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research article

Capturing the neglected extremes of UK poverty: a composite modelling approach to destitution and food bank usage

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'Destitution' has re-entered the lexicon of UK social policy in the 2010s, highlighted by the rapid growth of food banks and rough sleeping in a context of controversial welfare reforms and austerity policies, yet theoretical literature on this remains limited. Specialist surveys have been developed to measure and profile these phenomena, but these remain separate from the mainstream statistical approach to poverty, which relies heavily on large-scale household surveys. Evidence from recent work in this area, including qualitative evidence, is very suggestive of risk and driving factors, but it is difficult to weigh the relative importance of different factors or to predict the effects of policy measures. A composite survey approach is developed, linking a specialised survey targeting households at risk of destitution with a major national household panel dataset, to enable predictive models to be fitted to data including significant representation of hard-to-reach and non-household populations. Models predicting destitution and food bank usage are developed and compared, highlighting the roles of key factors. Vignettes are used to show how the risks vary dramatically between households in different situations. The potential role of such models in micro-simulation or prediction of impacts of different scenarios is discussed.

Key words destitution • poverty • food insecurity • combining surveys • modelling risks

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Introduction

Until relatively recently there has been little reference to 'destitution' within UK social policy literature, other than with regard to asylum seekers and other vulnerable migrants, who frequently lack access to welfare benefits ([Malfait et al, 2017](#); [McKeever](#)

et al, 2018). However, as ‘welfare reform’ began to unfold post-2010, and food banks expanded rapidly across the country (Loopstra et al, 2015; Bramley et al, 2021), concerns have mounted about the possible ‘re-emergence’ of destitution among UK nationals (Fitzpatrick et al, 2015; 2016; 2020; Butler, 2017; Alston, 2018). Alongside a general ‘freeze’ in the levels of working-age benefits, myriad social security cuts – benefit caps, local housing allowance restrictions, limits on family benefits, and narrowing eligibility for sickness and disability support – have placed increasing financial pressure on low-income households (Cribb et al, 2017; Portes and Reed, 2017). The rollout of Universal Credit (UC), particularly with its ‘five-week wait’ and debt deduction characteristics, appeared especially problematic (Corlett et al, 2022; Vizard and Hills, 2021; Hardie, 2022), while national and local emergency welfare assistance schemes have been eroded, especially in England (National Audit Office, 2016; Gibbons, 2017). There were also rising concerns about ‘in-work poverty’, especially that associated with highly insecure and marginal forms of work such as ‘zero-hours’ contracts (Bailey, 2018).

We start by reviewing the concept of destitution and its application, both in developing countries and in the UK, as an exemplar of a developed economy. After setting out our key research questions, we further clarify and justify the specific definition of destitution adopted in this UK context. The data and methods are then described in more detail, entailing the combining of data from two complementary surveys. Predictive models are derived from this exercise to shed light on factors associated with destitution, and the closely related phenomenon of food bank usage. Individual risk profiles are then discussed using the models to populate vignettes of diverse households. The concluding discussion draws out some significant implications for welfare policy while also assessing the potential value of the methodology to support policy simulations, and also noting some limitations.

Destitution concept in developing and developed country contexts

There is a surprisingly limited literature on the conceptual basis for ‘destitution’, or on the theoretical rationale for composite multivariate indicators of severe poverty which are increasingly deployed in development studies and from time to time labelled as indicators of destitution (for example, Alkire and Santos, 2014; Alkire and Seth, 2015). The most helpful strand of more recent literature stems from Dasgupta (1993), writing from a development economics perspective, who argued that the standard theory of resource allocation ‘does not make any essential use of the idea of basic commodity needs... the most fundamental needs: those that are necessary for sheer survival, best exemplified by nutrition, shelter, sanitation and health care’ (p.11). This should entail reviewing ‘biomedical literature on food deprivation, and the ways in which individuals try to adapt to such circumstances’ including ‘what effect this has on their ability to work and produce commodities’ (Dasgupta (1993)). Following on from this Devereux (2003) offered the following working definition of destitution:

Destitution is a state of extreme poverty that results from the pursuit of ‘unsustainable livelihoods’, meaning that a series of livelihood shocks and/or negative trends or processes erodes the asset base of already poor and vulnerable households until they are no longer able to meet their *minimum subsistence needs*, they lack access to the *key productive assets* needed to escape

from poverty, and they become *dependent* on public and/or private transfers.
(p.11, emphases in original)

The focus on minimum subsistence needs aligns with Dasgupta and indeed other contributions to extreme poverty definition (see for example [Gordon et al \(1995\)](#) report to UNICEF on Human Rights Minimum Core Obligation) but adds additional focus on ‘assetlessness’, on access to (not necessarily ownership of) productive assets (for example, land, livestock), and on whether relief transfers from public or private sources are available. This definition proved to be applicable and of value in contemporary studies in Ethiopia ([Sharp, 2003](#)).

In another strand of literature based on Indian experience, [Harriss-White \(2002\)](#) and others argued that social exclusion and political powerlessness can contribute to destitution, by blocking access to certain shared productive assets or to transfers within families or communities. Building on this, [Green \(2009\)](#) offers a social anthropological perspective on chronic poverty, arguing that in essence ‘Destitution is *social status*. Destitution represents the condition in which people become disengaged from the moral obligations of mutuality which constitute the matrix of the social. The destitute have lost their rights to dependent status’ (p.9).

Viewed in this way, destitution is expected to be found most commonly in ‘highly unequal and differentiated societies such as India’, as well as in countries ‘which do not have widespread systems of emergency assistance and social welfare’ (p.10). Those who are destitute ‘thus have to rely on the unpredictability and humiliation of charity and alms’. One might add that this description also fits Britain in the nineteenth century, the era of the Poor Law, which was designed for the relief of destitution, not poverty.

