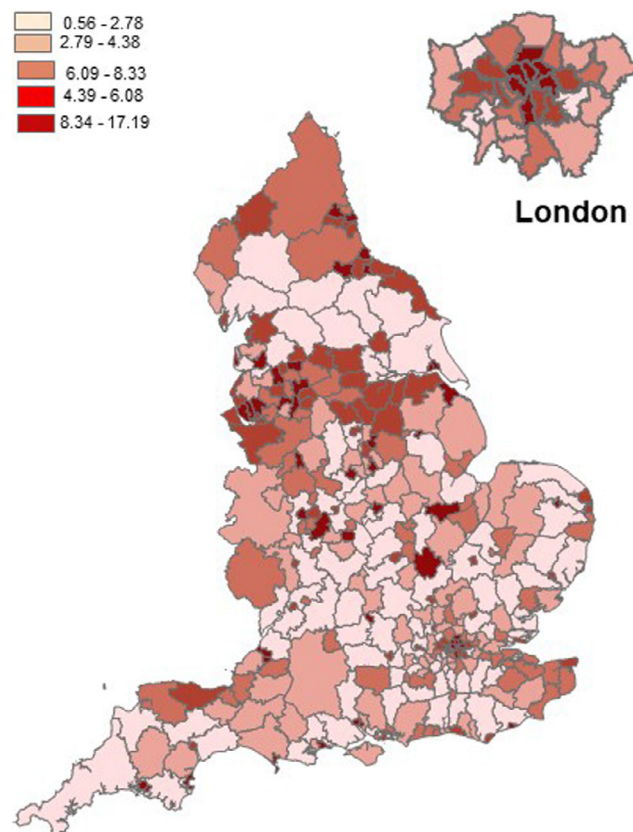
*Source:* Authors’ analysis of three administrative datasets and 2011 Census, all rescaled to common average value of 5.7 per 1,000.

including major seaside resorts (Blackpool, Bournemouth) and former port cities (Liverpool, Hull); certain London authorities are in the top 25, particularly the “central” boroughs of Camden, Tower Hamlets, and Westminster. The areas with low rates are broadly affluent suburbs or accessible commuter areas (Rochford, Chiltern, South Northants, East Dorset, South Cambs). These generalisations are broadly confirmed by inspection of the mapped values (Figure 1).

From the map in Figure 1 and the tables of local authorities one can certainly say that SMD appears to be strongly related to poverty, economic disadvantage, and decline in generally urban settings, with some particular focus on centrality (core cities) as well as coastal situation. “Business and education centres” are prominent at the top of the list and these generally have universities, a lot of younger single person households, and a lively “night-time” economy, which may also be accompanied by higher rates of crime and substance misuse. While many core cities have undoubtedly seen a transformation in the past 20 years, particularly in their vibrant centres, the overall performance of some major northern cities remains disappointing (Centre for Cities, 2019, p. 5). London is less dominant than in some other measures of disadvantage, although cosmopolitan central boroughs feature high in the list, while the situation of the northern urban/industrial areas, including former mining areas and manufacturing towns seems most concerning. This raises the background issue of “deindustrialisation” (Beatty & Fothergill, 2016), which we return to below. Seaside towns have been recognised for their distinctive profile, and might be seen as a different type of “deindustrialisation” with the decline of the traditional holiday industry, although as Beatty and Fothergill (2003) found the overall economic picture for these areas was more positive than negative thanks to in-migration. But before doing so we should proceed to examine systematic multivariate modelling of the geography of SMD.

## 5 | MODELLING PATTERNS OF SMD

Ordinary least squares (OLS) regression models for the composite SMD rate are used to explore research questions 3–5, identifying the main and distinct factors which seem to be associated with high levels of SMD, and testing consistency with certain explanatory hypotheses. In particular, from the policy issues highlighted in Section 3 we are particularly interested in the effects of poverty, including the roles of unemployment (current or past) and poor health/economic inactivity, while



**FIGURE 1** SMD rate (2/3 disadvantages) per 1000 working age adults (Local Authority Districts), 2010/11. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

controlling for expected demographic effects, particularly younger age and single households. We are also interested in the potential influence of the presence/supply of services specifically related to SMD groups (e.g., hostels for homeless people), as well as in indicators of particular problems associated with SMD (e.g., crime, childhood adversities). A very wide range of potential indicators were tested, including factors relating to housing supply/tenure, which could be related to homelessness or to factors like population turnover or particular neighbourhood subcultures, factors relating to education and health, and so forth.

