



Food insecurity and data infrastructure

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Open Data Institute

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About

This report is the result of joint research carried out by the Open Data Institute (ODI) with Frontier Economics and Mime published in October 2022. To share feedback by email or to get in touch, contact charlotte.mcleod@theodi.org. This work was designed by the ODI and project managed by strategic communications agency, Allegory.

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Executive summary

Background

Nutrition is a basic component of everyone's physical and mental wellbeing.¹ A household experiences food insecurity if *'they cannot (or are uncertain about whether they can) get an adequate quality or sufficient quantity of food in socially acceptable ways.'*^{2,3} The UK is currently experiencing an acute cost of living crisis. Current inflation in the UK is at its highest level for over 40 years and food prices are also rising rapidly.⁴ Food and non-alcoholic beverage prices were rising even faster than the average price level at an annual rate of 12.7% in July 2022.⁵ This is placing a strain on household budgets. Action is needed to address food insecurity and its root causes as well as targeting support towards the groups and individuals most at risk. As we will show, data has the power to help both understand the problem better and to tackle it in a more meaningful way.

Throughout this report we refer to data infrastructure (such as data assets supported by people, processes, and technology) and data practices in the context of food insecurity. Efforts to address food insecurity in an efficient and targeted way will be made far easier if effective data infrastructure exists so that the right information is collected and shared.⁶ This information would allow for an understanding of both who is at risk of food insecurity and what types of support are available (as well as highlighting any gaps in coverage of existing support for those experiencing food insecurity). An effective data infrastructure in this context would also allow for affected individuals to express their own needs and for service users to provide feedback on whether current initiatives are actually tackling the problem.

The aims of this research are to:

- **Explore** the underlying data infrastructure that could be used to support those who are experiencing food insecurity. Consider what insights can be drawn from examining a range of pre-existing datasets brought together for the first time. Determine how data could be used to mitigate the challenges of food insecurity.

¹ Child Poverty Action Group (2019), 'Living Hand to Mouth', <https://cpag.org.uk/policy-and-campaigns/report/living-hand-mouth>

² House of Commons Library (2022), 'Food poverty: Households, food banks and free school meals' <https://researchbriefings.files.parliament.uk/documents/CBP-9209/CBP-9209.pdf>

³ Financial Times (2022), 'UK inflation rate rises to 40-year high of 10.1%' <https://www.ft.com/content/2fb6f361-a7bb-4b98-8100-6847b5df79b4>

⁴ Office for National Statistics (2022), 'Consumer price inflation, UK: May 2022', <https://www.ons.gov.uk/economy/inflationandpriceindices/bulletins/consumerpriceinflation/may2022>

⁵ Office for National Statistics (2022), 'Consumer price inflation tables', <https://www.ons.gov.uk/economy/inflationandpriceindices/datasets/consumerpriceinflation>

⁶ Open Data Institute (2017), What we mean by data assets, people, processes, and technology in this context: <https://theodi.org/topic/data-infrastructure/>

- **Spark** a wider conversation on the role of data infrastructure in tackling food insecurity.
- **Encourage** other stakeholders to undertake follow-up actions that have a meaningful impact on tackling food insecurity.
- **Recommend** additional research that could be carried out and investments that could be made to create a more effective data infrastructure and inform evidence based decision making.

The unique aspect of our research is our specific focus on the role that data infrastructure can play in helping tackle food insecurity, a topic that has not been adequately examined to date. Our work assesses the current data infrastructure landscape for food insecurity and makes concrete recommendations about how that infrastructure can be improved.

The use of data to help tackle social challenges like food insecurity is an area of interest for the Open Data Institute (ODI). The ODI is an expert voice in certain key aspects of data infrastructure development. This expertise includes open data standards⁷ (documented, reusable agreements that make it easier for people and organisations to publish, access, share and use better quality data); and data institutions⁸ (data institutions are entities whose purpose involves stewarding data on behalf of others), both of which are highly relevant in this context. Organisations like the ODI can therefore play an important role in supporting efforts to tackle food insecurity in an effective way.

Our analysis brings together multiple datasets relating to different aspects of food insecurity which allows us to tease out new correlations and cross-check findings. Wherever possible we have used data that covers the UK as a whole. However, in several cases specific datasets related to England or Great Britain rather than the entire UK. This unique combination of datasets has not been included in any previous work in this form. These sources of data include:

- nationally representative household surveys which cover the prevalence of food insecurity among different household types
- data on eligibility for, and uptake of, national support schemes and local initiatives to combat food insecurity
- detailed information on the extent to which food insecurity impacts groups at a granular level in society
- the location of local support services and food charities as well as indicators of their activity
- drivers of food insecurity such as price indices.

In addition, we have gone further, to consider what data might be required to better tackle food insecurity in the future and how a more effective data infrastructure can support this.

⁷ Open Data Institute (2020), 'Data institutions', <https://theodi.org/project/rd-data-institutions>

⁸ Open Data Institute (2018), 'Open Standards for Data', <https://standards.theodi.org/introduction/what-are-open-standards-for-data>

Findings

Current challenge

In line with previous work we find that food insecurity is a significant and growing issue across the UK. The most recent survey data shows that 7% of households are classified as food insecure.⁹ The Food Standard Agency's (FSA's) Consumer Insights Tracking Survey shows that families are increasingly worried about being able to afford food, are cutting meal sizes and are skipping meals or using a food bank or other food charity.¹⁰

What is less well known is the extent of variation in food insecurity across both geographies and demographic groups. National figures mask considerable variance at this more granular level. Our analysis shows that households containing children are more likely to be classified as food insecure (9% of households containing children are classified as food insecure) relative to households without children (6%). Households headed by an individual who is Black (21% of these households are classified as food insecure), Bangladeshi (12%) or mixed ethnicity (13%) all experience above average rates of food insecurity. Average food insecurity rates are highest in the north-east of England (11% of total households in the region are experiencing food insecurity), inner London (9%) and the East Midlands (9%). Conversely, rates of food insecurity in Wales (3%), south-east England (4%) and south-west England (4%) are considerably lower.¹¹

While households containing someone in receipt of an income-related state benefit do experience high rates of food insecurity (24% prevalence among this group), our analysis suggests that food insecurity is not an issue confined to those who are unemployed or relying on income related benefits. Rather it is a major challenge for many parts of society. Recent media coverage has for example noted that some full-time professional workers may also be at risk of food insecurity.¹² To explore this further, we have used data published by the Food Standard Agency (which covers England, Wales and Northern Ireland) which allows us to explore how the responses to certain food insecurity metrics varies by employment status and employment type.¹³ Our analysis shows that 32% of employed respondents were worried that their households would not be able to afford food in the next month. This is approximately equal to the equivalent figure for non-working respondents (29%). Even amongst those respondents who worked in higher and intermediate managerial, administrative, or professional occupations, a significant proportion (27%) were worried about affording food.

⁹ Gov.uk (2022), 'Family Resources Survey'

<https://www.gov.uk/government/collections/family-resources-survey--2> Based on their responses to questions included in a national government representative survey households are then placed into one of four categories (high food security, marginal food security, low food security and very low food security). High and marginal food security households are considered to be food secure in our analysis. Low and very low food security households are considered to not be food secure.

¹⁰ Or other not for profit organisations active in this context.

¹¹ Publicly available data from the Family Resources Survey does not allow us to examine smaller geographic areas.

¹² Big Issue (2022), 'BT call centre sets up 'food bank' for its own staff', <https://www.bigissue.com/news/employment/bt-food-bank-community-pantry-own-staff>

¹³ Or other not for profit organisations active in this context.

Finally, we uncover strong evidence that food insecurity is a far broader issue than is suggested if we only consider usage of food banks and other food charities.¹⁴ For the first time we examine the correlation between the location of food banks across the country and local area deprivation (a proxy for underlying need). We observe no strong correlation. This is in keeping with the views of experts that usage of food banks is a poor indicator of food insecurity within a specific area. It is therefore essential to consider a wider range of indicators when determining the level of food insecurity in a given area. To help with this we have developed an interactive tool as part of this project to allow others to use the local area data on food insecurity drivers we have compiled.¹⁵ This allows users to examine drivers of food insecurity in their local area and compare one area with another.

Role of data and data infrastructure and current limitations

To tackle this nationwide issue effectively at a local level requires additional high quality data to be collected and shared. This will only be possible when there is appropriate data infrastructure in place. As we defined above, data infrastructure consists of data assets supported by people, processes and technology. Trustworthy data infrastructure can maximise data use and value, and help to tackle the issue of food insecurity.

Readily available data such as survey data on household finances, information on uptake of food bank and food charity services and data derived from online searches can be used to shine a light on the regional and demographic variation in food insecurity. However, our work suggests that the current data landscape is patchy and efforts to address food insecurity could be better directed with better data. For example, key data gaps include a lack of consistent historical data on the prevalence of food poverty (which limits our ability to place recent apparent rises in food insecurity into a wider context) and a lack of understanding about the location and nature of the local support services and food charities that exist (which limits the extent to which resources can be adequately targeted at those most in need and makes it more difficult to spot gaps in coverage). These gaps could undermine future efforts to better understand and respond to the current problem.

¹⁴ We have collected data on the location of food banks from three separate sources: Trussell Trust, Independent Food Aid Network and Bankuet.

¹⁵ Open Data Institute (2022), Food insecurity and data infrastructure, <https://theodi.org/article/food-insecurity-and-data-infrastructure>

There are multiple root causes of these data issues which we have identified. In particular the hyper-local nature of some types of support services such as community supermarkets or food banks creates a coordination problem. It is very challenging to develop processes for the collection and storage of information on all support services offered across the country in a consistent way. Data may also need to be shared across sectors in some cases which can add further challenges. People such as independent food aid providers may not have an obvious route to share data about the support that they provide. Also they may not see this form of data sharing as a priority if they are unaware of the value of sharing data or do not have the requisite capabilities in some cases.

Potential solutions

Open data standards could be used to improve the volume and quality of food insecurity data that is collected and shared and to address the coordination issues we have highlighted above. There are existing models of data standards that organisations such as the ODI are involved in. For example, Open Referral UK is an open data standard which establishes a consistent way of publishing and describing information on local community activities and services.

Standards like Open Referral UK can play an important role in this context. Some information on local services which addresses food insecurity is already included in the Open Referral UK data feeds. However, this is not consistent across the country and may not always be reliable and does not cover all areas. This suggests that while it is possible to include this type of information in an accessible and standardised format, further investment is needed to achieve a more comprehensive coverage rate (either within Open Referral UK or another data standard). This investment could facilitate development of improved standards, upskilling people in order to support the sharing of enhanced data assets, creating reliable data flows to support improved processes to tackle food insecurity.

Including information on these activities within an open data standard can be an enabler for targeting services, and ultimately understanding the root causes of the problem in the longer term. This could benefit service delivery organisations and policymakers who will more easily be able to spot gaps which need to be filled. Likewise having up-to-date and accurate information about the scope and location of services could benefit citizens who will be able to access the support they need.

Building on existing thinking on the topic of open data standards which has been pioneered by organisations such as ODI in the past will potentially allow for fast progress to be made in tackling this critical problem. The ODI has laid the groundwork for innovative data projects over the past 10 years. This experience can be usefully deployed in this context.

Future work

There are two ways in which future research could build on our work and add further value on this topic.

First, developing the supporting data infrastructure – to allow information on local initiatives to combat food poverty to be collected and shared – could be a future priority for policymakers and stakeholders (including the ODI) who want to collectively tackle the issue of food insecurity. Specifically, further work could consider how best to help organisations that assist those experiencing food insecurity make their data available in standard formats.

Second, further efforts could be made to engage directly with the groups who are most at risk of food insecurity that we have highlighted in our work. It will be essential going forward to understand their specific and varied perspectives and to draw on their lived experiences.

1. Background

We set out what we mean by food insecurity and its supporting data infrastructure.

What is food insecurity?

Why is food insecurity important?

Article 25 of the United Nations (UN) Universal Declaration of Human Rights¹⁶ highlights the importance of food in determining living standards.

Article 25

Everyone has the right to a standard of living adequate for the health and well-being of themselves and of their family, including **food**, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond their control.

Food is essential for survival and accessing food of a sufficient quantity and quality is a vital component of physical and mental wellbeing.¹⁷ In addition, poor diet has wider societal implications. These include higher costs for the NHS by increasing the prevalence and severity of a range of diet-related conditions and reduced productivity across the economy as a result of workplace absenteeism.¹⁸

What do we mean by food insecurity?

There is no universally accepted definition of food insecurity. In keeping with previous work we are defining food insecurity as the inability of individuals and households to access a nutritious diet. A household is therefore experiencing food insecurity if *'they cannot (or are uncertain about whether they can) get an adequate quality or sufficient quantity of food in socially acceptable ways'*.¹⁹

Food insecurity will partially be a symptom of low income. Food insecurity will therefore be highly correlated with more generic measures of poverty (see Section 3 for more detail) and those on low incomes spend a higher proportion of their overall budgets on food. However, income will not be the only driver of food

¹⁶ United Nations (2021), 'Universal Declaration of Human Rights' <https://www.un.org/sites/un2.un.org/files/2021/03/udhr.pdf>

¹⁷ Child Poverty Action Group (2019), 'Living Hand to Mouth', <https://cpag.org.uk/policy-and-campaigns/report/living-hand-mouth>

¹⁸ UK Parliament (2020), 'Hungry for Change', <https://publications.parliament.uk/pa/ld5801/ldselect/ldfphc/85/85.pdf>

¹⁹ House of Commons Library (2022), 'Food poverty: Households, food banks and free school meals' <https://researchbriefings.files.parliament.uk/documents/CBP-9209/CBP-9209.pdf>

insecurity. As we examine in this report, food insecurity is also influenced by other household and sociodemographic characteristics and some households with above average incomes will still be at risk.

Why is action needed now?

The UK government's Food Strategy published in June 2022 noted that affordability of food, and individuals' access to food, is a key element of the government's approach to tackling poverty.²⁰

The UK is currently experiencing an acute cost of living crisis. Current inflation in the UK is at its highest level for over 40 years and food prices are also rising rapidly.^{21 22} Food and non-alcoholic beverage prices were rising even faster than the average price level at an annual rate of 12.7% in July.²³ Rising energy and food prices particularly affect low-income households.

Previous work has highlighted how the impact of the COVID-19 pandemic has exposed the fragility of many households' economic situation and exacerbated many of the problems relating to poverty, food insecurity and wider health inequalities.²⁴ Also, the disruption caused by COVID-19 has impacted the ability of the government to track food insecurity over time in a comparable way. This is largely because it has been difficult to run face-to-face national household surveys during this period and some data collection efforts were paused entirely. For example, in mid-March 2020 face-to-face interviews to collect data on household incomes²⁵ was halted and processes were changed to allow data collection by telephone. As a result the achieved sample for this year's survey is significantly smaller than usual.

Action may need to be taken now to address this information gap. In the following sections we describe how we combined this type of nationwide survey data with information collected by representative organisations, regulators, community groups and charities to help explore the topic of food insecurity.

What do we mean by data infrastructure?

²⁰ Gov.uk (2022), 'Government food strategy', https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1082026/government-food-strategy.pdf

²¹ Financial Times (2022), 'UK inflation rate rises to 40-year high of 10.1%' <https://www.ft.com/content/2fb6f361-a7bb-4b98-8100-6847b5df79b4>

²² Office for National Statistics (2022), 'Consumer price inflation, UK: May 2022', <https://www.ons.gov.uk/economy/inflationandpriceindices/bulletins/consumerpriceinflation/may2022>

²³ Office for National Statistics (2022), 'Consumer price inflation tables', <https://www.ons.gov.uk/economy/inflationandpriceindices/datasets/consumerpriceinflation>

²⁴ UK Parliament (2020), 'Hungry for Change', <https://publications.parliament.uk/pa/ld5801/ldselect/ldfphe/85/85.pdf>

²⁵ As we describe in greater detail in Section 3 the Family Resources Survey (FRS) is an annual report that provides facts and figures about the incomes and living circumstances of households and families in the UK. Food security questions were recently added.

Throughout this report we refer to data infrastructure and data practices in the context of food insecurity. We are using the term data infrastructure to refer to **data assets** (for example a dataset measuring food insecurity among a specific group of households), supported by **people, processes, and technology**.²⁶

i) Data assets

Data assets include datasets, identifiers and registers.

ii) Data standards and technologies.

Data standards and technologies are used to curate and provide access to those data assets. Standards for data are reusable agreements that make it easier for people and organisations to publish, access, use and share better quality data. They are documented, reusable agreements that solve a specific set of problems or meet clearly defined needs. Standards detail the language, concepts, rules, guidance or results that have been agreed. Standards are used when it is important to be consistent, or to repeat processes, make comparisons, and reach a shared understanding. Standards are used in industries and sectors across the world to document agreements on physical items, ideas, digital products, processes, and more.²⁷

iii) Guidance and policies

Guidance and policies inform the use and management of data assets and the data infrastructure itself.

iv) Organisations

Organisations govern the data infrastructure. Data governance refers to the exercise of authority, control, and shared decision making (planning, monitoring, and enforcement), over the management of data assets.²⁸

v) People

People include those who are involved in contributing to or maintaining data infrastructure, and those who are impacted by decisions that are made using it.