In translating these concepts and insights into a developed country context (twenty-first century UK), we would argue that the destitution concept does have an economic core in terms of the resources needed to meet basic subsistence needs, while also having an important social dimension around access to assets, welfare and/or family support. Clearly there is less emphasis on the close nexus between nutrition and the ability to work productively in producing food and other essentials. In addition, access to clean water and sanitation, and to health services, would hopefully be unproblematic in such contexts (albeit perhaps under some challenge in contemporary UK) so the focus is more sharply on the basic essential material household consumption items – food, clothing, shelter, hygiene (and in a northerly climate, heat and light).

The focus on destitution is arguably justified as a distinct concept within the broader field of ‘poverty’, because it is closer to an absolute concept than mainstream poverty measures, dealing with the most basic (foundational) needs for physical survival and bodily health and integrity ([Maslow, 1943](#); [Hick, 2012](#)). As such there is a clearer imperative for action to resolve these basic shortfalls, which is likely to be agreed on by people coming from a wide range of moral standpoints (see [Dasgupta, 1993](#): 5–8), and arguably with a suspension of normal qualifications or elements of conditionality in welfare systems ([Watts and Fitzpatrick, 2018](#)). A focus on destitution highlights holes in the ‘welfare safety net’ which could threaten to undermine the legitimacy of the regime or implicit social contract ([Gibbons, 2017](#); [Alston, 2018](#)), while potentially calling for distinct or abnormal interventions in some cases (for example, adults with complex needs), especially where the external social costs of non-intervention may be high ([Bramley et al, 2015](#)).

Destitution is now widely referred to in the UK, but there are significant issues of definition and measurement to be addressed before engaging with the equally controversial aspects of drivers and their relative importance. Poverty definition has always attracted a degree of controversy, as rehearsed for example in [Centre for Social Justice \(2012\)](#), [Gordon \(2018\)](#), [Mack \(2018\)](#) and [Social Metrics Commission \(2020\)](#). There are attempts at measuring severe poverty but no agreed definition ([Bramley et al, 2018a: 39–41](#); [Bourquin et al, 2019: 52–74](#)), and the same could be said of ‘absolute poverty’ – the UK government publishes such a measure but this is simply the commonly-used relative low equivalised income measure with a fixed price base set a few years previously (for example, 2010). The present authors believe that the soundest basis for justifying a particular definition of poverty and, within that, of destitution lies in the ‘consensual’ approach to poverty definition and measurement ([Gordon, 2018](#); [Mack, 2018](#)). Since the countering of such ills entails asserting positive rights, in a democratic society, clear majority consent to granting such priority seems to be called for.

[Fitzpatrick et al \(2015\)](#) developed a definition of destitution, discussed further later in the article, based on expert consultation and public consensus, which has been adopted and promoted by the Joseph Rowntree Foundation (2016) and which informs the empirical studies conducted for them since 2015 and used in the analysis in this article. Others use the term but without necessarily adhering in strict terms to this definition ([Bhattacharjee and Lissauskaite, 2021](#)). At issue in part is the respective roles of income, material deprivation, and other indicators of immediate need ([Bramley et al, 2015: 8–14](#)). Over-reliance on income alone raises concerns about the validity of survey-recorded incomes at the very bottom of the scale, including negative values, which appear to be often misleading, due for example to misreporting or fluctuations in self-employment earnings ([Brewer et al, 2009](#); [Brewer et al, 2017](#)).

These problems of measuring income are not trivial, but they are not the greatest weakness of mainstream household surveys. Such surveys do not cover people who are not usually resident in private households, who may only represent around 2% of the overall population, but who appear from our ‘Destitution in the UK’ surveys to represent up to 40% of the destitute population ([Carr-Hill, 2015](#); [Bramley et al, 2018a](#); [Fitzpatrick et al, 2016](#); [2020](#)), with similar shortcomings in respect of homelessness. Further, there are serious grounds for believing that response rates to large scale household surveys are particularly low for some groups at risk of destitution and, particularly when such surveys are panels or have a repeating panel element, there is also an abnormally high attrition rate (for example because of household or housing instability) ([Hamilton and Hayes, 2020](#); [Bramley, 2021a: 50 and 56](#)).

It is arguable that the survey-dominated mainstream approach in Britain has led to a degree of complacency, with poverty seen as flatlining even while destitution may well have been increasing ([Bourquin et al, 2019](#); [Joseph Rowntree Foundation, 2020](#)).

Research aim and questions

The overall aim of this article is to show how far we can overcome the limitations of mainstream household surveys to investigate the incidence, risks and drivers of

destitution in the UK. This has been contextualised by a brief review of the concept of destitution itself. Specific research questions then are:

RQ1 What are the more important factors currently associated with destitution in the UK?

RQ2 Who is most at risk of destitution in the UK in the late 2010s?

RQ3 Are there significant differences between the risks and drivers of food bank usage and destitution?

Definitions

Destitution

The definition of destitution was developed as described in [Fitzpatrick et al \(2015\)](#). Under this definition, people are destitute if:

(a) they have lacked *two or more* of the following six essential items over the past month, because they cannot afford them:

- shelter (they have slept rough for one or more nights);
- food (they have had fewer than two meals a day for two or more days);
- heating their home (they have been unable to heat their home for five or more days);
- lighting their home (they have been unable to light their home for five or more days);
- clothing and footwear (appropriate for the weather);
- basic toiletries (such as soap, shampoo, toothpaste and a toothbrush);

and have an income below the standard UK poverty line (60% of median income after housing costs for the relevant household size); and have no or negligible savings;

or:

(b) their income is so ‘extremely low’ that they are unable to purchase these essentials for themselves.

The relevant weekly ‘extremely low’ income thresholds were obtained by averaging: (i) the actual mean spend on these essentials by the poorest 10% of the population; (ii) 80% of the JRF ‘Minimum Income Standard’ costs for equivalent items;¹ and (iii) the amount that the general public thought was required for a household of their size to avoid destitution, in an omnibus survey we undertook as part of the original study. The resulting weekly amounts (after housing costs, in 2019) were £70 for a single adult living alone, £95 for a lone parent with one child, £105 for a couple and £145 for a couple with two children. Again, this was subject to insufficient savings being available to make up for the income shortfall.

