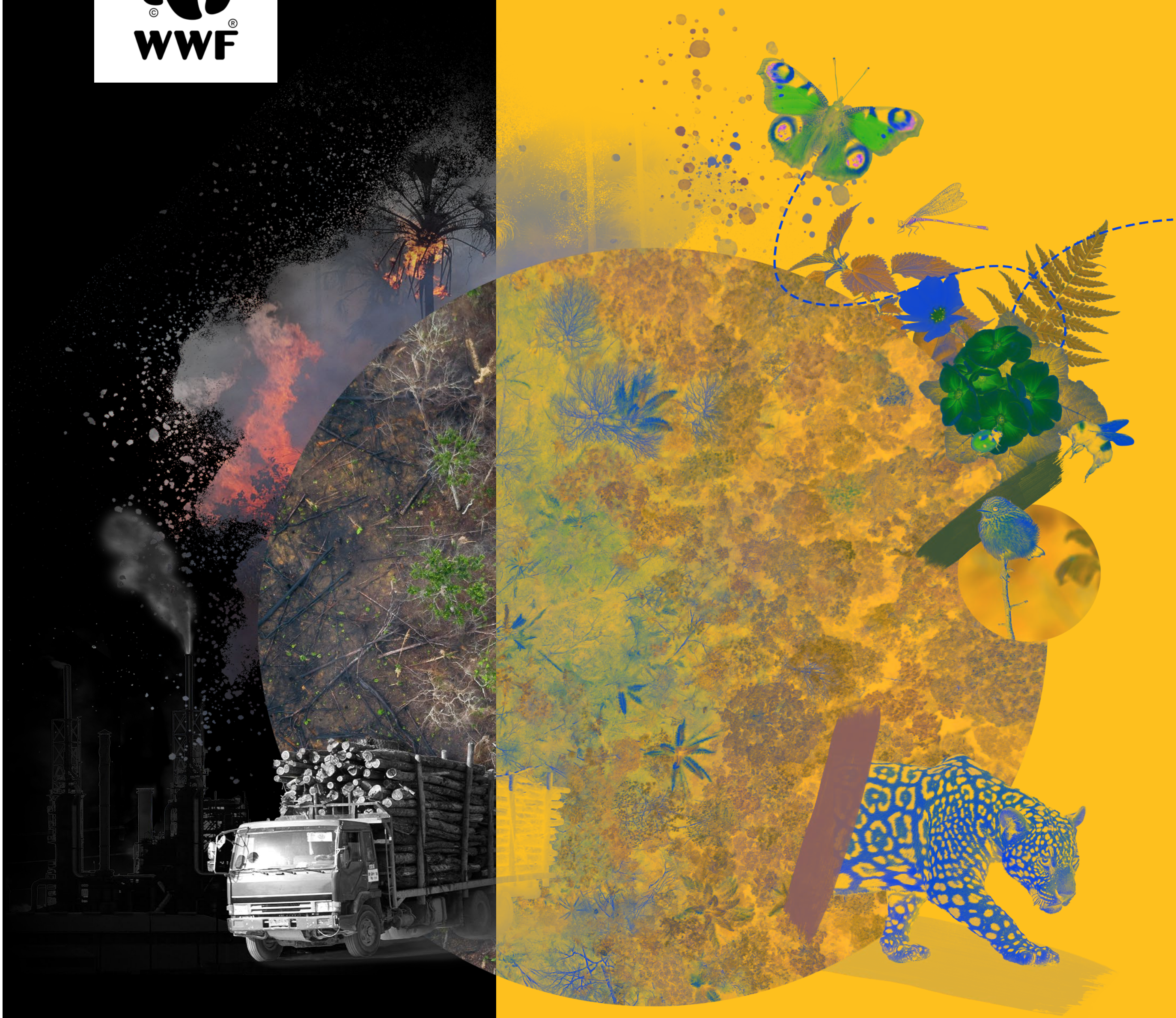


THE FOOTPRINT CALCULATOR REPORT

AN ANALYSIS OF DATA FROM WWF-UK'S ENVIRONMENTAL FOOTPRINT CALCULATOR

FEBRUARY 2019 - JUNE 2022


© Global Warming Images / WWF

CONTENTS

Measure your impact
footprint.wwf.org.uk

Authors
Joe Simpson, Simon Croft, Rhian Ebrey, Chris West (Stockholm Environment Institute, Department of Environment & Geography, University of York)

Special thanks
Players of the People's Postcode Lottery, Joanne Nightingale (WWF-UK), Stephen Cornelius (WWF-INT)

Design, Editorial and Production
Devon Moore (WWF-UK)

Graphics
Created with flourish.studio unless otherwise specified (flourish.studio).

This report was supported by players of People's Postcode Lottery

Supported by players of People's Postcode Lottery

Awarded funds from Postcode Planet Trust

WWF Living Planet Centre, Rufford House, Brewery Rd, Woking GU21 4LL

For contact details and further information, please visit our website at wwf.org.uk

Cover image: © Ben Coleman / WWF

FOREWARD

The latest science on the state of our climate has been laid out in a powerful new report by the United Nations' Intergovernmental Panel on Climate Change (IPCC). The Sixth Assessment Report illustrates the sheer gravity of the climate crisis and the increasingly severe impacts facing us if we do not take swift action to significantly reduce fossil fuel consumption and halt and reverse the destruction of nature. The science and evidence are clear, we must cut greenhouse gas emissions much more, and much faster. Each one of us has an obligation to respond to the climate and nature crisis and a great first step in acting is to get an understanding of the impacts of our individual lifestyles on the planet – our "carbon footprint".

The WWF Carbon Footprint Calculator is a simple questionnaire-based tool (designed for UK residents) that estimates how your lifestyle leads to carbon emissions across four categories; Food (diet, food waste, buying habits); Home (consumption and energy-saving measures); Travel (personal and public transport for leisure, work and holidays); and Stuff (consumable items such as electronics). This report provides an in-depth analysis of nearly 1.1million survey responses collated during February 2019 and June 2022. The average total footprint across all users is 12.26 tonnes CO2e, which is significantly above personal targets aligned with Paris Agreement commitments. For context, a 2030 global per-capita footprint target aligned with the Paris Agreement is somewhere in the region of 2.3 tCO2e. The COVID pandemic had a large impact on personal footprints, especially linked to travel, but as restrictions have eased a noticeable rebound effect has been observed. It is important to note that this calculator acts as a guide to your individual greenhouse gas emissions, based on broad categories, with part of your footprint being dependent on UK Government consumption (i.e. the cost of running the country) and policies (such as our electricity generation mix), which we can all lobby to improve! The Carbon Footprint Calculator does offer suggestions and personal challenges for how you can reduce your individual footprint in each category, such as eating seasonally, driving smarter and being energy wise.

Our planet and its people are resilient - but some of the impacts of climate change are simply hitting so quickly and so forcefully that if humans and nature are to adapt, we must all play our part to reduce these pressures as swiftly as possible. We have the solutions within our grasp. The actions and choices we all make daily, no matter how big or how small, play a crucial role in shaping the liveability of our planet for us now and for future generations.

JOANNE NIGHTINGALE
CHIEF ADVISOR, CLIMATE CHANGE WWF - UK

EXECUTIVE SUMMARY

An in-depth data analysis was conducted on 1,006,751 UK user responses to the WWF Carbon Footprint Calculator across the period February 2019 to June 2022.

The analysis involved exploration of the total carbon footprint of users, as well as the carbon footprints associated with Food consumption, Travel, Home and personal consumable ('Stuff') consumption.

The analysis also explored individual user answers to assess the popularity of environmentally friendly behaviours/lifestyles across the Food, Home, Travel and Stuff subcategories. Postcode data was used to analyse user data from a spatial perspective, revealing areas of the UK that demonstrate higher or lower uptake of environmentally friendly behaviours, and other areas that could be targeted for improvement.

Temporal information also revealed trends in the footprint and lifestyle-linked data, as well as the effect of the COVID-19 restrictions on individuals' carbon footprints.

KEY FINDINGS

The average (mean) total footprint across all users is **12.26 tonnes**, which is significantly above personal targets aligned with Paris Agreement commitments.

However, according to the 2015 national footprint accounts (that underpin the analysed version of the WWF Calculator's calculations) the per capita carbon footprint of the average UK citizen (calculated by dividing total emissions by population size) was **13.00 tonnes**, suggesting that the users of the WWF Calculator have slightly lower-than-UK-average footprints.

- The COVID pandemic had a large impact on personal footprints. The most important reductions were linked to the 'Travel' component of the footprint, and to flight behaviour in particular. From a pre-pandemic mean of 4.14 tCO_2e, the travel footprint dropped to an average of 1.66 tCO_2e (~40.1%) in August 2021. The 'Food' component also exhibits a similar decrease during COVID linked to decreased expenditure on takeaways and in restaurants, although the magnitude of change overall is much smaller. The 'Stuff' component follows a similar pattern (again overall impacts to footprints are small in comparison to the impact of flight reductions). The 'Home' component of the footprint is not apparently influenced by COVID.

- As COVID restrictions have eased, we observe a noticeable 'rebound' effect in the Travel, Food and 'Stuff' footprints, although at the end of the time series these remained below pre-COVID levels.

- There is a clear geographic trend in Travel footprints, with Londoners in particular tending to have the highest. Food footprints also tend to be higher than average in the London region.

- London regions have the highest footprints overall. Lower emissions associated with relatively higher rates of uptake of electrified vehicles, non-meat eating habits, use of walking, cycling or public transport, and smaller-than-average homes are offset particularly by a disproportionately higher number of flights, and higher-than average expenditure on takeaways/ restaurants and some consumables.

- Northern Ireland, The Channel Islands and remote island regions of Scotland also have high footprints overall. They all have high Travel footprints, driven by a high average number of flights. This is likely due to their remote location and disconnection to the rest of the UK.

- The Exeter Postcode Area has the lowest mean Total footprint across the dataset at 11.11 tonnes. It has the lowest mean Total footprint in urban-classified postcode outcodes, and the second lowest for rural-classified postcodes. Llandrindod Postcode Area has the lowest rural-only mean Total footprint.

- The Postcode outcode with the lowest mean Total footprint is the KA16 region in Kilmarnock with 8.26 tonnes. This is less than half that of the outcode region with the highest mean footprint, SW1X in London.

- For urban areas within major city regions (population size of at least 250k), Bristol comes out with the lowest footprint at 11.30 tonnes.

- Clear trends in the electrification of vehicles are observed over the time series, but there are also clear differences in regional uptake, with rates highest in London and lower in more remote parts of the UK. Clear London/rest-of-UK splits also emerge in terms of public transport usage.

- There appears to be a slight trend towards an increase in motor vehicle usage compared to walking, cycling and public transport use.

- There are opportunities for behaviour change linked to the Home footprint, with a relatively large number of users saying they don't have, or don't know if they have, green electricity tariffs. A relatively small but significant portion of users state they do not have energy-saving lightbulbs.

- The percentage of respondents who report having solar panels or solar water heaters remains very small, however both have increased over the timeseries.

- A shift towards lower winter heating temperatures is observed later in the time series; perhaps corresponding to the start of recent energy-price rises.

- There is a notable decrease in the rates of purchase of consumable items as a result of COVID, which appears to have persisted despite the easing of restrictions.

INTRODUCTION

The Stockholm Environment Institute at the University of York was commissioned by WWF-UK with support from players of People's Postcode Lottery, to analyse user-results from the WWF Carbon Footprint Calculator, completed by thousands of people each month. This follows a previous report in 2021 which undertook a preliminary analysis of around 300,000 users, but did not result in a public-facing report.

This report describes the main insights from the exploration and analysis of a dataset comprising 40 months (incl. partial-months)[1] of responses to the WWF Carbon Footprint Calculator that were made between February 2019 and June 2022. Respondents of the online Calculator answered questions that cover a range of lifestyle and consumption habits under four topics; 'Food', 'Travel', 'Home' and 'Stuff'. The carbon footprint associated with the respondent's lifestyle and consumption activities is calculated using an underlying model developed by the Stockholm Environment Institute and the University of Leeds which is underpinned with data sourced from the Office for National Statistics (ONS), UK MRIO database (based on EXIOBASE), Defra, Shrink That Footprint and the Energy Savings Trust. For the period of study, the Calculator allows individuals to compare their carbon footprint to a target of 10.5 tonnes of carbon dioxide equivalent (tCO_2e) and gives respondents tips on how to reduce their footprint [2].

This report provides analysis and interpretation of overall responses, presents time-series trends, and maps the answers and footprints geographically for those UK-based respondents who voluntarily left their postcode district code (a.k.a 'outcode') within the Calculator interface. In this report, we particularly highlight the geographic aspects of the data from the perspective of key trends and consumption-habits (and associated footprints) including for 'high population' areas of the UK (i.e. large urban areas). We also highlight the observed effect of the COVID-19 pandemic on the UK personal footprint.

When interpreting the results, it is important to consider these alongside knowledge of several 'limitations' which are inherent in the calculator design and deployment - typically as a consequence of the Calculator's intended purpose as an accessible and user-friendly personal carbon footprint calculator - rather than a detailed, exhaustive, appraisal of personal consumption and emissions:

The habits of the average UK-based respondents summarised in this report may differ from the average UK citizen. This is likely given that the calculator is hosted by an environment-/conservation-linked NGO and specifically relates to interactions between climate and personal lifestyles, a subject matter that is likely to appeal more to those who have pre-existing knowledge of and/or concern about the environment and climate change.

It is more than likely that some entries in the dataset are the result of users 'playing' with numbers to see what the footprint is, rather than a true reflection of their lifestyles. With the exception of 'extreme' cases of such behaviour (see Methods Summary) it is essentially impossible to identify such cases. Results should be interpreted on the assumption that in most cases they represent 'true' lifestyle choices, but with the understanding that some anomalies are likely.

The framing of questions varies, with some questions focused on activity taken in a given week and other questions asking about activity taken in the last year. Questions were designed in this way as their framing was deemed 'intuitive' but this does mean that changes in the answers given over time must be interpreted carefully as respondents are typically not responding just from the perspective of their near-time situation.

Not all questions have significant impacts on the overall footprint. Air travel and some household responses tend to have outsized impacts overall. This means that it is possible (even likely) for changes in overall footprints to be driven by just a small subset of the lifestyle activities/choices incorporated in the Calculator.

Low impact behaviour (and extremely high impact behaviour, with the exception of flights) is not always comprehensively captured. For example, aspects of the modelled footprint which are not modified directly via user responses in the Calculator may be added according to an 'average' UK contribution. Some questions also contain an effective 'upper limit' which may not represent extreme values accurately.

The Calculator is updated periodically to update emissions factors, but is otherwise fixed for periods of time (typically around two years). The carbon emission factors used in this analysis are therefore fixed over the study period. This means that any changes in emissions associated with technology-linked efficiency-improvements in manufacturing or decarbonisation of the national electricity grid are not captured.

---

1. The dataset starts in February 2019 (the date at which user-responses were first collected by WWF) and ends on the 14th June 2022. The November 2019 monthly dataset is also missing from the analysis, as this data was not originally manually downloaded from the Calculator.

2. Note that the period covered is associated with a now-discontinued version of the Calculator. The version of the Calculator now live on the WWF website (which was launched in June 2022) has had updates to some questions and the underpinning carbon emissions factors, along with some questions. This explains why the analysis time series reported here ends in June 2022.

Overall, a more 'accurate' footprint for citizens could be obtained via the use of a more detailed, targeted survey – e.g. one that requires information such as the number of miles driven in a particular type of car, annual gas and electricity consumption and type of aircraft flown in. For tracking changes over time, it would also be more 'robust' to target the same individuals at different points in time. Such survey design and implementation would, however, necessarily be a more time-consuming process to complete and would likely not achieve the same scale of responses as the WWF Calculator. The advantage inherent in the WWF Calculator's simplicity is that, as a result of its relative brevity, it has been completed by many hundreds of thousands of users. As such, it offers an incredibly rich dataset for analysis.

In the following sections, we outline the methods used in the development of the analysis. Results are then presented for an overview of the UK footprint estimates provided via users in the Calculator, including temporal and geographic trends. More detailed results for the subsections of the Calculator, and associated lifestyle responses, are then presented. Finally, we conclude with a short section summarising the overall findings, along with what these findings mean for how individuals may be able to (or be supported to) reduce their carbon footprint. An Annex with additional methods and data summaries/ visualisations is also included. The report is supplemented by results tables in CSV format, and high-resolution copies of the figures used.

METHODS SUMMARY

In order to undertake this analysis, several steps were undertaken to prepare and analyse user data:

1. RE-FORMATTING OF DATA FROM THE CALCULATOR TO COLLATE INTO A CONSISTENT FORMAT FOR ANALYSIS:

Early data from the Calculator was provided as monthly files, with later data (post 22nd March 2021) provided in a single file but with a different data structure. Scripts were therefore developed to harmonise the formatting and pull data into a single file for analysis.

2. 'CLEANING' OF DATA TO REMOVE IRRELEVANT DATA:

This analysis focuses just on the UK population. The WWF Calculator is intended to be UK-specific, although a large number of users of the Calculator specify that they are not UK based. Given that this analysis is also focused on regional differences, it was also important to filter out instances where accurate postcode information was not available. In some cases, data records in the original are incomplete (i.e. contain empty entries) and such entries were also removed.

Additionally, some users appear to have entered 'false'/ unrealistic results into the Calculator (e.g. 'maxing out' flight numbers, or systematically selecting maximum or minimum values across other responses). In such cases, the data from these users were also removed. See the Annex for additional details on this cleaning process.

3. RE-CALCULATION OF FOOTPRINTS FROM USER-RESPONSES:

Initial interrogation of the data revealed that there was, in some cases (particularly early in the time series), a mismatch between recorded footprints and recorded responses to the Calculator questions, likely caused by over-written user responses or other corruptions to the Calculator dataset. Ad-hoc instances of mismatches were identified throughout the early-part of the time series, so a decision was made to re-calculate the footprint values for all users based on the responses provided.

4. URBAN/RURAL CLASSIFICATION.

Data from the UK Census and ONS was used to classify postcode outcodes into an urban or rural classification. Postcode outcodes (e.g. YO10) are the most granular geographic information provided by users in the Calculator, but these do not correspond exactly to urban/city areas and therefore some assumptions are required in the classification scheme adopted. The methods used and assumptions adopted are described in the Annex.

5. EXPLORATORY ANALYSIS:

The outcome of the above steps is a cleaned and codified dataset that enables exploration of the size, trends and UK-geographic spread in personal footprints and lifestyles. Scripts were developed to automate these analyses in line with WWF-UK's requested focal areas of attention, with results outputs then provided in CSV format before visualisations were produced using the 'Flourish' software.

In total, 48.7% of the original data supplied by WWF-UK was removed via the cleaning process described above, with the majority (25%) of this explained by users not being UK-based, followed by incomplete entries (~12%), followed by removal of users who did not supply a postcode that could be matched to our postcode data (~10%). For details on the number of users removed at each stage, see the Annex.

Overall, this resulted in data for 1,006,751 users that was ultimately analysed for this report. Figure 1 shows the number of users per month of the dataset. 751,061 (74.6%) users fall in postcode outcodes classified as 'urban' and 255,690 (25.4%) as 'rural'.

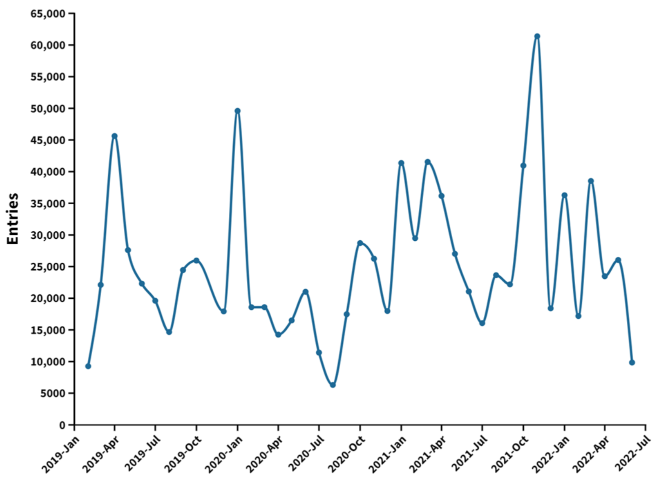


Figure 1. Entries per month for UK-based respondents to the WWF Footprint Calculator (February 2019 - June 2022), following data cleaning.

The mean number of entries per month was 25,169, with the most entries in a single month within the 41 month period 61,381 in November 2021, whilst the minimum was 6,305 in August 2020.

Grouping entries by postcode area (Figure 2) showed Bristol (BS) had the most entries of all postcode areas with 23,741 across the time series, while Shetland (ZE) had the fewest entries with 246. The mean number of entries across all 124 postcode areas is 8,119. Across the broader regions of the UK, Greater London has the most entries with 169,245, while Northern Ireland had the fewest entries with 18,695, excluding the Channel Islands (1685) and the Isle of Man (931).

The mean number of entries by region was 91,285. As might be expected, higher numbers of entries tended to occur in postcode areas with large cities, such as London, Birmingham, Manchester, Edinburgh, Glasgow, Bristol etc.

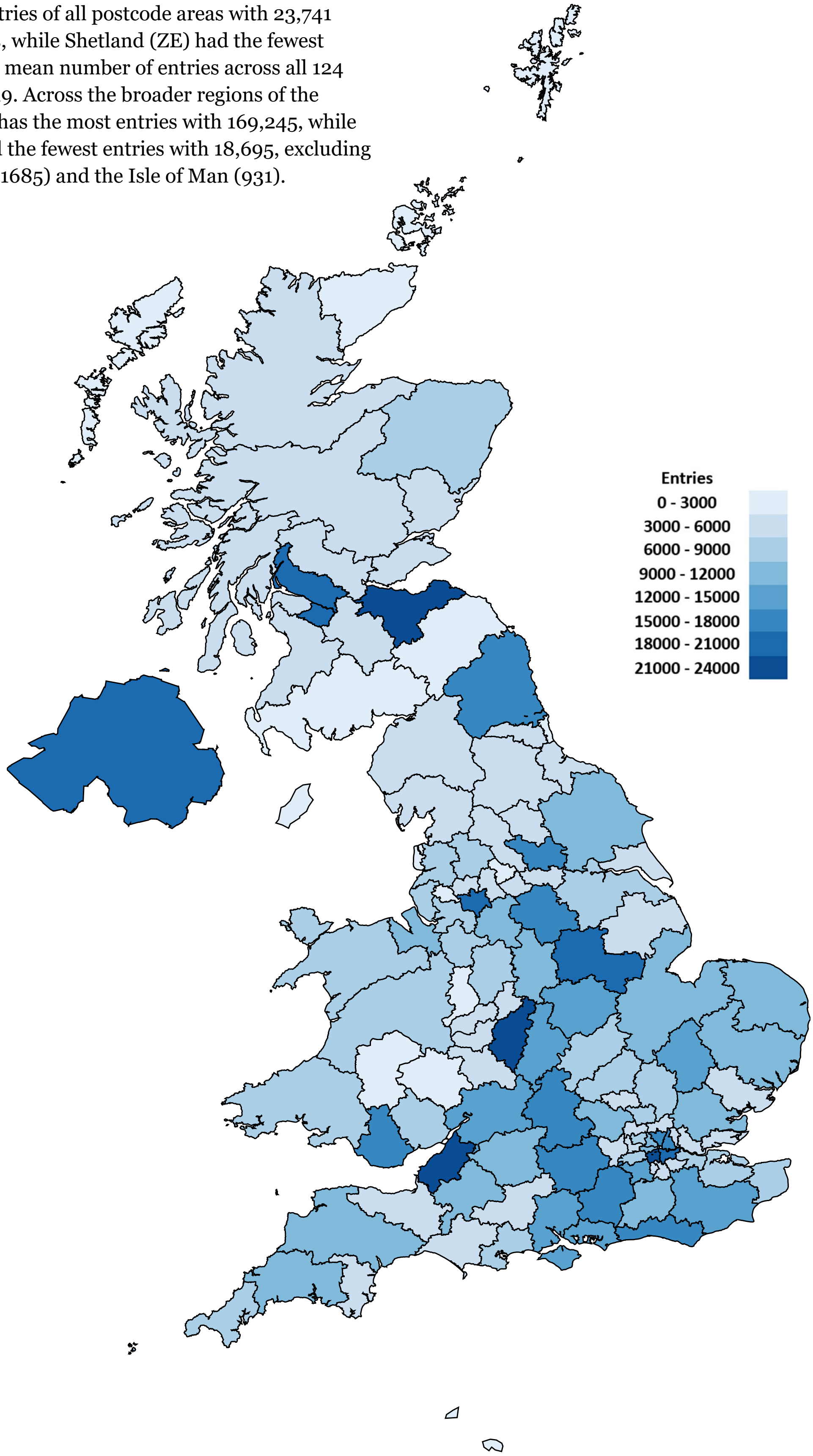


Figure 2. UK-user entries by postcode area for respondents to the WWF Footprint Calculator across the period February 2019 to June 2022, following data cleaning.

RESULTS

FOOTPRINT OVERVIEW

Across all 1,006,751 entries, the mean estimated total footprint was 12.26 tCO2e, the minimum total footprint recorded was 5.16 tCO2e, and the highest total footprint was 112.08 tCO2e[3] . Within the Calculator, the footprint calculations are somewhat constrained given the multiple-choice nature of the questions and technology-assumptions inherent in the calculations as framed, with 5.16 tCO2e representing the minimum possible value achievable for the user.

It is possible that, in reality, some respondents have a lower footprint based upon lifestyles and/or use of technologies not captured by the Calculator. However, it is also clear based on the distribution of results that, whilst 33.2% of respondents had a footprint of below 10 tonnes, many respondents have footprints which exceed this by some distance, with a long tail of individuals with more 'extreme' footprints (Figure 3). For context, a 2030 global per-capita footprint target aligned with the Paris Agreement is somewhere in the region of 2.3 tCO2e[4] .

Whilst technological improvements (e.g. decarbonisation of energy and land-based transport) will assist in a decrease in emissions, it is clear that current lifestyle choices in the UK, on average, are not currently aligned with this target.

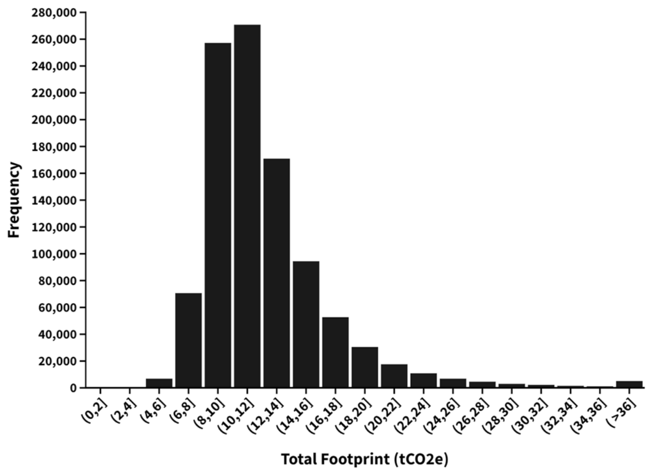


Figure 3. Histogram of the total footprint (tCO2e) for the WWF Footprint Calculator across the period February 2019 to June 2022. For visual purposes, the final bin includes entries with a total footprint between 36 to 112.08 tCO2e. The x-axis shows bins from 0-4 tCO2e for completeness, although no entries recorded a total footprint below 5.16 tCO2e, the minimum footprint possible. The maximum total footprint recorded was 112.08 tCO2e, the maximum footprint possible (after data cleaning).

It is also striking to observe that there is a clear geospatial pattern across the UK (Figure 4), with those with the highest footprints tending to reside in the South East/London regions of the UK. Footprints are also observed to be higher in non-mainland UK areas. Areas of the South West, North-West Scotland and Wales tend to have lower footprints on average (based on means across postcode regions).

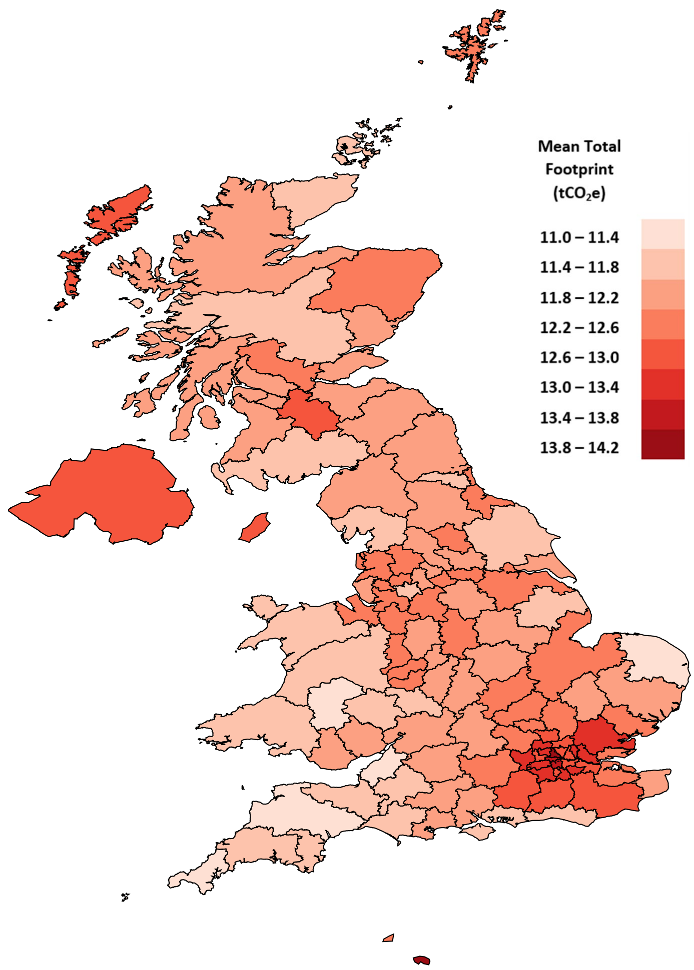


Figure 4. Mean total carbon footprint (tCO2e) by postcode area for respondents to the WWF Footprint Calculator across the period February 2019 to June 2022.

---

3. Noting that theoretically higher footprints are available if a user 'maxes out' all options, but these responses were removed in the cleaning process (see Methods Summary).

4. See IEEP 'Carbon Inequality in 2030' briefing note: https://ieep.eu/wp-content/uploads/2022/12/Carbon-inequality-in-2030_IEEP_2021.pdf

Home-related and travel-related emissions make the largest (and similar) contribution to the mean personal footprint across our user-sample, followed by purchases of 'stuff' and then food-related emissions (Table 1). The footprint associated with Government spending on behalf of individuals (which is not something that can be modified by the Calculator user), is also displayed in Table 1 for completeness.

Sub-Category	Mean Footprint (tCO2e)	Contribution to Total Footprint (%)
Food	1.66	13.6
Travel	2.82	23.0
Home	2.85	23.2
Stuff	2.19	17.8
Government Spending	2.75	22.4
Total	12.26	100.00

Table 1. The mean footprint (tCO2e) and its percentage contribution to the total footprint for each subcategory of the WWF Footprint Calculator across the period February 2019 to June 2022.

Breaking down the total footprint into its component parts reveals some further details about what is driving results. Figure 5 shows the distribution of the Travel component of the footprint across all user entries, revealing that for many individuals the footprint is quite low (between 0 and 1 tCO2e), but with a very significant number of individuals with high travel-linked footprints.

The geographic distribution of travel-related footprints (Figure 6) closely maps the trends shown for the total footprints (Figure 4, above) and (with the exception of non-mainland regions of Scotland) appears to be a dominant driver of the overall differences in the geographic distribution of the Total footprint.

The aggregation of the highest travel footprints in the London region is particularly striking, with residents of Northern Ireland, the Isle of Man and Jersey also standing out as having relatively high travel footprints.

