# Mapping the poverty premium in Britain


## Summary:

The 'poverty premium' describes how poorer households pay more than those on higher incomes to access and use essential products and services, such as energy, credit and insurance.

The more money that households spend on essentials, the less they have available to spend in their local area and the more they may be forced to make impossible decisions, such as choosing between heating or eating. If policy-makers can find ways of reducing the poverty premium – either on a local or national basis – we can expect an improvement in local economies and less pressure on public services, such as local advice centres, reduced burden in collecting council tax arrears, or even helping reduce poverty-related health issues.

This report provides estimates of how much the poverty premium costs local areas in Britain. We find that:

- A quarter of households (24%) are estimated to experience at least one type of poverty premium in a given area.
- This means that the cost of the poverty premium to a typical parliamentary constituency is £4.5 million per year. For each household in poverty, this equates to just over £430 per year – equivalent to nearly ten week's grocery shopping among low-income households.[1]
- The constituencies experiencing the largest total poverty premiums are Leeds Central (£8.9 million), Manchester Central (£8.4 million) and West Ham (£8.3 million).
- The constituencies with the highest proportion of households incurring at least one component of the poverty premium are Liverpool Walton (34.7%), Hackney South and Shoreditch (34.5%) and Tottenham (34.3%).
- The regions where the highest proportion of households incur the poverty premium are the North East (27.7% on average), London (26.2%), Yorkshire and the Humber (25.8%) and the North West (25.4%). Due to the size of constituencies, the absolute cost of the poverty premium to the average constituency is highest in London and the North East (both £5.0 million).
- The poverty premium is generally higher in areas of deprivation, with more unemployment, lower car access and more social renters.
- Parliamentary seats that the Conservatives won from Labour at the 2019 election typically experience a higher proportion of people incurring the poverty premium than seats that the Conservatives previously held (26% vs 22%). In monetary terms, this equates to approximately a £1.1 million difference in total poverty premium costs between the typical newly won seat and seats that the party held (£5.0 million vs £3.9 million).


[1] Average of £44.60 pw for bottom four deciles of income (Living Costs and Food Survey 2020)


University of BRISTOL

FAIR BY DESIGN
Ending the extra costs of being poor

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# 1. Introduction

**This report illustrates how the poverty premium – the additional costs that poorer households experience when accessing essential products and services – varies across different areas of Britain.**

The 'poverty premium' describes how poorer people pay more than those on higher incomes to access and use essential products and services, such as energy, credit and insurance. In the UK, since 2007, researchers have explored the ways in which poverty premiums arise, identified the main contributory factors, and eventually calculated both the prevalence of premiums among those in low incomes households, and the average cost to those who incur them. Fundamentally, the poverty premium occurs through interactions between current market practices and the circumstances, needs, choices and constraints of those households on lower incomes. These interactions can lead to an increased likelihood of lower income households experiencing higher costs in particular areas.

One recent study, published in 2020, estimated that the typical cost of the poverty premium to low-income households in the UK at that point was £478[2] per year (Davies and Trend 2020), comprising of the following actions:

- relying on prepayment meters for their gas and electricity;
- using non-standard billing methods (for example, paying on receipt of bill, rather than via direct debit)
- not switching to the best fuel tariff;
- paying more for home contents or car insurance as a result of living in a deprived area;
- taking out insurance for individual items;
- paying more to access their money (through fee-charging ATMs or pre-paid card fees); and
- using higher-cost forms of credit.

The purpose of this report is not to re-measure the poverty premium but rather to use what we already know to estimate the costs of the premium to local communities across the country. **We hope that these estimates can inform the decisions made by local and national government to tackle different components of the premium.**

Previous research has explored the poverty premium at a local level; two examples being Tower Hamlets and Greater Manchester (Toynbee Hall 2014, Whitham 2018). These both surveyed local residents on their spending patterns, then used a costing method based on earlier Save the Children research (2007) to estimate how much each element of the poverty premium would cost. This allowed the researchers to understand in what ways, and where, the extra costs were being incurred at a community level. In Tower Hamlets, for example, before the availability of fee-charging and free ATMS had been mapped (Tischer et al 2020), the researchers were able to contextualise the lack of free ATMS in East India and Lansbury (Toynbee Hall 2014 p.18). Taking a place-based approach also allowed the costs attributed to the geographically based premiums to be reflective of the actual premiums that local residents would be paying (Whitham 2014 p.8). However, this case study approach can be resource intensive, and so by using existing data, the local poverty premium can be explored and better understood without needing further primary research.

As explained in Box 1, we use an analytical technique called **spatial microsimulation** – which combines survey and aggregate area-level data – to produce estimates of the proportion of the population in local areas of England and Wales who are likely to experience different components of the poverty premium.

[2] This figure focussed on the main poverty premiums incurred, and excludes paying more for groceries, for example, or cheque cashing, which was largely obsolete by 2020.

## Box 1 – Data sources and methods used

In this report, we produce estimates of the proportion of households in parliamentary constituencies in England and Wales who experience different components of the poverty premium. From these proportions we can calculate an estimate of the total cost of the poverty premium in each area.

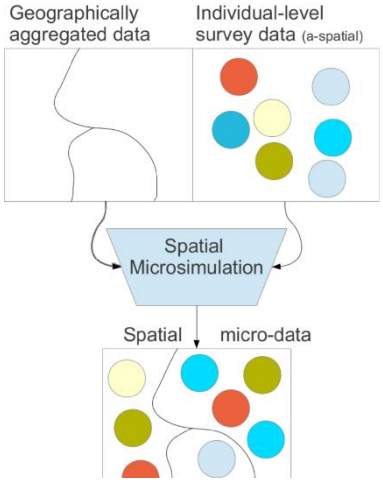
### Data sources

Our analysis brings together several different sources of data:

- Our 2016 nationally representative survey of households, which asked those on low incomes about the types of poverty premium they experience (n=3,975) (Davies et al 2016).
- 2011 Census data, providing a break-down of the characteristics of the population within local areas (for example, their age profile, housing tenure, economic activity).[3] We use lower-super output areas (LSOAs) as the basis of our analysis. When the 2021 census data is released, the figures can be updated.
- Data on the number of prepayment electricity meters in each LSOA (in 2017).[4]
- Costs for each component of the poverty premium, which were collected/calculated in 2019 as part of an update on the 2016 research (Davies and Trend 2020).

### Analysis

We employ a technique called spatial microsimulation, which allows us to combine our individual-level poverty premium survey data with geographically aggregated data from the 2011 census.[5] It takes those variables we have both at area-level and at individual-level and uses them to produce weights that show how likely an individual from the survey data is to live in a given area. We use the following variables that exist at both area- and individual-level: highest level of qualification; housing tenure; car or van availability; marital status; sex; economic activity; and social grade.



Explanation of spatial microsimulation from Lovelace & Dumont (2016)

Using these weights, we can predict area-level values for variables that previously only existed in the individual-level survey data, i.e. we can predict the proportion of people in a given area that experience each component of the poverty premium. From these proportions, we calculate the total premium costs experienced in each area.

To validate our results, we compared our estimates of prepayment electricity meters in local areas with actual data on the number of these meters in each LSOA. This revealed an 88% correlation between the predicted and real values, which we consider a strong correlation.

*Correction statement: Please note that this report was updated in October 2022, following discovery of errors in analysis which had affected a number of key percentages presented in the report and generally led to under-estimation in the proportion of households affected by the poverty premium. This version of the report updates and replaces previous versions.*

[3] Available from ONS Nomis: Table Finder - 2011 Census - Official Labour Market Statistics
[4] Available from GOV.UK: Electric prepayment meter statistics
[5] For more information see: Lovelace & Dumont (2016) 'Spatial Microsimulation with R'. CRC Press.

## 2. Leaky buckets and levelling-up: why the poverty premium matters for local areas

There are two broad arguments for the specific local benefits of reducing the poverty premium:

a) Reducing poverty is generally effective in reducing negative outcomes, many of which impact on local spending such as health or housing arrears.
b) Money not spent on the extra costs of the poverty premium is money that will be spent in the local economy.

