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# Climate change perceptions and actions survey: wave 1 and 2 methodology report

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# Climate change perceptions and actions survey: wave 1 and 2 methodology report

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Views expressed in this report are those of the researcher and not necessarily those of the Welsh Government

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## Table of contents

List of tables .....	2
List of figures.....	3
Glossary.....	4
1. Introduction .....	5
2. Methodology.....	6
3. Sample demographics.....	20
4. Summary.....	31

## List of tables

Table 2.1: Target responses by region and authority .....	9
Table 2.2: Households and shifts by authority .....	10
Table 2.3: Wave 1 survey, selected wards, authority and starting postcode district .....	10
Table 2.4: Wave 2 survey, selected wards, authority and starting postcode district .....	12
Table 2.5: Fieldwork summary .....	18
Table 2.6: Wave 1 response rate by region .....	18
Table 2.7: Wave 2 response rate by region .....	18
Table 2.8: Interviews by local authority .....	19
Table 3.1: Responses by male and female compared with 2021 census data for Wales – ‘What is your sex? (Wave 1), ‘Would you describe yourself as? (Wave 2)’ .....	21

## List of figures

Figure 2.1: Map of regions in Wales .....	8
Figure 2.2: Wave 2 survey postcard .....	14
Figure 3.1: Age responses compared with 2021 census data for Wales – ‘What age group do you fall into?’ .....	20
Figure 3.2: Ethnicity responses compared to 2021 census data for Wales - What is your ethnic group? .....	23
Figure 3.3: Location responses compared with 2021 census data for Wales - In which Local Authority do you live? .....	24
Figure 3.4: Economic activity responses compared with 2021 census data for Wales - Which of the following best describes your work status? .....	25
Figure 3.5: Occupational group responses compared with 2022 annual population survey - Which occupational group the chief income earner in your household belongs to? .....	26
Figure 3.6: Approximate income of household per year – ‘Please indicate the approximate income of your household per year (before tax and any other deductions)?’ .....	27
Figure 3.7: Annual household income – ‘Which of the following comes closest to how you feel about your household’s income these days?’ .....	28
Figure 3.8: Tenure responses compared with 2021 census data for Wales – ‘Does your household own or rent your accommodation?’ .....	29
Figure 3.9: Property type responses compared with 2021 census data for Wales – ‘What type of property does your household live in?’ .....	30

## **Glossary**

### **CAPI (Computer-Assisted Personal Interviews)**

Computer-Assisted Personal Interviews is a face-to-face data collection method in which the interviewer uses a tablet, mobile phone or a computer to record answers given during the interview.

### **MRS (Market Research Society)**

The Market Research Society is the UK professional body for research, insight and analytics. We recognise 5,000 individual members and over 500 accredited Company Partners in over 50 countries who are committed to delivering outstanding insight. As the regulator, we promote the highest professional standards throughout the sector via the MRS Code of Conduct.

### **Net Zero**

Where the greenhouse gases taken from the atmosphere are in balance with the greenhouse gases emitted.

## **1. Introduction**

- 1.1 This report details the methodology applied to undertake a quantitative survey of households in Wales, the Climate Change Perceptions and Actions Survey. The survey was commissioned by the Welsh Government to understand the attitudes and behaviours of people in Wales related to climate change. This research will contribute towards the Welsh Government's approach to behavioural and societal change and will inform future policy development and decisions in relation to decarbonisation, climate risk and adaptation, and tackling the nature emergency.
- 1.2 The aims of the research are to be met through primary research with members of the public in Wales over six biannual waves, with a target of 1,000 responses per wave.
- 1.3 This report considers outputs from the first two of six planned survey waves against national datasets, noting differences where they occur. Survey outputs reports have been produced for Wave 1 and Wave 2 which provide further detail on the background to this research, including the relevant policies and the research aims.

### **Report structure**

- 1.4 The report is structured as follows:
- Section 2: Methodology – overview of survey technique, sampling, fieldwork methodology and questionnaire development
  - Section 3: Sample Demographics – comparison of survey outputs with national datasets
  - Section 4: Summary

## 2. Methodology

### Selection of survey methodology

2.1 The specification was that the surveys should be:

- Cross-sectional.
- Undertaken in waves six times, six months apart (recognising that some of the topics surveyed will be subject to seasonality bias in responses).
- Producing a representative sample that is geographically, socially and economically dispersed so that all of Wales is represented.
- Based on random samples to ensure any changes in attitudes or behaviours can be confirmed as statistically significant.

2.2 A localised postcode sampling approach was applied as this allows for a random stratified approach. As the purpose of the survey is to track attitude changes over time, it is important that the survey methodology allows for statistically robust inferences to be made about any changes observed. A stratified sampling approach was used which involves selecting respondents at random from a sampling frame. The resultant sample can be said to be random, which is important when examining the statistical significance of the data. Other non-probability methods, such as using quota samples (selecting a predetermined number or proportion of a population that has been divided into subgroups), are limited in their ability to establish statistical significance and generalise findings to the wider population.

2.3 The survey method was distribution of postcards with links to an online survey. The postcard distribution was supplemented with face-to-face Computer Aided Personal Interview (CAPI) interviews. The use of postcards is cost effective and minimally intrusive, while CAPI reduces data entry errors.

2.4 Other survey methodologies were considered. Face-to-Face is a high-cost method and it was considered that the cost would be prohibitive for the required sample size. We also excluded telephone interviewing on the basis that telephone sampling, although random, cannot be stratified without using quotas, which is not a purely random approach.

2.5 Online panel surveys are an attractive option on the surface as these have the key advantage of providing a cost-effective means of sampling a large and geographically diverse population, but do not provide a probability sample since



panel participants are recruited via a range of methods, each with its own bias. It would also require quotas, as panel representation is traditionally poor in rural areas and amongst digitally excluded participants.

- 2.6 The appropriateness of a longitudinal methodology was considered. A strength of this approach is that any observed change in attitudes between waves is a real change and not subject to sampling error. However, all longitudinal surveys suffer from attrition which, even with measures to reduce it, is typically at least 30% per wave<sup>1</sup>. Those who drop out are replaced with new sample drawn in a similar way to the first wave. The problem with this is that those who do not drop out of the second and subsequent waves may be different from those who do.

### **Limitations of survey methodology**

- 2.7 The survey methodology, though producing a broadly representative of the population of Wales, does carry the risk of introducing a self-selection bias. This occurs when individuals choose themselves whether to participate in the survey, leading to a sample that may not accurately represent the broader population. This bias happens because the decision to respond can be correlated with the individual's characteristics, experiences, or opinions, which are often related to the subject of the survey. For example, people with strong opinions on climate change might have been more likely to respond to the survey, while those indifferent or less informed might have ignored the survey.
- 2.8 Self-selection bias can lead to skewed results, making the findings less reliable and generalisable. It challenges the survey's validity by introducing systematic differences between the sample and the population. This bias could have affected the conclusions drawn from the survey data, as the sample may not accurately reflect the views, behaviours, or characteristics of the entire population.

### **Sampling**

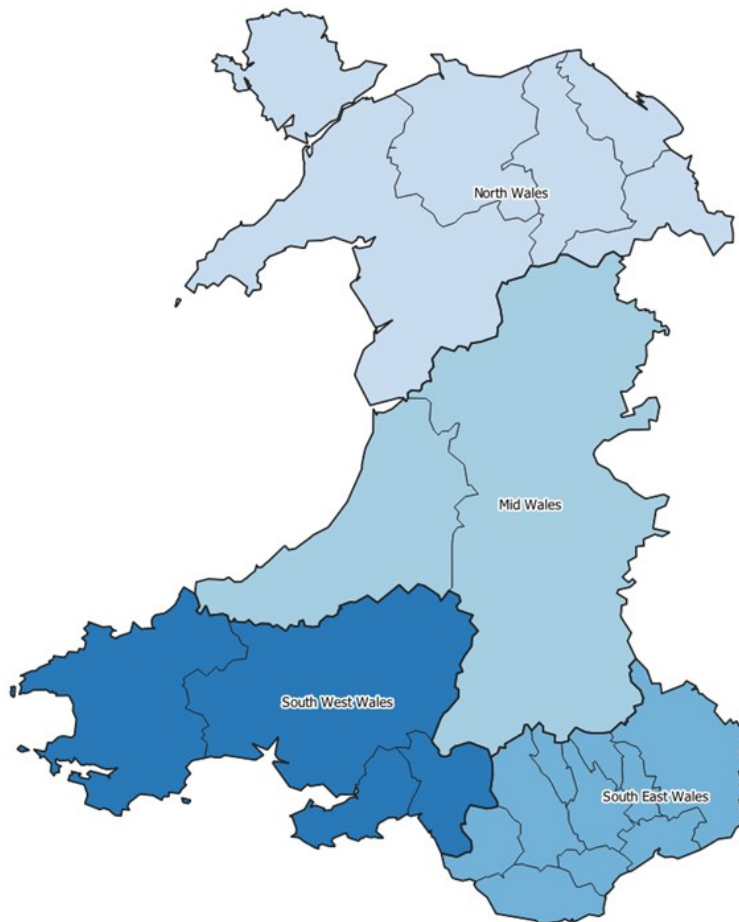
- 2.9 A proportional stratified random sampling approach was used as it provided a sample that best represents the entire population being studied. Stratified random sampling involved taking a random sample from stratified groups in proportion to the population. In disproportionate sampling, the strata are not proportional to the occurrence of the population.