²⁶ Open Data Institute (2017), 'Data infrastructure', <https://theodi.org/topic/data-infrastructure>.

²⁷ Open Data Institute (2018), 'Open Standards for Data', <https://standards.theodi.org/introduction/what-are-open-standards-for-data>

²⁸ DAMA International (2020), 'Data Management Book of Knowledge, 2nd edition', <https://www.dama.org/cpages/body-of-knowledge>

What is the relevance of data infrastructure in this context?

Efforts to address food insecurity in an efficient way will only be successful if certain preconditions are in place. A key enabler in this context is data infrastructure. Having the appropriate data assets, processes, people and technology will help to ensure that the right information is collected and shared in this context.

An effective data infrastructure related to food insecurity would allow for an articulation and understanding of relevant factors related to demand (who is at risk of food insecurity) and supply (what types of support are available). Even more importantly, an appropriate data infrastructure in this context would allow for affected individuals and families to express their own needs and highlight the extent to which current initiatives are actually tackling the problem.

Impact data could be used to tease out the individual and societal consequences of food insecurity. As a result, data infrastructure can also play an important role in evaluating current efforts to combat food insecurity. This type of evaluation can in turn inform whether efforts to tackle food insecurity represent a good use of public, private or third sector funds and ultimately ensure value for money.

Collecting, using and sharing this type of data will only be possible if an effective data infrastructure exists and all stakeholders have the means and incentives to make data available in an appropriate format. Within this piece of work we consider the current state of data infrastructure related to food insecurity; highlight gaps that may need attention going forward; and make concrete recommendations to deliver specific improvements in this context.

Report Structure

- Section 2 contains additional detail on the methods that we have used and approach undertaken.
- Section 3 outlines what we know about current variation in the prevalence of food insecurity and specific data limitations.
- Section 4 tracks trends in food insecurity over time.
- Finally Section 5, summarises our conclusions in regards to data infrastructure in this context and sets out our emerging recommendations.

2. Methods

This section sets out our focus for this piece of work. We also describe the methodology deployed.

What is the focus of our work?

This report draws together several data sources and existing evidence which relate to food insecurity in the UK and its underlying data infrastructure.

The aims of this research are to:

- **Explore** the underlying data infrastructure that could be used to support those who are experiencing food insecurity. Consider what insights can be drawn from examining a range of pre-existing datasets that we have brought together for the first time. Determine how data could be used to mitigate the challenges of food insecurity.
- **Spark** a wider conversation on the role of data infrastructure in tackling food insecurity.
- **Encourage** other stakeholders to undertake follow-up actions that have a meaningful impact on tackling food insecurity.
- **Recommend** additional research that could be carried out and investments that could be made to create a more effective data infrastructure and inform evidence-based decision making.

Our analysis and the supporting local area data tool (described further below) can be used to inform both national and local interventions based on empirical evidence of need. However, we also demonstrated that the data infrastructure relating to food insecurity is incomplete which may hamper current efforts to target support effectively. The interaction of food insecurity and data infrastructure has not been adequately addressed to date.

The societal importance of food insecurity in the current cost of living crisis motivated this work. In addition, the unique aspect of our research is our specific focus on the intersection of food insecurity and data infrastructure. This topic has not been adequately examined to date. Our work assesses the current data infrastructure landscape in this context and makes concrete recommendations.

The ODI and a range of other stakeholders could implement these recommendations to achieve meaningful change in this context.

The use of data to help tackle meaningful social challenges like food insecurity is an area of interest for the ODI. The ODI is an expert voice in certain key aspects of

data infrastructure development. This expertise includes open data standards²⁹ (documented, reusable agreements that make it easier for people and organisations to publish, access, share and use better quality data); and data institutions³⁰ (data institutions are entities whose purpose involves stewarding data on behalf of others), both of which are highly relevant in this context. Organisations like the ODI can therefore play an important role in supporting efforts to tackle food insecurity in an effective way.

Approach

Collection and analysis of data

This report combines data from several sources. The collection, analysis and visualisation of these data sources formed the cornerstone of our work. We used existing data to examine the prevalence of food insecurity currently among different groups, draw out relevant trends over time and consider important data gaps.

The table below lists each dataset we have used. We have set out the relevant category for each dataset as well as its year of publication and licence (where relevant).

Data category	Data set	Source	Date published	Licence
Direct measure of food security	Family Resources Survey (2020/21)	Family Resources Survey: financial year 2020 to 2021	2022	Open Government Licence v3.0
Measures of income and deprivation	Average household income (2020/21)	Average household income. UK: financial year ending 2021	2022	Open Government Licence v3.0
Measures of income and deprivation	Households below average income (1995 to 2021)	Households below average income: for financial years ending 1995 to 2021	2022	Open Government Licence v3.0

²⁹ Open Data Institute (2020), 'Data institutions', <https://theodi.org/project/rd-data-institutions>

³⁰ Open Data Institute (2018), 'Open Standards for Data', <https://standards.theodi.org/introduction/what-are-open-standards-for-data>

Responses to food insecurity / insecurity	Take-up of Healthy Start Vouchers (Sept 2021 to March 2022)	England Healthy Start uptake data (September 2021 to March 2022)	2022	Open Government Licence v3.0
Responses to food insecurity / insecurity	Eligibility for Free School Meals (2021/22)	Schools, pupils and their characteristics (Academic year 2021/22)	2022	Open Government Licence v3.0
Measures of income and deprivation	Children in low income families (2021)	Children in low income families: local area statistics 2014 to 2021	2022	Open Government Licence v3.0
Indirect measure of food security	Distance to food shops (2019)	English indices of deprivation 2019	2019	Open Government Licence v3.0
Responses to food insecurity / insecurity	Trussell Trust End of Year Statistics (2021/22)	Trussell Trust End of Year Statistics (2021/22)	2022	Pending
Indirect measure of food security	Density of fast food outlets (2017)	Fast food outlets: density by local authority in England	2018	Open Government Licence v3.0
Cost of food	Price of lowest-cost grocery items (April 2021 to April 2022)	Tracking the price of the lowest-cost grocery items, UK, experimental analysis: April 2021 to April 2022	2022	Open Government Licence v3.0
Cost of food	Consumer price inflation tables	Consumer price inflation tables	2022	Open Government Licence v3.0

Cost of food	Living Costs and Food Survey (2020/21)	Family spending in the UK: April 2020 to March 2021	2022	Open Government Licence v3.0
Direct measure of food security	Consumer Insights Tracking Survey (FSA)	Consumer Insights Tracking Survey: March 2022	2022	Open Government Licence v3.0

Table 1: Data sources used in this report

The subsequent sections of this report set out our findings and conclusions from analysis of this data.

Data visualisation

We created an interactive tool to allow others to use the data we collected together in a single location. No personal information is included in the underlying data sources or the visualisations presented in the tool. The majority of data included in the tool is openly available (via Open Government Licence for example). Where this is not the case explicit permission for inclusion has been provided by the relevant party. The tool is available at:

<https://theodi.org/article/food-insecurity-and-data-infrastructure>

To help identify and manage ethical issues related to the collection, use and sharing of this data we used the ODI's Data Ethics Canvas. The Data Ethics Canvas is a tool for anyone who collects, shares or uses data. It helps identify and manage ethical issues around the use of data. In this project it allowed us to think about data limitations and their consequences as well as ensuring we gave thoughtful consideration to the primary purpose for our use of data in this project. Within the canvas we have also explicitly considered potential positive and negative impacts from our work on different groups. The supporting [Data Ethics Canvas for this work is available here](#).

Desk research

To ensure that we built on existing work rather than duplicating research we firstly undertook a desk-based review of food insecurity in the UK. This involved online keyword searches of specific terms. Relevant evidence which we identified included:

- Government policy documents and reports and analyses from public sector bodies.
- Research reports published by charitable groups and think tanks.
- Output from Parliamentary Select Committees.

We used this evidence in a variety of ways. In several cases these sources guided us towards specific data assets which we included in our analysis. In addition, some sources highlighted issues relating to data infrastructure in this context. Finally, where possible, we used the existing evidence to inform our terminology and definitions. All relevant sources are cited in subsequent sections of this report.

Stakeholder engagement

Our approach and conclusions have also been shaped by engagement with a variety of stakeholders. These external stakeholders – from across academia, charities, commercial companies and local government organisations – have expertise either in food insecurity or data infrastructure in this specific context. Their insights are reflected throughout this report. A full list is provided in the Annex.

Both our desk research and stakeholder engagement also included consideration of the existence and quality of data infrastructure. In particular, we asked researchers working on this topic what information they are currently lacking that would allow them to undertake impactful work in the future and explored with them what the root causes of these data gaps might be. In addition, our own review of publicly available data highlighted data infrastructure issues such as a lack of standardisation which makes it hard to link separate sources of data, and definitional inconsistencies – which are reflected throughout. Finally, we tested our provisional set of data infrastructure issues with food insecurity experts and frontline professionals before finalising our work. This led to further refinement of our conclusions.

3. Variation in prevalence of food insecurity

We summarise what is known about current variation in the prevalence of food insecurity across the UK. This helps to paint a detailed data-informed picture of food insecurity. It also helps to highlight household groups who may be at highest risk of food insecurity which could inform the design of support.

In this section we present the results of our analysis of the current prevalence of food insecurity across the UK. Our work has combined multiple sources of data. These sources of data include nationally representative household surveys which cover food insecurity; location data on distances households must travel to access food; data on eligibility for and uptake of national support schemes; and local initiatives to combat food insecurity; as well as detailed information on the extent to which food insecurity impacts groups at a granular level in society.

Our work provides valuable insights for four reasons:

- We bring together in a single piece of analysis multiple datasets, each of which relates to some aspect of food insecurity. This unique combination of datasets has not been included in any previous work.
- We highlight shortcomings associated with only focusing on the most visible consequences of food insecurity, for example the use of food banks.
- We link food insecurity with more generic indicators of poverty. However, we are also able to illustrate how food insecurity impacts a specific group who do not receive as much attention in this context but may be at risk nonetheless.
- We consider not only how best to derive insights from the data that is currently publicly available but also noted data gaps and deficiencies. Addressing these would allow for the design of more efficient national and local response to food insecurity.

Prevalence of food insecurity among demographic groups in the UK

The Family Resources Survey (FRS) is an annual report that provides facts and figures about the incomes and living circumstances of households and families in the UK.³¹ In 2019 the Department for Work and Pensions (DWP) announced that it would introduce food insecurity questions to the FRS to allow for the investigation of food insecurity drivers and identification of the groups most at risk.³²

The FRS defines food security as ‘access by all people at all times to enough food for an active, healthy life’. Questions relate to the household’s experience in the 30 days immediately before their survey interview.³³ Based on their responses to these questions households are then placed into one of four categories (high food security, marginal food security, low food security and very low food security). High and marginal food security households are considered to be food secure in our analysis. Low and very low food security households are considered to not be food secure.

We have analysed the most recent wave of FRS data to explore the prevalence of food insecurity/poverty and how that varies among different subgroups. Overall 9,299 households answered the questions on food security in the most recent wave of the FRS (2020/21).³⁴ On average across the entire sample 7% of these UK households were classified as food insecure. This amounts to almost 1.95m households across the UK.³⁵

As we describe in more detail at the end of this section there are other national sources of data on food insecurity at the household level. These alternative sources do not always measure food insecurity in precisely the same way which can cause confusion and make it more difficult to understand the scale of the current problem.

We observed relatively high rates of food insecurity in single person households. Approximately 15% of households containing a working age single person were food insecure. The equivalent figure for households containing two adults was only 4%. This could be because households containing more than one adult can share some fixed expenses.

³¹ GOV.UK (2022), ‘Family Resources Survey’

<https://www.gov.uk/government/collections/family-resources-survey--2>

³² UK Parliament (2020), ‘HM Government – Written evidence (FPO0079)’,

<https://committees.parliament.uk/writtenevidence/298/html/>

³³ GOV.UK (2022), ‘Family Resources Survey: background information and methodology’

<https://www.gov.uk/government/statistics/family-resources-survey-financial-year-2020-to-2021/family-resources-survey-background-information-and-methodology#the-frs-questionnaire>. Household

responses to a number of questions on food security are combined to derive an overall score (0-10) which measures whether each household has sufficient food to facilitate active and healthy lifestyles. The same questions are also used internationally to measure food insecurity. A score of 0 indicates high food security and that the household has no problem, or anxiety about, consistently accessing adequate food. However, a score of 6-10 implies that at times during the last 30 days, eating patterns of one or more household members were disrupted and food intake reduced because the household lacked money or other resources for food.

³⁴ The ONS calculates the non-response rate at 77%. They attribute this low response rate to the COVID-19 pandemic and urge caution that those who responded to the survey may be meaningfully different to those who did not.

³⁵ Office for National Statistics (2020), ‘Families’. The ONS estimated that there were 27.8m households in the UK in 2020

<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/families>

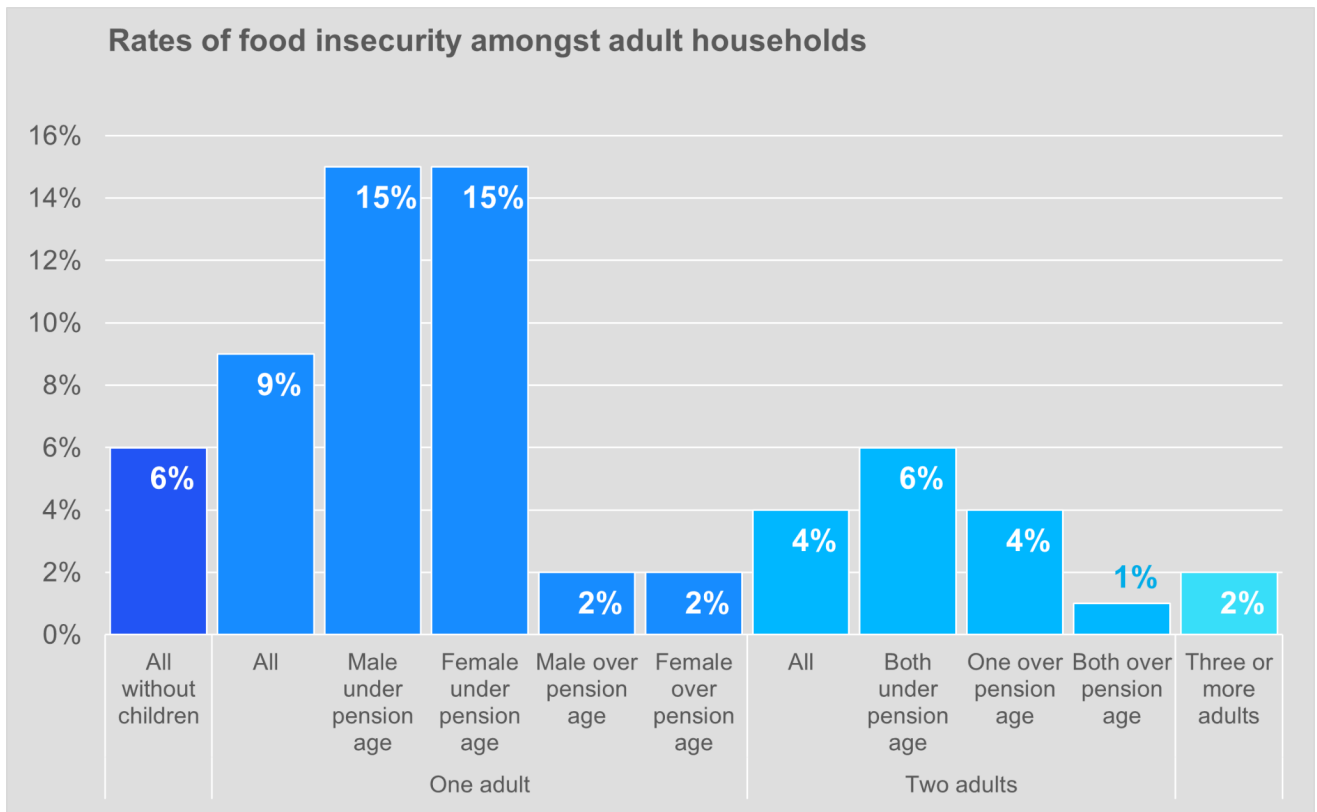


Figure 1: Rates of food insecurity among adult households (FRS, 2020/21)

On average households containing children are more likely to be classified as food insecure (9% of households containing children are classified as food insecure). The equivalent figure for households which do not contain any children is 6%.

Two additional patterns stand out. Firstly, households containing children and only one adult experience far higher rates of food insecurity (19% of single adult households with children experience food insecurity) than households containing children and two adults (7%). Secondly, households containing three or more children are more likely to be food insecure than households with one or two children (regardless of how many adults are in the household).

