Research on core homelessness and homeless projections: Technical report on new baseline estimates and scenario projections

RESEARCH ON CORE HOMELESSNESS AND HOMELESS PROJECTIONS

TECHNICAL REPORT ON NEW BASELINE ESTIMATES AND SCENARIO PROJECTIONS

Report of Research to Crisis

by

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1. Introduction

This technical report presents new estimates of the level and composition of core homelessness in England[1] in 2018-19, preceding the onset of the Covid-19 emergency. It goes on to present consistent projections of these numbers over the period to 2041, paying particular attention to the immediate period (2020-2021), and comparing with estimated changes since 2021. These projections consider a 'No Covid'/'Business as Usual' scenario, and scenarios with Covid (including initial Government responses). These scenarios consider a range of policy suggestions and possible economic developments. This is the central and critical output from this research which underpins Crisis's public pronouncements in December 2020 while also forming and important part of the Homelessness Monitor for England being published in early 2021.

To reiterate from the projection proposal, the **key aims** of this project are

- To respond to developments in and debates about the definition, scale and measurement of homelessness, by further developing the framework of 'Core, Other Statutory and Wider Homelessness Risks' as developed in the 'Homelessness Projections' research of 2017-18.
- To take opportunities presented by data developments since 2017 and ongoing to improve and reinforce the evidence base underpinning estimates and projections presented under the above framework, including within the context of the Homelessness Monitors series.
- Utilising opportunities arising from data developments and the lapse of time, to undertake a general update and recalibration of the Sub-Regional Housing Market Model (SRHMM), as well as its specific homelessness forecasting functions
- On the basis of the above, using the SRHMM to generate new set of forecast scenarios looking forward 5-20 years in the light of the emerging GB policy landscape (including the developing Covid crisis)

The original core homelessness and projections work was partly motivated by a dissatisfaction with the conventional published statistics on homelessness, which was also reflected in interventions from the UK Statistics Authority, NAO and parliamentary committees over recent years, some of which had been stimulated by Government responses to the *Homelessness Monitor* series. Of necessity the study sought out a range of additional sources to shed light on homelessness, particularly the more extreme and immediate forms which we term 'core homelessness'. At the time the Homelessness Reduction Act (HRA_ was going through parliament but had not been implemented. Subsequent to that we have seen a major change in the duties of local authorities in England towards all households experiencing or at risk of homelessness, regardless of their household type and 'priority need' status. Associated with that, a

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[1] Indicative estimates are also made for Great Britain, but fully detailed projections and scenarios have yet to be developed for Wales and Scotland.

major enhancement of administrative data collection has been implemented through the 'H-CLIC' individual recording system.

In this round of the study we have the benefit of being able to use a range of new or enhanced datasets, including administrative data from H-CLiC and from DWP, our own expanded and increasingly respected *Destitution in the UK* Survey, a specially commissioned new representative panel survey (*Public Voice*) conducted by Kantar Public, a new suite of questions on 'Housing Difficulties', included in the ONS *Survey of Living Conditions* in 2018, and several significant new questions in the *English Housing Survey* from 2018. Surveys used in the original study (MEH, 2010 and PSE, 2012) can be retired, or simply referred to as background, while some use is still made of other sources such as the Scottish Household Survey.

This report focuses on a concept of '*core homelessness*' – people who we would consider to be experiencing the most extreme and immediate forms of homelessness and who are effectively homeless at a point in time. The components of core homelessness and their definitions as applied in this study are shown in Table 1 below.

Table 1: Core Homelessness Categories and Definitions

Category	Description	Changes since 2017
Rough Sleeping	Sleeping in the open e.g. in streets, parks, carparks, doorways	
Unconventional Accommodation	Sleeping in places/spaces not intended as normal residential accommodation, e.g. cars, vans, lorries, caravans/motor home, tents, boats, sheds, garages, industrial/commercial premises	This combines the previous two categories of quasi-rough sleeping and squatting/non-residential buildings
Hostels etc.	Communal emergency and temporary accommodation primarily targeted at homeless people including hostels, refuges and shelters	
Unsuitable Temporary Accommodation	Homeless households placed in temporary accommodation of certain types, viz Bed and Breakfast, Private Non-selfcontained Licensed/Nightly Let, and Out of Area Placements (half in London, all elsewhere)	Unchanged in low and mid estimate. High estimate includes a proportion of the local increase in Exempt or Specified Supported Accommodation since 2016
Sofa Surfing	Individuals or family groups staying temporarily (expecting or wanting to move) with another household, excluding non-dependent children of host household and students, who are also overcrowded on the bedroom standard	In the mid and high estimate from 2020 we include a new group now identifiable from English Housing Survey: cases where host household reports temporarily accommodating people/household who would otherwise have been homeless in last year. As temporary residents this group will have been omitted from previous surveys

Core homelessness is a subset of the broader phenomenon of 'homelessness', which clearly includes those people who are legally defined as homeless in the UK, which effectively includes people who are threatened with becoming homeless (having no accommodation which they have a right to occupy within 56 days). Following the Homelessness Reduction Act (HRA 2017), and earlier legislation in Wales and Scotland, local authorities have responsibility to seek to prevent, or failing that to relieve homelessness among all such households, while also having a 'main duty' to

secure suitable permanent accommodation (typically social rented housing) for families and other vulnerable groups who are found to be eligible and unintentionally homeless[2]. A substantial proportion of households who are 'homeless' in terms of this legal/policy definition are not 'core homeless' on our definition, because they have not yet left their previous accommodation or because they have been placed in temporary accommodation which is 'suitable', typically an existing self-contained social rented or private rental dwelling let on license.

As well as enabling us to overcome certain shortcomings of familiar enumeration methods as outlined above, and further developed in Appendix A, we would argue that core homelessness is also more consistent with international approaches to defining homelessness[3], although it might also be argued that these are often minimalist and insufficiently enlightened[4]. More practically, this definition also avoids significant practical problems of double-counting and conceptual problems of mixing 'stock' and 'flow' measures. This is because it is a snapshot measure of the situation on a particular day/night, and people cannot be in more than one place at a time. However, some data sources cover flows or experiences over periods of time, and when using these we have to apply assumptions about the durations of homelessness experiences to get to a snapshot stock figure.

The original core homelessness and projections work was partly motivated by a dissatisfaction with the conventional published statistics on homelessness, which was also reflected in interventions from the UK Statistics Authority, National Audit Office (NAO) and parliamentary committees over recent years, some of which had been stimulated by Government responses to the *Homelessness Monitor* series. The most recent example is the NAO report of 14 January 2021;[5] introducing this report in the press release the head of the NAO said "For the first time, the scale of the rough sleeping population in England has been made clear, and it far exceeds the government's previous estimates".

2. Baseline estimates of core homelessness in 2018

In this section we present evidence on the level of core homelessness in England in 2018-19. The estimates of core homelessness presented below draw on a total of *ten* data sources overall (for Great Britain or England), with each component being based on *at least four* data sources. Our approach thus entails a high degree of 'triangulation'. As will be clear from the review of sources below, the sources used vary in statistical robustness in terms of coverage, definitions used and sample sizes, but they are all

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[2] In Scotland, since 2012, this duty has extended to all household types. There have also been detailed differences in the timing and manner in which prevention has been applied in Scotland, subject to current review.

[3] See in particular Busch-Geertsema, V., Culhane, D. & Fitzpatrick, S. (2016) 'Developing a global framework for conceptualising and measuring homelessness', *Habitat International*, 55, 124-132. https://www.sciencedirect.com/science/article/pii/S0197397515300023?via=ihub

[4] See Fitzpatrick, S. & Davies, L. (2020) 'The 'Ideal' Homelessness Law: Balancing 'Right Centred' and 'Professional Centred' Social Policy', forthcoming in *Journal of Social Welfare and Family Law*.

[5] National Audit Office (2021) *Investigation into the housing of roughsleepers during the COVID-19 pandemic.* Report on Ministry of Housing, Communities and Local Government by the Comptroller and Auditor General. Session 2019-20. 14 January 2020. HC1075.

respectable sources which cannot be dismissed out of hand. We have used judgement of all of these aspects taken together to apply a weighting to each source in respect of each component of core homelessness, when combining the estimates. The central estimate of numbers and the weights used are shown in matrix form in Table 2.

We can discuss each category of core homelessness in turn. More details on the datasets are provided in Appendix A, while Appendix B provides a summary table for the data sources used.

Rough Sleeping. We draw on five sources here, including retrospective questions within two general household surveys, a specialist survey of users of emergency support services, a new administrative record and the annual street count/estimate data. Of these, we regard the 'Destitution' (service user) survey as relatively robust and the estimates from the official counts and from the new administrative (H-CLIC) system as relatively less robust, at least with regard to total level (these sources have value in tracking trends and mapping down to local level). The limitations of street count methodology have been extensively rehearsed elsewhere (see also Fitzpatrick et al (2021) Housing Monitor England Section 5.1, and Appendix A below); the figure derived from this source includes some adjustments reflecting evidence from CHAIN in London and some imputation of values for authorities which had not carried out an actual count. With H-CLIC the uncertainties include deciding what proportion of the 'No Fixed Abode' category to include, the annual multiplier conversion factor (from flow to stock), and the extent to which significant numbers of people affected still do not apply to the local authority in England. However, under reasonable assumptions the resulting figure is not very different from Destitution and the two retrospective surveys. Overall, the pattern across the five sources shows considerable consistency, apart from the count estimate being a low outlier.

Unconventional & non-residential spaces. This combined category includes what was in the previous study presented as 'Cars, vans, tents, public transport' and 'Squatting and non-residential buildings/spaces'. While somewhat more detail is available from one source (the Public Voice panel), albeit for smallish sample numbers, overall detail on these categories is sparse, and it can be seen that the estimates from our four sources vary quite widely. Nevertheless it is noteworthy that the number estimated from the ONS Survey of Living Conditions (an official survey with quite a large sample) is surprisingly large. From Public Voice the most commonly reported 'other unconventional spaces' were car, caravan/motor home, shed or barn, van/lorry, squat/empty house, and tent. The weighted overall estimate is similar to but slightly higher than the rough sleeping figure, as in the previous study.

Hostels, etc. (including shelters, refuges, other emergency-temporary communal accommodation). This is the category of core homelessness for which we have the largest number of sources (six) and the highest level of consensus on numbers. We have given a lower weight to the Public Voice because of its smaller sample and to the H-CLIC estimate because it is derived from the flow from immediately preceding accommodation types, subject to assumptions about durations and proportions applying to local authorities. We use the data obtained from our DWP FOI from the Single Housing Benefit Extract (SHBE) data on housing benefit caseloads associated with temporary and supported accommodation, taking the relevant categories and

adjusting to exclude rehab-type accommodation (also using information from the 2016 DWP/MoHCLG study of Supported Accommodation[6]).

Unsuitable Temporary Accommodation. We give the highest weight to the source corresponding to the particular definition and approach used in the previous study, namely to the number of homeless households reported (under former P1E and now H-CLIC) to be placed in TA in the form of B&B, private nightly-let non-self-contained, and out of area placements (half of these in London). The Destitution survey does not seem to capture a high proportion of these cases. With the DWP FOI data we combine 'Board and Lodging' plus 'non-selfcontained licensed TA' with the 'out of area' numbers from H-CLIC. In the 'high' variant estimate we also make made a limited additional allowance for additional unsuitable TA arising from the exceptional recent growth in 'Exempt' supported accommodation in some localities (see further discussion below about the reasoning for possibly including this category).

Sofa Surfing. There is quite wide variation in the estimated numbers for this category, numerically the largest form of core homelessness. The numbers from the English Housing Survey were revised following processing of special access versions of this survey for the most recently available year (2018/19). We have lowered the weighting on UKHLS to reflect the clear indications of sample attrition problems in this panel survey, while also using a constant assumed proportion of the relevant concealed/crowded households who want to move. There are also issues of definition here, given the innovative approach which MoHCLG have included in the latest EHS surveys. This enables identification of an additional category of temporary residents staying with host households, who would not normally be covered by household surveys; we include this group where the existing household has no spare bedrooms. The Crisis study of sofa surfing in autumn 2019[7] is not included as a source on numbers but we have made use of its analyses to inform assumptions about durations. The most important development here is probably the much greater legitimacy being given to the whole concept of sofa surfing as a result of its inclusion in the ONS *Survey of Living Conditions* and its highlighting in the recent EHS release[8].

Overall Picture.

Table 2 below shows how we bring these estimates together by taking a weighted combination of numbers from the relevant sources for each category of core homelessness, with the weights varying for reasons indicated above. Our central estimate is that in 2018-19 the number of core homeless households in England was about 201,000. The corresponding figure for Great Britain is about 225,000[9]. We

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[6] Based on Blood, I., Copeman, I. & Finlay, S. (2016) *Supported Accommodation Review: The scale, scope and cost of the supported housing sector*. Report of research carried out by Ipsos MORI, Imogen Blood & Associates, and Housing & Support Partnership for Department for Work and Pensions with Department for Communiities and Local Government. DWP Research Report No. 927. ISBN 978-1-911003 41 0..

[7] See especially Sanders, B., Boobis, S. & Albanese, F. (2019) *"It was like a nightmare". The reality of sofa surfing in Britain today*. ISBN 978-1-78519-068-1. London. Crisis. www.crisis.org.uk

[8] Ministry of Housing, Communities and Local Government (2020) *English Housing Survey 2018-19: 'Sofa surfing' and 'concealed households'*. Factsheet.

[9] Five of our data sources cover Great Britain (or UK) as a whole, while the others are specific to England, with varying equivalent or different sources covering Scotland and Wales. We believe the relationship of the totals in the base year as given here for England and GB is reasonably accurate. However, in the later detailed modelling to predict future levels of core homelessness, we have not as

discuss recent changes further below, but those familiar with the predecessor 2017 study and its 2018 update will note that this total is higher than that previously reported, for example the figures of 170,600 (GB) and 153,200 (England) for 2017. The higher figure now reported is a reflection of some real increases in levels of some types of core homelessness in the last couple of years, but also the significantly greater data resources now available, together with one effective extension to the definition, in the category of sofa surfing within the English Housing Survey (EHS). The latter would account for 18,000 of the 47,000 higher numbers now given for England, suggesting that the real increase could be around 19%.

yet updated our models to predict changes for Wales and Scotland, and will focus primarily on England.

Table 2: Central Estimates of Core Homelessness by Component and Source, England, c.2018-19

DATA SOURCE	NAME	DESTITUTION	Public Voice	ONS-SLC	H-CLIC	HLESS LINK	DWP FOI	EHS-GB Survey – curr + retro	UKHLS	RS Counts	Weighted
	Type	S U survey	Survey - retro	Survey – retro	Admin	Service Cens	Admin		Survey – curr	S U Survey	Total 2019 England
Rough Sleeping	*Weight*	0.4	0.2	0.2	0.1					0.1	
	Estimate	14,402	16,352	12,584	16,674					5,138	13,729
Unconventional Accomod	*Weight*	0.2	0.3	0.3	0.2						
	Estimate	2,308	18,875	31,396	10,066						17,556
Hostels, etc.	*Weight*	0.2	0.1	0.2	0.1	0.2	0.2				
	Estimate	40,343	38,673	29,952	31,578	33,898	42,756				36,415
Unsuitable Temp'y Accommod	*Weight*	0.1	0.1	0.1	0.5		0.2				
	Estimate	5,918	16,348	12,661	22,840		18,020				18,517
Sofa Surfing	*Weight*		0.2	0.3				0.3	0.2		
	Estimate		142,182	114,603				133,204	58,068		114,392
Total Core Homeless											200,609

The. In view of the acknowledged uncertainties about durations, as well as some other assumptions, we also report 'high' and 'low' variations around our central estimates for each element of core homelessness. These Low and high variants on the central estimates are shown in summary in Table 3.

Taking the sum of the estimates based on lower assumptions, reflecting the uncertainties about some sources and assumptions, particularly in relation to durations, as discussed above, we have a total of 120,000 for England. Taking the alternative high assumptions we would see a total for England of 237,000. The component of core homelessness for which this range of variation is least, in proportional terms, is hostels, etc., where we have the most sources and the most concordance. The component where the range of variation is greatest is unconventional accommodation, where our data sources are most sparse. This is followed by sofa surfing, which happens to be the largest single component, but here the difference is partly accounted for by differences in definition and coverage, which we regard as an improvement. While we report the low and high variants here, these are perhaps misleading if simply summed, because while the probability of one component being at or below its low variant may be quite tangible, the probability of all components simultaneously being at or below their low variant must be seen as very low.

Table 3.: Baseline Estimates of Core Homelessness by Element in 2018-19, showing central weighted total, and totals under 'low' and 'high' assumptions

DATA SOURCE	NAME	Weighted Total	Low Ass'm	High Ass'm
	Type	2018-19 England	Total	Total
Rough Sleeping	*Weight*			
	Estimate	13,729	8,409	18,063
Unconventional & Non-resid	*Weight*			
	Estimate	17,556	6,054	25,573
Hostels, etc.	*Weight*			
	Estimate	36,415	32,482	38,955
Unsuitable Temp'y Accommod	*Weight*			
	Estimate	18,517	13,419	23,680
Sofa Surfing	*Weight*			
	Estimate	108,866	59,975	130,459
Total Core Homeless		195,084	120,340	236,731

It should be noted that there are slight differences between the numbers in the final column of Table 2 and the annual estimates presented in Figures 1 and 2 below. These reflect

decisions and procedures followed in translating these national estimates into projected numbers for individual years at local/sub-regional level, including making more use of the DWP FOI data available at that level in relation to hostels etc. and the reconciliation of forecasting model-based back-projections with national control profiles for rough sleeping and sofa surfing.

3. Recent Changes in Core Homelessness Numbers

The general picture is that core homelessness numbers (pre-Covid) have risen compared with the previous base estimates, which were made for 2015 and 2017. There are rises in each component, apart from hostels etc., with the largest absolute contributor to the increase being sofa surfing. However, in percentage terms the increase between 2012 and 2019 was greatest for Unsuitable TA (171%) and rough sleeping (99%). The modelling work also tends to indicate that these elements are more sensitive.

The order of magnitude of the overall increase (32,000 or 17% for England, as noted above) is in line with what we would expect from our recent work on Destitution in the UK 2019, where we are headlining increases of between 23% and 35% (depending on the measure) since early 2017, and our work for Trussell trust where there have been double figure % rises in food parcel demand over 2-3 years. When doing the previous study and its update, we noted some tendency to levelling off of the previous rising trend around 2016-17, which was attributed partly to the post-Brexit cooling of the London housing market and EEA migrations, but which can also be seen to have paralleled the fall in destitution found in this period in our JRF studies. It seems clear from the overall picture and from some of the specific data sources (including H-CLIC) that homelessness numbers have been generally on the rise again, pre-Covid.

Figure 1: Core homelessness estimates by category and year, England 2012-2019
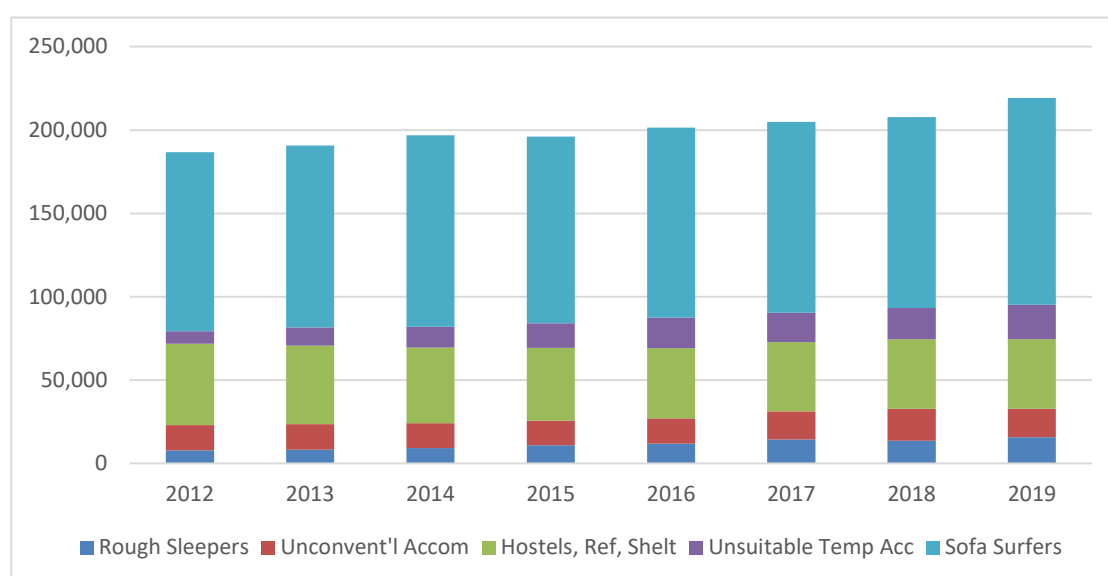
	2012	2013	2014	2015	2016	2017	2018	2019
Rough Sleepers	7,881	8,320	9,114	10,973	11,960	14,455	13,649	15,686
Unconvent'l Accom	15,160	15,234	15,037	14,706	15,126	16,710	19,050	17,079
Hostels, Ref, Shelt	48,706	47,027	45,347	43,668	41,988	41,672	41,702	41,702

Unsuitable Temp Acc	7,609	10,997	12,502	14,735	18,359	17,578	18,869	20,636
Sofa Surfers	107,368	109,135	114,848	112,029	114,046	114,493	114,467	124,111
Total Core Homeless	186,724	190,713	196,848	196,110	201,479	202,892	207,738	219,215

A similar analysis by broad region of England is shown in Figure 2. Traditionally London and the South East have been seen as dominating the picture of homelessness, and perhaps particularly in terms of statutory homelessness which, until 2018 and the HRA, was more dominated by family homelessness. However, core homelessness has a much higher proportion of singles, quite a high proportion of whom have complex needs, while others are primarily economically disadvantaged. The geography of these groups differs somewhat, with more emphasis on the midlands and north, particularly the more economically disadvantaged urban areas there[10]. This is reflected in Figure 2, and also in the fact that the growth seems to have been greater since 2012 in those regions (up 34% in the North and 47% in the Midlands, compared with 8% in the South and 4% in London).

Figure 2: Core homelessness estimates by broad region and year, England 2012-2019

	2012	2013	2014	2015	2016	2017	2018	2019
North	41,316	41,906	41,543	39,551	39,365	45,680	46,732	52,014
Midlands	29,738	32,961	33,722	34,403	35,383	41,845	40,575	41,432
South	60,715	61,395	62,340	61,538	64,043	61,143	63,322	66,235
London	53,631	53,082	57,912	59,326	61,384	52,547	55,512	57,957
England	186,724	190,713	196,848	196,110	201,479	202,892	207,738	219,215

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[10] For some confirmatory evidence from initial H-CLIC returns see Fitzpatrick & Bramley (2021 forthcoming) *Homelessness and Complex Needs: Policies, Expenditure and Outcomes 2015-2020,* Social Policy and Distributional Outcomes in a Changing Britain Research Paper 7, Figure 2

4. Developing Core Homelessness Projections

The biggest challenge in this project has been, as it was in 2017, to develop forward projections of core homelessness. The purpose of these projections is in part to inform the planning and resourcing of services for homeless people, and indeed in 2017-18 Crisis commissioned additional work from PWC to develop costings of policies to address homelessness as well as costs likely to be incurred as a response to it. It is also of course in part to alert the public, Government and policy communities to the challenges which may lie ahead in addressing homelessness. Perhaps most important, and potentially valuable, is the capacity to use the projections modelling methodology to explore alternative future scenarios, and in particular to use it to explore the potential efficacy of different policies or strategies in bearing down on core homelessness.

As in 2017, the approach adopted has been to build on an existing modelling framework which had been used in both this and a number of other research studies. This framework is the Sub-Regional Housing Market Model (SRHMM), which the author has developed in stages over more than a decade[11]. The essence of this model is to inform policy consideration in relation to planning, housing and related social policies by presenting consistent scenarios for the housing market and related systems/markets over the medium to longer term. These scenarios are driven by conditional forecasts embodying econometric functions to predict key variables (for example, housebuilding, house prices and rents, tenure shares and lettings). Key assumptions about future economic growth and financial conditions are judgemental inputs informed by independent forecasts and assessments. National population numbers are informed by official projections while sub-regional household numbers are generated by econometric functions allowing for behavioural responses in terms of movement between areas and household formation. The model predicts the evolution of levels of housing need and, since 2017, has been significantly enhanced to predict a range of numbers within the official homelessness system and core homelessness numbers in the categories defined for this study. These predictions are made for 102 subregional areas in England and another 14 areas in the other UK countries.

This unique model is obviously of crucial value in the present context, where we are trying to predict core homelessness numbers in the near and more distant future. It is one thing to have a model which can predict a particular aspect of homelessness, such as rough sleeping, on the basis of a number of risk and contextual factors; it is another to have a system which can 'predict the predictors' in such a model going forward over 10-20 years in a consistent fashion.