The inclusion of the second (very low income) criterion as an alternative to criterion (a) was justified primarily to reflect the judgement, supported by a large majority of the 2014 omnibus sample respondents,² that avoiding material deprivations only through reliance on charities or assistance from friends or relatives (other than parents) was not acceptable. This view of the unacceptability of reliance on charity or non-family support echoes the international definitions reviewed earlier. This second criterion could also reflect the specific situation of some households (for

example, women fleeing domestic violence) suddenly cut off from income and other home-based resources.

It should further be underlined that the consensual principle (clear majority support in omnibus survey) governed the choice of which consumption items were treated as essential, the number which had to be lacked to be unacceptable (two), and the time periods over which these lacks were experienced before counting.

While this is the formal definition, there is an additional implicit criterion which arises from the operational context for the implementation of this definition in the specialised surveys conducted in these studies. This survey was conducted with users of mainly voluntary sector 'crisis' services in a sample of case study areas across the UK, and measured numbers and incidence rates only count households who have taken the step of contacting such an agency (for example, advice services, hot food providers, food banks, homelessness support centres and hostels, migrant support services, local welfare assistance funds). It is important to reflect on this when implementing destitution indicators in other surveys with a more general household population sample. Many households who face a period of very low or no income (and no savings) may have assets to enable them to ride this out for a period without hardship – food in the freezer or larder, saleable possessions, credit cards or other borrowing facilities, or family (and possibly friends) to whom they can turn for material help. Again, this insight parallels the emphasis on assets and on access to support in the international development literature.

Data and methods

The analysis in this article draws primarily on two independent survey data sets, with supplementary analysis using a third.

Destitution in the UK survey

The first of these is the Joseph Rowntree Foundation 'Destitution in the UK' survey (DUKS) of users of crisis services across the UK in autumn 2019, the third in a series of surveys explicitly targeted at people with a high likelihood of experiencing destitution (Fitzpatrick et al, 2020). This survey was built around implementing the JRF destitution definition and sought to apply a relatively short 'census-type' self-completion survey to all users of a stratified random sample of crisis services in a one-week period, with interviewers or service staff/volunteers available to assist respondents as necessary. The survey questionnaire was translated into 23 languages with a significant presence in the localities covered by the survey, and this facility was widely used. The sample of 18 localities were chosen to represent a balance of regions and countries of the UK, the urban – suburban – small town – rural spectrum and levels of deprivation (Bramley et al, 2018b, Appendix D). Local crisis support services in the following categories (advice; hot food or food bank; homelessness and related; migrant-related; local authority welfare assistance funds) were identified in a comprehensive mapping exercise by a local coordinator, and a stratified random sample was selected (stratified in terms of these type categories and a broad size distinction of large vs small/medium), with replacement from the nearest equivalent type/size where services refused or withdrew. Across the 18 localities 113 services participated in the survey.

The survey was conducted over a three-week period in October–November 2019, and achieved a response of N=3914 households representing 64% of the estimated unique in-scope service users that week. This can be grossed up to a ‘weekly’ total for each area using the reciprocal of the response rate and the probability of selection of each service. The questionnaire included detail about the frequency of usage of the service where sampled plus each other type of crisis service in scope over the past year. Missing values in this dataset were filled using multiple imputation procedure based on use of all available data in the survey. That enabled an annual multiplier to be calculated for each household in the survey, based on the ratio of 52 weeks to the total number of in-scope service usage episodes (average value across the sample approximately 5). Most results from the survey are reported on an annual basis, which gives more representation to occasional service users and relatively less to intensive or chronic service users.

A large number of secondary datasets were analysed at local authority district (LAD) level in order to generate a set of composite indices of expected levels of destitution, in three sub-categories: migrants, complex needs, and UK-other households (see [Bramley et al, 2020](#): S.3.3 and App D). For the statistical modelling analysis reported in this article we use a normalised weight derived from dividing the annual weight by its mean value.

UK Household Longitudinal Survey

The UK Household Longitudinal Survey (UKHLS, widely known as *Understanding Society*) is the main UK Research Council-funded general multi-purpose household panel survey which has been running for over a decade and was the larger scale successor to the former British Household Panel Survey which ran for 16 years up to 2007. In this study we utilise data from the latest-available general wave (10) covering 2018/19, plus some data from immediately preceding waves to fill gaps or identify recent changes. The survey is widely documented (see <https://www.understandingsociety.ac.uk/about/about-the-study> and [UKDS, 2020](#)). For the purpose of this analysis, we have used UKHLS to generate a representative sample of the UK household population containing information enabling the application of our destitution definition (modified as appropriate) as well as certain other indicators of destitution (including food bank usage). This survey also provides a range of contextual demographic, socio-economic and geographic information which could help to explain the varying risk of these deprivations. More specifically, we sought to create a subset of such data containing variables which could be matched, precisely or approximately, to a similar set of variables derivable from the Destitution (DUKS) survey.

The rationale for this was that we were trying to create a dataset which would be more fully representative of the range of circumstances within which people experiencing or at risk of destitution are situated. As emphasised in the introduction, a high proportion of people who actually experienced destitution appeared to be in the non-private household population, or at best tenuously linked to a household. They may well also have had a higher probability of being in the non-responding part of mainstream survey samples, or the attrition from panel surveys such as UKHLS ([Carr-Hill, 2015](#)). At the same time, there will be some households within the wider household population covered by UKHLS who do experience destitution, some of

whom use crisis services and some of whom do not. Therefore, for this analysis our approach is to combine the two datasets, DUKS and UKHLS, for a common set of variables, to enable an analysis of the relationships between a range of driving, risk or contextual factors and the actual incidence of destitution and related deprivations. As with the DUKS survey, we apply a normalised weight to UKHLS analysis by dividing the household grossing weight by its mean value.