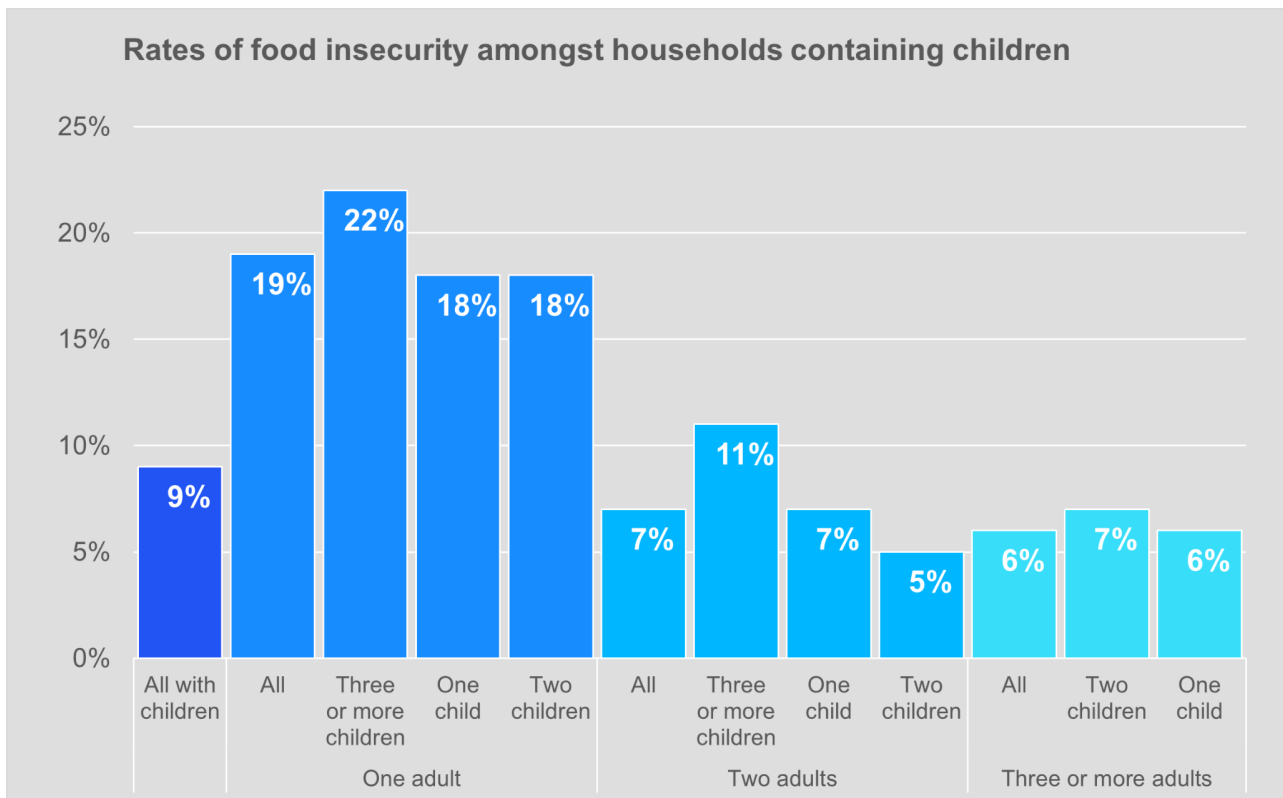


Figure 2: Rates of food insecurity among households containing children (FRS, 2020/21)

As well as the number and age of household members several other characteristics are clearly linked to food insecurity. Households headed by an individual who is Black (21%), Bangladeshi (12%) or mixed ethnicity (13%) all experience high rates of food insecurity. Whereas households headed by someone who is Indian (4%), or white (6%) are less likely to be classed as food insecure.

UK households containing someone in receipt of an income-related state benefit are also significantly more likely to experience food insecurity (24%). This pattern is most evident in relation to Employment and Support Allowance (ESA). ESA is designed to help those who have a disability or health condition that affects how much they can work.³⁶ Almost one in three households containing an ESA recipient is food insecure. A similar pattern can be seen for universal credit, and council tax reduction recipients.

³⁶ <https://www.gov.uk/employment-support-allowance>

Rates of food insecurity amongst households receiving specific government benefits

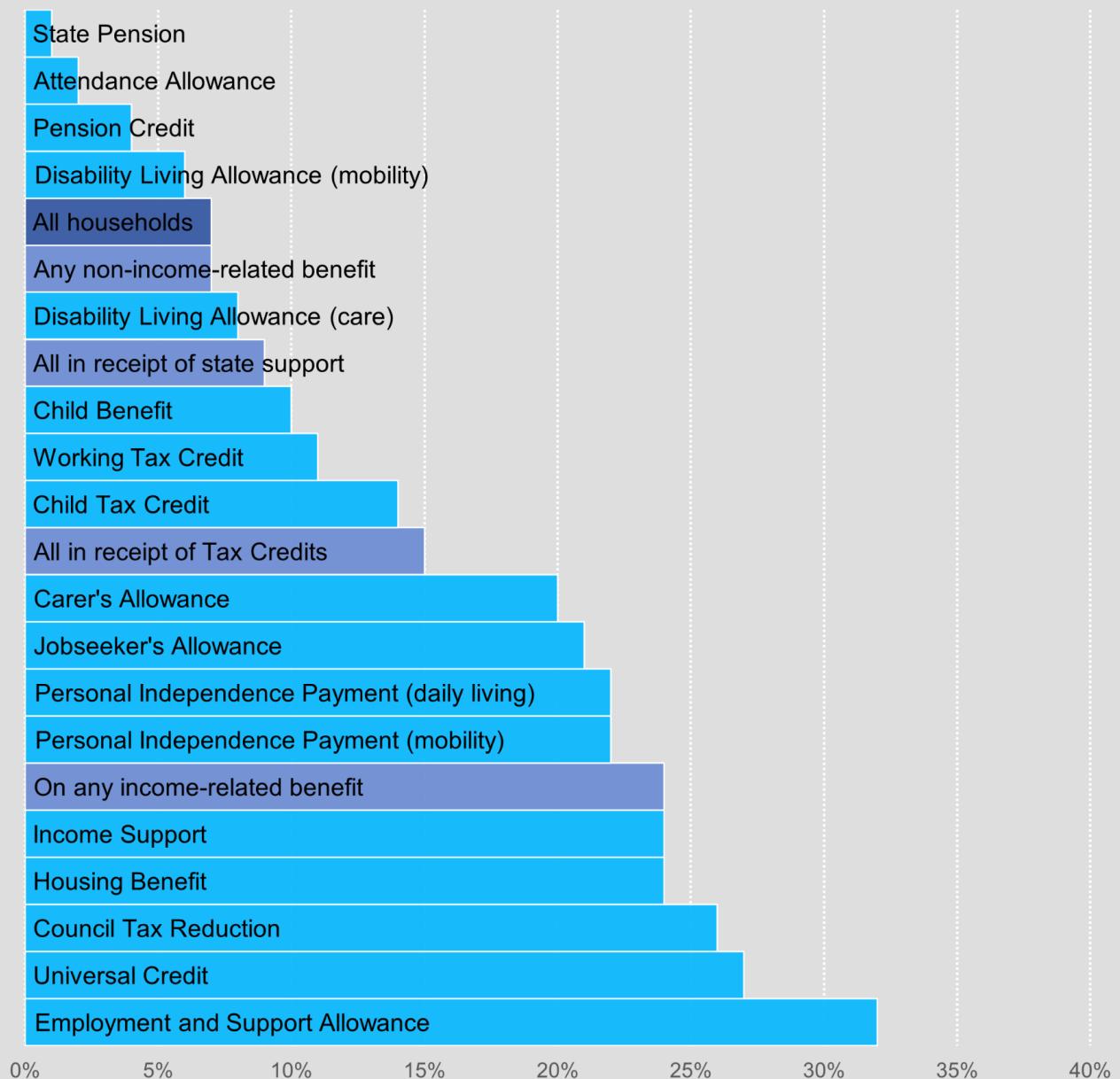


Figure 3: Rates of food insecurity among households receiving specific government benefits (FRS, 2019/20).

The analysis we present above does help to clarify which socio-demographic groups are likely to be at highest risk of food insecurity and may inform the design of local or national support schemes. Using publicly available FRS data it is not currently possible to drill down further and examine food insecurity among subgroups defined by multiple characteristics (for example, the interaction between disability and ethnicity). We consider the implications of this limitation at the end of this section.

Geographical drivers of food insecurity

Food insecurity will also be partially determined by where an individual or household is located in the country.

Our analysis of FRS data shows that on average food insecurity rates are highest in the north-east of England (11%), inner London (9%) and the East Midlands (9%). Conversely, rates of food insecurity in Wales (3%), south-east England (4%), south-east England (4%) and Northern Ireland (5%) are considerably lower.

This pattern will be influenced by multiple interrelated factors. Firstly and most obviously, prices vary across the country. Previous analysis by the Office for National Statistics (ONS)³⁷ concluded that the overall price level was 7% higher in London compared with the UK average price level. On the other hand the relative price level of Northern Ireland was 2.3% lower than the UK as a whole. Interestingly, food prices exhibited significantly less regional variation than other categories of expenditure such as recreation or hotels.³⁸ However, this still implies that some households in, for example, London will have lower purchasing power overall for a given level of income. This may have knock-on impacts on food insecurity. Unsurprisingly, previous research³⁹ has shown that food price increases generally result in an increase in the prevalence and depth of poverty.

Secondly, purchasing healthy food will be logistically more difficult in some areas of the country. One of the underlying domains of multiple deprivation which cover England considers the average distance by road to a general store or supermarket within each local authority.⁴⁰ Previous research has shown that food insecure families are less likely to report easy access to adequate food shopping.⁴¹

The below histogram summarises the average road distance to a general store or supermarket across England's local authorities.⁴² We can see that the average distance to a food shop is less than 1km for the majority of local authorities (and for a significant minority the average distance is less than 0.5 km). However, there are a relatively small number of predominantly rural local authorities where the average distance exceeds 2km.

³⁷ Office for National Statistics (2016), 'Relative regional consumer price levels of goods and services, UK: 2016', <https://www.ons.gov.uk/economy/inflationandpriceindices/articles/relativeregionalconsumerpricelevelsuk/2016>

³⁸ Ibid. The price level for "Recreation & Culture" was 15% higher in London relative to the UK average and equivalent figure for "Restaurants & hotels" was 13%

³⁹ The Department for International Development (2014), 'Food prices and poverty', https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/318351/Food_prices_and_poverty_final.pdf

⁴⁰ GOV.UK (2019), 'English indices of deprivation 2019' <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019>

⁴¹ National Library of Medicine (2016), 'Perceived and Geographic Food Access and Food Security Status among Households with Children', <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5588026/>

⁴² The indicator is defined as an average road distance measured in kilometres

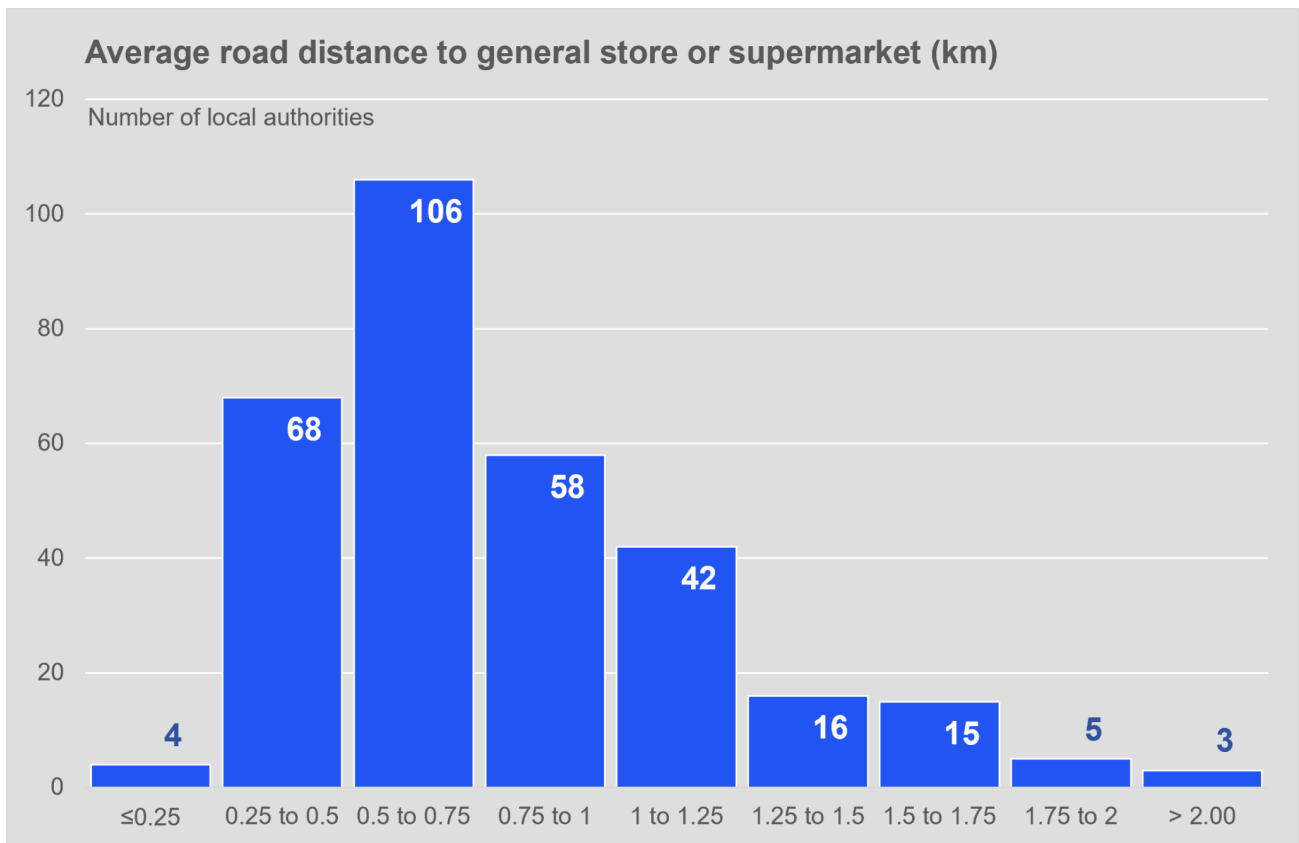


Figure 4: Average road distance to food shop by local authority (English indices of deprivation, 2019).

The ten local authorities with the lowest average distances are all London boroughs. The areas with the longest distances include mostly rural areas in Devon, Norfolk and Derbyshire.

Links to wider measures of poverty

As we noted in Section 1, food insecurity is highly correlated with other measures of poverty and deprivation. We explored this link in detail using the most recent data available to determine the extent to which food insecurity patterns are in keeping with variation in more generic measures of poverty across the UK as a whole.

We focused on⁴³ households that are below 60% of median contemporary income (median household disposable income in 2020/2021 was £31,400). These households with an annual income of less than £18,840 per annum are classed as low income under the government’s primary measure of poverty.

Overall in 2020/21 15.8% of households have a median contemporary income which is less than 60% of the median household income. Clearly this is significantly higher than the overall proportion of households who are classified as food insecure (7%). This could be for a number of reasons. For example, it may be that the food specific measure reflects a more acute level of poverty than the generic poverty line. It is also possible that some low income families may prioritise spending on food or have lower than average costs which means they do

⁴³ This analysis is again based on the 2020/21 FRS.

not find themselves in food insecurity. Finally, it also highlights the fact that the FRS's food insecurity metric relates only to the last 30 days while the income data covers the last 12 months. It is possible that some low income families currently classed as food secure may have experienced food insecurity issues at some point over the last year.

Despite this difference in proportion of families experiencing food insecurity versus the proportion below the poverty line, a similar pattern of variation emerges. A far higher proportion of households with children are living in relative poverty. The current rate of relative poverty for households with children is 31%. The equivalent figures for households containing only adults and pensioner households are both 17%. This pattern mirrors our findings in relation to food insecurity.