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<sup>1</sup> Gustavson, K., von Soest, T., Karevold, E. et al. Attrition and generalizability in longitudinal studies: findings from a 15-year population-based study and a Monte Carlo simulation study. *BMC Public Health* 12, 918 (2012). [BMC Public Health](#).

- 2.10 Stratification gives smaller error in estimation and greater precision than simple random sampling<sup>2</sup>. It is a technique often used when researchers want to know about different subgroups or strata – e.g., if one is interested in differences among groups based on gender.
- 2.11 The sampling was anonymous; no details were known of the people within the households.
- 2.12 A map of the Regions in Wales is shown in Figure 2.1.

**Figure 2.1: Map of regions in Wales**



- 2.13 Surveys were conducted in North Wales, Mid Wales, South West Wales and South East Wales at the household level. The total number of households in Wales (2021 census) was 1.347 million. Weighting by household in each of these regions gives North Wales 22.3% of households, Mid Wales 6.7%, South West Wales 22.6% and South East Wales 48.3%. Applying a further weighting in each of the four regions in respect of local authority provides the target number of responses to be undertaken (Table 2.1).

<sup>2</sup> How Stratified Random Sampling Works [Investopedia](https://www.investopedia.com/terms/s/stratified-random-sampling.asp).

**Table 2.1: Target responses by region and authority**

<b>Region</b>	<b>Authority</b>	<b>Households</b>	<b>Responses</b>
North Wales	Isle of Anglesey	30,800	23
North Wales	Gwynedd	51,100	38
North Wales	Conwy	52,200	39
North Wales	Denbighshire	42,400	31
North Wales	Flintshire	66,900	50
North Wales	Wrexham	57,900	43
Mid Wales	Powys	60,200	45
Mid Wales	Ceredigion	30,900	23
South West Wales	Pembrokeshire	55,500	41
South West Wales	Carmarthenshire	81,800	61
South West Wales	Swansea	105,000	78
South West Wales	Neath Port Talbot	62,400	46
South East Wales	Bridgend	62,400	46
South East Wales	Vale of Glamorgan	57,500	43
South East Wales	Cardiff	147,300	109
South East Wales	Rhondda Cynon Taf	103,300	77
South East Wales	Merthyr Tydfil	25,800	19
South East Wales	Caerphilly	76,300	57
South East Wales	Blaenau Gwent	30,300	22
South East Wales	Torfaen	40,200	30
South East Wales	Monmouthshire	40,900	30
South East Wales	Newport	66,100	49
	<b>Total</b>	<b>1,347,100</b>	<b>1000</b>

Source: 2021 UK Census, TS041 Number of Households

- 2.14 For a target of 1,000 responses, it was assessed that 35 fieldworker shifts with each yielding about 30 interviews would be required. Therefore, shifts were allocated proportionately to the number of households by authority. Then in each authority, a ward or wards were selected at random. Finally, for the selected wards, a starting address was chosen at random.
- 2.15 Table 2.2 shows the proportion of the 35 shifts (unrounded and rounded) based on the proportion of households in each authority. The final column shows the number of wards in each authority.

**Table 2.2: Households and shifts by authority**

<b>Authority</b>	<b>Households</b>	<b>Target responses</b>	<b>Shifts unrounded</b>	<b>Shifts rounded</b>
Isle of Anglesey	30,800	23	0.8	1
Gwynedd	51,100	38	1.3	1
Conwy	52,200	39	1.4	1
Denbighshire	42,400	31	1.1	1
Flintshire	66,900	50	1.7	2
Wrexham	57,900	43	1.5	1
Powys	60,200	45	1.6	1
Ceredigion	30,900	23	0.8	1
Pembrokeshire	55,500	41	1.4	1
Carmarthenshire	81,800	61	2.1	2
Swansea	105,000	78	2.7	3
Neath Port Talbot	62,400	46	1.6	2
Bridgend	62,400	46	1.6	2
Vale of Glamorgan	57,500	43	1.5	1
Cardiff	147,300	109	3.8	4
Rhondda Cynon Taf	103,300	77	2.7	3
Merthyr Tydfil	25,800	19	0.7	1
Caerphilly	76,300	57	2.0	2
Blaenau Gwent	30,300	22	0.8	1
Torfaen	40,200	30	1.0	1
Monmouthshire	40,900	30	1.1	1
Newport	66,100	49	1.7	2
<b>Total</b>	<b>1,347,100</b>	<b>1,000</b>	<b>35</b>	<b>35</b>

Source: 2021 UK Census, TS041 Number of Households

- 2.16 The selected Wards and the randomly selected interview starting postcode district (first part of a postcode) for Wave 1 is shown in Table 2.3 below. The full unit postcode of the starting point is not shown to avoid risks relating to information disclosure.

**Table 2.3: Wave 1 survey, selected wards, authority and starting postcode district**

<b>Area</b>	<b>Authority</b>	<b>Ward</b>	<b>Starting Postcode District</b>
N Wales	Isle of Anglesey	Ynys Gybi	LL65
N Wales	Gwynedd	Llanrug	LL55

<b>Area</b>	<b>Authority</b>	<b>Ward</b>	<b>Starting Postcode District</b>
N Wales	Conwy	Deganwy	LL31
N Wales	Denbighshire	Llanarmon-yn-Ial/Llandegla	CH7
N Wales	Flintshire	Connah's Quay South (Cei Connah - De)	CH5
N Wales	Flintshire	Northop Hall (Pentre'r Moch)	CH7
N Wales	Wrexham	Little Acton	LL12
Mid Wales	Powys	Llandrindod North (Llandrindod - Gogledd)	LD1
Mid Wales	Ceredigion	Llandyfriog	SA44
SW Wales	Pembrokeshire	Pembroke: Monkton (Penfro - Monkton)	SA71
SW Wales	Carmarthenshire	Garnant	SA18
SW Wales	Carmarthenshire	Penygroes (Pen-y-groes)	SA14
SW Wales	Swansea	Cockett (Y Cocyd)	SA5
SW Wales	Swansea	Llansamlet	SA7
SW Wales	Swansea	Penyrheol	SA4
SW Wales	Neath Port Talbot	Crynant (Creunant)	SA10
SW Wales	Neath Port Talbot	Sandfields West (Sandfields - Gorllewin)	SA12
SE Wales	Bridgend	Bryncoch (Bryn-coch)	CF32
SE Wales	Bridgend	Nottage (Notais)	CF36
SE Wales	Vale of Glamorgan	Cornerswell	CF64
SE Wales	Cardiff	Adamsdown	CF24
SE Wales	Cardiff	Fairwater	CF5
SE Wales	Cardiff	Llandaff North (Ystum Taf)	CF14
SE Wales	Cardiff	Pontprennau/Old St. Mellons (Pontprennau/Hen Laneirwg)	CF3
SE Wales	Rhondda Cynon Taf	Beddau (Y Beddau)	CF38
SE Wales	Rhondda Cynon Taf	Llwyn-y-pia	CF40
SE Wales	Rhondda Cynon Taf	Tonypandy	CF40
SE Wales	Merthyr Tydfil	Plymouth	CF48
SE Wales	Caerphilly	Maesycwmmwr (Maes-y-cwmwr)	CF82
SE Wales	Caerphilly	Ynysddu (Ynys-ddu)	NP11
SE Wales	Blaenau Gwent	Llanhilleth (Llanhilledd)	NP13
SE Wales	Torfaen	Coed Eva (Coed Efa)	NP44
SE Wales	Monmouthshire	Mardy (Y Maerdy)	NP7
SE Wales	Newport	Liswerry	NP19

Area	Authority	Ward	Starting Postcode District
SE Wales	Newport	Tredegar Park (Parc Tredegar)	NP10

Source: Accent

2.17 The selected Wards and the randomly selected interview starting postcode district (first part of a postcode) for Wave 2 is shown in Table 2.4 below. The full unit postcode of the starting point is not shown to avoid risks relating to information disclosure.