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[11] See in particular Bramley, G. & Watkins, D. (2016) 'Housebuilding, demographic change and affordability as outcomes of local planning decisions: exploring interactions using a sub-regional model of housing markets in England', *Progress in Planning*, 104, pp.1-35; Bramley, G. with Leishman, C., Cosgrove, P. and Watkins, D. (2016) *What Would Make a Difference? Modelling policy scenarios for tackling poverty in the UK.* https://pureapps2.hw.ac.uk/portal/files/10844984/Bramley_WhatWouldMakeaDifference_Report.pdf ; and Bramley, G. (2018) *Housing Supply Requirements across Great Britain for low income households and homeless people.* Research Report for Crisis and the National Housing Federation. Main Technical Report. Edinburgh. Heriot-Watt University. https://researchportal.hw.ac.uk/en/publications/housing-supply-requirements-across-great-britain-for-low-income-h .

On the face of it, this application of the model might be seen as a marginal or incremental extension of the work published in 2017 and 2018. In practice it has entailed a wholesale re-estimation and re-calibration of many key functions in the model, including several in the core of the housing market part as well as all of those relating to homelessness, including some new elements. At the same time, for a large number of variables in the model, base period input data has been updated by 2-3 years, or in some cases for a longer run of years. One key reason why updating of key economic housing market functions was overdue was that the distorting effects of the 2008-10 financial crisis meant that it would have been difficult and potentially misleading to simply recalibrate earlier models (originally fitted to data running up to 2007) by adding two or three years to the existing data run.

So, as part of this exercise the following core econometric functions within the SRHMM have been re-estimated and recalibrated, using data from the period 2009-18:

- Private housing completions
- House prices (real, mix-adjusted)
- Private market rents
- Lettings and net changes in private rental tenure
- Housing vacancies
- Net relets of social rented housing
- Household income levels
- Poverty after housing costs (AHC)

Most of these were re-estimated using annual panel data for local authorities or Housing Market Areas, but the last two were fitted to micro-longitudinal survey data from the UK Household Longitudinal Survey (UKHLS).

Predictive functions for the following elements of homelessness were also re-estimated

- Total homeless applications to the local authority
- Total households in temporary accommodation at year end
- Households in unsuitable temporary accommodation
- Rate/number of rough sleepers – three separate models based on Destitution survey/indicators, Public Voice survey and H-CLIC data were combined
- Other unconventional accommodation – model developed using Public Voice data
- Sofa surfing – two separate micro-econometric models based on EHS and UKHLS are combined, with a third Public Voice based model as backup
- Rate of households applying to LA as homeless due to loss of private rental tenancy, based on H–CLIC and P1E data

Some new elements were brought into the modelling framework, including local estimates of destitution rates (overall and for complex need adults), based on our programme of research for the Joseph Rowntree Foundation since 2014[12]. These are then overlaid by the complications of a significant 'regime change' ushered in by the Homelessness Reduction

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[12] See Fitzpatrick et al (2020 *Destitution in the UK 2020*, York, Joseph Rowntree Foundation, and Bramley et al (2020) *Destitution in the UK 2020 Technical Report*, https://researchportal.hw.ac.uk/en/publications/destitution-in-the-uk-2020-technical-report , especially sections xxx.

Act (HRA) and an ambitious new individual-level administrative data system, 'H-CLIC', then followed by the onset of COVID-19.

Appendix B presents a summary table giving the sources of data used in both the sub-regional model and the specific sources of data on core homelessness. Appendix C presents in tabular format a summary of the factors contained in each of the key models used to predict the elements of core homelessness. Appendix D describes and discusses each predictive model in more detail, including both the functions driving the general housing market model and the specific functions for elements of core homelessness.

As this research was progressing, the COVID-19 emergency overtook the UK and the world. Extraordinary measures were put in place to rehouse rough sleepers and other vulnerable homeless people at risk of rough sleeping or staying in communal accommodation settings deemed high risk. At the same time the lockdown(s) led to unprecedented economic contraction accompanied by a raft of measures from Government (notably the furlough Job Retention Scheme) to try to mitigate the economic impacts, although this did not and perhaps could not fully insulate all sections of the population from loss of work and income. As has already been documented[13], this crisis has led to a spike in destitution and associated consequences, such as a big increase in the use of food banks, both established networks and additional 'pop-up' provision. Indications from our interim update of the Homelessness Monitor and from Crisis's own network showed unexpectedly large increases applications for emergency accommodation in some areas initially resulting from the Covid disruption, although this may now have died down, and there were offsetting reductions in some types of homeless application to local authorities.

Therefore, it has been necessary to adapt the modelling to factor in Covid, and potentially varying assumptions about both the depth/pattern of its impact and the duration of its effects. Essentially, and at a minimum, we now have two baselines, the original 'business as usual' scenario and then a 'with-COVID' scenario. Specific future policy options and contextual variants are now mainly contrasted with the 'with COVID' baseline.

The main *policy options* modelled on this basis are as follows (listed in roughly descending order of immediacy of potential impact in post Covid period).

- Options for how special homelessness provision made during COVID emergency evolves into future new normal provision
- Further strengthening of prevention activity across the board, to bring all local authorities up to the level achieved by the most effective
- Options to reduce the scope for/level of evictions from the private rented sector
- Options to lift the remaining limits on Local Housing Allowance (support with housing costs for private tenants), or alternatively to revert to the regime of 2018.

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[13] See in particular: The Trussell Trust (2020a) *Summary Findings on the Impact of the Covid-19 Crisis on Food Banks*, briefing, available at https://www.trusselltrust.org/wp-content/uploads/sites/2/2020/06/APRIL-Data-briefing_external.pdf ; and Weekes, T., Spoor, E., Weal, R. & Moffett, G. (2020) *Lockdown, Loneliness and the Long Haul Ahead: The Impact of Covid-19 on Food Banks in the Trussell Trust Network*. https://www.trusselltrust.org/wp-content/uploads/sites/2/2020/09/the-impact-of-covid-19-on-food-banks-report.pdf

- Options to increase the share of social rented lettings going to homeless households, including additional quotas for core homeless
- Options to increase 'Housing First' and more rapid rehousing of complex need homeless people, accompanied by enhanced rehabilitation and support services, enabling reduction in hostel use, complex need and crime
- Options to change/improve the welfare benefits system, including raising the UC standard allowance, and a particular package focused on reducing the risks of destitution
- Options to raise the total level of housing supply and specifically social housing supply
- Scenarios entailing improved economic performance focused on the Midlands and North of England ('levelling up')

5. The Baseline Projections and COVID

Business as Usual

It is useful to start by setting out what we would judge to be a realistic scenario for core homelessness in England had the COVID-19 pandemic not occurred, and assuming a continuance of recent trends and policies over the coming period. We can refer to this by the shorthand of 'Business as Usual' (BUA). The economic assumptions reflected independent forecasts published before COVID, the expectation of Brexit with a form of (limited) trade deal, and a rate of economic growth still somewhat coloured by the so-called 'productivity puzzle' (i.e. lower than historic growth). The economic fortunes of the north/midlands vs London/south would continue to diverge. The demographic scenario assumed somewhat lower international migration than in the last 15 years, and a continuance of the recent slowdown in life expectancy. Housing supply would continue at around the levels of the last few years, but would not increase to the aspirational levels which governments have sought to achieve in recent years.

Figure 3 shows the results of this scenario in terms of estimated and then predicted levels of core homelessness, by category of core homelessness. The overall total is shown to have increased significantly from 172,0000 to 202,000 between 2012 and 2018, rising a bit further to 212,0000 by 2021, levelling off in the mid 2020s before rising gradually to a level of 225,000 by 2031 and then accelerating gradually to 277,000 by 2041. Over nearly three decades core homelessness would have grown by 60%. The dominant drivers of this growth would have been rough sleeping (nearly tripling) and unsuitable TA (increasing by over eight times), although the larges element (sofa surfing) would have also grown by 49%. The only category to have declined would have been hostels, and that decline has effectively nearly all happened already.

Figure 3: 'Business as usual' (non-COVID) baseline projection of core homelessness by category, England 2012-41
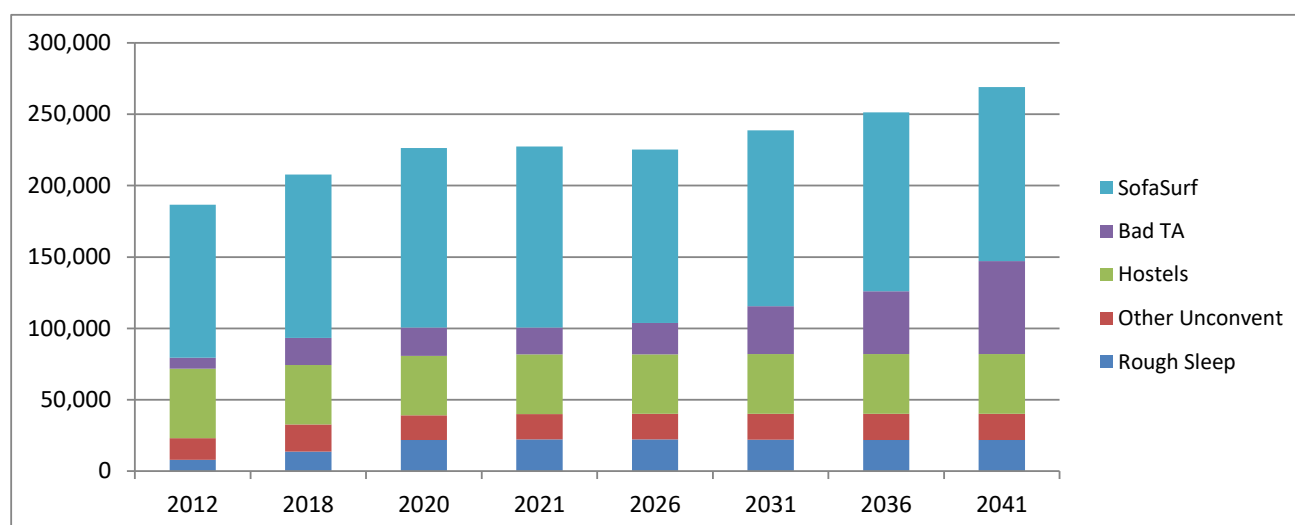
Modified 11 Dec 2020	2012	2018	2020	2023	2026	2031	2036	2041
England	186,724	207,738	226,372	227,367	225,294	238,769	251,288	269,130
% diff from 2018	-10.1%	0.0%	9.0%	9.4%	8.5%	14.9%	21.0%	29.6%
	2012	2018	2020	2021	2026	2031	2036	2041
Rough Sleep	7,881	13,649	21,708	22,245	22,141	21,937	21,748	21,682
Other Unconvent	15,160	19,050	17,364	17,730	17,991	18,269	18,463	18,515
Hostels	48,706	41,702	41,702	41,702	41,702	41,702	41,702	41,702
Bad TA	7,609	18,869	19,695	18,841	21,988	33,522	43,999	65,188
SofaSurf	107,368	114,467	125,902	126,848	121,472	123,340	125,376	122,043

It may be noted that three categories of core homelessness are not forecast to increase greatly after 2020, in this scenario; rough sleeping, other unconventional and hostel accommodation. The largest element, sofa surfing, is forecast to increase moderately. The most sensitive element, unsuitable temporary accommodation (UTA for short) rises increasingly steeply in this scenario. This sensitivity of this indicator reflects its role as a bellwether of pressures in the homelessness system; when driving factors are leading to an increased inflow at the same time that the opportunities for outflow are diminishing, local authorities have to resort increasingly to forms of TA that we classify as unsuitable, and households remain stuck in these for longer.

Figure 4 shows the same scenario as played out across the four broad regions of England. Here the overall story is the familiar one, in relation to homelessness, of London seeing the largest increase (91%) over the whole period 2012-41. The North and South would experience a below-average rate of increase (20-22%), with the Midlands seeing an increase closer to the average at 40%. However, in the part of this period which has already happened, the Midlands and the North experienced higher rates of increase while for London and the South the increases were lower. Possible explanations for this may include the easing of the London housing market in the period around 2016-18 and the relatively poor economic performance of the North and Midlands since 2012. Later in the projection period, the London housing market tightens further to a marked extent. The North appears to show some decline

in core homelessness over the longer term. While lower population growth is a factor, a less pressured housing market characterises this scenario.

Figure 4: 'Business as usual' (non-COVID) baseline projection of core homelessness by broad region, England 2012-41
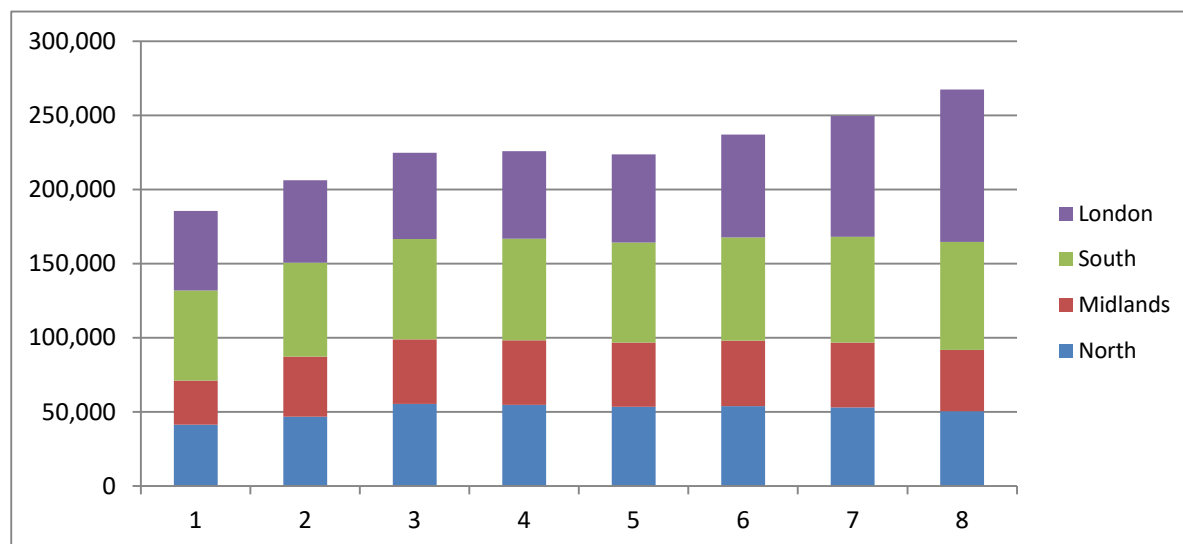
	2012	2018	2020	2021	2026	2031	2036	2041
North	41,316	46,732	55,355	54,748	53,358	53,827	53,040	50,328
Midlands	29,738	40,575	43,432	43,494	43,322	44,260	43,731	41,482
South	60,715	63,322	67,738	68,430	67,412	69,510	71,281	72,890
London	53,631	55,512	58,268	59,039	59,506	69,389	81,392	102,569
England	186,724	207,738	226,372	227,367	225,294	238,769	251,288	269,130

It should be noted that, at a late stage in this research, it was identified that the predictions of sofa surfing did not fully reflect expectations and this was attributed to a couple of variables in each of the two forecasting equations (based on EHS and UKHLS respectively), which had counter-intuitive signs while also being, in some of these cases, not statistically significant. Therefore in the final iteration of scenario testing these formulae were modified by setting these coefficients at zero. The results of this slightly modified model showed a stronger growth in sofa surfing in the longer run, leading to the BAU forecast reaching a total of 293,000 in 2041 rather than the 269,000 shown above, an increase of 9%.

A broader comment on the shape of the overall trajectory is in order at this point. In the original 2017 core homelessness projections, the later part of the projection (2031-41) showed a steepening growth rate in the baseline projection. In this new set of projections that future increase rate in the 2030s is somewhat more moderate, but still noticeable. How do we account for this? We would argue that this reflects both changes in the real world data from the last few years, and the way that this is carried through the assumptions and the modelling, and also some changes in the model itself resulting from its recalibration on more recent data. Essentially, the 2010s has been a decade of subdued economic growth and less spectacular swings in the housing market, compared with the period 1980-2010, which was when our previous models (particularly for house prices) were calibrated. We believe the

models as now used, not least for house prices, are sound in principle and reasonable-looking in terms of their sensitivity to what are widely accepted as the key determinants of these important housing market factors (see Appendix D for more details). Furthermore, some key underlying assumptions, for example on population and economic growth, are less bullish than in the previous study.

COVID and core homelessness

In modelling the impacts of COVID there are essentially three elements

Firstly, the impact of the initial and subsequent lockdowns and selective impacts on different sectors of the economy are shown and predicted to have impacts of a significant magnitude on economic variables through GDP changes in 2020 and gradually unwinding through 2021 and 2022. Judgements on the magnitude of these impacts draw on Treasury-compiled independent forecasts, NIESR 'NIGEM' economic forecasts, and background work undertaken in our study of impacts for Trussell Trust[14]. The unprecedented reduction in GDP in 2020 (over 10% on an annual basis)has a strong effect on unemployment in 2021 and several later years, with further effects on income, poverty , debt, etc.

Secondly, COVID and the lockdown has led to significant increases in the incidence of destitution, with some broadening of its geographical and socio-demographic footprint. In work just referred to we have estimated these impacts and this work informs our assumptions about the magnitude of change in destitution, in 2020 and in the following year or so. In simple terms, our estimate suggested a 50% rise in destitution for the year 2020 as a whole, persisting through 2021 (averaging 30% above base level) and into 2022 to a smaller extent (10%). These levels reflect awareness of repeated partial lockdowns in late 2020 and the prospects of some carry-over into early/mid 2021 (confirmed by the emerging reality). They are net of the offsetting effect of welfare easements like the 1-year raising of the UC personal allowance by £20pw.

Thirdly, the MoHCLG reacted to the crisis and proposals from the Public Health sector by rapidly developing a programme known as 'Everyone In', whereby hotel and other accommodation was procured to enable rough sleepers, people at risk of rough sleeping, and occupants of certain congregate hostel/shelter accommodation, to be housed in a safer environment from the viewpoint of infection transmission. The broad orders of magnitude of this provision, and its local distribution, are known and some key data published in May and September/October 2020 enable us to make reasonable estimates of its impact on core homeless numbers down to sub-regional level. We estimate that in *net terms* this programme led to a 7,000 reduction in rough sleeping compared with our estimate for 2019, or 3,000 less than in 2018, a 10,700 net increase in hostel etc. provision (including hotels used for the scheme), and a 13,000 reduction in sofa surfing. It can be seen that this represents a net reduction in core homelessness overall, of the order of 7,300 households; the programme has aided or accelerated the rehousing of that number of core homeless households into more appropriate permanent, transitional or supported accommodation, while helping around 33,000 households in total (up to November) in terms of safe temporary accommodation

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[14] See footnote 13 and Bramley, G. (2020) *Potential Destitution and Food Bank Demand Resulting from the Covid-19 crisis in the UK: Rapid Research for Trussell Trust. Modelling individual/household-level impacts and eligibility for mainstream welfare support.* Final report. 07.09.2020. https://www.trusselltrust.org/wp-content/uploads/sites/2/2020/09/Heriot-Watt-technical-report-FINAL.pdf

through some if not all of the the period of the pandemic. We factor the above net numbers into the with-COVID core homelessness estimates for 2020.

This has clearly been a successful intervention, from both a homelessness and public health viewpoints. Crisis commend this and would urge the government to continue with and build on it.

For the immediately following years we have made assumptions about the continuance[15] of this special provision, targeted at rough sleeping and others at risk thereof. We have also assumed in our 'with-COVID' baseline that some other government-led measures will be applied to help offset what would otherwise be a substantial spike in rough sleeping and core homelessness more widely. These measures include raising the effectiveness of prevention in securing accommodation for households presenting as at risk of homelessness significantly[16], and requiring authorities to use a quota of up to 20% of net social lettings to house core homeless households[17]. The continuance of Everyone In provision and the latter quota measure are run forward over the five years to 2025/2026.

Figure 5 shows our resulting new 'with-COVID' baseline estimates and projections by category for key years. It is obviously of particular interest to focus on 2020, the first year of the crisis and special measures. For the following period we show 2023 as a representative year, then 2026 and five-yearly intervals thereafter.

The Government's key economic measures in 2020 (the Job Retention (furlough) scheme, self-employment and business support schemes) served to insulate many if not all workers and households from the worst effects of lockdown and the large reduction in GDP resulting. Taken in conjunction with Everyone In, this meant that in 2020 core homelessness in general and rough sleeping specifically were reduced somewhat compared with 2018-2019.

The adverse economic and social impacts of Covid and the associated lockdowns and economics disruptions are particularly focused on 2021, and the model predicts quite a spike in some elements in that year, even with the range of counter-measures assumed to be put in place. By 2023 things have settled down to some degree, but three elements of core homelessness and the total are still significantly above 2020 levels and somewhat above pre-Covid levels. This applies to rough sleeping, hostels (deliberately, given the inclusion of special hotel-based provision here), and sofa surfing. Overall core homelessness in 2023 would be 4% above the BAU scenario or 14% above 2018 levels.

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[15] Hotel type accommodation for 20,000 households in 2021 dropping to 15,000 from 2023 to 2025.
[16] Raising all local authorities to the level of the 2018 average plus one standard deviation, based on H-CLIC prevention outcome table.
[17] The 'up to' part depends on whether there are enough core homeless in an area to justify that level of allocation, and partly also on the share of hostel residents in the total of core homeless.

Figure 5: New with-COVID baseline projection of core homelessness by category, England 2012-41
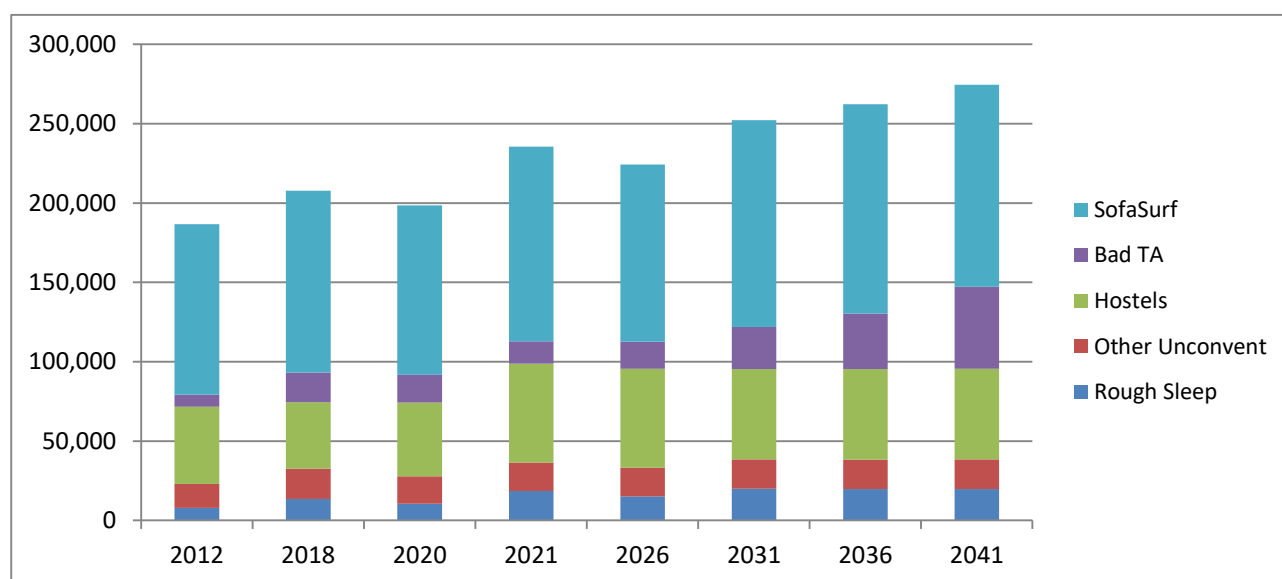
	2012	2018	2020	2023	2026	2031	2036	2041
England	186,724	207,718	198,524	235,430	224,213	252,169	262,277	274,443
% diff from 2018	-10.1%	0.0%	-4.4%	13.3%	7.9%	21.4%	26.3%	32.1%
	2012	2018	2020	2021	2026	2031	2036	2041
Rough Sleep	7,881	13,629	10,508	18,680	15,115	20,049	19,743	19,836
Other Unconvent	15,160	19,050	17,364	17,766	18,050	18,368	18,625	18,649
Hostels	48,706	41,702	46,463	62,313	62,313	57,030	57,030	57,030
Bad TA	7,609	18,869	17,502	14,204	17,154	26,451	34,964	51,814
SofaSurf	107,368	114,467	106,686	122,467	111,581	130,272	131,915	127,115

The medium term impacts of Covid on core homelessness appear to be noticeable but moderate, given the counter measures we have assumed and modelled. In 2031, with those measures having stopped after 2026, core homeless could be 5% above the BAU level (21% above 2018 level). Later in the projection period the Covid baseline scenario appears to show a marginally higher level of core homelessness than in the BAU baseline, 2% higher in 2041, although this would then be 32% above 2018.