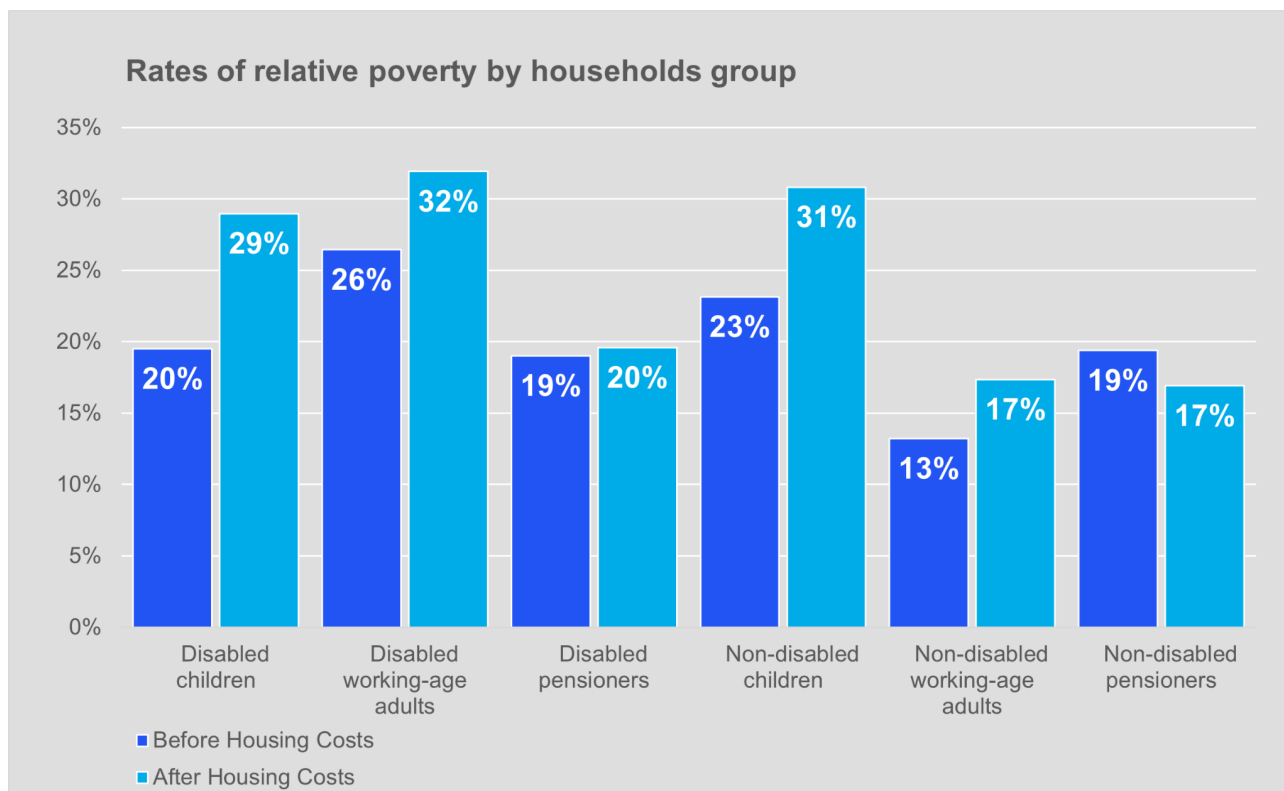


Figure 5: Rates of relative poverty by households group (FRS, 2020/21)

Households headed by Black (40%), Bangladeshi (55%) or mixed ethnicity (32%) individuals are all significantly more likely to be in relative poverty. This again is in keeping with our food insecurity analysis. The quoted poverty figures above are based on income after housing costs have been accounted for. A very similar pattern emerges if income before housing costs is used.

The link between food insecurity and poverty becomes even clearer when we examine rates of food insecurity among households who have earnings of less than 60% of median average income.⁴⁴

⁴⁴ After housing costs.

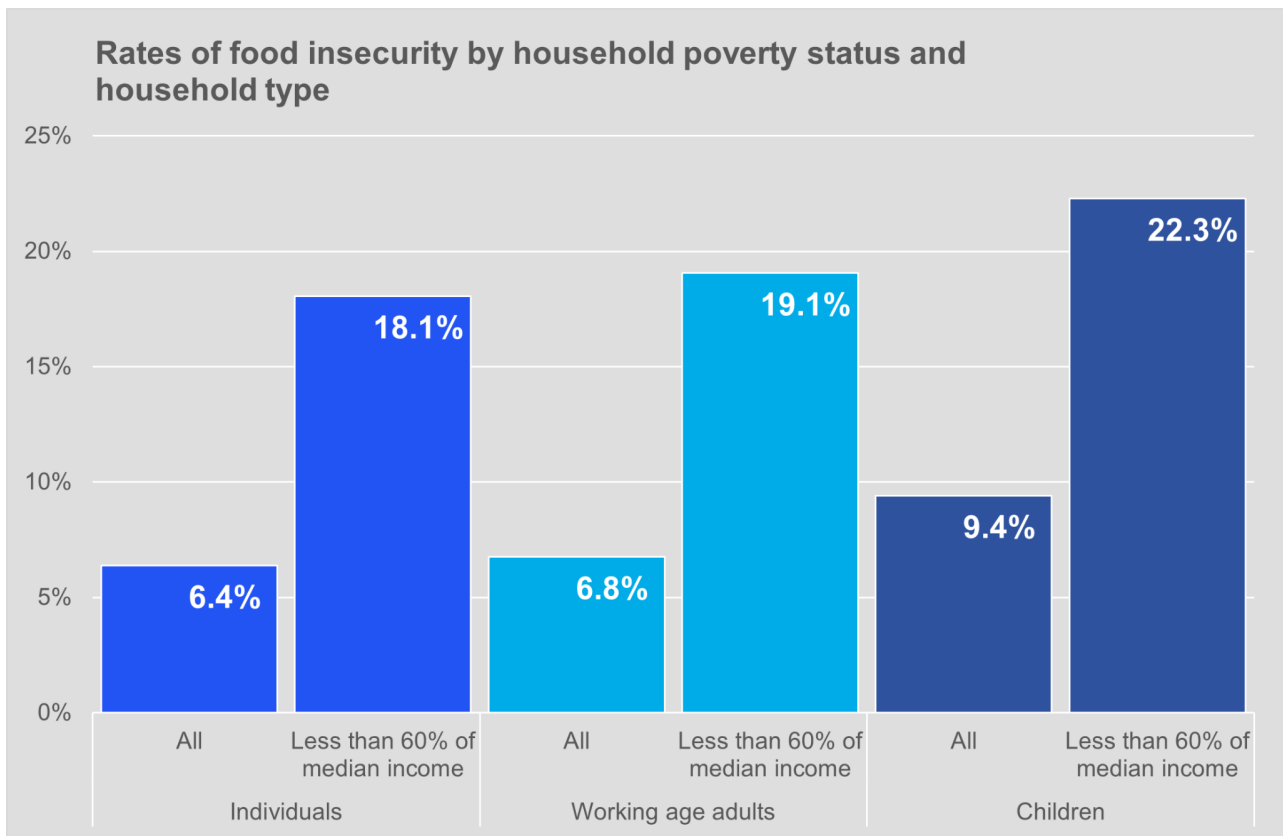


Figure 6: Rates of food insecurity by household poverty status and household type (FRS, 2019/20)

Slightly more than 6% of all individuals are living in households experiencing food insecurity. However, the equivalent figure among individuals living in households beneath the poverty line is over 18%. A similar differential is evident among only working age households and households containing children.

Case study: families with children

Based on our analysis above, families with children clearly emerge as a key group for whom food insecurity is more likely to be an issue.

We can dive deeper into poverty rates among this group of households. The DWP publishes official statistics (statistics that are produced by crown bodies, those acting on behalf of crown bodies, or those specified in statutory orders) on the number and proportion of children living in low income families.⁴⁵ Analysis of this data reveals stark geographic differences in the proportion of children living in poverty.

⁴⁵ GOV.UK (2020), 'Children in low income families: local area statistics' <https://www.gov.uk/government/collections/children-in-low-income-families-local-area-statistics>

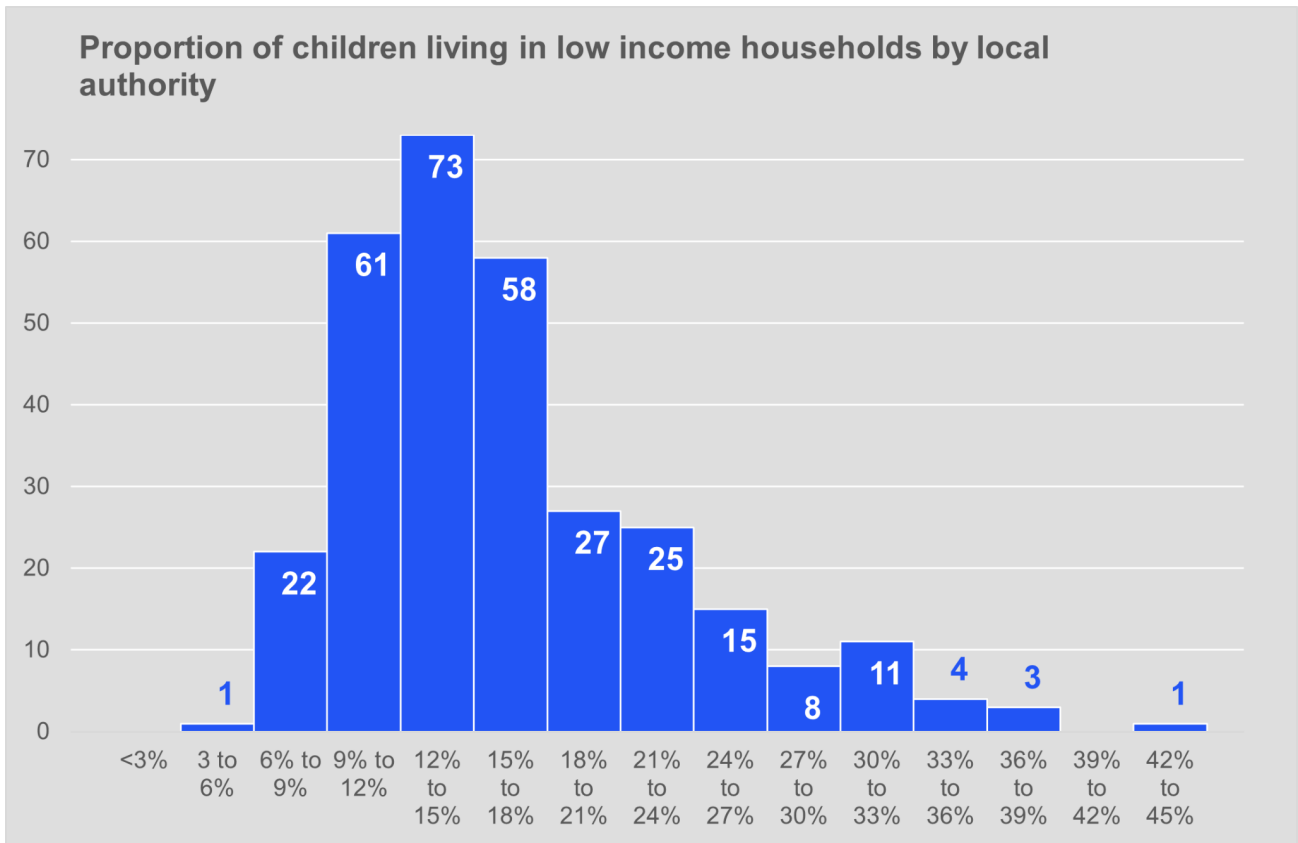


Figure 7: Count of Local Authorities by proportion of children living in low income households (<60% of median).

In the median local authority 16% of children are living in relative poverty. However, this rate is as high as 42% in Middlesbrough and as low as 3% in the City of London. Below we have illustrated the full extent of this variation geographically.

Food - Number eligible for Healthy Start vouchers per 100,000 all ages population - 2022

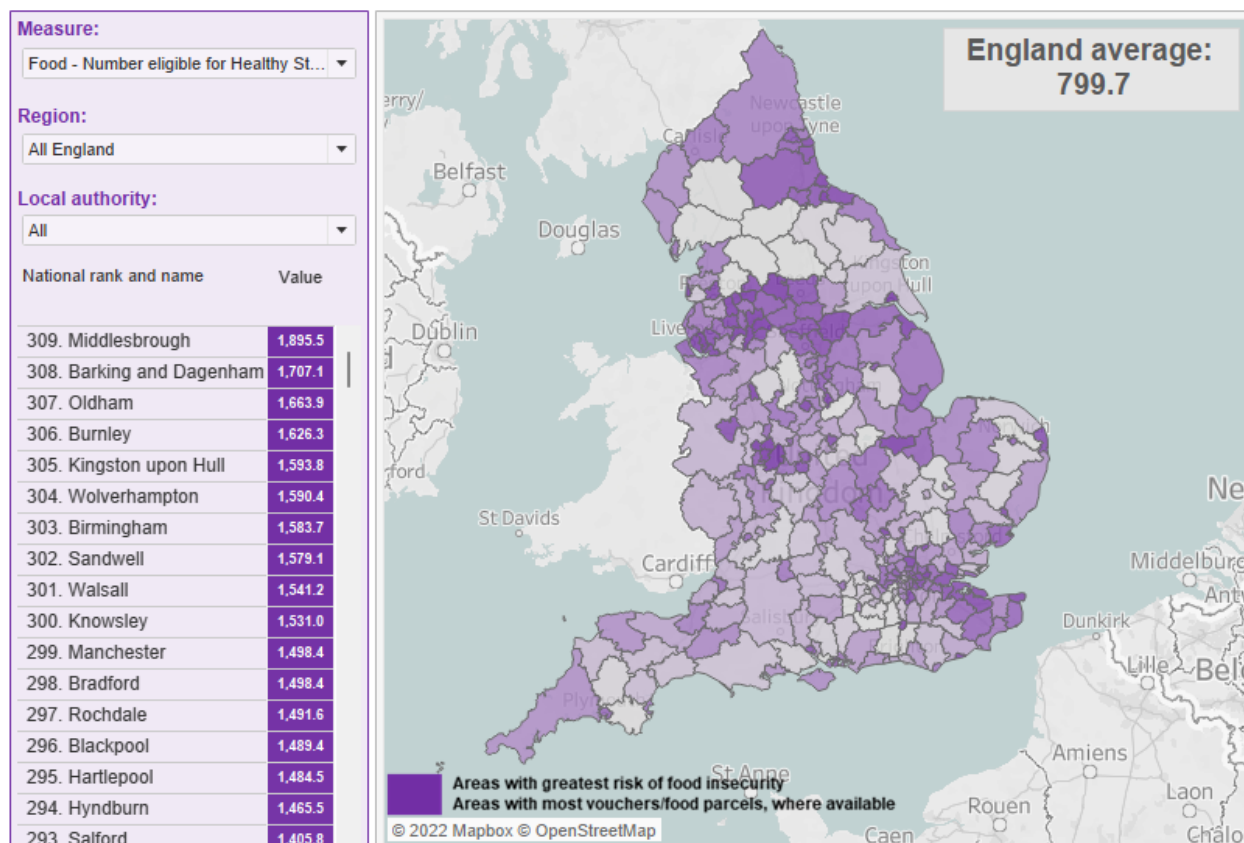


Figure 8: Heatmap of children living in low income households (<60% of median).

There are specific policies in place to help with food affordability for this group of households.⁴⁶ The Healthy Start scheme provides means-tested vouchers for pregnant women and families with young children. The vouchers can be used to buy healthy foods like milk or fruit.⁴⁷

The Healthy Start scheme website provides uptake data over a seven month period (currently September 2021–March 2022). In October 2021 only slightly more than half of eligible families in England claimed their entitlement under this scheme (54%). However, there has subsequently been five consecutive months of increased uptake. In March 2022 73% of eligible families made use of the scheme.

This trend could in part reflect seasonal variation or increased active promotion of the scheme to raise awareness. We cannot verify this directly as historical data is only available over a seven-month period. It is also plausible that uptake is increasing in the face of rising food costs and other pressures on family budgets.

⁴⁶ Other national and local policy responses and initiatives designed to tackle food insecurity are set out in Section 5.

⁴⁷ GOV.UK (2022), 'Healthy Start', <https://www.gov.uk/healthy-start>. Eligibility is usually based on receiving passport benefits such as Universal Credit or Child Tax Credits

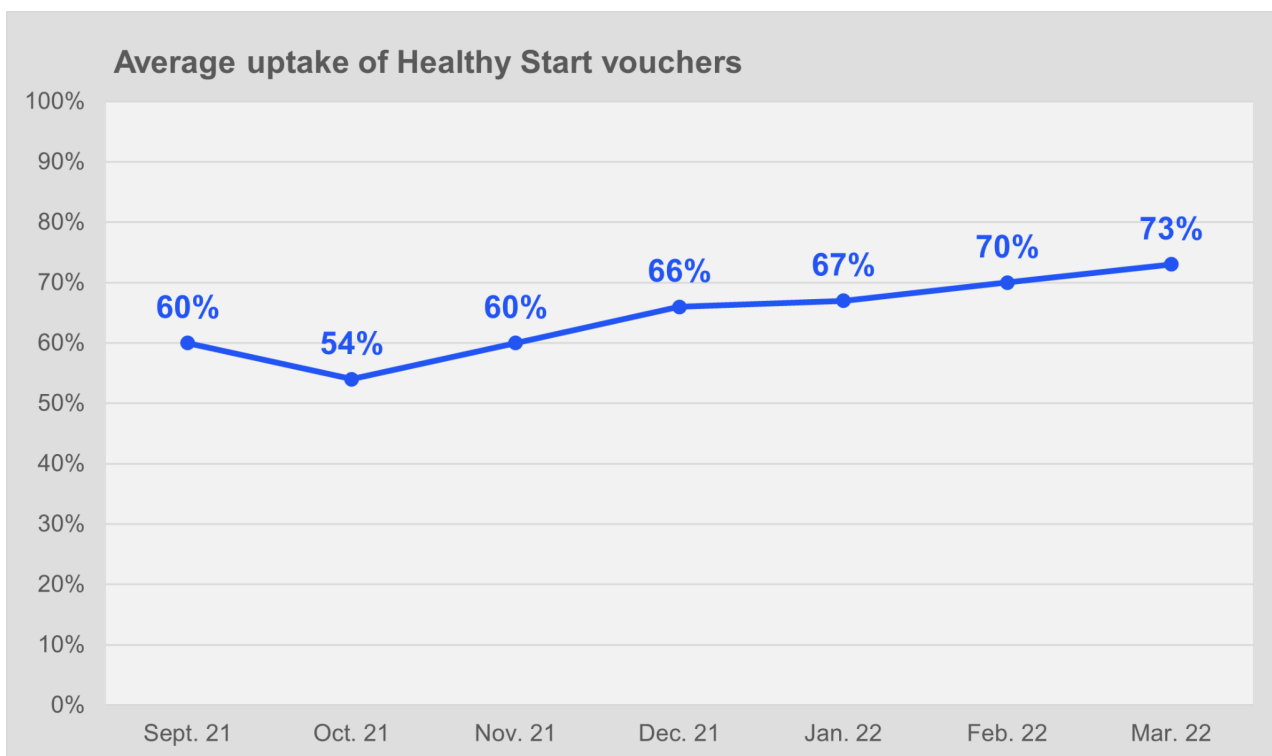


Figure 9: Average Healthy Start voucher uptake rates among eligible families in England (September 2021–March 2022).