**Table 2.4: Wave 2 survey, selected wards, authority and starting postcode district**

Area	Authority	Ward	Starting Postcode District
N Wales	Isle of Anglesey	Canolbarth Môn	LL77
N Wales	Gwynedd	Botwnnog	LL53
N Wales	Conwy	Glyn	LL31
N Wales	Denbighshire	Rhyl East (Rhyl Dwyrain)	LL18
N Wales	Flintshire	Ffynngroyw (Ffynngroyw)	CH8
N Wales	Flintshire	Queensferry	CH5
N Wales	Wrexham	Gresford East and West (Gresfordd - Dwyrain a Gorllewin)	LL12
Mid Wales	Powys	Llanrhaeadr-ym-Mochnant/Llansilin	SY10
Mid Wales	Ceredigion	Llanfihangel Ystrad	SA48
SW Wales	Pembrokeshire	Milford: Hakin (Aberdaugleddau - Hakin)	SA73
SW Wales	Carmarthenshire	Gorslas (Gors-las)	SA14
SW Wales	Carmarthenshire	Quarter Bach (Cwarter Bach)	SA18
SW Wales	Swansea	Bishopston (Llandeilo Ferwallt)	SA3
SW Wales	Swansea	Killay North (Cila - Gogledd)	SA2
SW Wales	Swansea	Newton	SA3
SW Wales	Neath Port Talbot	Allt-wen	SA8
SW Wales	Neath Port Talbot	Gwaun-Cae-Gurwen (Gwauncaegurwen)	SA18
SE Wales	Bridgend	Llangewydd and Brynhyfryd (Llangewydd a Brynhyfryd)	CF31
SE Wales	Bridgend	Pendre (Pen-dre)	CF31
SE Wales	Vale of Glamorgan	Gibbonsdown	CF36

<b>Area</b>	<b>Authority</b>	<b>Ward</b>	<b>Starting Postcode District</b>
SE Wales	Cardiff	Cyncoed	CF23
SE Wales	Cardiff	Lisvane (Llys-faen)	CF14
SE Wales	Cardiff	Pentyrch	CF15
SE Wales	Cardiff	Riverside (Glanyrafon)	CF11
SE Wales	Rhondda Cynon Taff	Glyncoch (Glyn-coch)	CF37
SE Wales	Rhondda Cynon Taff	Pont-y-clun	CF72
SE Wales	Rhondda Cynon Taff	Treorchy (Treorci)	CF42
SE Wales	Merthyr Tydfil	Bedlinog	CF46
SE Wales	Caerphilly	Aber Valley (Cwm Aber)	CF83
SE Wales	Caerphilly	Newbridge (Trecelyn)	NP11
SE Wales	Blaenau Gwent	Cwm	NP23
SE Wales	Torfaen	Llantarnam	NP44
SE Wales	Monmouthshire	Llanbadoc (Llanbadog)	NP15
SE Wales	Newport	Alway	NP19
SE Wales	Newport	Malpas	NP20

Source: Accent

### **Fieldwork method**

- 2.18 The survey was conducted in North Wales, Mid Wales, South West Wales and South East Wales at the household level.
- 2.19 The method was the distribution of postcards with links to an online survey. The postcard distribution was supplemented with face-to-face Computer Aided Personal Interview (CAPI) interviews.
- 2.20 Maps of each sampled area with the starting point were provided to interviewers, and they sampled residential addresses within the area on the map. Interviewers undertook 50% coverage in streets that they covered (i.e., every other household, 1 in 2). The interviewers noted the street numbers where they distributed. This allowed backchecking on whether cards had been distributed to help allay any concern that some interviewers may not have distributed all postcards.
- 2.21 Interviewers knocked on doors when distributing postcards. For those who answered, the interviewer offered them the postcard and asked them if they will fill in the online questionnaire using the link on the postcard. If they stated they could

not because of lack of internet or any other practical reason (poor eyesight, reading difficulty, etc), the interviewer offered to undertake a face-to-face interview on the doorstep using their tablet computer. This assisted with sampling vulnerable residents. Up to three face-to-face interviews were conducted each shift.

2.22 The postcards introduced the survey, and included an open link to the survey and a unique ID (to be entered onto the online questionnaire). A £5 'thank you' was offered for completion of the questionnaire. This was a voucher or could be a donation to a charity.

2.23 The double-sided postcard in both Welsh and English is shown in Figure 2.2.

**Figure 2.2: Wave 2 survey postcard**



2.24 The face-to-face interviews, which were conducted using a CAPI questionnaire, were encrypted and uploaded via Wi-Fi onto Accent's secure servers. Every participant was given a 'thank you' leaflet at the end of the interview that confirmed that the Market Research Society (MRS) Code of Conduct had been adhered to and provided freephone contact details of the MRS so that participants could verify that Accent is a bona fide market research agency.

### Questionnaire development

2.25 A rapid evidence review was conducted at the beginning of the project to ensure the project benefited from existing research in this area. The review was carried out across both grey (open-source reports) and academic literature. 68 publications were reviewed.

2.26 The evidence search was conducted using Google. Search terms used included - NetZero / Zero Carbon / Behaviour / Wales / Survey / Insight. Results were ordered by relevance to the search terms. There were in the region of 7.5 million results on the search terms, so only hits on the first 6 pages were reviewed and only then, if



they were either governmental, research institute, academic or commissioned reports. Media articles were not included in the list, nor were overtly commercial publications.

2.27 Each publication was mapped to identify which of the following topics were featured:

- Work location
- Travel to work
- Active travel
- Changes in behaviour due to covid 19
- Behaviours related to food, shopping, and diet
- Home heating
- Energy efficiency
- Water use
- Holidays
- Aviation
- Attitudes to the environment
- Climate change and public health
- Views on climate change and net zero
- Reuse and recycling.

2.28 The evidence review was used to inform the questionnaire design by identifying topic and styles of questions.

2.29 The questionnaire was developed by WSP, Accent, and the Welsh Government.

2.30 The questionnaire was designed to allow for tracking of attitudes and behaviours in future waves and was structured to cover the following six areas:

- About you and your household
- Your perceptions and attitudes
- About your home energy
- Food
- Daily life

- Travel.

2.31 The questionnaire was refined following both cognitive and pilot survey testing.

#### *Cognitive testing*

2.32 10 cognitive interviews were conducted before the pilot to test the efficacy and consumer understanding of the questionnaire, specifically question meaning. The participants were recruited through free-find recruitment, carried out by Accent. Participants were required to be familiar with Zoom and have a laptop or large tablet that they could use for the cognitive interview. Participants were offered a £30 incentive for completing the cognitive interview.

2.33 The interviews took place on Zoom from Tuesday 18 to Friday 21 July 2023.

2.34 Participants either shared their screen or were invited to control the screens of moderators depending on their familiarity with Zoom. Interviewers used cognitive probes to assess certain questions while inviting participants to comment at any point on anything they found unclear or notable. The interviews lasted approximately 45 minutes.

2.35 The questionnaire was tested in both English and Welsh to ensure clear and accurate translation. Seven interviews were conducted in English and three interviews were conducted in Welsh.

2.36 A report was prepared which included a series of recommended changes. These changes included modification of questions to be more easily understood, and changes to Welsh language version to provide more accurate / widely used terms.