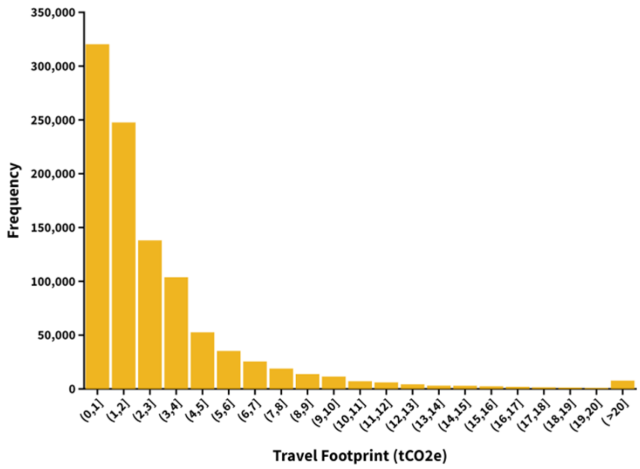


Figure 5. Histogram of the Travel footprint subcategory (tCO2e) for the WWF Footprint Calculator across the period February 2019 to June 2022. For visual purposes, the final bin includes the frequency of entries with a travel footprint between 20 to 96.94 tCO2e. Entries with flight footprints (a constituent part of the travel footprint) equal to or greater than 80 tCO2e were excluded. This decision was taken to remove unrealistically high annual flight counts, for example over 60 flights taken in one year. This condition retains 99.95% of all entries. The minimum recorded travel footprint was 0.01 tCO2e and the maximum was 96.94 tCO2e, the minimum and maximum possible values (after data cleaning), respectively.

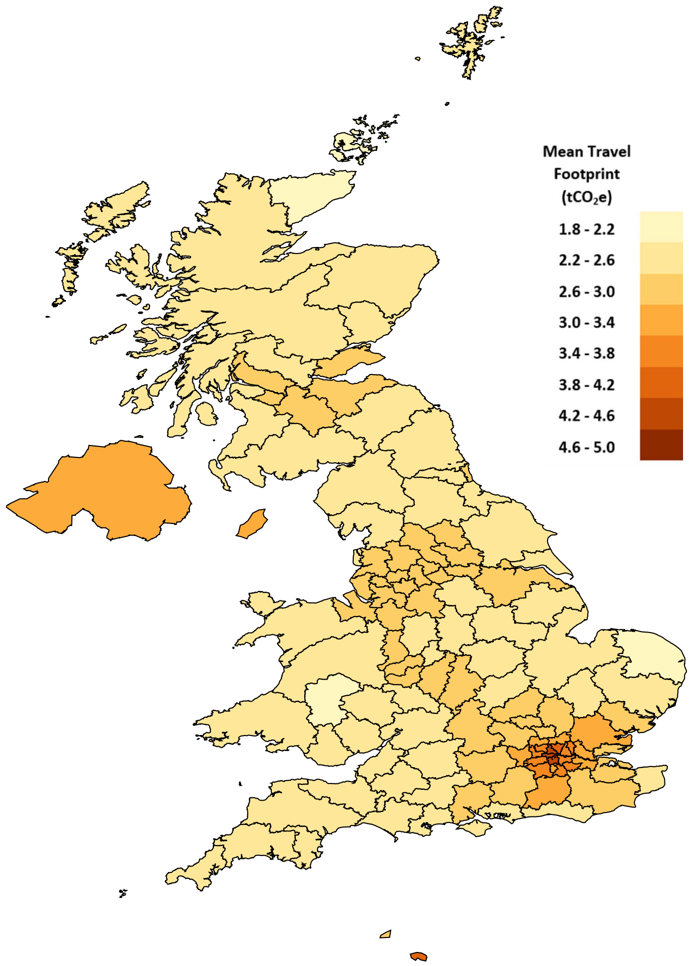


Figure 6. Mean Travel footprint (tCO2e) by postcode area for respondents to the WWF Footprint Calculator across the period February 2019 to June 2022.

For the Food component of the footprint, the breadth of results in the Calculator is more constrained given the nature of the questions (multiple choice based on food choices, waste and restaurant usage), which is reflected in the histogram (Figure 7).

Geographic trends in the food footprint (Figure 8) do not appear as pronounced as for the Travel footprint, although a tendency for higher footprints in the London region can again be observed (along with other pockets distributed across the country).

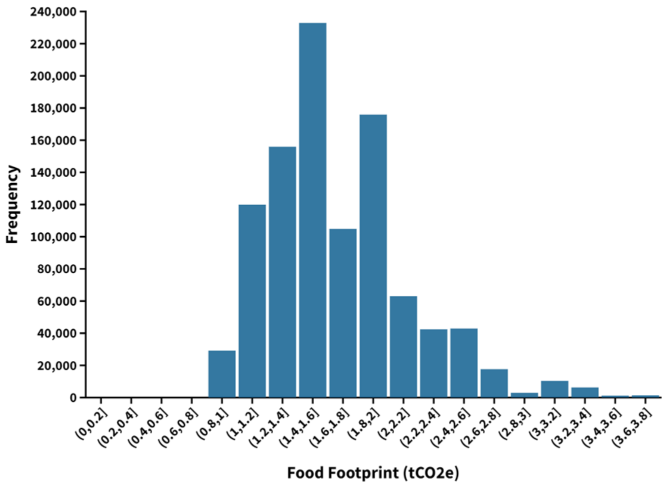


Figure 7. Histogram of the Food footprint subcategory (tCO2e) for the WWF Footprint Calculator across the period February 2019 to June 2022. The x-axis shows bins from 0-0.8 tCO2e for completeness, although no entries recorded a food footprint below 0.85 tCO2e. The maximum possible food footprint is 3.66 tCO2e and the minimum possible is 0.85 tCO2e.

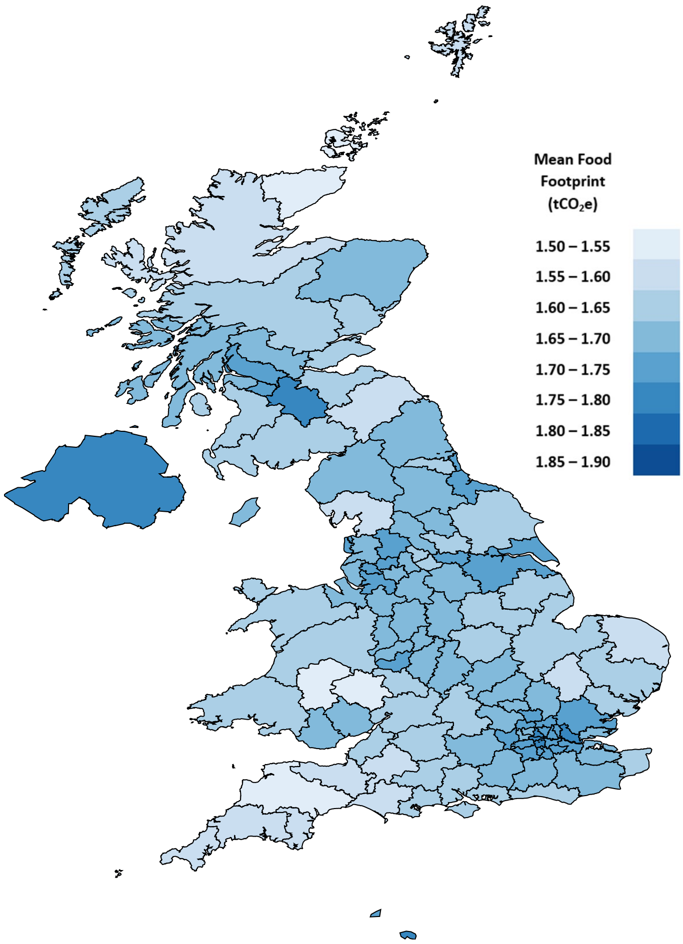


Figure 8. Mean Food footprint (tCO2e) by postcode area for respondents to the WWF Footprint Calculator across the period February 2019 to June 2022.

The Home component of the footprint within the Calculator allows a greater range of outcomes, given the ability for the user to select very 'green' options (renewably sourced energy and/or energy saving measures and low household heating temperatures) or more intensive options (oil-based heating, high heating temperatures).

Footprint results across the Calculator are therefore quite wide-ranging, with a relatively long tail of higher-footprint entries but also a spike in the users with the lowest footprint observed (Figure 9).

For the home footprint, a rather different geographic pattern is observed (Figure 10) with the London region typically having lower footprints and more rural areas of the UK having higher footprints [5]. Non-mainland areas of Scotland, Northern Ireland, the Isle of Man and the Channel Islands have the higher mean home footprint, linked to a greater dependence on non-renewable resources for heating (see Annex Tables A9 & A10).

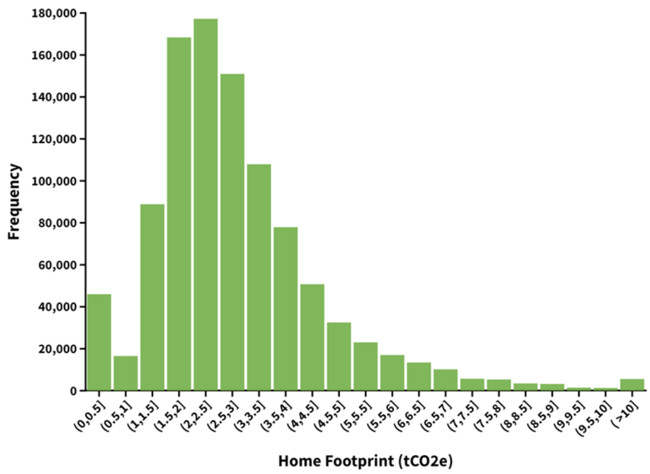


Figure 9. Histogram of the Home footprint subcategory (tCO2e) for the WWF Footprint Calculator across the period February 2019 to June 2022. For visual purposes, the final bin includes the frequency of entries with a home footprint between 10 to 22.67 tCO2e. The minimum recorded home footprint was 0.40 tCO2e and the maximum was 22.67 tCO2e, the minimum and maximum possible values, respectively.

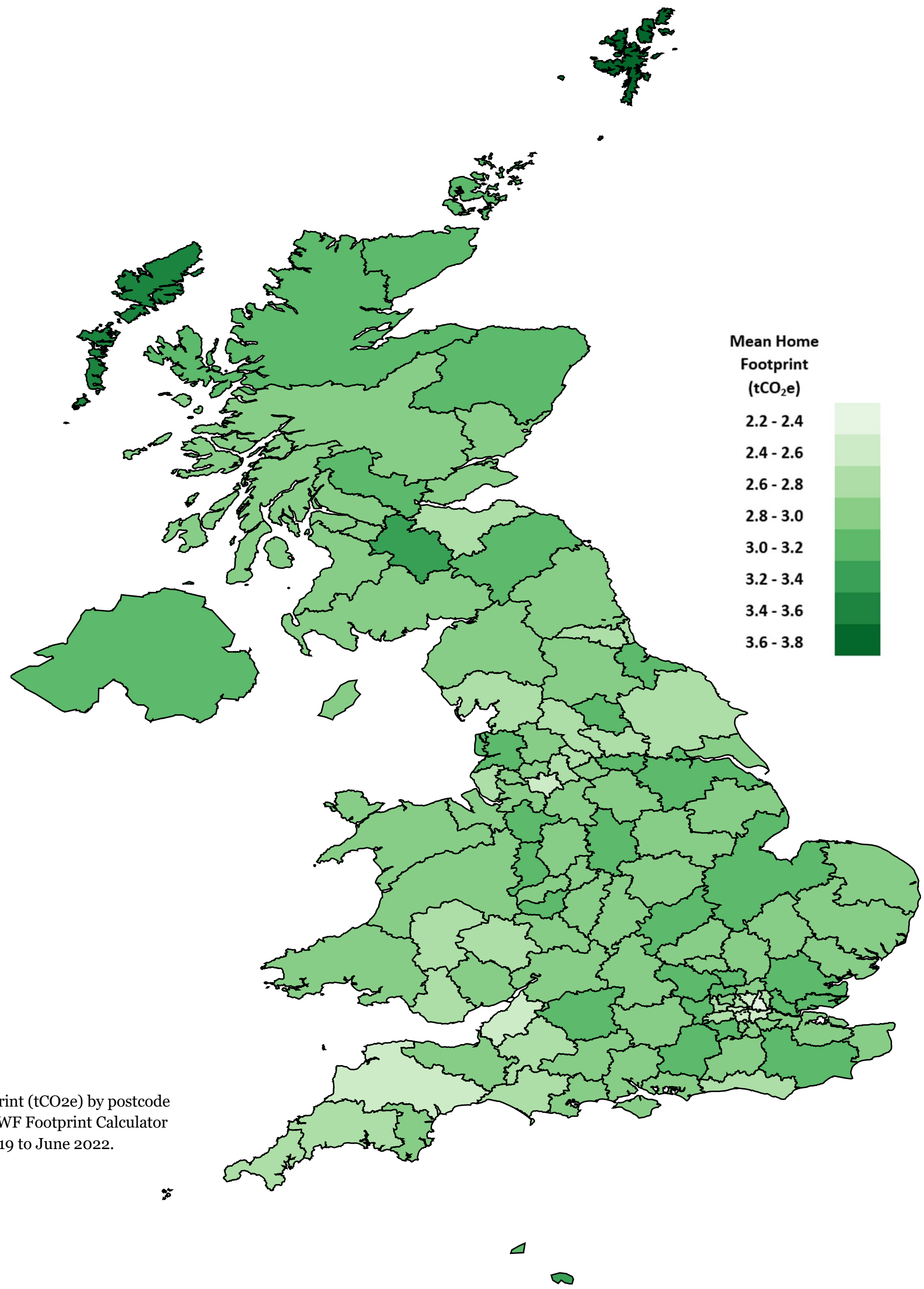


Figure 10. Mean home footprint (tCO2e) by postcode area for respondents to the WWF Footprint Calculator across the period February 2019 to June 2022.

[5] Rural areas have an average Home footprint of 2.99 tCO2e, urban areas have 2.80 tCO2e

The Stuff component of the Calculator also allows a relatively wide range of footprints to be achieved by users, and again indicates a relatively wide range of consumption habits, with a long-tailed distribution indicating that some individuals have relatively 'extreme' material consumption habits (Figure 11).

Note that in this section of the Calculator, a fixed footprint is added in the 'stuff' section which represents average expenditure on consumables not covered by the questions in the Calculator, which explains why the minimum footprint achievable is 1.16 tonnes. There is no clear trend in the 'stuff' footprint across the UK (Figure 12).

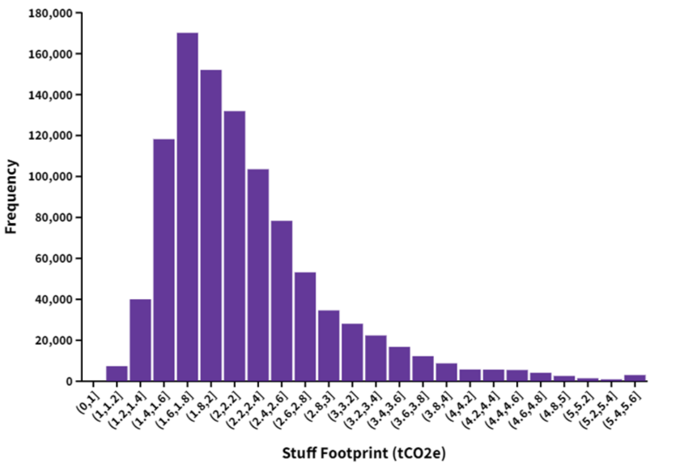


Figure 11. Histogram of the 'stuff' footprint subcategory (tCO2e) for the WWF Footprint Calculator across the period February 2019 to June 2022. The bin (0,1] is shown for completeness, but no value occurred below 1.16 tCO2e. The minimum recorded 'stuff' footprint was 1.16 tCO2e and the maximum was 5.43 tCO2e, the minimum and maximum possible values, respectively.

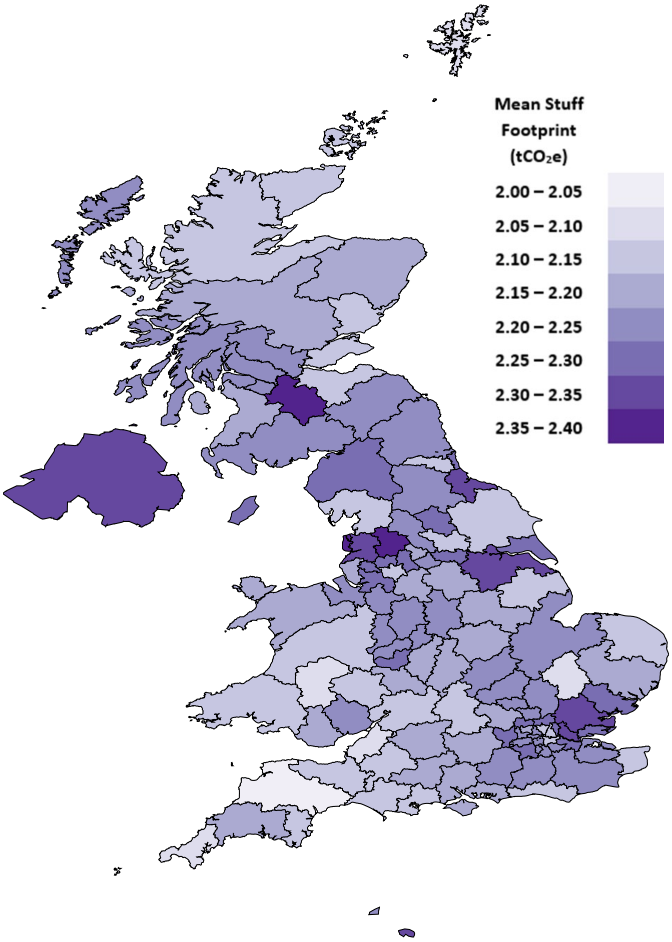


Figure 12. Mean 'stuff' footprint (tCO2e) by postcode area for respondents to the WWF Footprint Calculator across the period February 2019 to June 2022.

Aggregating user entries by month of completion allows trends over time to be explored. It is important to note that the Calculator asks users to respond to questions about consumption habits over different time frames (e.g. flights in the past 12 months, spending on consumables per month, etc.) and this should be borne in mind when interpreting any trends which are likely to be subject to lags (e.g. stopping flights in one month may not immediately reduce the travel footprint if a Calculator user flew in previous months).

An exploration of the time series is, however, particularly interesting in the context of the COVID pandemic which caused major disruption between March 2020 and February 2022. The impact of the pandemic on the mean total footprint is clearly observed in Figure 13.

Before the pandemic, results from the Calculator indicated a mean total footprint of around 13.66 tonnes, which dropped to a low of 10.65 tonnes (a drop of ~22%) in August 2021. Restrictions (e.g. on travel) started to ease before the Government's 'Living with Covid' strategy was launched in February 2022, and we observe a general increase in the footprint from August 2021 onwards. As of June 2022, footprints were below pre-pandemic levels.

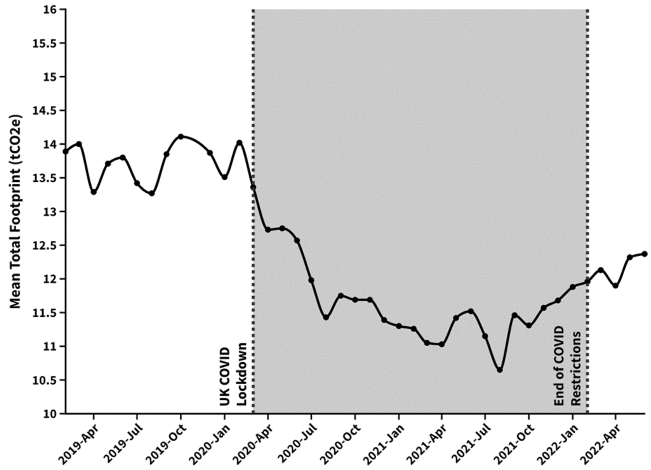


Figure 13. Time series of the mean monthly total footprint (tCO2e) for UK-based respondents to the WWF Footprint Calculator (February 2019 - June 2022). The grey shaded region represents the time period during which the UK experiences the COVID-19 pandemic. The period begins in March 2020, when Prime Minister Boris Johnson announced quarantine lockdown measures. Throughout the pandemic various restrictions were dropped, imposed and then dropped again. The end of the COVID-19 pandemic period was judged to be in February 2022, when the government announced the 'Living with COVID' strategy, by which time most of the major COVID restrictions had been lifted.

Source: https://www.gov.uk/government/publications/covid-19-response-living-with-covid-19.

Breaking down the time series into the footprint sub-sections (Figure 14) clearly reveals that it is the travel component which underpins much of the changes observed. This is fully in line with expectations given the primary policy interventions by governments (UK and overseas) during the pandemic were restrictions to international travel and household and workplace-mixing.

Mean travel-related footprints dropped from over 4.14 tonnes to a minimum of 1.66 tonnes (a drop of ~60%) in August 2021 during the pandemic.

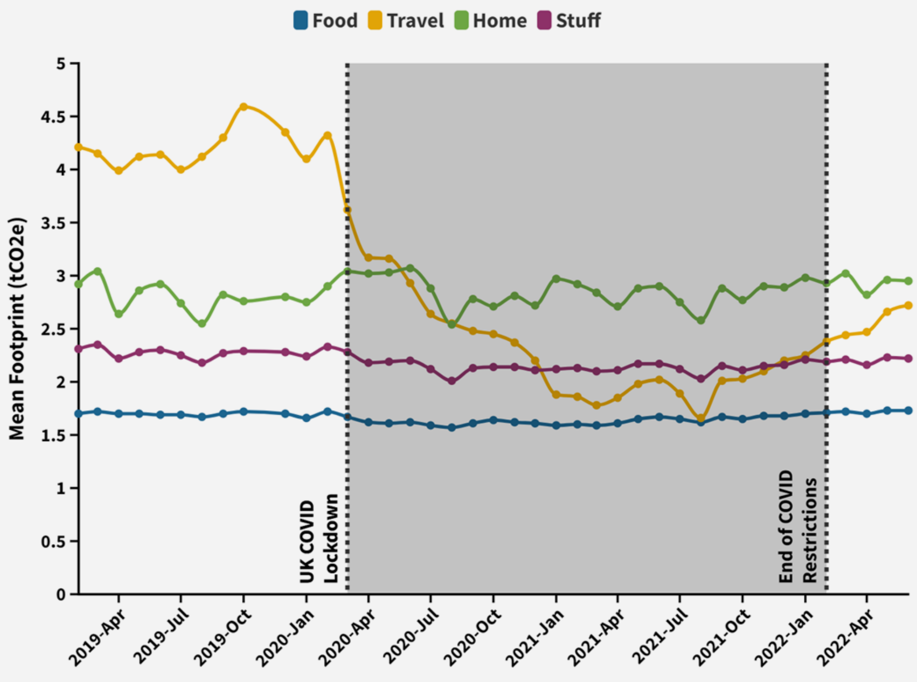


Figure 14. Time series of the mean monthly footprint for each subcategory (tCO2e) for UK-based respondents to the WWF Footprint Calculator (February 2019 - June 2022).

REGIONAL RESULTS AND TRENDS

The following results provide more detailed information on footprint results from the perspective of particular geographic regions, including details on observed differences between rural and urban areas.

Aggregating geographic data to country (or crown dependency) level (Table 2) reveals that residents of the Channel Islands and Isle of Man have the highest mean Total footprint. Of the countries of the UK, Northern Ireland residents have the highest mean Total footprint (and also have the highest mean footprint across all sub-categories compared with other countries of the UK), with residents of Wales with the lowest (who also have the lowest mean footprint across all sub-categories).

Country	Food Footprint (tCO2e)	Travel Footprint (tCO2e)	Home Footprint (tCO2e)	Stuff Footprint (tCO2e)	Total Footprint (tCO2e)	Entries
England	1.66	2.85	2.84	2.18	12.28	861,665
Scotland	1.66	2.60	2.92	2.17	12.10	84,469
Wales	1.65	2.40	2.82	2.16	11.77	39,306
Northern Ireland	1.75	3.05	3.12	2.30	12.97	18,695
Isle of Man	1.69	3.33	2.92	2.26	12.95	931
Channel Islands	1.73	3.26	3.20	2.26	13.20	1,685

Table 2. Mean Total footprint and subcategories (tCO2e) for the UK and its constituent countries and crown dependencies across the period February 2019 to June 2022. The Channel Islands represent the Bailiwicks of Guernsey and Jersey.

At postcode outcode scale (Table 3; filtered to only include outcodes with at least 20 entries), urban regions in London dominate the highest footprint areas, with the exception of users in the rural-classified CA21 region of Carlisle. Outcodes in the SW postcode in particular feature prominently, with the SW1X outcode having an extremely high mean total footprint (note that a larger number of respondents are from SW7 and SW3 outcodes which also have very high mean footprints.

Outcode	Area Name	Classification	Mean Total Footprint (tCO2e)	Entries
SW1X	London	Urban	20.19	67
SW7	London	Urban	17.83	385
SW3	London	Urban	17.35	372
WC1B	London	Urban	16.87	66
EC2A	London	Urban	16.86	66
SW1W	London	Urban	16.52	155
W8	London	Urban	16.44	432
CA21	Carlisle	Rural	16.43	33
SW10	London	Urban	16.13	310
W1T	London	Urban	16.08	84

Table 3. Top 10 postcode outcodes by mean Total footprint (tCO2e) across the period February 2019 to June 2022. Note: 242 outcodes (8.4%) with entries below 20 were excluded as they are judged not likely to provide a representative enough sample of the outcode. The resultant dataset includes 2,648 of the original 2,890 total outcodes (91.6%).

In contrast, outcodes associated with the lowest mean total footprints are predominantly rural, with the HU18 urban-classified area of Hull the exception in the bottom 10 (Table 4).

Entries overall in these rural areas are lower (which is to be expected as population density is lower) but Kimarnock (with 160 entries) has the outcode (KA16) with the lowest mean footprint in the UK at 8.26 tCO2e.

Outcode	Area Name	Classification	Mean Total Footprint (tCO2e)	Entries
KA16	Kilmarnock	Rural	8.26	160
TN36	Tonbridge	Rural	9.40	25
LL48	Llandudno	Rural	9.61	29
PA20	Paisley	Rural	9.67	35
HU18	Hull	Urban	9.84	62
PH36	Perth	Rural	9.84	32
LL26	Llandudno	Rural	9.87	31
TR21	Truro	Rural	9.94	34
NR23	Norwich	Rural	9.96	40
SA39	Swansea	Rural	10.05	31

Table 4. Bottom 10 postcode outcodes by mean Total footprint (tCO2e) across the period February 2019 to June 2022.

Aggregating outcodes to Postcode Areas reveals the EC region of London to have the highest mean Total footprint (Table 5). With the exception of Jersey, the top postcode regions by mean Total footprint are within, or neighbouring, London.

Postcode Area	Area Name	Mean Total Footprint (tCO2e)	Entries
EC	London	14.05	890
JE	Jersey	13.92	847
NW	London	13.86	9,719
WC	London	13.83	597
W	London	13.74	10,372
SW	London	13.73	2,3620
KT	Kingston	13.21	13,714
SL	Slough	13.15	5,909
HA	Harrow	13.10	6,288
CM	Chelmsford	13.09	10,502

Table 5. Top 10 Postcode Areas by mean Total footprint (tCO2e) across the period February 2019 to June 2022.

Exeter is the Postcode Area with the lowest mean Total footprint (Table 6). There is no clear geographic clustering, although several Postcode Areas in the South West of the UK are present in the bottom 10.

Postcode Area	Area Name	Mean Total Footprint (tCO2e)	Entries
EX	Exeter	11.11	10,877
LD	Llandrindod	11.28	718
TR	Truro	11.31	7,355
BS	Bristol	11.35	23,741
NR	Norwich	11.39	11,728
HR	Hereford	11.44	2,217
KW	Kirkwall	11.44	841
LA	Lancaster	11.55	5,560
PL	Plymouth	11.60	9,816
SA	Swansea	11.61	8,565

Table 6. Bottom 10 Postcode Areas by mean Total footprint (tCO2e) across the period February 2019 to June 2022.

Table 7 reveals no clear distinction between postcode outcodes classified as urban and rural in terms of mean Total footprint.

However, the Travel component of the footprint appears to be somewhat higher on average in urban areas, with the Home component, in contrast, being somewhat higher in rural areas.

Subcategory	Rural Footprint (tCO2e)	Urban Footprint (tCO2e)
Food	1.62	1.68
Travel	2.68	2.87
Home	2.99	2.80
Stuff	2.20	2.18
Total	12.23	12.27

Table 7. Mean Total footprints and other footprint subcategories by urban (751,061 entries in total) or rural (255,690 entries) classification for the WWF Footprint Calculator across the period February 2019 to June 2022.

Focusing only on urban outcodes (i.e. removing postcode outcodes classified as rural from the Postcode Area aggregations) reveals, again, the dominance of London and near-London Postcode Areas within the list of areas with the highest mean Total footprint (Table 8).

Exceptions include the Inverness (IV) Postcode Area (although this has a relatively low number of entries) and Isle of Man (IM).

Postcode Area	Area Name	Mean Total Footprint (tCO2e)	Entries
EC	London	14.05	890
NW	London	13.86	9,719
WC	London	13.83	597
W	London	13.74	10,372
SW	London	13.73	23,620
IV	Inverness	13.23	75
KT	Kingston	13.21	13,714
SL	Slough	13.15	5,909
IM	Isle of Man	13.14	323
HA	Harrow	13.10	6,288

Table 8. Top 10 Postcode Area by mean Total footprint (tCO2e) for urban outcodes only across the period February 2019 to June 2022. Note: Eight postcode areas (6.5%) do not have urban outcodes. One postcode area had entries below 50 and these were excluded as are judged not likely to provide a representative enough sample of the area. The resultant dataset includes 115 of the original 124 Postcode Areas (92.7%).

In urban-classified outcodes, users in the Exeter (EX) Postcode Area have the lowest mean Total footprint, followed by Norwich (Table 9). Again, several areas in the South West feature in this list, but so do urban areas in e.g. York (YO), Cambridge (CB) and Lincoln (LN) which did not feature in the bottom ten list that included both urban and rural classifications.

Postcode Area	Area Name	Mean Total Footprint (tCO2e)	Entries
EX	Exeter	10.71	4,218
NR	Norwich	11.07	6,739
DT	Dorchester	11.13	1,152
YO	York	11.15	4,275
TR	Truro	11.22	4,091
BS	Bristol	11.30	21,900
CB	Cambridge	11.35	5,631
LA	Lancaster	11.41	3,034
SY	Shrewsbury	11.45	1,466
LN	Lincoln	11.51	1,417

Table 9. Bottom 10 Postcode Area by mean Total footprint (tCO2e) for urban outcodes only across the period February 2019 to June 2022.

Focusing only on rural outcodes (i.e. removing postcode outcodes classified as urban from the Postcode Area aggregations) reveals Jersey (JE) as the area with the highest mean Total footprint (Table 10). Rural-classified areas around Belfast, and Liverpool also feature in the top 10.

Postcode Area	Area Name	Mean Total Footprint (tCO2e)	Entries
JE	Jersey	13.92	847
CM	Chelmsford	13.39	2,563
TS	Cleveland	13.26	1,338
BT	Belfast	13.23	8,446
AL	St. Albans	13.14	186
L	Liverpool	13.11	315
ML	Motherwell	12.97	1,362
RG	Reading	12.95	5,296
HP	Hemel	12.93	3,629
HS	Comhairle nan Eilean Siar	12.93	260

Table 10. Top 10 Postcode Area by mean Total footprint (tCO2e) with rural outcodes only across the period February 2019 to June 2022. Note: 26 postcode areas (21.0%) did not have rural outcodes. One postcode area had entries below 50 and these were excluded as they are judged not likely to provide a representative enough sample of the area. The resultant dataset includes 97 of the original 124 total postcode area (78.2%).

Users in rural-classified outcodes in the Llandrindod (LD) Postcode Area have the lowest mean Total footprint, followed by Exeter (Table 11)[6]

Postcode Area	Area Name	Mean Total Footprint (tCO2e)	Entries
LD	Llandrindod	11.28	718
EX	Exeter	11.36	6,659
OL	Oldham	11.42	529
TR	Truro	11.43	3,264
KW	Kirkwall	11.44	841
HR	Hereford	11.44	2,217
LL	Llandudno	11.44	3,714
TQ	Torquay	11.49	2,102
BD	Bradford	11.49	765
PL	Plymouth	11.61	4,650

Table 11. Bottom 10 Postcode Area by mean Total footprint (tCO2e) with rural outcodes only across the period February 2019 to June 2022.