The regional impacts shown in Figure 6 suggest that the core homelessness impacts of Covid plus counter measures in 2023 would be substantial in all regions. In 2026, the persisting differences from BAU would be relatively small, and favourable in the northern and midland regions, while being slightly adverse in London. Later in the projection period, the worsening of homelessness prospects appears to be more pronounced in the North whereas in London and the South the position in 2041 is marginally better than in the BAU baseline. While our projection does not explicitly reflect the tiered lockdown implemented in England in September-October 2020, it does reflect the patterns of poverty, destitution and housing conditions which disadvantage the northern regions and contribute to both Covid vulnerability and core homelessness vulnerability.

Figure 6: New with-COVID baseline projection of core homelessness by broad region, England 2012-41
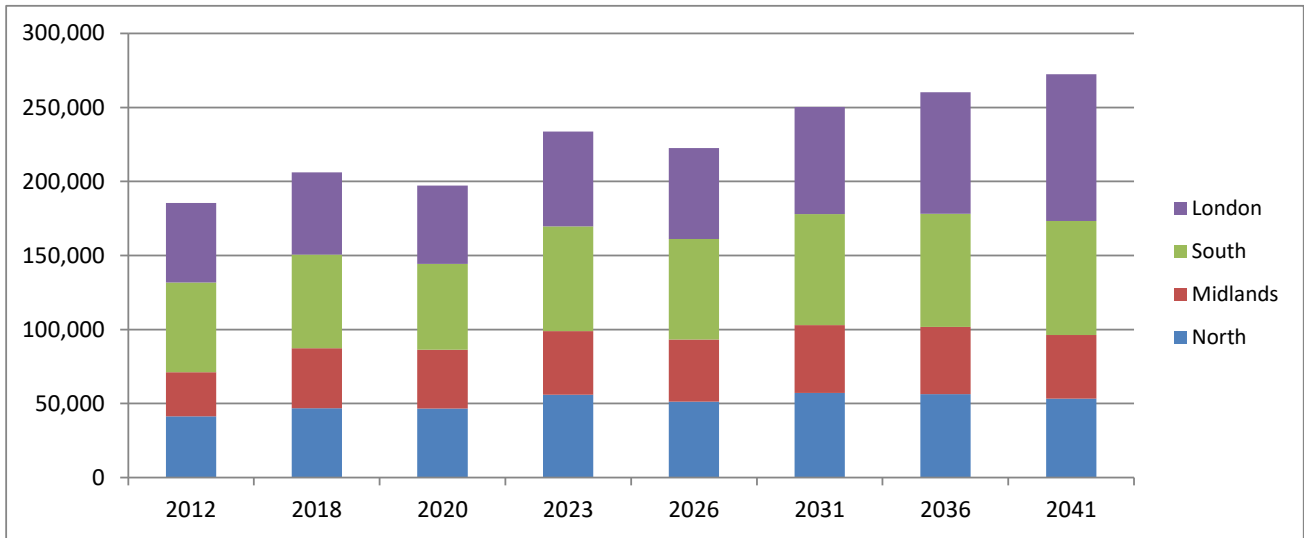
	2012	2018	2020	2023	2026	2031	2036	2041
North	41,316	46,731	46,642	55,928	51,191	57,142	56,440	53,393
Midlands	29,738	40,570	39,674	43,069	41,975	45,930	45,374	42,891
South	60,715	63,315	58,040	70,676	67,912	74,865	76,395	77,011
London	53,631	55,504	52,845	64,000	61,396	72,365	82,137	99,208
% chg from baseline			0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
England	186,724	207,718	198,524	235,430	224,213	252,169	262,277	274,443

6. Variant Policy and Contextual Scenarios in the Medium Term

In this section we outline the findings of a number of scenarios where we have tested the impact of a number of scenarios, over the medium to longer term time horizon. We first look at individual scenarios and some variants, before comparing them as individual standalones and then as part of a structured buildup.

Local Housing Allowance

It is appropriate to include scenarios relating to different policy settings for the Local Housing Allowance (LHA), which is essentially the maximum level of private rent which the Universal Credit (UC) or Housing Benefit (HB) systems will support for private tenants. These levels are laid down for 'Broad Housing Market Areas' (BRHMA) and for different bedroom sizes of accommodation. Before 2013 these were based on the median of observed rents. From 2013 they were set at the 30th percentile of rents. However, these levels were then indexed to rise by only small amounts (CPI, then 1%, then 0% from 2015 to 2019). As a result of these decisions a gap developed between typical market rents and LHA levels, which was of quite significant magnitude in some areas (particularly in London and the south). Much evidence from the Homelessness Monitor showed that it was increasingly difficult for local authorities to discharge homelessness duties or assist with prevention and relief into the private rented

sector where this LHA gap was substantial. It was also expected to contribute to arrears and evictions within the sector.

Consequently we tested for the effect of the LHA-rent gap in a number of our models used to predict different elements of core homelessness or its drivers, and we found significant effects in a number of cases (homeless through loss of private tenancy, total homeless applications, total temporary accommodation, unsuitable temporary accommodation), reflected in the projection model as now operating. We look at two opposing policy options for LHA, given the current position is assumed to be one of maintaining LHA at the 30th percentile level with appropriate indexing. These alternatives are (a) to lift the LHA so that effectively the full amount of median market rents would be coverable by the system, at LA district level or (b) to revert to the earlier position, with the LHA indexed only to CPI, but subject a maximum rent gap of £100 pw (2 bedroom). Table 3 below exemplifies the impacts of these two options on core homelessness over time.

Table 4 shows that lifting the LHA further to eliminate remaining rent gaps would have a moderately positive effect overall, reducing core homelessness by 1.2% (2,000) in 2026, 2% (5,000) in 2031, rising to 4.6% (12,500) by 2041. This reduction would be mainly channelled through reduced levels of unsuitable TA (down 56%) and would provide a disproportionate benefit to London (11% reduction in core homeless) and to some extent the South, with little impact on Midlands or North.

Subsequently, we have explored a slight modification to the predictive models for sofa surfing, where two perverse coefficients in each of the sofa surfing equations, were set at zero (see Appendix D). This gives more reasonable/expected impacts of certain scenarios on this aspect of core homelessness. This particularly affects the LHA scenario, generating larger reductions in core homelessness of 4.1% in 2026, 5.6% in 2031, 7.3% in 2036 and 11% in 2041, and makes LHA one of the most impactful policies in the medium to longer term.

The converse policy, of reverting towards the earlier position by indexing LHA to CPI inflation, rather than actual rental inflation, would lead to a rapid escalation in core homelessness, by 11% in 2023, 29% in 2026 and 116% by 2031. Clearly this second option would not be sustainable for any extended period, and is indicative of the difficulties which were emerging in the period up to 2019. The policy recommendation here is, obviously, not under any circumstances to return to the previous regime, but ideally to lift the LHA completely to median level in all local authority areas.

Table 4: Impact of Local Housing Allowance options on core homelessness compared with COVID baseline

Baseline +COVID							
2012	2018	2020	2023	2026	2031	2036	2041
186,724	207,718	198,524	235,430	224,213	252,169	262,277	274,443
Diff from BAU	0.0%	-12.3%	3.5%	-0.5%	5.6%	4.4%	2.0%
Lift LHA							
2012	2018	2020	2023	2026	2031	2036	2041
186,724	207,718	198,524	233,604	221,497	247,249	255,629	261,864
Diff from Baseline	0.0%	0.0%	-0.8%	-1.2%	-2.0%	-2.5%	-4.6%
Lift LHA variant S/S							
2012	2018	2020	2023	2026	2031	2036	2041
189,297	211,951	203,700	239,626	228,737	259,997	271,170	281,503
Diff from Alt Baseline	0.0%	0.0%	-3.2%	-4.1%	-5.6%	-7.3%	-11.0%
LHA Index CPI							
2012	2018	2020	2023	2026	2031	2036	2041
186,724	207,718	198,524	260,864	289,793	546,151	707,638	936,646
Diff from Baseline	0.0%	0.0%	10.8%	29.2%	116.6%	169.8%	241.3%

Other Welfare Measures and Destitution

While the LHA is a well-understood factor which can be shown to directly impact on core homelessness, and to contribute to wider destitution, is there a role for other changes in social security/welfare policy parameters which could have similarly beneficial effects? It ought to be possible to bear down on core homelessness in this way, given the evidence from many of our predictive models (as described in Appendix D) of the roles played by poverty, unemployment and debt/financial difficulties. We have tested one specific measure and a more general package, both targeted on reducing destitution in the general population.

The first measure is to maintain the £20 pw temporary enhancement to personal allowances in the Universal Credit system, initiated in March 2020, from April 2021. We can simulate the impact of this on poverty after housing costs using the UKHLS data set. We have evidence both from this approach and from econometric modelling of food bank demand to support a general assumption about the magnitude of reduction in destitution (c. 20%) which could result from this. The second part of Table 4 below shows that this would appear to have a modest impact on core homelessness, reducing it by 1.9% (5,000) in 2023, 1.0% (2,300) in 2026 and 1.4-1.9% (5,000) in later years. It is worth noting that its relative impact on rough sleeping would be larger, with an 11% reduction attributable in 2041, and also unsuitable TA which would be down by 5%in the longer run.

The destitution-oriented package is strongly informed by emerging findings from the JRF study of *Destitution in the UK 2020 (*Fitzpatrick et al 2020*)* and work undertaken for the Trussell Trust as reported in Sosenko et al (2019) *State of Hunger* report. In addition to the general level of benefit allowances, key measures would include: ending of the 5-week wait for Universal Credit; strictly limiting the amount of debt recovery from benefit payments; drastically reducing the incidence of 'failed' PIP assessments for people with long term health conditions and disabilities; and improved local welfare assistance schemes (including enabling migrants to access these). It is judged that these could make a substantial reduction in destitution, of the order of 45%. The impact of these measures in combination on core

homelessness appears to be significant and useful, particularly in the early period, although moderate overall in the long run. This is shown in the middle part of Table 5. There is a greater reduction in core homelessness in the range 3.6-5% (8-14,000) in all years from 2023 to 2041. However, it appears that the tendency to reduce rough sleeping is much more marked still, with this number more than halving in the later period. The greatest reduction would be in the northern regions (-8.1%) with the other regions seeing a similar level of reduction (c. -4.2%)

Table 5: Impacts of Raising Universal Credit Standard Allowance and wider Destitution-related package on core homelessness compared with COVID baseline

Baseline +COVID							
2012	2018	2020	2023	2026	2031	2036	2041
186,724	207,718	198,524	235,430	224,213	252,169	262,277	274,443
Diff from BAU	0.0%	-12.3%	3.5%	-0.5%	5.6%	4.4%	2.0%
Raise UC £20							
2012	2018	2020	2023	2026	2031	2036	2041
186,724	207,718	198,524	231,062	222,075	248,522	257,637	269,212
Diff from Baseline	0.0%	0.0%	-1.9%	-1.0%	-1.4%	-1.8%	-1.9%
Destit Pkg + UC £20							
2012	2018	2020	2023	2026	2031	2036	2041
186,724	207,718	198,524	224,066	216,059	239,914	249,109	260,694
Diff from Baseline	0.0%	0.0%	-4.8%	-3.6%	-4.9%	-5.0%	-5.0%
Destit pkg + Large Increase in UC							
2012	2018	2020	2023	2026	2031	2036	2041
186,724	207,718	198,524	220,830	214,980	237,942	245,772	256,338
	0.0%	0.0%	-6.2%	-4.1%	-5.6%	-6.3%	-6.6%

Finally, before leaving Universal Credit and related measures, we can illustrate the impact of a strategy to raise UC much more dramatically, sufficient to reduce general poverty by a quarter, together with the destitution-related package of measures. This is shown at the bottom of Table 4. This strategy would contribute to an early reduction of 6.2% (15,000) in core homelessness in 2023, and 4.1% in 2026 rising again to 6.6% (18,000)at the end of the period. This set of measures would again reduce rough sleeping a lot, by 50%, while having more moderate impacts on unsuitable TA (-14%). Although the largest impact would be in London (-8.1%), the impact in the North would also be almost as large at -7.9%, with impact in the Midlands lowest at -4.2%.

Prevention

In the previous study it was found that indicators of a more active and comprehensive approach to prevention by local authorities appeared to be associated with lower levels of core homelessness, and that these effects happened quite quickly within the projection period. Since 2017 the context has changed as a result of the Homelessness Reduction Act of that year and its implementation from April 2018. What was previously more discretionary has become a statutory responsibility and hence, in a sense, more universal. The way of collecting data about prevention activity has changed, and we only have 1-2 years of data

under the new system[18]. The previous model calibrated the effects of prevention on different elements of core homelessness by including measures in annual panel data by local authority to pick up the effects of varying levels and mixes of prevention activity on outcomes. These models are no longer so viable or useful in the new regime. We have been able to pick up some effects of one key indicator of prevention effectiveness in the context of cross-sectional models for two components (rough sleeping and total TA) for the one year of 2018. These show that the proportion of completed prevention cases where accommodation was secured had a significant negative effect on those two outcomes. We therefore include these effects in our modelling, looking at the option of raising all local authorities either to the level of the mean plus one standard deviation, or alternatively to the highest, given the observed variation between housing market areas (mean 0.57, S D 0.103, range 0.36 to 0.85).

This particular prevention scenario has a noticeable impact on core homelessness outcomes, at least in the range up to the intermediate target (mean+1 S D). In the short run it would reduce rough sleeping by around 9% in 2023 while reducing unsuitable TA by 32% in 2022, giving an overall reduction in core homelessness of 3.3%. The impact would be relatively greater in London, although perhaps it might be argued that prevention is much more difficult in London given the pressures there. In the longer run the overall reduction would be around 4.4%, including 10% less rough sleeping and 15% fewer in unsuitable TA, with again the largest impact in London.

The may not be the best or the only way of measuring prevention effectiveness, but it does suggest that there is a continuing role for maximising LA performance in this area in bearing down on core homelessness, not least rough sleeping.

Because this approach has relatively immediate effects, we decided to include this in our revised baseline scenario, along with the enhanced 'Everyone In' and also the social housing quotas measure discussed in the next section. Thus it is embodied in the with-Covid Baseline. However, the option of pushing this option even harder, and raising all LAs to the observed maximum value, seemed not to have any additional marginal benefit.

Social Housing allocations

In practical terms, a policy lever which looks as though it ought to offer significant scope, particularly in facilitating 'routes out' of core homelessness, is to increase the share of available social lettings allocated to homeless households. There is a general parameter for this which can be varied, and works through several of the forecasting equations where this was found to be significant (e.g. total and unsuitable TA). We have also programmed a more targeted intervention, implementing an additional quota of (say) 20% of net lettings to be allocated specifically to core homeless households, post-Covid. The latter is shown to be more effective, although care is needed not to set this parameter at an unrealistically high level later in the forecast period – the model now includes an automatic regulator to prevent that, as well as a controllable parameter to determine whether the measure should continue into the longer term beyond the early post-Covid period (2027-).

In view of concerns about the prospects for core homelessness and particularly rough sleeping in the immediate period following Covid, we again decided to include this relatively

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[18] We have two years and one quarter of data on the characteristics of applicants and whether they are in the Prevention, Relief or Main Duty stages, but we only have one year's worth of cohort flow data indicating what the outcomes of prevention were for the 2018/19 intake.

fast-acting measure in the package of policies including Everyone In and prevention for that immediate period. Therefore it is part of the baseline up to 2026. We then illustrate the impact of continuing to apply it from 2027 onwards, as in Table 5.

Table 6 shows the overall impacts of these two measures over the longer term. The more general measure, in the form of a general 30% increase in the homeless share of lettings, was previously found to have only a moderate effect on core homelessness, bringing reduction of 1% in 2026 rising to 1.7% (4,000) in 2031 and 2036. That effect works mainly through unsuitable TA, with some offsetting impact apparent within sofa surfing. The second measure, a specific quota for core homeless acting directly to reduce numbers the rough sleeping, unsuitable TA and sofa surfing sectors, is much more effective. This (combined with the above measure) achieves reductions of 5.6% in (13,000) 2031 and rather more in 2036-41 (6-6.8%, or 17-18,000). The impacts would be felt in all regions, but with higher impacts in the North (-9%) and South (-7.5%), and rather lower percentage impacts in the Midlands and London. An important feature of these measures is that they would effect a significant reduction (8.5%) in sofa surfing as well as similar levels of reduction in rough sleeping and unsuitable TA. It would also be expected to interact positively with increased social housing supply in a combined scenario.

Table 6: Impacts of applying a 20% quota of lettings for core homeless households beyond 2027 and 30% increase in general share of lettings to homeless

Baseline +COVID							
2012	2018	2020	2023	2026	2031	2036	2041
186,724	207,718	198,524	235,430	224,213	252,169	262,277	274,443
Diff from BAU	0.0%	-12.3%	3.5%	-0.5%	5.6%	4.4%	2.0%

Soc Lets Quota 20% CH							
2012	2018	2020	2023	2026	2031	2036	2041
					238,85		
186,724	207,718	198,176	234,913	223,711	4	244,421	257,929
Diff from Baseline	0.0%	-0.2%	-0.2%	-0.2%	-5.3%	-6.8%	-6.0%

Housing First and Complex Need reduction measures

The scenario illustrated here attempts to illustrate what may be regarded as desirable elements in a strategy to reduce core homelessness. The first part of it is to increase (by a factor of 3) the level of Housing First provision (from an albeit rather low base), which is assumed to impact progressively in the form of a reduced level of SMD (and hence overall) Destitution. The related part is to reduce the scale of traditional hostel provision over time as more of its traditional clientele are sustainably settled in conventional housing with appropriate support. A further linked part is to see a slightly larger annual reduction in crime rates (back to the rates of reduction seen in the period 2007-13). Implicitly assumed as part of this package is an increase in the scale and effectiveness of support and rehabilitation programmes for offenders and people with addictions. The results of our exemplification of this scenario are shown in Table 7.

It should be noted that the reduction in hostel numbers is only a fraction of the modelled HF numbers; this proportion was derived from arithmetic using evidence from the *Hard Edges* 2015 report for England and from the Destitution in the UK survey 2019 to estimate stocks and flows of the relevant group. Essentially we assume successful HF placements are drawn

pro rata from stocks and flows, that the proportion in hostels are as in the Destitution survey, and that one-third of the number from that part of the stock would be decommissioned, gives approximately the 3.5% pa reduction in hostel spaces assumed in this scenario.

The results of this scenario are very encouraging, with progressively increasing reductions in core homelessness recorded of 2.6% by 2026, 5.9% (15,000) by 2031, 9.9% (26,000) by 2036 and 13.3% (36,000) by 2041. This is one of the largest impacts of any of the policy options modelled separately here. Although the larger part of this reduction in accounting terms would be represented by the reduction in hostel numbers (44% reduction over 20 years), there would be a significant reduction in rough sleeping and some reduction in unsuitable TA. All regions would see substantial reductions but the largest proportionate reduction would be in the Midlands (-18.6%) with somewhat lower reductions in London and the South.

Table 7: Impact of Increased 'Housing First' provision with associated reductions in SMD destitution, crime, and hostel numbers, compared with COVID baseline

Baseline +COVID							
2012	2018	2020	2023	2026	2031	2036	2041
186,724	207,718	198,524	235,430	224,213	252,169	262,277	274,443
Diff from BAU	0.0%	-12.3%	3.5%	-0.5%	5.6%	4.4%	2.0%
More HF, less hostels							
2012	2018	2020	2023	2026	2031	2036	2041
186,724	207,718	195,612	229,873	218,386	237,220	236,232	237,906
Diff from Baseline	0.0%	-1.5%	-2.4%	-2.6%	-5.9%	-9.9%	-13.3%

Reduced Private Rental Evictions

There is widespread awareness that a significant issue facing the sector at this juncture is the position of quite a large number of tenants in the private rented sector who may now face eviction (in England), as the temporary suspension of evictions during Covid comes to an end and new cases work their way through the court system. We have not attempted to specify in detail exactly what measures might be put in place here but envisage that this could be a combination of ending 'no fault' evictions, as in Scotland, enhanced court protocols perhaps linked to Local Authority prevention activity, and so forth. More radical measures involving ongoing blanket bans of such evictions over the longer term seem unlikely to find favour with the current government. The scenario tested aimed to see a reduction in homeless presentations to local authorities which result from the end of a private rental tenancy by a factor of around one half. The results of this simulation are shown in Table 8.

Table 8: Impact of reduced private rental evictions leading to homelessness compared with COVID baseline

Baseline +COVID							
2012	2018	2020	2023	2026	2031	2036	2041
186,724	207,718	198,524	235,430	224,213	252,169	262,277	274,443
Diff from BAU	0.0%	-12.3%	3.5%	-0.5%	5.6%	4.4%	2.0%

Halve PRS Evict's							
2012	2018	2020	2023	2026	2031	2036	2041
186,724	207,718	198,524	233,126	222,086	248,410	256,188	266,372
Diff from Baseline	0.0%	0.0%	-1.0%	-0.9%	-1.5%	-2.3%	-2.9%

These initial impacts of this measure are smaller than might have been expected, being of the order 1% (or 2,300) in 2023, but they build up progressively to 2.9% (8,000) by 2041. It can be noted that this is only a fraction of the number which might have been expected on the basis of the H-CLIC recorded homeless applications who are likely to exit a PRS tenancy (ie.. half of 64,000 p.a), although that is a flow and converting it to a stock might reduce it to something like 10,000. Clearly, also , a lot of households who become homeless through this route do not become core homeless – they either are helped by successful prevention activity or they go into the statutory homelessness system and are placed in 'suitable' TA, which does not count as core homelessness. Nevertheless, it is possible that our model is underestimating the potential impact of policies in this area, for example among people who do not apply to councils. The model is only showing reductions in rough sleeping (-6.8%) and unsuitable TA (-12.4%) for this scenario, with no real impact on sofa surfing, hostels or other unconventional captured by the model. The impacts are more marked in London (-5.6% in 2041) and least in the Midlands (-0.7%).

Levelling Up

Particularly over the last year or so, political events in the UK and especially in England have led to a significant focus on the concept of 'levelling up'. This implies a radical attempt to counter decades of relatively weaker economic performance of midland and northern English regions compared with the performance of London and the 'Greater South East'. The current government has indicated a commitment to tackling this challenge and has announced some policy measures, in relation to infrastructure, education/training, and most recently green growth, which would contribute to such a strategy. It is beyond our scope to critically evaluate such measures or make further proposals as to what more may be needed to realise this ambition. However, we are in a position to ask a simple 'what if?' question of our model: what would happen to core homelessness if economic growth rates over the next 20 years came closer to parity acoss the regions (and housing market areas) of England, while contributing to an overall increase in GDP growth with only a very slight downward nudge for the leading region (London). The scenario here effectively reduces the GDP growth gap by about 70%. Table 9 shows the results of this strategy.

Table 9: Impact of successful 'levelling up' strategy for regional economic growth on core homelessness compared with COVID baseline

Baseline +COVID							
2012	2018	2020	2023	2026	2031	2036	2041
186,724	207,718	198,524	235,430	224,213	252,169	262,277	274,443
Diff from BAU	0.0%	-12.3%	3.5%	-0.5%	5.6%	4.4%	2.0%

Levelling Up							
2012	2018	2020	2023	2026	2031	2036	2041
186,723	209,541	201,853	238,101	222,053	244,852	249,594	259,276
Diff from Baseline	0.9%	1.7%	1.1%	-1.0%	-2.9%	-4.8%	-5.5%

The impacts here are encouraging , with reductions in core homeless building up from 1.0% (2,000) in 2026 and 2.9% (7,000) by 2031, to 5.5% (165000) by 2041. Interestingly, the biggest impacts are on sofa surfing, showing the pathway through general poverty and economic wellbeing factors. As expected/hoped, the reductions are greater in the North (5.7% in 2041) than in the South (-4.1%), although there is still a sizeable reduction for London (-7.0%). This may be because this strategy would divert more internal migration from London towards the North and so ease pressure on London's overheated market. There are some grounds for expecting some positive synergies between this scenarios and others, for example on housing supply.

Social and Total Housing Supply

The next scenario considered is one involving a substantial increase in overall housing supply (new build completions) with a relatively large increase in new social housing. The scenario is similar to the recommended option emerging from the 2018 Crisis/NHF Housing Requirements study, entailing increasing total completions to between 300,000 and 340,000 across England, with social completions rising from 25-30,000 to between 78,000 and 91,000 p.a.. The results are shown in the middle part of Table 10

Table 10: Impact of Higher Total and Social Housing Supply options on core homelessness compared with COVID baseline

Baseline +COVID							
2012	2018	2020	2023	2026	2031	2036	2041
189,297	211,951	203,700	247,606	238,469	275,332	292,416	316,401

High Newbuild Supply							
2012	2018	2020	2023	2026	2031	2036	2041
189,297	211,951	203,672	245,924	231,028	262,124	269,478	270,143
Diff from Baseline	0.0%	0.0%	-0.7%	-3.1%	-4.8%	-7.8%	-14.6%

Hi Supply +20% quota							
2012	2018	2020	2023	2026	2031	2036	2041
185,985	202,962	192,665	230,574	216,663	224,907	232,749	232,899
	-4.2%	-5.4%	-6.9%	-9.1%	-18.3%	-20.4%	-26.4%

Note: in this table the baseline and variants are from a variant of the model used in the other Tables in this section, involving slight modifications to the sofa surfing model, as described in Appendix D..

