Dadansoddi ar gyfer Polisi

YMCHWIL GYMDEITHASOL Y LLYWODRAETH

GSR

GOVERNMENT SOCIAL RESEARCH

Analysis for Policy

Llywodraeth Cymru
Welsh Government

SOCIAL RESEARCH NUMBER:
43/2026
PUBLICATION DATE:
11/03/2026

Climate change perceptions and actions survey: wave 3 and 4 methodology report

Mae'r ddogfen yma hefyd ar gael yn Gymraeg.

This document is also available in Welsh.

 ISBN 978-1-83745-206-4

Title: Climate Change Perceptions and Actions Survey
Subtitle: Wave 3 and 4 Methodology Report

Author(s): Colin Wright

Full Research Report: Wright, C (2026). *Climate Change Perceptions and Actions Survey: Methodology report waves 3 and 4*. Cardiff: Welsh Government, GSR report number 43/2026.
Available at: https://www.gov.wales/climate-change-perceptions-and-actions-survey-wave-3-and-4

For further information please contact:
Name: Louisa Smith
Division: Climate and Environment Research Team
Welsh Government
Cathays Park
Cardiff
CF10 3NQ
Email: ClimateAndEnvironmentResearch@gov.wales

Table of contents

List of tables

List of figures

Glossary

CAPI

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

The Market Research Society is the UK professional body for research, insight and analytics (Market Research Society). They 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, they 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 (Climate Action Wales Public Engagement Strategy 2023-26).

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 third and fourth of six planned survey waves against national datasets, noting differences where they occur. The equivalent outputs for waves 1 and 2 can be found in the Wave 1 and 2 Methodology Report.

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 To inform this research the Welsh Government specification outlined that the survey should be designed to be:

- Cross-sectional, each individual wave providing data that is a snapshot of attitudes and behaviours at that time.
- 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. Telephone interviews were excluded 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 have the 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[1]. 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 sample 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.

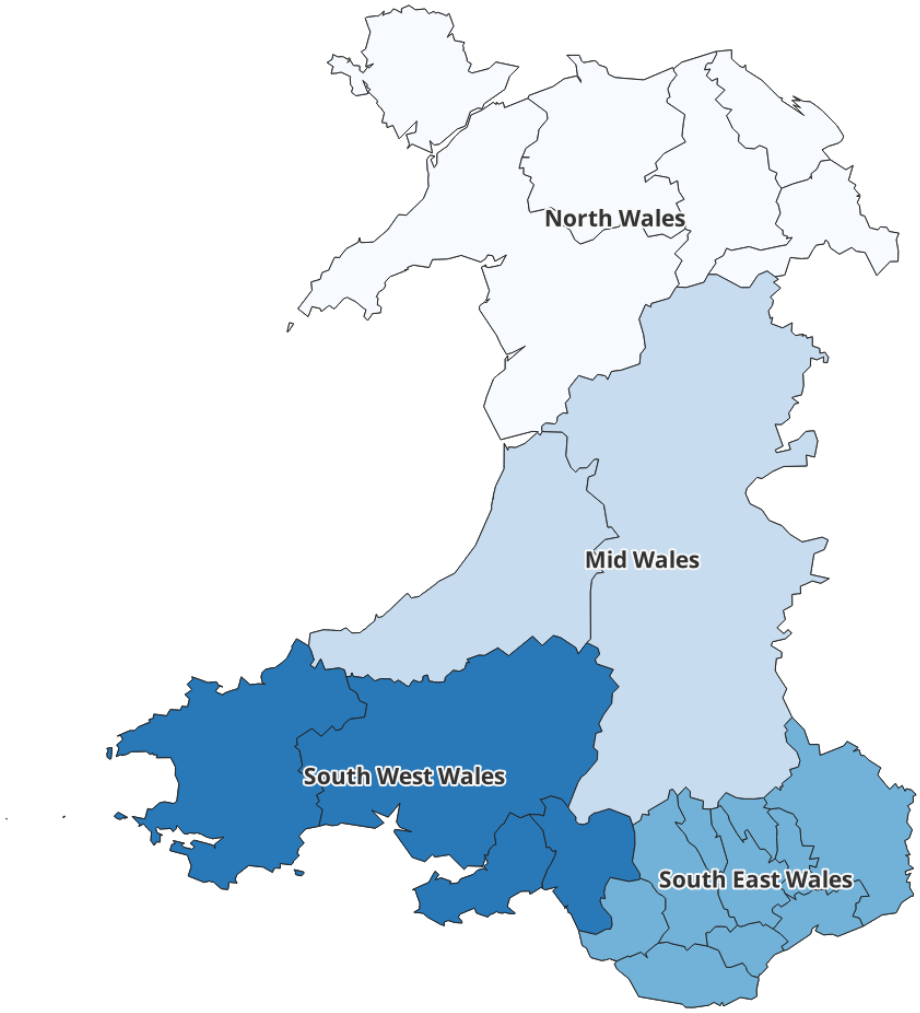
[1] Gustavson, K., von Soest, T., Karevold, E. et al. Attrition and generalizability in longitudinal studies: findings from a 15-year population-based study and a Monte Carlo simulation study. BMC Public Health 12, 918 (2012). BMC Public Health.