The UKHLS destitution flag uses the same income and savings thresholds, but has to approximate the material deprivation criterion and also proxy the issues underlying use of a crisis service.³ We turn to an earlier survey (PSE) to explore and calibrate these elements.

Poverty and Social Exclusion Survey UK 2012

To reflect the importance of assets and informal support, highlighted in background conceptual literature, as well as detailed differences in the questions on material deprivations included in different surveys, a further investigation was conducted using the UK Poverty and Social Exclusion Survey 2012, the source with the widest range of relevant indicators. First, we looked at what combinations of material deprivation indicators available in our mainstream survey (UKHLS) would provide the best match with the ‘two or more of the six basic essentials’ listed earlier. Two options appeared to perform equally well in terms of matching the incidence of lacking the six basic essentials within PSE, and also in terms of predicting further indicators of destitution in PSE, namely skimping on food, subjective severe poverty, and using Citizens Advice Service (exemplar of key service used in Destitution study). These options were reporting nine of the total (29) available deprivations in UKHLS, or two or more of the most relevant subset of six; in practice we used the first option. Second, we looked at other indicators of receiving material help from family/friends in five ways (food, bills, clothes, toys, big electrical goods) and at indicators of limited creditworthiness (for example, relating to credit cards, bank loans and so on), but these did not improve the fit to our key indicators of skimping on food and so on. Third, we looked at including a fairly broad indicator of problem debt and arrears (including housing costs, Council Tax and so on), and this did improve the fit to skimping on food, severe poverty and use of CABs – this does appear to be a good indicator of lack of support and relevant assets. Therefore, for our composite destitution indicator based on UKHLS, we combine the modified 9+ material deprivations and/or low income/no savings with this indicator of debt and arrears.

Combined analysis

This exercise may be viewed as the addition of two sets of cases (households) which are partially non-overlapping. [Table 1](#) sets out a classification in terms of combinations of four binary differences: (a) whether in private household; (b) whether uses crisis service (ever, within a year); (c) whether destitute; and (d) whether responding to relevant surveys. Two columns highlight whether such cases would be included in UKHLS or DUKS. The final comment column indicates how such cases would be reflected in our composite modelling analysis. Households may be captured directly in one or other, or in some cases (rows 4 and 6) both surveys – in such instances there may be a case for downweighting when estimating total numbers affected. Households not responding

Table 1: Categories of Case in composite modelling approach

Row	In private household?	Uses crisis service(s)?	Destitute?	Responds survey(s)	Included in UKHLS	Included in DUKS	Comment
1	Yes	No	No	No	No	No	Part of base popn, weights allow for
2	Yes	No	No	Yes	Yes	No	Part of base popn
3	Yes	Yes	No	No	No	Yes	Captured in DUKS, via weights
4	Yes	Yes	No	Yes	Yes	Yes	Included both surveys (downweight in count)
5	Yes	Yes	Yes	No	No	Yes	Included in DUKS
6	Yes	Yes	Yes	Yes	Yes	Yes	Included in both (downweight in count)
7	Yes	No	Yes	No	No	No	Excluded from both
8	Yes	No	Yes	Yes	Yes	No	Included in UKHLS
9	No	No	No	No	No	No	Excluded both surveys (arguably rare)
10	No	No	No	Yes	No	No	Excluded both surveys (arguably rare)
11	No	Yes	No	No	No	No	Captured in DUKS, via weights
12	No	Yes	No	Yes	Yes	Yes	Included in DUKS
13	No	Yes	Yes	No	No	No	Captured in DUKS via weights
14	No	Yes	Yes	Yes	Yes	Yes	Included in DUKS
15	No	No	Yes	No	No	No	Excluded both surveys (arguably rare)
16	No	No	Yes	Yes	No	No	Excluded both surveys (arguably rare)

to surveys may be reflected indirectly by grossing up weighting schemes in both surveys, but here we make deviating assumptions between the two surveys: we believe UKHLS will have non-response and attrition bias not fully corrected by weighting scheme, whereas we believe our DUKS survey is representative of users of in-scope crisis services after grossing up.⁴ UKHLS does reach a potentially significant group of private households who are destitute but do not use crisis services and therefore do not feature in DUKS (row 8), but fails to reach another group who are in private households but, owing to transience, building type or stress, have a disproportionate non-response or attrition tendency which is unlikely to be fully corrected in survey weights (row 7). The latter group, who also do not use crisis services, are probably the most significant group omitted from our approach. Based on extensive in-depth research experience with homeless and other non-household groups with severe or complex needs, our view is that groups 9, 10, 15 and 16 (non private household individuals/groups who do not use crisis services ever over a year) are rare.

This analysis can be used to estimate total numbers experiencing destitution in the UK and reconcile with published estimates from [Fitzpatrick et al \(2020\)](#), allowing for areas of overlap. However, the main focus of this part of the research has been to examine relationships rather than to estimate the exact size of these sub-populations. For that purpose, the overriding advantage of combining the two datasets was that it gave us both a large number of observations of households at risk and actually experiencing destitution and a much larger number still of observations at low risk with little or no indication of experiencing such problems. This enabled the effects of differences in driving, risk and background control factors, between those experiencing destitution and those not, to be much better calibrated. In practical terms, the two datasets of common variables were combined using the 'normalised' (annual) household weights derived in each case, both having an average value of 1.00.