The information underlying this chart has been added to the local area tool⁴⁸ that we created as part of this work, so that it is possible to explore eligibility and uptake of Healthy Start Vouchers by local authorities in England. This can give an indication of differential food poverty risks by locality.

In addition, certain children are eligible for free school meals.⁴⁹ Free school meals are for children whose parents receive certain benefits (or who are receiving those benefits themselves).⁵⁰ In addition, since September 2014, free school meals have been provided for all children in reception, year 1 and year 2 in primary schools.

Currently 24% of all state-funded students are eligible for free school meals. Eligibility for free school meals (and uptake among those eligible) is highly correlated with deprivation. The figure below shows the average percentages of free school meal eligibility and uptake in local authorities grouped by their deprivation decile rank.⁵¹

⁴⁸ Open Data Institute (2022), Food insecurity and data infrastructure, <https://theodi.org/article/food-insecurity-and-data-infrastructure>

⁴⁹ GOV.UK (2022). 'Apply for free school meals', <https://www.gov.uk/apply-free-school-meals>

⁵⁰ House of Commons Library (2022), 'School Meals and Nutritional Standards (England)' <https://researchbriefings.files.parliament.uk/documents/SN04195/SN04195.pdf>. Relevant benefits include Income Support, Jobseekers Allowance, Universal Credit with household income of less than £7,400 per year

⁵¹ Indices of deprivation affecting children (IDACI)

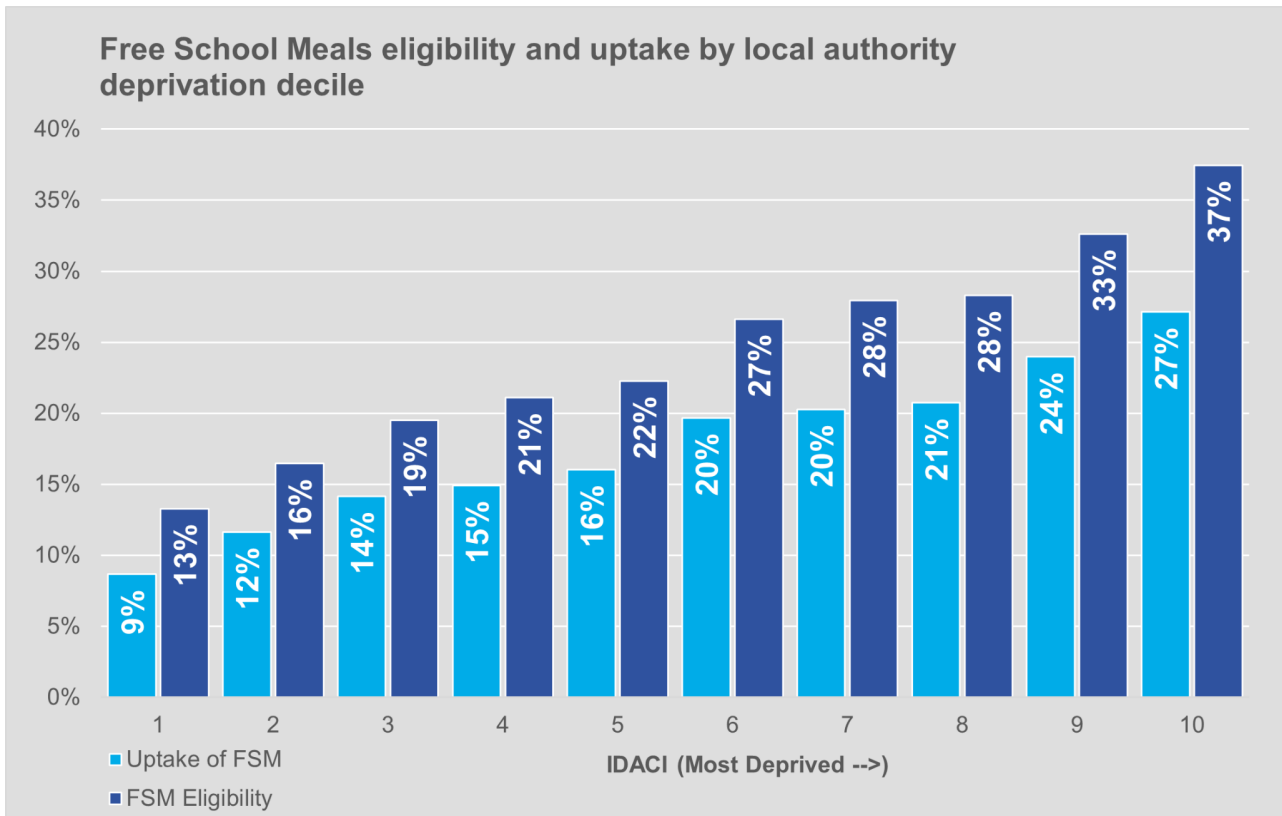


Figure 10: Prevalence of free school meals by local authority deprivation decile (2021/22).

In addition, Irish Traveller children, Roma children, and Black Caribbean children are all significantly more likely than white British children to be eligible for free school meals.

Although some local areas provide their own holiday free school meal vouchers there is no national free school meals scheme during school holidays which can place a severe strain on certain groups of households.

Case study: working households

Some households that contain someone in employment are still at risk of food insecurity. The proportion of low income households which contain at least one working adult (in work poverty) has been rising for over a decade.

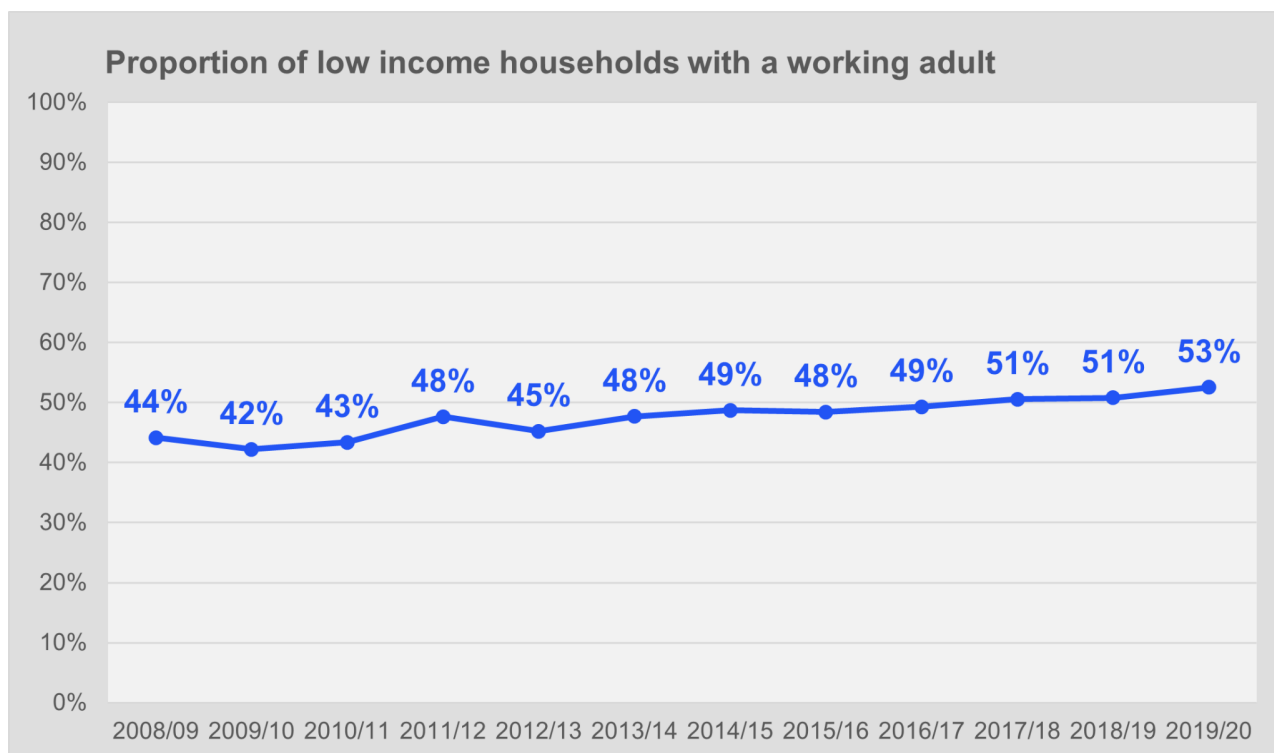


Figure 11: Proportion of low income households containing at least one working adult (2008/9–2019/20).

The Food Standard Agency's (FSA's) Consumer Insights Tracking Survey (which covers England, Wales and Northern Ireland)⁵² allows us to explore how the responses to certain food insecurity metrics vary by employment status and employment type. We have analysed this data and presented the results in the table below.

Firstly we can observe that food insecurity is not an issue confined to those who are unemployed or out of the labour force. The FSA data shows that 32% of employed respondents were worried that their households would not be able to afford food in the next month. This is approximately equal to the equivalent figure for non-working respondents (29%). Also, 24% of employed respondents had cut down on the size of their meals or skipped meals in the past month because they did not have enough money to buy food and 16% of employed respondents had used a food charity or food bank in the last month.

If we focus on different types of occupation we can see that 27% of respondents who worked in higher and intermediate managerial, administrative, or professional

⁵² Food Standards Agency (2022), 'Household Food Insecurity'
<https://www.food.gov.uk/sites/default/files/media/document/FSA%202022-06-09%20-%20Annex%20B%20-%20Household%20Food%20Insecurity%20Evidence%20and%20Consumer%20Tracker%20Data.pdf>

occupations (this corresponds to the ONS’s social grade AB)⁵³ were worried that their households would not be able to afford food in the next month. Over 20% of this professional group had cut down on the size of their meals or skipped meals in the past month and 16% had used a food charity or food bank in the last month.

Generally speaking these figures that we have reported for those working in professional occupations are lower than the equivalent figures for respondents from other social grades (such as those working in administrative occupations, skilled manual or semi-skilled manual occupations and the unemployed). However, we can clearly see that food insecurity is not an issue confined to those who are unemployed or relying on income-related benefits. Rather it is a major challenge for large proportions of society including those with a professional occupation.

Our findings are in line with recent media coverage which has for example focused on the use of food banks among NHS staff.⁵⁴

Metric	Employment status		Social grade			
	Working	Not working	AB	C1	C2	DE
Worried about being able to afford food	32%	29%	27%	30%	29%	40%
Cut meal size or skipped meals (because they did not have enough money to buy food)	24%	19%	21%	18%	20%	30%
Use a food charity or food bank	18%	9%	16%	10%	15%	18%

Table 2: FSA insecurity metrics by employment status and employment type

⁵³ ONS (2010), ‘Socioeconomic classifications’ <https://www.ons.gov.uk/methodology/classificationsandstandards/otherclassifications/thenationalstatistics/socioeconomicclassificationsssecrebasedonsoc2010>

⁵⁴ e. Mirror (2022), ‘Low-income nurses forced to queue at food banks to feed families after finishing shifts’ <https://www.mirror.co.uk/news/politics/low-income-nurses-forced-queue-27171976>

Use of local services which address food insecurity

We can also examine the variation in the usage of local support services across the country. The FSA Household Food Insecurity report (which covers England, Wales and Northern Ireland)⁵⁵ found that, in March 2022 15% of respondents who had used a food charity or food bank in the last month.

Data on food bank and food charity service usage can reveal important insights on the scale of current food insecurity issues. However, it is important to note from the outset that not all individuals who experience some form of food insecurity will use a food bank. FSA data (from the Household Food Insecurity report)⁵⁶ shows that 22% of respondents skipped a meal, or cut down the size of meals, because they did not have enough money to buy food. A further 31% of respondents were very or somewhat worried about not being able to afford food in the next month. These figures are clearly far higher than the rate of food bank usage quoted above (15%). This highlights the larger scale of need captured by food insecurity data but not food bank data.

There are several reasons why people struggling with food insecurity would not use a food bank or other type of food aid. Firstly, access to food banks can be gatekept by referrals. There may also be stigma around food bank usage, which may deter people. Some households may also not have a food bank close to where they live or may be unaware of the location of food banks in their area or the specific services offered.

The Independent Food Aid Network (IFAN) is calling for a ‘cash first’ approach to tackling growing food insecurity. Like the Trussell Trust, IFAN is calling for measures that would reduce the poverty driving food insecurity in communities including adequate social security payments, wages and job security as well as the availability of statutory cash grants in every local authority in the UK.

Many food banks are currently struggling to keep up with the rise in demand at the same time as a fall in donations⁵⁷ and increasing operational costs. This reinforces concerns regarding their lack of sustainability and the need for a cash first and long-term approach to growing food insecurity.

Granular and comprehensive data on the location of food banks and other food charities is difficult to access as there is no one centralised list of food aid charities and services. This is partly because some of these services are relatively new or evolving and there is not yet adequate data infrastructure in place. As we describe in more detail below, the very local nature of provision also creates coordination challenges in terms of standardisation. Previous research has concluded that in February 2021 there were over 1,300 Trussell Trust food banks in

⁵⁵ Food Standards Agency (2022), ‘Household Food Insecurity’
<https://www.food.gov.uk/sites/default/files/media/document/FSA%2022-06-09%20-%20Annex%20B%20-%20Household%20Food%20Insecurity%20Evidence%20and%20Consumer%20Tracker%20Data.pdf>

⁵⁶ *ibid*

⁵⁷ BBC (2022), ‘Food banks warn they are struggling to keep up with demand’,
<https://www.bbc.co.uk/news/business-62228972>

the UK, and over 900 independent food banks⁵⁸ as well as a large number of wider support services which can relate to food insecurity. To try and partially address this data gap as part of this work we combine data from multiple sources together for the first time.

The map that we present below contains information on the location of food banks and other local food and wider support services (such as advice centres, out of school clubs and drop in centres) affiliated with Trussell Trust and FareShare. FairShare redistributes surplus food to charities that turn it into meals). This combined dataset has never been made publicly available before and it can now serve as a valuable resource for link workers and individuals seeking support in their local area. However, it will still be missing some information as no consolidated list exists.

The location of each food bank and support organisation below refers to the location of where the aid was provided rather than the home addresses of recipients.

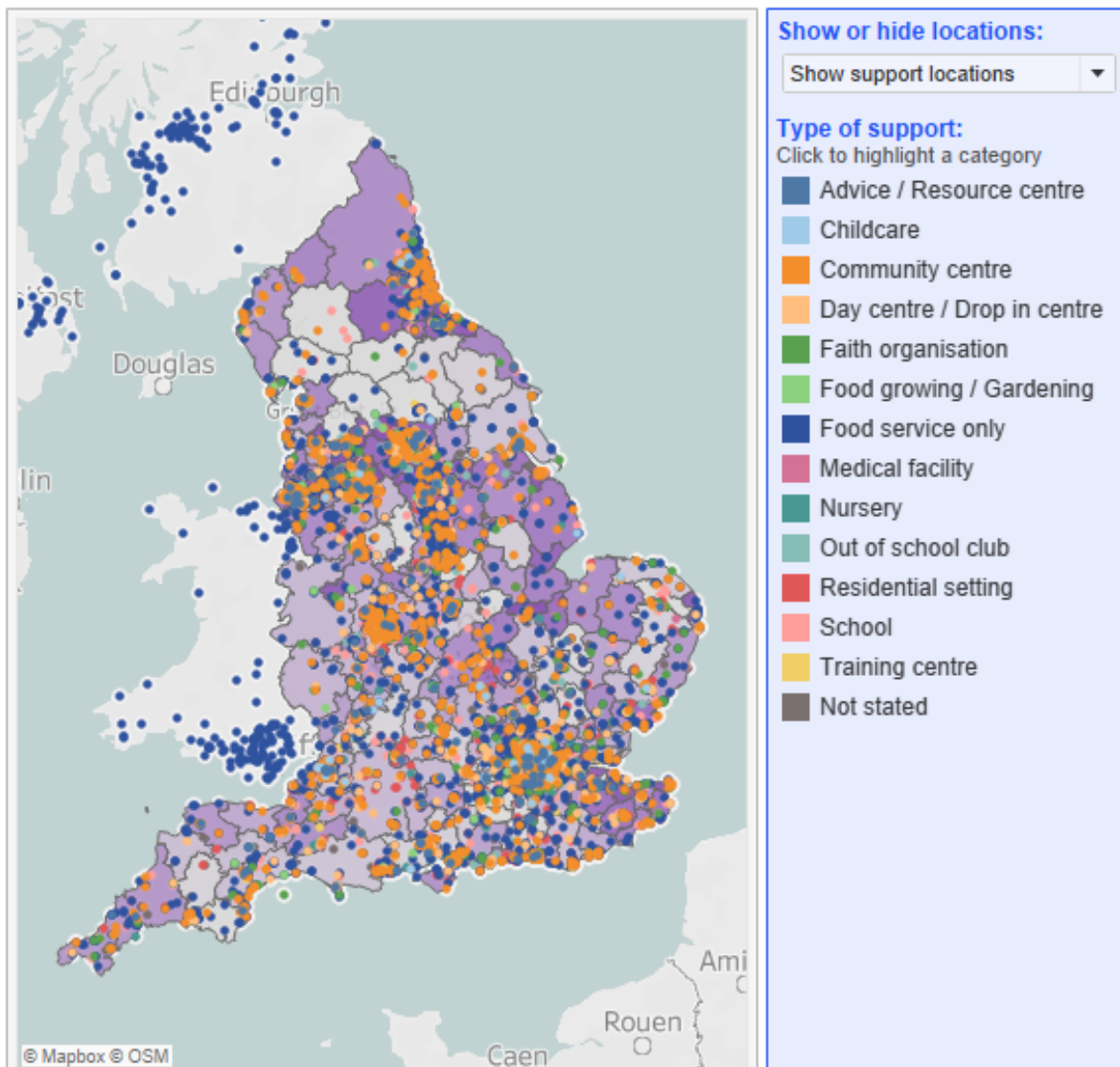


Figure 12: Location of food banks and other support services across the UK

⁵⁸ House of Commons Library (2022), 'Food banks in the UK', <https://researchbriefings.files.parliament.uk/documents/CBP-8585/CBP-8585.pdf>

The information underlying this map has been added to the local area tool⁵⁹ that we created as part of this work so that it is possible to explore the location of some food banks and other services related to tackling food insecurity within a specific locality. Policymakers can therefore start to explore areas which look to be underserved and individual service providers can potentially explore linkages to neighbouring aid providers. However, as we have noted above, while this represents an improvement in data availability caution is still needed as not all food banks and other relevant local services can be included.