[6] Exeter and Truro are examples of Postcode Areas which have relatively low mean total footprints in both urban and rural classifications. Mean total footprints are lower in the urban-classified areas of both Exeter and Truro (see Tables 9 and 11).

To explore how Total footprints had changed across the period February 2019 to June 2022, a mean of the five months in 2019 and 2022 was taken (February to June). Postcode Areas were assigned a ranking according to their 2019 and 2022 five-month averages (ordered smallest to largest footprint). The change in ranking was calculated by subtracting the 2022 rank from the 2019. A positive rank change thus represents a decrease in total footprint.

Table 12 reveals users in the Isle of Man had the largest percentage reduction between the end and start of the timeseries, along with users from Western Central London (WC) and Luton. In contrast Table 13 revealed that Dumfries' footprint grew slightly from the start to the end of the time series, whilst Galashiels' and Jersey's footprint decreased by under one percent. At country level (excluding crown dependencies), Table 14 reveals users in England to have demonstrated the largest percentage reduction.

Area	Area Name	2019 Five-Month Mean Footprint (tCO2e)	2022 Five-Month Mean Footprint (tCO2e)	Percentage Change (%)	2019 Five-Month Entries	2022 Five-Month Entries	2019 Rank	2022 Rank	Rank Change
IM	Isle of Man	15.18	11.04	-27.29	64	98	114	3	+111
WC	London	17.06	13.65	-19.98	80	124	121	119	+2
LU	Luton	14.70	12.00	-18.37	523	429	109	52	+57
UB	Southall	15.37	12.56	-18.29	496	415	116	97	+19
DH	Durham	13.77	11.35	-17.63	435	478	72	7	+65
PA	Paisley	13.79	11.40	-17.36	318	355	73	8	+65
WS	Walsall	14.11	11.68	-17.25	508	484	92	21	+71
HX	Halifax	14.05	11.65	-17.05	263	204	86	20	+66
SR	Sunderland	14.25	11.88	-16.62	206	227	99	44	+55
W	London	15.83	13.24	-16.38	1,118	1,374	118	115	+3
PR	Preston	14.14	11.86	-16.13	754	944	95	38	+57
SW	London	15.89	13.35	-15.98	2,490	3,007	119	118	+1

Table 12. Top 10 postcode areas with the largest percentage changes from their 2019 and 2022 five-month mean footprint (tCO2e). 12 postcode areas are included as 2 pairs of areas had the same ranking change. Three postcode areas were removed as they did not meet the 50 entry threshold over the five-month period, leaving 97.6% of all postcode areas.

Area	Area Name	2019 Five-Month Mean Footprint (tCO2e)	2022 Five-Month Mean Footprint (tCO2e)	Percentage Change (%)	2019 Five-Month Entries	2022 Five-Month Entries	2019 Rank	2022 Rank	Rank Change
DG	Dumfries	12.23	12.27	+0.29	274	185	4	78	-74
TD	Galashiels	12.62	12.58	-0.26	281	134	15	99	-84
JE	Jersey	14.15	14.07	-0.60	65	127	98	121	-23
TQ	Torquay	12.61	12.41	-1.57	753	863	13	86	-73
LN	Lincoln	12.30	11.88	-3.43	461	533	5	43	-38
SA	Swansea	12.33	11.80	-4.30	1,024	861	6	32	-26
TA	Taunton	12.53	11.96	-4.51	534	743	12	49	-37
PL	Plymouth	12.12	11.53	-4.86	1,148	1,066	2	13	-11
PH	Perth	13.14	12.50	-4.89	481	322	35	94	-59
LL	Llandudno	12.77	12.10	-5.25	742	810	20	60	-40

Table 13. Top 10 postcode areas with the smallest percentage changes from their 2019 and 2022 five-month mean footprint (tCO2e).

Area Name	2019 Five-Month Mean Footprint (tCO2e)	2022 Five-Month Mean Footprint (tCO2e)	Percentage Change (%)	2019 Rank	2022 Rank	Rank Change
Isle of Man	15.18	11.04	-27.29	6	1	5
England	13.68	12.12	-11.39	3	4	-1
Scotland	13.44	12.06	-10.21	2	3	-1
Northern Ireland	14.10	12.92	-8.37	5	5	0
Wales	12.82	11.84	-7.63	1	2	-1
Channel Islands	13.95	13.02	-6.67	4	6	-2

Table 14. UK nations and crown dependencies ordered by rank change based on their 2019 and 2022 five-month mean footprint (tCO2e).

Looking across major city regions (i.e. aggregating urban postcode areas where more than one corresponds to a major conurbation) reveals that London has the highest mean Total footprint at 13.25 tonnes (Table 15). Bristol is lowest with a mean footprint of 11.30 tonnes.

Area Name	Food Footprint (tCO2e)	Travel Footprint (tCO2e)	Home Footprint (tCO2e)	Stuff Footprint (tCO2e)	Total Footprint (tCO2e)	Entries
London	1.75	4.11	2.47	2.17	13.25	99,430
Belfast	1.75	2.97	3.00	2.27	12.75	10,249
Wakefield	1.70	2.71	3.05	2.28	12.49	5,577
Doncaster	1.71	2.45	3.08	2.31	12.30	3,268
Sunderland	1.72	2.74	2.76	2.29	12.27	1,502
Wolverhampton	1.68	2.61	2.98	2.24	12.26	2,768
Milton Keynes	1.67	2.71	2.94	2.19	12.25	5,239
Glasgow	1.72	2.64	2.83	2.21	12.14	16,822
Bradford	1.67	2.72	2.78	2.21	12.12	4,879
Derby	1.66	2.47	2.99	2.23	12.10	7,567
Liverpool	1.68	2.77	2.69	2.19	12.08	7,813
Birmingham	1.67	2.66	2.83	2.16	12.07	20,378
Stoke on Trent	1.67	2.49	2.91	2.23	12.05	4,690
Edinburgh	1.64	2.81	2.72	2.09	12.00	18,623
Coventry	1.65	2.62	2.79	2.15	11.97	8,924
Leicester	1.64	2.50	2.91	2.17	11.96	10,635
Newcastle	1.68	2.47	2.82	2.20	11.92	13,701
Hull	1.71	2.30	2.85	2.26	11.87	3,532
Sheffield	1.65	2.44	2.84	2.18	11.86	16,055
Cardiff	1.67	2.51	2.75	2.17	11.85	15,056
Nottingham	1.62	2.38	2.92	2.13	11.79	15,684
Manchester	1.68	2.62	2.53	2.14	11.72	19,626
Brighton	1.60	2.53	2.65	2.11	11.64	14,427
Plymouth	1.61	2.33	2.73	2.17	11.59	5,166
Bristol	1.60	2.43	2.47	2.05	11.30	21,900

Table 15. Mean total footprints (tCO2e) of the top 25 conurbations in the UK by population (ordered by number of entries) across the period February 2019 to June 2022.

FOOD-RELATED RESULTS

FOOD-RELATED RESULTS

Delving specifically into the results emerging from the Food subcategory of the Calculator, we observe a small reduction in the mean food footprint during the COVID-restriction period, which later rebounds (Figure 15). The mean pre-pandemic Food footprint was 1.69 tCO2e, falling to a monthly minimum of 1.57 tCO2e (~92.9% of pre-pandemic) in August 2020.

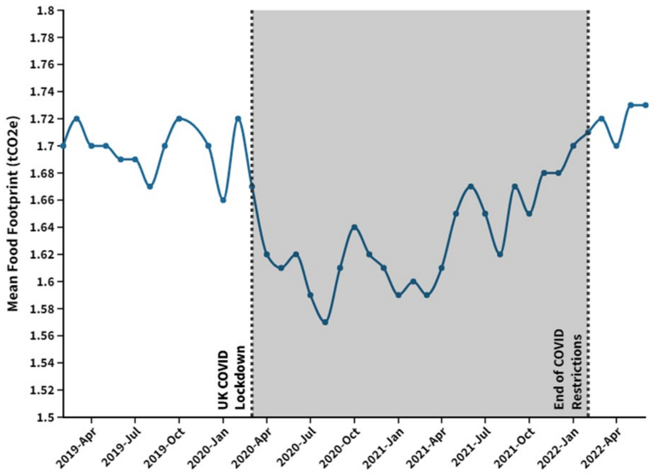


Figure 15. Time series of the mean monthly footprint for the Food subcategory (tCO2e) for UK-based respondents to the WWF Footprint Calculator (February 2019 - June 2022).

We can also explore distributions and trends in the underpinning lifestyle choices that users have indicated in response to questions in the Calculator.

Table 16 shows the number of users of the Calculator by their meat-related consumption choices, revealing that the majority of respondents eat meat in some meals, and 15.3% of users in every meal. Vegans and vegetarians comprise 16.6% of Calculator users.

Diet Type	Entries	Percentage Contribution (%)
Meat in some meals	561,579	55.8
Meat in every meal	153,861	15.3
Vegetarian	114,498	11.4
Meat very rarely	98,191	9.8
Vegan	51,829	5.2
No beef	26,793	2.7

Table 16. The number of entries and percentage contribution of each diet type of respondents to the WWF Footprint Calculator across the period February 2019 to June 2022.

Figure 16 reveals no observable trend over time when users are aggregated into non-meat eaters (vegans and vegetarians) and meat eaters (all other categories), and Figure A3 (Annex) also indicates no clear trend within individual categories over time.

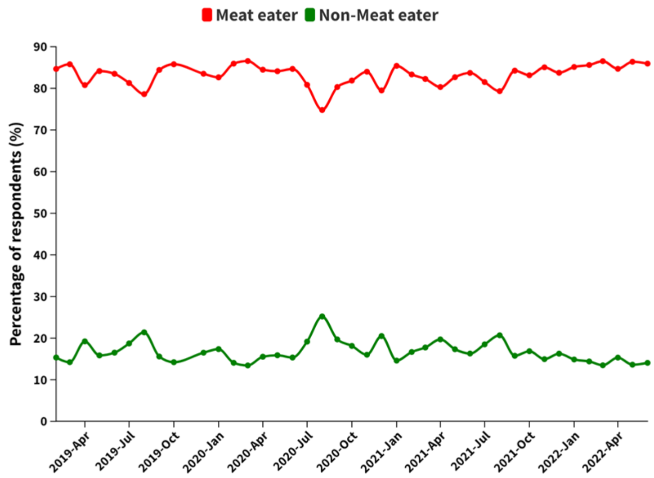


Figure 16. Time series of the percentage of respondents by month across the period February 2019 to June 2022 that reported eating a vegan or vegetarian diet (non-meat eater) or a diet that contained meat (meat eater).

Geographically, there are some interesting differences between regions with respect to the percentage of entries associated with non-meat eaters (Figure 17) with proportions highest in the Brighton Postcode Area (BN) but with high proportions also in the London region and South West.

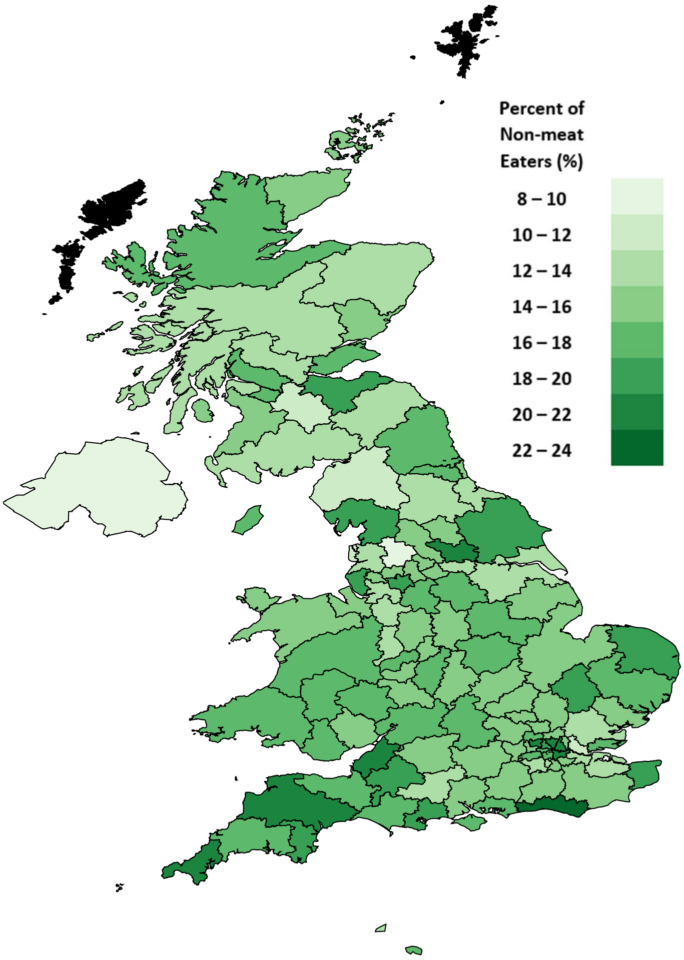


Figure 17. The percentage of respondents following a meat-free diet in each postcode area across the period February 2019 to June 2022. The black pattern shows postcode areas below the 50-user threshold.

Table 17 reveals that users who select that they do not eat meat also have a lower mean footprint across all other categories of the Calculator.

Subcategory	Non-Meat Eater Footprint (tCO_2e)	Meat Eater Footprint (tCO_2e)
Food	1.30	1.73
Travel	2.23	2.93
Home	2.37	2.94
Stuff	1.96	2.23
Total	10.62	12.59

Table 17. Mean total footprints and other subcategories by diet type (non-meat: 166,327 entries; meat: 840,424 entries) for the WWF Footprint Calculator across the period February 2019 to June 2022.

Just over half of users say that some of their food purchases are locally sourced, with roughly equal percentages either not worrying about local sourcing, or buying a lot of food locally (Figure 18). There are no clear trends in sourcing behaviours observed over time.

Interestingly, there is a clear geographic trend that can be observed in those who say they source locally, with those in the South West of England, Wales, Scotland and Northern Ireland having notably higher rates of local sourcing than the rest of England (Figure 19).

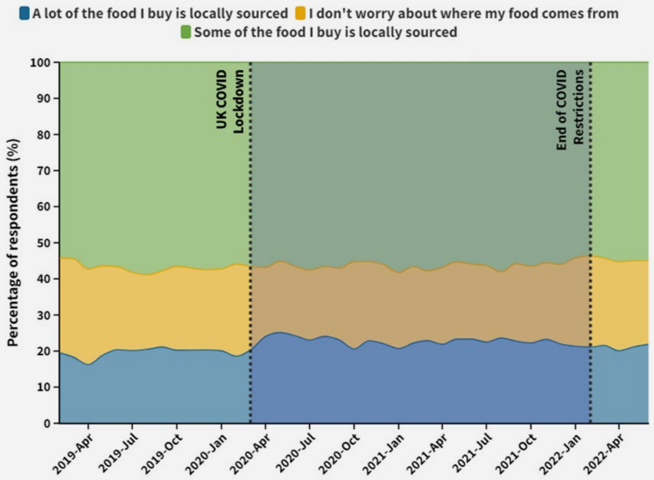


Figure 18. A time series showing how much food respondents source locally by percentage across the period February 2019 to June 2022.

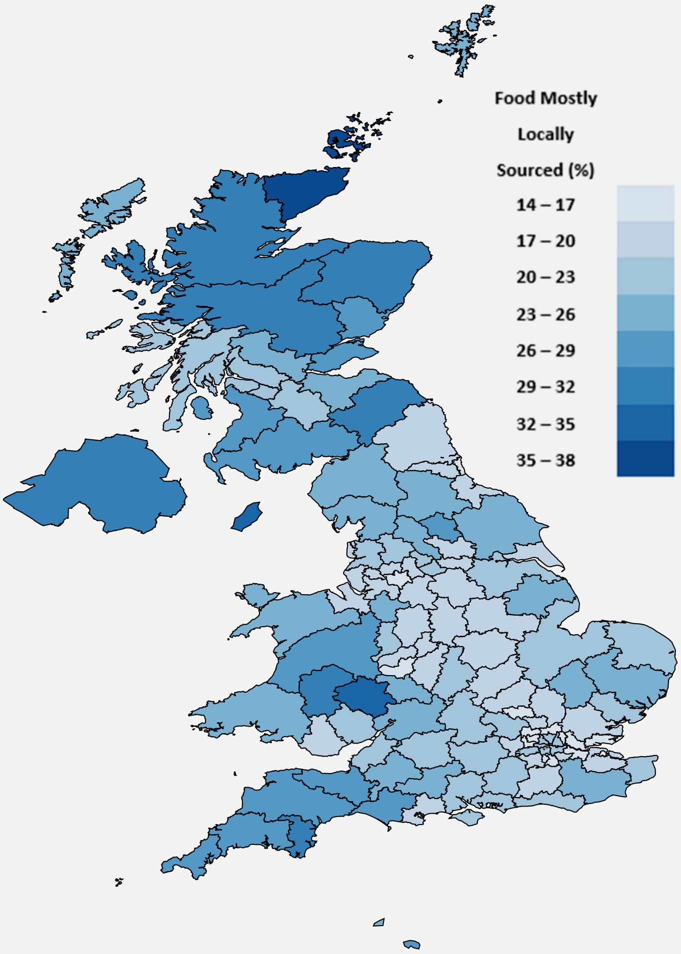


Figure 19. The percentage of respondents locally sourcing most of their food in each postcode area across the period February 2019 to June 2022.

Figure 20 illustrates the impact of the COVID-restrictions on weekly expenditure on takeaways and restaurants, with a notable increase in people saying they do not spend any money on this during the restriction period (and particularly in the earlier period of restrictions).

This change in behaviour explains the trend in the overall Food footprint. The proportion of people spending a small amount (£1-£10) on restaurants and takeaways appears to be relatively stable, meaning that it was the selection of larger expenditure categories that was ultimately reduced. Proportions in each category pre- and post-COVID, however, appear to be very similar.

Figure 21 indicates that there is geographic focus towards London among those spending at least £10 per week on restaurants and takeaways. Higher expenditure is also present in Central Scotland (around the Glasgow area). Figure 22 indicates that the proportion of users who spend nothing per week on restaurants and takeaways is highest in rural areas of the UK and lowest in Central London.

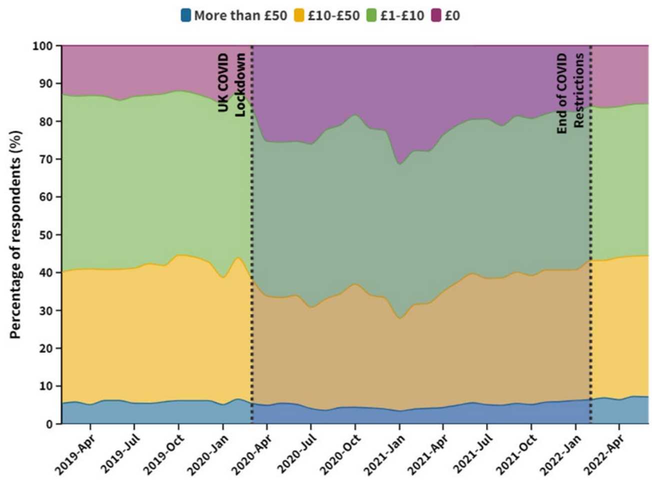


Figure 20. A time series showing the percentage contribution of the weekly spend at restaurants, canteens and takeaways of respondents across the period February 2019 to June 2022.

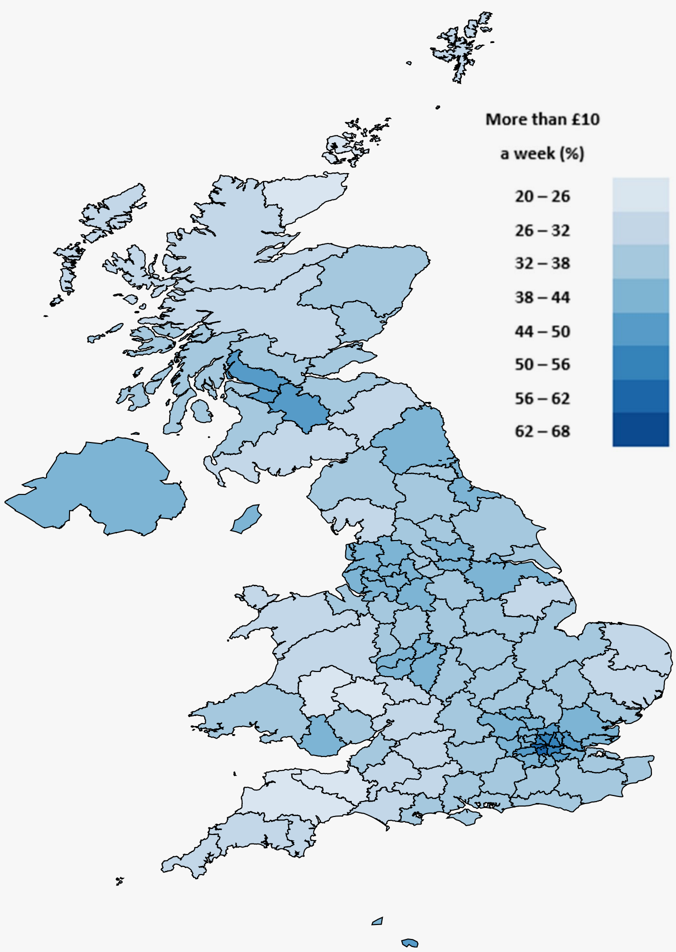


Figure 21. The percentage of respondents spending more than £10 a week at restaurants, canteens and takeaways in each postcode area across the period February 2019 to June 2022.

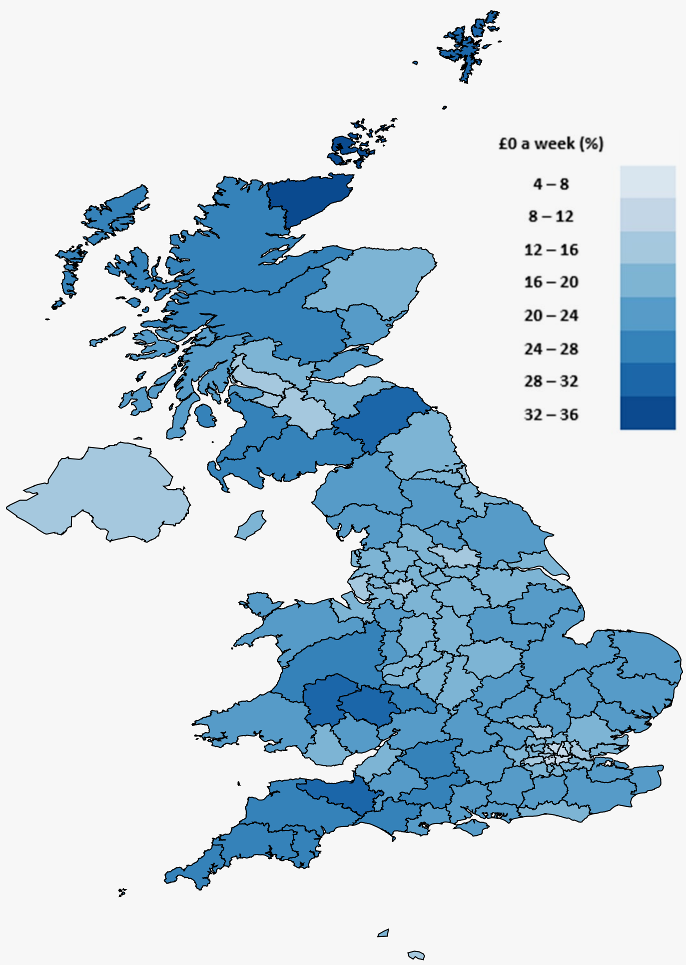


Figure 22. The percentage of respondents spending £0 a week at restaurants, canteens and takeaways in each postcode area across the period February 2019 to June 2022.

No clear trends emerge in terms of food waste over time (Figure 23) with the proportion of people who state they waste no food remaining relatively stable at around 17%. The number of people who say they waste more than 10% of their food is also relatively consistent at around 20%.

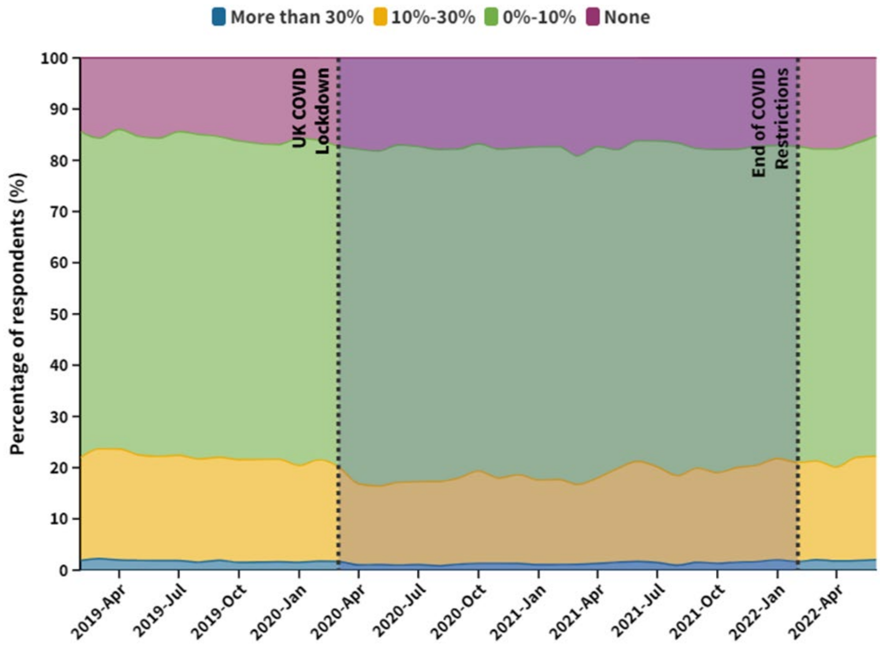


Figure 23. A time series showing the percentage contribution of the amount of food waste generated respondents across the period February 2019 to June 2022.

HOME-RELATED RESULTS

HOME-RELATED RESULTS

Delving into the results emerging from the Home subcategory of the Calculator, Figure 24 reveals that there is no clear trend observed in the Home footprint across the time series.

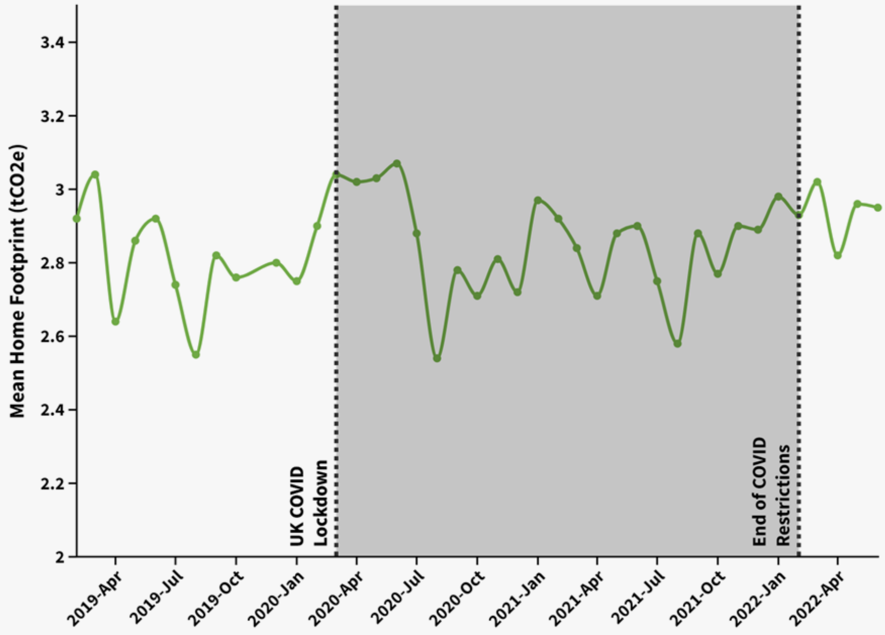


Figure 24. Time series of the mean monthly footprint for the Home subcategory (tCO2e) for UK-based respondents to the WWF Footprint Calculator (February 2019 - June 2022).

Table 18 reveals that those with detached houses average a higher footprint across all footprint categories. Conversely, those with terraced houses have a lower mean footprint than other households across most footprint categories (with the exception of flat owners who have a lower Stuff footprint on average).

Detached home ownership is lowest in Central London (Figure A4) which has (along with e.g. the Manchester region) higher rates of terraced house ownership (Figure A5).

There is also a tendency for a smaller number of bedrooms in the Central London area (Figure A6), with the suburbs of London (along with several other regions in the UK, including Northern Ireland) having relatively high proportions of users with houses with four or more bedrooms (Figure A7).

The majority of users heat their homes using gas, followed by electricity (Table 19), with the latter most common in Shetland, but also higher than average in London and the surrounding areas, the South West and Northern Scotland (Figure 25).

House Type	Detached Footprint (tCO2e)	Semi Detached Footprint (tCO2e)	Flat Footprint (tCO2e)	Terrace Footprint (tCO2e)
Food	1.68	1.67	1.65	1.64
Travel	3.12	2.58	3.08	2.50
Home	3.47	2.86	2.41	2.08
Stuff	2.29	2.21	2.01	2.12
Total	13.30	12.07	11.89	11.09

Table 18. Mean total footprints and other subcategories by house type (Detached: 325,424 entries; Semi detached: 345,430 entries; Flat: 155,189 entries; Terrace: 180,708 entries) for the WWF Footprint Calculator across the period February 2019 to June 2022.

Heating	Entries	Percentage (%)
Electricity	280,320	27.84
Gas	640,106	63.58
Oil	58,039	5.76
Wood	28,286	2.81

Table 19. The number of entries and percentage contribution of the home heating method of respondents to the WWF Footprint Calculator across the period February 2019 to June 2022.

Oil heating usage is highest in Northern Ireland and the Outer Hebrides (Figure 26), with wood-based heating the least common heating source but most prevalent in Northern and Southern Scotland, Wales, Southwest and Northwest England (Figure 27).

No obvious trends in heating types over time are observed (Figure A9).

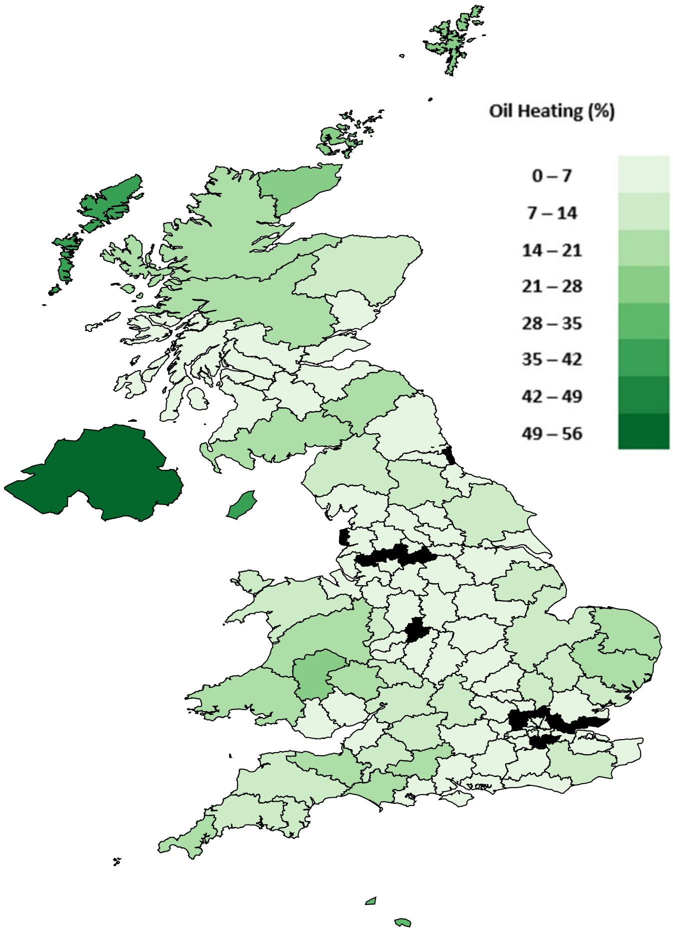


Figure 26. The percentage of respondents that live in a house with oil heating in each postcode area across the period February 2019 to June 2022. The black area shows postcode areas below the 50-user threshold.