Table 2 presents the best OLS regression model derivable at district level for the composite measure of SMD2/3 rate (over working age population) based on the three main administrative datasets equally weighted.<sup>7</sup> “Best” in this context refers to the set of explanatory variables available, eliminating variables not significant at the 5% level and variables with unacceptably high degrees of collinearity as indicated by VIF statistics (as listed under table).

The model has generally good fit to the data, explaining 87% of the variance at district level. All variables are significant at the 5% level. One feature of the model worthy of note is the large negative constant term. Given that most of the explanatory variables are ratio scale measures in the positive quadrant, which implies a tendency to a more-than-proportionate response, this can be linked to the high variance noted above. While one might postulate non-linear or interactive relationships, these add complexity to the model and can be difficult to interpret.

Variables are grouped broadly into categories, starting with the demographic, moving through economic, social, institutional/housing, and finishing with geographical situation. The demographic variables are in line with expectations, with large positive effects from having a larger number of younger adult residents and one-person (non-pensioner) households. There is also a negative effect from “born overseas,” suggesting SMD is more associated with the indigenous population than with migrants, although this might also reflect relative access to services as well as any “selectivity” effects in migration itself (in terms of skill or motivation).

**TABLE 2** Regression model for composite SMD2/3 rate at district level using individual variables (weighted by household population)

Variable description	Coefficient <i>B</i>	Standard coefficient $\beta$	Significance <i>p</i>
(Constant)	-5.576		0.000
Aged 16–24	0.469	0.401	0.000
One person household under 65	0.220	0.294	0.000
Born overseas (%)	-0.027	-0.103	0.013
Unemployed (% working age)	0.674	0.283	0.000
Economically inactive (% working age)	-0.144	-0.162	0.000
M M <sup>a</sup> job change 1981–2011 (%)	-0.018	-0.064	0.041
Long term sick or disabled (% working age)	0.881	0.404	0.000
ID2015 “Crime” score	0.655	0.097	0.038
Mental health institution (% population)	0.321	0.048	0.020
Homeless hostel resident (% population)	0.510	0.112	0.000
Hotel, holiday accommodation (% population)	0.233	0.138	0.000
Social renting (% households)	-4.565	-0.104	0.009
ID2015 Geographical barriers	1.247	0.185	0.000
Dependent variable: Composite SMD2/3 rate mean/standard deviation	5.71		3.16
Adjusted <i>R</i> <sup>2</sup>	0.87		
Standard error estimate	1.16		
<i>F</i> ratio	167.9		
No of cases	313		

*Note:* Variables tested but excluded as insignificant or too collinear include: aged 25–34; aged 65+; black, mixed, Pakistani/Bangladeshi ethnicity; lower quartile earnings; high qualifications (level 4); student household; criminal justice institutional inmates; private renting; non-priority homeless; homeless prevention and relief; dwellings with one to two rooms; ID2015 “indoor score” (crowding, lack central heating); mining and metal industry workers 1991; ID2015 (Indices of Deprivation): low income, health, education scores; shoplifting crime 2011–14; Children in Need index; CIN number/population; school absence 2014; pupils with any special educational need; school pupils moved home and/or school; population density.

<sup>a</sup>Change in (typically) “male manual” jobs in mining/energy/water, manufacturing, construction and transport, 1981–2011, % of all jobs in 1981.

An important group of variables are those we would term “economic,” relating to labour market characteristics or outcomes. Unemployment has a strong positive effect, but so does “long term sick/disabled” (as % of working age) – we would argue that much of this may represent hidden unemployment in former industrial and mining areas, as well as a health legacy (Beatty & Fothergill, 2007, 2016). It is interesting that the other “economically inactive category,” not associated with health/disability, has a negative association. We would interpret this as capturing in part more voluntary forms of non-participation in employment, including homemakers, parents, and other carers. SMD is also associated with a variable measuring long-term change (1981–2011) in jobs in industries traditionally associated with better-paid male manual employment – mining/energy/water, manufacturing, construction and transport; the more negative this indicator, the more SMD in 2011.

Of the suite of Indices of Deprivation indicators (2015 edition), the crime score is unsurprisingly the one which works best in this model, alongside the other variables already described. The other measures more directly capturing low-income poverty or low social class are too strongly collinear, with unemployment and other labour market variables to be included in this model.