We also used this unique dataset to consider the extent to which current food bank prevalence correlates with local area deprivation (a proxy for poverty or underlying need). The scatterplot below shows the correlation between the number of food parcels distributed per capita in each local authority and the average rate of deprivation. Again due to data limitations this analysis only includes Trussell Trust food parcels who will not be equally active in each part of the UK.

The fact that we observe no strong correlation is in keeping with the survey and anecdotal evidence we presented above: that the location of food banks are a poor indicator of food insecurity within a specific area. This analysis therefore seems to indicate that food insecurity as an issue is far wider than the subset of the population using food banks. This emphasises why better measurement of local food insecurity is so important.

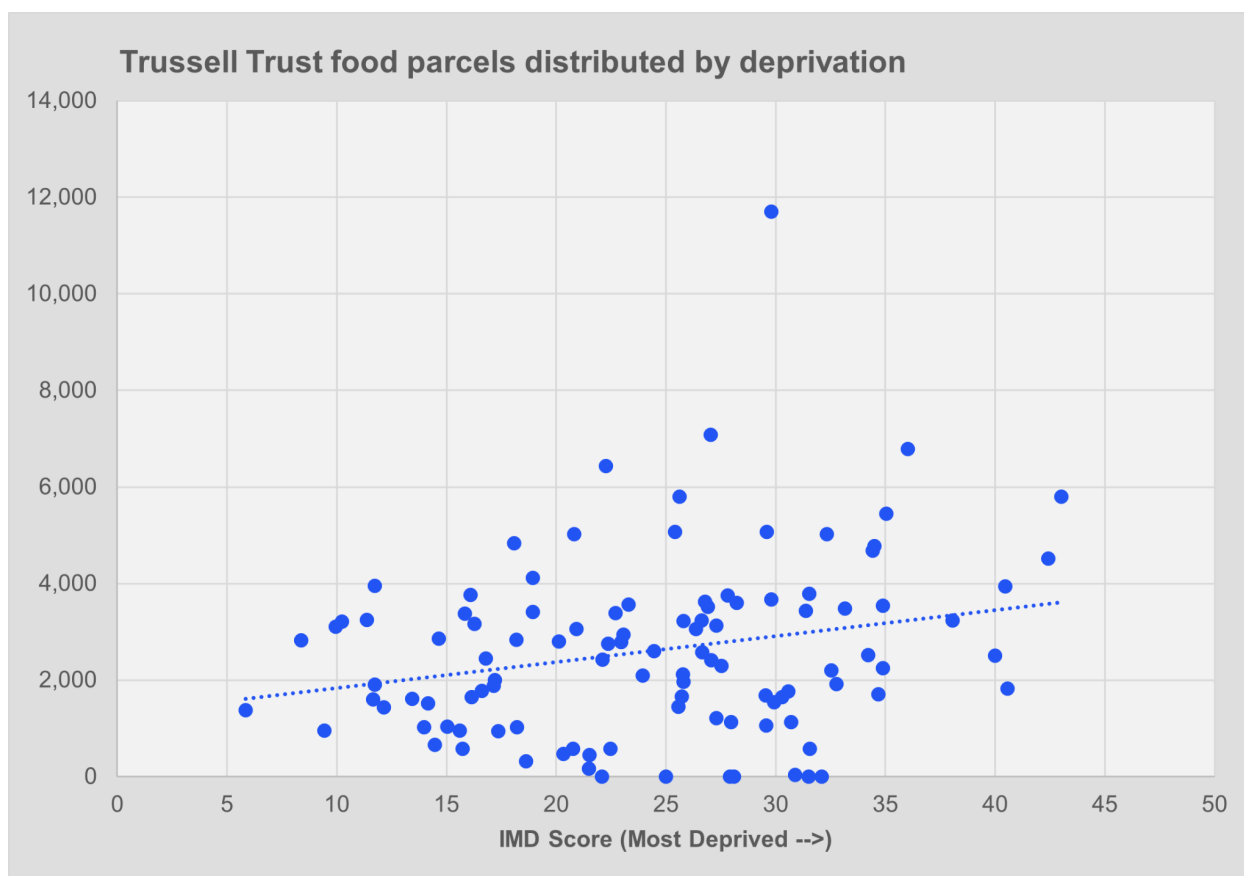


Figure 13: Correlation between volume of food parcels distributed and deprivation within each local authority

⁵⁹ Open Data Institute (2022), Food insecurity and data infrastructure, <https://theodi.org/article/food-insecurity-and-data-infrastructure>

The information underlying this scatterplot has been added to the local area tool⁶⁰ that we created as part of this work. The tool includes data on multiple domains of deprivation which allows users to explore other correlations and uncover patterns in food insecurity.

Food banks are not the only type of support offered to individuals facing food insecurity. Other initiatives include social supermarkets where consumers do pay for groceries albeit at large discounts. These supermarkets could help to avoid the stigma associated with what can be seen as 'handouts'. Meal providers also help to distribute surplus food. Likewise breakfast clubs and holiday clubs may in some cases include provision of free or discounted meals. However, comprehensive data on the location and specific activities undertaken, as well as eligibility criteria (if any) is also difficult to access.

Data infrastructure issues which lead to gaps in our understanding

Our analysis on the geographic and demographic variation in the prevalence of food insecurity is helpful in understanding relevant drivers. When combined with our accompanying local area tool this work can allow local areas to infer patterns of need. Our work also helps to build a nationwide data enabled picture of food insecurity in the UK as well as highlighting specific at-risk groups, some of which may challenge existing preconceptions regarding this issue.

However, there are also important shortcomings and gaps in the data which are related to underlying issues in the data infrastructure. These gaps could undermine future efforts to better understand and respond to the problem. We have summarised these below.

Data gaps are preventing us from understanding the scale of the current problem

The addition of food security questions for the first time as part of the FRS represents a significant improvement. Nationally representative data on food insecurity is now available.

Further consideration of the precise wording and structure of the included questions may help to provide more valuable information. For example, the FSA also collects information on the proportion of people who live with food insecurity.⁶¹ The FSA's Consumer Interest in Food report relies on the same 10-item food security questions that feature in the FRS.⁶²

⁶⁰ Open Data Institute (2022), Food insecurity and data infrastructure, <https://theodi.org/article/food-insecurity-and-data-infrastructure>

⁶¹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/106099/Annex%20B%20-%20Household%20Food%20Insecurity%20Evidence%20and%20Consumer%20Tracker%20Data.pdf

⁶² This same measure is also used internationally.

Despite this similarity in approach, the FSA concludes that 15% of people live with household food insecurity. This is more than twice the rate of household food insecurity reported by the FRS data (7%). This difference may be largely driven by the fact that the FSA questionnaire asks interviewees about the last 12 months rather than the last 30 days.⁶³ Also the FSA questionnaire is at the individual level while the FRS data is at the household level.

Improving our understanding of the current scale of food insecurity is a vital precondition to taking any effective action in this context. Currently there are at least two different publicly funded surveys which do not align in terms of measurement. There may be value in making these two separate sources more consistent in the future or being clearer about the pros and cons of different food insecurity assessment periods. Creating a single overarching food insecurity ‘National Statistic’ (described by the ONS as ‘important official statistics that have been demonstrated, through assessment, to meet the very highest standards of trustworthiness, quality and value’), which is accompanied by a clear definition and appropriate metadata could be helpful in this regard.

Data gaps prevent us from understanding who is most at risk

Our analysis highlights which types of households are most likely to suffer from food insecurity. This type of analysis could in some cases inform the design of specific interventions aimed at reducing the scale of the issue.

However, other forms of subgroup analysis are not possible using the open data that is provided by the DWP.⁶⁴ For instance, it is currently not possible to use the published data to examine whether there are any important interactions between ethnicity and lone-parent status for example. Also, the only publicly available geographic breakdown of FRS data provided is by nation and by region. It may be helpful to make available more granular geographic breakdowns which would be possible from the underlying microdata. This may require greater investment to increase survey sample sizes (or boost response rates which declined markedly after the COVID-19 pandemic). Provision of easy-to-access, granular geographic breakdowns could for example allow local authorities and charitable organisations to better understand and respond to current patterns of need.⁶⁵ This in turn may ultimately allow resources to be targeted on areas where poverty is most concentrated.

⁶³

https://www.food.gov.uk/sites/default/files/media/document/Food%20and%20You%202020Wave%20Q3%20-%20Technical%20Report_0.pdf

⁶⁴ <https://www.gov.uk/government/statistics/family-resources-survey-financial-year-2020-to-2021>

⁶⁵ Off research projects have provided this breakdown in the past. For example: Food Foundation analysis carried out last year:

<https://shfuni.maps.arcgis.com/apps/instant/interactivelegend/index.html?appid=8be0cd9e18904c258afd3c959d6fc4d7> However, no consistent series is available for a long period of time at this level of granularity.

Integration with other sources of data

Food insecurity data which is collected as part of FRS allows us to explore which types of households are most likely to be impacted by food insecurity. The FRS contains a rich set of variables covering income sources as well as multiple household characteristics. However, importantly there is no information collected as part of the FRS on actual dietary health.

As noted by the House of Lords Select Committee on Food, Poverty, Health and the Environment it may be valuable to integrate measures of food insecurity with existing health surveys.⁶⁶ This would allow researchers to trace through the actual impacts of food insecurity in a much more direct way than is currently the case. Likewise improving the interoperability of FRS data with the National Diet and Nutrition Survey for example may offer some benefits and could help to shine a light on the underlying causes and effects of food insecurity.

Underlying data infrastructure issues

The data gaps we have highlighted stem in large part from inadequate data infrastructure. There are several root causes for these issues. Firstly, the hyper-local nature of some types of support creates a coordination problem. It is very challenging to collect and store information on all support services offered across the country in a consistent way when that information requires input from so many individual entities. Furthermore, independent aid providers may not have an obvious route to share data about the support that they provide.

The scale of food insecurity is growing. This is placing a greater strain on services to expand while the data ecosystem is still nascent. The focus of support services may understandably be on helping as many households as possible rather than collecting or sharing valuable information.

In addition, the importance of capturing nationwide representative data on food insecurity has only recently been acknowledged and acted upon by the government. This is an important positive step but means that we do not yet have a long and consistent series of data.

⁶⁶ National Diet and Nutrition Survey, or the Health Survey for England for example.

4. Trends in food insecurity over time

In this section we summarise temporal trends in food insecurity and highlight gaps in our understanding which could be addressed via improved data infrastructure. This confirms that food insecurity is a growing issue and clarifies that action is needed now. We also suggest how additional data could be collected and shared in a standardised format to partially address current challenges.

In this section we present the results of our analysis of food insecurity trends over time. Again this analysis is based on multiple sources of data including representative household surveys, national statistics on price trends and changes over time in eligibility for certain types of support. Our work therefore provides valuable insights for two reasons:

1. We bring together multiple datasets which relate to the evolution of food insecurity over time. This unique combination of datasets has not been included in any previous work to date. We use this data to illustrate how food insecurity is growing in prevalence and emphasises the need for immediate action. Using multiple data sources allows us to cross check findings and have greater confidence in our results.
2. We also suggest how some of the underlying data infrastructure issues could be addressed going forward. This could help to ensure that households get the support that they need and any support provided achieves value for money.

Prevalence of food insecurity rates over time

The Food Standard Agency's (FSA's) Consumer Insights Tracking Survey (which covers England, Wales and Northern Ireland)⁶⁷ allows us to explore how the prevalence of certain food insecurity metrics has evolved over time. The FSA reports three metrics from April 2020 to March 2022 which we have illustrated below.

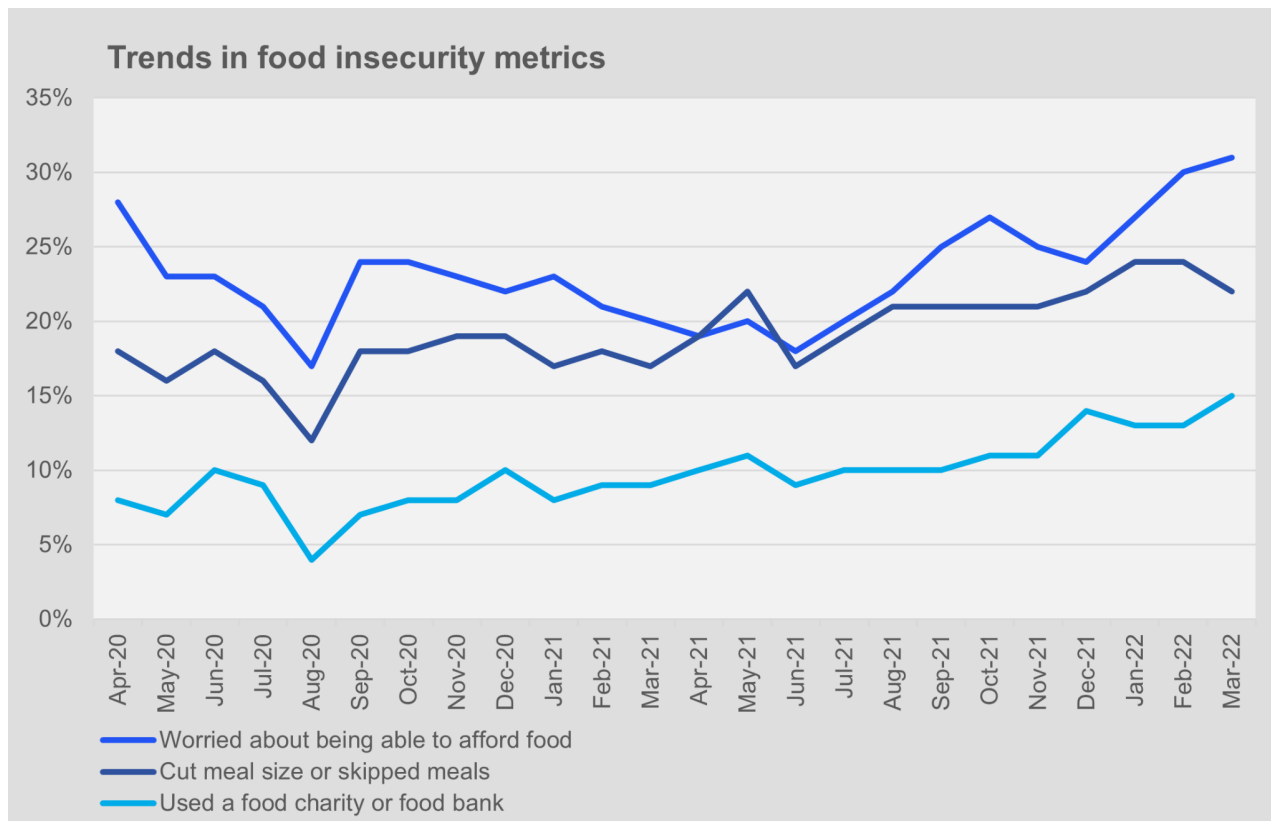


Figure 14: Trends in food insecurity metrics (April 2020–March 2022).