The number of usable cases from Wave 10 of UKHLS for this purpose was 18,750, to be joined to the 3,914 from DUKS (although missing data on relevant variables reduced the combined usable sample to around 16,380). This shows that the destitution sample, although of a good size, was not dominant in terms of the overall modelling dataset. There were cases flagged in the UKHLS part of the sample as destitute, but their number (266) and incidence (1.4%) was lower than would be implied by the national annual estimate derived from grossing up of the destitution survey (3.75%), even when allowing for c.40% of destitute cases being not in private households (making it 2.4%), although well above the national annual weekly estimate (0.67%). Three factors affected this comparison: the likely under-representation of those at risk of destitution within the household population in UKHLS due to nonresponse and attrition (row 7 in [Table 1](#)); the fact that we had to use different measures of material deprivation and a supplementary criterion of financial difficulty in our UKHLS version of 'likely destitution'; the reality that when measuring this in UKHLS we were using a mixture of 'last month', current and annual time exposures.⁵

For the purposes of national descriptive totals, we applied an uplift factor of 1.525 to UKHLS cases of predicted destitution to match the national total estimated numbers experiencing destitution over a year reported in [Fitzpatrick et al \(2020\)](#) who were residing in private households.⁶ This was effectively allowing for the aforementioned factors affecting the UKHLS based estimates.

The common dataset derived from combining the two surveys gave us two potential dependent variables of interest, and 44 potential explanatory variables

covering demographics (age, gender, household type), ethnicity and migrant status, health and disability status, work and benefit status and changes therein, and housing tenure. Available variables also included adverse events (including eviction and relationship breakdown) as well as financial difficulties, income and savings, and whether households had received material help from families, or whether they had living relatives. Some banded area (LAD level) variables relating to general levels of destitution, complex needs, certain housing issues were included, as well broad regional dummies and a rural flag.

The primary interest in this article is in destitution, so we mainly focus on this model. However, food bank usage is of some interest, both in terms of current UK policy discourse and more specifically because we know, from national surveys of food bank users, that this is essentially a subgroup of destitute households, with c.95% of food bank users classified as destitute on the definition given earlier (Bramley et al, 2021: 41), although only a minority of destitute households use food banks.

Modelling approach

The main analysis utilised binary logistic regression models to identify significant predictors of the two outcomes of destitution and food bank usage, seeking through progressive elimination of insignificant terms the best combination of predictors. All regressions were weighted by the normalised annual weights, which have a mean value of 1.0 within each survey and overall. For the destitution model no insignificant predictors were retained. Because food bank usage nests within destitution, it is appropriate to use a common predictor variable set for both outcomes, to avoid inconsistent predictions, although this meant that some individual variables in the food bank model were insignificant. This approach also reflects the insights of Mood (2010) and Breen et al (2018), which caution against comparing effect sizes (for example, odds ratios) in logit models between models containing different variable sets or applied to different sub-groups, due to the roles of omitted variables and unobserved heterogeneity in these non-linear models.

The models were essentially observational and cross-sectional, and partly for this reason entail considerable caution about causal interpretation. However, most of the explanatory variables refer to an immediately preceding time period, varying somewhat in duration, so this is not a case of trying to explain or predict a retrospective variable from current attributes. While associations shown from models which control for a wide range of other factors may plausibly suggest a causal role, care is needed because of possible selection effects, reverse causation or omitted variables bias. One particular danger to be avoided in this case is the danger of spurious correlation arising from the inclusion of the same variable, or a very closely related variable, on both sides of the equation. Two variables which play a key role in creating the composite destitution indicator, income and financial difficulties, have to be excluded from the explanatory variables set to avoid this problem. Another way of looking at this is to regard these variables as endogenous or intervening variables, and in this simple single-equation setup their effects are reflected partially in the coefficients on other exogenous variables which influence income as well as destitution.

In addition to providing a general picture of the relative importance of different factors, these models also provide a basis for predicting the risk of adverse outcomes, both at an aggregate level (for example, regions or localities) and at an individual level,

Table 2: Logistic regression models for destitution and food bank use based on composite dataset from 'Destitution' survey and UKHLS, 2019 (using normalised weights from each survey)

Variable description	Varname	Destitution			Food bank		
		B	Sig.	Exp(B)	B	Sig.	Exp(B)
Aged under 25	ageu25	0.739	0.000	2.094	-0.352	0.004	0.703
Born overseas	bornos	0.938	0.000	2.554	0.295	0.006	1.343
English language used	englishlangd	-1.120	0.000	0.326	0.610	0.000	1.840
Couple household	cpl	-0.819	0.000	0.441	-0.716	0.000	0.489
Lone parent family	lpf	-0.628	0.000	0.534	-0.489	0.000	0.613
Number of children	nkids	0.257	0.000	1.292	0.012	0.734	1.012
Relationship breakdown	relbd	-0.691	0.000	0.501	0.236	0.047	1.266
Working HoH	works	-0.943	0.000	0.389	-0.814	0.000	0.443
HoH lost job	lostjob	0.574	0.000	1.776	0.573	0.000	1.773
Lost benefit income	lostben	0.440	0.000	1.553	0.632	0.000	1.881
Universal credit	ucd	1.234	0.000	3.434	1.021	0.000	2.776
Mental health problem	mhprob	0.690	0.000	1.994	0.864	0.000	2.372
Poor health reported	poorhlth	0.644	0.000	1.905	0.140	0.171	1.150
Social rent tenure	socr	-0.567	0.000	0.567	-0.045	0.543	0.956
Home owner	own	-1.902	0.000	0.149	-1.832	0.000	0.160
Log estimated savings	lestsavgb2	-0.819	0.000	0.441	-0.384	0.000	0.681
Parents give mater help	parmaterhelp	0.692	0.000	1.997	0.463	0.000	1.589
Other relatives living	othrelative	-1.354	0.000	0.258	-1.237	0.000	0.290
Banded destitution level	pdestbnd	0.255	0.000	1.290	0.164	0.000	1.178
	Constant	3.692	0.000	40.136	-1.080	0.001	0.339
N of Cases (unweighted)		16,376			16,380		
Chi-sq		8630.4			3705.2		
deg frdm		19			19		
Signif		0.000			0.000		
-2 Log Likelihood		7648.8			5985.6		
Nagelkerke R-sq		0.621			0.436		
% correct predn		92.9			94.3		

Note: following variables excluded to avoid spurious correlation: log of equiv income; material deprivation; financial difficulties; following variables in dataset excluded as not significant in destitution model: female, age under 35, black, south Asian, couple family, multi-adult hshld, high share of income from income related benefits, disability, evicted from private renting, no or negligible savings dummies, food banks per population, regional dummies, rural indicator.

for different households with particular combinations of attributes, in the form of vignettes. This highlights both the extreme variation in risk level and also the particular combinations most likely to trigger the outcome. This also provides a basis for discussion of the possible development of microsimulation approaches to examine the effect of different external shocks or policy measures, utilising these predictive models.