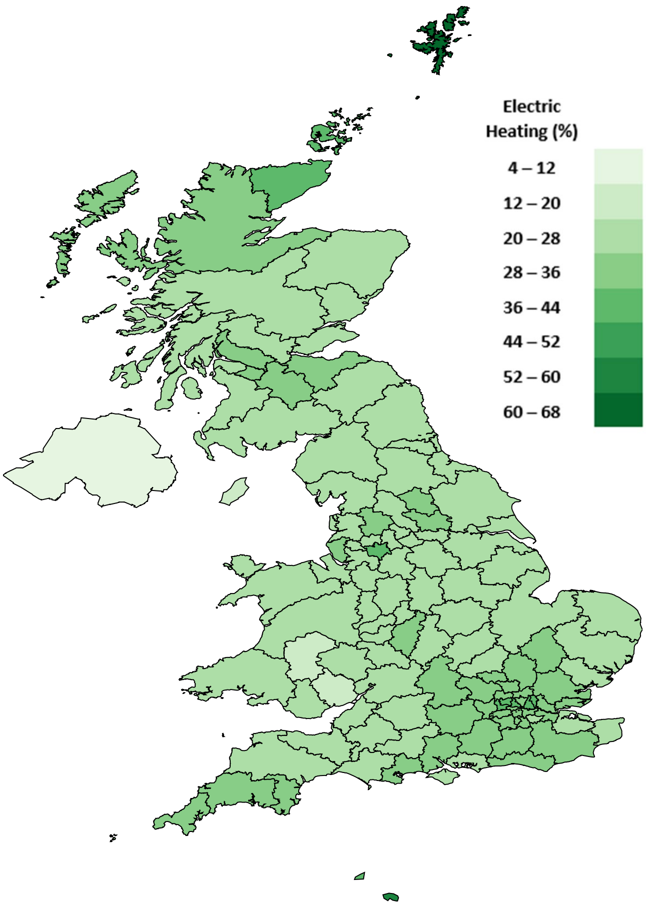


Figure 25. The percentage of respondents that live in a house with electric heating in each postcode area across the period February 2019 to June 2022.

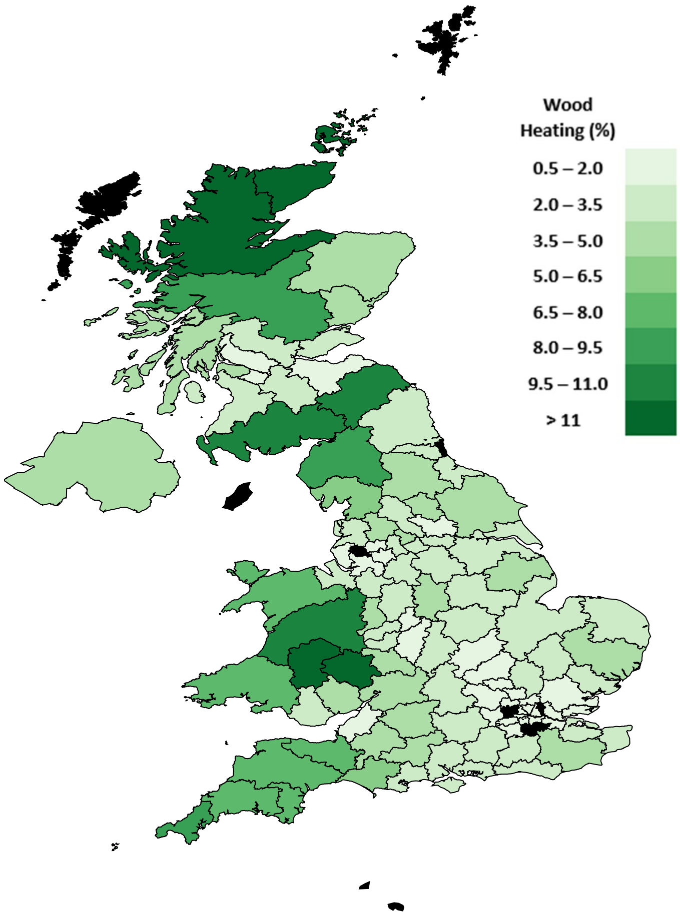


Figure 27. The percentage of respondents that live in a house with wood heating in each postcode area across the period February 2019 to June 2022. The black pattern shows postcode areas below the 50-user threshold.

More than half of users do not know whether they have a green electricity tariff, and a further 14% say that they do not (Table 20). Rates of no/don't know are highest in Northern Ireland and the Isle of Man, although there are pockets with higher rates spread across the UK including London suburbs (Figure 28). Over the time series, there seems to have been a slight increase in users who say they are on a 100% green tariff (Figure 29).

Is your electricity on a green tariff?	Entries	Percentage (%)
I don't know	523,329	51.98
No	139,552	13.86
Yes 100%	217,853	21.64
Yes but the tariff is less than 100% renewables	126,017	12.52

Table 20. The number of entries and percentage contribution of the types of green tariffs of respondents to the WWF Footprint Calculator across the period February 2019 to June 2022.

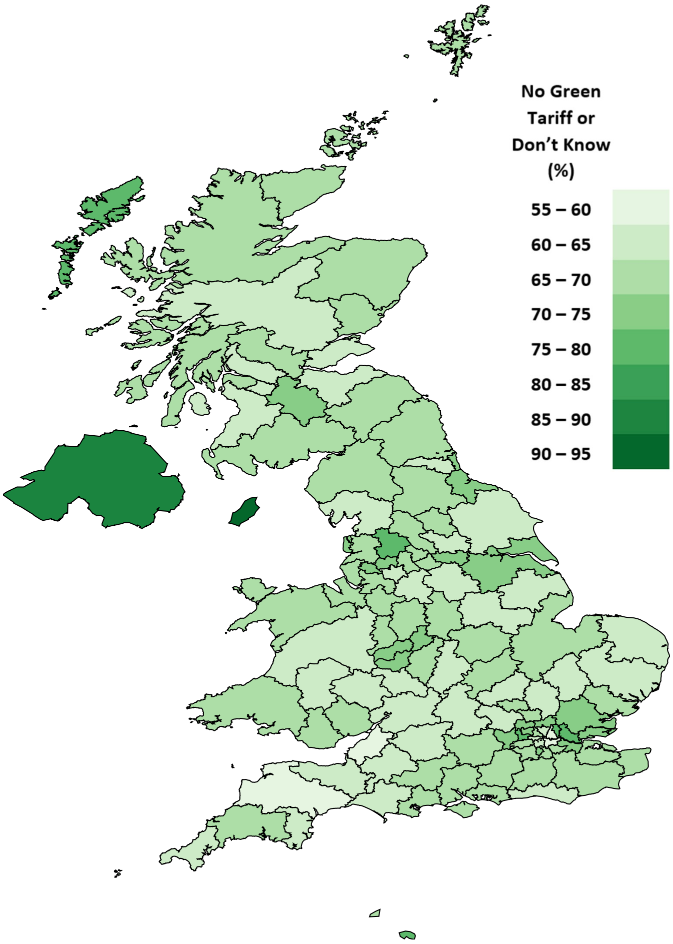


Figure 28. The percentage of respondents that either do not know or are not on a green tariff in each postcode area across the period February 2019 to June 2022.

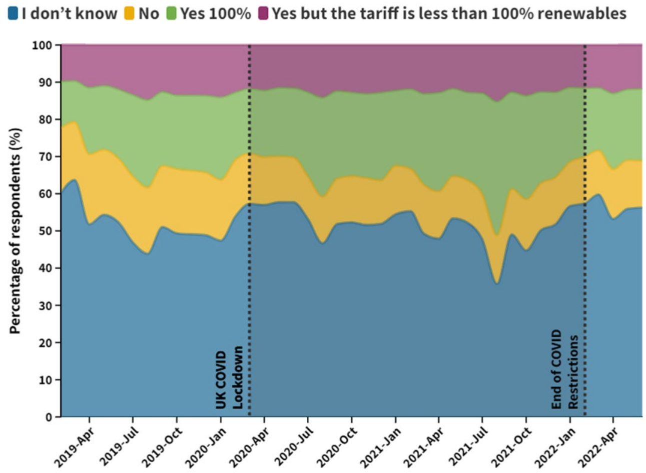


Figure 29. A time series showing the percentage contribution of the types of green tariff of respondents across the period February 2019 to June 2022.

Over the time series (Figure 30) there also appears to have been a decrease in the number of people heating their homes to 18-21 degrees in winter (although this remains the highest temperature bracket, Table 21), with an increase in the number of users heating to 14-17 degrees and below 14 degrees.

This trend is particularly observed in the latter part of the time series. Interestingly, it appears that there is a higher proportion of users in England (with the exception of those in the Southwest) who heat to 18-21 degrees compared to other areas of the UK (Figure 31).

Heating Temperature	Entries	Percentage (%)
14-17°C	244,761	24.31
18-21°C	630,432	62.62
Below 14°C	38,255	3.80
Over 21°C	93,303	9.27

Table 21. The number of entries and percentage contribution of home heating temperature of respondents to the WWF Footprint Calculator across the period February 2019 to June 2022.

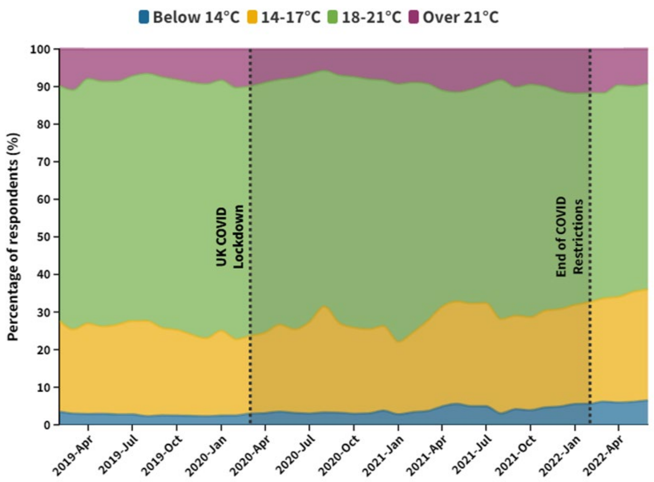


Figure 30. A time series showing the percentage contribution of house heating temperature of respondents across the period February 2019 to June 2022.

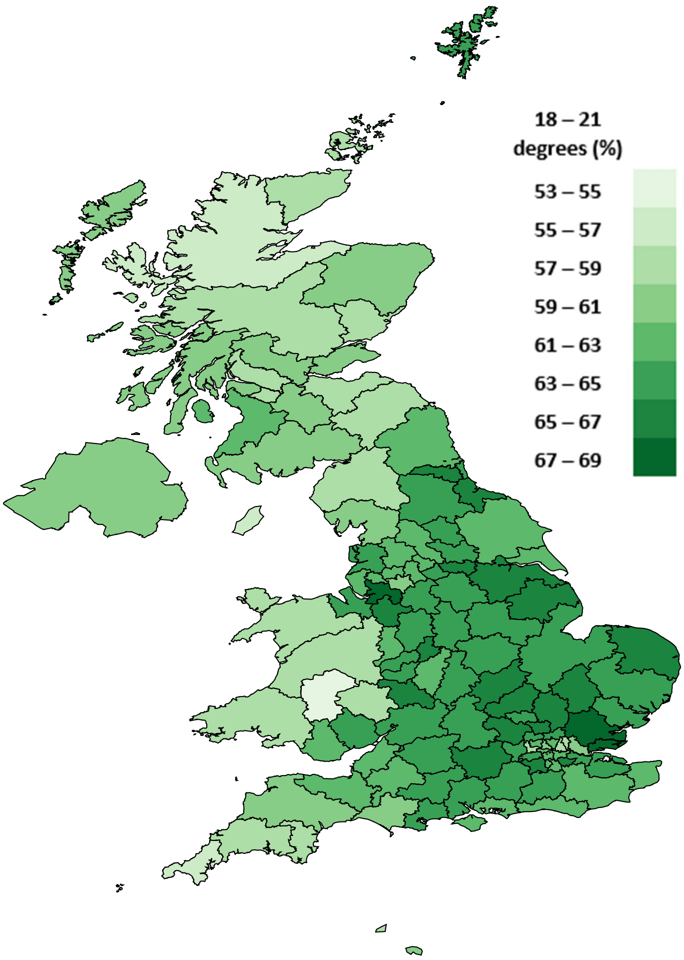


Figure 31. The percentage of respondents that heat their home to 18 - 21 degrees in each postcode area across the period February 2019 to June 2022.

Double glazing and energy saving light bulbs are the most common energy saving measures specified by users (Table 22). Over time, however, there appears to have been a slight decrease in users selecting that they have these measures [7], there also appears to be a slight increase in the number of users with solar panels and solar water heaters (Figure 32).

Geographic patterns across energy saving measures vary, but there are a couple of striking findings, for example: the rate of uptake of low-flow water fittings appears to be higher in Southern England (Figure 33), and the rate of solar panels appears highest in the South West, but also in pockets of Wales and Scotland (Figure 34).

Home Improvement	Entries	Percentage (%)
Energy saving light bulbs	756,938	75.19
Loft insulation	680,919	67.64
Cavity or solid wall insulation	474,030	47.09
Condensing boiler	346,715	34.44
Double glazing	803,642	79.83
Low flow fittings to taps and showers	176,310	17.51
Solar panels	81,845	8.13
Solar water heater	37,304	3.71

Table 22. The number of entries and percentage contribution (of all entries) of the home improvements of respondents to the WWF Footprint Calculator across the period February 2019 to June 2022

7. The explanation for this is unclear, although decreases are only slight.

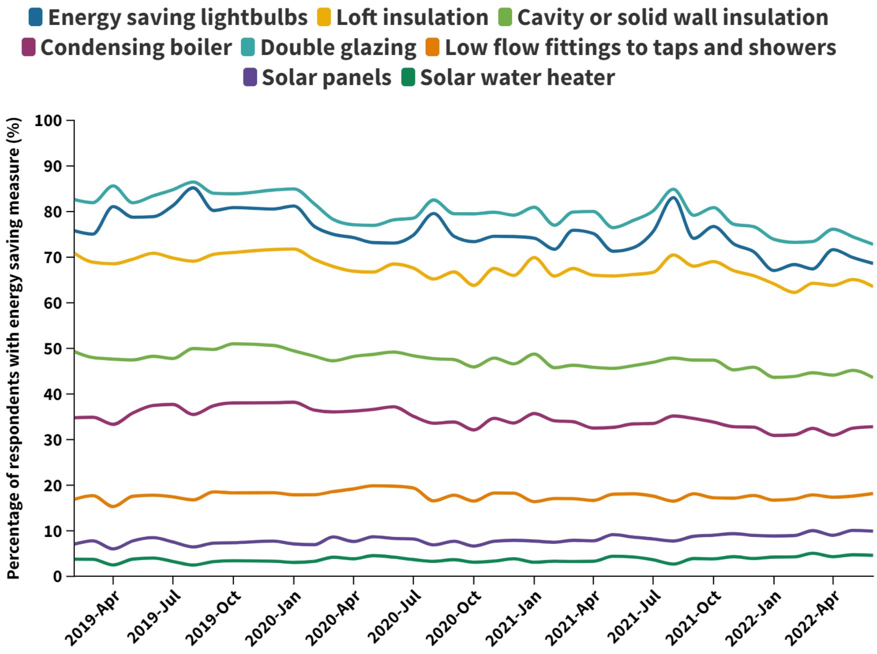


Figure 32. Time series of the percentage of respondents by month across the period February 2019 to June 2022 that report having an energy saving measure in their house.

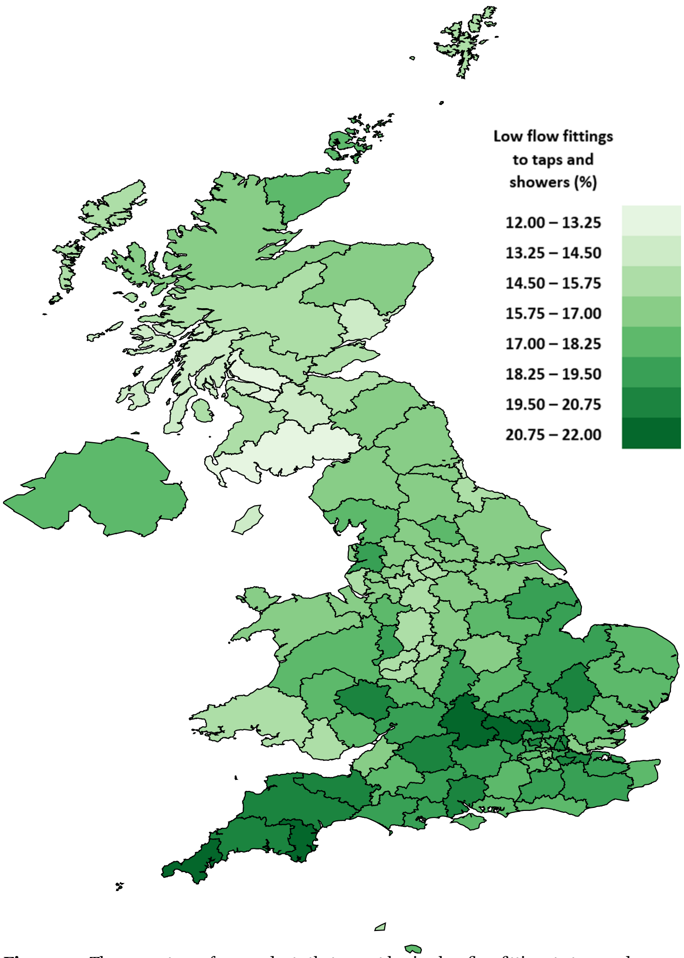


Figure 33. The percentage of respondents that report having low flow fittings to taps and showers in their home in each postcode area across the period February 2019 to June 2022.

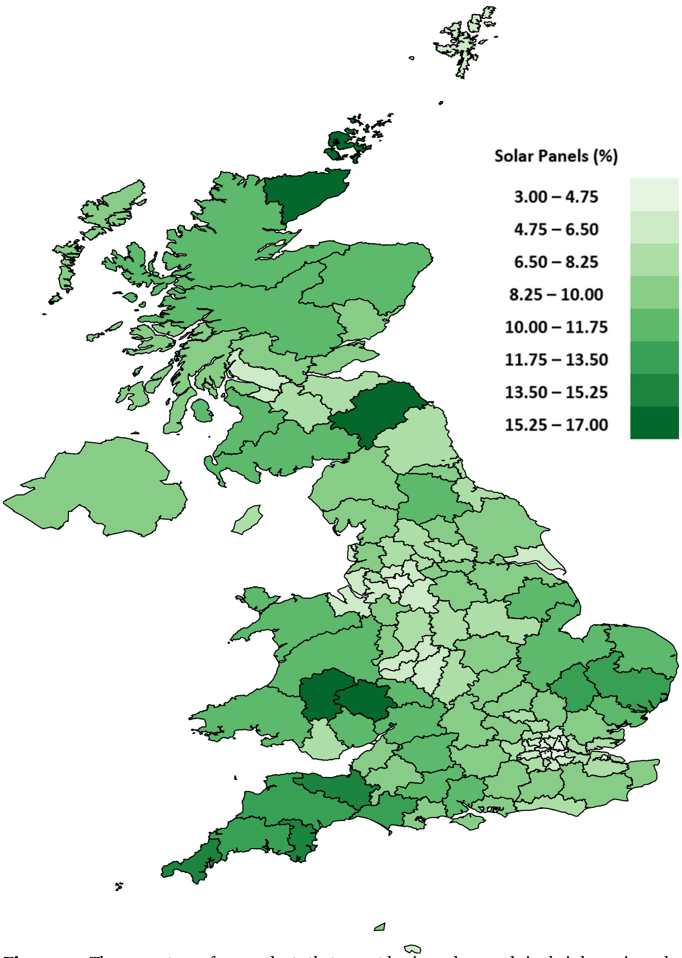


Figure 34. The percentage of respondents that report having solar panels in their home in each postcode area across the period February 2019 to June 2022.

TRAVEL-RELATED RESULTS

TRAVEL-RELATED RESULTS

Delving into the results emerging from the Travel subcategory of the Calculator, Figure 35 reveals the pronounced effect of the COVID pandemic on the Travel footprint. The mean pre-pandemic Travel footprint was 4.14 tCO2e, falling to a monthly minimum of 1.66 tCO2e (~40.1% of pre-pandemic levels) in August 2021.

Changes in the number of return flights is a key driver of this change, with a drop during the pandemic across all flight categories (Figure 36). When one bears in mind that users of the Calculator are asked to provide return flights taken within a 12 month period it is likely that, in reality, travel footprints at the peak of the pandemic were lower than implied by these results (i.e. most users would be unlikely to have been flying during the pandemic itself).

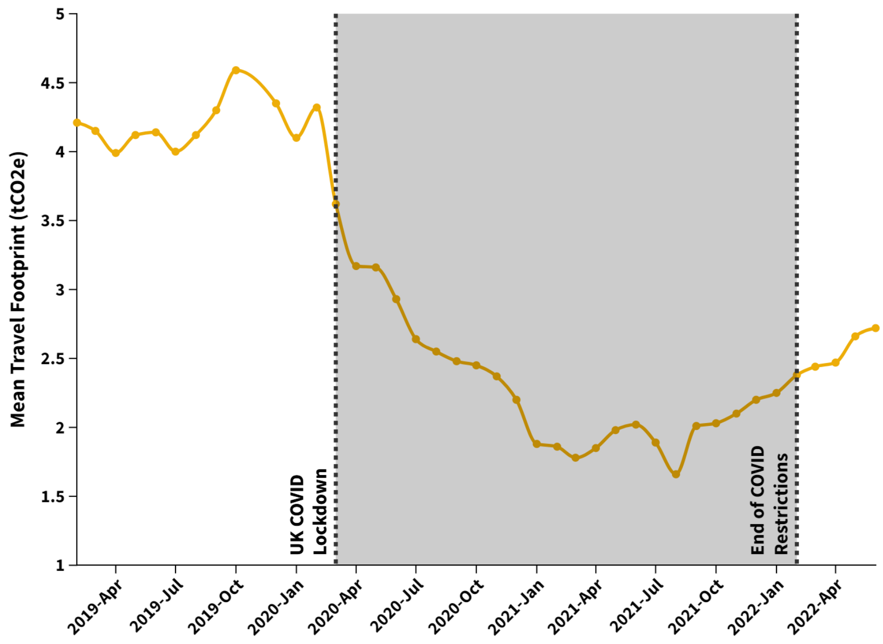


Figure 35. Time series of the mean monthly footprint for the Travel subcategory (tCO2e) for UK-based respondents to the WWF Footprint Calculator (February 2019 - June 2022).

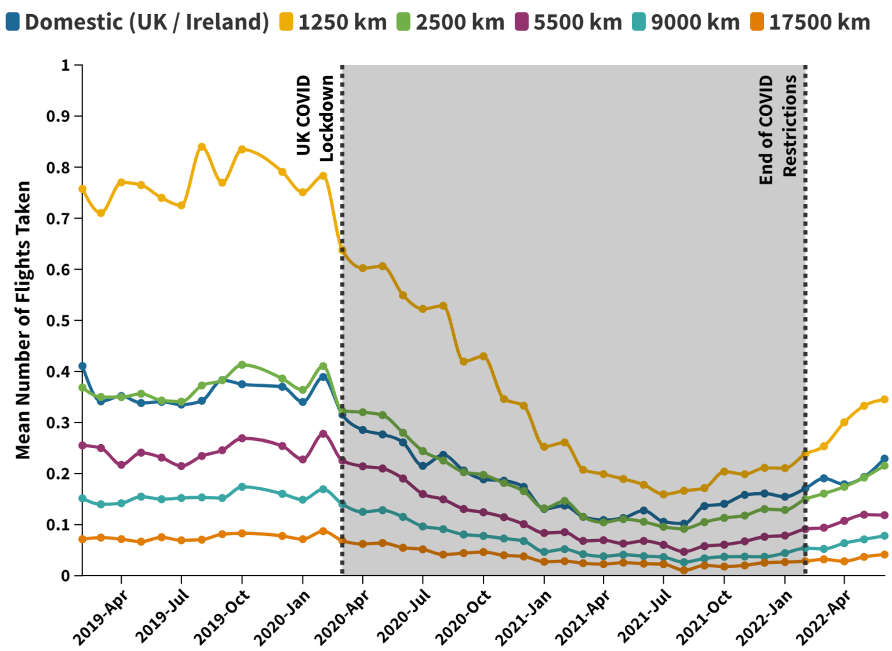


Figure 36. A time series showing the average monthly number of return flights taken by destination distance across the period February 2019 to June 2022.

Figure 37 is also striking as it reveals a strong tendency for more flights (across all categories) towards regions in and surrounding London, and also in non-mainland parts of the UK. The Edinburgh region also stands out as having a relatively high mean number of flights per user.

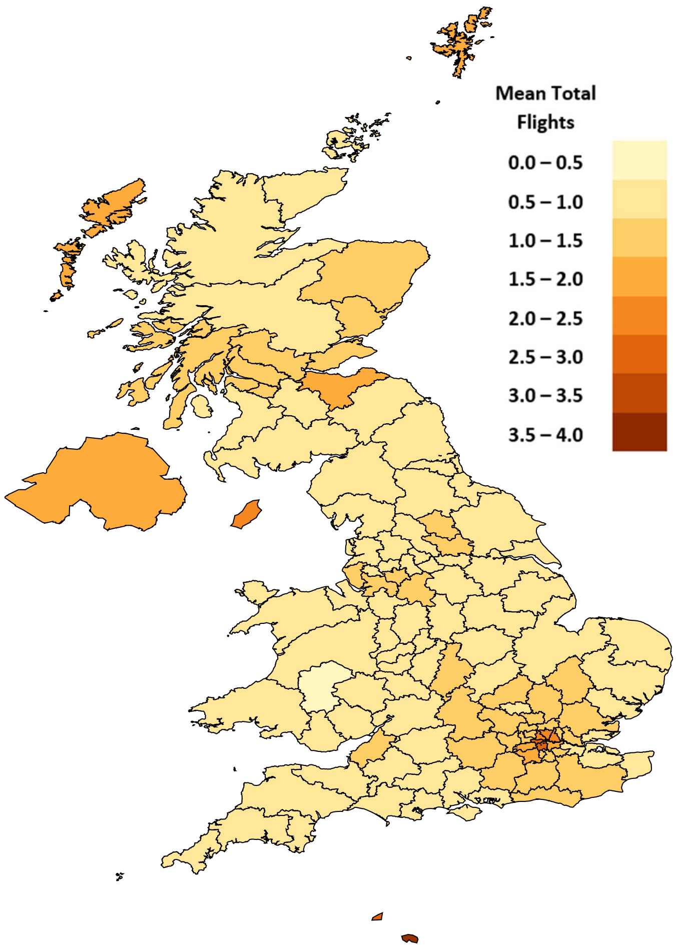


Figure 37. The mean total flights taken in each postcode area across the period February 2019 to June 2022.

Individuals who fly more often also have the largest footprints, on average, across all subcategories of the Calculator (Table 23).

Subcategory	Zero Flights Footprint (tCO2e)	1-5 Flights Footprint (tCO2e)	5+ Flights Footprint (tCO2e)
Food	1.60	1.71	1.97
Travel	1.39	3.82	12.86
Home	2.82	2.87	3.03
Stuff	2.09	2.26	2.67
Total Footprint	10.66	13.41	23.28

Table 23. Mean Total footprints and other subcategories by number of flights (zero flights: 560,842 entries; 1-5 flights: 406,791 entries, 5+ flights: 39,118) for the WWF Footprint Calculator across the period February 2019 to June 2022.

Turning to the land-based transport component of the footprint, Figure 38 reveals a steady increase in the percentage of users (who report that they use a personal vehicle for primary transport) who say that they use electrified vehicles; rising from ~6% at the start of the time series to 14% at the end. Figure 39 reveals that rates of electrified vehicle usage are highest in London and surrounding areas and appear lowest in more remote regions of the UK.

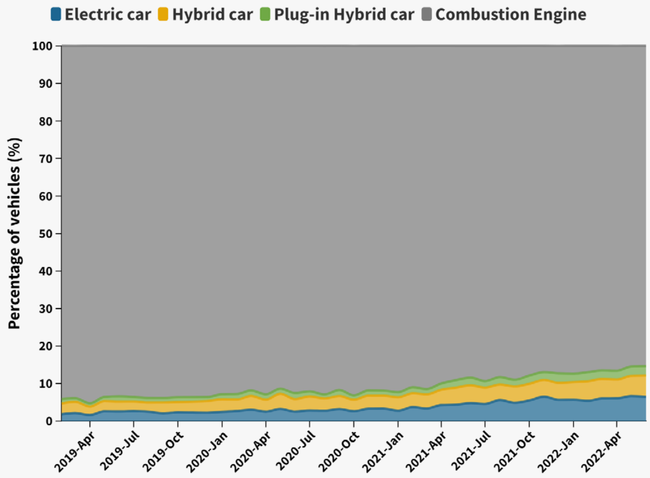


Figure 38. Time series of the percentage of vehicle-owning respondents by month across the period February 2019 to June 2022 that reported owning an electrified vehicle (Electric car, Hybrid car or Plug-in Hybrid car) versus combustion engine (Large, medium or small petrol or diesel car, motorbike).

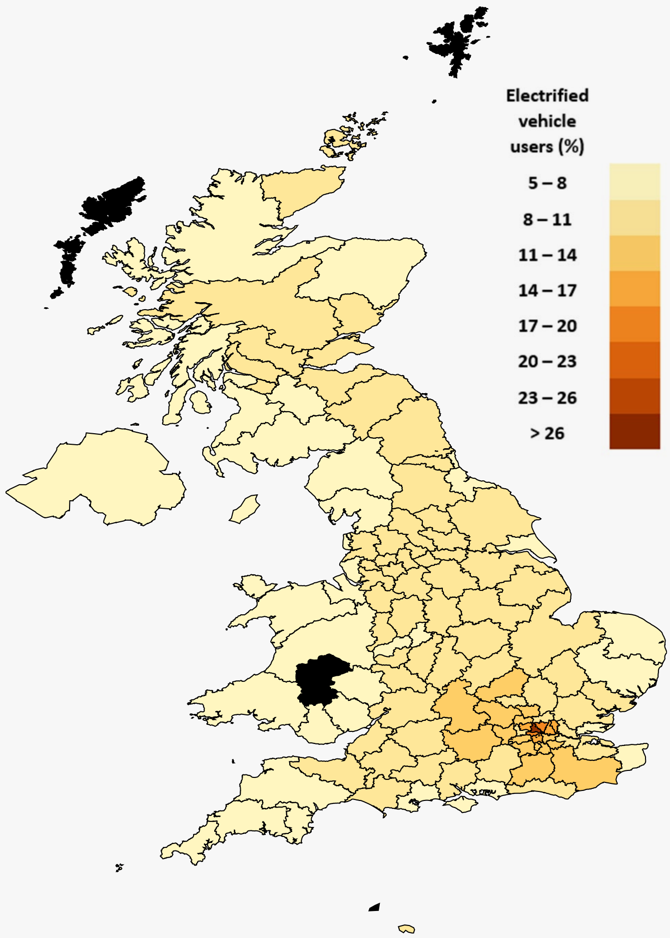


Figure 39. Percentage of vehicle-owning respondents that reported owning an electrified vehicle (Electric car, Hybrid car or Plug-in Hybrid car) in each postcode area across the period February 2019 to June 2022. The black pattern shows postcode areas below the 50-user threshold.