Each of these three metrics show a recent increase in food insecurity. Each metric reached a peak value at some point over the most recent three months of the survey (covering January–March 2022). In March 2022 31% of households were worried about being able to afford food. This is the highest ever recorded figure for this metric over the period in question. In the same month 22% of families either cut meal sizes or skipped meals. This was slightly down on the peak of 24% which was recorded in February 2022. Finally, an estimated 15% of households used a food charity or food bank in March 2022. This is also the highest figure recorded on this metric.⁶⁸

Together these indicators present a clear picture of rising food insecurity in the UK. It is useful to measure this rise over the last number of years. It would be even more informative if these recent trends could be placed in a wider historical context. However, consistent long-term data on the prevalence of food insecurity

⁶⁷ Food Standards Agency (2022), 'Household Food Insecurity'

<https://www.food.gov.uk/sites/default/files/media/document/FSA%202022-06-09%20-%20Annex%20B%20-%20Household%20Food%20Insecurity%20Evidence%20and%20Consumer%20Tracker%20Data.pdf>

⁶⁸ From November 2021 onwards the phrasing of this question changed from 'In the last month, how often, if at all, have you arranged for food to be delivered to your house through a food charity or food bank?' to 'in the last month, how often, if at all, have you used a food charity or food bank?'

is difficult to locate and access. We discuss the implications of this at the end of this section.

The FCA's tracking metrics are in keeping with time series data on the number of food parcels distributed by Trussell Trust food banks from 2005/2006 to 2021/22 across the UK as a whole. There is significant growth evident over this period. In 2015/16 Trussell Trust distributed slightly more than 1m food parcels. This figure has more than doubled in the intervening seven years. It peaked in 2020/21 before receding slightly in the most recent year. This may in part reflect the disruption caused by COVID-19 during 2020/21.

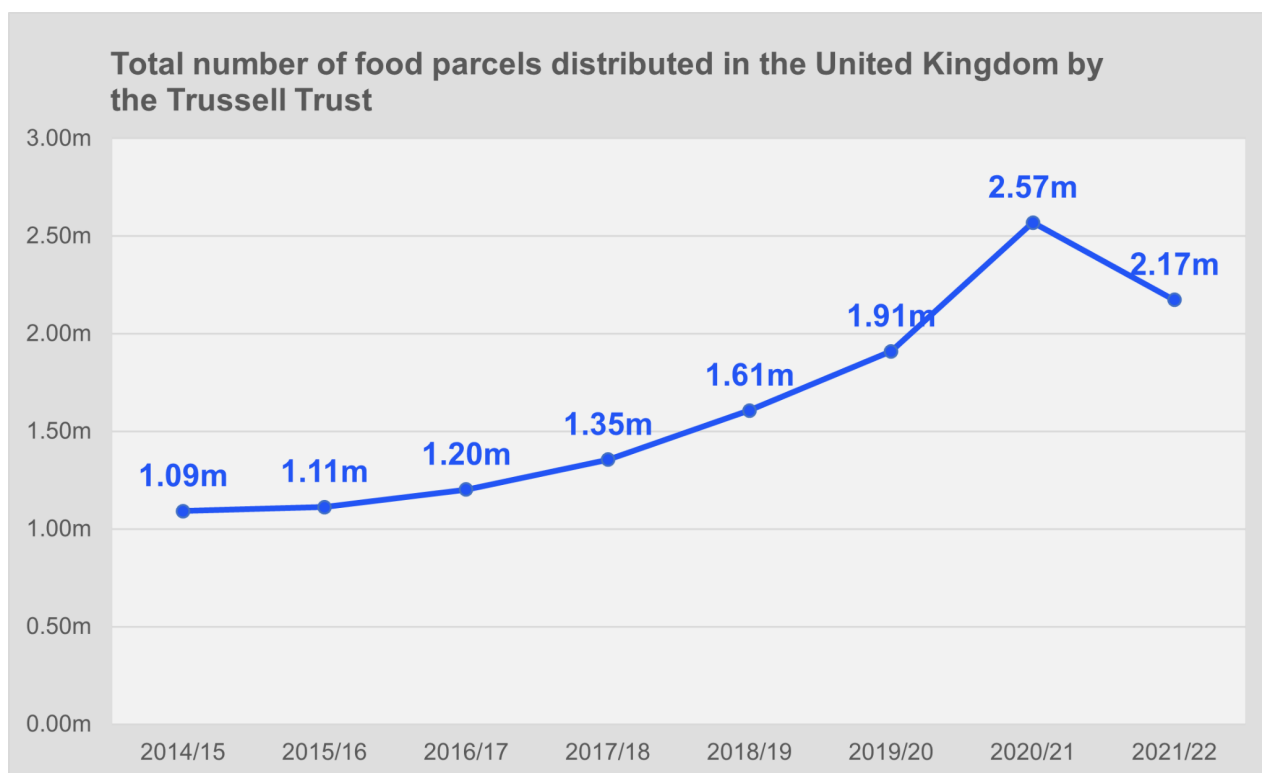


Figure 15: Trends in food parcels distributed by Trussell Trust in the UK (2015/16 2021/22).

As we noted in the previous section these figures do not include all food banks⁶⁹ and food banks are by no means the only form of support provided for those experiencing food insecurity.

We also collected and analysed data on the volume of keyword Google searches for 'food bank' in the UK from the start of 2020 to the end of 2021.⁷⁰ The series is indexed so that the highest volume of searches which occurred in a specific week during the period in question is assigned a value of 100. All other values are expressed in relation to this peak value.

⁶⁹ Food Aid Network (2022), 'A survey of food banks operating independently of The Trussell Trust food bank network', https://uploads.strikinglycdn.com/files/916700bb-23a5-46d8-8363-3b8d88938542/Report_IndependentFoodBankStudy_Dec2019-pdf.pdf. We can also draw on a survey of independent food banks which was carried out in 2019. This survey also pointed to a rise in usage over time as 75% of the independent food banks started operating in the past nine years.

⁷⁰ Google Trends (2022), <https://trends.google.com/trends/?geo=GB>

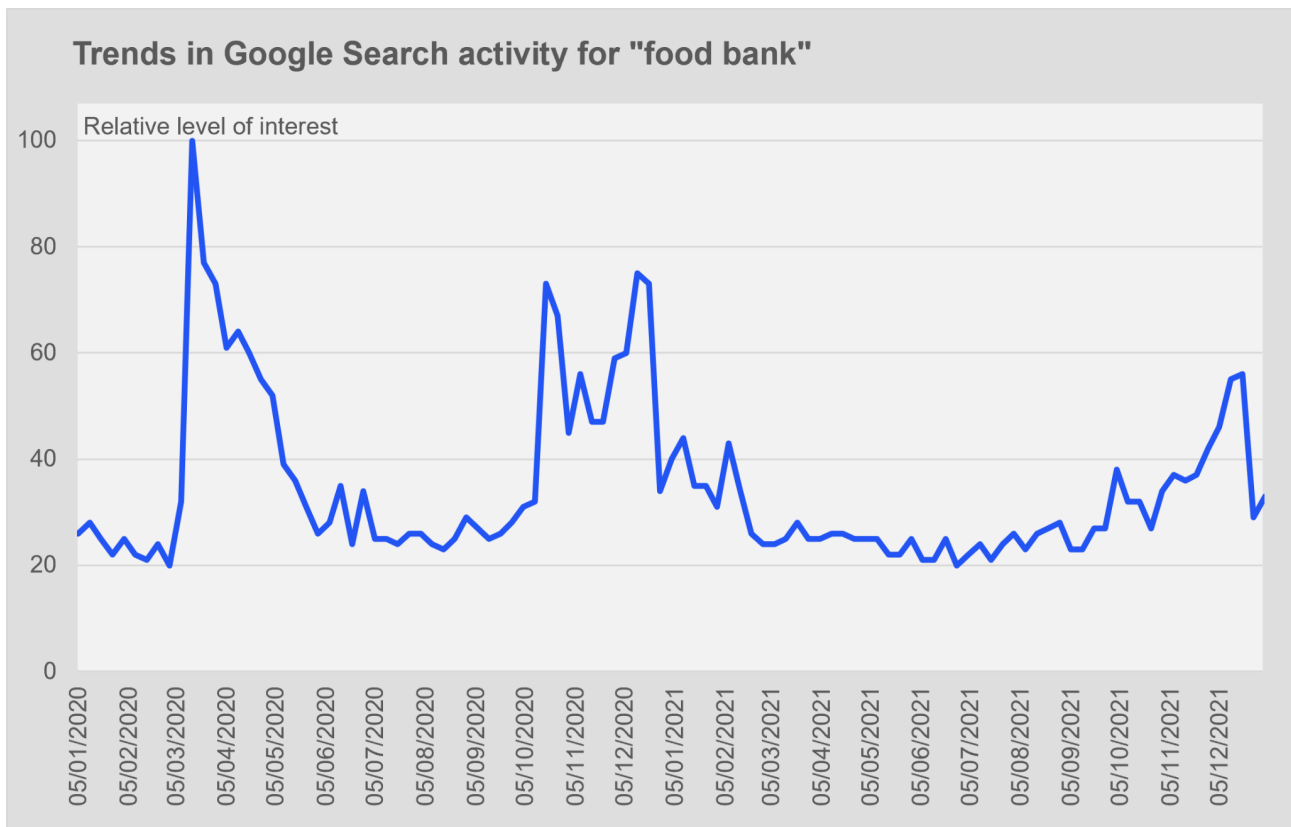


Figure 16: Trends in Google Search activity for ‘food bank’ across the UK (2020–2021).

We can immediately see that this series exhibits significant volatility over the period in question. Spikes in search volumes occurred in March, October and December 2020. This corresponds closely to the introduction or reintroduction of restrictive COVID-19 social distancing measures during 2020. It is highly likely that the associated labour market impacts of these restrictions led to a higher than average volume of people exploring whether they could access a food bank in their local area. Search volumes remained more stable during 2021 on average. However, there was a steady rise in searches for food banks in the lead up to Christmas.

Drivers of food insecurity over time

Wider poverty trends

As we noted in Section 3, food insecurity patterns are inherently linked to more generic measures of poverty. We also explore how wider poverty measures have evolved in recent years across the UK. Again we focus on the proportion of households that are below 60% of median contemporary income. This is in keeping with the government’s primary measure of poverty.

As we can see below, the proportion of all UK households in relative poverty has remained approximately constant since 2015/16. After housing costs approximately 16% of families had an income of less than 60% of the median in 2015/16 and 2020/21.

However, importantly this aggregate trend masks a significant rise in the proportion of children in low income families. In 2015/16 15.5% of children were living in low income families. However, by 2020/21 this figure had risen to 18.7%. This could potentially be one of the key drivers of the rises in food insecurity that we have shown above.

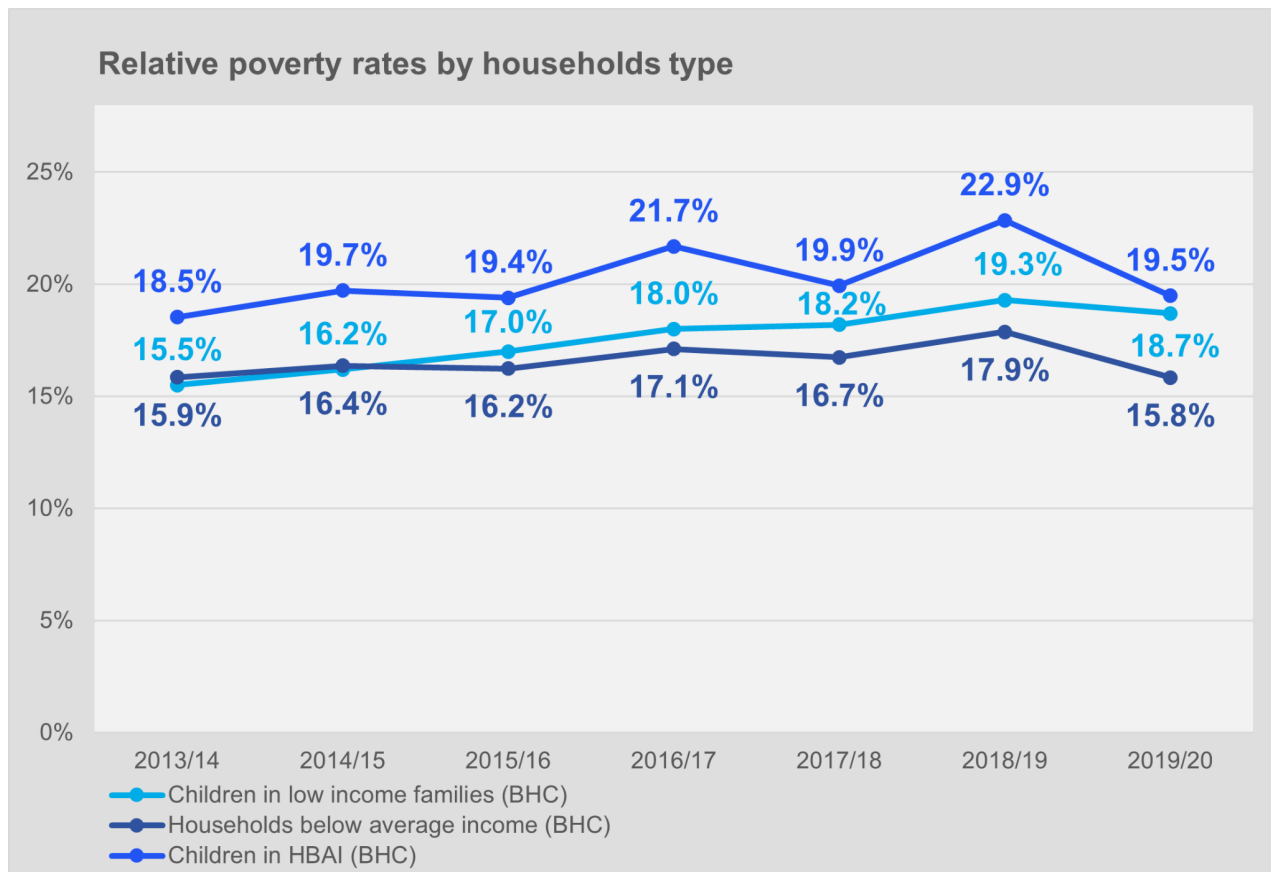


Figure 17: Trends in relative poverty for all households and households containing children (2015/16–2020/21).

Unsurprisingly there has been an increase in the proportion of children eligible for free school meals in recent years. In 2021/22 24% of all state-funded pupils were eligible compared with 18% in 2019/20, and 15% in 2015/16.⁷¹ This change in free school meals eligibility does in part reflect a rise in food insecurity. However, it may also be due to a change in the underlying criteria which has meant that pupils can retain their eligibility even if their circumstances change. This leads to children moving off free school meals at a lower rate overall.

⁷¹ House of Commons Library (2022), 'School Meals and Nutritional Standards (England)', <https://researchbriefings.files.parliament.uk/documents/SN04195/SN04195.pdf>

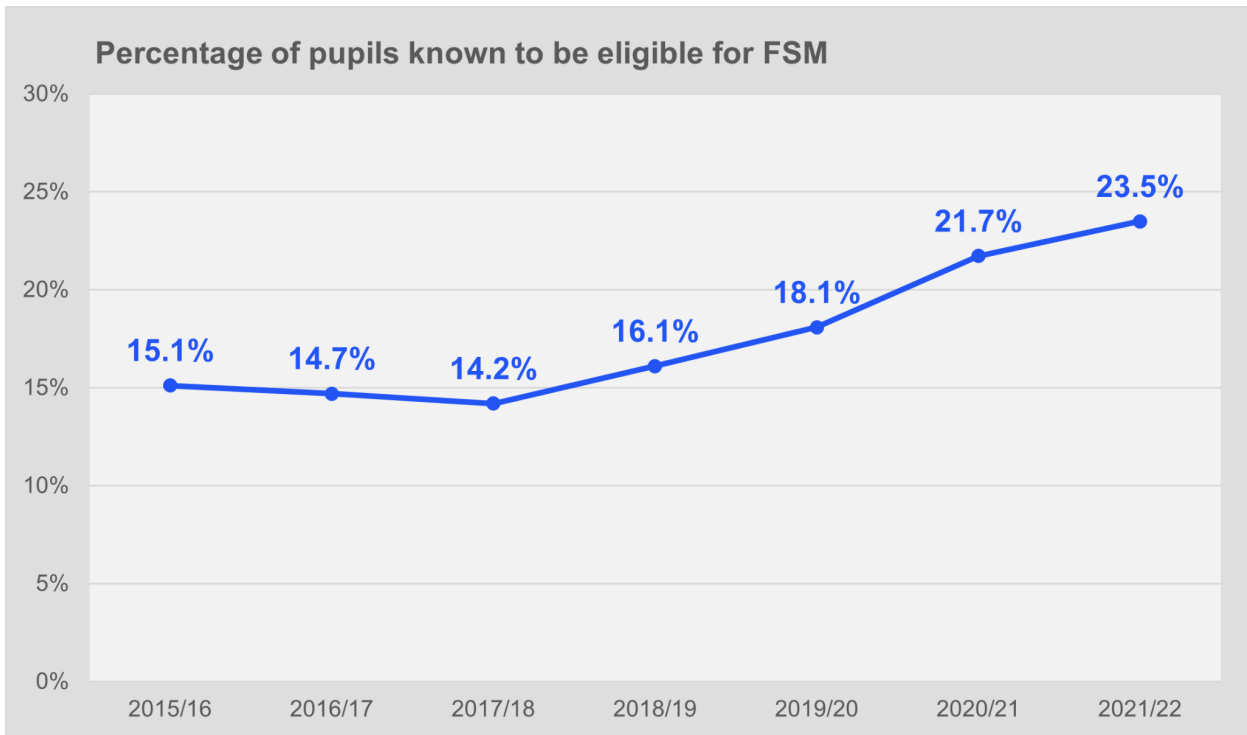


Figure 18: Trends in eligible for free school meals (2015/16–2021/22).