These impacts are moderate in magnitude, particularly in the period up to 2031, with core homelessness reduced by 3.1% (7,000) in 2026, although rising to 4.8% (13,000) in 2031, and reaching 7.8% (23,000)in 2036 and 14.6% (46.000) in 2041. It is well understood, and clear from the previous study, that the beneficial impacts of new housebuilding take quite a long time to work through, because (a) it takes time to build up a new build programme,, and (b) the impacts work through the overall size of the stock and its turnover rate, rather than the immediately available new build lets. However, in the long run it is clear that this strategy would achieve the largest impact on core homelessness of any of the measures considered in this analysis.

Obviously it takes time for housebuilding completions to build up, not least given the Covid-induced slump in output in 2020. One of the reasons for the rather weak initial impacts on homelessness in the 2020s appears to be that there is a high level of new household formation triggered in that period by the increased supply. As shown in the Bramley (2018) housing requirements study, there is a large backlog of unfulfilled wish to form new households among younger adults, many currently living as concealed households (although relatively few of these constitute sofa surfers on our definition). This large housebuilding programme, slanted towards the social rented sector, would quite definitely enable many more households to live separately and many households currently in need to have a more reasonable prospect of rehousing in the social sector within a shorter time period. However, without additional measures (for example on allocation priorities) it might not impact quickly on core homelessness.

It is worth demonstrating that by combining the pair of policy options, high supply plus rehousing quotas of up to 20% of net lettings for core homelessness extended beyond 2026, as in the third part of Table 10. This further and dramatically increases the impact in 2031 to 18.3% or 50,000) and subsequent years, reaching 26% (83,000) by 2041.

The category of core homeless most strongly impacted by higher supply in the longer run is unsuitable TA, and this is true of the combined strategy with rehousing quotas as well. This policy would prevent this category from ballooning. It would also achieve a sizeable numerical reduction in sofa surfing (-27%), holding this at close to current levels. The regional impact would be heavily focused on London, where core homelessness would fall by nearly a half by 2041, with a moderate reduction of 17.5% in the South but relatively little impact in the Midlands or North.

Summary of Impacts of Individual Policies

It is useful at this point to summarise the impacts of the policies considered in this analysis, by showing the percentage reductions in core homelessness, relative to the with-COVID baseline, at each point in time for each policy considered in isolation. Table 10 shows this summary, with the policies listed in descending order of the size of their impact at the end of the projection period, 2041.

It is noteworthy but expected that the policies which come top on this reckoning are those which have an impact which progressively builds up over time: increasing housing supply; deploying Housing First and other measures to reduce complex need homelessness and associated hostel use; raising LHA; and, to more moderate extent, 'levelling up'. Conversely, policies which are mainly geared to short term alleviation, such as prevention and limiting evictions, have small longer term impact. The negligible/perverse impact of prevention in this table reflects the fact that the with-Covid baseline already includes a tranche of extra

prevention, and it appears that this together with HRA implementation and previous advances may be exhausting the gains from prevention. The measures included within the shorter term Covid package embodied in the baseline included prevention measures which reduced core homelessness by 3.3% in 2023-2031 and 4.4% in 2041.

Table 11: Summary of Impact of Policies considered individually, ranked by size of impact by 2041

Year	2020	2023	2026	2031	2036	2041
8. Housing Supply*	0.0%	-0.7%	-3.1%	-4.8%	-7.8%	-14.6%
7. Hsg First, SMD redn	-1.5%	-2.4%	-2.6%	-5.9%	-9.9%	-13.3%
2. Raise LHA*	0.0%	-3.2%	-4.1%	-5.6%	-7.3%	-11.0%
10. Large ^ Welfare	0.0%	-6.2%	-4.1%	-5.6%	-6.3%	-6.6%
5. Rehousing Quotas	-0.2%	-0.2%	-0.2%	-5.3%	-6.8%	-6.0%
9. Levelling Up	1.7%	1.1%	-1.0%	-2.9%	-4.8%	-5.5%
6. UC & Destit measures	0.0%	-4.8%	-3.6%	-4.9%	-5.0%	-5.0%
3. Limit Evictions	0.0%	-1.0%	-0.9%	-1.5%	-2.3%	-2.9%
4. Prevention	0.0%	0.9%	0.5%	0.2%	0.8%	0.8%

Note: * impacts of options 2 and 8 based on slightly modified model in respect of sofa surfing models

Time horizon has a bearing on the ranking of policies. If the main focus is on the five year horizon of 2026, the most impactful policies would be the large or moderate rise in welfare rates and the destitution package, and raising the LHA, with supply and levelling up less prominent.

It is important to understand that the overall impact described above is composed of differential impacts on the five different components of core homelessness, as represented in the current version of the core homelessness projection model. Table 12 looks at these effects on the longer term time horizon of 2041. It can be seen that a majority of policies have effects in the desirable direction of reducing *rough sleeping* in the longer run, and that quite a few of these impacts are substantial (approaching or exceeding 10% reduction). The biggest impacts are associated with the welfare benefits measures including measures aimed specifically at reducing destitution. Next in importance is the strategy of using Housing First and improved support and rehab services to reduce complex need homelessness and in the process reduce hostel spaces gradually.

Table 12: Longer Term Impact of Policies considered individually on main components of core homelessness (% of with-Covid baseline at 2041)

Policy package	Rough Sleep	Unconvent-ional Acc	Hostels etc	Unsuitable Temp Acc	Sofa Surfing
Raise LHA+	0.5%	-1.7%	-1.7%	-55.8%	-3.5%
Limit Evictions	-6.8%	-0.5%	0.0%	-12.4%	-0.2%
Prevention*	-9.8%	0.9%	18.5%	-15.3%	18.7%
Rehousing Quotas	-8.5%	-1.1%	0.0%	-7.5%	-8.5%
UC & Destitution measures	-53.1%	-1.3%	0.0%	-5.1%	-0.3%
Housing First, SMD red'n	-15.9%	-1.8%	-43.9%	-14.8%	-0.2%
Housing Supply+	1.8%	-1.7%	0.0%	-61.0%	-8.8%
Levelling Up	-1.2%	-1.1%	0.0%	-5.3%	-9.4%
Large Benefits increase	-50.0%	-1.5%	0.0%	-13.8%	-0.6%

Note: * 'Prevention' effect simulated by the negative of the effect of not applying the prevention element specified in the 'with-Covid' baseline. + Raise LHA and Housing Supply utilise slightly modified model in relation to sofa surfing predictive formula.

The *unconventional accommodation* category, as represented in the current version of the model, shows relative limited changes in response to the different policy strategies. This is the category of core homelessness on which we have least robust evidence and hence limited capability of modelling drivers, although it is apparent that it is in part linked to other elements of core homelessness. The *hostels* category is essentially supply-determined in our modelling approach; thus the main opportunity to reduce hostel numbers is seen to lie in the Housing First related strategy.

Unsuitable temporary accommodation is the category of core homelessness which is most likely to be affected by any and indeed all of the policies tested. This reflects the way our modelling structure channels a wide range of influences through the overall level of homeless applications to local authorities, movements in the total level of temporary accommodation placements and, from the dynamics of that, the proportion of 'unsuitable' placements. This category is very strongly influenced by (total and social) housing supply, and by raising of LHA limits, while being quite significantly influenced by prevention, Housing First and limitations on evictions, as well as large increases in welfare benefit rates, and moderately affected by the remaining policies.

Sofa surfing presents a mixed picture. While for three policies, rehousing quotas, supply and levelling up, the impacts on this type of core homelessness are substantial and in the direction expected, for several other policies the effects are rather small in percentage terms (although it should be remembered that in this case a small percentage can still be quite a large number). In one case in this table, prevention, the effects appear to be perverse, in the sense that these policies appear to increase the numbers sofa surfing by a significant amount.

The models currently used to predict sofa surfing in the overall simulation are based on UKHLS and EHS data, as described at the end of Appendix D. While we attempt to include all types of sofa surfing and to capture the effects of local or sub-regional housing market conditions on this outcome within this modelling, there are practical limits to our ability to do this using the EHS or our Public Voice survey. There are also some technical issues about whether certain effects shown in the current version of the models should be retained in the context of the simulation. . Having conducted some further tests, involving neutralising two perverse coefficients (one of which was not significant anyway) in the sofa surfing models, it appears that sofa surfing responses are somewhat more in line with expectations, expecially in the scenarios of raising the LHA and to some extent in that of increasing supply, with knock-on effects in terms of the overall efficacy of the combined policy package.

Table 13 looks in a similar way at the shorter term impacts on different policies, with a focus on the earlier target year of 2026, while Table 14 looks at the medium term, 2031.. It should be remembered that these impacts are measured relative to the 'with Covid' baseline, which also includes additional measures to counter the emergency including extension of Everyone In, improved prevention and rehousing quotas.

Table 13: Shorter term Impact of Policies considered individually on main components of core homelessness (% of with-Covid baseline at 2026)

Policy Package	Rough Sleep	Unconvent-ional Acc	Hostels	Unsuitable Temp Acc	Sofa Surfing
2. Raise LHA+	0.3%	-0.3%	0.0%	-39.6%	-2.3%
3. Limit Evictions	-8.2%	-0.1%	0.0%	-6.8%	0.3%
4. Prevention*	-10.2%	-0.1%	17.0%	-24.5%	-1.7%
5. Rehousing Quotas	0.0%	0.0%	0.0%	-2.3%	-0.1%
6. UC & Destit measures	-56.5%	-0.7%	0.0%	-4.2%	1.1%
7. Hsg First, SMD redn	-6.7%	-0.3%	-7.0%	-2.9%	0.1%
8. Housing Supply+	1.8%	-0.1%	0.0%	-25.3%	-2.6%
9. Levelling Up	-0.5%	0.1%	0.0%	-1.2%	-1.7%
10. Large ^ Welfare	-53.0%	-0.7%	0.0%	-11.7%	0.8%

Note * The impacts of prevention and rehousing quotas are estimated by reversing the inclusion of these elements in the with-Covid baseline. + Raise LHA and Housing Supply utilise slightly modified model in relation to sofa surfing predictive formula.

Table 14: Medium term Impact of Policies considered individually on main components of core homelessness (% of with-Covid baseline at 2031)

Impact in 2031	Rough Sleep	Unconvent-ional Acc	Hostels	Unsuitable Temp Acc	Sofa Surfing
2. Raise LHA+	-0.1%	-0.7%	0.0%	-42.7%	-2.6%
3. Limit Evictions	-7.5%	-0.3%	0.0%	-7.5%	-0.2%
4. Prevention*	-10.5%	0.4%	18.5%	-16.8%	1.2%
5. Rehousing Quotas	-7.1%	-0.5%	0.0%	-8.7%	-7.3%
6. UC & Destit measures	-53.5%	-1.2%	0.0%	-1.8%	-0.6%
7. Hsg First, SMD redn	-10.6%	-0.5%	-20.0%	-4.4%	-0.1%
8. Housing Supply+	1.8%	-0.3%	0.0%	-32.5%	-3.2%
9. Levelling Up	-0.5%	-0.3%	0.0%	-0.6%	-5.4%
10. Large ^ Welfare	-50.7%	-1.3%	0.0%	-6.8%	-1.6%

Note: as for Table 13.

Most measures still have an effect on rough sleeping on the 2026 time horizon, apart from housing supply where it really is too early, and similar comments apply to LHA and 'levelling up'. The biggest effects are associated with the enhanced welfare measures including measures intended to reduce destitution. The effects of limiting evictions, prevention and rehousing quotas are also quite substantial on this shorter term perspective. .

As above, the modelled effects on unconventional accommodation are small. In the shorter term, hostel numbers are either unchanged or changed by a moderate amount. Unsuitable temporary accommodation again shows itself capable of being change quite substantially by

a number of measures, including raising the LHA, increased housing supply and prevention, with also useful contributions from rehousing quotas and larger welfare upgrades.

Sofa surfing is mainly impacted by rehousing quotas, with again as noted above some smaller impacts from LHA and supply.

Stacking up the Impacts

Important policy questions concern what can be achieved by implementing combinations of policy options, or indeed (if core homelessness were given a very high priority) *all feasible and effective policies*. So far we have looked at policy options individually, enabling us to compare their individual effectiveness, short or longer term. While that gives some initial guide to 'what works', it is not necessarily the same as what the effect would be of adding that one to others already in place. Sometimes, adding a fresh policy approach may work in a synergistic way to increase the impact so that it is greater than the sum of its parts. However, more commonly, the more policies you add, the less they may appear to add, relative to what might have been expected from looking at them in isolation. That may be because the different policies are to varying degrees helping the same people, and the pool of remaining 'at risk' people may be getting smaller the more policies are in place.

It follows that, in this 'stacking up' approach, it does matter in which order policies are added to the package. We would argue that the most logical order would relate to immediacy of implementation and impact, and after that work through more directly housing-related policies, perhaps taking the simpler before the more complex. Policies further back in the hierarchy would then be ones which would take longer to impact, be more complex to implement, involve a wider range of sectors, and cost most. Following those principles we have created a sequence of ten scenarios building on our With-Covid Baseline, and run the model with each element added in turn. The results are shown in Figure 7 and Table 15, where numbers represent number of core homeless households at a point in time over a 29 year period.

This analysis shows a number of things very clearly.

Firstly, it is possible to reduce core homelessness by substantial margins, given time and determination. Future increases are far from inevitable. Implementing all ten policies would see core homelessness drop by 44% compared with the baseline by 2041. In 2041 core homelessness would be 17% below 2018 levels and 6% below 2012 levels[19]. It is also worth noting that this measures reductions against our Covid baseline which includes measures intended to reduce or alleviate homelessness in the immediate period. The 2041 figure with all 8 policy measures is also 39% below the BAU baseline for that year.

Secondly, some policies have a bigger impact than others. The biggest wins would come from raising the LHA, housing supply and a strategy of reducing SMD homelessness through larger scale use of Housing First, with associated measures such as crime prevention and better rehab, and corresponding reduction of hostel spaces. Also quite useful would be implementing rehousing quotas for core homeless to access social housing, raising social

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[19] Readers should note that this final sequential analysis uses a slightly modified model, in that slight amendments were made to the predictive functions for sofa surfing to remove anomalous effects of one variable in each function, as noted in Appendix D. These led to predictions of sofa surfing which were more consistent across policies and with expectations.

security benefit rates and addressing the destitution-inducing features of the welfare system, and an economic strategy of 'levelling up' economic performance across regions.

Thirdly some policies have larger effects earlier on, including (apart from the 'Everyone In' initiative),rehousing quotas, and the measures to reduce destitution. Other strategies including the HF/SMD one, housing supply, and levelling up would clearly be more gradual and progressive in their effects.

Figure 7: Total core homelessness in England with the sequential addition of ten policy scenarios to reduce core homelessness in the period to 2041
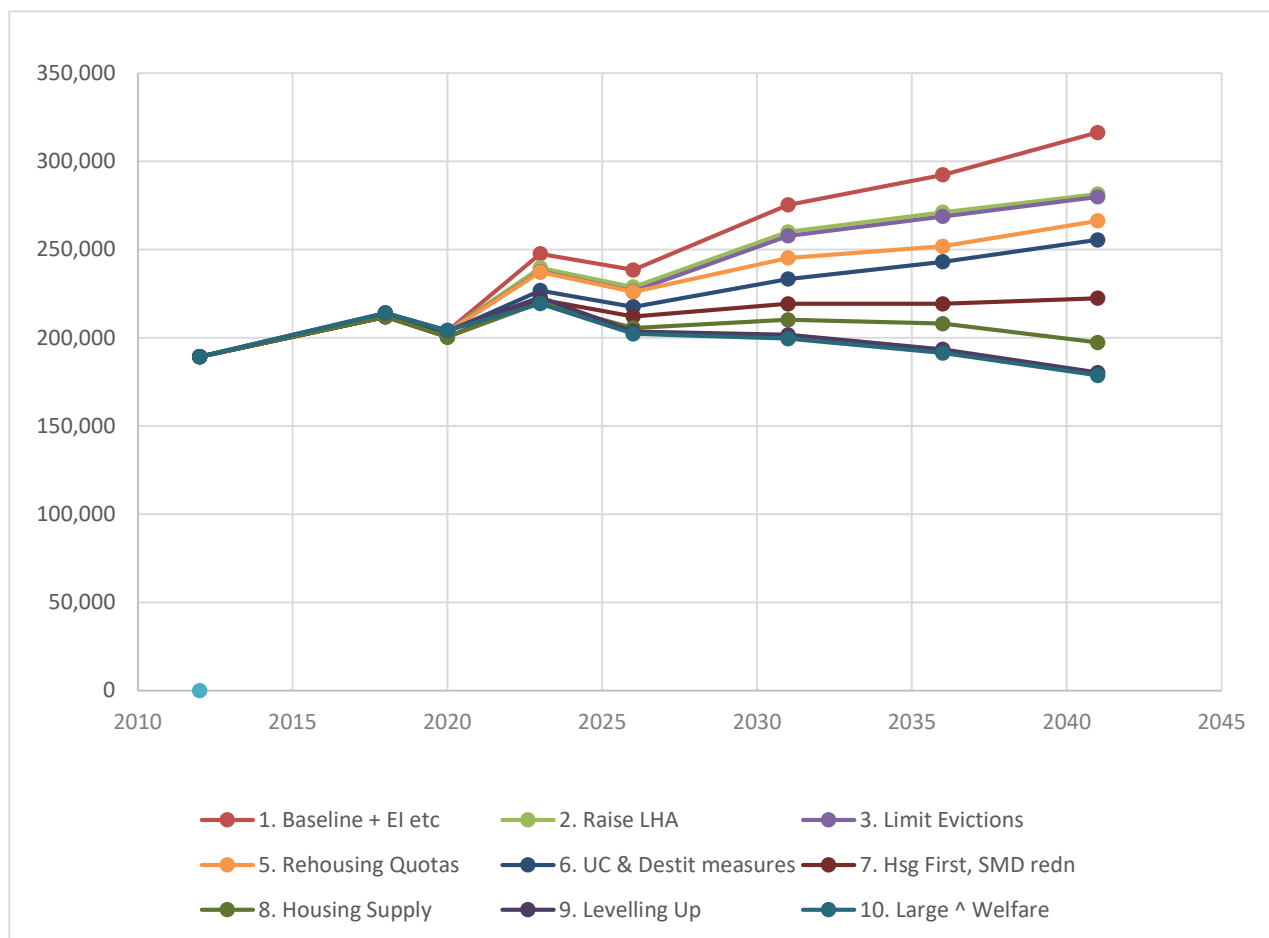
Table 15: Total core homelessness in England with the sequential addition of eight policy scenarios to reduce core homelessness in the period to 2041 (numbers)

Year	2018	2020	2023	2026	2031	2036	2041
1. Baseline + EI etc	211,951	203,700	247,606	238,469	275,332	292,416	316,401
2. Raise LHA	211,951	203,700	239,626	228,737	259,997	271,170	281,503
3. Limit Evictions	211,951	203,700	237,596	226,343	257,786	268,849	279,858
5. Rehousing Quotas	211,951	203,350	237,190	226,009	245,263	251,882	266,312
6. UC & Destit measures	211,951	203,350	226,802	217,548	233,307	243,071	255,528
7. Hsg First, SMD redn	211,951	200,439	221,702	212,072	219,290	219,300	222,431
8. Housing Supply	211,951	200,409	219,897	205,580	210,165	207,999	197,300
9. Levelling Up	214,083	204,090	222,862	203,612	201,665	193,467	180,264
10. Large ^ Welfare	214,083	204,090	219,383	202,212	199,513	191,360	178,653
Difference from Baseline			-11.4%	-15.2%	-27.5%	-34.6%	-43.5%

Housing supply, which here includes a large element of new social rented housing, is an important and totemic policy issue. We showed above that this could have quite sizeable effects in the longer run, and appeared to have some synergy/complementarity with social housing allocation quotas. However, in this sequential analysis, housing supply seems to have limited additionality in the earlier years, while still having a large impact in the long run. The reasons which supply impacts take time to work through were outlined above, and it is also clear that some of its impact in reducing core homelessness identified in Tables 11 might be met in the earlier years by other measures. This is not to say that new supply would not provide benefits in terms of meeting wider housing needs on a large scale. It may also be, to some degree, a necessary precondition (practically or politically) for the implementation of other measures, particularly rehousing quotas, Housing First or indeed successful prevention.

7.   Direct Measures and Early Priorities in Immediate Post-Covid Period

At the time of writing there is an understandable concern with the immediate priorities for policy in the next period as we pass (hopefully) from the midst of a pandemic into the aftermath of the pandemic. In this period of aftermath, more of the impacts on the economy, labour market, employment and households will emerge and evolve, and these are likely to be initially as or more serious than those experienced in the early lockdown, because (a) the furlough and other emergency schemes will be wound down, while (b) some sectors will not fully return to previous levels of activity and (c) significant numbers of businesses will not be able to sustain continued operation on borrowed money. This means that there is likely to a substantial spike in redundancies and unemployment, and delayed recovery to a new normal in economic terms, as is confirmed by the consensus of economic forecasts now.

Our forecasting model (the SRHMM) reflects these assumptions and forecasts in annual steps. Although in the preceding section the main emphasis was on medium to longer term prospects, reflected in five yearly snapshots, in this section we look at the annual figures for the period 2019 to 2024. On that basis, we go on to suggest policy measures which could and should be activated in this immediate post-Covid period, to avert or mitigate a threatened

spike in rough sleeping and some other forms of core homelessness. The spirit of this is very much to reflect the initial success of the direct intervention, 'Everyone In', in stemming what might otherwise have been a double spike in both rough sleeping and Covid infections within the homeless population.

Through trial analyses we have identified the best candidate policy measures to alleviate core homelessness in general, and rough sleeping in particular, in the short run (next 2-3 years). These include extending a slightly enhanced version of 'Everyone In' for several years, but tapering the scale of it down during this period. The other measures considered most immediately relevant and falling within the housing sphere are more effective prevention and direct rehousing quotas for core homeless. We have therefore included these in our 'with Covid baseline'. Other measures found to give significant impacts in this short run period, from those examined above, include raising the LHA, reducing evictions and the combination of maintaining the £20 pw higher UC rate and the package of welfare measures aimed at reducing destitution.

Figure 8 shows the impact of seeing the impact of Covid and then applying these measures in sequence, for each of the four years 2021 through 2024. The incremental impacts are shown expressed as a percentage of the Business as Usual ((BAU, non-Covid) baseline.

Figure 8: Impacts on rough sleeping of Covid and successive additional policy measures in years 2021-2024 (percent of BAU increment for each element)
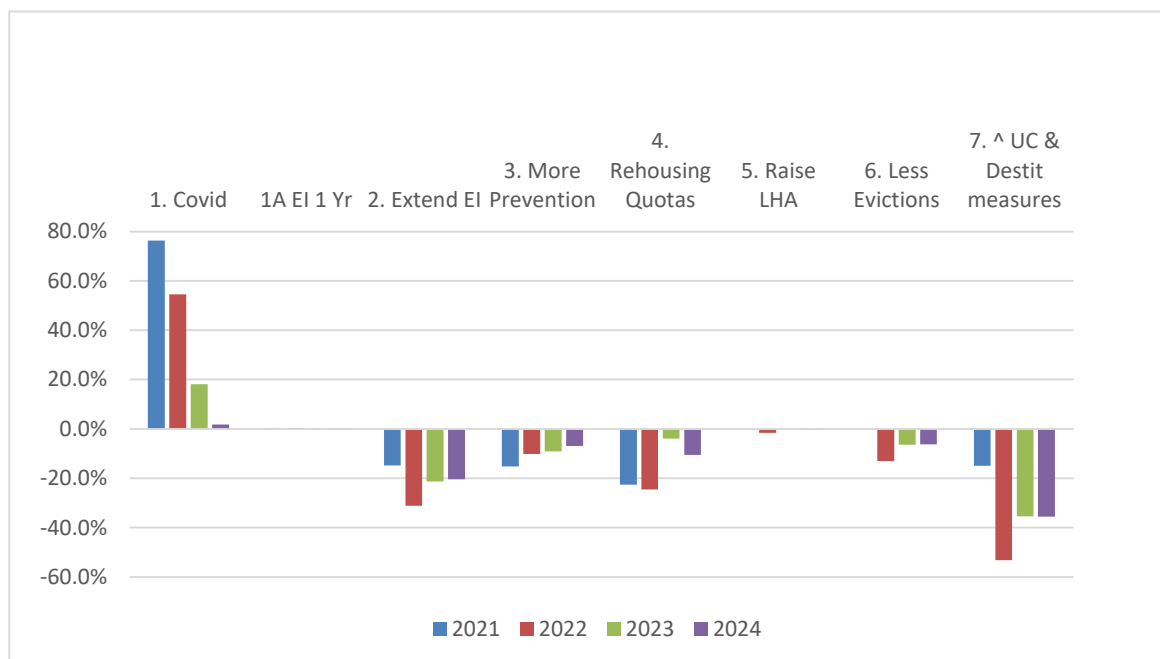
	2021	2022	2023	2024
1. Covid	76.3%	54.6%	18.1%	1.8%
1A EI 1 Yr	0.4%	0.4%	0.1%	0.1%
2. Extend EI	-14.8%	-31.2%	-21.3%	-20.4%
3. More Prevention	-15.2%	-10.1%	-9.1%	-6.9%
4. Rehousing Quotas	-22.5%	-24.5%	-3.9%	-10.6%
5. Raise LHA	0.0%	-1.6%	0.0%	-0.4%
6. Less Evictions	0.0%	-13.0%	-6.4%	-6.2%

7. ^ UC & Destit measures	-14.9%	-53.2%	-35.4%	-35.5%

This analysis shows firstly the serious impact of Covid in pushing up rough sleeping dramatically in 2021-22 without any counter measures in place. Extending the Everyone In initiative, initially on a somewhat larger scale and then tapering down a bit, achieves quite a substantial reduction, particularly in 2022 but is not enough to fully offset this adverse Covid impact. More effective prevention would make a useful early, but smaller and tapering contribution. Applying rehousing quotas of up to 20% of net lettings to be reserved for Core Homeless would have quite a large impact in 2021 and 2022 when the problem is most acute. That explains why we recommend these approaches highly as an immediate priority and have included them in our post-Covid baseline.