In short, using a place-based approach to understand, and then reduce the poverty premium can be part of the levelling up agenda. At this point in time, there is a real necessity to keep as much money as possible in the pockets of those on low incomes; even relatively modest amounts of extra money in household budgets can make a difference. The Scottish Government has recently introduced the Scottish Child Payment; a weekly payment of £10 a week to all families with a child under the age of six – an amount roughly equivalent to the £490 average premium incurred by low-income households. If 80% of eligible households receive the benefit, then it is estimated that it would remove 10,000 children from poverty.[6] And while the amount needed is possibly greater than the total cost of the poverty premium, evidence suggests that increasing the incomes of households entitled to Free School Meals (FSM) can improve the educational outcomes for these children within them (Cooper and Stewart 2013).

Debts on household bills have been a rising issue for a number of years. Citizens Advice reported that by 2016/17, the number of debt problems that they saw relating to paying household bills was almost twice that of debt problems with consumer credit (Lane et al 2018). Council tax arrears are a problem for both the households who have fallen behind and the local authorities trying to fund services. As of 31 March 2021, the total amount of council tax still outstanding amounted to £4.4 billion.[7] The collection practices are equally costly – adding on average £278 to the debt of those who fall into arrears, as well as the cost of employing bailiffs and courts to address these (Derricourt et al 2019). Social housing rent arrears have reached £1bn.[8]

Notably, the people who are falling into arrears with these bills were more likely to be vulnerable than those with consumer debts – they were more likely to be unemployed, to be single parent households, and to be in social housing (Lane et al 2018). These are the same vulnerabilities that increase the likelihood of incurring poverty premiums, and so reducing the poverty premium could impact positively on the rate of arrears across these essential services. Broadly speaking, people do not default on household bills unless they have no choice, so by addressing the poverty premium, and putting more money into the pockets of low-income households, this will increase capacity to keep up with rent or council tax. This may lead to a further gain, as many households will borrow to try to keep up with their commitments, and even worse, to pay the fines and fees they've incurred because of council tax arrears (Derricourt et al 2019). Such borrowing may well occur through accessing higher cost credit, so by avoiding household bill debt, households could also avoid incurring a credit poverty premium.

Additionally, extra money that low-incomes households have – if not spent on essential bills – is likely to be spent in the local community, with the consequent benefits that this will bring. Where people shop for groceries is influenced heavily by location-related factors (Piacentini et al 2011), and this is particularly true for those in areas of disadvantage; in 2018, the Social Market Foundation estimated that nearly one

[6] The Scottish Parliament: Scottish Child Payment
[7] GOV.UK: Collection rates for Council Tax and non-domestic rates in England, 2020 to 2021
[8] Inside Housing: Social housing rent arrears hit record £1bn

in ten deprived areas are 'food deserts'[9]; many people in these areas will have little choice over where they shop (Corfe 2018).

Lower income households are also less likely to own a car, while people with disabilities are more likely to live in households in poverty, and both factors lead to lesser mobility compared with more advantaged households. This lack of mobility is a barrier to accessing shops with cheaper groceries (Lucas et al 2019).

> *"Where financial resources and mobility are particularly restricted, participants reported behaviour more in the style of 'convenience shoppers', purchasing goods from local stores more often than they would prefer"* (Piacentini et al 2011)

It is recognised that small grocery stores serve the needs of those in disadvantaged areas, albeit in a more expensive way (Clarke and Banga 2010). Indeed, shopping in convenience stores is considered one type of poverty premium in itself (Davies et al 2016). However, while shopping locally may have an extra financial cost to the individual, it may have wider benefits to the local area, as well as social benefits for those who are shopping there. The lack of resources and mobility to shop further afield also impact on other areas of life. Piacentini et al (2011) note that local shops where customers and staff know each other can offer an opportunity to socialise for those where alternative opportunities are limited "*due to unemployment and limited funds for socializing outside the home"* (p.154) – those who are likely to be paying the poverty premium. Clarke and Banga (2010) describe these shops as a "*'social hub' for individual communities*" (p.199). They also challenge the notion that they are inherently more expensive, arguing that the social significance of their service is lost to market distortions and an inability to compete with larger stores on the same terms (ibid p. 200).

Moreover, if there is more money available as a result of paying less for gas and electricity, then it may be possible to buy better, and healthier food than is currently affordable. It is not uncommon for people on low incomes to only buy fruit and vegetables in the weeks when benefits are paid (Piacentini et al p.152).

An increase in spending in local stores could also produce wider economic benefit to an area, notably via the creation of part time jobs, and because communities with local businesses are typically more prosperous (Rybaczewska and Sparks 2019).

> *"Small retail businesses promote entrepreneurial and risk-taking activity, which has a positive consequence in terms of local employment and income generation"* (Clarke and Banga 2010 p.196)

Rybaczewska and Sparks (2019) quote a study from Portland estimating that for every $100 spent in local stores, an additional $58 is contributed to the local economy, in comparison with an extra $33 for national stores (p.2). This can be described as the 'local multiplier effect' (Sacks, 2002). *Local* stores may buy bread from *local* bakeries, whereas large national chains may have more supply chains from outside of the community. Preventing money from 'leaking' outside of the community is the central idea behind the 'leaky bucket' model (NEF, 2002), which aims to identify the ways that money circulates within and outwith a local area. Having a local customer base with more money in their pockets can only help local economies thrive, and eliminating the poverty premium is a fair means of achieving this.

[9] Defined as an area containing two or fewer supermarkets/convenience stores.

# 3. Results: the geography of the poverty premium

## Overall costs of the premium

On average, we find that one-in-four households (24%) are estimated to experience at least one component of the poverty premium in a given year, with the average household in poverty experiencing a premium of £437[10] per year. This means that, as we see in Table 1, the total cost of the poverty premium to households in Britain is estimated at approximately £2.8 billion, with the cost of the premium totalling £4.5 million in a typical parliamentary constituency.

### Table 1 – The average cost of the poverty premium in a typical constituency is £4.5 million

Descriptive statistics for components of the poverty premium at constituency-level

| | Constituency mean | Constituency median | Total for all constituencies |
|---|---|---|---|
| Cost of prepayment meter premium | £326,839 | £306,047 | £206,562,446 |
| Cost of non-standard billing methods premium | £763,227 | £763,798 | £482,359,410 |
| Cost of premium for not switching to best fuel tariff | £1,611,742 | £1,583,186 | £1,018,621,174 |
| Cost of area-based insurance premiums | £688,255 | £608,777 | £434,977,224 |
| Cost of insurance for individual items premium | £440,322 | £436,260 | £278,283,424 |
| Cost of access to money premium | £62,193 | £56,737 | £39,306,233 |
| Cost of higher-cost credit premium | £568,311 | £535,257 | £359,172,563 |
| Cost of all premiums | £4,460,890 | £4,330,226 | £2,819,282,473 |
| Average cost of poverty premium per household in poverty | £437 | £433 | |

The single largest component of the poverty premium was because of not switching to the best fuel tariff (£1.6 million per constituency).[11] The second most expensive component of the poverty premium is the cost of non-standard billing methods (£770,000 per constituency), such as paying on receipt of bill rather than by direct debit.

## The geography of the poverty premium

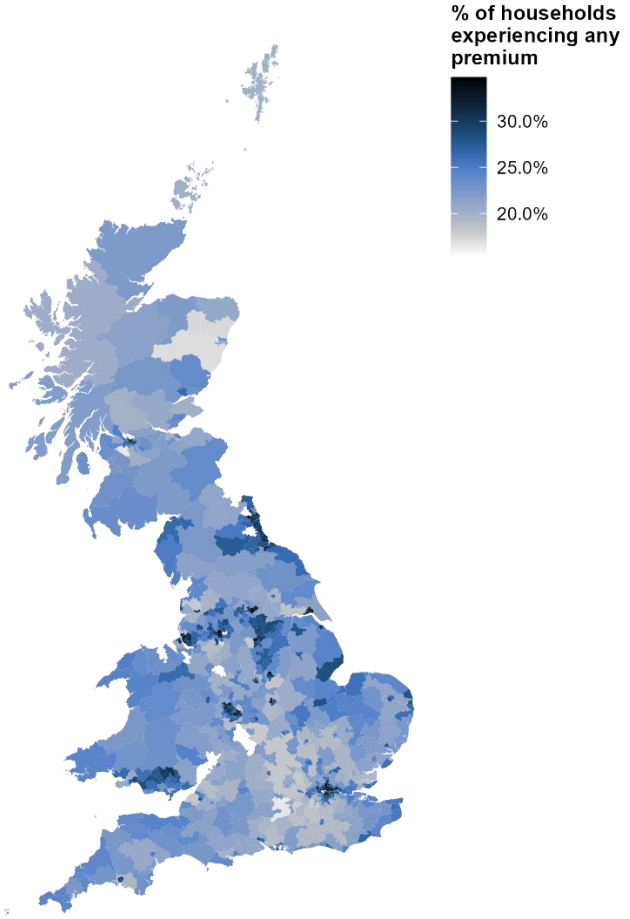
Figure 1 shows the proportion of households in each constituency who experience at least one element of the poverty premium. It can also effectively be interpreted as a map of households living below the poverty line, given that our 2016 research found that 99% of households living below this line incurred at least one element of the poverty premium. The map therefore also corresponds closely with the pattern of deprivation in England and Wales, with the areas with the highest proportions experiencing the poverty premium also featuring high on the deprivation rankings: over a third of households in Liverpool Walton, for example, experience the poverty premium – the highest in England and Wales – and it also ranked as the most deprived constituency in the country in 2019. In terms of absolute total cost to the constituency, it is those constituencies with both a large population and high proportion experiencing the poverty premium which have the highest total costs. Leeds Central – with an electorate of over 80,000 (compared to average of 70,530 across the UK) in 2019 and 33% of households experiencing the poverty premium (8th highest out of 573 Constituencies in England and Wales) – has the largest total cost of the premium in the country, at nearly £8.9 million.