Figure 40 provides a comparison between the number of respondents who say they use a motor vehicle compared to those who use walking, cycling or public transport for their journeys.

This indicates that there has been a slight upward trend over the time series in the proportion of people using motorised personal transport, rising from ~65% at the start of the time series to ~70% at the end, and a concurrent slight decreasing trend in walking, cycling and public transport usage as a primary transport mechanism.

The highest proportion of users who rely on walking, cycling and public transport are in the London region (Figure 41).

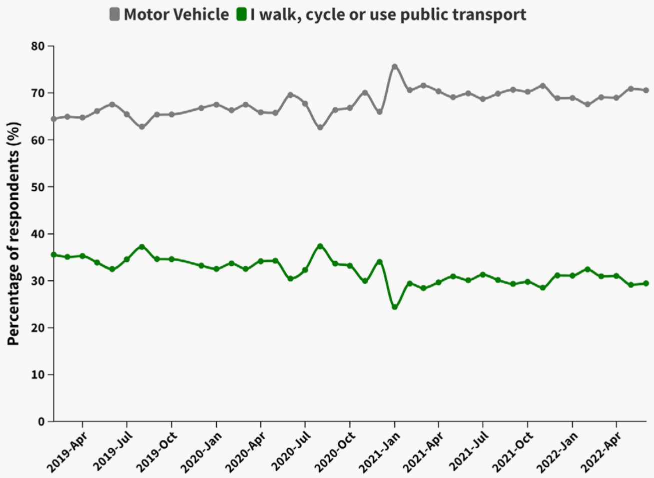


Figure 40. Time series of the percentage of respondents by month across the period February 2019 to June 2022 that reported using a motor vehicle (Electric car, Hybrid car or Plug-in Hybrid car, Large, medium or small petrol or diesel car, Motorbike) versus walking, cycling or using public transport for all their journeys.

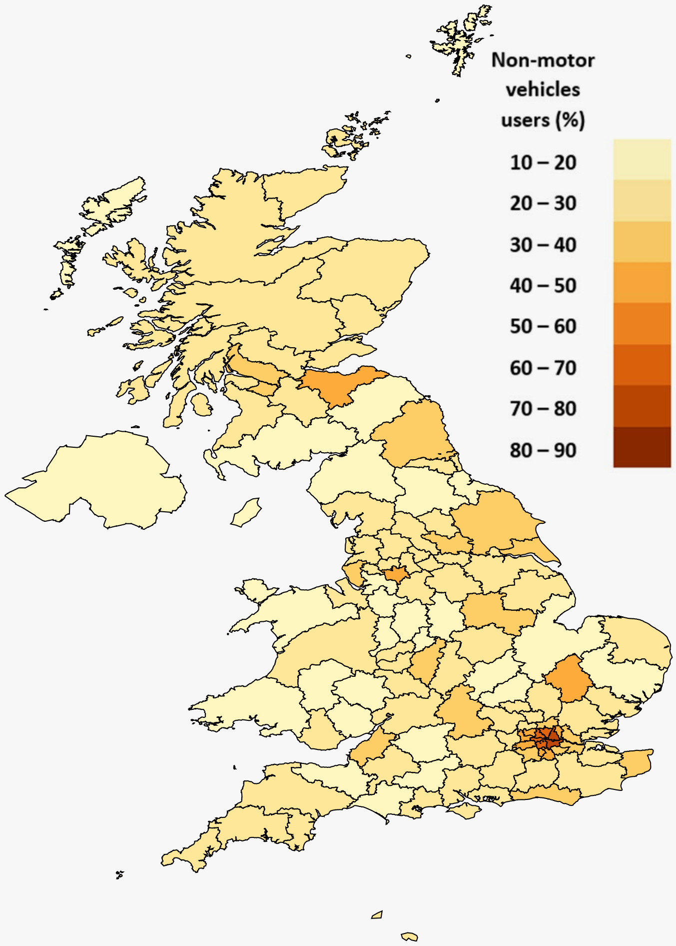


Figure 41. Percentage of respondents that walk, cycle or use public transport for all their journeys in each postcode area across the period February 2019 to June 2022.

It would appear that COVID-related restrictions had an effect on, although they did not induce a reduction in, absolute car use; indeed there appears to have been a slight decline across the full time series in respondents who say they do not use a car (Figure 42).

Instead, during the COVID-restrictions there appears to have been an increase in car use for shorter journeys (under two hours car usage per week) and particular reductions in those who said they travelled for five to 15 hours per week. This is likely consistent with a larger number of people working from home, for example, but still taking short journeys for recreational purposes in the local area.

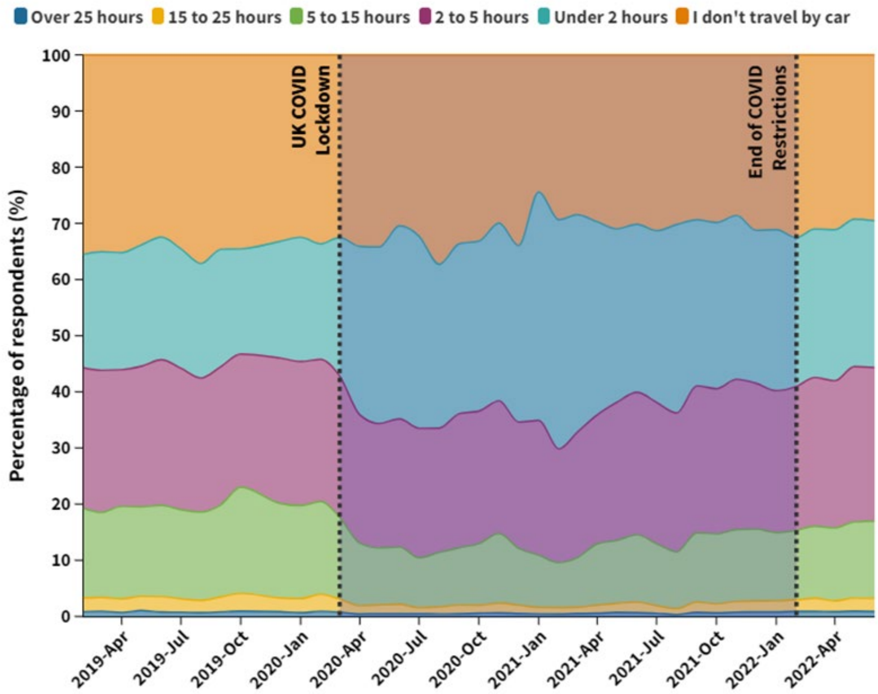


Figure 42. Percentage of respondents that walk, cycle or use public transport for all their journeys in each postcode area across the period February 2019 to June 2022.

Figure 43 reveals that, with the exception of the London area and Edinburgh, the percentage of users who state that they never use a bus is high across the UK. A similar picture is present for trains, although in this case it is an area of Scotland around Glasgow (and not Edinburgh) which has a higher percentage of train users in addition, again, to London (Figure 44).

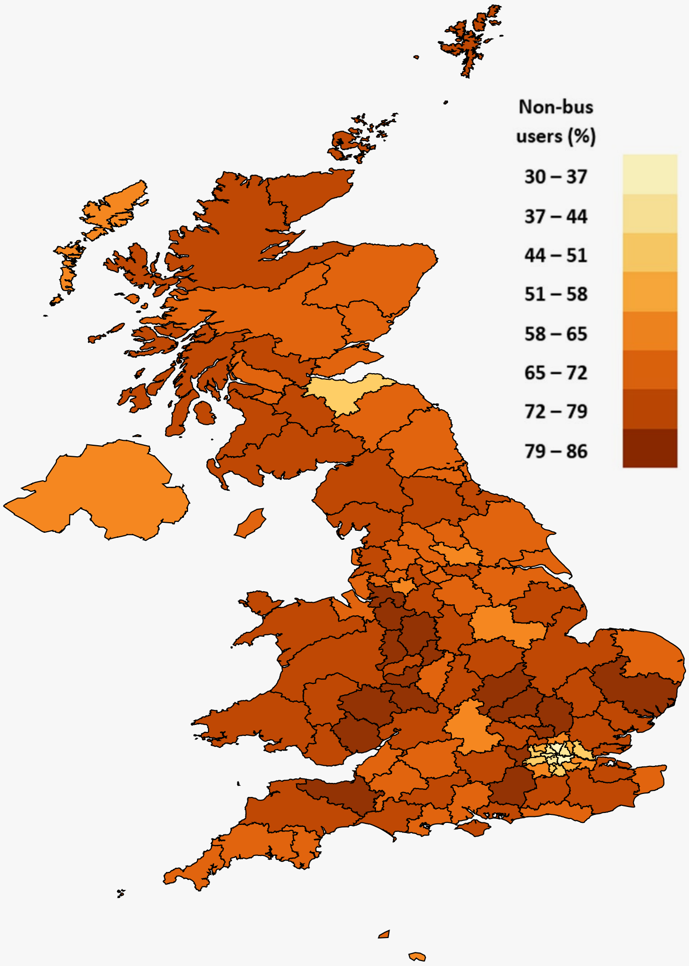


Figure 43. Percentage of respondents that do not use buses in each postcode area across the period February 2019 to June 2022

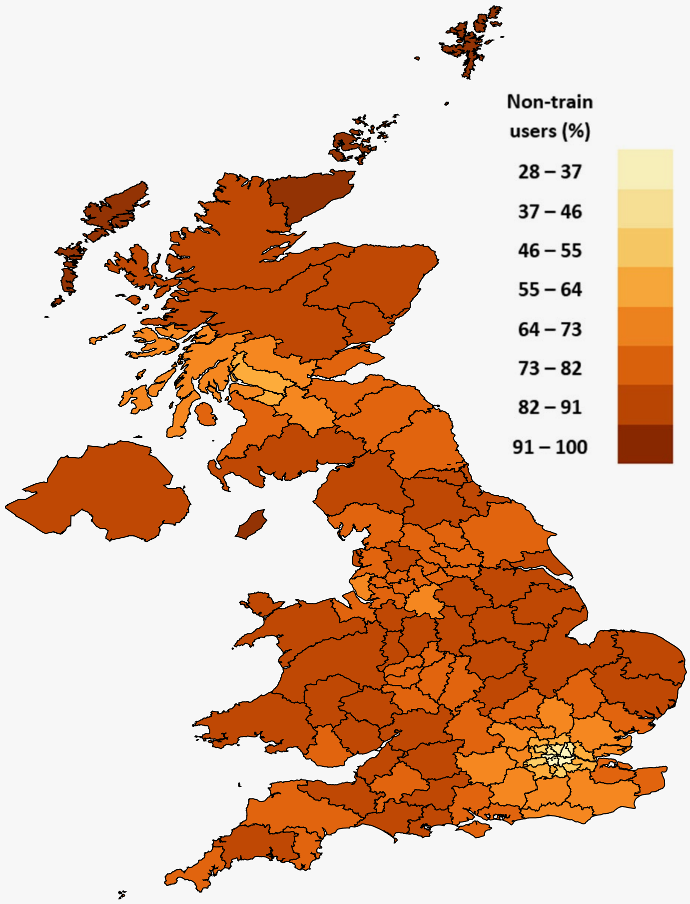


Figure 44. Percentage of respondents that do not use trains in each postcode area across the period February 2019 to June 2022.

The impacts of COVID restrictions on land-based transport use are also apparent, with increases observed in people stating that they 'don't travel by bus' (Figure 45) and 'don't travel by train' (Figure 46). Similar to the situation with flights, whilst a rebound is observed as COVID restrictions eased, by June 2022 rates of bus and train usage had not yet reverted to pre-pandemic levels.

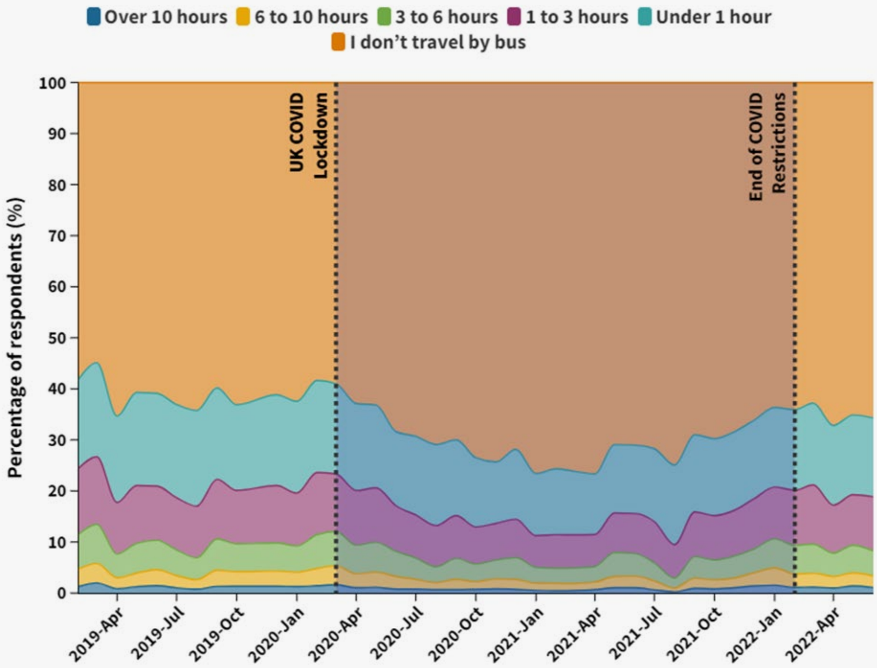


Figure 45. A time series showing respondents' bus usage by percentage across the period February 2019 to June 2022.

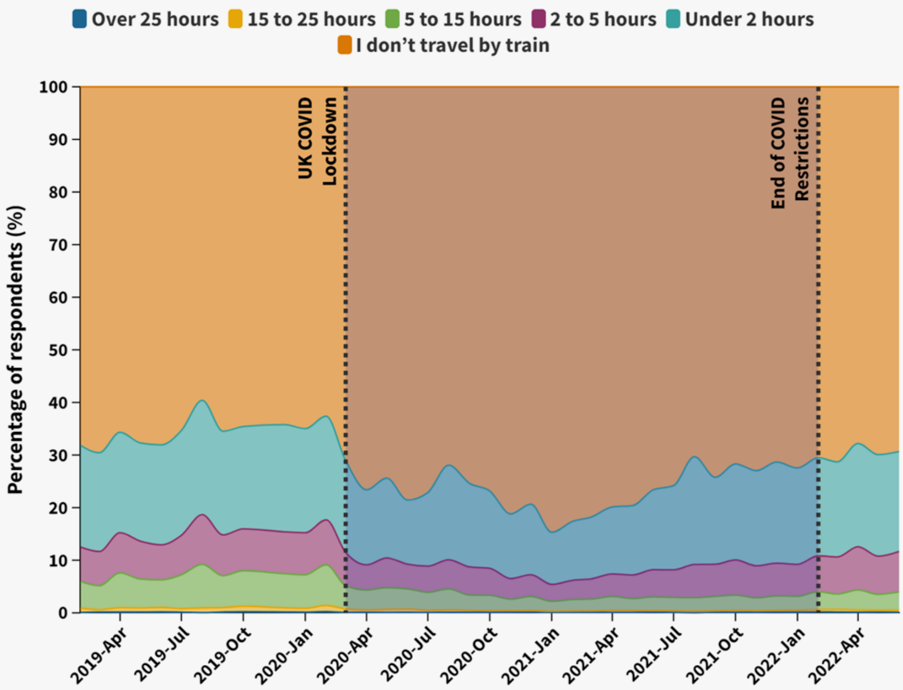


Figure 46. A time series showing respondents' train usage by percentage across the period February 2019 to June 2022.

STUFF-RELATED RESULTS

STUFF-RELATED RESULTS

Delving into the results emerging from the Stuff subcategory of the Calculator, Figure 47 indicates that there appears to have been a COVID-related impact on this component of the footprint, with it decreasing following the introduction of restrictions. Footprints following the restrictions remained somewhat lower than before COVID. The mean pre-pandemic travel footprint was 2.27 tCO2e, falling to a monthly minimum of 2.01 tCO2e (~89% of pre-pandemic levels) in August 2020.

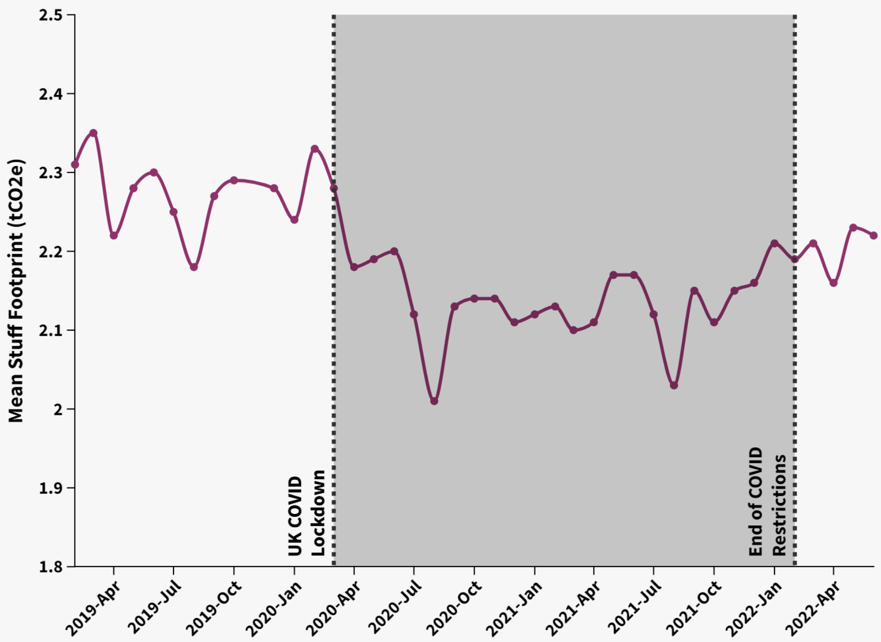


Figure 47. Time series of the mean monthly footprint for the Stuff subcategory (tCO2e) for UK-based respondents to the WWF Footprint Calculator (February 2019 - June 2022).

Almost 50% of users had purchased a mobile phone in the last 12 months, and 40% of users a new TV, laptop or PC (Table 24). Purchases of large household appliances and large furniture items were less common, but still made by 28% of users.

Household Items	Entries	Percentage of All Entries (%)
TV, laptop or PC	408,265	40.55
Large item of furniture	288,610	28.67
Washing machine, dishwasher, tumble dryer or fridge freezer	283,801	28.19
Mobile phone or tablet	502,070	49.87

Table 24. The number of entries and percentage contribution (of all entries) of respondents that report spending on selected household items in the past 12 months in the WWF Footprint Calculator across the period February 2019 to June 2022.

Purchase rates across all four categories of items are characterised by a marked decrease following the introduction of COVID restrictions, which have persisted beyond the end of restrictions (Figure 48).

There are no particularly obvious geographic trends in the purchases of consumables, with the exception of large appliances where purchases appear lower in the Central London region in particular (Figure 49, see Annex for other consumables).

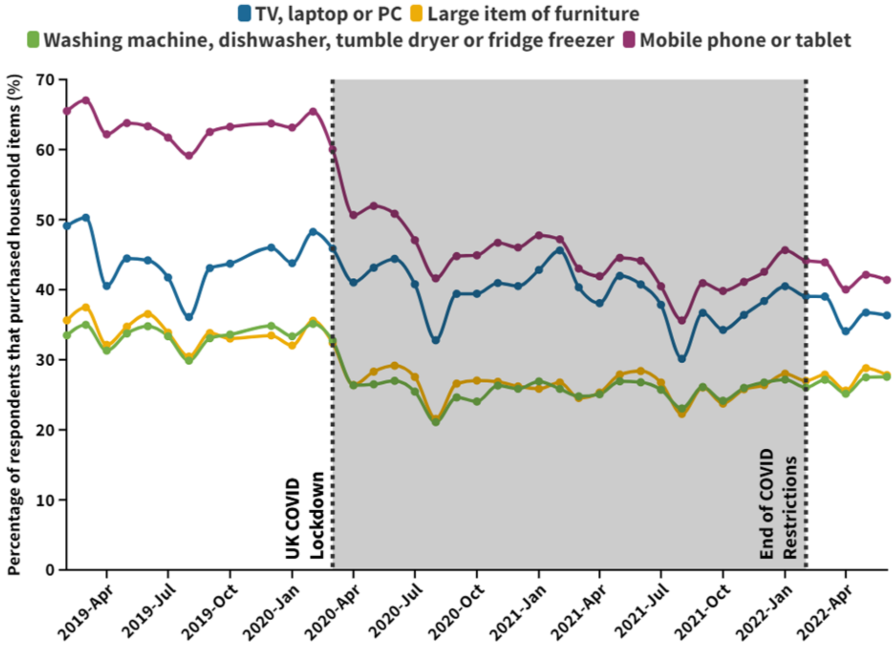


Figure 48. Time series of the percentage of respondents by month across the period February 2019 to June 2022 that report purchasing selected household items in the past 12 months.

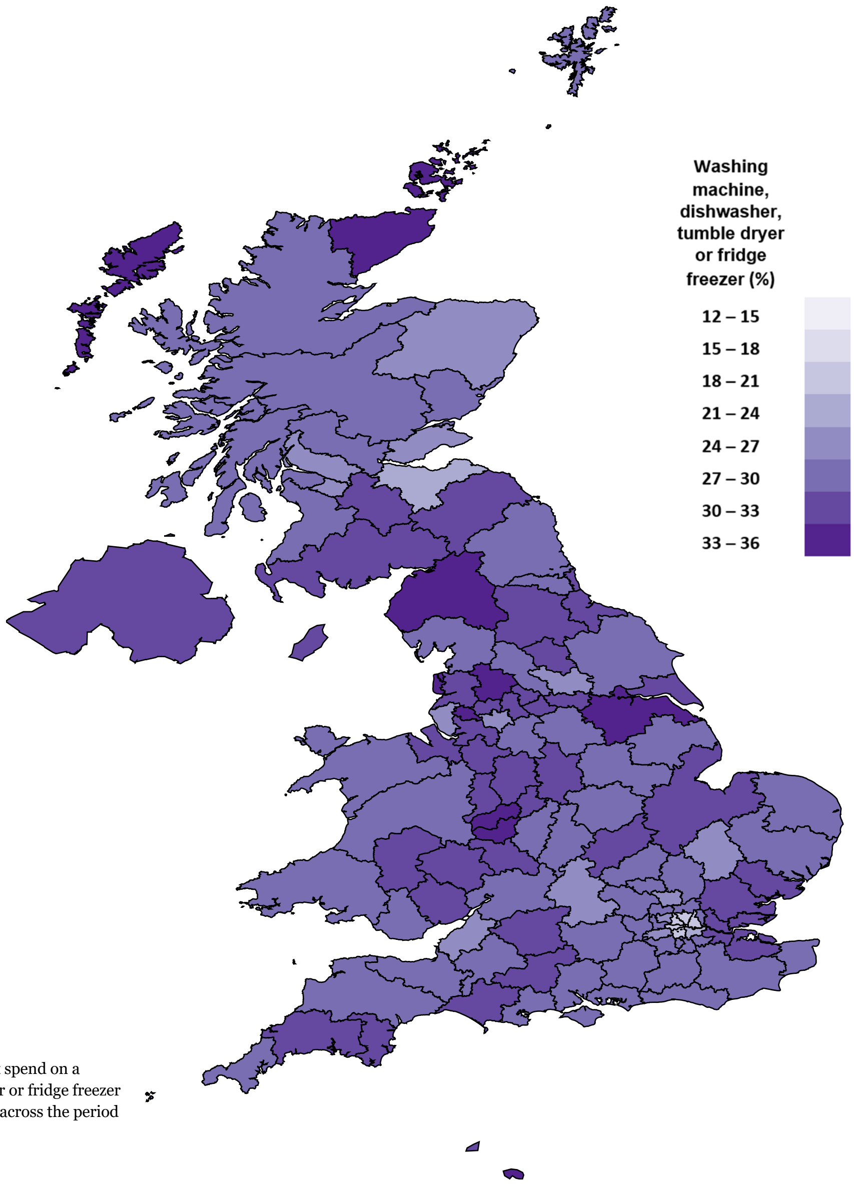


Figure 49. Percentage of respondents that spend on a washing machine, dishwasher, tumble dryer or fridge freezer in the last 12 months in each postcode area across the period February 2019 to June 2022.

Expenditure on clothing and footwear appears also to have dipped slightly following the COVID restrictions, with a greater proportion of users spending no money on clothes, and fewer users spending large amounts (Figure 50).

Following these slight decreases there has been a rebound back to the levels approximating the pre-COVID situation. Higher levels of spending on clothing and footwear appear more frequently in users from around the London, Manchester and Glasgow regions along with selected other hotspots (Figure 51).

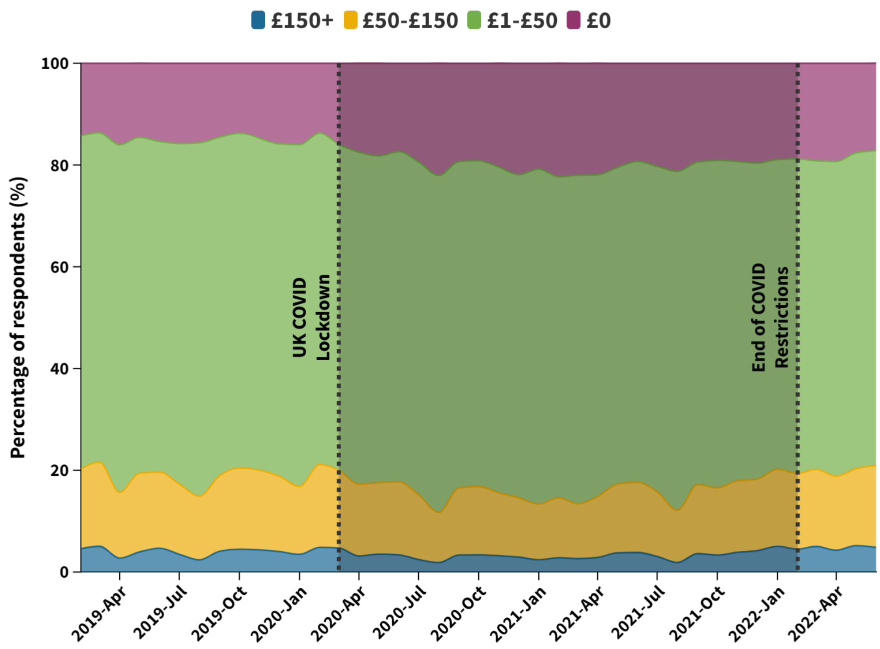


Figure 50. A time series showing respondents' monthly spending on clothing and footwear by percentage across the period February 2019 to June 2022.

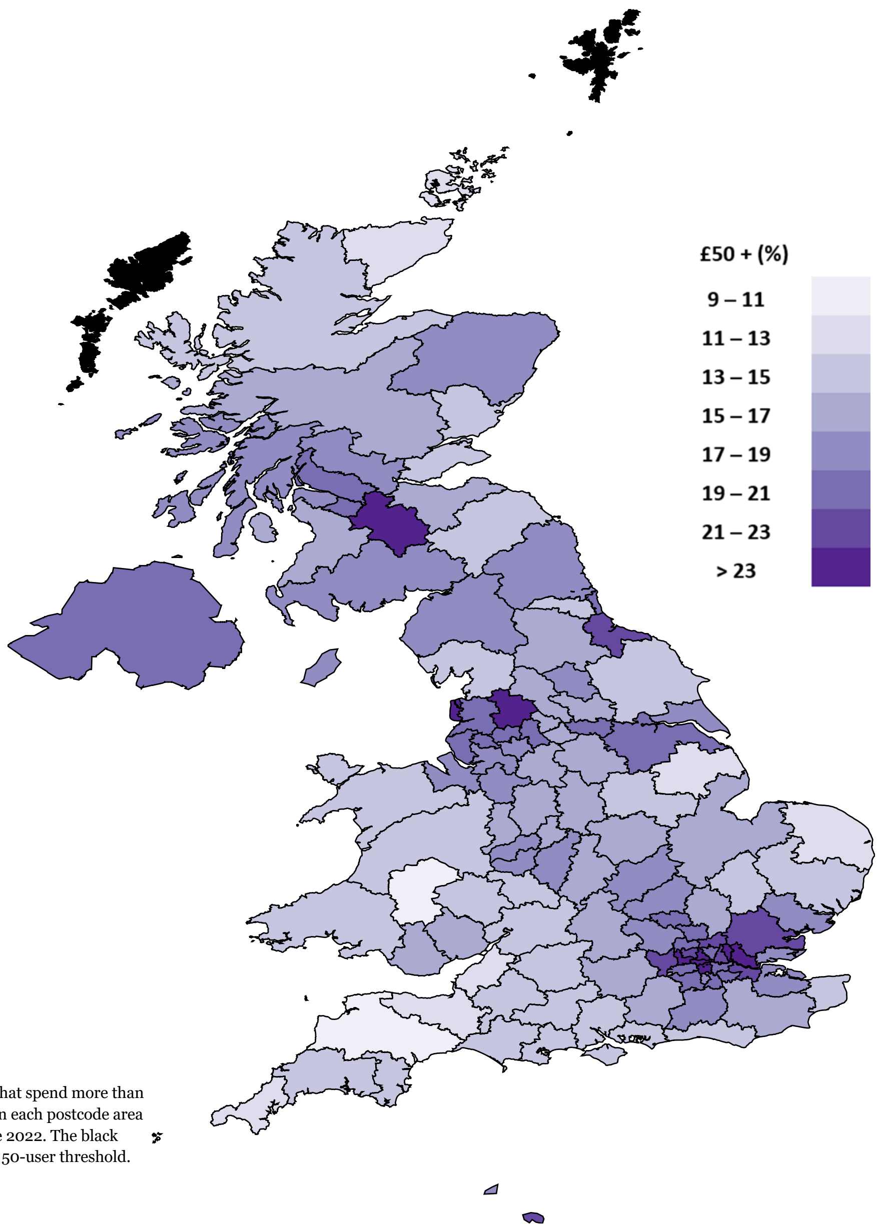


Figure 51. Percentage of respondents that spend more than £50 a month on clothing and footwear in each postcode area across the period February 2019 to June 2022. The black pattern shows postcode areas below the 50-user threshold.

There appears to be a slight upward trend in users saying that they spend more than £30 on pets per month, which may indicate additional pets, or inflationary pressures on pet food, or a combination of the two (Figure 52). This trend does not clearly relate to COVID-related restrictions.

Pet ownership appears to be lowest in London and selected other city-regions across the UK (Figure 53). On average across the dataset, pet owners have higher footprints than non-pet owners across the Stuff, Home and Food categories, but a slightly lower Travel footprint (Table 25).

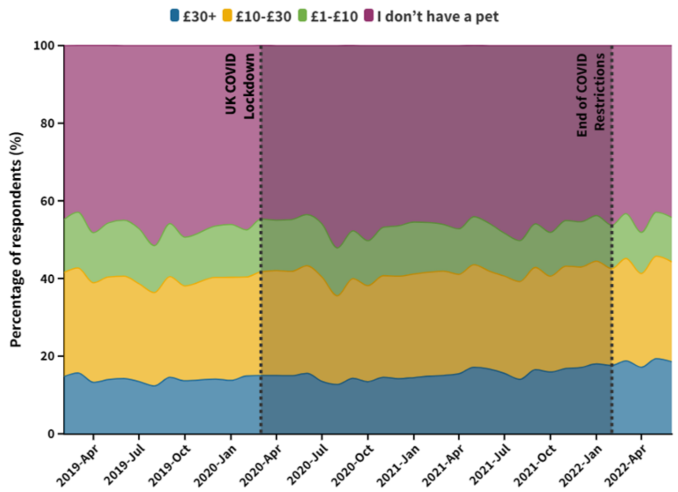


Figure 52. A time series showing respondents' monthly spending their pet and pet food by percentage across the period February 2019 to June 2022.