#### *Pilot testing*

2.37 A pilot survey was conducted with the aim of testing:

- The recruitment process
- The clarity and flow of the questionnaire
- The appropriateness of the language used
- The accuracy of all routings through the questionnaire (i.e. where certain supplementary questions are skipped as they are irrelevant)
- Ease of use of the show material when used in face-to-face interviews
- The interview duration

- The survey hit rate.
- 2.38 A pilot of three shifts was undertaken in Swansea, Mountain Ash and Cardiff with the aim of achieving about 100 interviews:
- 2.39 Fieldwork took place between Saturday 29 and Monday 31 July 2023.
- 2.40 1,300 postcards were distributed. 83 entered the online survey (6%) and by 12:00 on 2nd August, 32 had completed the survey, a 2.5% response rate, which was lower than the 7% expected. It is possible that the beginning of the summer holidays, combined with sampling over the weekend, had a negative impact on response, with many not being at home.
- 2.41 The following recommendations were made and adopted to help improve the main stage response rate.
- Ask fieldworkers to knock on 100 doors and encourage people to answer the survey.
  - Make the landing page more appealing by adding the title and logos above the boxes that need to be entered.
  - Revise the text on the postcard to make it more appealing. For example:  
Please give your views in relation to climate change by answering this important Welsh Government survey hosted by Accent.
- 2.42 Furthermore, the average completion time for the questionnaire was 18 minutes. This was considered long, especially for a door-to-door interview.
- 2.43 In order to shorten the interview length, but still maintain the full scope of the survey, a recommendation was made to simplify a number of the follow up questions, which ask whether each action has been undertaken in the last 12 months or before. It was recommended that these simply ask for all mentioned whether any have been done in the preceding 12 months. This applied to Q27, Q29, Q33, Q35, Q38, Q42, Q44 and Q50 (see the Annex for survey questions). This still captured the key issue on whether a recent change has been made.

#### *Changes following Wave 1*

- 2.44 Some changes were made to the questionnaire following the completion of Wave 1. This included the addition of an additional question (10B) regarding how the respondent felt about their household income. Other changes were minor, typically standardising response options to include “prefer not to say” and “don’t know”.

2.45 The updated Wave 2 survey was not subject to cognitive or pilot testing.

### Fieldwork

2.46 The fieldwork for Wave 1 took place between Saturday 19 August and Thursday 14 September 2023, and the fieldwork for Wave 2 took place between Tuesday 6 February and Wednesday 17 March 2024.

2.47 A summary of the fieldwork and responses is for both Wave 1 and Wave 2 provided in Table 2.5 below.

**Table 2.5: Fieldwork summary**

Region	Wave 1	Wave 2
Fieldwork dates	19/08/2023 – 14/09/2023	06/02/2024 – 17/03/2024
Postcards distributed	13,715	15,761
Surveys completed	949	943
Online completions	835	764
Face to face completions	114	179
Welsh language completions	7	18
Response rate	6.9%	6.0%

Source: Climate Change Perceptions and Actions Survey, Wave 1 and Wave 2, 2024

2.48 The response rate by region for Wave 1 is given in Table 2.6.

**Table 2.6: Wave 1 response rate by region**

Region	Postcards distributed	Responses	Response rate
North Wales	1,899	159	8.4%
Mid Wales	568	42	7.4%
South West Wales	2,778	167	6.0%
South East Wales	8,470	576	6.8%
Total	13,715	944	6.9%

Source: Climate Change Perceptions and Actions Survey, Wave 1 2024

2.49 The response rate by region for Wave 2 is given in Table 2.7.

**Table 2.7: Wave 2 response rate by region**

Region	Postcards distributed	Responses	Response rate
North Wales	3,052	156	5.1%
Mid Wales	523	11	2.1%
South West Wales	3,609	221	6.1%

Region	Postcards distributed	Responses	Response rate
South East Wales	8,576	553	6.4%
Total	15,761	943	6.0%

Source: Climate Change Perceptions and Actions Survey, Wave 2 2024

2.50 The number of interviews by local authority is given in Table 2.8. Where the response target has been exceeded the number of responses is in bold type.

**Table 2.8: Interviews by local authority**

Region	Authority	Target	Wave 1 Responses	Wave 2 Responses
North Wales	Isle of Anglesey	23	8	<b>25</b>
North Wales	Gwynedd	38	31	17
North Wales	Conwy	39	37	23
North Wales	Denbighshire	31	19	28
North Wales	Flintshire	50	34	31
North Wales	Wrexham	43	30	32
Mid Wales	Powys	45	22	3
Mid Wales	Ceredigion	23	20	8
South West Wales	Pembrokeshire	41	9	26
South West Wales	Carmarthenshire	61	48	38
South West Wales	Swansea	78	77	<b>96</b>
South West Wales	Neath Port Talbot	46	33	<b>61</b>
South East Wales	Bridgend	46	36	<b>48</b>
South East Wales	Vale of Glamorgan	43	<b>51</b>	20
South East Wales	Cardiff	109	<b>147</b>	<b>145</b>
South East Wales	Rhondda Cynon Taf	77	<b>85</b>	75
South East Wales	Merthyr Tydfil	19	<b>22</b>	<b>23</b>
South East Wales	Caerphilly	57	<b>86</b>	<b>87</b>
South East Wales	Blaenau Gwent	22	<b>46</b>	<b>34</b>
South East Wales	Torfaen	30	32	<b>44</b>
South East Wales	Monmouthshire	30	27	12
South East Wales	Newport	49	44	<b>65</b>
	<b>Total</b>	<b>1,000</b>	<b>944</b>	<b>941</b>

Source: Climate Change Perceptions and Actions Survey, Wave 1 and Wave 2, 2024

2.51 Analysis of the survey outputs are provided in Wave 1 and Wave 2 Survey Outputs reports.

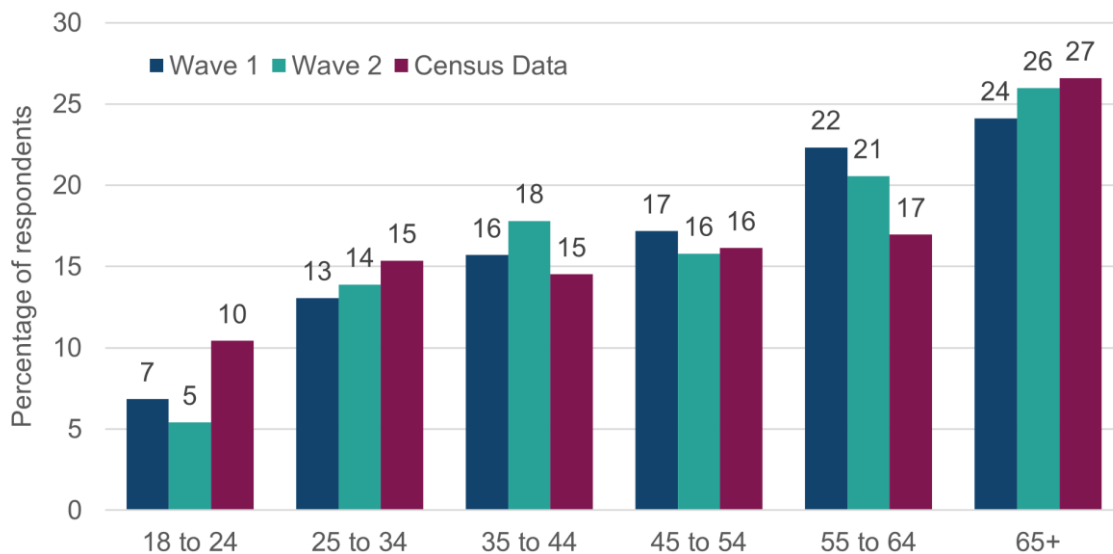
### 3. Sample demographics

3.1 To check if the sample was representative of the wider population in Wales, outputs from questions 1 to 13 of the survey (covering demographic characteristics) are presented here alongside comparable national data sets for Wales. Comparisons are typically made with 2021 census data for Wales, which has been extracted from the UK-wide census data. Comparisons indicate that the sample is broadly representative of the population of Wales in regard to age, male and female, ethnicity, work status, and household income. Minor differences were observed for location, occupation, tenure, and property type.

#### Age

3.2 The age responses from Wave 1 and 2 are presented in Figure 3.1 alongside 2021 census data for Wales. The age proportions of the respondents of both surveys broadly align with the census data.

**Figure 3.1: Age responses compared with 2021 census data for Wales – ‘What age group do you fall into?’**



Source: Climate Change Perceptions and Actions Survey, Wave 1 and Wave 2, 2024. Multiple choice. Questions asked of all. ‘Prefer not to say’ excluded. Base W1 = 942, Base W2 = 938

Census data: 2021 UK Census, TS007 Age by single year.

#### Male and female

3.3 Wave 1 asked respondents ‘What is your sex’, in line with Census 2021. Wave 2 asked ‘Would you describe yourself as’. Both questions allowed respondents to indicate ‘prefer not to say’. The change made to the question for Wave 2 is intended to remain for future survey waves.