[10] This figure is calculated using the most representative survey data (2016) but the most recent costings (2019) which accounts for the difference between this, and the figure quoted on p.2

[11] It should be noted, however, that the costs used in our calculations are taken from our 2019 premium calculations, meaning that some elements of the premium will now be higher or lower than our estimates suggest (for example, given the unexpected and unusual rise in the cost of energy in recent months, and the consequent increase of the price cap in April 2022, switching fuel provider will not currently give any cost savings; at the time of writing there are no cheaper open market tariffs than the new price cap, and in fact might even be more expensive than remaining on a standard tariff: Energy bills set to rocket by a massive £693/year for millions

## Figure 1 – The geography of the poverty premium in Great Britain

% of households experiencing at least one component of the poverty premium, by constituency




An interactive map can be found at:
www.fairbydesign.com/povertypremium

## Table 2 – Top 10 constituencies, ranked by total cost of the poverty premium to households in the area

| Constituency | Total cost of all premiums to constituency |
|---|---|
| 1. Leeds Central | £8,837,996 |
| 2. Manchester Central | £8,362,420 |
| 3. West Ham | £8,323,734 |
| 4. Blackley and Broughton | £7,973,099 |
| 5. Hackney South and Shoreditch | £7,857,078 |
| 6. Birmingham, Ladywood | £7,686,307 |
| 7. Liverpool, Walton | £7,657,976 |
| 8. Tottenham | £7,639,124 |
| 9. Camberwell and Peckham | £7,553,453 |
| 10. Barking | £7,510,800 |

## Table 3 – Top 10 constituencies, ranked by proportion of households experiencing the poverty premium

| Constituency | % of households in constituency experiencing a poverty premium |
|---|---|
| 1. Liverpool, Walton | 34.7% |
| 2. Hackney South and Shoreditch | 34.5% |
| 3. Tottenham | 34.3% |
| 4. Blackley and Broughton | 34.1% |
| 5. Bethnal Green and Bow | 34.0% |
| 6. Nottingham North | 33.9% |
| 7. Camberwell and Peckham | 33.8% |
| 8. Leeds Central | 33.1% |
| 9. Birmingham, Ladywood | 32.9% |
| 10. Sheffield, Brightside and Hillsborough | 32.8% |

At a regional-level, we find that the North East has the highest proportion of households experiencing the poverty premium: the average constituency in the North East has 27.7% of households experiencing the premium, compared to 21.6% in the South East. London (26.2%), Yorkshire and the Humber (25.8%), and the North West (25.4%) are the regions with the next highest poverty premium levels. In terms of absolute cost, the average constituency cost is highest in London and the North East, at £5 million per constituency. This equates to a total cost of over £360 million to London households per year.

### Table 4 – The North East has the highest proportion of households experiencing the poverty premium

Average premium cost and average percentage of households experiencing the premium, by region

| Region | % experiencing any poverty premium | Average constituency cost of all premiums | Total cost of all premiums for entire region |
|---|---|---|---|
| East of England (N=58 constituencies) | 22.9% | £4,211,719 | £244,279,723 |
| East Midlands (N=46) | 24.2% | £4,508,086 | £207,371,966 |
| London (N=73) | 26.2% | £5,040,067 | £367,924,905 |
| North East (N=29) | 27.7% | £5,025,164 | £145,729,745 |
| North West (N=75) | 25.4% | £4,841,754 | £363,131,517 |
| Scotland (N=59) | 22.4% | £4,102,808 | £242,065,693 |
| South East (N=84) | 21.6% | £3,971,148 | £333,576,409 |
| South West (N=55) | 22.8% | £4,169,628 | £229,329,523 |
| Wales (N=40) | 25.1% | £3,745,448 | £149,817,930 |
| West Midlands (N=59) | 25.2% | £4,611,447 | £272,075,391 |
| Yorkshire and The Humber (N=54) | 25.8% | £4,888,512 | £263,979,672 |
| **Total (N=632)** | 24.3% | **£4,460,890** | **£2,819,282,473** |

Zooming-in on specific components of the poverty premium, the geography of households incurring premiums is similar to Figure 1 across most individual components, such as using higher-cost credit or being on a prepayment meter. Some components, however, exhibit slightly different patterns. Use of fee-charging ATMs, for example, appear more concentrated in city centres (Figure 2). Our area-based premiums – for those below the poverty line who have car (Figure 3) or home insurance (Figure 4) and live in a more deprived area – also show interesting patterns. We only apply these area-based premiums to those living in the bottom 40% most deprived LSOAs (with the cost of the premium increasing with deprivation), however the maps do not simply show that the proportion of people experiencing these premiums is highest in the most deprived areas. Rather, because many of those in the most deprived areas do not own a car or have home contents insurance, only those areas which are relatively deprived but have higher levels of car ownership/home contents insurance uptake are highlighted.