Predictive models and main drivers

Destitution

Table 2 shows the logistic regression models fitted to the composite dataset to predict the log-odds of destitution and of food bank usage. The summary statistics at the bottom show that this destitution model has reasonably good fit for such a micro model, with 93% of correct predictions overall (63% of destitute cases) and a Nagelkerke R-sq measure of 0.621. Nineteen variables were significant at the 5% standard. The range of types of variable contributing was quite wide, as illustrated by the sub-groupings highlighted in the table (age, migrancy, household demographics, work and benefits, health, housing, assets and support, and locality level effects) and this suggests that there is significant potential for using such a model in simulation exercises or proxy predictions.

The strongest individual variable effects, based on odds ratios⁷, are being a home owner and having other living relatives (negative, or protective effects), and applying for and/or receiving Universal Credit (positive, OR=3.34). The latter ties in with qualitative evidence from the study which indicated that, in this particular time period, the roll-out of this new form of income-related working age benefit was particularly problematic, owing to its 'on-line only' application process, five-week wait for payment and debt deduction from payments (Fitzpatrick et al, 2020; Hardie, 2022). By contrast, lost benefit income and lost job had more moderate effects, alongside the effect of actually having work in reducing risk substantially (OR = 0.39).

The demographic effects included a strong positive effect from being a migrant (born overseas, OR 2.55), being young (under 25, OR 2.09) and negative effects from being a couple household (OR 0.44) or (surprisingly to some) a lone parent (OR 0.53), albeit with increased risk associated with having more children (OR for 1 extra child 1.29). In addition to being a migrant (born overseas), having limited English was clearly associated with destitution (OR for using English questionnaire = 0.33), while ethnic effects were apparently more marginal, albeit subject to data limitations.⁸ Both poor physical health and mental health problems had quite strong positive effects in increasing destitution risks (OR 1.91 and 1.99 respectively). These effects may have indirectly reflected inadequacies in the health-related welfare benefits, judging by qualitative evidence in Fitzpatrick et al (2020).

Housing tenure showed up in moderate negative (protective) effects from social renting (OR 0.57) as well as the strong home ownership effect noted earlier, with the alternatives including both private renting and not being a private household. Somewhat against expectations, relationship breakdown appeared to be associated with lower risk of destitution (OR 0.50). Furthermore, there were particularly interesting effects associated with two other variables capturing the issue of family support. As already noted, having other relatives living was consistently and very strongly associated with lower risk of destitution (OR 0.26). However, parents actually giving material support had a moderate *positive* association with destitution; this was interpreted as a situation where endogeneity or reverse causation dominates – that is, when this variable was flagged, it was signalling that the household was in distress, parents were responding as they could, but this was often not enough to prevent destitution. Variables tested but excluded due to non-significance or for other reasons are listed below Table 2.

Food bank usage

As expected, the model for food bank usage is similar in many respects, as expected given that this is clearly a subset of destitution in the UK currently. The overall fit is less good, indicated by the smaller chi-squared statistic and log-likelihood statistics and the Nagelkerke pseudo R-squared figure of 0.436. Nevertheless, the overall percentage of correct predictions was similar at 94%, albeit with a much lower percentage (20%) of actual food bank users predicted by the model (with the conventional 50% cutoff).

Of the 19 variables, 12 had similar effects to those in the destitution model in terms of scale, direction and significance. One variable had a noticeably weaker effect but in the same direction (born overseas). Three variables were not statistically significant for food bank usage: number of children, poor health, and social renting tenure. Meanwhile, three variables had significant effects but with the opposite sign to that found for destitution overall: aged under 25 now had a negative effect; having good English now became a positive predictor, as did relationship breakdown. These findings are consistent with descriptive data on food bank user profiles (Bramley et al, 2021), including the lesser emphasis on young adults, more emphasis on indigenous UK population rather than migrants, more focus on social renters, and a more conventional view of the adverse effect of relationship breakdown on poverty and other deprivations, such as homelessness.

Individual risk profiles

While model results summaries such as Table 2 are valuable for focusing on the significance and impact of particular variables, or groups of variables, in terms of their systematic association with destitution and related deprivations, it is also of value to look in a more holistic way at the situation of representative households with particular combinations of characteristics and circumstances. Because these are essentially micro, household-level models it is possible to generate a predicted probability of a household with a particular combination of attributes experiencing destitution or using food banks. This form of analysis, using illustrative ‘vignettes’, is useful both for getting a sense of the types of household circumstances which are associated with high risks of experiencing these deprivations and for gaining an appreciation of the really dramatic differences in risk between differently-situated households. This is also potentially appropriate as a way of looking at effect sizes when working with non-linear models such as this, as these can vary greatly depending on the combination of attributes of a household.⁹

Table 3 presents six vignettes of households across the range from the comfortably-off family through a range of situations characterised by reducing levels of income and savings, less secure work, citizenship and benefit statuses, greater health-related and debt problems, less secure housing, and less informal support. Case 1 represents the former situation, showing that for this family at this point in time the risk of destitution was vanishingly small (0.09%), one-fourteenth of the average population risk, with the risk of food bank usage also similarly tiny (0.16%). Case 2 is similar, although here the household did have some risk factors as a lone parent having experienced a relationship breakdown, with limited savings. Nevertheless, for this household, given work and family support and social renting tenure, the risks were still very low at 0.8% for destitution, below the 1.3% national average for destitution, and 0.9% for food bank usage.