Three further desirable policies are then added beyond this. Raising the LHA is desirable from an overall core homeless point of view, especially in the medium to longer term but it would not have much short term impact on rough sleeping. Reducing evictions would make a useful contribution in 2022 and rather less thereafter. Last but clearly not least, maintaining the £20 uplift in UC and applying the package of other welfare measures geared to reducing destitution would have a very large effect in 2022 and pretty large in the following two years.

Figure 9 presents a similar analysis for core homelessness as a whole.

Figure 9: Impacts on core homelessness of successive additional policy measures in years 2021-24 (percent of BAU increment for each policy package)
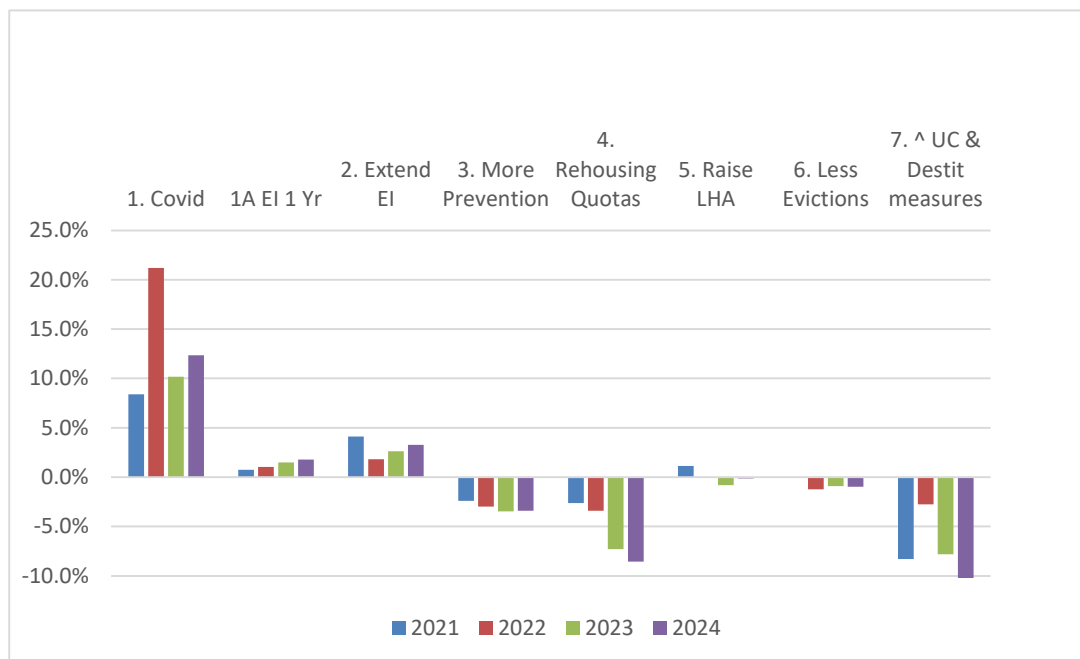
	2021	2022	2023	2024
1. Covid	8.4%	21.2%	10.2%	12.3%
1A EI 1 Yr	0.7%	1.0%	1.5%	1.8%
2. Extend EI	4.1%	1.8%	2.6%	3.3%
3. More Prevention	-2.4%	-3.0%	-3.5%	-3.4%
4. Rehousing Quotas	-2.6%	-3.4%	-7.3%	-8.5%

5. Raise LHA	1.1%	-0.1%	-0.8%	-0.1%
6. Less Evictions	0.0%	-1.2%	-0.9%	-1.0%
7. ^ UC & Destit measures	-8.3%	-2.8%	-7.8%	-20.7%

Most of the findings here are in line with expectations. Covid itself increases core homelessness throughout this period, with a particularly large effect shown in 2022. The model may slightly exaggerate this timing effect given its heavy reliance on one-year lags, but at the same time a large spike in unemployment from 2021 may be expected to have progressive impacts on severe poverty and destitution and general scarring effects which take time to be overcome. The remainder of the impacts look more in line with expectations. The Everyone In initiative and its suggested extension both increase core homelessness because they increase the numbers in hostels (EI provision is counted in that category). Better prevention has useful if moderate impacts which this time increase somewhat over time. Rehousing quotas would have the largest beneficial impacts, particularly after 2023. Raising the LHA would have modest net additional impacts in this period. Reduced evictions would have only a small impact on overall core homelessness. The UC and welfare measures would again have relatively large effects, from 2021 onwards with a particularly large effect shown for 2024.

8. Conclusions and Implications

This study is focused on 'core homelessness' in England, past, present and future. There are several reasons for this particular focus on core homelessness. This constitutes the most severe, immediate and damaging forms of homelessness. It also captures some groups ignored or under-represented in statutory homelessness processes and statistics, particularly single /non-family homeless, and some migrant groups. Our approach involves consistent measurement of numbers at point in time which avoids double counting, while recognising that individuals may experience several different forms of homelessness over a period of time.

Since first proposed and presented in 2017[20], data to estimate core homelessness have developed further and enable us to present estimates of current and recent numbers with more confidence. Among the data drawn on for this study we would in particular draw attention to our use of the new Kantar 'Public Voice' panel survey, the ONS Survey of Living Conditions 2018 module on 'Housing Difficulties'[21], enhancement of English Housing Survey indicators[22], new administrative homelessness monitoring system ('H-CLIC') measures, and Department of Work and Pensions Housing Benefit--based) measures of temporary accommodation and supported housing.

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[20] See Bramley, G. (2017) *Homelessness Projections: Core homelessness in Great Britain. Summary Report*. London: CRISIS https://www.crisis.org.uk/media/237582/crisis_homelessness_projections_2017.pdf.

[21] See Hamilton, M. & Hayes, B. (2020) *Past experiences of housing difficulties in the UK: 2018*. Office for National Statistics. 22 October 2019. https://www.ons.gov.uk/peoplepopulationandcommunity/housing/articles/pastexperiencesofhousingdifficultiesintheuk/2018

[22] See note 2.

These developments also give greater legitimacy to elements of the definition of core homelessness which we are using, notably the ONS 'Housing Difficulties' analysis from the EU-comparative Survey of Living Conditions, which highlights unconventional accommodation and sofa surfing, and the English Housing Survey which also highlights sofa surfing as well as concealed households and emergency/temporary accommodation.

We build up core homelessness from five components. Each of our component numbers at national level is based on *at least four*, and in some cases *up to six* sources. Several of our key survey sources are cross-validated by the relatively well-known totals for hostels etc. The new H-CLIC system and data from a comprehensive FOI to DWP also provide some cross-validation as well as more locally-based evidence.

These new data sources enable additional or improved approaches to developing statistical models to predict core homeless numbers in each component. In some cases we can combine several models to improve the predictions of key elements, including rough sleeping and unsuitable temporary accommodation as well as sofa surfing, although scope for further development of the latter is identified.

At the same time the opportunity has been taken to recalibrate many of the statistical predictive functions within the SRHMM platform, for example those for housebuilding, house prices, rents, vacancies and lettings. These are functions are used for projecting core homeless forward over 20 years, and are now mainly based on data from the last decade.

Core homelessness in England is estimated to have totalled nearly 220.000 in 2019, having risen from about 187,000 in 2012. During 2020 these numbers dropped somewhat to around 200,000, mainly due to the effects of the Government's special 'Everyone In' programme in response to the Covid emergency.

The largest element of core homelessness in 2018 was its least visible manifestation, sofa surfing, accounting for more than half (110,000 households or individuals). Next in numerical importance was hostel and similar accommodation (42,000), followed by unsuitable temporary accommodation and other unconventional accommodation, at around 19.000 each. The least numerous group were those actually sleeping rough at a point in time, which we estimate (from five sources) at 13,600.

The gradual increase in overall numbers from 2012 to 2019 concealed wide differences between different categories, with hostels declining by 13%, and sofa surfers and other unconventional increasing by 16% and 13%, while rough sleeping virtually doubled (99%) and unsuitable temporary accommodation rose by 171%. The more volatile behaviour of these latter two categories is also reflected in the forward projections.

If Covid had not happened and economic and demographic trends had continued in a similar fashion to the recent past, we projected future core homelessness numbers running at about the 225,000 level in the early-mid 2020s, gradually rising to nearly 240,000 in 2031 and 270,000 by 2041. This increase would have been largely accounted for by unsuitable temporary accommodation.

It is predicted that the economic aftermath of Covid risks a substantial rise in core homelessness including rough sleeping, and the Government is urged to take a range of shorter term measures to alleviate that. These should include continuance of the special provision of hotel-type accommodation on a substantial scale, effective prevention, social

rehousing quotas, limits on evictions and some welfare changes. With such measures in place the impacts would be moderated by 2023, but core homelessness would remain somewhat higher in the medium term than it would have been without Covid, particularly in the North.

Around a dozen different policy mechanisms or changes were tested, individually and in combination, using the projection model, looking at short, medium and longer time horizons. Some of the most effective short term measures have already been mentioned in connection with recommended short term responses for the post-Covid period. In the medium term, the most effective policies for reducing core homelessness would be large increases in welfare benefit levels and associated measures to reduce destitution, and raising the level of Local Housing Allowance to the level of median actual rents (and maintaining that level).

In the longer term, the largest projected impact on reducing core homelessness would result from increasing total and social housing supply, and from consistent, large scale application of Housing First accompanied by appropriate support and rehab provision and a reduction of traditional hostel accommodation, along with the raising of the LHA as already mentioned. The effectiveness of the supply would be greatly increased by the maintenance of social housing quotas for core homeless households. A successful levelling up of economic performance across the English regions would also contribute to the reduction of core homelessness.

The Government have been particularly concerned with tackling rough sleeping in England. The model projections indicate that much the most effective measures to reduce rough sleeping in the medium term would be raising the level of welfare benefits and tackling the features of the welfare system which are particularly associated with destitution – the 5 week wait for UC, excessive debt recovery from benefit recipients, and problems with disability related benefits, and more consistent and better funded local welfare assistance services[23]. Other measures which would have worthwhile impacts in reducing rough sleeping in the medium term include more effective prevention, rehousing quotas for core homeless, and limiting private rental evictions.

A steady rise in core homelessness is not inevitable. A comprehensive programme of the recommended measures is shown to be capable of reducing core homelessness by 28% in 2031 and 43% in 2041, compared with what it would have been without any change in policies. This scenario would see core homeless 17% below the level of 2018 and 6% below the level of 2012. Furthermore, rough sleeping would be reduced by 64%, hostels by 44%, and unsuitable temporary accommodation would be largely eliminated (down 90%).

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[23] See Fitzpatrick et al (2020) *Destitution in the UK 2020:* York: Joseph Rowntree Foundation.

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APPENDIX A

DETAILS OF DATA SOURCES USED TO ESTIMATE CORE HOMELESSNESS

Introduction

This Appendix provides a more detailed description and commentary on the key data sources used to estimate core homelessness. In drafting this we have reflected the following checklist of issues, albeit not slavishly.

> General type
> Sample size & CI size
> Geographical coverage (RoUK, regions, LAs)
> Coverage issues in general
> Coverage of specific CH groups
> Issues around questions/definitions
> Key uncertainties & high / low options
> Durations data (stock-flow conversion)
> Time trends/changes
> Demographic profiles
> Reasons/background circumstances/pathways
> Scope for modelling

Destitution in the UK 2019 Survey

This is a special survey of users of a range of mainly non-statutory services which provide advisory, material and other support to people/households at risk of destitution across the UK. The third survey in this series took place in October-November 2019 and is closely comparable to the preceding survey undertaken in March-April 2017. The survey is essentially a paper self-completion survey which is easy to use and was extensively cognitively tested, and translations into 26 relevant languages were made available. It was administered through 113 participating services in 18 case study areas across the UK (14 in England, including 4 in London, 2 in Scotland and 1 each in Wales and NI). The achieved sample size was 3858 which represented at 63% response rate. Using local informants we created a sampling frame of all services 'in scope' in each area classified by type and size, and using this we can gross findings up to the local authority total. Using an extensive analysis of secondary indicators, we calibrated model estimates of destitution for each local authority in GB which were consistent with the survey findings across the 18 areas, so enabling grossing up to national level. Using questions on frequency of use of the service where surveyed and of other services in scope plus appropriate multiple imputation procedures we generated estimates for appropriate annual multipliers to get from weekly cases to annual cases.

The survey is designed to provide national estimates, but being strongly clustered (by area and agency) it is difficult to break it down regionally or locally. The coverage of services addressing homelessness is generally very good, but it appears to be poorer at capturing those with more ephemeral housing difficulties, particularly sofa surfing, among those

(including working adults/households) who are not at imminent risk of material destitution. There is a direct question on where people are currently living with responses including 'sleeping rough', 'your partner's, parent's, or other family/friend's house', 'a hostel, refuge, B&B or night shelter', 'Other', 'a temporary flat/house arranged by council or support agency', or 'Flat or house of your own, either rented or owned'[24]. There is a separate question which highlights rough sleeping in the last month, a specific question on the number of nights/weeks spent in hostel over the last year, and frequency of use of homelessness 'drop in' services over last year (also 'soup kitchens/soup runs'). In 2019 we also asked if respondents had applied to the Council for assistance with homelessness (a majority, in each relevant category, had not done so by the time of the survey). Using this range of questions we can classify households both in terms of the core homelessness typology and the 'other statutory'/'wider risks' typologies too.

In terms of change over time, we are able to compare results with spring 2017, which confirms the general increase (overall, or for a like-with-like comparison using only services participating in both surveys). Within that there was some shift between modes, with a greater increase in hostels and less in rough sleeping. Some limited but useful demographics are available, covering gender, age, household type[25], country of birth, asylum status, disability, while questions on experiences over the last year provide indicators of both complex needs and particular factors which may have contributed to homelessness. Using a combination of these factors we are able to develop reasonable predictive functions using logistic regression, for rough sleeping specifically and for the wider status of core homelessness. These are used in the projections part of the research, by being interacted with secondary-indicators-based indices of destitution rates for all local authorities in Great Britain.

New Population Panel 'Public Voice'.

This is a new type of population panel set up by Kantar Public for diverse purposes, whereby specific suites of questions may be combined with a standard suite of socio-demographics. The survey mode is a mixture of on-line and telephone, but the survey is distinguished from typical 'omnibus' or rapid survey products by eschewing quota sampling and taking strong steps to ensure and demonstrate representativeness of the adult UK population (after weighting)[26]. We developed a specific set of 'housing experiences' questions focused on both the 'last 2 years' and 'ever', including detailed examples of unconventional accommodation types as well as the main core homelessness categories. These questions were based in part on the best previous example of retrospective homelessness questions, the Scottish Household Survey, but enhanced in relation to unconventional accommodation, and also aligned with the questionnaires developed for the parallel Crisis EEA nationals homelessness study currently in the field. For each type of housing difficulty we also asked the duration of the experience using banded time periods, again distinguishing the last two years from ever. These durations data are key to translating between annual (flow-and-stock) and spot stock estimates.

Data were delivered in two tranches with a total combined sample of 2897, with a majority of interviews carried out in early 2020. The numbers can be grossed up to the total adult

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[24] The last two categories are not counted as core homelessness.

[25] Bearing in mind 30% of the sample are not in private households and another 10% approx. are not the main householder.

[26] An 80 page technical report on this survey methodology (Kantar (2020) *Public Voice: Recruitment Surveys 1 & 2, and example Panel Survey 4a: Technical Report*) is available from Kantar Public:

population of UK, and broad regional comparisons are possible in some cases, as well as basic socio-demographics. Because of the sampling design and the efforts to ensure representativeness, survey weights vary quite widely and use of complex sampling analysis techniques shows that the typical 'design effect' on standard errors of proportions in the kinds of analyses we would do would be to raise these by about 50%. Therefore, while we use the 'last two years', and derived estimated annual numbers, for some purposes it is better to use, or blend with use of, the 'ever experienced' data. This particularly applies to the relatively rarer experiences in the 'other unconventional' categories. Certain categories included within the questionnaire did not generate large numbers of cases which were separate from other categories, so they are effectively merged into the main CH categories – this applies to 'other form of insecure accommodation' and 'super overcrowding'. As with destitution, we asked whether people had applied to the council for assistance because they had nowhere to live or were threatened with homelessness, and again found a high proportion of core homeless had not so applied at the time of the survey.

As with the Destitution survey, we can use the combination of socio-demographics, other experiences, and some limited geographical banded indicators, to fit predictive models for core homelessness as a whole and for sub-categories. These are particularly useful because this is a general population sample. For example experiencing core homelessness (ever) is predicted by having applied to the council, having a very low income, experiencing financial/debt/arrears difficulties, unemployment, younger age, recent migrancy, and living in a locality with a high rate of destitution. The model for applying to the council has similarities but also features single and lone parent household types, seriously limiting disability , and being in London. The rough sleeping model is similar to those just described but shows a particularly strong link with having reported staying in unconventional spaces, as well as links with hostel etc. accommodation and sofa surfing (see Appendix D for more details of this model). It should be noted that this survey suggests that rough sleepers typically experience one or several of the other types of core homelessness as well. Similar models can be fitted for the other categories of core homelessness including sofa surfing.

ONS Survey of Living Conditions

This is a survey which has been carried out annually by the ONS as UK's contribution to the EU – Survey of Income and Living Conditions (EU – SILC), which in 2018 included a modest suite of questions on past experiences of 'Housing Difficulties', which essentially correspond to four of our categories of core homelessness - rough sleeping, other unconventional, emergency-temporary (i.e. mainly hostels etc), and sofa surfing. This may prove to be a one-off, as the future of UK participation in EU-SILC is uncertain. Previously ONS was planning to harmonise this survey with the Expenditure and Food Survey and the Wealth and Assets Survey, and it is not clear what the implications of that might be, either. Analysis of the survey had been delayed by Covid but has now taken place, and an article was recently published based on it[27]. Having shown interest in the study the current author was asked to comment on and peer review the work, and the authors' followed up on some suggestions made in this process.

There are several good things about this development, particularly the inclusion of retrospective homelessness (alias housing difficulties) questions in a substantial national survey under the aegis of the national statistics agency, and more specifically the legitimacy

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[27] See Hamilton, M. & Hayes, B. (2020) 'Past experiences of housing difficulties in the UK: 2018.' Office for National Statistics. 22 October 2018.

it gives to the sub-concepts of other 'unconventional' forms of 'accommodation' ("staying in a place not intended as a permanent home") and 'sofa surfing'. The survey has quite a large sample (c.18,500) and significant numbers did report housing difficulties. A question on durations was asked, which is fairly crucial in deriving spot figures for core homelessness. It also enables valuable connections to be shown between experience of homelessness and low levels of personal wellbeing and the continuing experience of poor housing conditions.

There are, however, a number of limitations. Firstly, as was documented in a detailed memo to the team, and is reflected in the 'Strengths and Limitations' section of the article, detailed examination of the sampling and survey contact procedures reveals that, partly owing to the rotating panel structure of part of the sample, quite a lot of the people we may be most interested in (those who have had recent or ongoing housing difficulties) are likely to be omitted or under-represented. Secondly, the homelessness experiences question is treated as single-coded, not multi-coded, so people can only have one such experience, or none. Our own Public Voice survey results shows that this is a serious oversimplification. Thirdly, the durations patterns recorded look on the long side, compared with our other sources, which may be related in that people may conflate experiences which comprised a mixture of types of difficulty over a more extended period. In using these data, we have made certain assumptions to reflect these limitations, particularly the first one, by assuming that a certain proportion of (more recent) experiences are effectively censored from the sample while others are affected by differential non-response. We have also used some findings from our Panel Survey to estimate the effective time period over which people experienced housing difficulty.

The ONS team have made significant attempts at modelling the patterns in these data, but it may be argued that they adopted a fairly conservative approach to potential causal relationships. It was pointed out to them what had a been argued and demonstrated in our *Housing Studies* paper on homelessness risks[28], that correctly sequenced longitudinal data yielded the same conclusions about apparent causality as cross-sectional analysis of retrospective homelessness data. However, the advice of their methodologists limited the variables which they felt they could include on the right hand side of their models, with some success apparently in the case of measures of house prices/affordability. Nevertheless they did find that factors associated with poverty (e.g. low levels of qualifications) as well as subregional measures of housing affordability did help to predict the risk of housing difficulties.

Looking at the results in Table 2 above, it does not appear that these numbers, as filtered through the adjustments mentioned above, are systematically out of line with the other sources. Rough sleeper numbers are somewhat lower, but unconventional places are pretty high, as are sofa surfers. While hostels etc looked initially a little on the high side we argue that some of them belong in 'unsuitable TA' and apportion accordingly.

The new H-CLIC administrative data

This data source is a major new resource, but it remains rooted in the statutory homelessness system and as such has certain limitations. Statistics derived from statutory homelessness activity may be regarded as measures of 'expressed demand', but they omit people whose circumstances may equate to 'homelessness' in an objective sense, but who have not (or have not yet) made an application. This is, of course, partly a reflection of the powers and

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[28] Bramley, G. & Fitzpatrick, S. (2017) 'Homelessness in the UK: who is most at risk?', *Housing Studies, details to add*

duties of local authorities which have, until 2017 in England, de-prioritised most single adults. Even today they remain a reflection of the limited options which authorities may be able offer applicants, especially in the most pressured areas. Two of our key data sources (Destitution and Public Voice) indicated that in the period 2018-20 it was still only a minority of core homeless households who had applied to their local authority.

On the other side of the coin, it needs to be recognised that many of those enumerated as seeking LA help are households are not – at the time of that interaction – actually homeless in terms of our core homeless definition. This is because either they have not yet left their previous accommodation, even though they are deemed to at risk of losing it, or because they or have been subsequently placed in 'suitable' TA and again are no longer core homeless in the strict terms of our definition. From a legal standpoint they clearly remain 'homeless', in the sense of being at risk of losing or not yet having access to accommodation they have a right to occupy on an ongoing basis, and therefore appropriately included in routinely published TA statistics.[29]   We would classify these groups as 'other statutory homeless', and in the Homeless Monitor England report we have devoted much attention to trends and profiles of this group (most of Chapter 4, and in part of Section 5.3 of Fitzpatri ck et al 202).

This data source (H-CLIC) is obviously important because it is now the main official source of information on how the local authority-operated homelessness system is actually functioning and the numbers of households it is dealing with in different categories. It should by design be a significant advance on its predecessor P1E system, and in some respects superior to the Scottish HL1 system that was in part its inspiration. Apart from national and regional totals, as a comprehensive (non-sample) administrative system it provides data quarterly and annually at the local authority level across England.

We have a little over two years' of data from the H-CLIC system and this appears to be useful in a range of ways. One element is essentially carried over (almost) unchanged from the previous system, which is our source for 'Unsuitable Temporary Accommodation', namely the tables showing numbers of 'homeless' households (i.e. those who have applied and are waiting for inquiries or rehousing) placed and supported in TA at 31 March each year by category of TA. We take the categories of B&B, private licensed non-selfcontained[30], and out of area placements (half of these in London) as our definition of 'unsuitable TA'.

For the remaining categories where we have entries in Table 2 under H-CLIC, we use the new information on the type of accommodation occupied at the point of application (i.e. not 'last settled' accommodation) as an indicator to highlight certain core homeless categories. For rough sleeping, we combine the rough sleeping category itself with a proportion of the 'No Fixed Abode' category (default one-half), while for the Unconventional category we take the other half of NFA. For Hostels etc we take the sum of 'HMO, Lodging and Temporary Accommodation' and 'Supported Housing, Hostel and Refuge'[31]. In each of these cases, we apply an assumption about durations, derived from an assessment made across a range of sources for each form of core homelessness, to get from flow to stock. We then apply a factor

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[29] Such as an appropriately sized and located existing self-contained social rented or private rental dwelling let on license.