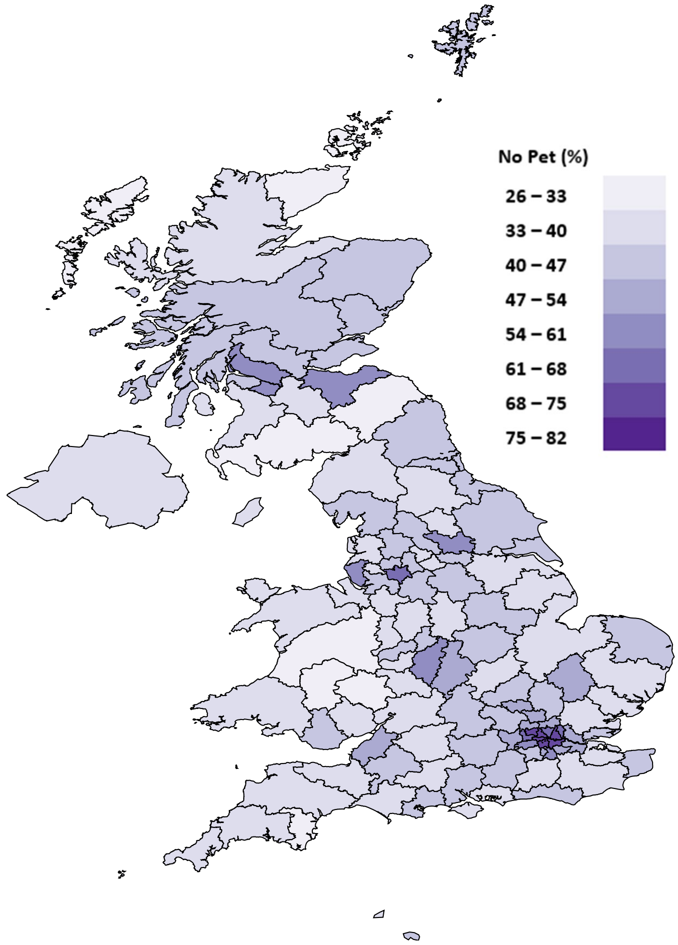


Figure 53. Percentage of respondents that do not have a pet in each postcode area across the period February 2019 to June 2022.

Subcategory	Pet Owner Footprint (tCO2e)	Non-Pet Owner Footprint (tCO2e)
Food	1.60	1.97
Travel	1.39	12.86
Home	2.82	3.03
Stuff	2.09	2.67
Total Footprint	10.66	23.28

Table 25. Mean Total footprints and other subcategories by pet ownership (pet owner - 541,494, 53.8%; non-pet owner - 465,257, 46.2%) for the WWF Footprint Calculator across the period February 2019 to June 2022.

There appears to have been a small reduction in expenditure on health, beauty and grooming products in relation to COVID restrictions, with the proportion of users saying they spend £0-10 per week increasing very slightly during the period, although proportions at the end of the time series appear roughly equivalent to those at the start (Figure 54).

There appears to be a tendency for somewhat higher levels of expenditure on health and beauty products around London and other regions linked to cities (Figure 55).

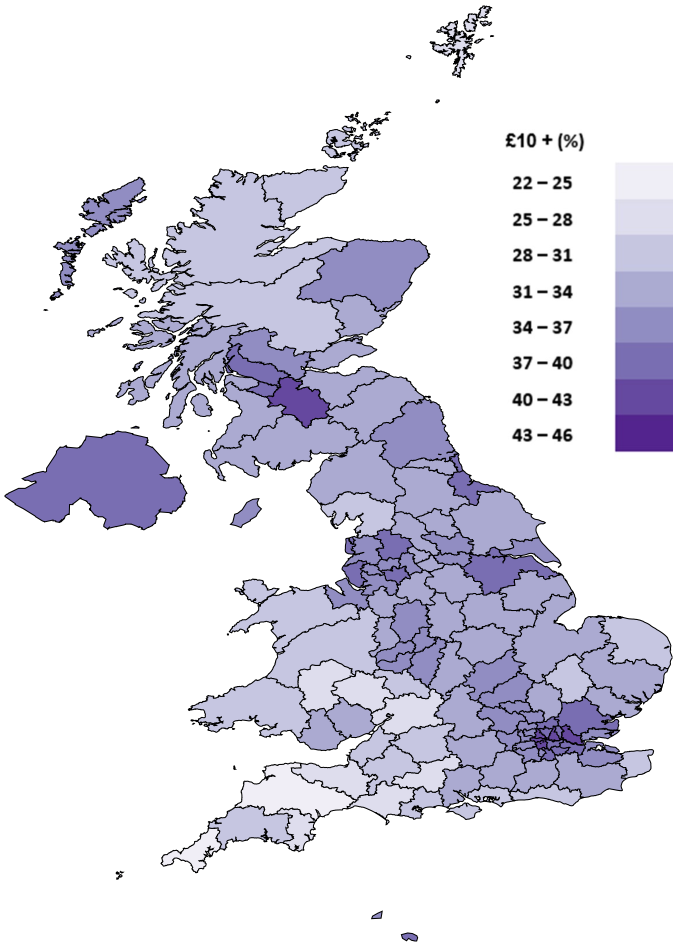


Figure 55. Percentage of respondents that spend more than £10 on health, beauty and grooming products monthly in each postcode area across the period February 2019 to June 2022.

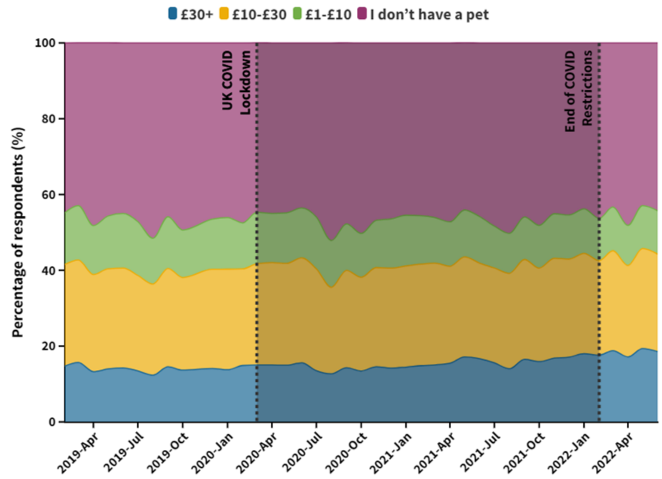


Figure 54. A time series showing respondents' monthly spending on health, beauty and grooming products by percentage across the period February 2019 to June 2022.

No clear time series trends emerge for expenditure on mobile phone, internet and TV contracts (Figure 56), and there are also no clear geographic trends observed (see Annex).

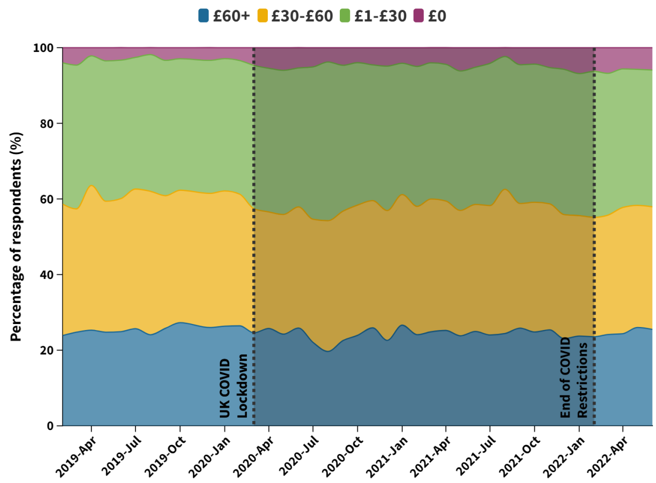


Figure 56. A time series showing respondents' monthly spending on mobile phones, internet and TV contracts by percentage across the period February 2019 to June 2022.

SUMMARY

The results reveal that the average UK user of the WWF Calculator (between February 2019 and June 2022) had an estimated footprint of 12.26 tonnes, which is **significantly above the targets required to stick within a 1.5 degree Celsius global temperature increase,** even assuming that the UK citizen would not need to reach a globally 'equitable' target of 2.3 tonnes by 2030[8] .

The Travel footprint (and to a lesser extent the Food and Stuff footprints) has been notably (and expectedly) affected by COVID restrictions, but once these were lifted increases were observed and footprints would perhaps be expected to rebound to previous levels if our time series was extended [9]. Thus, at an aggregate level, whilst there has been a general reduction in Total footprints over the timeseries (e.g. see Tables 12 & 13) this may be most directly related to the fact that COVID-related disruptions have not fully eased, a conclusion of a longer-term footprint reduction would be premature at this stage and will require further assessment using data from the newer version of the Calculator that was launched in June 2022.

It should be noted that available technologies are fixed within the Calculator for the time series studied (i.e. the same carbon conversion factors are used throughout the period), which means that reductions in the carbon footprint of UK citizens may have, in reality, been present via emissions-intensity improvements associated with e.g. energy use, transport or production processes. Nonetheless, it is commonly accepted that extensive carbon reductions necessitate a combination of technological change and behavioural change, and the evidence provided by this analysis suggests that sustained carbon reductions associated with the latter are not observable at aggregate level.

That said, there are some 'positive' trends that are observed over time, including the uptake in the number of users stating they used electrified personal transport. Additional climate-positive trends include a slight increase in the number of users who say they are on a green electricity tariff, a decrease in household heating temperatures, and a slight increase in solar panel ownership. A decrease in the purchases of consumer goods is also observed. Somewhat unexpectedly, no trends were observed overall in meat/ non-meat related food choices, despite the increasing availability of meat-free alternatives e.g. in supermarkets[10]. Somewhat negative trends include an observed tendency away from walking, cycling and public transport.

Geographically, there are some extremely clear trends in footprints and lifestyle choices, not least the heavy bias towards the London region which has the highest footprints overall. This picture, however, is more nuanced when it comes to specific components of the footprint.

Certain less carbon intensive choices and/or factors such as a tendency towards increased electrified personal transport use, meat-free diets, greater use of public transport, and smaller home footprints (which also appears to be correlated with e.g. lower-than-average pet ownership) is more than offset (primarily) by much higher than average flight numbers and other aspects such as higher usage of takeaways and restaurants and relatively high expenditure on clothing and footwear and health and beauty products. In contrast, outside of London and in more remote areas, we tend to observe much lower levels of electrified personal transport, lower use of public transport, and higher home footprints, but also lower numbers of flights.

These London vs non-London differences are quite striking. In contrast, over the whole of the UK, differences in mean Total footprints in urban-classified vs rural-classified regions are not pronounced, but some differences in mean footprints in subsections are observed (e.g. Home footprints are higher in rural areas, Travel footprints in urban areas).

It is hard to pinpoint the 'greenest' areas of the UK given that areas with lower footprints are scattered across the region, although at the Postcode Area level, Exeter stands out as the region which has the lowest footprint overall (the EX Postcode Area also has the lowest footprint for urban-classified outcodes and second-lowest for rural-classified outcodes). Kilmarnock's outcode KA16 has the honour, however, of having the lowest mean total footprint and no Exeter (EX) outcodes are actually present in the lowest ten outcode regions, which are dominated by rural-classified outcodes. At the country level (excluding crown dependencies), Welsh users have the lowest average Total footprint. Focusing on major cities, London is followed by Belfast and Wakefield as areas with the highest footprint, with Bristol having the lowest footprint followed by Plymouth and Brighton.

---

8. See IEEP 'Carbon Inequality in 2030' briefing note: https://ieep.eu/wp-content/uploads/2022/12/Carbon-inequality-in-2030_IEEP_2021.pdf

9. An overshoot may even be observed as people compensate for travel restrictions by increasing overseas visits which would have been restricted in the previous period.

10. Uptake of meat-free alternatives, however, is not directly covered in the Calculator and therefore increases may be simply masked within responses such as 'I eat meat in some meals' which are broad classifications of behaviour.

As well as highlighting a clear geographic divide in some components of the carbon footprint across the UK, regional differences in the data serve to illustrate the potential for lower-carbon lifestyles. Furthermore, it is clear that users who exhibit a tendency towards increased flights, or those who eat meat, also have a tendency towards higher footprints in other categories, suggesting potential opportunities for improvements in certain footprint components (e.g. via education) that might 'trickle down' into other components. Of course, higher-impact lifestyles (meat eating, living in detached houses, more flights) will be closely linked to income levels, which will be a primary driver of consumption-based footprints overall.

The impacts of the COVID pandemic, however, indicate the potential for decarbonisation with behavioural change; the challenge is thus how to achieve this in an equitable manner whilst also not resorting to what (in non-pandemic times) would be seen as 'draconian' measures, e.g. restriction of travel or dietary freedoms.

Breaking opportunities for lifestyle changes down into the component categories, in the Food component of the footprint, it is apparent that significant dietary shifts are not observed over time in our results, but reductions in the use of takeaways and restaurants does have a positive influence. Those who say they spend more than £50 a week on takeaways and restaurants, for example, add 1.35 tonnes to their footprint compared to non-users of takeaways and restaurants.

Reductions in food waste (a user who eats meat in some meals would have a emissions reduction of ~0.53 tonnes if avoiding food waste compared to a similar user wasting between 10-30% of their food) and lower consumption of meat (all things being equal, a vegan is estimated by the Calculator to have a food footprint 0.56 tonnes lower than those who eat meat in every meal) are likely to be the main drivers of reduced footprints in the Food category.

Vegetarian and vegan consumers are still in the minority, and - given that cultural and behavioural shifts typically take several years to take place - will likely remain so for the immediate future despite an increase in meat-free alternatives in recent years. These alternatives however, may help to make inroads into the still significant portion of the UK population who say they 'eat meat in every meal'.

For the Travel component of the footprint, it is evident that flights are the primary cause of the largest footprints, and numbers of flights will likely need to be decreased significantly unless alternative fuels are available in aviation in the immediate future. A reduction in flights is a choice that UK residents can make with little intervention from third-parties, and even a reduction of one return short-haul flight can save 0.4 tonnes of CO2e.

Alternative low-carbon technologies are increasingly used in personal transport (e.g. electric cars are estimated to have in-use emissions which are a third of large internal combustion vehicles, even if users select they are not on a green electricity tariff[11]), but the decrease in users who say they don't use a car is a trend that (even with electric vehicles becoming more common[12]) needs to be reversed alongside an increase in the use of bus and train use (which across most of the UK is fairly low). Someone who uses a train for 5-15 hours a week has a reduction in footprint of around 1.8 tonnes compared to someone who spends the equivalent amount of time in a large internal combustion engined car [13].

The availability of adequate infrastructure at affordable prices is likely the critical determinant of uptake of these forms of transport, however, and car-use is unlikely to decrease e.g. in rural areas unless alternatives are more readily available and encouraged.

For the Home component of the footprint, a large determinant is the type and size of people's houses. A higher prevalence of smaller and terraced housing in London explains why the Home footprint in this region is lower than average. The proportion of users across the UK who say they don't, or don't know whether they have, a green electricity tariff is relatively high.

This is especially the case in Northern Ireland and the Isle of Man, which may be explained by the relatively limited number of energy suppliers which operate in these regions. Switching to a green tariff can significantly cut carbon emissions; according to the calculations that underpin the Calculator, lighting and appliance use in a three-bed semi-detached house may be associated with roughly 1.16 tonnes of CO2e [14] for those not on a green tariff. Emissions savings associated with green tariffs for those who also cook and/or heat with electricity would be even higher.

A small shift towards green tariffs was observed over the time series, but it appears that with further awareness-raising further emissions reductions could be achieved. Likewise, reductions in household winter temperatures can lead to significant emissions reductions, along with cost savings, and the shift later in the time series towards reduced winter temperatures may reflect rising costs of gas and electricity in the UK towards the end of 2021.

Whilst home energy saving measures can require upfront investment by the property owner, a still-significant proportion of users (~25%) say they do not have energy saving light bulbs, which are relatively low-cost and will make a small but important contribution towards lower-carbon lifestyles.

11. Emissions are further reduced if they charge using renewable electricity.

12. Relative resource-use and affordability are particular concerns linked to electric vehicles which require expensive batteries and are typically larger than average vehicles.

13. This assumption assumes the emissions associated with average national rail use which reflects a mix of fuel types, travel by electric train is likely to reduce emissions further. The Calculator also assumes a mean car occupancy rate of 1.6 people, meaning that those who travel alone in the car would experience even greater emissions savings with a switch to train.

14. Total emissions, not per person.

It is striking that low-flow water fittings appear to be more common in southern areas. In addition to water saving, such fittings are also associated with energy savings (where water is heated) and also emissions savings associated with the processing of potable water. Therefore, uptake of low-flow fittings in more northerly parts of the country should also be encouraged.

For the Stuff component of the footprint, a particularly striking result is the decrease in consumables that followed COVID, which seems to have persisted despite the easing of restrictions. Users who purchase from none of the four categories of consumer goods specified in the Calculator have a footprint that is ~0.9 tCO_2e lower than those that buy one item from each category.

Waiting longer to replace items, and repairing rather than replacing older items, are both key mechanisms to ensure that the trend observed is maintained into the future. Purchases of clothing and footwear and cosmetic products also decreased slightly during COVID (likely also related to decreased social interaction) but rebounded. Nonetheless, this indicates the potential for changes in lifestyles and norms to impact on consumption habits which - whilst likely low impact individually - may contribute to the larger-scale reductions that are ultimately required for a low-carbon transition.

ANNEX

ADDITIONAL METHODS EXPLANATION

The majority of analysis was carried out in R-studio. Tasks were split into six R scripts related to different stages of formatting, cleaning and analysis. The authors can share the scripts upon request.

RE-CALCULATION OF FOOTPRINTS

A major element of the work conducted involved the reconstruction of the WWF Footprint Calculator Excel Spreadsheet (that underpins calculations hosted in the online tool) in R code. This was conducted to recalculate all footprints in the dataset, after numerous incorrect and corrupted final footprints were discovered in the original data downloads. During the reconstruction process, several minor errors in the Excel model were discovered. These errors were recorded and corrected in the R script to ensure footprint estimates were as accurate as possible[15].

Firstly, in the 'Home' component of the Excel sheet, the cells that calculate the 'hot water' and 'cooking' footprints contain an 'if else' logic tree based on answers given to question 8, concerning ownership of a variety of home energy improvement measures. On inspection, the order of this logic tree was found to be erroneous with respect to the order of effects that solar panels and a green tariff would have on overall energy footprint for users who select that they heat their homes with electricity. The 'if else' logic tree was thus changed to reflect a more sensible order and energy footprint impact.

The logic tree is now as follows (Figure A1):

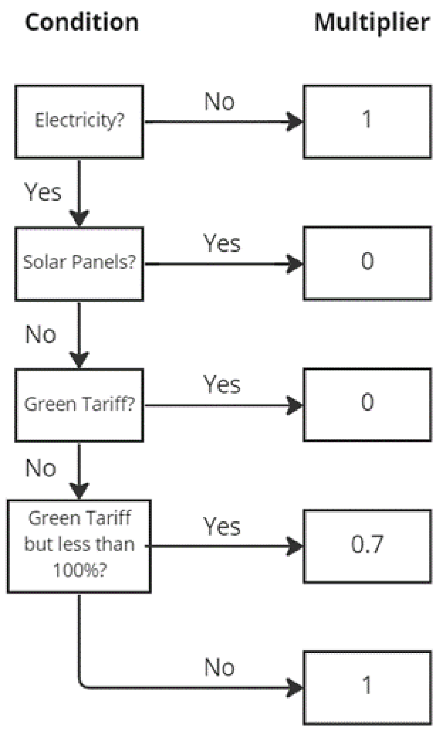


Figure A1. The new logic tree for Question 8 of the Home section implemented for the hot water and cooking footprints in the reconstruction of the WWF Carbon Footprint Calculator Excel spreadsheet model.

15. The latest version of the WWF Calculator, not covered by this analysis, does not contain these errors.

Secondly, mistakes were found in the Excel formula on the Home sheet Question 7. The question used a lookup table of CO_2 footprint values based on a combination of answers to questions 1, 3, 4 and 7 on the Home sheet. The lookup references for three combinations of answers were corrected (Table A1).

Home Q1: What kind of house do you live in?	Home Q3: How many people (aged 17 and over) live in your house?	Home Q4: How do you heat your home?	Home Q7: How warm do you keep your home in winter?	Previous lookup cell	New lookup cell
Detached	3	Electricity	18-21 warm	home calc'!J31	home calc'!L31
Semi detached	2	Electricity	18-21 warm	home calc'!L4	home calc'!L34
Terrace	4 or more	Oil	18-21 warm	home calc'! F40	home calc'!H40

Table A1. Answer combinations to questions in the Home section to the WWF Footprint Calculator in Excel spreadsheets, their resulting lookup cell, and the new corrected cell

DATA FORMATTING

The format of the data downloaded from the Calculator originally contained columns for every single possible answer, with a 'true' or 'null' entry as appropriate. This format was converted to contain the given answer in string format, by renaming the existing column names (1,2,3...) to the answer strings (e.g. "18-21deg", "Yes" etc.), then pasting these column names into the row entries if they contained a 'true' entry. A 'null' entry was converted into an 'NA'. The columns were then renamed using an original list of survey questions.

COMBINING OLD AND NEW DATA FORMATS

Changes to new data format

Redundant columns were dropped, and 'country' and 'region' (UK postcode) columns were relocated. All columns were renamed using abbreviations e.g. 'fd.1' corresponds to 'Food Question 1'. For columns corresponding to multiple choice questions, elements with an 'NA' were changed to 0, and elements with a character string were changed to 1.

Changes to old data format

All 'NULLs' were replaced with 'NA'. The new data column names were pasted onto the old data column names.

Format changes applied to both datasets

Discrepancies in answer strings between data sets were resolved and non-standard characters were removed, then datasets were bound together to form a contiguous dataset encapsulating entries to the Footprint Calculator from February 2019 to June 2022.

DATA CLEANING

The raw data required cleaning through several steps. The removal of non-UK postcodes represented the largest change in entries (-25.0%). The cleaning steps in Table A2 are presented in the order they occur in the R scripts. While much of the cleaning process followed a logical order, some cleaning requirements were discovered during initial analysis stages, and thus appear at the end of the cleaning stages e.g. the removal of flight footprints over 80t CO_2e and the removal of the SW1A Outcode.

Cleaning Stage	Remaining Entries	Change	Percentage Change
Raw data	1,964,268	-	-
UK-only postcodes	1,474,044	-490,224	-25.0
Remove duplicates	1,458,504	-15,540	-1.1
Remove incomplete entries	1,224,143	-234,361	-16.1
Remove extreme footprint values[16]	1,213,688	-10,455	-0.9
Remove entries with 60 flights taken	1,204,393	-9,295	-0.8
Remove entries with maximum commuting	1,201,238	-3,155	-0.3
Remove 'NULL' postcodes	1,014,694	-186,544	-15.5
Remove invalid postcodes	1,010,172	-4,522	-0.4
Remove flight footprints over 80t CO2e	1,009,675	-497	0.0
Remove SW1A Outcode	1,006,751	-2,924	-0.3
Total	-	-957,517	-48.7

Table A2. Cleaning and filtering stages carried out on the WWF dataset.

16. Before the excel model was converted into R code and all carbon footprints were recalculated, the lowest values for the total footprint and the highest values for the travel and home footprints were removed to prevent biases and illegitimate entries.

POSTCODE VALIDATION METHOD

The postcode information provided by Calculator users enabled analysis of the data from a geographic perspective. Postcodes in the dataset were validated by matching them to a masterlist of all valid full postcodes sourced from the Office for National Statistics (ONS). This list contains 1,789,251 postcodes.

This validation method involved an iterative matching and editing process with multiple stages. Firstly all postcodes were trimmed to outcode-only e.g. AB10 1AB was trimmed to AB10. In the first stage of the matching process, postcodes in the WWF data were matched to the master ONS postcode list. Then non-matching postcodes were trimmed to three characters and matched with the master ONS postcode list, producing a new set of matching postcodes. This new set of matching postcodes was then appended to the original set of matching postcodes.

The second phase of the process involved taking the list of non-matching postcodes and changing any zeros in the first or second position of the character string to the alphabet letter 'O'. This edited list was matched with the master ONS postcode list, producing a new set of matching and non-matching postcodes. The remaining set of non-matching postcodes were then trimmed to three characters and then two, with - after each edit - newly matching postcodes incorporated into the validated ONS postcode list. This iterative process left a small number of non-validated postcodes. Manual inspection of this list confirmed the remaining postcodes were invalid e.g made-up or unidentifiable.

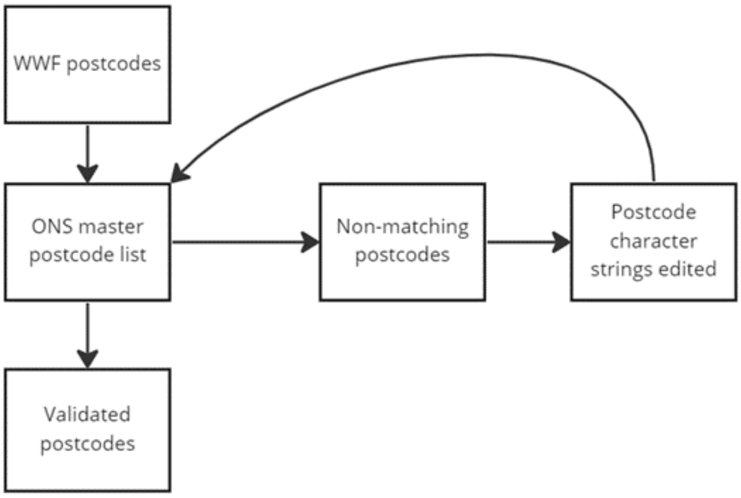


Figure A2. A simplified representation of the postcode validation process used in the data cleaning stage of the analysis of WWF data.

The only additional step taken to clean the WWF dataset involved the removal of any entries with the postcode 'SW1A' as this was offered as an example postcode within the WWF Footprint Calculator. This resulted in an unusually large number of respondents using this postcode. The number was far above the population of the SW1A outcode and thus could not be used to represent the average carbon footprint of individuals in that outcode.

URBAN/RURAL CLASSIFICATION

To classify each postcode outcode as urban or rural, alternative methods were used depending on the country of application and associated data availability.

England, Scotland and Wales

For England, Wales and Scotland, datasets of population density by postcode from the 2011 census were used. The decision was made to classify outcodes with a population density above 300 persons per km2 as urban, and below, as rural.

Northern Ireland

Population density by postcode is not available, based on our searches, for Northern Ireland. The closest comparable geographical/administrative area with population density data are so-called ‘small areas’ or SAs. Unfortunately, these areas do not map onto postcode outcodes one-to-one. Therefore an alternative classification method was created for Northern Island.

The ONS master postcode dataset tags each postcode according to the 2001 Census urban/rural indicator, ur01ind. For Northern Ireland, the indicator uses the following classification: A = Belfast Metropolitan Urban Area; B = Derry Urban Area; C = Large Town: 18,000 and under 75,000 people; D = Medium Town: 10,000 and under 18,000 people; E = Small Town: 4,500 and under 10,000 people; F = Intermediate Settlement: 2,250 and under 4,500 people; G = Village: 1,000 and under 2,250 people; H = Small Village, Hamlet or Open Countryside: less than 1,000 people.

The full postcodes in the ONS dataset were trimmed to outcode only (three or four characters) and rows with ur01ind entries A-C were classified as ‘urban’, D-H as ‘rural’. The data was then grouped by outcode (using the group_by() function in R) and a count and proportion of ‘rural’ or ‘urban’ postcodes within a given outcode was found e.g. the ‘AB10’ outcode has 673 postcode tagged as ‘urban’ (99.9%), and one tagged as ‘rural’ (0.148%). Then rows were filtered for urban/rural proportions > 50% e.g. the AB10 row contained only the ‘urban’ tag. This leaves a list of unique outcodes classified as either ‘urban’ or ‘rural’.

Mismatching postcodes for England, Scotland and Wales

Despite using validated England, Scotland and Wales postcodes (according to the process described above) a number of the postcode outcodes present in WWF data were not present in the ONS datasets containing population density information. To classify these postcodes as ‘urban’ or ‘rural’, the 2011 Census rural-urban classification was used with the method above. This method classified B40 and M90 as ‘rural’, but as they are both airports, they were modified to ‘urban’.

Isle of Man and The Channel Islands

The ONS master postcode list does not contain urban/rural classifications for the Channel Islands or the Isle of Man. In the Isle of Man, the two outcodes IM1 and IM2 covering the island capital Douglas were classified as urban, all other outcodes were tagged as rural. In the Bailiwicks of Guernsey and Jersey, collectively making up the Channel Islands, there are no outcodes meeting the threshold of 10,000 inhabitants to be classified as urban, so all postcodes here were assigned as rural.

ASSIGNING COUNTRY TAGS TO POSTCODES (OUTCODE)

Each postcode outcode was tagged with the country it belongs to. Issues arose over certain border regions. Between England and Wales, as 20 outcodes are in both England and Wales, it was decided these border regions would be assigned as England as the towns in which they were located were English towns. The outcodes TD12 and TD15 have full postcodes in both England and Scotland. The TD12 outcode in Scotland has more residents than the TD12 outcode in England, thus was tagged as in Scotland. The TD15 outcode in England has more residents than the TD15 outcode in Scotland, thus was tagged as in England.

Region	Postcode Area	Postcode Area Name
South East	RH, SL, PO, MK, ME, GU, SO, OX, CT, RG, TN, BN	Redhill, Slough, Portsmouth, Milton Keynes, Medway, Guilford, Southampton, Oxford, Canterbury, Reading, Tonbridge, Brighton
Scotland	ML, G, EH, AB, KY, FK, DD, KA, DG, PH, PA, IV, HS, TD, KW, ZE	Motherwell, Glasgow, Edinburgh, Aberdeen, Kirkaldy, Falkirk, Dundee, Kilmarnock, Dumfries, Perth, Paisley, Inverness, Comhairle nan Eilean Siar, Galashiels, Kirkwall, Shetland
East	SG, SS, CO, AL, CM, IP, PE, CB, HP, LU, NR	Stevenage, Southend, Colchester, St. Albans, Chelmsford, Ipswich, Peterborough, Cambridge, Hemel, Luton, Norwich
Wales	SA, CF, NP, LL, SY, LD	Swansea, Cardiff, Newport, Llandudno, Shrewsbury, Llandrindod
North East	LS, DH, TS, YO, WF, HU, HG, NE, DL, SR	Leeds, Durham, Cleveland, York, Wakefield, Hull, Harrogate, Newcastle, Darlington, Sunderland
West Midlands	ST, DY, CV, NN, WS, B, WV, TF, WR, HR	Stoke on Trent, Dudley, Coventry, Northampton, Walsall, Birmingham, Wolverhampton, Telford, Worcester, Hereford
North West	M, CW, BB, CH, CA, LA, PR, BD, BL, OL, WA, L, SK, HD, FY, WN, HX	Manchester, Crewe, Blackburn, Chester, Carlisle, Lancaster, Preston, Bradford, Bolton, Oldham, Warrington, Liverpool, Stockport, Huddersfield, Blackpool, Wigan, Halifax
Greater London	SW, WD, KT, TW, UB, RM, SE, BR, SM, EN, EC, N, CR, W, WC, NW, E, DA, HA, IG	London, Watford, Kingston, Twickenham, Southall, Romford, London, Bromley, Sutton, Enfield, London, London, Croydon, London, London, London, London, Dartford, Harrow, Ilford
South West	BS, EX, GL, TA, BA, SN, BH, TQ, TR, PL, DT, SP	Bristol, Exeter, Gloucester, Taunton, Bath, Swindon, Bournemouth, Torquay, Truro, Plymouth, Dorchester, Salisbury
Northern Ireland	BT	Belfast
East Midlands	LE, NG, DE, LN, DN, S	Leicester, Nottingham, Derby, Lincoln, Doncaster, Sheffield
Isle of Man	IM	Isle of Man
Channel Islands	JE, GY	Jersey, Guernsey

Table A3. Complete list of UK postcode areas and names and corresponding regions.