The next three variables capture possible “supply side” influences from having concentrations of certain types of institutions – mental health, homeless hostels, and hotel/B&B/holiday accommodation – although interestingly criminal justice institutions are not significant in this model. The hotel/holiday accommodation variable in particular highlights the seaside towns which are a striking feature of Table 1 and Figure 1. One housing variable is included, the percentage of social housing, and this has a negative sign – this might be indicative that, *ceteris paribus*, having more social housing availability may help to reduce SMD (solution vs. problem), and is not consistent with any notion of particular subcultures conducive to SMD being associated with this tenure. The final variable included is a rural proxy, the ID “geographical barriers” index. This may indicate that the lack of access in some rural areas to jobs and services may exacerbate SMD risks, after controlling for poverty and other factors.

To sum up, this model appears to provide a good explanatory story as well as a good fit to the data. In particular, it appears to provide support for a “structural economic” explanation for concentrations of SMD, consistent with the broader account emphasising the legacy of deindustrialisation. This could include accounts recognising the possible psychological impacts of large-scale economic decline, particularly on male manual workers, and second-generation effects via ACEs. At the same time it suggests that there may be expected elements in the story relating to particular demographics, but also particular concentrations of crime (which might have cultural or other origins) as well as service/accommodation supply-side factors (e.g., hostels and holiday accommodation).

We acknowledge the limitations of aggregate cross-sectional regression models of this kind, which face a number of limitations as direct evidence of causality. One issue is potential “reverse causation,” as arises for example in debates about the relationship between poverty and ill-health. Yet in this particular incidence, while one might posit two-way links between, say, younger singles with a taste for hedonism concentrating in core cities or seaside resorts and the prevalence of substance misuse in such areas, it is frankly implausible to claim that transgressive behaviour by a small group of adults “caused” the deindustrialisation of the north of England;

Another issue is that of the pervasive extent of multi-collinearity, which makes it difficult to say definitively which variable, within a highly correlated set, is more important. An alternative approach to the same dataset, which overcomes this problem in the technical sense, at some cost in terms of detailed insights, is to apply factor analysis to the full set of potential explanatory variables, and then use the factors rather than the original variables. Table 3 illustrates this.

Five factors are extracted which together account for 72% of the overall variance in the full dataset. After rotation, the first two factors account for 29.5% and 14%, respectively. Table 3 shows the regression model resulting when these five factors are used as predictors. The descriptive characterisation of each factor is based on those variables which are most strongly loaded on that factor. It can be seen that the most important factor in explanation of SMD is the second factor, characterised as “poor, low class/education, sick,” which as we go on to show is effectively highlighting former industrial areas of the north. The second most important explanatory factor is the one labelled “urban, younger, single, ethnic, and crime”; as we show below, this factor highlights cosmopolitan areas in London. Third in explanatory importance is the third factor, labelled “very young, student,” which highlights major cities which are concentrations of both business and higher education, or heritage centres (i.e., smaller university towns such as York). The next in importance is the fifth factor, which is labelled “children in need” as it mainly loads on those particular variables (related to ACEs), and tends to highlight central London and coastal resorts. The least important factor is that labelled “hotel, private rent, poor housing,” which actually highlights the same general types of locality.

While the factors provide continuous summary measures of broad relevant characteristics of localities, we can also use groupings of similar local authorities to reveal patterns in both the dependent variable and these broader explanatory



**TABLE 3** Regression model for composite SMD2/3 rate at district level using factors (weighted by household population)

Description	Coefficient <i>B</i>	Standard coefficient $\beta$	t-statistic <i>t</i>
(Constant)	5.673		0.000
Urban, younger, single, ethnic, crime	1.585	0.502	0.000
Poor, low class/education, sick	1.893	0.606	0.000
Very young, student	1.183	0.379	0.000
Hotel, private rent, poor housing	0.248	0.079	0.001
Children in need	0.766	0.245	0.000
Dependent variable: Composite SMD2/3 rate mean/standard deviation	5.71	3.16	
Adjusted $R^2$	0.83		
Standard error estimate	1.37		
<i>F</i> ratio	294.4		
No of cases	312		

factors. Table 4 illustrates this approach, showing that the area types with the highest scores are “Business and Education Centres,” “London Cosmopolitan Central,” “Manufacturing Traits,” with “Coastal Resorts and Services” and “Mining Heritage” also well above average. The model using individual variables comes closer than the factor-based model to matching this variation, while the relationship between the factors and the typology is clear (from factor scores in bold type).