[30] In fact, this category appears to have disappeared from the table, post-H-CLIC, although we can find an equivalent category in the DWP-FOI data, but in either case the numbers were/are not large.

[31] While this might appear to be double counting with unsuitable TA, in respect of Lodgings=, this is actually referring to a different group, people coming into the LA homelessness system rather than those already being managed within it.

to reflect our clear evidence that only a proportion of core homeless people have applied to the Council for assistance, at the time they were surveyed (whether in Destitution or Public Voice surveys). Although these estimates might seem to be based on somewhat rough and arbitrary assumptions, the numbers resulting are not wildly out of line with the other sources in each case.

The HCLIC system contains a range of demographic indicators and significant breakdowns in terms of previous housing circumstances and reasons for homelessness. These of course are and will continue to be reported and discussed in the Homelessness Monitor. Two types of information of particular interest are proxies for additional needs and vulnerabilities from which we can define broader and narrower groups of complex need ('SMD') homeless, and information about the migration/nationality status of applicants.

While the local authority basis of the H-CLIC data offers the opportunity for fitting cross-sectional or short panel models to relate different measures of homelessness incidence to contextual socio-economic and demographic indicators, there are limitations. A significant and currently negative feature, from the projections point of view, is that it is difficult to replicate one of the key driving models in the previous set-up, namely the panel model of homeless priority need acceptances (which itself then drove the sub-models for all TA and unsuitable TA). The implementation of the HRA from 2018 renders that key indicator, previously the touchstone for much analysis of homelessness, unusable for that purpose. Ways of getting around this have been explored, and a variant modelling approach adopted using the total applications variable and a dummy variable interaction with this for the year 2018.

Homeless Link: Support for Single Homeless People

As in the previous studies, we make use of the annual Homeless Link review of Support for Single Homeless People, which includes an updating of their census/survey of establishments which provide emergency, temporary and supported accommodation for (primarily single) homeless people. While this was previously the main key source used, we are now in the position of having a wider range of other sources to support our estimates of the scale of this form of core homelessness. Fortunately, although there is a range in the numbers, this is not too wide and can probably be explained. Perhaps one of the key roles of the having multiple, broadly comparable estimates of hostel numbers is to give greater assurance that the other numbers we derive from retrospective surveys, such as those for rough sleeping and other unconventional, are in the right ballpark.

We have generally referred to the HL estimates when considering change from year to year, but the general pattern has been one of stability. We previously considered trying to get the HL data broken down to local authority level, but without success. However, we now have less need for that as we have two complementary sources (H-CLIC and DWP-FOI) which go to that level. This means that we can move away from the clearly incomplete as well as dated ONS 2011 Census Communal Accommodation numbers.

The main issue with the forward projections is understanding, mapping and projecting into the future the effects of the emergency measures put in during Covid-19, entailing special provision of hotel accommodation and the closure of a part of the hostels-shelters sector. This is discussed further in the text of the main report. In general we have taken the view that hostel etc numbers were supply-driven and effectively determined by funding, and our presumption would be that this will continue to be the case.

Department for Work and Pensions Freedom of Information Dataset on Temporary and Supported Accommodation

We became interested in these data after having our attention drawn to a rapid growth in rather questionable forms of 'supported accommodation' in certain areas, notably Birmingham, as featured in the report *Exempt from Responsibility*[32]. This led to an approach to DWP and encouragement to submit an FOI to obtain comprehensive data, at regional and local authority level, on all of the categories of temporary and supported accommodation, annually over the period 2016 to 2020. The data cover all cases where DWP provides support with housing costs for such accommodation, as this is still all channelled through the Housing Benefit system (and recorded in SHBE data system), regardless of whether the client is on UC or legacy benefits for the rest of their income support.

This source is useful as an additional independent source for estimating numbers, nationally, regionally and down to local authority level, on the various categories of temporary accommodation which we are interested in. In addition, in the light of recent reports, including that referred to above, and further contact with organisations involved, we believe it could be appropriate to make some allowance for some element of 'Exempt' (and 'Specified') Supported Accommodation, as a part of 'Unsuitable Temporary Accommodation'. The context for this is the recognition that there is quite a bit of interaction between supported accommodation and homelessness, particularly single homelessness where additional support or complex needs are involved. Our concern is that some of this accommodation may be both insecure and unsafe/unsupervised for vulnerable people who might otherwise be in, or have been through, the homelessness system

There is a policy debate to be had about this sector, including the current funding models, regulation, commissioning and the quality and value for money of some parts of the the supported accommodation sector. This goes somewhat beyond the scope of this report, although the data obtained from DWP (which include rent levels) could be relevant to that..

The figure shown in Table 2 for 'Hostels etc.' is derived from the field in the DWP FOI data for 'Short Term, Emergency or Transitional' accommodation. We have tried to adjust this to exclude the 'Transitional' part which comprises residential rehab facilities for drugs/alcohol cases, offenders, and also half of the category 'Other, including Refugees'. Our source for this breakdown was the 2016 study of Supported Accommodation commissioned by DWP and MoHCLG from Ipsos-MORI and others, clearly making the assumption that these numbers would not have changed much between 2016 and 2019. This left a total of 46,726, to which we added the subcategory from temporary accommodation called 'Other, including temporary and short term accommodation owned by registered Housing Associations' (N=859), to give the total of 47,565 (GB). Unfortunately, this indicator is only available for (Feb) 2020, whereas the other DWP ones are annual from 2016 to 2020.

These data are clearly a valuable addition to the overall set, and especially valuable in giving a local picture across the whole of GB. Comparisons with H-CLIC TA tables for selected larger local authorities suggest that there is a rough approximation of similarity in terms of the scale and breakdown between licensed, leased, B&B, etc. (most of the former not being part of core homelessness, of course). However, one point to underline is that this is only a measure of those who have qualified for and are receiving HB support with housing costs.

[32] Raisbeck, T (2019) *Exempt from Responsibility: Ending social injustice in Exempt Accommodation.* Research and Feasibility Report for Commonweal Housing. Birmingham: Spring Housing Association. www.springhousing.org.uk;

This is likely to exclude some unknown, probably not very large, group of homeless people who are in such accommodation but not receiving such support. This would include some who are working but homeless, and some non-UK nationals who do not have recourse to public funds.

With regard to counting some of the Exempt (and/or Specified) Accommodation as effectively 'Unsuitable Temporary Accommodation', our approach is to recognise the significant 'spikes' of increasing numbers in certain localities, notably Birmingham which is clearly an 'outlier' and where the situation has been documented in some detail by the above study. Our approach to estimating this 'extra element' of unsuitable TA is simply to take a proportion of the increase in Exempt and Specified Accommodation, above a threshold, in those localities where there has been a marked increase. If we take half of the increase between 2016 and 2018, we get a number of 19,500, which when counted in our 'high' variant core homelessness estimates would raise the Unsuitable TA number significantly, although this would still be blended with weighted values from other sources in our methodology.

English Housing Survey

In the previous core homelessness estimates the EHS was chiefly relevant and useful as the better source of our destimate of sofa surfing. As a one-off survey it is less affected by attrition and non-tracing of groups at risk of core homelessness, compared with longitudinal surveys like UKHLS (and the panel aspect of ONS-SLC). It has a reasonable size of sample (c.13,500 each year). It asks appropriate questions to enable the relevant categories of concealed households to be identified and filtered for preferences, as well as overcrowding against bedroom standard. However, this measure as previously applied is still likely to omit some people whose stay is explicitly temporary, as they would routinely be classed as 'not usually resident' and therefore not interviewed or covered in the household grid[33]. It was always a source of some concern that we were under-counting single sofa surfers, given that a surprisingly high proportion of those identified, in both EHS and UKHLS, appeared to be families or couples.

However, the MoHCLG have opened up a whole other area for debate about definitions by publishing a special bulletin from the 2018/19 (and part of 2017/18) EHS reporting on a number of new questions and additional analyses. Of these, the most interesting and relevant here is a new measure of 'sofa surfing' which is based on the following definition and question:

> A household is said to have a "sofa surfer" if they have had, in the last 12 months, someone living with them who would otherwise be homeless. Respondents are asked: In the last 12 months have you had people living with you because they had lost their home and had no accommodation to go to. Sofa surfers are not permanent members of the household.

This is clearly a different way of getting at the issue, using a retrospective question but addressed to the host household rather than the sofa surfer per se. It invites the host to make

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[33] The phenomenon of temporary residents being missing from virtually all official surveys, and hence measures of poverty, wellbeing and other key issues, was highlighted in the report by Bramley, Sosenko and Wood (2018) on *Scoping Project to Investigate the alternatives for including non-household populations in estimates of personal well-being and destitution*. Edinburgh: Heriot-Watt University. https://researchportal.hw.ac.uk/en/publications/scoping-project-to-investigate-the-alternatives-for-including-non

a judgement about the counterfactual situation, i.e. that the person(s) would otherwise have been 'homeless' (i.e. 'lost their home and had no accommodation to go to').

It states that sofa surfers are not permanent members of the household, although it is not clear that that statement is included in the question. If that statement were true, then this group of sofa surfers would be non-overlapping and additional to the group we have measured in our previous measure; that previous S/S group were members of the household but wanted to move and were overcrowded (and were not non-dependent children of host, nor students). This (the new EHS group) may be seen as a commendable attempt to include a group we have previously identified as likely to be omitted from household surveys and associated core homeless measures (as in Bramley et al 2018, JRF-ONS scoping study, see footnote). However, the definition is inconsistent insofar as it does not (a) apply a filter to exclude nondependent children, nor (b) exclude those who are not overcrowded, and thence not literally sleeping on the sofa, or the floor. There is also the subjective element about what would have happened if they (the host) had not accommodated them (the temporary stayers).

We accept that this new approach is interesting, and gives added legitimacy to the sofa surfing concept, as well as measuring a group which is largely or wholly omitted from our existing measure. However, it is not fully consistent with our definition and may be at risk of somewhat exaggerating the phenomenon. It appears to identify a non-overlapping group who have been omitted from surveys, including EHS, as non-household members, but who do look like sofa surfers, except insofar as some of them may just be using the spare room /bed. This is perhaps where the missing singles we were previously concerned about have gone. Therefore we should include a proportion of them, which will lead to a rise in the measured numbers, which is not about year-to-year change but about definition and scope. In our analysis of the new EHS data we estimate the proportion by looking to see whether the host household had spare bedrooms; it appears (from 2017/18) data that a majority did not have spare bedrooms and that of the order of 60% of this group should therefore be counted.

There are additional indicators in the latest rounds of EHS which cover aspects of homelessness or related forms of housing need, including concealed households, self-reported use of temporary accommodation (current or past) and applying to the local authority as homeless. While providing some useful complementary evidence to that available from H-CLIC and other sources such as UKHLS, these indicators do not generally lead directly to key indicators of core homelessness, but they are very relevant to the wider groups of 'other statutory homeless' and 'at risk of homelessness'.

In previous study the EHS was only used to a limited extent for modelling. Part of the reason for this is that it is less good than UKHLS for modelling transitions where the predictor variables are correctly time-sequenced (i.e. lagged). Another part is that, in recent years, MoHCLG have only released data with lower level spatial identifiers (e.g. local authorities) attached under secure conditions. However, the intermediate 'Special Licence' version does now have GOR region codes, so we can undertake modelling with at least regional indicators of housing and labour market conditions. On this basis we were able to undertake modelling of sofa surfing incidence which paralleled that carried out on UKHLS (as discussed below).

U K Household Longitudinal Study (UKHLS, alias 'Understanding Society')

This dataset is quite valuable for general analysis of the housing system and household behaviour/transitions, and we have made extensive use of it in work for Crisis and NHF on housing affordability, needs and requirements. We have 9 waves (2008/09 to 2017/18) set

up for analysis with many attached variables from local authority level datasets. There is a new wave of fieldwork undertaken during Covid but we are sceptical as to its value as the response is a lot lower than normal. the normal Waves 10 (2018/19) or 11 (2019/20) had yet to be released at the time of writing[34].

In the previous study we used this just for sofa surfing, averaging the estimate with that from EHS. However, over time the numbers fell, whereas in EHS they were tending to rise. We therefore took the view that this source was somewhat compromised by sample attrition (we have also found specific evidence of that in relation to migrant groups). Nevertheless we have included it in the baseline estimates, using a rolling average and also taking a fixed share of a slightly more widely defined group of concealed households who are also overcrowded. It has very little in the way of variables which can link it to the homelessness categories or activities of local authorities, unlike EHS. However, it has better linked local market and contextual data and a fuller range of variables to define poverty and wellbeing, including the potential to model the risks of destitution resulting from income shocks such as those resulting from COVID, as exemplified in recent work for Trussell Trust[35].

Rough Sleeping Counts and Local Estimates

Rough sleeping statistics, as traditionally collated in the UK (e.g., under MHCLG's annual enumeration), have tended to involve figures derived from periodic counts or from count-informed estimates – in the English instance, as provided by local authorities. Without denying the usefulness of such methods and the importance of maintaining the associated official series, they are open to criticism.

Issues intrinsic to *all* street counts include their inherent and inevitable tendency to understate the overall scale of rough sleeping. Except, perhaps where implemented on a small-scale experimental basis or restricted to a very small geographical area, the level of enumeration resources required to achieve 100% coverage of any spatial unit would be considered excessive. This is a particular issue because of the fact that, strictly speaking, rough sleeper counts must take place in the hours of darkness. Moreover, rough sleepers themselves necessarily tend to seek forms of shelter from the elements and from the risk of criminal victimhood (e.g., theft or violent attack) and counts do not normally cover private premises. Because of their particular vulnerability to such risk, female rough sleepers are especially liable to seek hidden sites – and, by the same token, especially likely to be undercounted.[36] Additional motivations for rough sleepers to try to avoid notice and contact with enumerators may include shame at their situation, involvement in addictions or offending, and/or uncertain citizenship status

In the course of reviewing international literature on homelessness it became apparent that there has been considerable attention to this issue in the US, particularly since the mid-2000s as Federal programmes to tackle homelessness have encouraged the conduct of periodic 'Point in Time' (PIT) counts. Key recent papers which review these critiques include: O'Flaherty (2019, pp.7 & 19;); Evans et al (2019, pp.9-10) ; Rukmana (2020, pp.291-308); and Flaming, D. & Burns, P (2017). These studies highlight the intrinsic

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[34] Since undertaking the main analyses for this study, Wave 10 has now been released.
[35] Bramley, G. (2020) *Potential Destitution and Food Bank Demand Resulting from the Covid-19 crisis in the UK: Rapid Research for Trussell Trust. Modelling individual/household-level impacts and eligibility for mainstream welfare support*. Final report. 07.09.2020. https://www.trusselltrust.org/wp-content/uploads/sites/2/2020/09/Heriot-Watt-technical-report-FINAL.pdf
[36] Reeve, K. (2007) Homeless women: Homelessness careers, homelessness landscapes; London: Crisis

limitations outlined above, the inconsistency of results over time and between cities, as well as the general propensity to under-count. International comparative studies have also highlighted these problems (Bainbridge & Carrizales 2017). In highlighting the potential for general under-enumeration in traditional rough sleeper counts we can look to evidence from American cities which have gone to considerable lengths to establish and test the rigour of count procedures. In New York, for example, the use of 'plant-recapture' techniques in studies done decades apart found that point in time estimates understated the rate of unsheltered homelessness by about 40-50%, even within defined locations.[37]

Potentially superior to simple rough sleeper counts are enumeration methods drawing on 'by name list' (BNL) frameworks, where many support services share access to a common database of street homeless people within a given geographical area, and in which each identified service user has a unique record. This concept and terminology has been quite widely adopted in the USA[38] and has recently spread to Australia[39]. Closer to home, London's CHAIN database is a fairly long-established BNL-type system – statistically valuable because of its facility to record both stocks (numbers at a point in time) and flows (people entering and leaving a state of rough sleeping) over time. Beyond their utility for numerical monitoring, frameworks of this kind can generate more detailed profile information, for example on migration status, age, gender, and so forth, while also playing a vital role in informing the appropriate targeting of assistance to individuals. However, such frameworks are also resource-intensive and difficult to apply at large (e.g. citywide, regional or national) scales.

In some other countries (e.g., Australia) rough sleeping (and other forms of homelessness) are enumerated in a nationally consistent way through period population censuses.[40] In the absence of such an approach in the UK, however, reliance on periodic rough sleeper counts and count-informed estimates is likely to continue. For the reasons discussed above, these will always tend to understate the extent of street homelessness – even as represented at a point in time, let alone in relation to the numbers of people affected over a time period. Nevertheless, they are of some value for tracking changes over time at a broad scale, and for providing an estimate at local level [41].

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[37] Evans et al (2019), previous footnote pp.9-10.

[38] https://homelessdata.com/knowledge-base/how-can-i-use-the-by-name-list-in-homelessdata-for-housing-prioritization/

[39] Pawson, H., Parsell, C., Liu, E., Hartley, C. and Thompson, S. (2020) Australian Homelessness Monitor 2020; Melbourne: Launch Housing
https://cityfutures.be.unsw.edu.au/documents/619/Australian_Homelessness_Monitor_2020.pdf

[40] It is arguable that simply asking ONS to add a PIT street count to the Census would not deal adequately with the issue, but that what would really be needed would also include surveys of people in communal establishments, surveys of users of crisis services, retrospective questions in large scale household surveys, and inclusion of 'not usually resident' persons present in households in appropriate surveys – see Bramley, G., Sosenko, F., Wood, J. with Williams, J. & Matthews, P. (2018) *Scoping project to investigate the alternatives for including non-household populations in estimates of personal well-being and destitution*, Interim Research Report to Joseph Rowntree Foundation and ONS. Edinburgh: Heriot-Watt University. https://researchportal.hw.ac.uk/en/publications/scoping-project-to-investigate-the-alternatives-for-including-non

41 Efforts have been made to enhance the quality of standard (annual) local authority rough sleeper counts in recent years (as specified by MHCLG). Under current guidance local authorities are expected to decide, jointly with local agencies, which of several permitted approach to use for this task https://www.gov.uk/government/publications/rough-sleeping-snapshot-in-england-autumn-2019/rough-sleeping-snapshot-in-england-autumn-2019.

In the light of these arguments, overall, it is unsurprising that all of the four other data sources we have used to estimate rough sleeping produce figures in the range 13-18,000, which are 2.5-3.5 times the official count-based figures.

In the previous study we treated the count estimates as the basis for the 'low' core homelessness numbers set, while using other sources for (MEH, SP, PSE) for the middle and higher estimates. While it seems appropriate to include the counts within the set of estimates which we take account of, we would argue to give them a relatively low weight. The figure that we use in practice has actually been enhanced, in the case of London, by taking account of the CHAIN data. Where the CHAIN figure, converted to a nightly basis, is higher than the LA count/estimates figure, we substitute the CHAIN based figure. For non-London authorities, we have enhanced the estimates further by fitting a regression model to the London authorities (post adjustment) plus those non-London authorities which had conducted a count, and using this as a basis for imputing figures in authorities which did not conduct a count. A similar procedure was followed in the 2017 study.

Having made these adjustments we do use the enhanced count-based figures to provide a national trend indicator for scaling the year-to-year changes in numbers generated by back-projecting our predictive models. We now also have a method based on H-CLIC to generate local numbers from the flow of cases applying to the local authority, as described above.

Appendix B

Data Sources for Models

Table B.1: Data Inputs and Sources for Sub-Regional Housing Market Model (SRHMM)

Item	Definition	Source
Completions	Number social and private per 100 households x Year x LAD	DCLG/MoHCLG Housing Statistics Live Tables, T.253
Migration (domestic)	Persons per 100 residents 'in' & 'out' x 4 age groups x year x LAD, adj to HMA basis using 2007 matrix	ONS Local migration estimates based on NHSCR data
Household Headship	Ratio of HRP/Population x 3 age groups	BHPS analysis 1997-2003; 2001 & 2011 Census base rates 2001 & 2011x LAD; ONS 2016-based household projections..
House Price	Median and Lower quartile price all sales & by type	H M Land Registry data compiled at LAD level
Market rents	Median market rent for 2 bedroom unit; number of lets recorded	Valuation Office Agency (VOA) local market database
Market rents supplementary source	Zoopla listings rents and lettings data	Zoopla listing agency, accessed via Urban Big Data Centre, Univ of Glasgow.
Social housing stock	LA + RSL rental dwellings x Year x LAD	CLG HSSA returns; MHCLG Local Authority Housing Statistics data returns.
Total & Private Stock	Private sector dwellings x Year x LAD	CLG HSSA returns ; MHCLG Table LT100 & LT125; MoHCLG net additions.
Earnings	Median full time earnings x LAD (residence)	ASHE (Annual Survey of Hours & Earnings)
Population	Number x Age x LAD	ONS Mid Year Estimates
Net Lettings	No. of lets to new tenants by LA's & RSLs x LAD	CLG HSSA returns; MoHCLG CORE Summary Tables 2016-18
Vacancies	No. & % of dwellings by social/private x LAD	CLG HSSA returns; LA level all Vacants MHCLG Table LT615.
Household Income	Gross Income of Household from all sources £k pa x LAD	Synthetic model estimate based on UKHLS 2009-17; earlier years based on change in Regional Accounts Real Household Disposable Income series for NUTS3 regions;

Births & Deaths	Numbers x LAD	ONS 'Components of Change' tables; ONS 2018 Population Projections.
International Migration	Number 'in' and 'out' x year x LAD	ONS 'Components of Change' tables
Mortgage Interest Rate	Ave percentage x year	HM Treasury 'Pocket Databank'; UK Finance Mortgage Trends
Unemployment (asunem)	Core age (30-44) claimant unemployment % of working age, adj for definitional changes	NOMIS data compiled for MigMod study and extended for Bramley-Leishman panel model
Unemployment (ILO)	Unemployed and seeking work, % of economically active	Annual Population Survey (APS) 3-year rolling average, and 2001/2011 Censuses.
Planning permissions flow	New planning permissions granted for housing, units x LAD, as % of households	Estimated from CLG PS2 returns and Emap-Glenigan database of major sites.
Planning permissions stock	Outstanding uncompleted permissions units x LAD, as % of households	Estimated from former DOE PS3 returns, Emap-Glenigan database, PS2 returns and CLG completions data;
Small sites	Share of small sites in private housing permissions	Emap-Glenigan database, c. 2015
Housing built on previously developed land (PDL)	Annual LA level % new housing on brownfield land (PDL)	MoHCLG Tables P211-213
High & low Social Class	% in higher occupational groups	Census 2001 + Annual Population Survey Occupational Groups (pooled 3 yr ave data)
Single person, lone parent & other household types	% households single non-elderly, lone parent, etc	Census 2001 & 2011; LFS trends x broad age & region 1992-2008; DCLG Household projection share trends 2008-2033 and 2014-2039
White British, Black, Asian, Mixed/other	% population with White-British, Black, Asian, Mixed/other ethnicities	Census 2001 & 2011; LFS trends x broad age & region1992-2008
Net Density	Dwellings per hectare of land in residential use, ward level	Census 2001, GLUD (Generalised Land Use Database) from CLG via Neighbourhood Statistics
Sparsity	Hectares per person, LAD level	Census 2001 & 2011
Students	% population f t students	Census 2001 & 2011; LFS trends x broad age & region1992-2008

IMD Low Income	IMD 2004 & periodic updates to ID2019; Low Income Score, averaged at LA level	IMD (Indices of Multiple Deprivation), derived from DWP benefits data
Distance major centre	Ave distance in km of dwellings from major retail service centre (>150k m2 floorspace)	CLG database of major retail/service centres
Greenspace	% of land area 'greenspace'	GLUD
Air	Index of Air quality/pollution	Derived for DTLR MigMod study
Climate	Index of warmer, drier, sunnier climate	Derived for DTLR MigMod study
Scenic	Index of proximity to scenic areas e.g. Nat Parks, AONB	Derived for DTLR MigMod study
Cars density	Cars per m of road length	2001 Census, GIS analysis
Sick/disabled	Limiting long term illness/disability, %	2001 & 2011 Censuses; LFS trends x broad age & region1992-2008

Table B.2: Additional data Inputs and Sources for Homeless Projection Model and Enhancement of SRHMM to provide local level needs estimates and targets

Item	Definition	Source
Statutory Homeless annual flow numbers	Applications, Acceptances and Decisions; reasons for loss of last secure accommodation; from 2018: accommodation immediately prior to application	Local Authority Annual 'P1E' statistical returns; From 2018/19 LA annual returns based on H-CLIC individual record system under Homelessness Reduction Act
New Statutory Homelessness data post-HRA from 2018	All applications, prevention cases, relief cases, main duty cases; demographic characteristics; immediate prior accommodation; support needs; outcomes of prevention	From 2018/19 LA annual returns based on H-CLIC individual record system under Homelessness Reduction Act
Temporary Accommodation	Homeless households in TA in total and in particular 'unsuitable' types (B&B, nightly non-selfcontained, out of area)	LA returns of numbers at 31 March each year. Incorporated within new H-CLIC based monitoring system post 2018; Totals estimates also confirmed from DWP FOI data, retrospective and service user surveys.