3.4 The responses from Wave 1 and 2 are presented in Table 3.1 alongside 2021 census data for Wales. The census data has been adjusted to reflect the proportions for the population of 18 years and above.

**Table 3.1: Responses by male and female compared with 2021 census data for Wales – ‘What is your sex? (Wave 1), ‘Would you describe yourself as? (Wave 2)’**

<b>Male and Female</b>	<b>Wave 1 Survey</b>	<b>Wave 2 Survey</b>	<b>2021 Census</b>
Male	46%	45%	48%
Female	53%	54%	52%
Prefer not to say / Other	1%	1%	-

Source: Climate Change Perceptions and Actions Survey, Wave 1 and Wave 2, 2024. Multiple choice. Questions asked of all. ‘Don’t know’ excluded. Base W1 = 946, Base W2 = 943

Census data: 2021 UK Census, TS009 Sex by single year of age.

3.5 The proportion of respondents of both surveys identifying as male or female align broadly with the census data. Both waves saw a slightly higher proportion of female respondents.

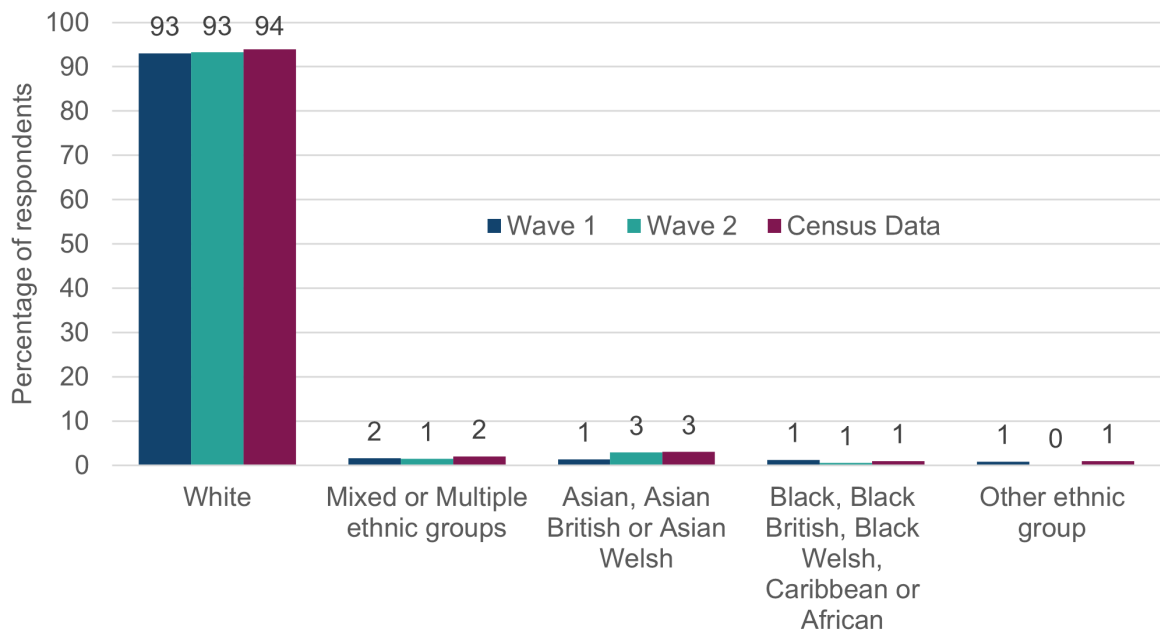
### **Ethnicity**

The ethnicity responses from Wave 1 and 2 are presented in

Figure 3.2 alongside 2021 census data for Wales.



**Figure 3.2: Ethnicity responses compared to 2021 census data for Wales - What is your ethnic group?**



Source: Climate Change Perceptions and Actions Survey, Wave 1 and Wave 2, 2024. Multiple choice. Questions asked of all. 'Don't know' and 'Prefer not to say' excluded. Base W1 = 931, Base W2 = 930.

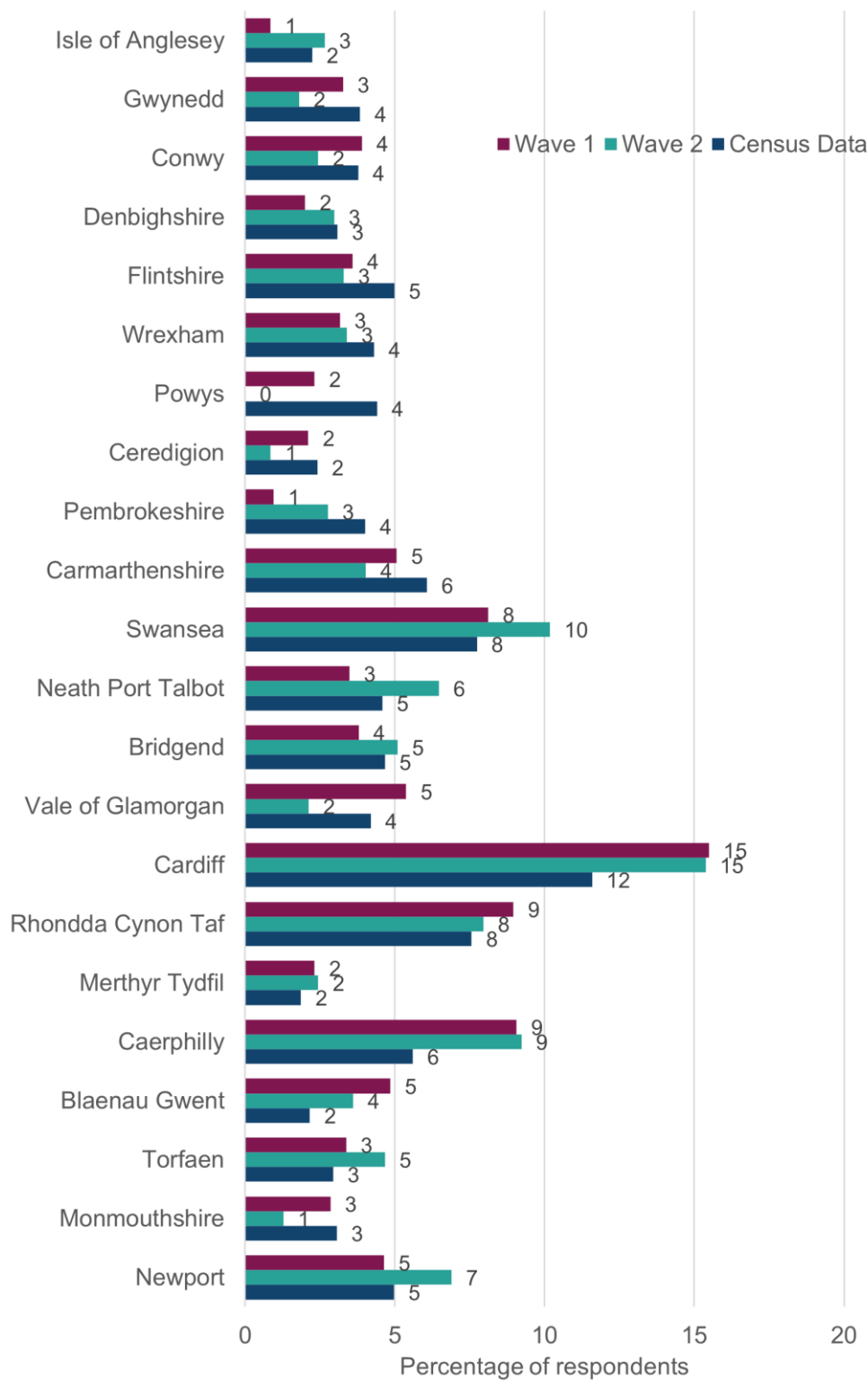
Census data: 2021 UK Census, TS021 Ethnic group.

3.6 The ethnicity proportions of the respondents of both surveys align with the census data.

**Location**

3.7 Respondents were asked in which Local Authority they lived. The responses are presented in Figure 3.3 alongside 2021 census data for Wales. The census data has been adjusted to reflect the population of 18 years and above in each Local Authority.

**Figure 3.3: Location responses compared with 2021 census data for Wales - In which Local Authority do you live?**



Source: Climate Change Perceptions and Actions Survey, Wave 1 and Wave 2, 2024. Multiple choice. Questions asked of all. 'Prefer not to say' excluded. Base W1 = 944, Base W2 = 941.