ADDITIONAL FIGURES AND TABLES

FOOD SECTION

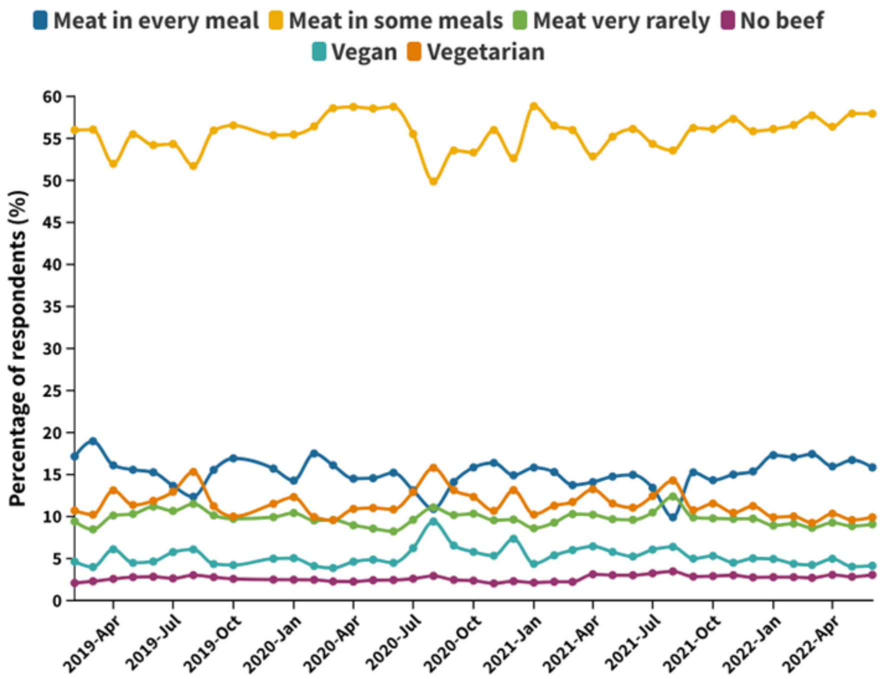


Figure A3. Time series of the percentage of respondents by month across the period February 2019 to June 2022 of six diet types.

In a week, how much do you spend on food from restaurants, canteens and takeaways?	Entries	Percentage (%)
£0	189,627	18.84
£1-£10	429,372	42.65
£10-£50	334,211	33.20
More than £50	53,541	5.32

Table A4. The number of entries and percentage contribution of weekly spend at restaurants, canteens and takeaways of respondents to the WWF Footprint Calculator across the period February 2019 to June 2022.

Of the food you buy, how much is wasted and thrown away?	Entries	Percentage (%)
None	169,640	16.85
0% - 10%	635,066	63.08
10% - 30%	186,572	18.53
More than 30%	15,473	1.54

Table A5. The number of entries and percentage contribution of the food waste generated by respondents to the WWF Footprint Calculator across the period February 2019 to June 2022

How often do you buy locally produced food that is not imported to the UK?	Entries	Percentage (%)
A lot of the food I buy is locally sourced	215,333	21.39
I don't worry about where my food comes from	224,737	22.32
Some of the food I buy is locally sourced	566,681	56.29

Table A6. The number of entries and percentage contribution of the amount of food locally sourced by respondents to the WWF Footprint Calculator across the period February 2019 to June 2022.

Postcode Area	Area Name	Mean Food Footprint (tCO2e)	Entries
EC	London	1.86	890
SW	London	1.79	23,620
ML	Motherwell	1.78	4,394
W	London	1.78	10,372
WC	London	1.77	597
NW	London	1.77	9,719
BT	Belfast	1.75	18,695
RM	Romford	1.75	5,001
JE	Jersey	1.75	847
BB	Blackburn	1.74	6,743

Table A7. Top 10 Postcode Areas by mean Food footprint (tCO2e) across the period February 2019 to June 2022.

Postcode Area	Area Name	Mean Food Footprint (tCO2e)	Entries
EX	Exeter	1.53	10,877
LD	Llandrindod	1.53	718
HR	Hereford	1.54	2,217
KW	Kirkwall	1.54	841
TA	Taunton	1.55	5,247
TR	Truro	1.55	7,355
TQ	Torquay	1.56	5,786
DT	Dorchester	1.57	3,703
IV	Inverness	1.57	3,407
ZE	Shetland	1.57	246

Table A8. Bottom 10 Postcode Areas by mean Food footprint (tCO2e) across the period February 2019 to June 2022.

HOME SECTION

House Type	Entries	Percentage
Detached	325,424	32.32
Flat	155,189	15.41
Semi detached	345,430	34.31
Terrace	180,708	17.95

Table A9. The number of entries and percentage contribution for each house type of respondents to the WWF Footprint Calculator across the period February 2019 to June 2022.

Bedrooms	Entries	Percentage (%)
1	59,907	5.95
2	176,815	17.56
3	382,717	38.02
4 or more	387,312	38.47

Table A10. The number of entries and percentage contribution of the number of bedrooms in the houses of respondents to the WWF Footprint Calculator across the period February 2019 to June 2022.

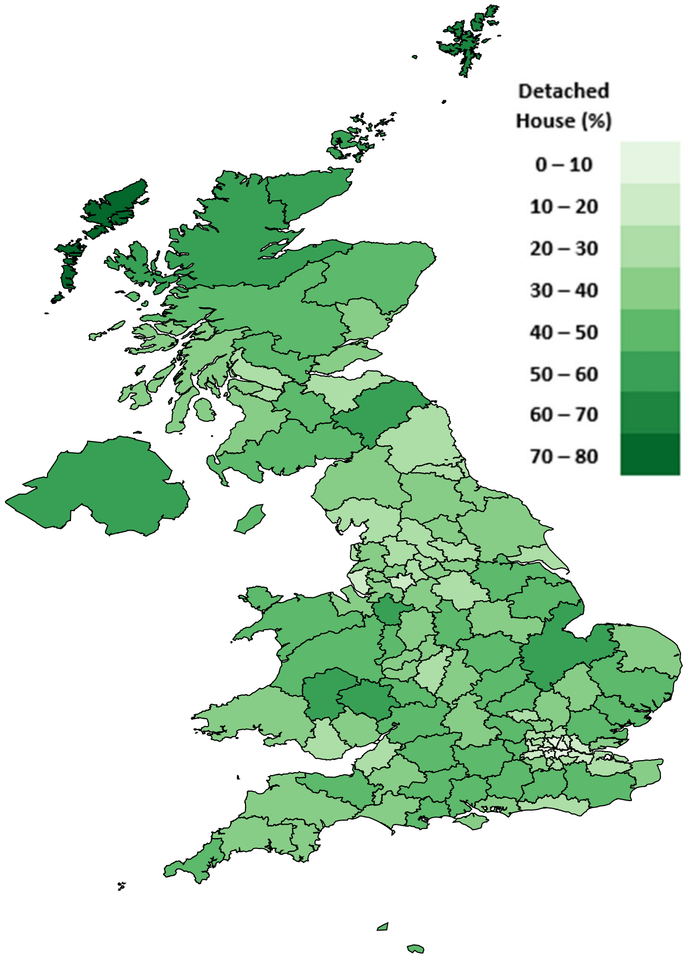


Figure A4. The percentage of respondents that live in a detached house in each postcode area across the period February 2019 to June 2022.

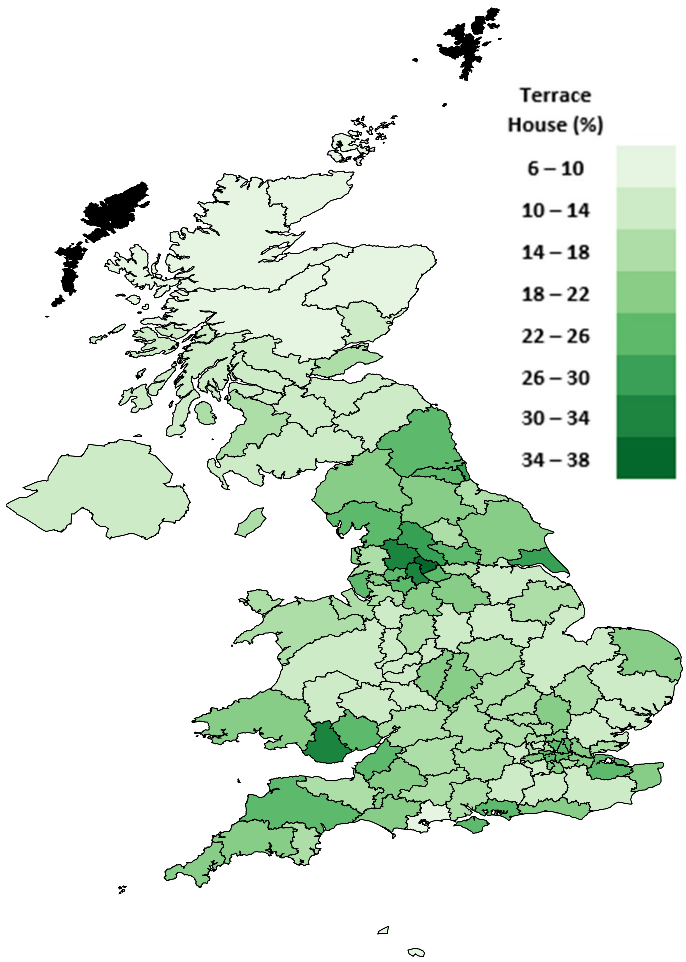


Figure A5. The percentage of respondents that live in a terrace house in each postcode area across the period February 2019 to June 2022. The black pattern shows postcode areas below the 50-user threshold.

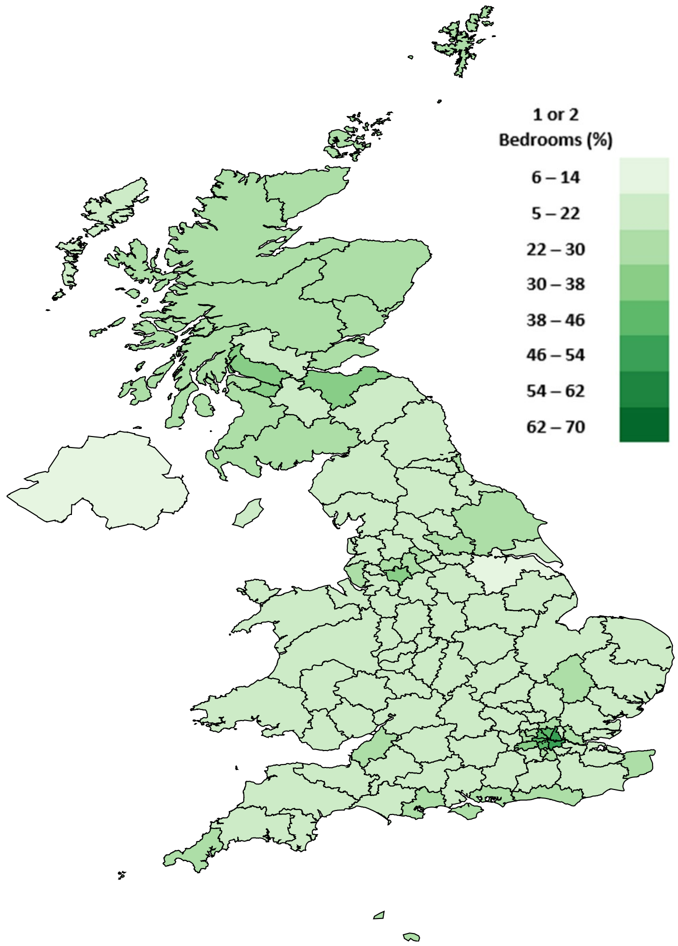


Figure A6. The percentage of respondents that live in a house with one or two bedrooms in each postcode area across the period February 2019 to June 2022.

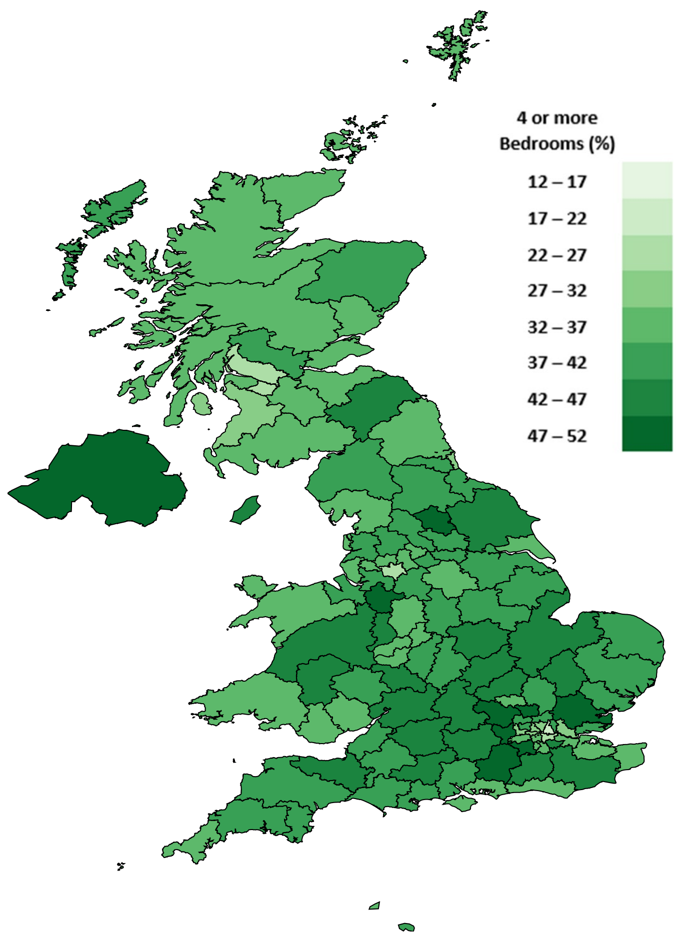


Figure A7. The percentage of respondents that live in a house with four or more bedrooms in each postcode area across the period February 2019 to June 2022.

Heating Type	Rural Outcodes (%)	Urban Outcodes (%)
Electricity	24.43	29.01
Gas	51.99	67.53
Oil	17.44	1.79
Wood	6.14	1.68

Table A11. Percentage contribution of each home heating type for urban and rural postcode outcodes for the WWF Footprint Calculator across the period February 2019 to June 2022.

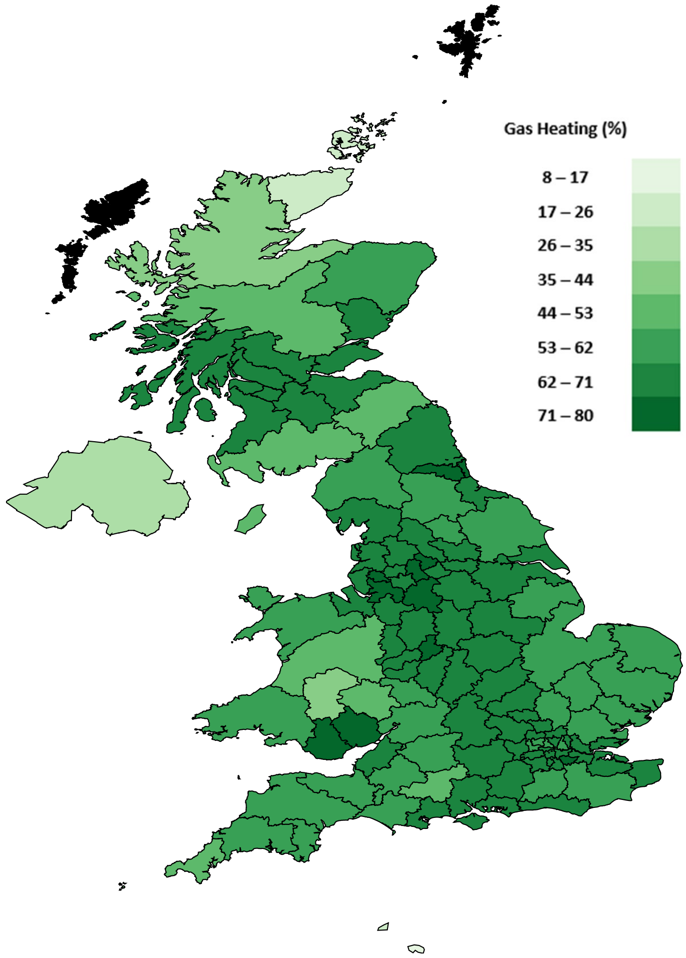
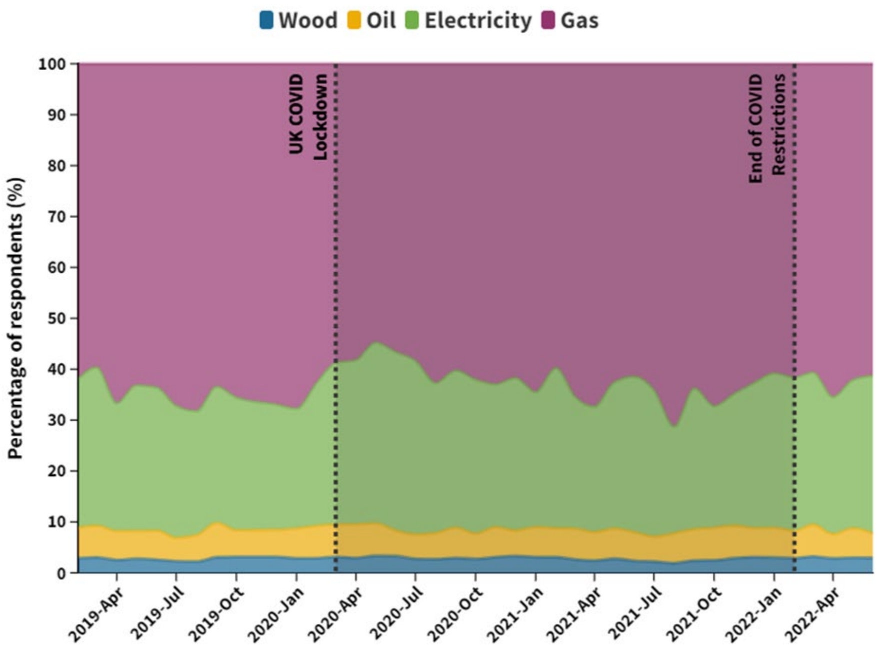


Figure A8. The percentage of respondents that live in a house with gas heating in each postcode area across the period February 2019 to June 2022. The black pattern shows postcode areas below the 50-user threshold.

Country	Electricity (%)	Gas (%)	Oil (%)	Wood (%)
Northern Ireland	8.64	34.4	52.93	4.03
Isle of Man	14.29	44.04	36.63	5.05
Channel Islands	47.72	16.38	32.11	3.80
Wales	22.72	64.83	7.75	4.69
Scotland	28.02	62.36	5.91	3.71
England	28.45	64.39	4.55	2.60

Table A12. The percentage contribution of each home heating type by country for respondents to the WWF carbon Footprint Calculator across the period February 2019 to June 2022.

Figure A9. A time series showing the percentage contribution of the home heating of respondents across the period February 2019 to June 2022.



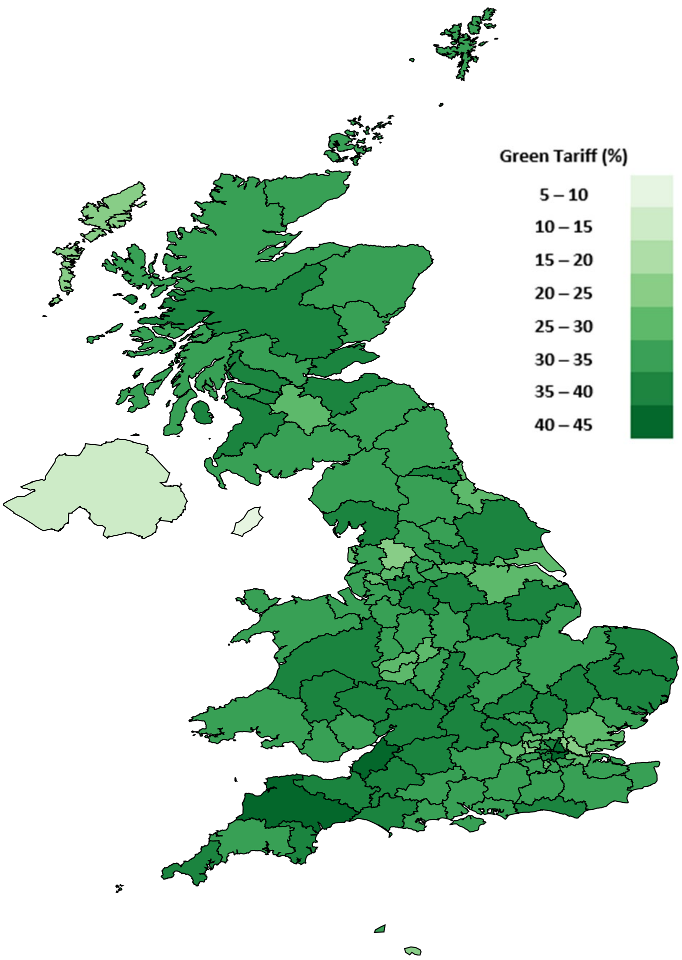


Figure A10. The percentage of respondents that are on either a 100% green tariff or < 100% green tariff in each postcode area across the period February 2019 to June 2022.

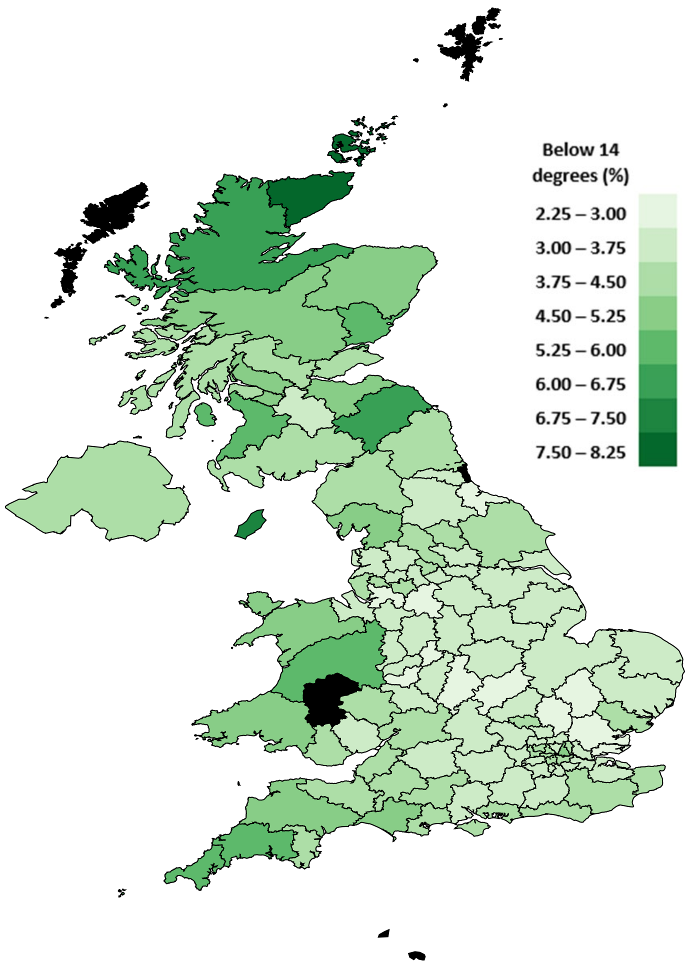


Figure A11. The percentage of respondents that heat their home below 14 degrees in each postcode area across the period February 2019 to June 2022. The black pattern shows postcode areas below the 50-user threshold

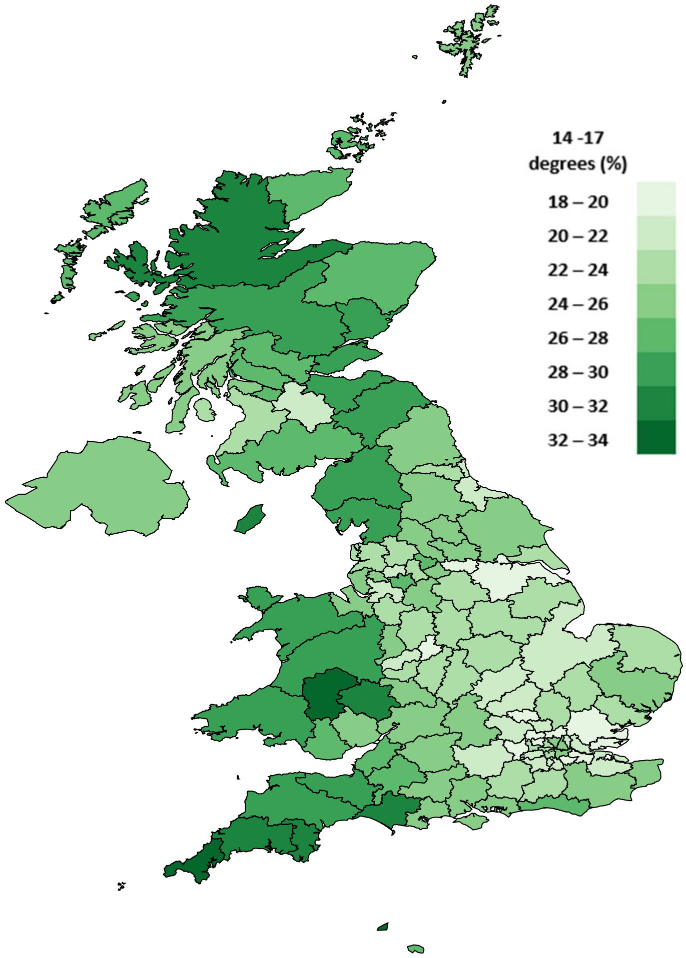


Figure A12. The percentage of respondents that heat their home 14 - 17 degrees in each postcode area across the period February 2019 to June 2022.

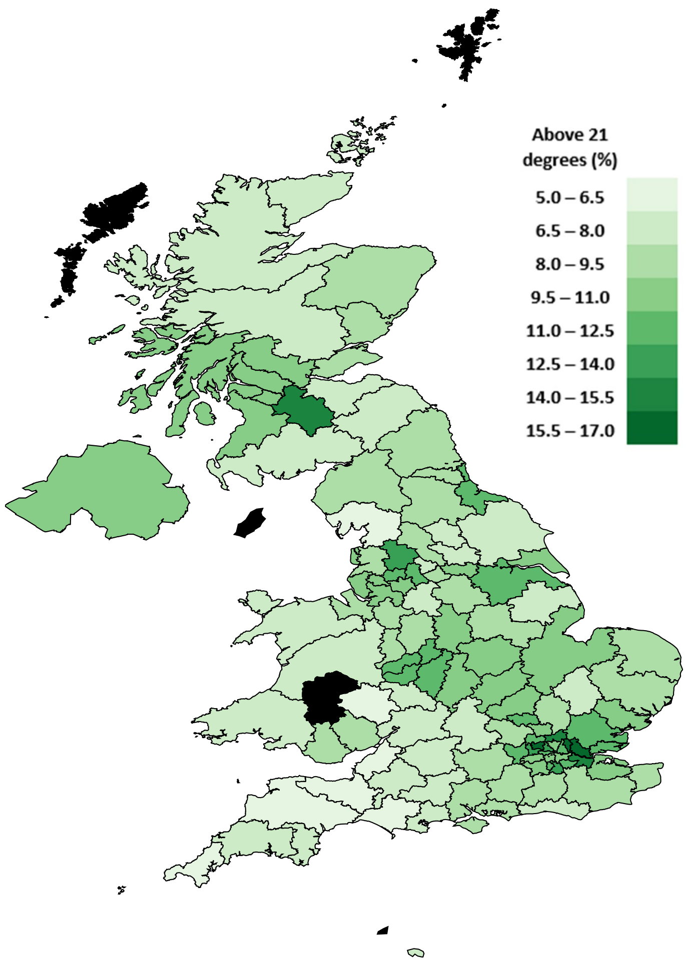


Figure A13. The percentage of respondents that heat their home above 21 degrees in each postcode area across the period February 2019 to June 2022. The grey/white chequered pattern shows postcode areas below the 50-user threshold.

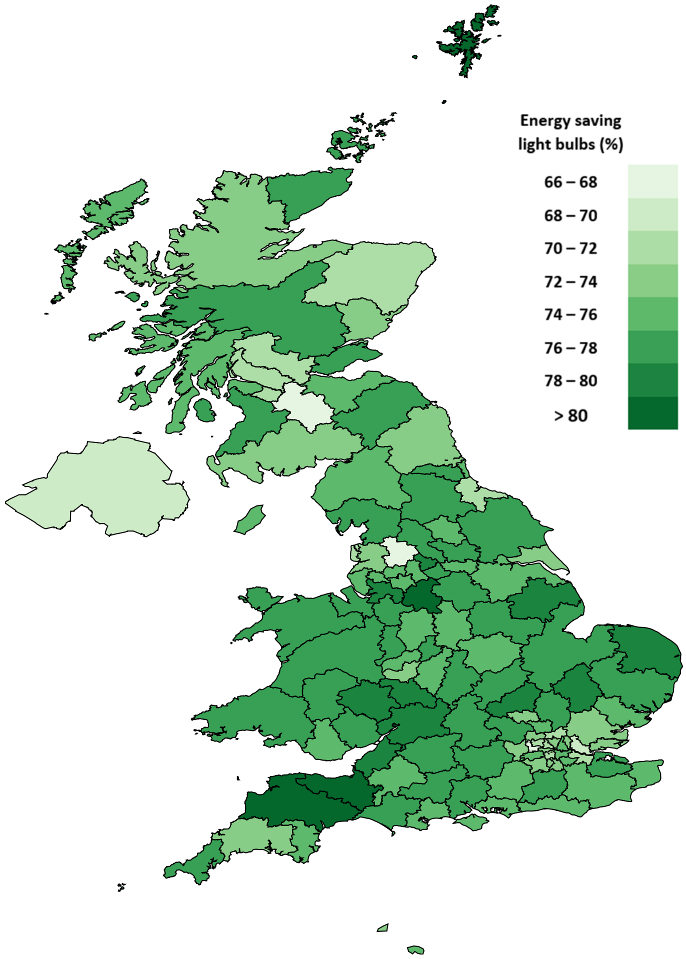


Figure A14. The percentage of respondents that report having energy saving light bulbs in their home in each postcode area across the period February 2019 to June 2022.

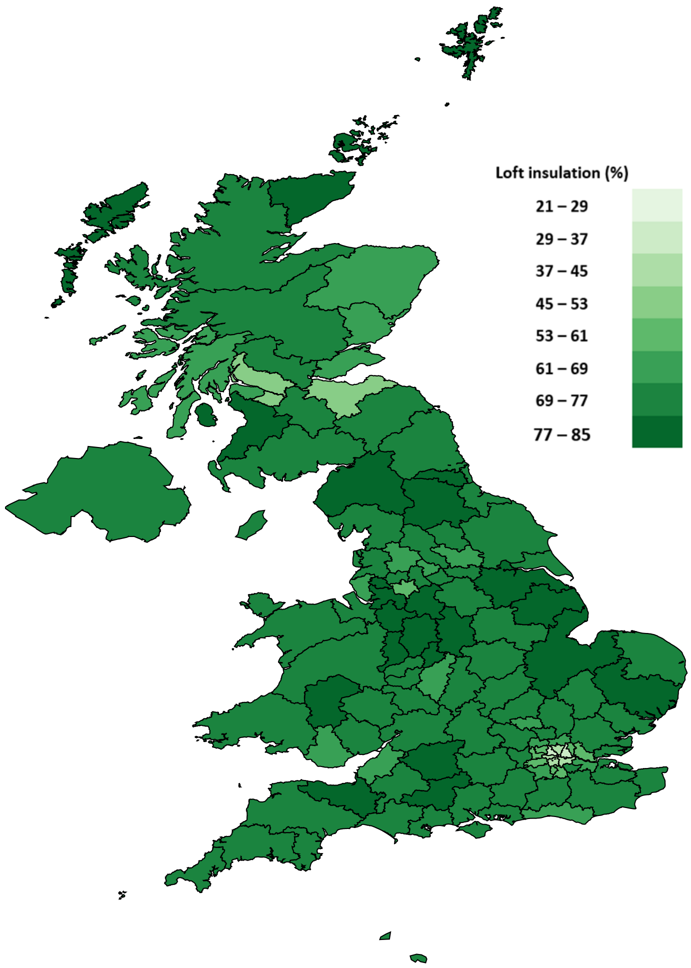


Figure A15. The percentage of respondents that report having loft insulation in their home in each postcode area across the period February 2019 to June 2022.