Rough Sleepers	Spot count/estimate data for autumn each year; Alternative estimates for rough sleeping and 'quasi rough sleeping'.	MHCLG .Rough Sleeping in England 2010-19.; also CHAIN data for London. Data subject to imputation for LAs without counts
Rough sleeping alternative sources	Survey of users of crisis services; Retrospective questions in household surveys; inference from admin data; ad hoc data collections.	Destitution in the UK 2019 & 2017 surveys; ONS Survey of Living Conditions 2018; Kantar Public Voice panel survey 2020; Scottish Household Survey 2012-15 (durations estimates); data from 'Everyone In' initiative 2020
Hostel Residents	Occupied hostel places (category also includes shelters, refuges, and emergency hotel accommodation under Everyone In initiative 2020).	Homeless Link 'SNAP' /SSHP survey annual; DWP Freedom of Information data from SHBE (Housing Benefit) system on all households supported in temporary & supported accommodation (relevant categories, informed by 2016 research study by Blood et al) Service user and retrospective surveys as above, plus Everyone In data.
Sofa surfers	Concealed singles or households wanting to move, not non-dependent children or students, overcrowded. EHS includes temporary residents accommodated who would otherwise have been homeless.	EHS and UKHLS survey estimates; ONS-SLC and Public Voice retrospective survey questions; predicted rates based on logistic regression models fitted to former surveys

SUMMARY OF PREDICTIVE MODELS FOR ELEMENTS OF HOMELESSNESS: VARIABLES BY MODEL

Model	Rough Sleep	Rough Sleep	Rough Sleep	Unconventional Accom	Homeless application rate	Temporary Accomod rate	Unsuitable Temporary Accommod rate	Private Renter Exits at Risk	Sofa Surfing in UKHLS	Sofa Surfing in EHS
Table	D.8	D.9	D.10	D.11	D.12	D.13	D.14	D.15	D.16	D.17
Dependent Var Name	roughsleepd	evroughsleep2	lphclicrsprox18	evuncovent2	lphldtot	lptatot	lpbadta	exprrisk	sofasurf11	sofasurf12
Observations	3163	2816	315	2816	2413	2175	2173	11927	155743	105462
Level	Household	Adult	LA	Adult	LA	LA	LA	Household	Household	Household
Period	2019	up to 2020	2018-19	up to 2020	2011-2018	2012-18	2012-18	2010-17	20010-17	2009-17
Independent variable description	*Varname*	*Varname*	*Varname*	*Varname*	*Varname*	*Varname*	*Varname*	*Varname*	*Varname*	*Varname*
Female gender	Female -									
Aged 60 or over	age60ov -								preveldh -	age65ov -
Couple	Cpl -								prevcfam +	cfam +
Hshld with child(ren)	Child -								prevnkids +	
London dummy	London +									
Income AHC (banded)	Incomeahc -								lgincindyrk -	lahceqinc -
Rent payable /week	Rentwk -									
Food deprivation	Food +									
Clothes deprivation	Clothesd +									
Number essentials lacked	numessentlack5 +							prevmdp +		
Born in New EU country	Bornneweu +			EEAMigrant +						
Benefit delay last yr	exp_delayd -									
Arrears with bills	exp_billsd -							findiff_1 +	findiff_1 +	
Problem debt	exp_debtd -									
Evicted last year	exp_evictedd +		phlendrent +							

Variable										
Applied to LA as h'less	exp_homelessd +									
Cut in working hours	exp_hoursd -									
Alcohol or drug problem	exp_alcohold +	Drinks (+)								
Number of experiences	Numexp +									
Applied/on Univ Credit	UCD +									
SMD level of LA (banded)	Psmdband +		Pdestsmd +		pdestsmd +					
Destitution level of LA (banded)		pdestbnd +	Pdestgen +	pdestbnd3 -	pdestgen +					
London dummy	London +		London -		london +	London +	london +			
South England dummy		South +								
Stayed in unconventional acc		evunconvent2 +								
Stayed in emergy/tempy acc		evemerg-temp2 +	phostelnew -	evemerg-temp2 +	phostelnew +		phostelnew +		lpbadta +	
Sofa surfed		evsofasurf2 +								
Migrant last 10 years		migrant10 -							bornos +	
Aged under 45		ageu45 +						ageu30 +	ageu25 -	ageu30 -
Disability limiting 'a lot'		disablimitlot +								
Not working sick/disab		ltsick - / diswkstat +			pcsick -					ltsick +
Unemployed		Unemp +							Punem +	Punem+
Self-employed		Selfemp +								
Low income <40% median		lowinc40 -			lowinc40 -			pov60ahc_1	pov60ahc_1 +	
Single person hhd wkg age			Sing +							
Unsuitable TA % hhd			Pbadta -							
Crime rate /1000 popn			Crimratept (+)							
Wkg age with no qualifs			Pnoqual -		pnoqual +					
Business & Emp centres			BECent (-)		BECent +		BECent -			
LA Area ha/ population			Laspars (+)						Laspars -	
Ever slept rough				evrough-sleep2 +						
Ever sofa surfed				evsofasurf2 +						

Variable						
Multi adult hshold	Mult +					mult +
Black ethnicity	pblack +					
ID Low income score (n'hood depriv)	plwincid +				plwincid -	
ID Education score	Eduscr19 +					
Excess rent over LHA £pw	exrent +	Exrent +	exrent +		exrent2lp +	
Homeless % social lets	phlslets +	Phlslets -	phlslets -			
Poor children %	ppoorchld -					
Mental health instit residents %	ppmhinst +					
Log of prevention/all homeless apps	lprevrat -					
Single over all homeless ratio	hlasingrat +					
Number of prevention measures	numprevmeasr +				numprevmeasr +	
HRA 2018 dummyx application rate	hraphldtot +	hraphldtot -	lphldtot			
Lagged log total TA % of hshlds		lptatot_1 +				
Log total homeless applics % hshlds		Lphldtot +				
Real median market rent £pw		Rlmrent +		rlmrent +	rlmrentlp +	Rlmrent+
Social rented lets % hsholds		Pslets -	pslets -			
Log diff from t-1 in TA rate, % hshlds			ldta +			
Log of lagged unsuitable TA rate, % hshlds			lpbadta_1 +			
Private renting % hshlds			ppr +	ppr + (*)	ppr3lp +	tenpr +
Change in price %				pchgprice -		
Multi-adult family					prevmult +	
Social renter					prevsoc +	tensr +
Student					prevstud -	
Individual concealed household					indconceal2_1 +	
Private rental letting rate % hshlds					pprletszlp -	
Lone parent family						lpfam +
Household rep works full time						hrpftemp +
High NS-SEC occupation						hisec -

APPENDIX D

FURTHER DETAILS OF PREDICTIVE MODELS

Core Functions within the Sub-Regional Housing Market Model

The following functions within the SRHMM have been updated as part of this research project. In most cases the revised models are fitted to data for the period 2010-18 (local authority annual panels) or 2015-18 (cross-sectional micro models). In some cases the previous model was calibrated on data from the period up to 2007, while in other cases some more recent data had been used.

- Private housing completions
- House prices (real, mix-adjusted)
- Private market rents
- Lettings and net changes in private rental tenure
- Housing vacancies
- Net relets of social rented housing
- Poverty after housing costs (AHC)

Housebuilding – private housing completions

This model predicts the rate of new private housing completions (as % of resident households) at Housing Market Area level (N=102) and was fitted to annual panel data over the period 2009-18. The model was fitted using OLS regression weighted by a weight reflecting the relative number of local authorities contained in each HMA. This model follows a tradition of similar models including those in Bramley & Watkins (2016) and Bramley & Leishman (2005). All variables are time-varying except the small sites share. The first two variables capture time variations around the local mean level. All variables except lagged real price are significant at the 5% level, with all significant at the 10% level.

Table D.1: Private Completions model

Description		Varname	Coeff B	Std Coeff Beta	t stat	Sig.
	1	(Constant)	0.624		6.208	0.000
Lagged priv comps rel level		tvppcmp_1	0.181	0.227	9.354	0.000
Lagged real mix-adj house price rel level		tvrlmapric_1	0.082	0.065	1.669	0.095
Lagged new planning perm's % hhd		pppflow_1	0.071	0.185	6.915	0.000
Log of lagged plg perm's stock % hhd		lpdopp2_1	0.020	0.050	2.137	0.033
Mortgage interest rate		Mir	-0.049	-0.155	-3.492	0.001
Share of small sites in priv permissions %		psmstprivpp	-0.261	-0.093	-4.179	0.000
Prev developed (brownfield) land %		Pdl	-0.005	-0.382	-15.633	0.000
Social completions % hhd		Pscmp	0.683	0.296	11.504	0.000
Lagged vacancy rate %		pvac_1	-0.026	-0.122	-4.754	0.000

Model Summary

Model	R	R Square	Adj R Sq	S E E
	0.769	0.591	0.587	0.21146
N of cases	883		F ratio	140.6

This model indicates that new-build private housing supply is driven by an element of momentum from previous years, the flow of new and stock of existing planning permissions, and the volume of new social rented housing completions. Output is higher when local house prices are relatively high, and when mortgage interest rates are generally low. Development is slower where more sites with permission are small or when the share of brownfield land is high, and when local vacancies are higher.

House Prices

This model predicts the log of the mix-adjusted average house price in each Housing Market Area (HMA), using HMLR price data by four main types. The model form is a partial adjustment framework with log-log estimation over the annual series 2010-2018; the high coefficient on lagged price (0.809) indicates relatively slow adjustment, while the structural relationship may be retrieved from the other coefficients divided by (1-0.809). The 'user cost' term follows common practice in house price modelling, embodying the effects of interest rate, maintenance costs, property taxes, and expected growth in values) The model fits data for the base period extremely well and key variables have effects in the expected direction and of expected magnitude, apart perhaps from the spatial relative price term. All variables are significant at the 5% level apart from the change in PRS term which can be discarded. Wealth effects are captured by London and South dummies interacted with FTSE index.

Table D.2: Model for log of house price level at housing market area level 2010-18

Variable	Varname	Coeff B	std Coeff Beta	t-stat	Sig.
Constant	(Constant)	2.707		9.760	0.000
Lagged log mix adj price	lmaprc_1	0.809	0.781	47.240	0.000
Log spatial relative price	lspatrlprc	-0.085	-0.028	-3.182	0.002
Log vacancy rate h	lpvac	-0.084	-0.041	-6.097	0.000
Log total completions %hhd	lptcmp	-0.024	-0.018	-3.900	0.000
Log real hshld disp income	lrhdipc	0.158	0.056	4.319	0.000
Log median earnings	lmdearn	0.123	0.030	3.399	0.001
Log 'User Cost'	lucc1	-0.075	-0.090	-14.629	0.000
Log Diff priv rented %	ldprs	0.013	0.001	0.172	0.863
London x FTSE ('000)	londftsek	0.022	0.077	6.409	0.000
South x FTSE ('000)	southftsek	0.008	0.042	5.656	0.000

Model Summary

R	R Square	Adj R Sq	S E E
0.993	0.986	0.986	0.06585

N cases	897	F ratio	6303

Weighted by neutral HMA weight

This model shows that house prices are quite strongly influenced by the previous year's price level, and to some extent by surrounding area prices. 'Supply' factors including vacancies and total completions tend to exert a downward influence on prices, while demand factors represented by household incomes and earnings levels exert a positive influence. The user cost of capital, affected by interest rates and expected capital growth, exerts a negative effect, while growth in the local private rented sector has a positive effect. Wealth effects are apparent through the interactions of the FTSE stock market index with London and South of England regions.

Private market rents

This model aims to predict the real level of median market rents for 2-bedroom accommodation at local authority level across England, using Valuation Office Agency (VOA) rent data. The model is again of a partial adjustment form fitted to data for English local authority districts/UAs over the period 2010-2018. The model was set up to apply two-stage least squares with potentially endogenous vacancy rate and private letting rate variables, but in the event these variables did not contribute significantly to this final structural equation. The rate of adjustment is even slower than for prices, consistent with the observed inertia in rent levels. The overall fit is again very high and most variables are significant, except for those mentioned above and private completions supply (p=0.213). Among the stronger structural effects are house price level and change, earnings and younger adult populations.

Table D.3: Model for private market rent level at local authority level 2010-18.

Variable description	Varname	Coeff B	Std Coeff Beta	T stat	Signif
Constant	(Constant)	-9.812		-8.127	0.000
Lagged real median rent 2br	rlmrent_1	0.923	0.921	143.727	0.000
Real median house price £k	rlmdpricek	0.031	0.045	8.669	0.000
Log diff real median house price	ldprice	47.326	0.030	19.365	0.000
Pred priv rented lets % hhd	pred(pprletsz)	0.000000	0.000	-0.335	0.738
Median earnings £k pa	mdearnkpa	0.202	0.012	5.540	0.000
Pred vacancy rate %	pred(pvac)				
Social lettings % of hshlds	pslets	-0.859	-0.005	-2.398	0.017
Private completions % hshlds	ppcmp2	-0.482	-0.002	-1.245	0.213
Unemployment rate %	punem	0.108	0.004	1.714	0.087
Young adults 25-39 %	pc2539	0.301	0.019	5.249	0.000
Gross in-migration rate %	ginmr	0.162	0.005	1.930	0.054
Lone parent hshlds %	phh1k	0.226	0.004	1.885	0.060
Multi-adult hshlds	mult	0.125	0.005	2.724	0.006
Neutral weight based on households	hhdwgt				

Model Summary

R		R Square	Adj R Sq	S E E
	0.997	0.994	0.994	6.29389
N cases		3162	F ratio	41179

Private Rental Lettings

This model seeks to predict the rate of private rental lettings per 100 households at LA district level based on panel data over the period 2010-18, the data being derived from a combination of Zoopla and VOA sources. The model set-up is two-stage least squares with vacancies and private market rents treated as endogenous. The overall fit of the model is satisfactory if less good than for the price and rent models. The strongest drivers are the existing PRS stock, and the rent level, with some positive effects from private new completions and a significant inverse relationship with the stock market (alternative investment opportunity). The Post-2016 dummy captures Brexit and other contextual influences which appear to have increased lettings, while various area type indicators highlight areas with lower lettings rates (rural, coastal, manufacturing; also areas with more Black ethnicity).

Table D.4: Private rental lettings rate by local authority 2010-18.

Variable description	Varname	Coeff B	Std Coeff Beta	t stat	Sig.
	(Constant)	9.034		6.819	0.000
Private renting % of hshlds	ppr	0.331	0.570	29.133	0.000
Pred Real Mean Rent £pw	prrlment	0.017	0.383	16.088	0.000
Pred Vacancy Rate %	prpvac	-0.078	-0.016	-0.721	0.471
Stock Market Capitalisation	stkcap	-0.091	-0.250	-10.681	0.000
Private completions % hshlds	ppcmp2	0.693	0.060	4.744	0.000
Dummy variable year>=2016	Post2016	0.923	0.128	5.813	0.000
Black ethnicity	Black	-0.116	-0.180	-10.792	0.000
LA area (ha)/LA population	laspars	-0.847	-0.085	-5.822	0.000
Rural area dummy	rural	-0.244	-0.025	-1.784	0.074
Coastal area dummy	coastal	-1.167	-0.097	-7.356	0.000
Manufacturing traits' area	manuf	-0.308	-0.023	-1.806	0.071

Neutral household size weight.

Model Summary

R		R Square	Adj R Sq	S E E
	0.816	0.665	0.664	2.070
N Cases		2529	F ratio	1949

This private rental lettings function is a new feature of the model. It is used to act as one influence generating change in the private rental stock. If lettings are above a norm for the area type, the private rental stock will tend to expand. However, as before, this supply influence is combined with demand-side influences from a tenure choice model which remains as in previous versions of the model, based on micro-analysis of the British Household Panel Survey (not updated in this refresh).

Housing Vacancies

A vacancy formula was developed within the set of private rents and private lettings treated as endogenous/simultaneous. The final version used log of the vacancy rate as the dependent variable with a lagged level of this in the final model as shown below. This model explained about three-quarters of the variance, with all included variables significant except lone parent households. Other variables with relatively strong effects included change in house price (-ve), private renting share, total and international in-migration (-ve), multi-adult households and Black ethnicity (also both –ve), and a positive relationship with low income poverty (low demand areas tend to be poor, see Bramley et al 2000). There was also a positive relationship as expected with rises in the ratio of dwellings to estimated household numbers.

Table D.5: Model for housing vacancy rate

Variable description	Varname	Coeff B	Std Coeff Beta	t stat	Sig.
Constant	Const	0.991		17.492	0.000
Log of lagged vacancy rate %	lpvac_1	0.426	0.627	51.409	0.000
Pred(Rent as % Median House Price)	prror3	0.023	0.055	3.131	0.002
Log difference Median House Price	ldprice	-0.576	-0.092	-8.619	0.000
Private renting % of hshlds	ppr	0.007	0.133	7.146	0.000
Median earnings £k pa	mdearnkpa	-0.002	-0.022	-1.698	0.090
Gross in migration rate %	ginmr	-0.015	-0.103	-4.749	0.000
International in-migration rate %	intinmr	-0.026	-0.073	-3.040	0.002
Lone parent households %	phh1k	0.004	0.019	0.931	0.352
Multi-adult hshlds %	mult	-0.011	-0.095	-7.325	0.000
Black ethnicity %	ethnic - Black	-0.007	-0.117	-6.316	0.000
ID Low Income Score propn	plwincid	0.887	0.151	6.890	0.000
Area (ha)/population	laspars	0.053	0.057	4.478	0.000
Log difference Dwg Stock/Hshld ratio	ldstkhhd	0.568	0.033	3.499	0.000

Dep var: log of vacancy rate %; weighted by neutral household weight.

Model Summary

R	R Square	Adj R-sq	S E E
0.867	0.753	0.751	0.165

It should be noted that vacancies play a significant role in the model and they are subject to a modified hybrid treatment. The model values for vacancy level in the forward projection half half based on this predicted value and half on the actual discrepancy between dwelling stock and households, adjusted for sharing and second homes. This is a logical identity which needs to be recognised in housing models. If the resulting hybrid predicted vacancy rate falls below a threshold or above another threshold, additional adjustment mechanism start to operate. These influence price, household formation, in-migration, demolitions and private completions, with the strongest effect on price. Their effect is to introduce an additional non-linear feedback on these variables, in order to bring vacancies back within a reasonable range.

Net Relets of Social Rented housing

This variable plays a significant role in the model, because along with new social rented provision and the inherited size of the social stock it determines the supply of lettings, which then represents a key means of resolving, relieving or indeed preventing homelessness. The model developed uses a panel of LA district/UA level observations for the period 2009-2018, and follows the line of predecessor models. The net relet rate is the number of lettings to new tenants, excluding transfers and lets to tenants from other social landlords, and first lettings of new homes, as a percentage of the social rented housing stock (includes so-called 'affordable rent'). The fit of the model is less good than others reported here, perhaps owing to some data inconsistency problems in the mid-2010s associated with changes in statistical returns collected from LA's. The more recent data appear better. Nevertheless the model tells a broadly consistent story, whereby relet rates are lower where/when house prices are higher and where market rents are above the subsidisable level, where poverty is concentrated, where there is a more predominantly white population, and where there is more new social building. Relets are higher where vacancy rates are higher ('low(er) demand'), densities higher, and where the population is more young (under 40) or older (over 65), the latter reminding us that death and institutionalisation of elderly social tenants is a significant source of relets.

Table D.6: Model for net relet rate of social rented housing at local authority level 2009-18

Variable description	Varname	Coeff B	Std Coeff Beta	T stat	Signif
Constant	(Constant)	31.931		13.690	0.000
Log of real median house price	lrlmdprice	-2.278	-0.402	-12.441	0.000
Mean gross hshld income £k pa	mnginc	-0.001	-0.036	-1.477	0.140
Mortgage interest rate	mir	0.903	0.199	11.266	0.000
ID Low income score (propn)	plwincid	-16.420	-0.363	-11.802	0.000
Private completions % hshlds	ppcmp	-0.208	-0.025	-1.515	0.130
Unemployment rate %	punem	-0.075	-0.077	-3.192	0.001
Vacancy rate %	pvac	0.449	0.171	8.963	0.000
Dwellings per hectare (resid use)	netdens2	0.003	0.050	2.100	0.036
Aged under 40 %	pcageu40	0.058	0.152	3.553	0.000
Older population 65+ %	peld	0.055	0.116	2.677	0.007
White ethnicity	pwhite	-0.026	-0.158	-5.430	0.000
Excess market rent -LHA £pw	exrent	-0.033	-0.121	-6.849	0.000
Social completions % hshlds	pscmp	-4.710	-0.244	-14.859	0.000

weighted by neutral household weight

Model Summary

R	R Square	Adj R-sq	S E Est
.625a	0.391	0.389	1.98
N Cases	3205	F ratio	157.8

Poverty after housing costs

This variable plays a significant role in predicting aspects of homelessness at local/sub-regional level. The model is calibrated on the micro-longitudinal UK Household Longitudinal Study ('Understanding Society') data pooled across 8 years (2010-2017). The model is fitted using OLS regression on the pooled household level data, i.e. it is a linear probability model for the binary outcome of being poor after housing costs. While most variables are at individual household level, the affordability ratios combine LA area-level price/rent values with individual income values. This model is used to predict AHC poverty rates at Housing Market Area level.

Table D.7: Model to predict household poverty rate after housing costs

OLS LP Model

Variable description	Varname	Coeffic B	Std Coeff Beta	t stat	Signif
Constant	(Constant)	-0.035		-29.192	0.000
Aged under 25	ageu25	0.006	0.006	4.213	0.000
Retired household	preveldh	-0.007	-0.008	-7.032	0.000
Couple family	prevcfam	0.030	0.033	29.553	0.000
Asian ethnicity	asian	0.037	0.009	7.976	0.000
House price: hshld income ratio	hphhir	0.004	0.075	60.168	0.000
Rent: income ratio	affrat	0.052	0.056	45.951	0.000
High Affordability ratio dummy	highar	0.495	0.359	290.658	0.000
Poverty BHC	pov60bhc	0.652	0.607	497.498	0.000
Financial difficulties	findiff	0.021	0.019	16.228	0.000
Private renter	privr	0.011	0.010	9.281	0.000
Social renter	socr	0.031	0.033	28.175	0.000
Student	stud	0.029	0.018	13.643	0.000
Unemployed	unem	0.024	0.014	12.457	0.000
Low income score locality	plwincid	0.139	0.022	20.311	0.000

Dependent Variable: pov60ahc (dummy)

Weighted by xhwgt

Model Summary			
R	R Square	Adjusted R Square	S E E
0.822	0.675	0.675	0.20646
N Cases	281,270	F ratio	41759

Models to Predict Components of Core Homelessness

For each main component of core homelessness, apart from 'hostels etc', there is at least one, and in two cases more than one, statistical predictive model used in the context of the Sub-Regional Housing Market Model (SRHMM) to predict rates of that element of homelessness over future years, at the level of 102 Housing Market Areas across England. 'Hostels etc.(which includes shelters, refuges and other emergency temporary accommodation for homeless people) are taken to be supply (i.e. capacity, often related to funding) –determined. For rough sleeping, the average of three distinct models is used. For sofa surfing we use the average of two models, one based on EHS and one based on UKHLS. For unsuitable TA we use the outcome of a set of three linked models, for total applications, total TA and unsuitable TA.

Rough Sleeping Model (1) based on 'Destitution' Survey

This model is a logistic regression fitted to individual household data from the Destitution in the UK data where the sample are households using 113 crisis services[42] in 18 localities across UK. The dependent variable is reporting sleeping rough at the time of the survey or in the last month. The model shows expected relationships with demographic attributes, with income and material deprivations, migrancy from 'new EU' and with certain experiences in last year, particularly eviction, applying to LA as homeless, and drug/alcohol problems.

Since this model is fitted to a particular subset of the population at risk of destitution, it is interacted with the local (HMA level) predicted level of destitution, overall and for those with complex needs, from the JRF 'Destitution in the UK' studies of 2015, 2017 and 2019 when predicting levels of rough sleeping at HMA level. Some variables from this micro model are combined with others and represented by a suitable proxy when generating the synthetic predictive model at HMA level.

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[42] Advice services, hot food providers, food banks, homelessness day/support centres and hostels, refuges, migrant advisory/support services, local welfare funds.