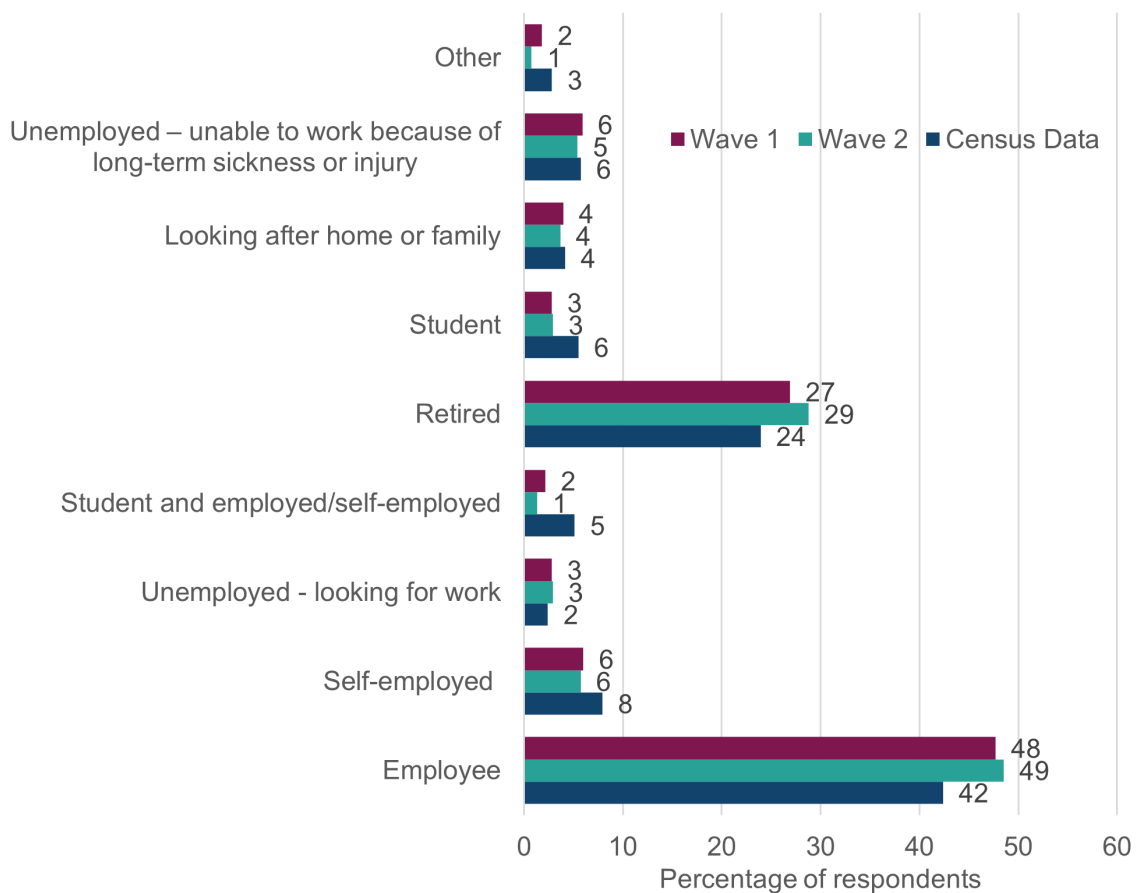
Census data: 2021 UK Census, TS007 Age by single year.

3.8 The proportion of respondents of both surveys is broadly in line with the census data. However, Cardiff and Caerphilly exceed the expected proportions in both survey waves. This is due to a higher response rate to the survey in those areas.

**Work status**

3.9 Respondents were asked about their current work status. The responses are presented in Figure 3.4 alongside economic activity data taken from 2021 census for Wales.

**Figure 3.4: Economic activity responses compared with 2021 census data for Wales - Which of the following best describes your work status?**



Source: Climate Change Perceptions and Actions Survey, Wave 1 and Wave 2, 2024. Multiple choice. Questions asked of all. 'Doing unpaid work for a business that you or a relative owns' and 'Prefer not to say' excluded. Base W1 = 933, Base W2 = 927

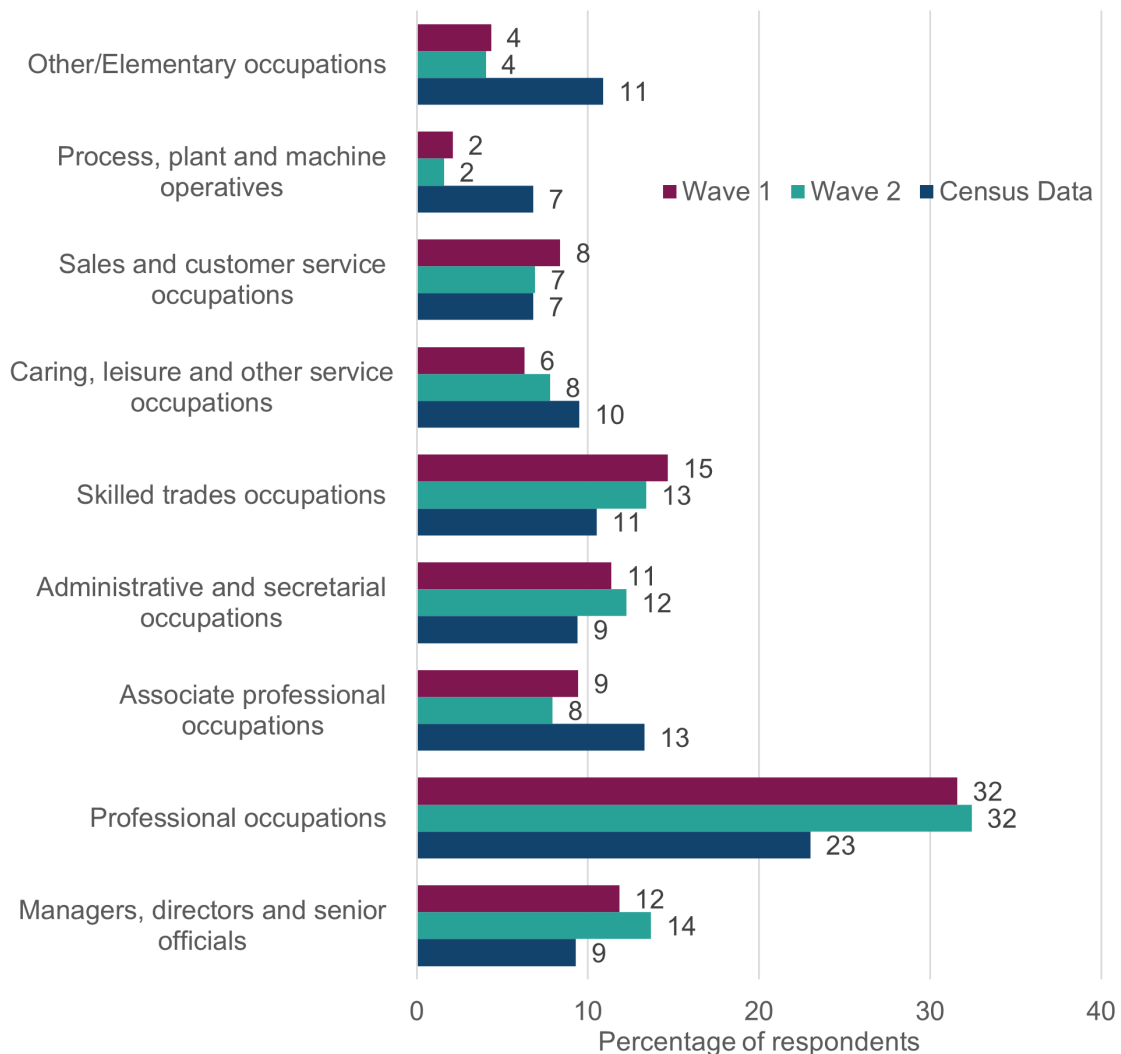
Census data: 2021 UK Census, TS066 Economic activity status

3.10 The work status proportions of the respondents of both surveys align with the census data, although both saw a higher proportion of retired respondents and employees with fewer students than in comparison to the census.

## Occupation

3.11 Respondents were asked what occupational group the main income earner in the household belonged to. The responses are presented in Figure 3.5 alongside Employment by Occupation data for Wales, taken from Office for National Statistics annual population survey.