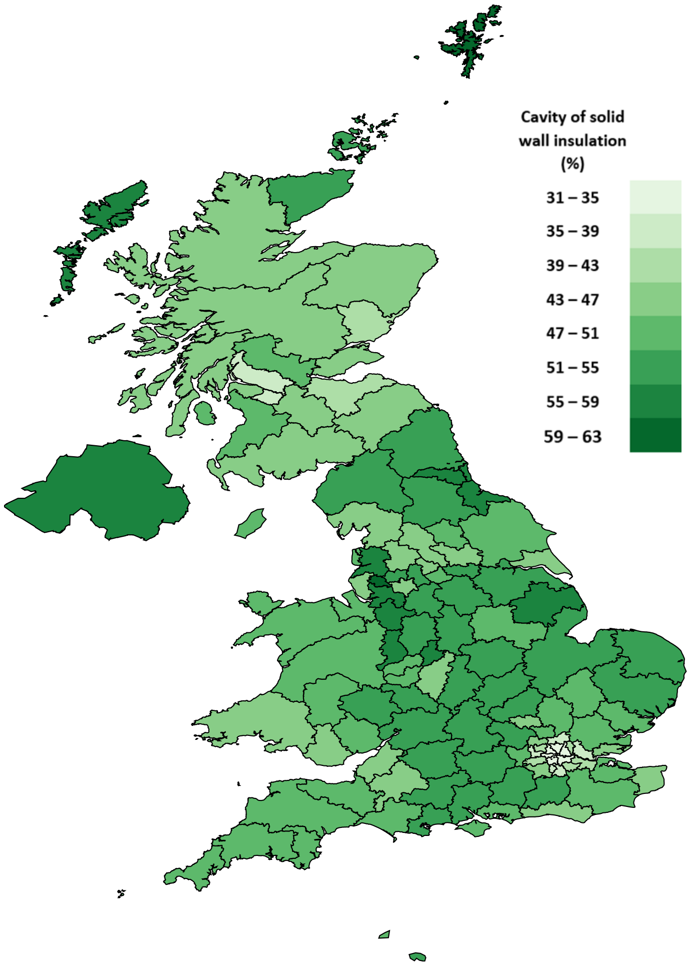


Figure A16. The percentage of respondents that report having cavity or solid wall insulation in their home in each postcode area across the period February 2019 to June 2022.

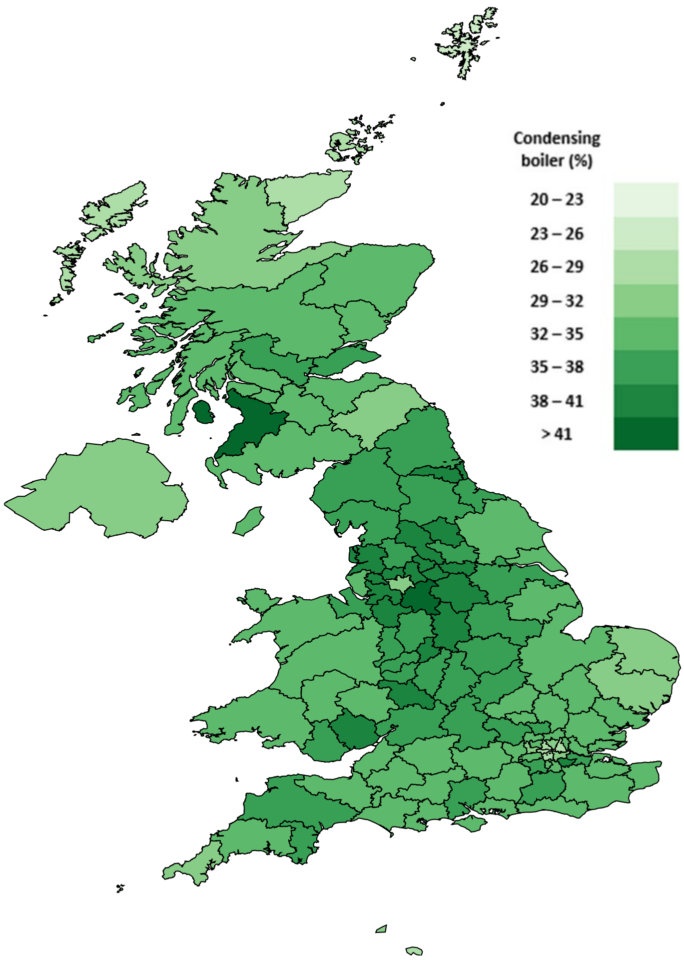


Figure A17. The percentage of respondents that report having a condensing boiler in their home in each postcode area across the period February 2019 to June 2022.

Figure A18. The percentage of respondents that report having double glazing in their home in each postcode area across the period February 2019 to June 2022.

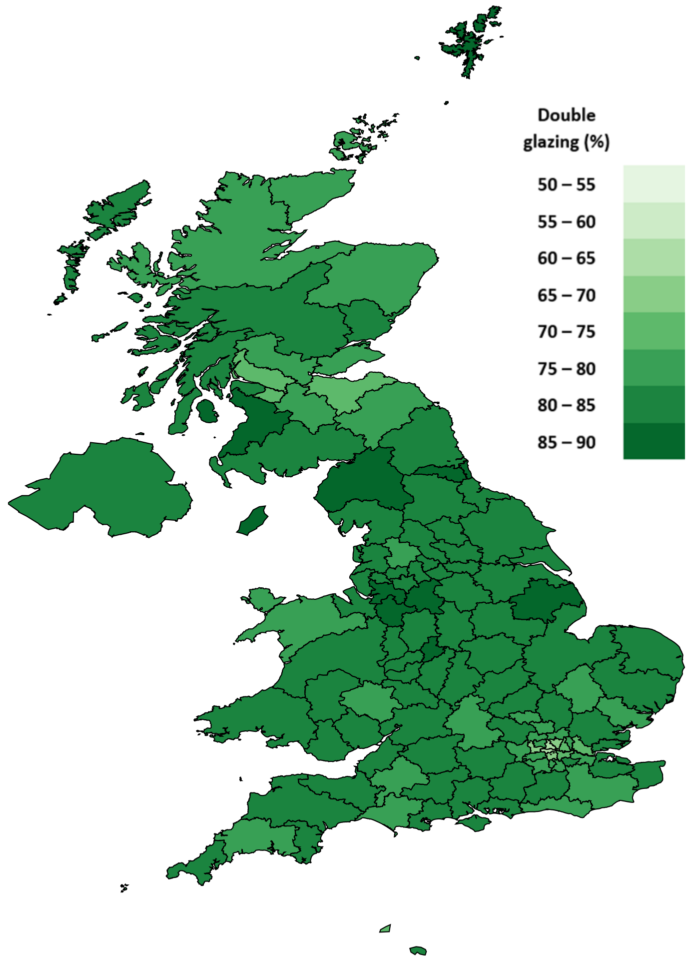
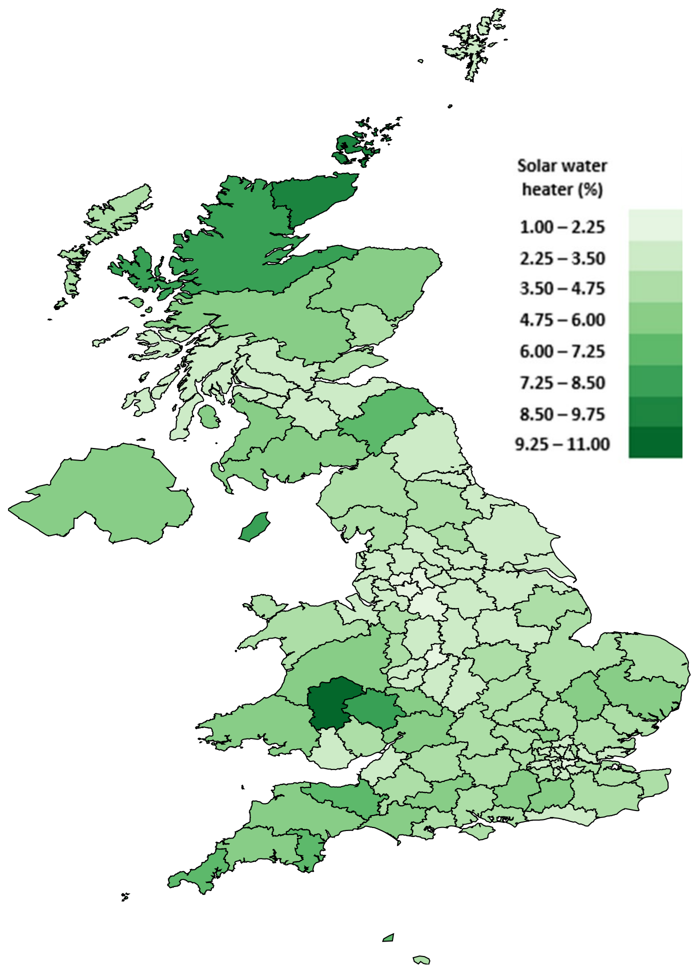


Figure A19. The percentage of respondents that report having a solar water heater in their home in each postcode area across the period February 2019 to June 2022.



TRAVEL SECTION

Means of Transport	Entries	Percentage (%)
Electric car	26,979	2.68
Hybrid car	26,196	2.60
Large petrol or diesel car	100,569	9.99
Medium petrol or diesel car	279,241	27.74
Motorbike	5,474	0.54
I walk, cycle or use public transport for all my journeys	316,590	31.45
Plug-in Hybrid car	11,398	1.13
Small petrol or diesel car	240,304	23.87

Table A13. The number of entries and percentage contribution of each means of transport of respondents to the WWF Footprint Calculator across the period February 2019 to June 2022.

Transport	Entries	Percentage (%)
Motor vehicle	690,161	68.55
I walk, cycle or use public transport	316,590	31.45

Table A14. The number of entries and percentage contribution of motor vehicles versus walking, cycling or using public transport of respondents to the WWF Footprint Calculator across the period February 2019 to June 2022.

Car Usage	Entries	Percentage (%)
15 to 25 hours	19,573	1.94
2 to 5 hours	248,692	24.70
5 to 15 hours	129,764	12.89
Over 25 hours	6,882	0.68
Under 2 hours	284,805	28.29
I don’t travel by car	317,035	31.49

Table A15. The number of entries and percentage contribution of the weekly car usage of respondents to the WWF Footprint Calculator across the period February 2019 to June 2022.

Train Usage	Entries	Percentage
15 to 25 hours	4,960	0.49
2 to 5 hours	61,411	6.10
5 to 15 hours	38,557	3.83
I don’t travel by train	731,541	72.66
Over 25 hours	1,260	0.13
Under 2 hours	169,022	16.79

Table A16. The number of entries and percentage contribution of the weekly train usage of respondents to the WWF Footprint Calculator across the period February 2019 to June 2022.

Bus Usage	Entries	Percentage (%)
1 to 3 hours	92,723	9.21
3 to 6 hours	46,838	4.65
6 to 10 hours	23,160	2.30
I don’t travel by bus	678,377	67.38
Over 10 hours	10,068	1.00
Under 1 hour	155,585	15.45

Table A17. The number of entries and percentage contribution of the weekly bus usage of respondents to the WWF Footprint Calculator across the period February 2019 to June 2022.

STUFF SECTION

Monthly Spend on Clothes and Footwear	Entries	Percentage (%)
£0	184,807	18.36
£1-£50	647,684	64.33
£50-£150	137,471	13.65
£150+	36,789	3.65

Table A18. The number of entries and percentage contribution (of all entries) of monthly spend on clothes and footwear for respondents to the WWF Footprint Calculator across the period February 2019 to June 2022.

Bus Usage	Entries	Percentage (%)
1 to 3 hours	92,723	9.21
3 to 6 hours	46,838	4.65
6 to 10 hours	23,160	2.30
I don't travel by bus	678,377	67.38
Over 10 hours	10,068	1.00
Under 1 hour	155,585	15.45

Table A17. The number of entries and percentage contribution of the weekly bus usage of respondents to the WWF Footprint Calculator across the period February 2019 to June 2022.

STUFF SECTION

Monthly Spend on Clothes and Footwear	Entries	Percentage (%)
£0	184,807	18.36
£1-£50	647,684	64.33
£50-£150	137,471	13.65
£150+	36,789	3.65

Table A18. The number of entries and percentage contribution (of all entries) of monthly spend on clothes and footwear for respondents to the WWF Footprint Calculator across the period February 2019 to June 2022.

Figure A20. Percentage of respondents that spend on a TV, laptop or PC in the last 12 months in each postcode area across the period February 2019 to June 2022.

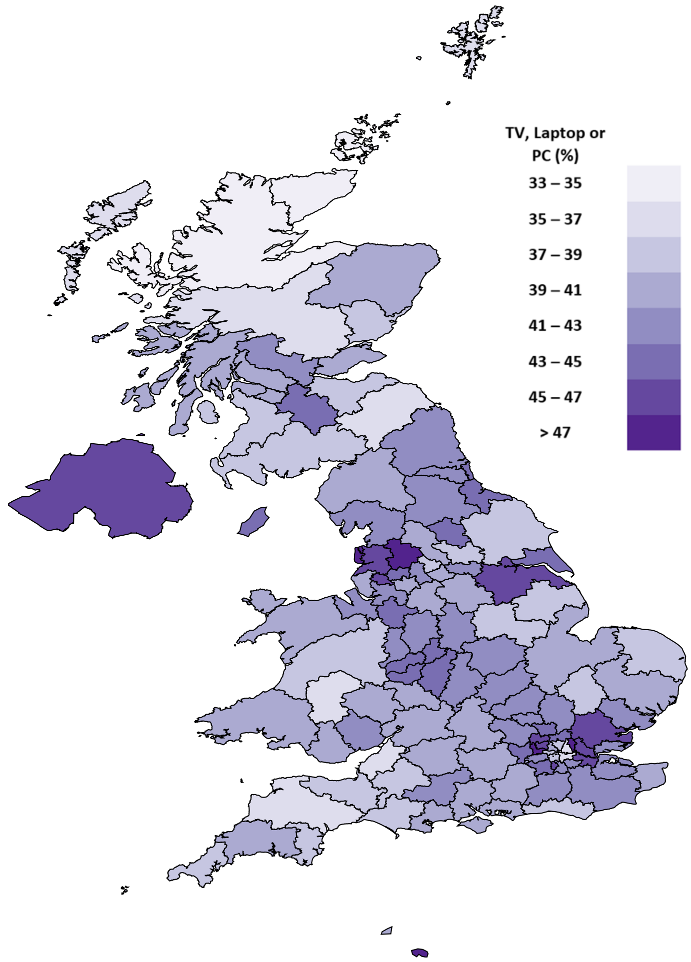


Figure A21. Percentage of respondents that spend on a large item of furniture in the last 12 months in each postcode area across the period February 2019 to June 2022.

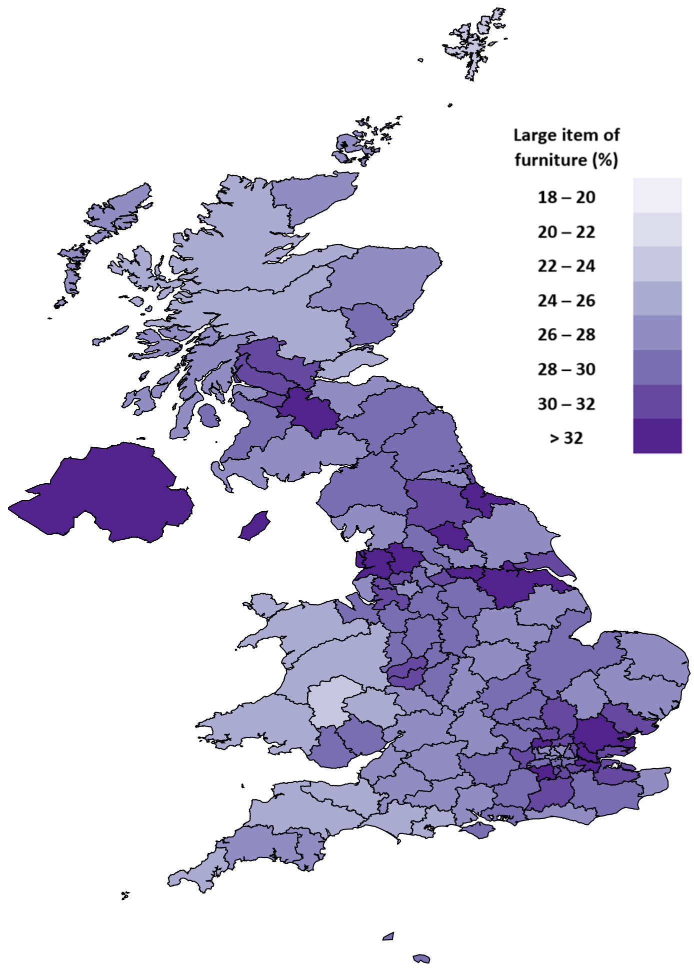


Figure A22. Percentage of respondents that spend on a mobile phone or tablet in the last 12 months in each postcode area across the period February 2019 to June 2022.

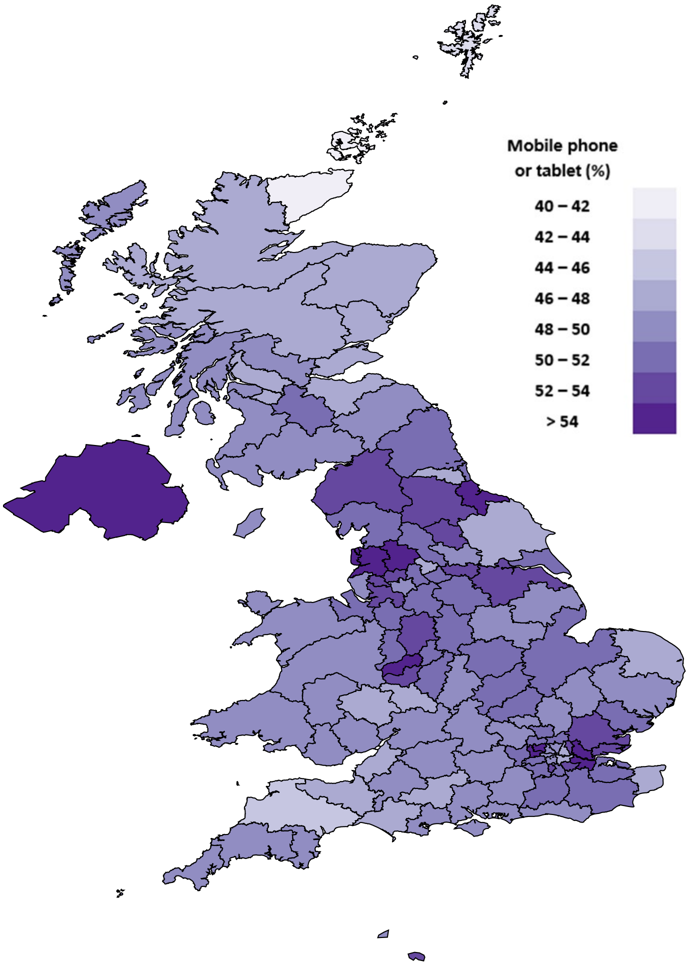
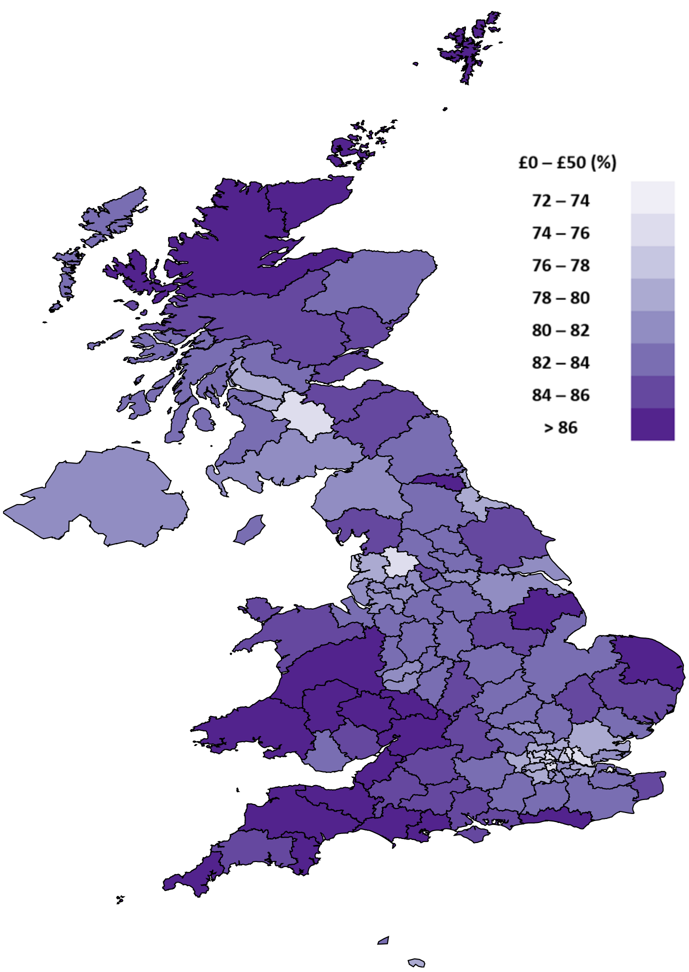


Figure A23. Percentage of respondents that spend £0 - £50 on clothing and footwear monthly in each postcode area across the period February 2019 to June 2022.



Monthly Spend on Pets and Pet Food	Entries	Percentage (%)
I don't have a pet	465,257	46.21
£1-£10	125,077	12.42
£10-£30	261,646	25.99
£30+	154,771	15.37

Table A19. The number of entries and percentage contribution (of all entries) of monthly spend on pets and pet food for respondents to the WWF Footprint Calculator across the period February 2019 to June 2022.

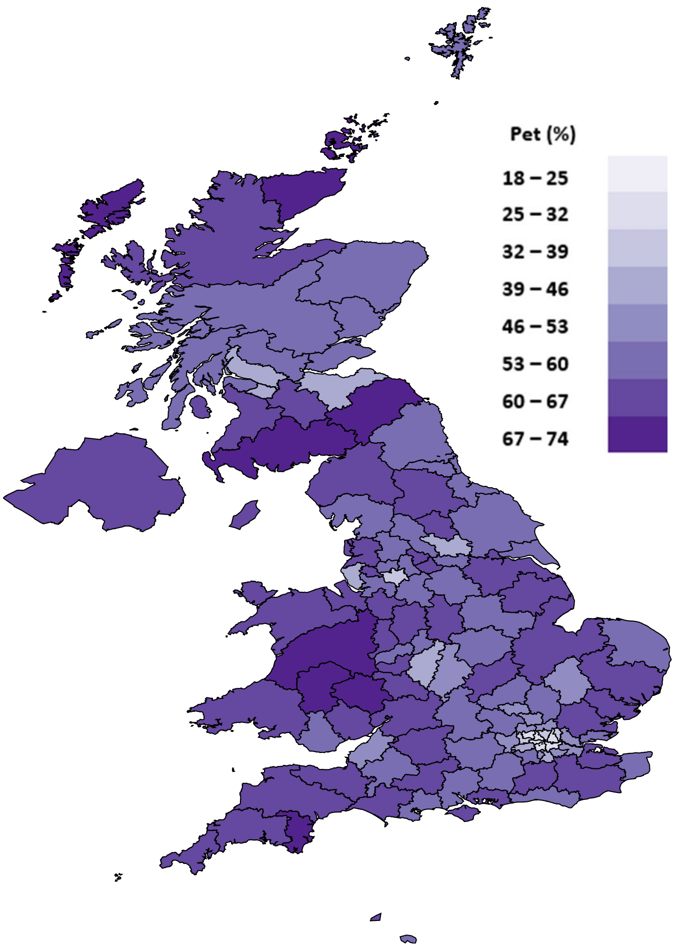


Figure A24. Percentage of respondents that own a pet in each postcode area across the period February 2019 to June 2022

Monthly Spend on health, beauty and grooming products	Entries	Percentage (%)
£0-£10	665,763	66.13
£10-£50	305,020	30.30
£50+	35,968	3.57

Table A20. The number of entries and percentage contribution (of all entries) of monthly spend on health, beauty and grooming products for respondents to the WWF Footprint Calculator across the period February 2019 to June 2022.

Monthly Spend on phone, internet and TV contracts	Entries	Percentage (%)
£0	44,718	4.44
£1-£30	367,347	36.49
£30-£60	343,779	34.15
£60+	250,907	24.92

Table A21. The number of entries and percentage contribution (of all entries) of monthly spend on phone, internet and TV contracts for respondents to the WWF Footprint Calculator across the period February 2019 to June 2022.

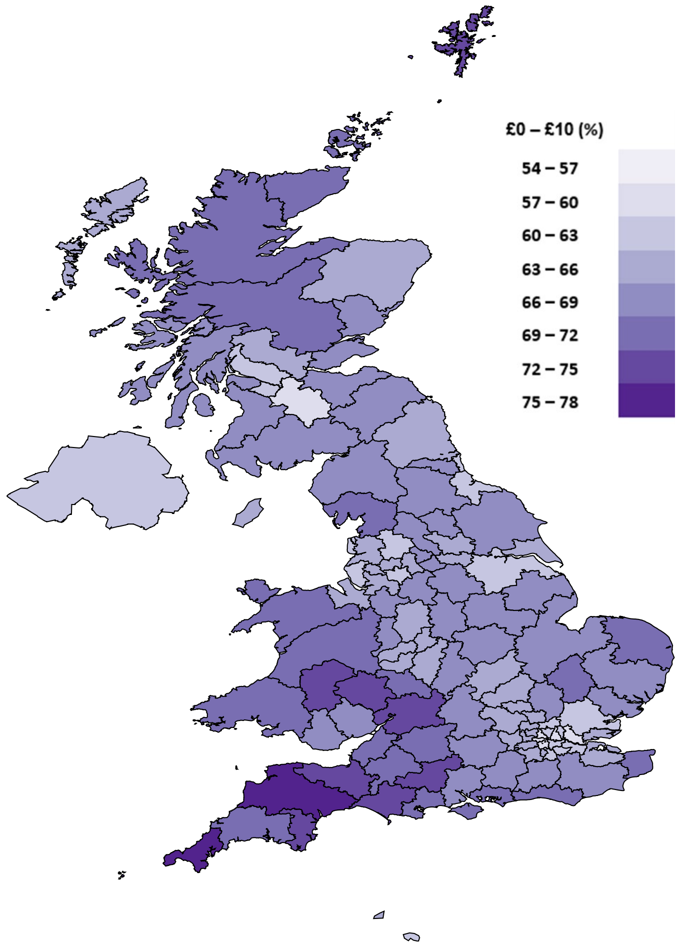


Figure A25. Percentage of respondents that spend £0-£10 on health, beauty and grooming products monthly in each postcode area across the period February 2019 to June 2022.

Figure A26. Percentage of respondents that spend £0 - £30 mobile phones, internet and TV contracts monthly in each postcode area across the period February 2019 to June 2022.

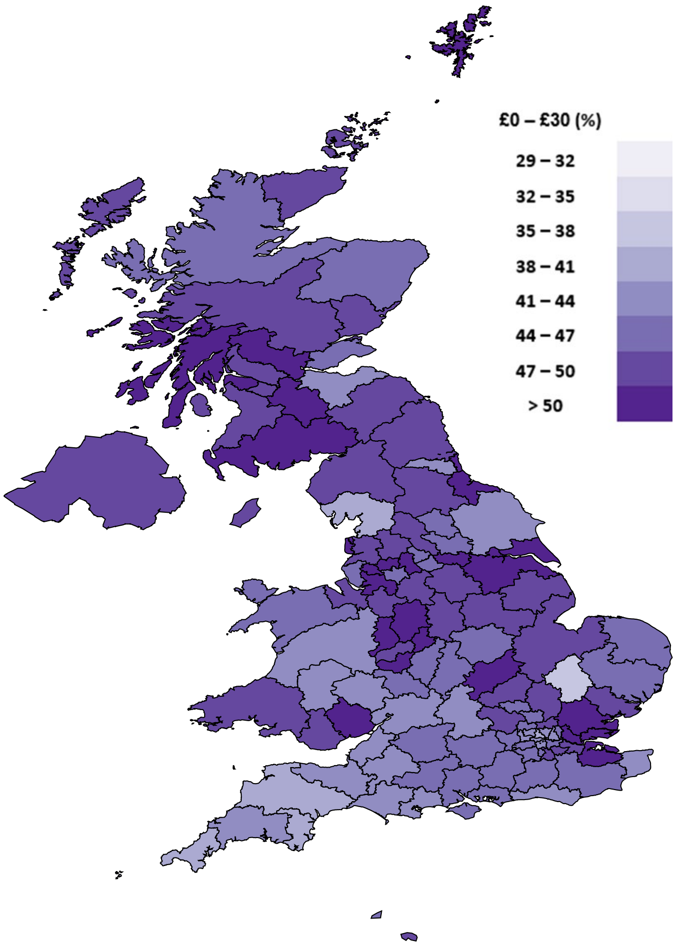
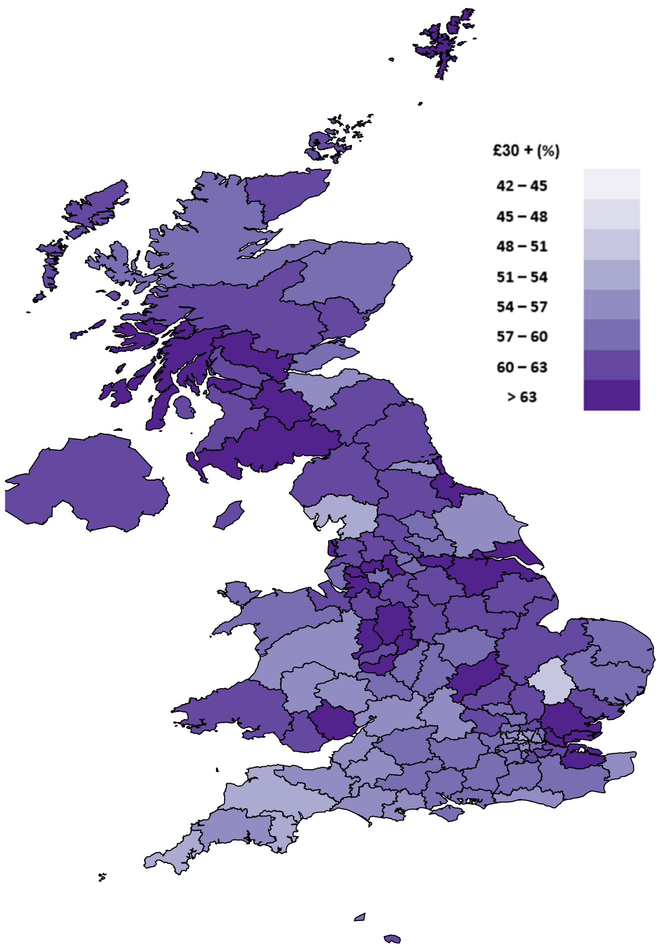


Figure A27. Percentage of respondents that spend more than £30 mobile phones, internet and TV contracts monthly in each postcode area across the period February 2019 to June 2022.



OUR WORLD AND EVERY CREATURE THAT LIVES HERE – INCLUDING US – FACE A CRITICAL MOMENT. PROTECTING WHAT'S LEFT IS NOT ENOUGH – WE'RE NOW IN A RACE TO RESTORE THE NATURAL WORLD AND PREVENT CATASTROPHIC CLIMATE CHANGE BEFORE IT'S TOO LATE. AND IT'S A RACE WE CAN STILL WIN.

TOGETHER, WITH IMMEDIATE ACTION, WE CAN STILL STOP THE LOSS OF NATURE AND SET IT ON THE ROAD TO RECOVERY.

For a future where people and nature thrive | wwf.org.uk