Table D.8: model to predict rough sleeping based on Destitution in UK survey of users of crisis services

Variable Description	Varname	Coeffic B	Signif p value	Odds Ratio Exp(B)
Female gender	Female	-0.727	0.000	0.484
Aged 60 or over	age60ov	-0.746	0.000	0.474
Couple	Cpl	-1.096	0.001	0.334
Hshld with child(ren)	Child	-0.992	0.000	0.371
London dummy	London	0.406	0.001	1.501
Income AHC (banded)	Incomeahc	-0.041	0.103	0.960
Rent payable /week	Rentwk	-0.006	0.000	0.994
Food deprivation	Food	0.231	0.103	1.259
Clothes deprivation	Clothesd	0.313	0.020	1.367
Number essentials lacked	numessentlack5	0.728	0.000	1.439
Born in New EU country	Bornneweu	1.024	0.000	2.783
Benefit delay last yr	exp_delayd	-0.285	0.035	0.752
Arrears with bills	exp_billsd	-1.154	0.000	0.443
Problem debt	exp_debtd	-0.340	0.012	0.712
Evicted last year	exp_evictedd	0.460	0.002	1.584
Applied to LA as h'less	exp_homelessd	0.468	0.000	1.596
Cut in working hours	exp_hoursd	-0.507	0.032	0.602
Alcohol or drug problem	exp_alcohold	0.27	0.141	1.216
Number of experiences	Numexp	0.074	0.036	1.077
Applied/on Univ Credit	Ucd	0.075	0.466	1.078
SMD level of LA banded	Psmdband	0.174	0.001	1.190
	Constant	-1.419	0.000	0.128

	-2 L L	Cox & Snell R Square	Nagelkerke R Square
	2653	0.246	0.363
	% correct predn		80.3%
	N of cases		3163

The model just described as currently used in the projections of core homelessness is fitted simply to a sample of households who are using crisis services, and hence a group at particularly high risk. It is possible to join these data with an extract from a nationally representative household survey (UKHLS), with an effectively common sub-set of variables, and run a similar predictive model across this composite sample. The results of doing this provide a plausible model which offers additional insights into possible influences on rough sleeping (or, in a related model, all core homelessness). Variables which are common to both sources yield similar effects in this alternative model, including age, household types, Universal Credit, eviction, AHC income, and area SMD level. Additional variable effects which are of interest include an association with loss of job/unemployment, disability, mental and physical health problems, savings, and having relatives who might offer support.

Rough Sleeping Model (2) based on Public Voice survey

This is a logistic regression to predict the odds of reporting ever having slept rough, fitted for a random sample of adults across the UK in early 2020.

The model achieves a reasonable fit for a micro model predicting a relatively rare occurrence, with most effects plausible and in line with expectations. Rough sleeping appears to be very strongly linked to the (rare) circumstance of having previously stayed in unconventional accommodation, with pretty strong links to staying in emergency/temporary accommodation (expected) and, perhaps more significantly, sofa surfing. In this model recent migrancy (all countries) seems to reduce the odds. Younger age, disability, non-working and unemployment effects are strong and as expected, as is having a very low income. Some these variables echo findings from the previous model, and also from its enhanced version linked to UKHLS. The alcohol variable is plausible but not statistically significant in this moderate sized sample (p=0.239).

Table D.9: Model to predict odds of rough sleeping, retrospective data from Public Voice Survey.

Variables in the Equation		Coeff		Signif	Odds Ratio
		B	Wald	p value	Exp(B)
Stayed in unconventional acc	evunconvent2	4.243	81.576	0.000	69.583
Stayed in emergy/tempy acc	evemergtemp2	1.254	9.971	0.002	3.506
Sofa surfed	evsofasurf2	1.656	22.702	0.000	5.236
Migrant last 10 years	migrant10	-2.501	2.881	0.090	0.082
Aged under 45	ageu45	0.819	6.502	0.011	2.267
Disability limiting 'a lot'	disablimitlot	1.297	9.210	0.002	3.657
Not working sick/disab	ltsickdiswkstat	0.994	4.214	0.040	2.703
Unemployed	Unemp	1.453	12.154	0.000	4.274
Self-employed	Selfemp	0.947	3.772	0.052	2.577
Low income <40% median	lowinc40	1.687	21.373	0.000	5.406
Alcohol issue	Drinks	0.431	1.385	0.239	1.538
Banded destitution of LA	pdestbnd3	0.465	5.004	0.025	1.593
South England dummy	South	0.768	4.292	0.038	2.156
Constant	Constant	-7.647	136.058	0.000	0.000

		-2 L L	Cox & Snell R Sq	Nagelkerke R Sq	
-2 L L		385.26	0.127	0.533	
	N		2816	98.0	% correct

Readers should bear in mind that some of these explanatory factors are based on current values while the rough sleeping occurred at some time in the past (but see Bramley & Fitzpatrick 2017 for evidence that such retrospective based relationships are not misleading). Rough sleeping is somewhat more prevalent in localities with higher destitution rates and in the South of England, after controlling for the above.

Rough Sleeping Model (3) based on H-CLIC Homeless Applicants flow data

This model is a cross-sectional LA-level linear probability model using the first year's data (2018/19) from H-CLIC on households applying to the LA as homeless whose immediately prior accommodation was 'rough sleeping' or 'No Fixed Abode' (half thereof).

Table D.10: Model to predict rate of homeless applications from rough sleeping or 'no fixed abode'.

Variable Description	Varname	Coeff B	Std Coeff Beta	t stat	Signif
Constant	(Constant)	-4.811		-14.685	0.000
Single person hhd wkg age	Sing	0.054	0.266	2.803	0.005
Unsuitable TA % hhd	Pbadta	-0.693	-0.148	-2.050	0.041
Homeless ex PRS % hhd	phlendrent	1.374	0.286	5.615	0.000
Crime rate /1000 popn	Crimratept	0.003	0.108	1.295	0.196
Hostel res on HB % hhd	phostelnew	-0.909	-0.357	-6.339	0.000
SMD Destitution rate % hhd	Pdestsmd	1.666	0.241	2.078	0.039
General Destit rate % hhd	Pdestgen	1.675	0.193	1.859	0.064
Wkg age with no qualifs	Pnoqual	-0.077	-0.303	-4.344	0.000
London dummy	London	-0.530	-0.228	-2.979	0.003
Business % Emp centres	BECent	-0.210	-0.092	-1.467	0.144
LA Area ha/ population	Laspars	0.187	0.074	1.316	0.189

Dep Var: lphclicrsprox18 (log of applicants from (RS + 0.5* NFA) as % of hshlds

Weighted by hhdwgt

	Model Summary			
R	R Square	Adj R-sq	S E E	
0.625	0.390	0.368	0.690	
N Cases	315	F ratio	17.7	

This model exploits new data now available from the H-CLIC system giving a stronger steer on the local geography of rough sleeping. Although this does not have a very good fit, perhaps because the data system is just settling down in its first year, also the first year of the Homeless Reduction Act, it nevertheless provides a valuable complement to the other two models. While most of the effects are as expected, including single person households, people evicted or otherwise leaving the PRS as homeless, SMD and general destitution level, several of the other apparent effects are not perhaps as expected. It appears from the negative signs that 'unsuitable TA' and hostel places may be substitutes for RS at local level, and that London and core cities do not have higher rates of presentations from RS or NFA when controlling for other variables. This model can probably be improved in future.

Model for ever stayed in unconventional accommodation in Public Voice sample

The following logistic regression model was fitted to the Public Voice adult sample from early 2020, to predict the odds of having ever stayed in unconventional accommodation or spaces not intended for permanents residence. This includes tents, sheds, garages, cars, vans, lorries, caravans, boats, industrial buildings, etc.

Table D.11: Model to predict odds of ever stayed in unconventional accommodation, retrospective data from Public Voice Survey 2020.

		Coeff	Signif	Odds ratio
Variable description	Varname	B	p value	Exp(B)
Ever slept rough	evroughsleep2	3.967	0.000	52.820
Ever stayed in emerg't/temp	evemergtemp2	1.975	0.000	7.208
Ever sofa surfed	evsofasurf2	2.069	0.000	7.920
Multi adult hshold	Mult	0.951	0.025	2.588
EEA migrant	EEAMigrant	0.832	0.298	2.297
Lower Income hhd	lowinc40	-0.667	0.132	0.513
LA destitution rate (banded)	pdestbnd3	-0.634	0.027	0.531
Constant	Constant	-4.905	0.000	0.007

		-2 Log likelihood	Cox & Snell R Sq	Nagelkerke R Sq
		230.341	0.109	0.609
		N cases	Correct %	
		2816	99.1	

The model shows a very strong relationship with rough sleeping, and quite a strong relationship with staying in hostels and other emergency/temporary accommodation and with sofa sufing. There is as expected a positive relationship with currently living in a multi adult household and being an EEA migrant. The last two variables reflect low socio-economic status of household and area have a negative sign, which is somewhat against expectations. We interpret this in the following way: staying in unconventional spaces is a form of core homelessness which, while clearly related, differs from rough sleeping and other forms in not being so closely related to poverty but rather affecting a broader socio-economic spectrum. That is a way of characterising the cross-sectional pattern socially and geographically. However, we believe that is potentially misleading when predicting changes from year to year, because it could lead to implausible perverse movements in this predicted element of core homeless in response to short term economic changes such as a recession. Therefore in the simulation model for forward years we hold these two variables constant in this sub-model.

Model for total homeless applications rate to local authority

The following model seeks to predict the annual rate of all homeless applications to the local authorities (as a % of resident households) based on a panel model of all English local authorities over the period 2011-2018. The role of this model within the overall simulation is as the first of three linked models which also predict total households placed in temporary accommodation (TA) and the number/rate placed in unsuitable temporary accommodation. The model deals rather crudely with the introduction of the HRA by interacting a dummy for the year 2018 with the rate of applications in the previous year 2017. The dependent variable is logged to produce a closer to normal distribution, and the regression is weighted by the relative size of the local authority in terms of households.

Table D.12: Model for total homeless application rate to local authority

Variable description	Varname	Coeff B	Std Coeff Beta	T stat	Signif
Constant	(Constant)	-1.680		-34.767	0.000
Black ethnicity	pblack	0.016	0.103	4.164	0.000
ID Low income score propn	plwincid	3.206	0.201	5.252	0.000
ID Education score	Eduscr19	0.017	0.178	7.201	0.000
Sick/disabled econ status	pcsick	-0.197	-0.330	-10.978	0.000
Excess rent over LHA £pw	exrent	0.0030	0.038	2.484	0.013
Homeless % social lets	phlslets	0.399	0.077	5.632	0.000
SMD destitution rate %	pdestsmd	0.575	0.122	5.392	0.000
General destitution rate %	pdestgen	2.218	0.249	7.946	0.000
Poor children %	ppoorchld	-0.010	-0.073	-2.685	0.007
Wkg age no qualifications %	pnoqual	0.004	0.030	1.994	0.046
Mental health instit residents %	ppmhinst	0.046	0.024	1.991	0.047
Hostel resid on HB %	phostelnew	0.109	0.040	2.683	0.007
Business & employment centres	BECent	0.093	0.041	2.514	0.012
London	london	0.181	0.077	3.320	0.001
Log of prevention/all homeless apps	lprevrat	-0.363	-0.417	-28.047	0.000
Single over all homeless ratio	hlasingrat	0.913	0.212	12.205	0.000
Number of prevention measures	numprevmeasr	0.041	0.173	9.647	0.000
HRA 2018 dummyx application rate	hraphldtot	0.586	0.316	16.200	0.000

Dep Var: lphldtot (log of homeless applications as % of households)

Weighted by hhdwgt

Model Summary

R	R Square	AdjR Sq	S E E
0.805	0.648	0.646	0.51906
N of cases	2413	F ratio	245.3

The model shows expected relationships with measures of poverty and disadvantage (two ID scores and destitution scores), although with a slight offset in relation to child poverty and an indication that poverty associated with long term health conditions is somewhat less associated with homelessness. There are also associations with Black ethnic populations and low/no qualifications and with two types of institutional populations (mental health and hostels) and with London and other core cities. The excess of market rent over LHA appears to have a positive relationship with homelessness, while a higher emphasis on prevention appears on balance to reduce it. However, having a high share of single homeless applicants is associated with having a high overall rate, which is perhaps logically to be expected: pre-HRA this might have been interpreted as a more liberal stance in the face of a lower overall pressure of homelessness relative to social housing supply, for example in some northern areas, although there could also be a straightforward demographic effect here. The proportion of lettings to homeless households appears to have a positive relationship with the

rate of homeless applications; it is not clear quite what inferences may be drawn from this (allocations following demand/need, or allocations stimulating more applications?).

Model for total temporary accommodation rate

This model is similar to the preceding one in that it is fitted to the same panel of local authority level observations over the period up to 2018. This model can be regarded as a form of partial adjustment model, where the lagged total stock of TA plays a strong role and this gradually adjusts to the pressure of new demand from total applications, modified by factors relating to the private rental market (rent level and excess of rent over subsidisable LHA rates) and the availability of social rented lettings. All variables are in line with expectations (except possibly the last one) and the fit of the model is high.

Table D.13: Model for total temporary accommodation rate at local authority level

Variable description	Varname	Coeffic B	Std Coeff Beta	t stat	Signif
Constant	(Constant)	-0.502		-8.234	0.000
Lagged log total TA % of hshlds	lptatot_1	0.797	0.799	65.286	0.000
Log total homeless applics % hshlds	Lphldtot	0.157	0.094	10.228	0.000
Real median market rent £pw	Rlmrent	0.001	0.078	6.401	0.000
Excess market rent over LHA £pw	Exrent	0.006	0.046	5.867	0.000
Social rented lets % hsholds	Pslets	-0.047	-0.013	-1.834	0.067
% of social lets to homeless hshlds	Phlslets	-0.174	-0.021	-3.029	0.002
London dummy	London	0.084	0.021	1.814	0.070
HRA 2018 dummy x h'less applics % hshlds 2017	hraphldtot	-0.075	-0.025	-3.268	0.001

Dep var: lptatot, log of total in temporary accommod as % of households

Weighted by hhdwgt

Model Summary			
R	R Square	Adj R Sq	S E E
0.954	0.909	0.909	0.445
N cases	2175	F ratio	2719

As in many homelessness functions there is a London markup effect, while the final term attempts to control for the impact of the HRA in 2018.

The logic of the market rental and social lettings variables is clear and consistent with survey evidence from the Homelessness Monitor over a run of years. The ability to contain and reduce the number of households in TA is affected by the ability to assist households (under the rubrics of prevention or relief) into tenancies in the private rented sector, which is limited by the level of rents and especially by the extent to which rents exceed LHA, the limit of subsidy available in the PRS. Conversely, the more social lettings are available and the more of these are made available to homeless households, the easier it is to reduce the numbers in TA.

Model for Unsuitable Temporary Accommodation rate

The final model in this linked set of three predicts the rate of unsuitable temporary accommodation, again in a partial adjustment framework. Unsuitable TA is higher where it was already high, where there is growth in total TA, and where there is a higher level of new homeless applications. This is exacerbated by a greater LHA gap and alleviated where social lettings rates are higher and/or more of these are used for homeless cases. Unsuitable TA is also higher in areas with more private renting, more hostels, and in London, although less so in other Business and employment centres. The higher level in London reflects in part the extensive use of out of area placements by London boroughs.

Table D.14: Model for Unsuitable Temporary Accommodation rate at local authority level

Variable description	Varname	Coeff B	Std Coeff Beta	t stat	Signif
Constant	(Constant)	-2.018		-12.472	0.000
Log diff from t-1 in TA rate, % hshlds	ldta	1.015	0.225	19.915	0.000
Log of lagged unsuitable TA rate, % hshlds	lpbadta_1	0.597	0.589	34.755	0.000
Log total homeless applics % hshlds	lphldtot	0.255	0.106	8.021	0.000
Excess market rent over LHA £pw	exrent	0.014	0.069	5.117	0.000
Social rented lets % hsholds	pslets	-0.388	-0.075	-5.321	0.000
% of social lets to homeless hshlds	phlslets	-0.213	-0.017	-1.519	0.129
Private renting % hshlds	ppr	0.028	0.080	4.781	0.000
Hostel resid's, % hshlds	phostelnew	0.273	0.041	2.993	0.003
London dummy	london	0.747	0.128	7.660	0.000
Business & employment centres	BECent	-0.162	-0.028	-1.908	0.056

Dep Var: lpbadta - log of unsuitable TA as % hshlds
Weighted by hhdwgt

Model Summary

R	R Square	Adj R Sq	S E E
0.857	0.735	0.734	1.103

	N cases	2173	F ratio	600.571

Again, we can say that this model works well in capturing the dynamic of unsuitable TA as we understand it, from our work on the Homelessness Monitor. The model has a reasonable fit and all variables work in the direction expected. One variable of particular interest is retained in the model although its statistical significance falls just short of the 10% significance level (percent of social lets to homeless households). The overall supply of social lettings is a more significant and powerful determinant.

Model for homelessness risk from loss of private rental tenancy

In recent years homelessness statistics have shown a growing role for 'Loss of Assured Shorthold Tenancy' as a major source of homeless applications to local authorities. While it is possible to model this at local authority level, the preferred approach implemented in the projections has been to use a micro model fitted to the household panel data from *Understanding Society* (UKHLS). This highlights households who move out of a private rental

tenancy either due to eviction or movers who could not afford to buy or rent at market rates and who either moved into social renting or made multiple moves or who exhibited any of a range of housing needs. We characterise this group as ex-PR movers 'at risk'. Table D.15 shows the resulting model, which is only applied to households who were in private renting in the preceding wave.

Table D.15: Logistic regression model for households exiting private renting at risk of homelessness in UKHLS panel waves 2-9 (2010-17)

Variable description	varname	Coeff B	Signif. p value	Odds Ratio Exp(B)
Aged <30	ageu30	0.646	0.000	1.909
Poor AHC	pov60ahc_1	0.573	0.000	1.774
Material Depriv propn	prevmdp	1.098	0.000	2.997
Financial Dfficulties	findiff_1	0.427	0.000	1.533
Low income score	plwincid	-2.796	0.001	0.061
Real market rent	rlmrent	0.003	0.000	1.003
Change in price %	pchgprice	-0.013	0.010	0.987
No. Prevention Measures	numprevmeasr	0.067	0.002	1.069
	Constant	-4.707	0.000	0.009

-2 L L	Cox & Snell R Sq	Nagelkerke R Sq
3352.9	0.018	0.069
N cases	11,927	

This model does not appear to have a very good fit and is predicting a relatively rare event in the population. Some of the variables have effects clearly in line with expectations: younger age, poverty after housing costs in the previous year, having several material deprivations in and/or experiencing financial difficulties in the previous year, while there is a positive association with market rent levels in the locality. Some area effects are not perhaps in line with prior expectations. Households living in the most deprived neighbourhoods (low income score) are less likely to be in this risk group, perhaps because such neighbourhoods are dominated by social housing and private rental housing may be concentrated in different, more mixed neighbourhoods. There appears to be an inverse relationship with change in house prices (after allowing for rent levels), which is perhaps counter to expectations. The positive association with the number of homeless prevention measures may be indicative of a tendency (pre-HRA) for these to be used more by authorities which experienced more pressured markets.

In the projection model the predicted rates of risky exits from private renting are interacted with the size of the private rented sector in the housing market area. One way in which this factor affects core homelessness, and specifically rough sleeping, is via the variable 'phlendrent' which features in the model Table D.3.

Sofa Surfing Model based on UKHLS

We finally go on to describe models used to predict sofa surfing, reporting primarily on the two models combined in the predictive framework of the SRHMM. Both of these models focus on the cases within large scale household surveys where households contain concealed households which correspond to our definition of sofa surfing. In the first case, based on UKHLS, the group modelled is slightly wider because it omits the criterion of expecting/wanting to move in order to retain sufficient cases across years. Neither of these models include short term sofa surfers who are not treated as usually resident, but this group can be captured by retrospective survey questions such as those in Public Voice, discussed further below.

Table D.16: Logistic regression for sofa surfing model based on UKHLS longitudinal panel Waves 2-9 (2010-17)

Variable description	Varname	Coeffic. B	Signif p value	Odds ratio Exp(B)
Aged under 25	ageu25	-1.307	0.000	0.270549
Retirement age household	Preveldh	-2.219	0.000	0.109
Born overseas	Bornos	1.192	0.000	3.293
Couple family	Prevcfam	0.222	0.023	1.248
Multi-adult family	Prevmult	2.048	0.000	7.749
Number of children	Prevnkids	0.198	0.000	1.219
Poor after housing costs	pov60ahc_1	0.228	0.000	1.256
Social renter	Prevsoc	0.407	0.000	1.502
Log of gross indiv income £k pa	Lgincindyrk	-0.241	0.000	0.786
Student	Prevstud	-2.371	0.000	0.093
Financial difficulties	findiff_1	0.465	0.000	1.593
Individual concealed household	indconceal2_1	0.428	0.000	1.535
Real mean mix-adj house price	Rlmnmapriclp*	-6.27E-07	0.023	1.000
Unemployment rate	Punem	0.075	0.000	1.078
Social rented lettings % hshlds	Pslets*	0.050	0.446	1.051
LA area ha/population	Laspars	-0.971	0.000	0.379
Log of unsuitable TA % hsholds	Lpbadta	0.062	0.000	1.064
Real median rent £pw	Rlmrentlp	0.0026	0.001	1.003
Excess of market rent over LHA £pw	exrent2lp	0.0027	0.022	1.003
Private renting households %	ppr3lp	0.020	0.000	1.021
Private rental letting rate % hshlds	Pprletszlp	-0.044	0.000	0.957
Constant	Constant	-5.544	0.000	

	Model Summary		
-2 L L	Cox & Snell R Sq	Nagelkerke R Sq	
17553.500	0.028	0.215	
N cases	155,743		

prefix 'prev' or suffix _1 means in previous wave

Suffix 'lp' means LAD level from LAD panel.

All variables from rlmnmapriclp onwards are LA level.

It should be noted that for two variables marked with *, real house price (rlmnmapriclp) and social lets (pslets), in the final runs of the simulation, the coefficients on these two variables were set at zero. The grounds for this were that their effects were counter to expectations, perverse, inconsistent with other models, and tending to lead to implausible predictions. In one case (pslets) the coefficient was in any case not significant. In the other case the price variable was working against the main and more relevant effects of the rent variables, which were expected to have a more direct impact on households at risk of homelessness including sofa surfing.

The UKHLS model is an update and refinement of that used in the previous homeless projections. The model takes account of individual /household level demographics, and shows expected relationships with households in the middle age range, multi-adult households with concealed individuals, having been born overseas, poorer and social renting households experiencing financial difficulties. Local area level housing and labour market factors play a role including unemployment, average and excess rents, private renting sector level, and the presence/scale of unsuitable TA, with rural areas having lower incidence.

Sofa Surfing Model within English Housing Survey

The model applied within the English Housing Survey was similar, but this time the sofa surfers were also filtered on intention to move, and the data are independent samples each year rather than a longitudinal panel. Area level housing and labour market variables, the last four marked by asterisk, were attached at GOR region level by year, not local authority level.

Table D.17: Logistic regression for sofa surfing model based on English Housing Survey (2009-17)

Variable description	Varname	Coeffic B	Signif p value	Odds Ratio Exp(B)
Aged under 30	ageu30	-0.745	0.000	0.475
Aged over 65	age65ov	-0.581	0.005	0.559
Couple family	cfam	1.407	0.000	4.083
Lone parent family	lpfam	1.812	0.000	6.124
Multi-adult household	mult	4.586	0.000	98.139
Household rep works full time	hrpftemp	0.608	0.000	1.837
Not work long term sick/disab	ltsick	0.391	0.002	1.478
High NS-SEC occupation	hisec	-1.029	0.000	0.357
Log of equivalised income AHC	lahceqinc	-0.126	0.020	0.882
Social renter	tensr	0.624	0.000	1.866
Private renter	tenpr	0.392	0.009	1.479
Real median rent	Rlmrent+	0.005	0.000	1.005
Excess rent over LHA	exrent2+*	-0.016	0.000	0.985
Social lettings % hhd	Pslets+*	0.316	0.353	1.371
Unemployment rate	Punem+	0.050	0.311	1.052
	Constant	-9.126	0.000	0.000

+ variables at GOR region x year

Model Summary

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	Cox &	Nagelkerke
-2 L L	Snell R Sq	R Sq
3374.64	0.013	0.290
N cases	105,462	

Note * in final simulations the coefficients for two variables (exrent2 and pslets) were set at zero

Comparison of the models shows general consistency with similar direction of effect for most variables, the only exceptions being the 'exrent2' variable (negative in this model) and the pslets variable (now positive, but still not significant). It was decided to set these coefficients at zero in the final version of the simulations, on the grounds that their effects were counter to expectations, perverse, inconsistent with other models, and tending to lead to implausible predictions. In one case (pslets) the coefficient was in any case not significant. In the other case the variable was working against the related overall rent variable. In these EHS models these variables were in any case imperfectly matched spatially to the individual observations as this matching was at the very broad GO region level.

A further logistic regression model was also developed based on the Public Voice survey and its retrospective question about sofa surfing. This model is not currently used for prediction within the SRHMM because of its smaller sample, limited locality-linked variables, and the issue of using current attributes to predict past experiences. However, the model does provide some further insights, including the strong links with other forms of core homelessness, the positive association with migrancy, similar patterns in relation to older households, low income and financial difficulties. This survey should pick up sofa surfing involving short stays which do not get picked up on normal household surveys, but this group is also captured by new questions in the EHS (only applied from mid 2017). In a future iteration a larger sample from this Public Voice survey could support analysis of retrospective experiences in the recent past (last 2 years).   g