Figure 2 – % of households incurring premium for paying to access cash

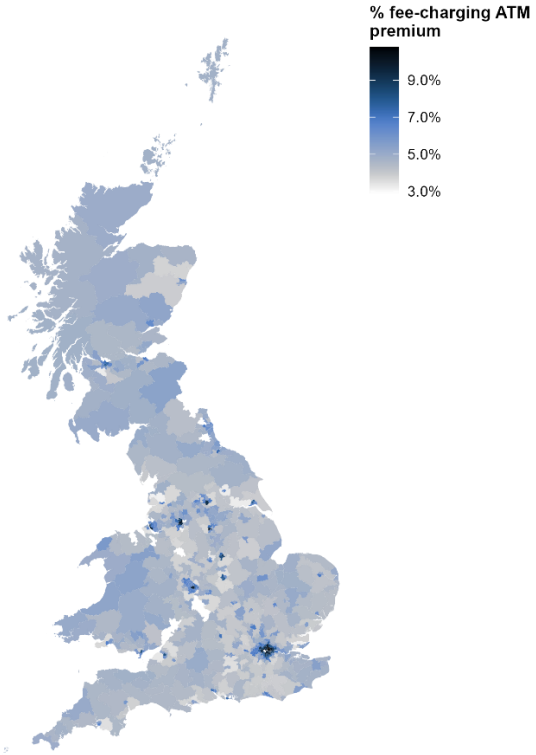



Figure 3 – % of households incurring area-based premium: home contents insurance

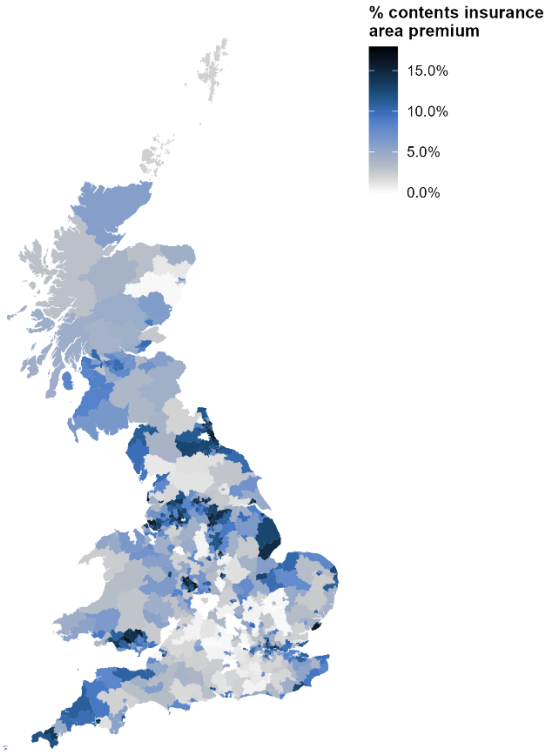
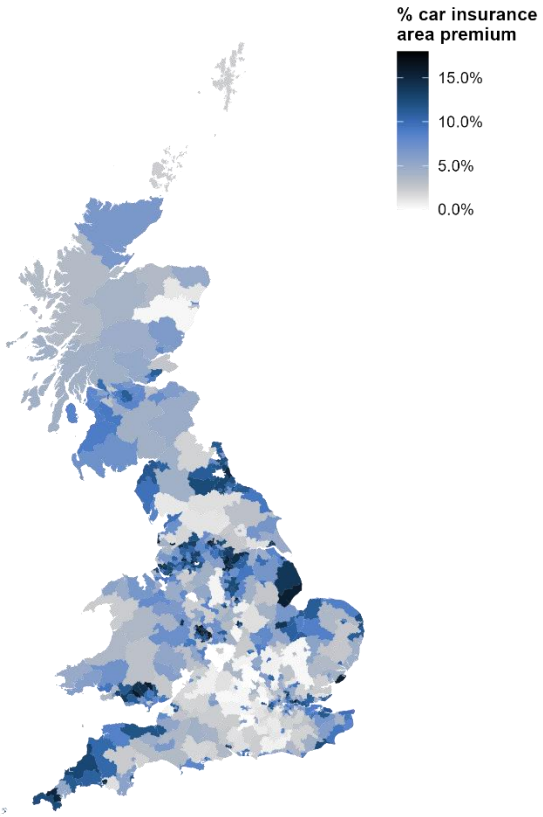
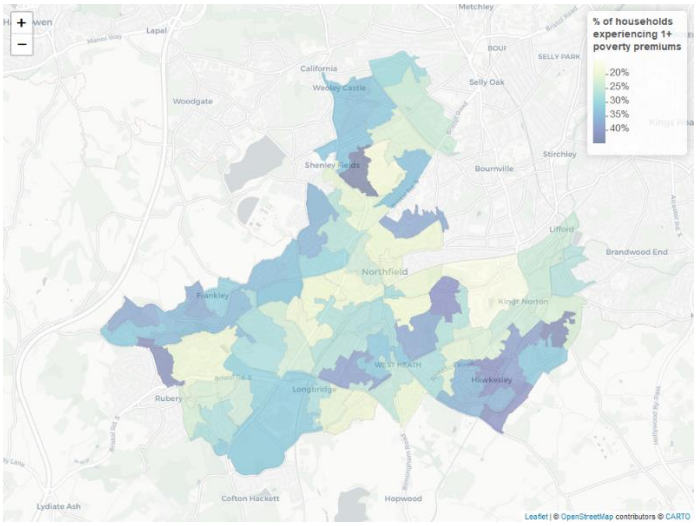



Figure 4 – % of households incurring area-based premium: car insurance



Case study: Constituency of Birmingham, Northfield.




*Map of premiums by LSOAs in Birmingham, Northfield*

**Total premium cost: £6.6 million**

Prepayment meter premium:
£515,000

Non-standard billing premium:
£870,000

Non-switching premium:
£2.1 million

Area-based insurance premium:
£1.7 million

Insurance premiums:
£490,000

Access to money premium:
£80,000

Higher-cost credit premium:
£850,000

The constituency of Birmingham, Northfield – located in the southern suburbs of Birmingham – is home to around 100,000 people. It is the 26th most deprived constituency in England, with 40% of the LSOAs in the constituency being in the most deprived decile. At the 2019 election, the seat turned Conservative for the first time in 27 years, with the Conservative candidate Gary Sambrook gaining a majority of 1,640 votes.

The total cost of the poverty premium to households in the area is estimated at £6.6 million, with a number of areas, such as the Hawkesley estate, having a high proportion (over 40%) of households incurring at least one type of poverty premium. If even one quarter of the overall poverty premium was removed, then around £1.6 million would flow back into the local economy.

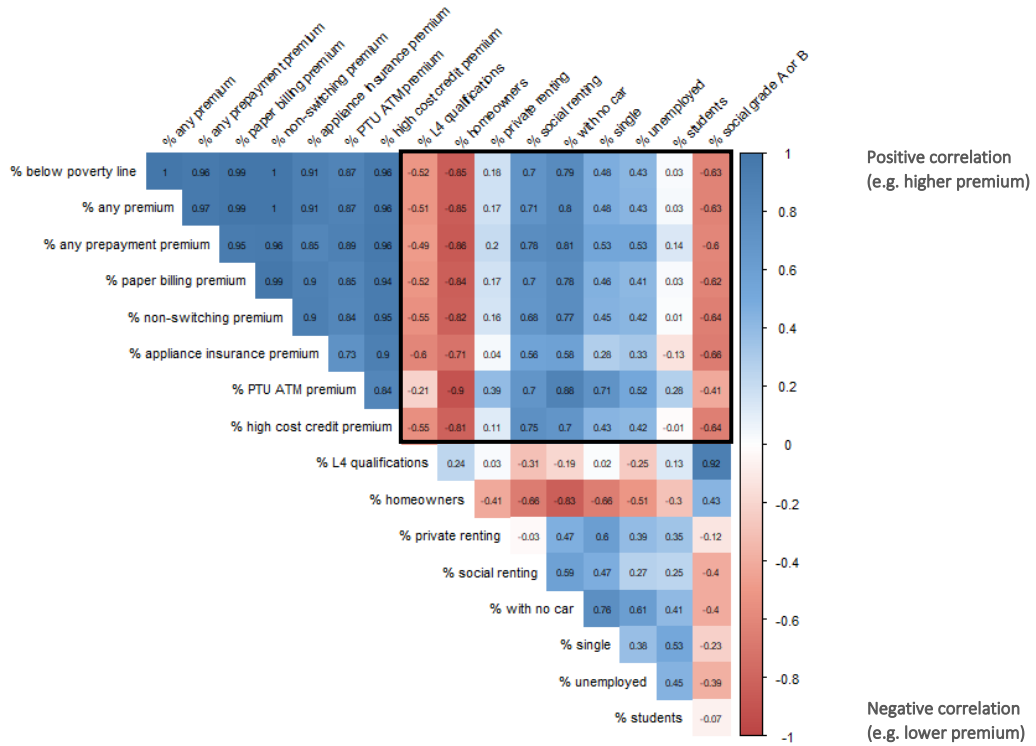
The constituency is home to nearly 7,500 prepayment electricity meters, with the total premium for use of prepayment meters (both electricity and gas) taking over £0.5 million out of the pockets of local people. Meanwhile, the use of higher-cost credit by those on low incomes in the area costs around £850,000 in total. The premium that living in a deprived area has on insurance meanwhile totals nearly £1.7 million.

## What types of areas experience higher poverty premiums?

Figure 5 explores how other socio-demographic characteristics of areas are linked with higher or lower levels of a number of different components of the poverty premium. The chart shows levels of correlation between the proportion of households experiencing different premiums and the proportion of the local population with different characteristics (for example, the percentage who are homeowners). Dark blue cells indicate a strong positive correlation, while dark red cells indicate strong negative correlations. We see that most components of the poverty premium are generally higher in areas with greater unemployment, more people without access to a car and more social renters. Meanwhile, these premiums tend to be lower in areas with more homeowners, more people in social grades A or B, and more people with higher-level qualifications. The premium for using pay-to-use (PTU) ATMs appears somewhat different, in that it is more positively correlated with the proportion of single adults and private renters and more negatively correlated with white ethnicity and homeowners. Collectively, these factors are generally indicative of younger adult populations / students, highlighting that younger people were more likely to have used PTU ATMs in the 2016 poverty premium survey[12] (despite evidence that older consumers are typically more likely to still rely on cash – Access to Cash Review 2019).

### Figure 5 – Poverty premiums affect certain socio-demographic groups more than others

Correlation coefficients between the % of households experiencing different types of poverty premium and the % of adults in the constituency in different socio-demographic groups




[12] It would be interesting to explore the extent to which this has changed, if at all, given changes to the ATM market over time which have seen a return of more PTU machines in deprived locations (see, for example, Tischer et al 2019 for a study of this trend in Bristol).