The next two cases illustrate intermediate situations where destitution is a tangible risk but still relatively unlikely to occur. Case 3 is a couple family with three children,

Table 3: Vignettes of households at varying risk of destitution and food bank usage (percent predicted to experience each type of deprivation)

Case No	Description	Destitute	Food bank
1	UK, 40s, couple fam 2ch, £10k sav, owner	0.09% (0.05%, 0.13%)	0.16% (0.12%, 0.20%)
2	UK, 30s, LP +1ch, works, £1k sav, Soc Rent, rel b/down, fam suppt, poorer area	0.8% (0.43%, 1.17%)	0.9% (0.68%, 1.12%)
3	UK, 35, cpl family 3 kids, working, priv rent, no savings, poor area	7.4% (4.2%, 10.6%)	1.7% (1.29%, 2.11%)
4	UK, 40, LPF 2 kids, lost job, relationship b/down, on UC, priv rent, modest savings	9.7% (5.6%, 13.9%)	9.9% (7.7%, 12.1%)
5	UK single 23, works, £0.05k sav, priv rent, poor health, no family	41.9% (30.6%, 53.2%)	5.7% (4.4%, 7.0%)
6	Migrant, Black, single, ltd English, lost job, no sav; priv rent, poor health, no support	83.4% (77.0%, 89.8%)	6.3% (4.9%, 7.7%)

Notes: 95% confidence intervals for predicted percent shown in parentheses; default values for variables not mentioned earlier are generally zero for binary indicators, except English language (1); and 'low' (1) for area destitution band

working on a relatively low income, in private renting with no savings living in a poorer area of the country, with other living relatives but no overt support from parents. For this household the risk of destitution is 7.4%, roughly six times the national average, although the risk of food bank use is quite low at 1.7%. A family of this sort is at risk in terms of potential debt and/or housing insecurity given any impairment of income from work. Case 4 is a lone parent with two children with modest savings living in private renting, who has experienced both job loss and a relationship breakdown, and is currently applying for or receiving Universal Credit. For this household the risk of destitution approaches one-in-ten (9.7%) with the likely form this taking being obliged to use a food bank, despite receiving some family support.

The last two cases illustrated represent households at high risk of destitution, of the order of 50% or more based on the models and their combination of attributes. Case 5 is a UK born single male aged 23 who works but for a low earnings level, has limited savings (and some debt), is living in private renting, has experienced eviction, has poor health, and has no living relatives or family support. In this case the risk of destitution is 42%, while the risk of food bank use is much lower at under 6%; implicitly for this household homelessness is a high risk, with debt and health issues compounding the picture. Case 6 involves a Black migrant male single person with limited English, who has lost his job, with no savings, living in private renting with poor health, and having no family support. For this individual destitution is an 'odds on' outcome with an 83% risk, again much less for food bank usage but very likely to involve homelessness in some form.

Concluding discussion

This article commenced with a compressed discussion of the background, meaning and significance of the destitution concept and its relevance to contemporary UK social policy. Key elements in the concept are that it represents the most extreme form of absolute

poverty, focused on inability to obtain the immediate essentials of life, while bereft of assets or sources of support. This review also pointed to some factors in the recent emergence of this concept and its renewed relevance in UK, which provided the motivation for the empirical investigation reported in this article. This focuses on the potential scope for combining different types of survey to both measure and model destitution.

In relation to this overarching aim, it does appear possible to overcome the limitations of mainstream household surveys to investigate the incidence, risks and drivers of destitution and related deprivations including food bank usage. However, the ability to relate and indeed join such a survey to a specialised 'census-type' survey of users of crisis services (DUKS) is critical, to ensure higher representation of higher risk populations as well as proper representation of excluded non-household and non-responding populations. The combined dataset derived from joining the DUKS and UKHLS surveys is arguably an appropriate basis for calibrating such models, although a few variables are not exactly the same. Some judgement, informed by reference to a more detailed earlier survey (PSE), was needed in determining the exact parameters of the destitution flag in the UKHLS, allowing for differences in questions, timing and the act of going to a crisis service.

It should be emphasised at this point that we are modelling 'destitution' as operationalised in the JRF studies, where there is an implicit third criterion – the use of crisis service(s), assumed to proxy lack of assets or support – beyond experiencing material deprivations and/or very low income with no savings, in the practical definition applied. In principle, it may be argued that having to rely on certain types of support (for example, from parents) or use of certain types of asset (for example, credit card) should not be acceptable in such a definition, but there may not be consensus (clear majority) support for such a judgement. There would probably be more support for the notion that people silently suffering malnutrition or risking their health in an unheated home should be counted as destitute even though they have not used a crisis service. We reflect this area of uncertainty by including as destitute households in UKHLS who meet either of the material deprivation or very low income/no savings criteria and who also report serious problem debt or arrears, a group who were shown in PSE survey evidence to be at high risk of skimping on food or clothing or using an advice service.

The first more specific research question (RQ1) concerned the more important factors currently associated with destitution in the UK. Migrant status, certain benefit issues, loss or lack of work or income, appear to be the most important factors, alongside household composition and access to support. The rollout of the Universal Credit (UC) system stands out as important in this period, along with other loss of benefits, which links to references in the literature to the exclusion of certain groups from social security or welfare support. Mental or physical health problems were both quite important drivers and risk factors, while lack of family support (including parents unable to help sufficiently) clearly played an important role, as anticipated. Less secure housing tenures also contribute to the risk level. Reconciling the two types of survey has underlined the significance of the range of assets and sources of informal support which households may have to enable them to stave off destitution in the face of an income shock, and this links strongly back to the wider international development literature perspective on destitution.

As expected on the basis of recent research on food bank users, the pattern of predictive factors for this sub-group of destitute households was relatively similar (RQ3). The main differences were that young adults use food banks less, while the indigenous UK population are more prominent than migrants in their use, including more social renters, and more people affected by relationship breakdown.