Overall, we can say from this evidence that the structural economic factors that are particularly associated with deindustrialisation in the northern and midland parts of England clearly do play a large role in “explaining” higher levels of SMD, but that there are some other themes, including the role of universities (in both core and heritage cities) and their associated concentrations of young singles, night-time economies, casual service employment, and more prevalent street homelessness. Central London boroughs and some coastal resorts also share these characteristics.

Ultimately, cross-sectional regression models remain somewhat unsatisfactory, as conclusive evidence of causal processes, rather than general associations. To go further, it is desirable to complement these by drawing on more individual-level associations and associations over time. Cohort studies are particularly helpful in tracing potential influences on SMD-type conditions and outcomes going back through young adulthood to childhood, as is illustrated in the case of homelessness by Bramley and Fitzpatrick (2017), where the influence of economic adversity in these earlier life stages is underlined.

## 6 | CONCLUDING DISCUSSION

This paper offers new evidence on the extent and on the social and spatial incidence of a particular social problem, labelled “severe and multiple disadvantage” (SMD) (alias “complex needs”), referring to adults with combinations of issues with homelessness, substance misuse and offending. In doing so we also seek to make a contribution to contemporary debate on the definition and nature of poverty, while at the same time illuminating some aspects of England’s urban and regional development over recent decades.

Using this definition of SMD we estimate that around a quarter of a million adults (around 0.6% of the working age population) experience combinations of these over a year. SMD, so defined, is predominantly a white male working class 20- or 30-something phenomenon, with tenuous engagement in the labour market, very poor health and quality of life, and problematic or absent family relationships.

Our first research question was concerned with the consistency between measures derived from different administrative datasets; here we found a generally high concurrence between independent administrative datasets in the geographical distribution of SMD rates. Second, we were interested in how much the incidence of SMD varied across localities and found that these rates show substantially wider geographical variance than most other general socio-demographic and disadvantage indicators used to characterise localities. Localities at the top of the league (with rates over 20 times those at the bottom) are northern urban areas including core cities, port, seaside, and manufacturing towns, whereas areas at the bottom are affluent suburban or commuter areas in the south.

**TABLE 4** Actual and predicted levels of SMD2/3 by ONS groups of local authorities, showing scores on factors

ONS local authority group	Actual SMD2/3	Predicted individual variables	Predicted factors	Urban, younger single, ethnic, crime	Poor, low class/ education, sick	Very young, student	Hotel, private rent, poor housing	Children in need
Group name								
Business and Education Centres	9.84	9.73	9.66	0.40	<b>0.65</b>	<b>1.69</b>	0.00	0.15
London Cosmopolitan Central	8.40	8.17	8.00	<b>2.86</b>	-1.26	-0.43	0.68	<b>0.69</b>
Manufacturing Traits	7.51	6.91	6.83	0.01	<b>0.96</b>	-0.39	-0.36	-0.16
Coastal Resorts and Services	6.98	6.56	6.62	-0.46	0.47	-0.17	<b>1.74</b>	<b>0.71</b>
Mining Heritage	6.58	6.62	6.48	-0.28	<b>0.87</b>	-0.52	-0.62	0.48
Heritage Centres	5.72	6.08	6.16	-0.76	-0.48	<b>2.03</b>	0.34	0.14
London Cosmopolitan Suburbia	5.66	6.31	6.94	<b>1.89</b>	-0.39	-0.38	0.20	-0.78
Growth Areas and Cities	5.46	5.70	5.69	0.27	0.15	-0.44	-0.56	-0.05
Multicultural Suburbs	4.38	4.87	5.35	1.03	-0.49	-0.06	-0.05	-1.23
Rural Coastal and Amenity	2.97	3.36	4.05	-1.02	0.02	-0.53	<b>2.04</b>	0.10
Rural England	2.89	3.37	3.22	-0.82	-0.21	-0.36	-0.50	-0.26
Rural Hinterland	2.82	2.60	2.82	-1.01	-0.41	-0.36	0.60	-0.28
Prosperous England	2.59	2.56	2.25	-0.60	-1.14	-0.06	-0.55	-0.15
England	5.71	5.67	5.67	0.00	0.00	0.00	0.00	0.00

Note: LA classification based on original ONS 2011 classification (version 1). Bold type in columns 4-8 highlight area types with particularly high scores on each factor

Our third, central research question concerned the main systematic factors associated with higher levels of SMD. Multi-variate modelling confirmed strong relationships with economic and labour market weakness, including the indirect health legacy of deindustrialisation (question 4), after controlling for expected demographic and institutional supply effects (question 5). Somewhat distinctive factors, including crime and family dysfunction, associated with central and “cosmopolitan” London boroughs and with seaside resorts and regional centres/university towns can be discerned (question 6), but arguably the strongest story is of the (depressed) economic background.