Analysis also reveals interesting political patterns, whereby constituencies gained by the Conservatives from Labour in the 2019 election typically experience higher levels of the poverty premium than those seats the Conservatives already held. Figure 6 shows how the proportion of households experiencing the poverty premium in these newly-won seats – many in the so-called 'red wall' – more closely resembles that in the constituencies that Labour was able to continue holding in 2019 (median of 26% for Con gains; 28% for Lab holds) than traditional Conservative seats (median of 22%). In terms of total cost of the poverty premium for each constituency, the mean for seats Labour held was £5.5 million, for Conservative holds was £3.9 million and for those that switched from Labour to the Conservatives was £5.0 million. This suggests that the poverty premium may now have greater electoral relevance for the governing party than it previously did, as it is directly affecting pounds in pockets for many more of their constituents. Noteworthy seats gained by the Conservatives with high-levels of the poverty premium include: West Bromwich West (31.1% of households experiencing the poverty premium), Stoke-on-Trent Central (30.9%), Wolverhampton North East (30.9%), Great Grimsby (30.2%) and West Bromwich East (29.7%).

**Figure 6 – Seats gained by the Conservatives in 2019 are more affected by the poverty premium**
Scatter plot showing the % of households experiencing any poverty premium in constituencies, by 2019 election result. Each dot represents a constituency. The bars represent the interquartile range ($25^{th}$-$75^{th}$ percentiles) and the average.

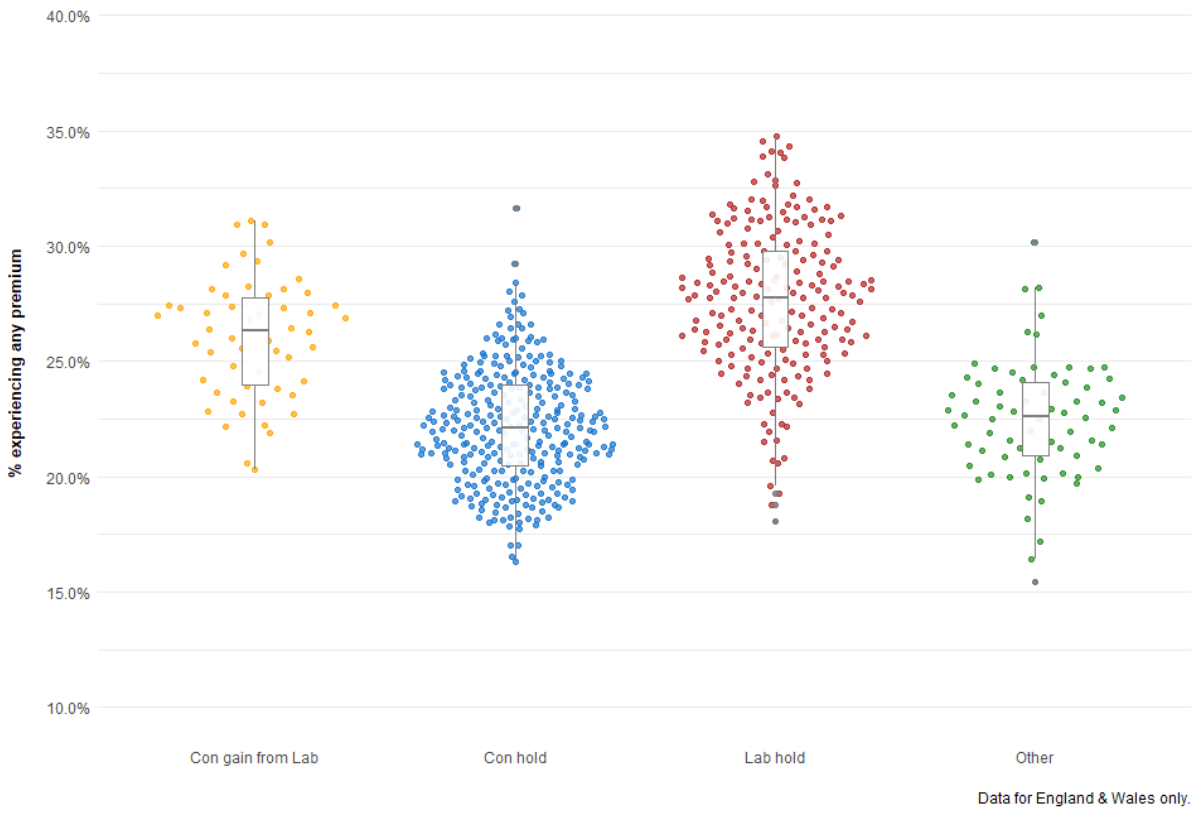
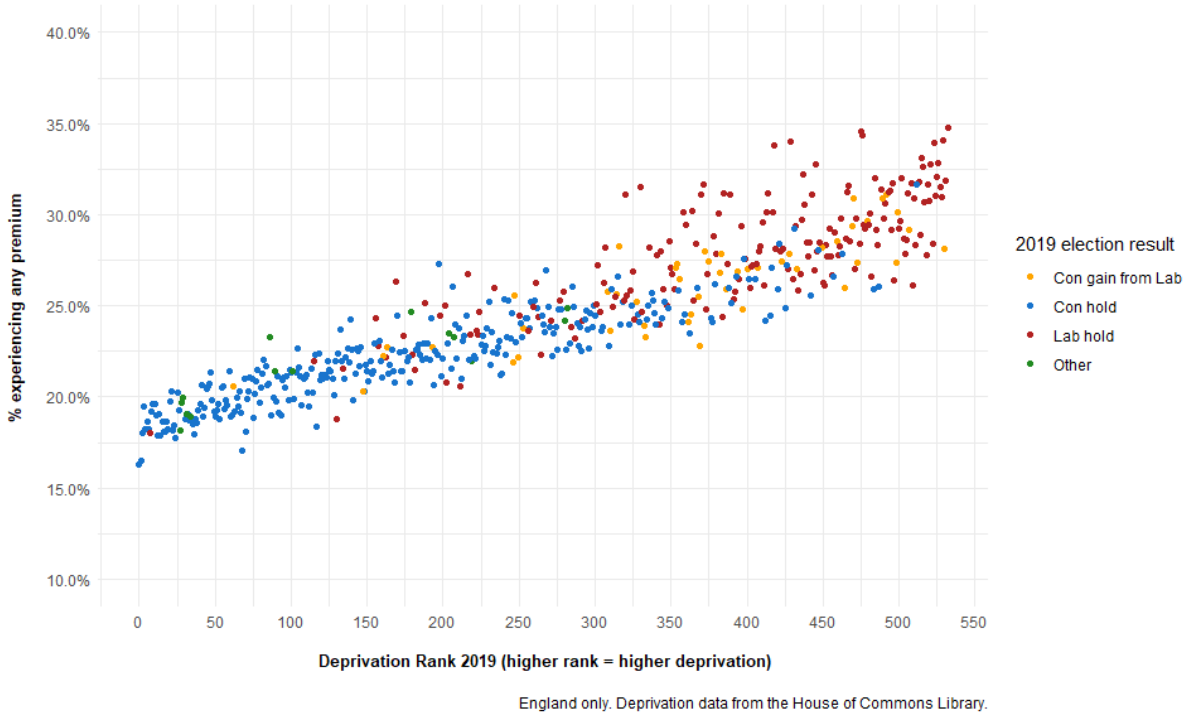



Figure 7 highlights these patterns in an alternative way. The chart not only shows a clear association between higher levels of deprivation in a constituency and a greater percentage of households in the area experiencing the poverty premium, but it also reveals differences by 2019 election result. Seats that the Conservatives held in 2019 are more likely to be concentrated in the bottom left-hand corner (i.e. lower deprivation and lower poverty premium), but those seats that they gained from Labour are

much more likely to be nearer the top-right hand corner (i.e. higher deprivation and higher poverty premium).

### Figure 7 – The poverty premium is linked to deprivation and 2019 election result

Relationship between 2019 deprivation rank and % of households experiencing any premium, by 2019 election result.