**Figure 3.5: Occupational group responses compared with 2022 annual population survey - Which occupational group the chief income earner in your household belongs to?**



Source: Climate Change Perceptions and Actions Survey, Wave 1 and Wave 2, 2024.: Multiple choice. Questions asked of all. 'State pensioner,' 'Unemployed,' 'Other,' 'Don't know' and 'Prefer not to say' excluded. Base W1 = 668, Base W2 = 694.

ONS data: 2022 ONS (Office for National Statistics) annual population survey.

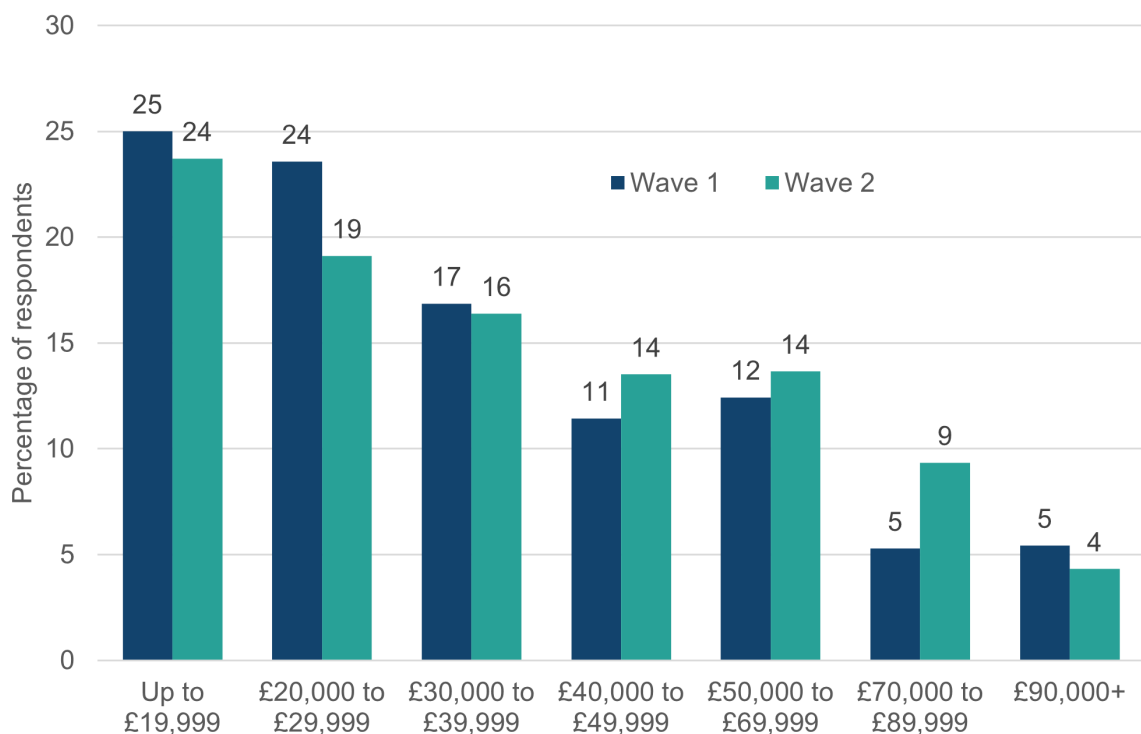
3.12 The comparison of the two survey responses with the census dataset shows that a higher proportion of the survey respondents are in Professional occupations. This might be because only the occupation of the head of the household has been asked, the ONS data includes all population. Alternatively, as people working in

Professional and similar ‘desk based’ occupations are more likely to deal with virtual and actual paperwork during the working day, the survey might have been more accessible to them.

### Income

3.13 Respondents were asked their annual household income per year, before tax and any other deductions. There was no identified comparable national dataset where household income is distributed across income bandwidths, thus only the survey responses are presented in Figure 3.6.

**Figure 3.6: Approximate income of household per year – ‘Please indicate the approximate income of your household per year (before tax and any other deductions)?’**



Source: Climate Change Perceptions and Actions Survey, Wave 1 and Wave 2, 2024. Multiple choice. Questions asked of all. ‘Don’t know’ and ‘Prefer not to say’ excluded. Base W1 = 700, Base W2 = 696

3.14 In Wave 1, 21% selected “Prefer not to say” and 5% selected “Don’t know” in response to this question. Over a quarter of respondents to Wave 2 also did not give a range for their household income, 22% selected “Prefer not to say” and 4% selected “Don’t know”.

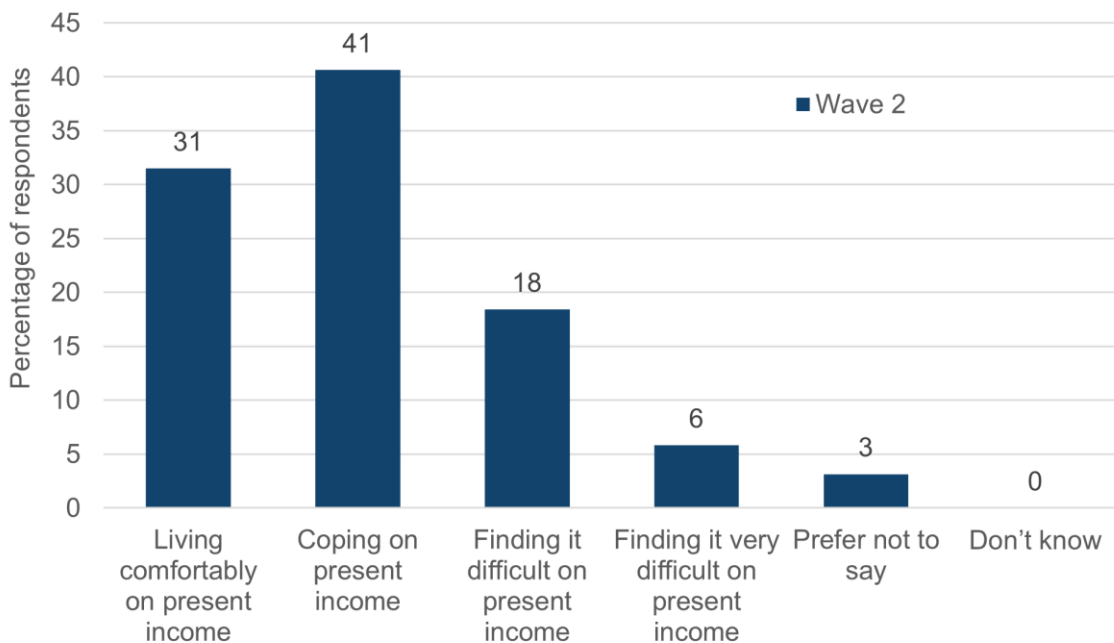
3.15 The average household income of survey respondents was £38,500 for Wave 1 and £41,000 for Wave 2. The average was calculated by applying proportions to income

range midpoints. The upper and lower incomes bands had their upper (£90,000) and lower limit (£19,999) respectively applied.

3.16 The survey data was compared to national datasets for Wales. Office for National Statistics (ONS) data gave the average total annual household income for middle layer super output areas (MSOA) in Wales<sup>3</sup>. Combining this data with the number of households per MSOA from Census 2021 gave an average household income for Wales of £38,300. This is in line with the average household income for Wave 1 (£38,500), but lower than that of Wave 2 (£41,000). The low response rate to this question across both Waves should be born in mind when interpreting results using these data.

3.17 Respondents were asked how they felt about their annual household income. The responses are presented in Figure 3.7. This question was only asked in Wave 2.

**Figure 3.7: Annual household income – ‘Which of the following comes closest to how you feel about your household’s income these days?’**



Source: Climate Change Perceptions and Actions Survey, Wave 2 2024. Multiple choice. Questions asked of all, households with only 1 adult excluded. Base W2 = 635.

3.18 In comparison to the survey question ‘Please indicate the approximate income of your household per year’, this question saw a lower proportion of Wave 2

<sup>3</sup> “Office for National Statistics (ONS), published 11 October 2023, ONS website, statistical bulletin, Income estimates for small areas, England and Wales: financial year ending 2020” [Income estimates for small areas, England and Wales - Office for National Statistics \(ons.gov.uk\)](https://www.ons.gov.uk/statistical-bulletin/2023/11/income-estimates-for-small-areas-england-and-wales).

respondents indicating ‘don’t know’ or ‘prefer not to say’ (3% indicating prefer not to say in comparison to 26% don’t know/prefer not to say for household income).