Price levels

The cost of living crisis in the UK is exacerbating existing food insecurity issues. A rapid rise in the price of food combined with a sustained increase in the overall rate of inflation is placing significant pressure on household budgets.

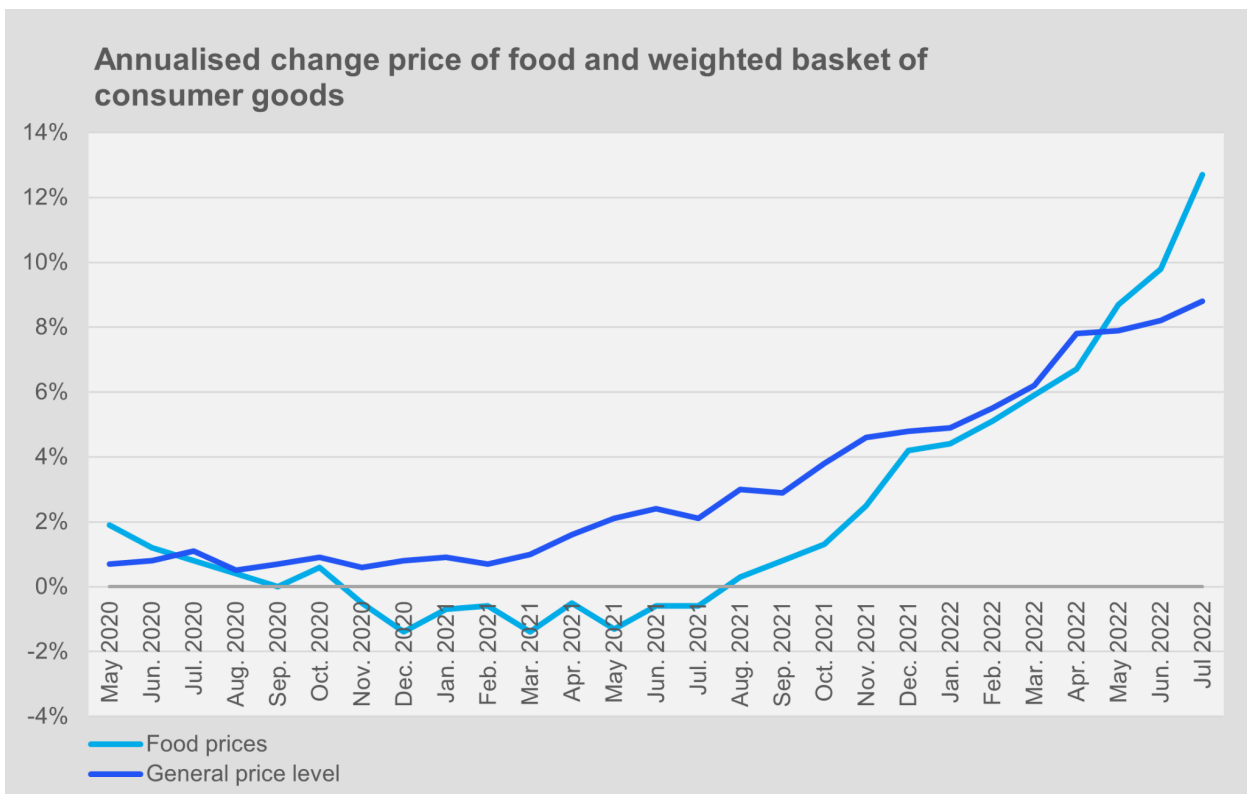


Figure 19: Annualised change price of food and weighted basket of consumer goods (May 2020–May 2022).
<https://www.ons.gov.uk/economy/inflationandpriceindices/articles/ukconsumerpriceinflationbasketofgoodsandservices/2022>

The figure above shows how the annual percentage changes in food prices and the general price level have evolved over the last two years. Between December 2020 and August 2021 food prices were actually falling relative to the previous 12 months. However, this rapidly changed during the final months of 2021 and the first half of 2022. By July 2022 food prices were rising faster (12.7% rise in 12 months) than the overall price level (8.8% rise in 12 months) on an annualised basis.

Poverty campaigners have highlighted that inflation may have differential impacts on different groups in society if the rise in the cost of value brands was not reflected in the general inflation figures. Therefore, average inflation rates grossly underestimated the real cost of inflation for the poorest in society.⁷²

The ONS has subsequently started to consider how the prices of the lowest-cost versions of 30 everyday items have risen.⁷³ This metric may be particularly relevant as a driver of food insecurity as families experiencing food insecurity may be forced to opt for the lowest cost version of staple items.

Initial findings from this analysis suggested that the lowest-priced items have increased in cost by around as much as average food prices. Both the low cost index and overall prices have risen by around 6%–7% over the 12 months to April 2022.

However, the analysis also showed how some of the lowest priced food staples had increased rapidly over the period 12 months to April 2022. This will have had a major impact on households who were experiencing food insecurity over that period. We illustrate the top 10 fastest rising items below. The price of the lowest cost pasta available for example rose by 50% in the 12 months to April 2022. The other lowest cost items in the top 10 all rose in price by between 17–10% over the same period.

⁷² i news (2022), 'Jack Monroe claims vindication after ONS inflation data shows huge price rise in some value-brand staples'

<https://inews.co.uk/news/jack-monroe-inflation-data-huge-price-rise-value-brand-staples-1658481>

⁷³ Office for National Statistics (2022), 'Tracking the price of the lowest-cost grocery items, UK, experimental analysis: April 2021 to April 2022',

<https://www.ons.gov.uk/economy/inflationandpriceindices/articles/trackingthelowestcostgroceryitemsuexperimentalanalysis/april2021toapril2022>

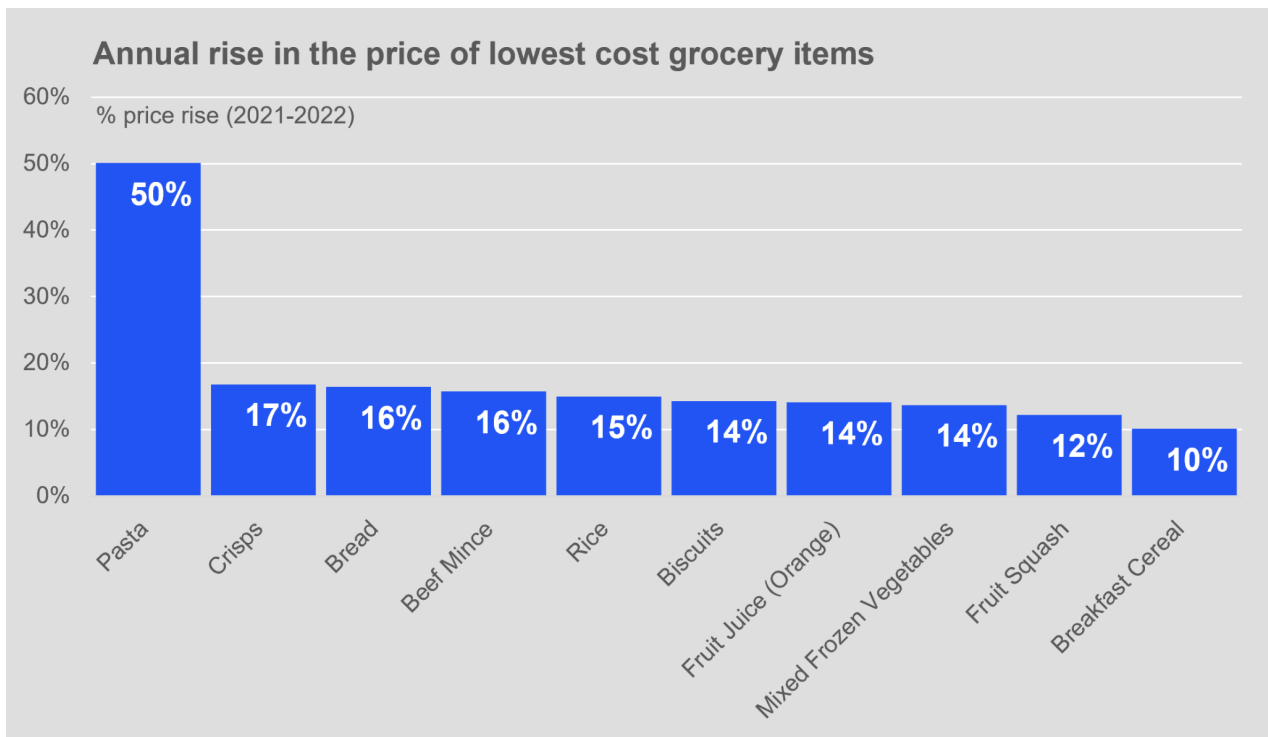


Figure 20: Annual rise in the price of lowest cost grocery items (April 2021-April 2022).

Data infrastructure issues

Our analysis illustrates trends in the prevalence of food insecurity and its drivers. However, this analysis is not as granular and rich in historical data as we would like. We summarise some of the underlying data infrastructure issues below which create gaps in the data. These issues could undermine future efforts to understand and respond to the problem.

Data gaps limit our ability to understand long term trends

As we noted in Section 3, questions on food security have recently been added to the Family Resources Survey. This means that it is not yet possible to use this valuable data asset to tease out longer term trends in food insecurity.

It would be helpful for example to have collected comparable data during the recession which followed the financial crisis of 2008. This would have allowed us to compare recent rises in food insecurity to another period of acute financial pressure on households and therefore place the scale of the current challenge in a wider context. It is therefore vital that a commitment to this data collection is maintained over a long period of time. This will allow longer term trends to be analysed and also potentially facilitate the setting of specific food insecurity reduction targets and help to evaluate the impact of specific interventions.

Lack of data standards

Data on local authority support schemes such as specific local area grants and food vouchers are not published in a consistent way. This makes it difficult to determine rates of take-up over time and highlight which groups may be missing out.

We have tried to create a composite measure of all food bank locations. However, this itself will not be complete due to the limitations of the available data. Comprehensive nationwide data on other initiatives that address food insecurity such as social supermarkets, meal providers and breakfast clubs is very difficult to access and does not currently exist in a single data asset or a common format. This is partly because some of these services are relatively new or evolving and there is not yet adequate data infrastructure in place. As we describe in more detail below, the very local nature of provision also creates coordination challenges in terms of standardisation.

Collecting some of this data for the first time and consolidating existing data would improve understanding about the scale of food insecurity and how it has evolved over time as well as highlighting potential gaps in the current support network.

It may be that the data already exists within individual local authorities or community groups. There may therefore be significant value in using an open data standard to try and record and share this type of information more effectively.

Improving data infrastructure

Data standards are reusable agreements that make it easier for people and organisations to publish, access, use and share better quality data. This approach could be used to improve the volume and quality of food insecurity data that is collected and shared making it easier to combine and analyse data across the country and over time. We describe a relevant example below.

Open Referral UK

- **Open Referral UK**⁷⁴ is an open data standard which establishes a consistent way of publishing and describing information on local community activities and services.
- It sets out a specific format for sharing information about organisations, services, locations, opening times and eligibility.
- Local government organisations currently collect large amounts of data but this can be presented in different formats and is often collected multiple times and in inconsistent ways.
- Adopting an open data standard helps to solve this problem by providing easy to access information on a variety of services.

A similar model with a bespoke data standard could be developed and applied to local services which address food insecurity. Some information on these services

⁷⁴ Open Referral UK (2022), <https://openreferraluk.org/>. The UK version of the Open Referral standard has recently been endorsed for use across government by the Data Standards Authority. It is also endorsed in a recent NHS procurement framework.

is already shared in the Open Referral UK data feeds. For example, Pennine Lancashire Integrated Care Partnership lists 197 organisations providing a range of services, of which 9 are related to food (around 5%). In the Bristol area food banks and other services are included (around 1% of included organisations). However, coverage varies considerably.

This suggests that while it is possible to include this type of information in an accessible and standardised format, investment is needed. Ideally the included information would cover local initiatives such as social supermarkets and meal providers and specify their location, opening hours and the food service offered. This inclusion would be made much easier if national organisations who provide services aimed at addressing food insecurity could publish their information in a standard format, making it easier to keep systems and registries up to date.

Sharing information consistently on these activities within Open Referral UK or an alternative data standard can be an enabler for addressing gaps in service coverage, and ultimately exploring the root causes of the problem in the longer term. This could benefit service delivery organisations and policymakers who will more easily be able to spot gaps which need to be filled.

Likewise having up-to-date and accurate information about the scope and location of services could benefit citizens who will be able to access the support they need. This means that fewer people in need will be given out of date information and lose trust in support services. For example, we carried out an exploratory analysis of an Open Referral-compliant community-services platform which lists locations and opening times for food banks run by a regional provider who is supported by a national charity. The information included was last updated in 2018. We cross-checked this information against current provision and were able to determine that some of these food banks had since closed. As a result, link workers – connecting people in need with local services – may have to visit many sources of information and often create their own, manual registries. The public may therefore ultimately receive better and more efficient services if data was published in open standard formats and they could select the type of support which most closely matches their specific need.

5. Conclusion

Our work is uniquely focused on food insecurity and underlying data infrastructure in this context. Our conclusions not only highlight the scale of the current problem but also include key data infrastructure recommendations which we, and others can take forward in this context.

We find that food insecurity is a significant and growing issue across the UK. Nationally representative survey data shows that 7% of households are classified as food insecure. However, this average figure masks considerable variability. The Food Standard Agency's (FSA's) Consumer Insights Tracking Survey reports three metrics from April 2020 to March 2022 (worries about being able to afford food, cutting meal sizes or skipping meals, and using a food charity). Our analysis shows that each metric reached a peak value at some point over the most recent three months of the survey (covering January–March 2022).

Food insecurity is highly correlated with wide measures of poverty as 18% of all individuals living in low income households experience food insecurity. However, a key insight from our work is that food insecurity is not an issue confined to those living in acute poverty or relying on income-related benefits. Rather it is a major challenge for large proportions of society including those with a professional occupation.

We have shown that existing data can be used to shine an important light on the demographic and historical variation in food insecurity. However, our analysis has also highlighted shortcomings in data infrastructure that could undermine future efforts to understand and respond to the problem.

There are several root causes of the data infrastructure issues that we have observed. Firstly, the hyper-local nature of some types of support provided creates a coordination problem. It is very challenging to collect and store information on all support services offered across the country in a consistent way when that information requires input from so many individual entities. Furthermore, independent aid providers may not have an obvious route to share data about the support that they provide.

Open data standards could be used to improve the volume and quality of food insecurity data that is collected and shared. There are existing models of data standards. For example, Open Referral UK is an open data standard which establishes a consistent way of publishing and describing information on local community activities and services. Data standards like those developed by Open Referral UK can play an important role in this context.

The Open Referral UK⁷⁵ project is stewarded by the ODI. Some information on local services which address food insecurity is already included in the Open Referral UK data feeds. However, this is not consistent across the country and may not always be reliable. This suggests that while it is possible to include this type of information in an accessible and standardised format, further investment is needed to achieve a more comprehensive coverage rate (either via Open Referral UK or via an alternative data standard).

Building on existing thinking on the topic of open data standards which has been pioneered by organisations such as ODI in the past will potentially allow for fast progress to be made in tackling this vital problem. The ODI has laid the groundwork for innovative data projects over the past 10 years. This experience can be usefully deployed in this context.

There are several ways in which future research could build on our work and add further value to this topic. Firstly, as we have noted throughout, data on a variety of local initiatives to address the symptoms of food insecurity such as social supermarkets is very difficult to identify. Developing the supporting data infrastructure to allow this information to be collected could be a future priority. Similarly, further work might consider how best to help services aimed at addressing food insecurity to make their data available in standard formats, to ensure that people are aware of the local support available and can select the service that matches their needs.

Secondly, further work could be carried out to engage directly with the groups who are most at risk of food insecurity. It will be essential going forward to understand their specific and varied perspectives and to draw on their lived experiences. This deep engagement could help to design future support mechanisms, explore what existing initiatives are most effective and understand what data sharing would actually make a positive difference.

⁷⁵ Open Referral UK (2022), <https://openreferraluk.org/>. The UK version of the Open Referral standard has recently been endorsed for use across government by the Data Standards Authority. It is also endorsed in a recent NHS procurement framework.

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List of stakeholders consulted

Stakeholder organisation
AgeUK
Barnardo's
Centre for Food Policy
Child Poverty Action Group
Citizens Advice
Fareshare
Food Standards Agency (FSA)
Herts Sports Partnership
Home-Start UK
Independent Foodbank Network (IFAN)
Manchester Youth Zone

Multicultural Marketing Consultancy
Mumsnet
Professor Greta Defeyter, Northumbria University
PCS
Trussell Trust
Royal College of Nursing
Runnymede Trust

Table 3: List of organisations who provided some input to this work