In reflecting on the wider significance of these findings, we would point out that there is an uneasy relationship between this SMD group and the wider field of poverty and disadvantage, whether in research or policy discourse. In particular, a central debate is between those emphasising structural causes of poverty and disadvantage, for example in the labour market or the class system (Atkinson, 2015; Bradshaw, 2013; Lansley & Mack, 2015, Gordon, 2018), and those who point towards the behaviour and choices of some poor and disadvantaged groups as a significant causal or exacerbating factor in their situation (Centre for Social Justice, 2012; 2014; Duncan-Smith, 2006). The “complex needs” group discussed here are sometimes viewed as an exemplar of this latter position, with multiple and serial “bad choices” in relation to offending, addictions, broken relationships and anti-social behaviour compounding their own poverty and alienation

from society, even though this group actually represents a very small proportion of the overall population living in poverty.

It is true that the people affected by SMD clearly exercise forms of agency which reinforce their own disadvantage, while inflicting harm on others and financial costs on public services. Yet, the geography of their incidence tells a somewhat different story, with the most important factor being poverty and labour market disadvantage, traceable in significant measure to the deindustrialisation of earlier decades. While some caution is always in order when interpreting cross-sectional statistical associations, in this instance the alternative “reverse causation” interpretation is implausible. While adults always have the potential for agency and choice within constraints, surveys with retrospective data show that most of these people had childhoods marked by trauma and distress, and they certainly cannot be held responsible for that (Bramley & Bailey, 2018; Bramley & Fitzpatrick, 2017; Bramley et al., 2015). Furthermore, there is growing evidence from the field of psychology that stress of the kind which may be induced by persistent poverty, ill-health and homelessness, as well as the legacy of childhood trauma, can lead to poor decision-making, particularly in relation to addictions and offending (Starke & Brand, 2012).

If we may look forward to a future where governments and service agencies commit to a more sensitive, “psychologically-informed” approach to this complex needs group (Keats et al., 2012; Theodorou & Johnsen, 2017), then indicators of their numbers and geographical location should have an important role to play in policy design, implementation and assessment. An index such as that exemplified in this paper ought to have a key role in such a context, yet ironically at the time of writing it would not be possible to reproduce the index reported in this paper. One of the datasets used (Supporting People) has collapsed through lack of funding, and access to the other two is much more hedged with data governance hurdles than was the case in 2013–14. There are hopeful developments in some areas, such as the initiation of an individual-level record of all homeless applications to local authorities in England, and investment of significant resources in administrative data and data linkage mechanisms. However, there is also a need to develop a much more effective way of including non-household and transient populations in official surveys of living standards and wellbeing.

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## DATA AVAILABILITY STATEMENT

In addition to four tables included in the paper, an Appendix has been prepared in Excel Spreadsheet format containing the whole dataset used in study, and data descriptives. The intention is to make this unique set of indicators and the associated dataset available to the research community.

## ORCID

Glen Bramley  <https://orcid.org/0000-0002-3543-682X>

## ENDNOTES

<sup>1</sup> In future, use of prescription data may overcome this data limitation.

<sup>2</sup> OASys is completed for most of those in the community at tier 2 and above, and for all 18–20 year olds in prison, and all older prisoners on sentences of 12 months or greater.

<sup>3</sup> Taking SMD2/3 as indicative of *multiple* disadvantage, and varying depending whether the denominator is poverty before housing costs (150 per 1,000) or after housing costs (210 per 1,000).

<sup>4</sup> These included the *Multiple Exclusion Homelessness Survey* (Fitzpatrick et al. 2013) and the *UK Poverty and Social Exclusion Survey 2012* (Lansley & Mack 2015; Bramley & Bailey 2018).

<sup>5</sup> Excluding two authorities for which most data were missing owing to coding mismatches.

<sup>6</sup> The part of the country covered by this imputation model for one of the three components accounts for 40.2% of the household population of England.

<sup>7</sup> All regressions weighted by relative scale of local authority measured by number of households.

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