3.19 Almost a quarter of the respondents (24%) stated that they were finding it difficult or very difficult on the current household income.

3.20 It should be noted that this question was only asked to households with 2 or more adult residents (aged 18 or older). In future waves this will be asked of all respondents.

**Tenure**

3.21 Respondents were asked if the household owned or rented their accommodation. The responses are presented in Figure 3.8 alongside tenure data taken from 2021 census for Wales.

**Figure 3.8: Tenure responses compared with 2021 census data for Wales – ‘Does your household own or rent your accommodation?’**



Source: Climate Change Perceptions and Actions Survey, Wave 1 and Wave 2, 2024. Multiple choice. Questions asked of all. ‘Don’t know’ and ‘Prefer not to say’ excluded. Base W1 = 921, Base W2 = 913.

Census data: 2021 UK Census, TS054 Tenure.

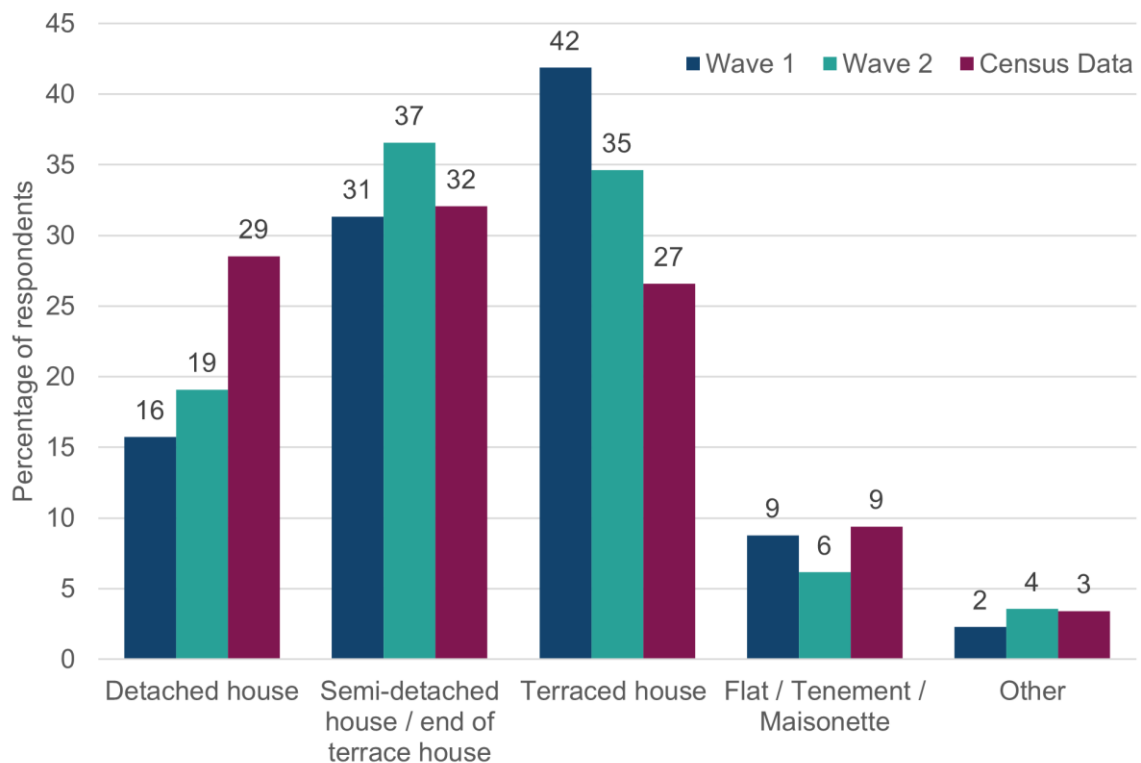
3.22 The tenure proportions of the respondents of both surveys are broadly in line with the census data, although in both waves the survey data has 7 percentage points

more home-owners than the census data, and 8 percentage points fewer renters than the census data.

### Property type

3.23 Respondents were asked what type of property they lived in. The responses are presented in Figure 3.9 alongside accommodation type data taken from 2021 census for Wales.

**Figure 3.9: Property type responses compared with 2021 census data for Wales – ‘What type of property does your household live in?’**



Source: Climate Change Perceptions and Actions Survey, Wave 1 and Wave 2, 2024. Multiple choice. Questions asked of all. ‘Don’t know’ and ‘Prefer not to say’ excluded. Base W1 = 922, Base W2 = 929

Census data: 2021 UK Census, TS044 Accommodation Type

3.24 The property type proportion of the respondents of both surveys are in line with census data for semi-detached and flat type properties. However, Wave 2 had 8 percentage points more respondents from terraced houses and 10 percentage points fewer from detached houses than in comparison to census data. Wave 1 showed larger variation from the census data for both of these property categories. This is due to the randomly selected starting points for the fieldwork and the type of residential property within the ward. It is unlikely that each ward will have a distribution of property type in line with the census.



## 4. Summary

- 4.1 A quantitative survey of households in Wales, the Climate Change Perceptions and Actions survey, has been commissioned by the Welsh Government to understand the attitudes and behaviours related to achieving Net Zero. This research is expected to contribute towards the Welsh Government's approach to behavioural and societal change, and will inform future policy development and decisions in relation to commitments to reach Net Zero by 2050.
- 4.2 The aims of the research are to be met through primary research with members of the public in Wales over six biannual waves of 1,000 responses.
- 4.3 A rapid evidence review was conducted across both grey (open-source reports) and academic literature. The evidence review informed the design of a questionnaire to allow for tracking of attitudes and behaviours in future waves, and was structured to cover the following six areas: demographics, perceptions and attitudes, home, food, daily life, and travel. The questionnaire was further refined following both cognitive and pilot survey testing.
- 4.4 Wave 1 fieldwork was undertaken in August and September 2023. A proportional stratified random sampling approach was used as it provided a sample that best represented the entire population being studied. Fieldworker shifts were allocated in proportion to the number of households in each authority. The method employed was the distribution of postcards with links to an online survey. The postcard distribution was supplemented with face-to-face CAPI interviews. An incentive of £5 was offered for completion of the questionnaire.
- 4.5 A total of 949 surveys were completed for Wave 1, with a response rate of 6.9%.
- 4.6 Some changes were made to the questionnaire following the completion of Wave 1. This included the addition of an additional question (10B) regarding how the respondent felt about their household income. Other changes were minor, typically standardising response options to include "prefer not to say" and "don't know".
- 4.7 The updated Wave 2 survey was not subject to cognitive or pilot testing.
- 4.8 A total of 943 surveys were completed for Wave 2, with a response rate of 6.0%.
- 4.9 Demographic characteristics of the sample were compared to national data sets for Wales to ensure the sample was representative of the wider population. Demographic questions covered age, male and female, ethnicity, location, work

status, occupation, household income, property type, and tenure. Comparisons indicate that for both surveys the sample is broadly representative of the population of Wales. The survey outputs compared well alongside national data sets for age, sex, ethnicity, work status, household income, and occupation. Small variations were observed between the survey data and national data sets for location, occupation, tenure, and property type.

### **Limitations and reflections**

- 4.10 Whilst the sample was broadly representative of the public in Wales based on key sample demographics, the sampling method was at risk of introducing a self-selection bias. This occurs when individuals choose themselves whether to participate in the survey, leading to a sample that may not accurately represent the broader population. This bias happens because the decision to respond can be correlated with the individual's characteristics, experiences, or opinions, which are often related to the subject of the survey. For example, people with strong opinions on climate change might have been more likely to respond to the survey, while those indifferent or less informed might have ignored the survey. Furthermore, there were some concerns from households as to whether the survey was real and from the Welsh Government.
- 4.11 Self-selection bias can lead to skewed results, making the findings less reliable and generalisable. It challenges the survey's validity by introducing systematic differences between the sample and the population. This bias could have affected the conclusions drawn from the survey data, as the sample may not accurately reflect the views, behaviours, or characteristics of the entire population.
- 4.12 The Public Engagement Strategy<sup>4</sup> discusses ambitions to explore marginalised groups, who are often at increased risk of the negative impacts of climate change and climate policies. However, the sample size of some marginalised groups, such as certain ethnic minorities, was too low in this survey to provide generalisable insights. Other complementary methods may be required in the future to further understanding around those most likely to be impacted by climate change and climate policies.

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<sup>4</sup> [Climate Action Wales: Public engagement strategy 2023 to 2026 | GOV.WALES](#)