## 4. Discussion and conclusions

This report highlights the potential of spatial microsimulation techniques to produce estimates of the poverty premium for local areas. It shows that, while many components of the poverty premium are universal in nature, their impacts vary across the country, depending on the characteristics of the local population and the level of pre-existing poverty. It has already been noted that many poverty premiums are inherently geographical in nature, but our research has brought clarity on the ways in which this impacts on the costs. For example, those who are car owners in areas of higher deprivation are most likely to incur this particular poverty premium, but there are areas in the UK where this is more or less likely – deprived areas where car ownership is more of a necessity are more vulnerable to this, than for example, areas of higher deprivation in larger cities. While London has many areas of with high levels of deprivation, for example, overall car ownership is lower. Through our area-based poverty premium estimations, therefore, it is easier to identify where the focus of poverty premium elimination should be, for different areas. Conversely, previous research (Tischer et al 2019) has demonstrated that it is in the more deprived areas of cities that ATMs are most likely to be fee paying, and our research also finds a higher percentage of households incurring the access to cash premium. Urban constituencies, therefore, may need to attend to campaigning to ensure that free cash is easily available for their residents. As new survey data on the types and frequency of poverty premiums is produced, and the 2021 census data is released, giving a more up to date description of the demographic make-up of local areas, then our area-based poverty premium maps can, and should be updated.

The need to reduce or eliminate the poverty premium has never been more urgent. Those who are vulnerable to poverty premiums are starting to fall into arrears, or drawing on costly credit to get by, with the consequences for local services that this will entail. More people will need to seek debt or other advice, there will be greater call on foodbanks, and on social funds or other sources of emergency support. It seems unfair that the costs of providing these services should fall on local funding, when often the poverty premiums are as a result of the commercial practises of national (or even international) companies.

Therefore, tackling the various elements of the premium should be a priority for policy-makers given both the current squeeze on the cost of living and the longer-term contribution of the poverty premium to keeping poor households trapped in poverty. Our analysis demonstrates that on a local level, the amount of money that a reduction in the poverty premium would raise is substantial and could make a quantifiable difference to both the individual households and the local communities. And it is clearly more problematic in some constituencies than others – we noted earlier a £1 million difference between differently held constituencies. The Government's 'levelling-up' agenda provides new impetus and opportunities for tackling these spatial inequalities. The key question is where the impetus to do this should come from. Should there be a locally distributed 'Poverty Premium Reversal' fund, aimed at researching and addressing local issues and implementing local solutions? Or should the poverty premium be tackled at a national supplier level? There is likely a need for both approaches: the pressure to stop utility companies charging more for non-standard billing can only be achieved a national level, however representatives of areas that are particularly affected by this premium may take up the mantle to bring about this change. The potential to keep an average three quarter of a million pounds within their local economy should be a strong motivator. It is likely that the money would either be spent locally, and create extra jobs or grow local businesses, or would be spent to reduce financial difficulty, and therefore reduce the burden on local services.

However, thinking locally can also help provide the solutions to some of the issues. Credit Unions are largely place-based, not-for-profit lenders, who could help reduce some of the half a million pounds

that, on average, is spent servicing costly credit in each constituency. As with shopping locally, visiting local pubs, the wider benefits of job creation, but also of civic cohesion will be felt in the community. Promoting these, and other local and cheaper alternatives to the more costly services, can be the basis of a fightback against the unfair and counterproductive costs of the poverty premium.

### Building on this analysis

We have made a number of assumptions when conducting this analysis. We assume that the relationship between our socio-demographic variables and likelihood of incurring poverty premiums is the same across the country, whereas in reality it is likely the case that this will vary. For instance, while at a national-level we see that social renters are more likely to incur a premium for using higher-cost credit, it may be the case that this relationship is weaker in certain places due to local interventions (such as a housing association working in partnership with a credit union to offer more affordable credit to social housing tenants). Assumptions also had to be made when the original poverty premium costs were calculated in both 2016 and then 2019, such as the number of times per year a typical individual in poverty would be expected to use a fee-charging ATM. Such assumptions could be re-considered at least to some extent if the poverty premium survey is re-run and the costs are recalculated.

While using spatial microsimulation alone we were able to produce reasonably accurate estimates of the number of prepayment electricity meters in an area, it was better to use the actual number of such meters in an area (from data collected by BEIS). Our understanding of the nuances of the poverty premium therefore could be improved through collecting more detailed data on different components of the premium and to publish this data in aggregate form at various geographical scales. Data from government departments, local authorities and commercial organisations (for example, banking transaction data or insurance industry data) could all help to improve our understanding.

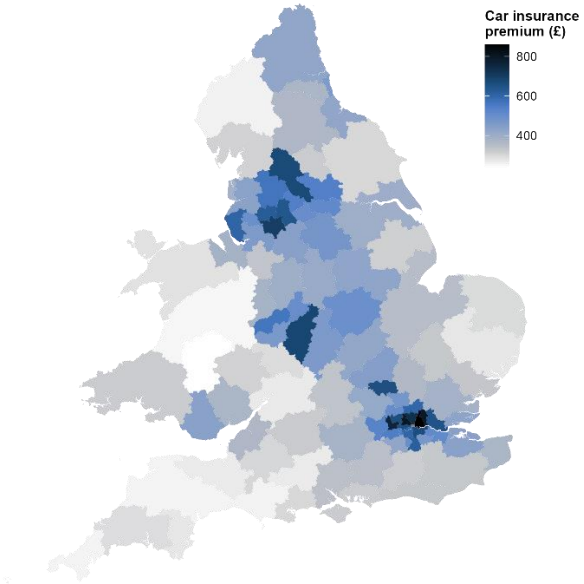
For example, the price comparison website MoneySuperMarket regularly publishes data on the cost of home and car insurance premiums across the UK.[13,14] They kindly provided this data to the research team as context for our analysis. Figure 8 therefore shows how the median cheapest insurance quote offered to potential customers varies across the country. These maps on their own do not tell us a great deal about the poverty premium itself, as the patterns we see are more likely to be driven by differences in house prices / the value of cars being insured, or perhaps by certain demographic characteristics (for example, areas with more young drivers might see higher car insurance premiums). Nevertheless, with further analysis or more detailed data it may be possible to more fully unpick the impact of local area deprivation on insurance premiums.

[13] MoneySuperMarket (2020) 'Does your postcode affect car insurance premiums?'
[14] MoneySuperMarket (2022) 'Home Insurance – UK price index'

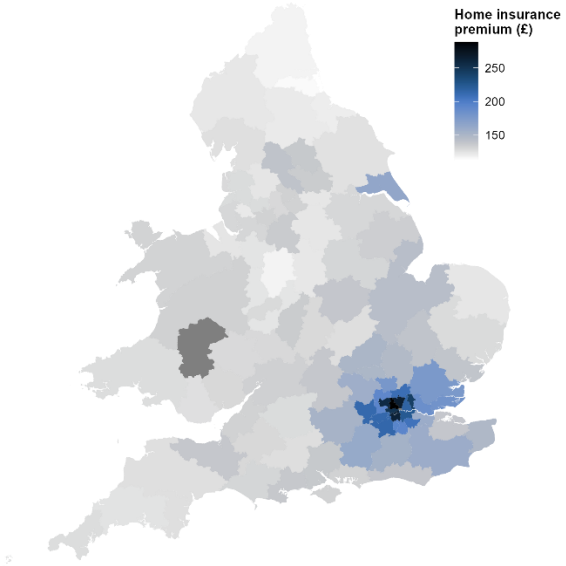
## Figure 8 – Insurance quote data from Money Supermarket offers additional insights

Median cheapest insurance quote for car and home buildings/contents insurance, by postcode area

a) Car Insurance




b) Home buildings/contents insurance




Data provided by Money Supermarket. Quarterly data for 2021 Q4.