The variation in risk profiles could be quite extreme, but who was most at risk of destitution in the UK in the late 2010s (RQ2)? Young singles, migrants with limited English, people without or losing work, households on or applying for UC, people with mental or physical health problems, renters and people not in private households, and people with no living relatives or parents able to provide material assistance were the higher risk cases. Starting out with no or limited savings and some debts or arrears greatly reduced financial resilience in the face of income shocks or persistently low income. The overriding impression from this form of analysis is that the degree of variation in risk for different households is shockingly wide.

It is suggested that these models have reasonable predictive power, including at individual level as well as at the level of local or intermediate geographies, although there are some limitations within the general household survey dataset used (UKHLS) in some contexts. This opens up the possibility of using them as inputs to policy simulation work, whether at the micro level of individual households or in a macro or regional/local context, including predicting outcomes under changing future conditions, changing policies on particular welfare measures, or the impact of a particular complex shock, such as COVID-19. Examples of the former kind include modelled scenarios for core homelessness and rough sleeping as reported in [Fitzpatrick et al \(2021: ch. 6\)](#) and [Bramley \(2021\)](#), while examples of the latter kind are reported in [Weekes et al \(2020\)](#) and [Bhattacharjee and Lisauskaite \(2021\)](#). Such work is still under development, but clearly one relevant consideration is the predictive accuracy of these models, particularly at the micro level but also for geographical units such as local authorities or regions.

A number of limitations of this work may be identified. The analysis is essentially cross-sectional and observational in nature, and caution is needed in drawing strong conclusions on causality, although some of the strong relationships observed (for example with Universal Credit) are both suggestive and consistent with other types of evidence ([Sosenko et al, 2019](#); [Fitzpatrick et al, 2020](#); [Bramley et al, 2021](#); [Hardie, 2022](#)). Not all variables can be precisely replicated between the two surveys, and this is particularly an issue with destitution itself. The act of attempting to link these two different types of survey has thrown up significant questions about who and what is missing in each case. Area-level effects have been tested using crude dummies and banded indicators, but there is clearly scope for more subtlety on this aspect. No attempt has been made to introduce interaction terms into the modelling, on the grounds that the existing models are rich enough at this stage of development and such effects can be difficult to interpret and lack an overriding case for inclusion. The analysis, and other related work, has thrown up question marks about the extent and impact of non-response and attrition, particularly in UKHLS among groups of interest.

This article contends that destitution is a distinct concept which can be operationalised and is of major and growing significance in the UK. We believe that the UK Social Policy community has been slow and hesitant to pick up on this, with most of the running being made by NGOs rather than academics. Possible reasons for this reticence include a concern not to divert attention from the central issue of poverty, a growing focus on non-material issues of capability and identify, a distaste for the 'Poor Law' connotations of destitution, and an overwhelming reliance upon large scale household survey data, the limitations of which are becoming more apparent in the aftermath of COVID-19. We would argue that the neglected extremes of UK poverty should be a priority focus for study, because they highlight significant and growing failures in the UK social security system to meet basic human needs.

Notes

- ¹ The Minimum Income Standard (MIS) is somewhat more generous than conventional poverty lines, partly because it is conceived as a longer term sustainable 'adequate' living standard. [Hirsch et al \(2016\)](#) reviewed levels between 70% and 100% of MIS, showing progressively increasing material hardship as the level decreased, and 80% was chosen as a conservative level within this range.
- ² In late 2014 an Omnibus survey was used to seek the views of a representative sample of 2000 UK adults on key elements of the definition of destitution, as reported in [Fitzpatrick et al \(2015\)](#) and [Bramley et al \(2016\)](#).
- ³ The UKHLS destitution flag uses the same income and savings thresholds, but since the available material deprivation indicators are different, and less concentrated on the basics of food/clothes/heat and so on, we use a threshold count of 9 from the 29 available, which was shown in supplementary analysis of PSE data to be equivalent and strongly predictive of key indicators associated with destitution. Also, because households may have assets or informal support to tide them over and not need to apply to crisis services, we also apply a third criterion of getting into difficulty keeping up with housing or related bills or finding it very difficult to manage financially.
- ⁴ See [Bramley et al, 2018b](#), especially s.4 and Appendix 4, for discussion of weighting and grossing up and potential sources of error in DUKS survey; it should also be noted that the 2020 DUKS won the Market Research Society's Prize for most 'Inclusive Research' based on the lengths taken to include hard to reach groups, notably the use of questionnaires translated into 26 languages.
- ⁵ The DUKS survey identifies destitution based on information for the last month, while in the case of UKHLS the picture is more mixed. Within UKHLS, the income information is primarily monthly (with some elements estimated from annual); the savings are a mixture of spot and annual; the material deprivations are not explicit about time period but some elements (holiday, contents insurance) are effectively annual; the financial difficulties indicators are also a mixture of current and annual.
- ⁶ This total number for destitution in UK is somewhat lower than the published total, because it effectively does not include the markup applied in [Fitzpatrick et al \(2020\)](#) for users of Local Authority Welfare Assistance Funds not included in the survey.
- ⁷ Odds ratios measure the proportional change in the odds of destitution for 1 unit change in each independent variable. All variables in the model are binary 1–0 apart from number of children (range 0–8, SD 0.42), log of savings (range 4.6–15.2, SD 2.22) and banded destitution level at Local Authority level (range 0–4, S D 1.05).
- ⁸ The Black and South Asian ethnicity indicators in the destitution survey are mainly proxied by country of birth and therefore fail to adequately represent Black or Asian British identities, so this estimated effect should be treated with caution.
- ⁹ The cutoff level of predicted probability of having the characteristic (being destitute, in this case) based on the predictive model which is used when calculating the percentage of correct predictions in standard logistic regression output. Users can vary this value.
- ¹⁰ Further indicators of model fit are included in the supplementary information.
- ¹¹ It is also possible to calculate average marginal effects for particular variables or groups of variables across the whole sample or sub-samples.

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Conflict of interest

The authors declare that there is no conflict of interest.

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