# Appendix A – Table of costs used in analysis

| Premium | Description | Cost of poverty premium 2019 |
|---|---|---|
| | | £ / year |
| | | - |
| **Use of prepayment meters** | | - |
| Prepayment meter - electricity | Extra cost of prepayment meter tariff versus standard variable tariff for dual fuel direct debit payment. We divide dual fuel tariff premium by two to reach values for electricity and gas separately. | £29 |
| Prepayment meter - gas | | £29 |
| On best prepayment meter tariff | Extra cost of being on the best prepayment meter tariff relative to being on the best monthly direct debit payment. | £131 |
| **Non-standard billing methods** | | |
| Payment on receipt of bill - electricity | Extra cost of quarterly billing compared with direct debit payments. We divide dual fuel tariff premium by two to reach values for electricity and gas separately. | £54 |
| Payment on receipt of bill - gas | | £54 |
| On best payment on receipt of bill tariff | Extra cost of being on the best quarterly bill tariff relative to being on the best monthly direct debit payment. | £143 |
| Home contents - monthly payments | Extra cost of paying monthly rather than annually for insurance. | £10 |
| Car insurance - monthly payments | | £161 |
| **Not switched to best fuel tariff** | Extra cost of not having switched dual fuel monthly direct debit tariff in last two years, relative to those who have switched. | **£213** |
| **Area-based premiums** | | - |
| Home contents insurance - deprived area | Extra cost of home insurance if living in 20$^{th}$ percentile of deprivation, relative to median (50$^{th}$ percentile) level of deprivation. | £5 |
| Car insurance - deprived area | Extra cost of car insurance if living in 20$^{th}$ percentile of deprivation, relative to median (50$^{th}$ percentile) level of deprivation. We apply a sliding scale, so that those living in the 20$^{th}$ percentile or below have a premium of £298, those in the 20$^{th}$ to 30$^{th}$ percentiles have a premium of £199, and those in the 30$^{th}$ to 40$^{th}$ percentiles have a premium of £99. | £298 |

| **Insurance for individual items** | | |
|---|---|---|
| Household appliance insurance | Typical cost of policy covering a number of kitchen appliances up to £1,000 in value. | £176 |
| Mobile phone insurance | Typical cost of policy covering 1.25 mobile phones which meet the minimum income standard. We use 1.25 to account for households with multiple adults. | £81 |
| **Access to money** | | |
| Fee-charging ATM | Typical cost of using one fee-charging ATM per month. Multiplied by 1.25 to give a household value. | £25 |
| Pre-paid card fees | Cost of making 10 withdrawal/top-up fees per year plus application fee for typical pre-paid card. | £33 |
| **Higher-cost credit** | | |
| Rent-to-own | Extra cost of purchasing a TV (most commonly bought item via rent-to-own in our survey) on rent-to-own, versus buying the same TV outright. | £182 |
| Short term loan | Typical cost of credit on two short-term £200 loans paid back over three months each. Multiplied by 1.25 to give household value. | £237 |
| Home collected loan | Typical cost of credit on two loans of £450, one paid back over 26 weeks (535% APR) and one over 52 weeks (299% APR). | £644 |
| Pawnbroking loan | Typical cost of credit on two six month loans of £130 (154% APR). | £152 |
| Subprime personal loan | Typical cost of credit on two six month loans of £450. | £557 |
| Subprime credit card | Typical cost of credit on £900 borrowed being repaid over 12 months (37.65% APR). Multiplied by 1.25 to give household value. | £207 |
| Mail order catalogues | Extra cost of purchasing a minimum income standard spec washing machine via mail order catalogue (paid over 52 weeks at 39.9% APR) versus buying the same washing machine outright. | £60 |
| Christmas hamper scheme | Extra cost of buying a typical Christmas hamper versus buying the same hamper items at a supermarket. | £47 |

## Appendix B – Methodology

We used a technique called spatial microsimulation to estimate the proportion of adults in a given area who are below the poverty line (defined as 70 per cent of the median income[15]) and experiencing each of a range of components of the poverty premium. This uses two main data sources: 1) our 2016 nationally representative survey of households, which asked about their experiences of different poverty premiums (n=3,975); and 2) aggregate data from the 2011 census at the lower layer super output area (LSOA) level[16] for England and Wales (n=34,753 LSOAs). We employ a form of spatial microsimulation called Iterative Proportional Fitting to create weights for each individual household who responded to the 2016 survey. These weights essentially give the likelihood that each household would live in a given LSOA and are created based on the following socio-demographic characteristics which were asked about in the survey and are also available from census data:

- Tenure
- Car or van availability
- Highest level of qualification
- Marital status
- Sex
- Economic activity
- Social grade

These variables were chosen based on their availability, i.e. they were common variables across both the survey and census data. We attempted to also include a Government Office Region variable; however, the survey sample size was not sufficient to include this level of geographical data in the analysis.

Having created a matrix of weights (3,975 survey respondents x 34,753 LSOAs = 138 million individual weights), we could determine the number of adults in each LSOA who would be likely to incur each of the poverty premiums. These figures were then aggregated up to the level of parliamentary constituency, based on which constituency the population weighted centre of the LSOA was located in. By converting the number of adults to number of households (see below), we could then calculate the total cost to a constituency of each poverty premium using a simple multiplication (number of households incurring premium x average household premium cost). These costs were taken from our 2019 cost calculations.

The only poverty premiums where we take a slightly different approach are those for prepayment electricity meters and car insurance. As BEIS published figures on the number of prepayment electricity meters per LSOA in 2017 we instead use those in our calculations – and also use these to validate our predicted versus actual values, as described below. For the car insurance premium, we apply premium costs on a sliding scale based on which deprivation percentile an LSOA falls into (with all those in poverty with a car experiencing the premium). Those living in the 20th deprivation percentile or below (i.e. more deprived) have a full premium of £298, while those in the 20th to 30th percentiles have a slightly lower premium of £199, and those in the 30th to 40th percentiles have a premium of £99. Those in areas above the 40th percentile are not given the premium.

[15] See the methodological appendix of the 2016 'Paying to be Poor' study (Davies et al, 2016) for an explanation of the theoretical and pragmatic reasons for using 70 per cent of median income as the poverty line.
[16] LSOAs typically have a population of approximately 1,500 people or 650 households.

The analysis has limitations, mainly related to how up to date the various datasets are and to some of the assumptions that the analysis has to make. The following limitations are important to consider when interpreting the results:

- The data used is now relatively old, so it is our hope that all of the data sources can be updated in the near future. The census data is over ten years old, meaning that areas which have changed significantly in recent years will be under- or over-estimated. Likewise, the proportion of households experiencing individual premiums and the costs that they endure are also likely to have changed over time – whether as a result of changes in Government policy or commercial practices, or more widespread societal changes; for example, those brought on by the coronavirus pandemic and/or by increasing (although still not universal) uptake and availability of internet access and smartphones.
- The analysis assumes that the relationships between our socio-demographic variables (e.g. tenure or social grade) and likelihood of experiencing poverty premiums doesn't vary across space. In reality, actual experience of the poverty premium will be dependent on the local context (e.g. use of fee-charging ATMs is dependent on local availability of free ATMs).
- As in the original research, the costs of different elements of the poverty premium are assumed not to vary across either socio-demographic groups or across geography.
- In most cases, the range of possible answers that a respondent could give for the above questions were broadly the same in the 2016 survey as they had been in the 2011 census; however, as the categories need to be coded in an *identical* way across the survey and census data for the spatial microsimulation to work, it was necessary to combine certain categories, even if not exactly comparable. This typically meant combining groups with relatively few respondents in, such as grouping those whose highest qualification was an apprenticeship with those with 'other' qualifications.
- It was also important to deal with the fact that most of the variables shown above were at the individual-level (i.e. number of adults in the LSOA), with only 'tenure' provided at household-level (i.e. number of households in the LSOA) from the Census data. To mitigate this, for each LSOA we constructed an estimate of how many individuals (adults) lived in households of each tenure type in the area, based simply on the proportion of households in each tenure type (for example, if 20% of households lived in the private rented sector, we assumed that 20% of adults would do so as well).[17] This meant that we had estimates for all LSOAs in England and Wales of how many adults fell into each of the socio-demographic groups. From this, the spatial microsimulation allowed us to produce estimates of the number of adults in each LSOA incurring each of the poverty premiums; however, as the table of poverty premium component costs (shown in Appendix A) was based on household-level costs, we needed to then convert these figures to the number of households in each LSOA incurring each of the premiums. We did this by multiplying the number of adults incurring a given premium by the ratio of the total number of households in the LSOA to the total number of adults.

### Validating our measure

To check that our estimates were as accurate as possible, we were able to use data published by BEIS on the number of prepayment electricity meters in each LSOA (in 2017). We can compare this actual

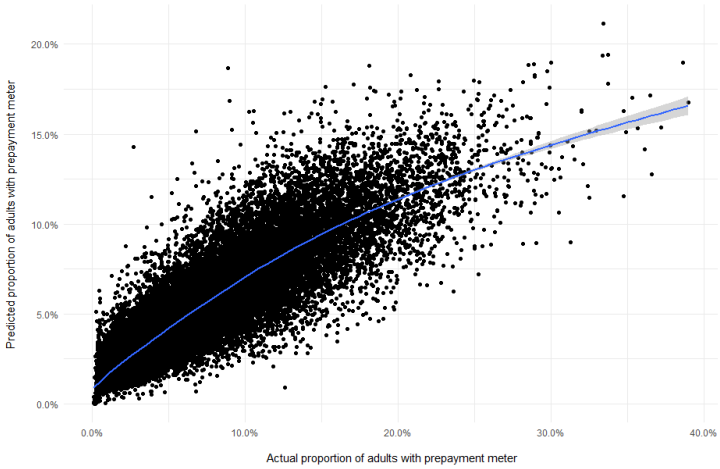
[17] This is of course a simplification of reality, as some tenure types may typically have a higher/lower number of adults. In any future project, it would be helpful to better take into account household size.

data against the number of prepayment electricity meters that we estimate should exist in each LSOA based on our 2016 survey.

It should be noted though that we might expect our estimates to be slightly lower because we are only able to estimate the number of prepayment electricity meters that are in households *below the poverty line.* In other words, there may be a (likely small) number of households who have a prepayment electricity meter but do not live below the poverty line.

Figure A1 shows how our predicted measure performs against the actual results for all LSOAs in England and Wales.[18] Each black dot represents an individual LSOA. As you can see, there is a strong positive correlation between the actual and predicted values. The correlation coefficient is 0.89 (out of 1) or equivalent to 89% correlation. Regression analysis gives an adjusted R-Squared value of 0.79, indicating that our predicted values account for nearly 80% of the variation in real values. This suggests that we can have quite high levels of confidence in the estimates that we produce.

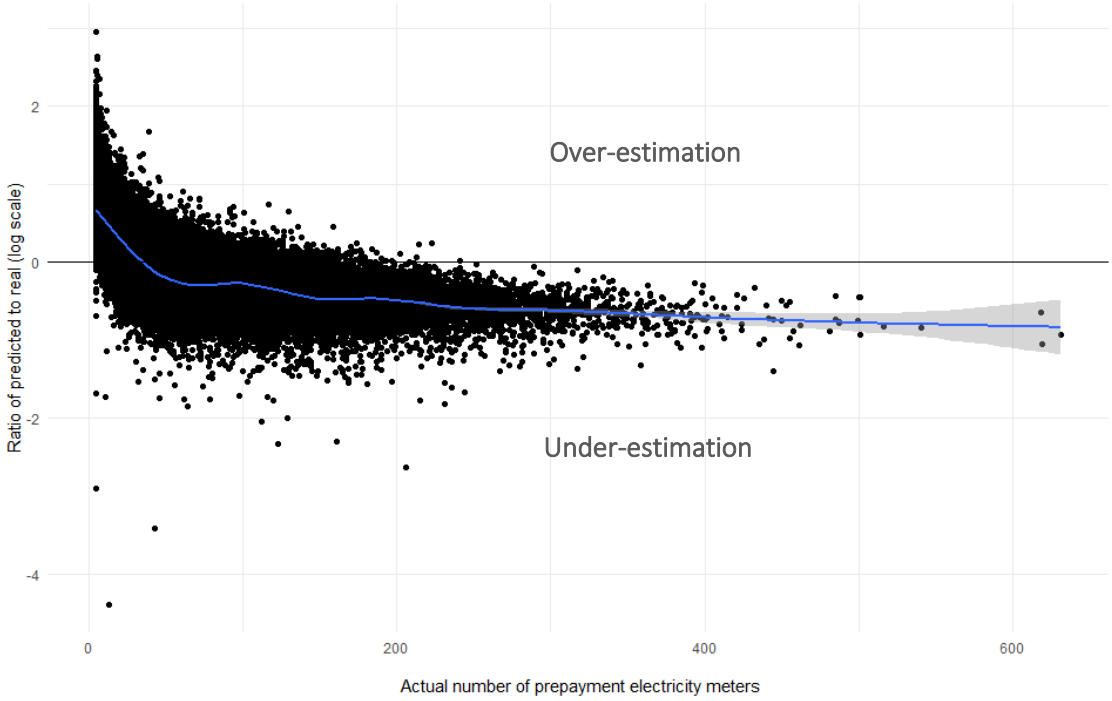
Figure A1 – Actual prepayment electricity meters per LSOA versus predicted number




We did, however, further explore the results for patterns in over- or under-estimation. By dividing the predicted values by the actual values, we find a median ratio of 0.86 and a mean ratio of 1.06. Values below 1 indicate that the predicted value is lower than the actual value, whereas values above 1 indicate the opposite. This suggests that for most LSOAs we under-estimate the number of meters (likely as a result of focusing only on those households in poverty), but for some LSOAs we substantially over-estimate the number. Plot A2 reveals the reason for this, showing that over-estimates are only common in those areas with a very low number of meters (note this plot uses a log scale to show the differences more clearly, with values above 0 indicating over-estimation and values below 0 indicating under-estimation). Such an effect would lead to the areas with low poverty premiums being predicted as having slightly higher premiums than in reality, whereas those with the highest actual premiums would be under-estimated.

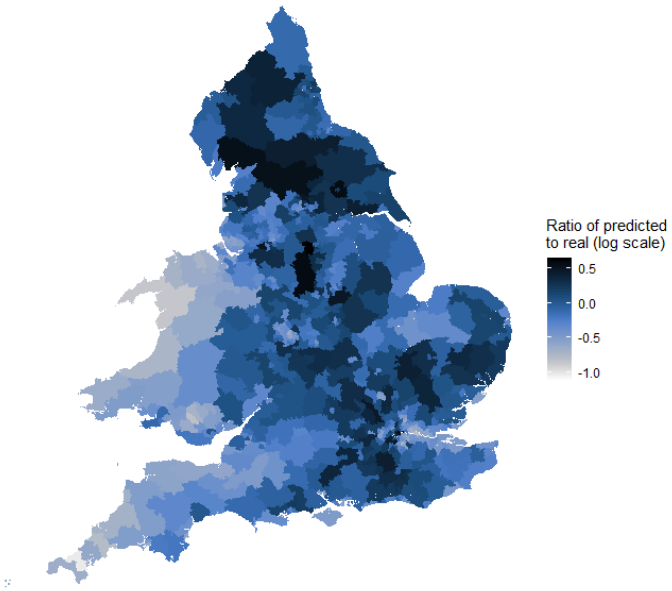
[18] Please note that BEIS redacts data on the number of prepayment electricity meters in LSOAs with 5 or fewer meters. For the purposes of our analysis, we assume that all these redacted LSOAs take a value of 5 actual meters.

Figure A2 – Over- and under-estimation of prepayment electricity meters, by the actual number of electricity meters in an LSOA




We also tested for spatial patterns in over- and under-estimation, as shown in Figure A3. This revealed that we were more likely to produce under-estimates in Wales and the Southwest of England. For example, the median predicted number of prepayment electricity meters was 53 per LSOA in Wales, but in reality there is actually a median of 96. For the South West, these figures are 42 and 58 respectively. In the North East, we predict 65 and the actual value is 65. The reason for the under-estimation in Wales and the South West is unclear, but it may be the case that there are more prepayment electricity meters in these areas within households that are not below the poverty line. Alternatively, it may indicate that a stronger relationship between certain socio-demographic variables and likelihood of incurring the poverty premium might exist here. For example, it could be the case that social housing tenants in Wales and the South West are more likely to have a prepayment meter here than elsewhere in England and Wales. Any number of explanations – from the energy market, to local authority policies, to the housing stock – could cause such patterns, but regardless they should be taken into account when interpreting the results. While we opted to use the actual number of

Figure A3 – Over- and under-estimation of prepayment electricity meters, by parliamentary constituency



prepayment meters per LSOA in calculating area-level premiums, it is possible that other premiums also have similar types of spatial patterning that we were unable to detect due to lack of data.

### Analysis in *R*

All analysis was conducted in *R*. The spatial microsimulation was conducted using the package 'ipfp: Fast Implementation of the Iterative Proportional Fitting Procedure in C' based on guidance in Lovelace, R., Dumont, M. (2016) 'Spatial microsimulation with R'. CRC Press.

Colour palette used in maps from 'scico: Colour Palettes Based on the Scientific Colour-Maps'.

Correlogram in Figure 5 uses 'corrplot: Visualization of a Correlation Matrix', based on inspiration from R-bloggers.com.

Figure 6 is an adapted violin plot using 'ggbeeswarm: Categorical Scatter (Violin Point) Plots', based on inspiration from Isabella Velásquez.

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