2.10 Stratification gives smaller error in estimation and greater precision than simple random sampling[2]. 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



Description of Figure 2.1: a map of Wales with four regions highlighted - North Wales, Mid Wales, South West Wales, and South East 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 (according to the 2021 census) was 1.347 million. Weighting by household in each of these regions gives North Wales 22.4% of households, Mid Wales 6.7%, South West Wales 22.6% and South East Wales 48.3%. Applying a further weighting in

[2] How Stratified Random Sampling Works Investopedia.

each of the four regions in respect of local authority provides the target number of responses to be undertaken (Table 2.1). These targets are the same for all survey waves.

Table 2.1 – Target responses by region and authority

Region	Authority	Households	Responses
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
	Total	**1,347,100**	**1000**

Source: 2021 UK Census, TS041 Number of Households

2.14 For a target of 1,000 responses, it was assessed that 35 fieldworker shifts (period of time in which fieldworkers distribute a target number of postcards), with each yielding about 30 completions 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.

Table 2.2 – Households and shifts by authority

Authority	Households	Target responses	Shifts unrounded	Shifts rounded
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
Total	1,347,100	1,000	35	35

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 3 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 3 survey, selected wards, authority and starting postcode district

Area	Authority	Ward	Starting Postcode District
N Wales	Isle of Anglesey	Aethwy	LL59
N Wales	Gwynedd	Arllechwedd	LL43
N Wales	Conwy	Marl	LL31

Area	Authority	Ward	Starting Postcode District
N Wales	Denbighshire	Prestatyn North (Prestatyn - Gogledd)	LL19
N Wales	Flintshire	Gwernaffield	CH7
N Wales	Flintshire	Shotton West (Shotton - Gorllewin)	CH5
N Wales	Wrexham	Brymbo	LL11
Mid Wales	Powys	Builth (Llanfair-ym-Muallt)	LD2
Mid Wales	Ceredigion	Aberystwyth Gogledd/ North (Aberystwyth Gogledd)	SY23
SW Wales	Pembrokeshire	Goodwick (Wdig)	SA64
SW Wales	Carmarthenshire	Dafen	SA14
SW Wales	Carmarthenshire	Llansteffan	SA33
SW Wales	Swansea	Landore (Glandwr)	SA1
SW Wales	Swansea	Landore (Glandwr)	SA4
SW Wales	Swansea	Penclawdd (Pen-clawdd)	SA4
SW Wales	Neath Port Talbot	Coedffranc Central (Coed-ffranc - Canol)	SA10
SW Wales	Neath Port Talbot	Pontardawe	SA8
SE Wales	Bridgend	Brackla (Bracla)	CF31
SE Wales	Bridgend	Morfa	CF31
SE Wales	Vale of Glamorgan	Baruc	CF62
SE Wales	Cardiff	Grangetown	CF11
SE Wales	Cardiff	Llanishen (Llanisien)	CF14
SE Wales	Cardiff	Plasnewydd	CF24
SE Wales	Cardiff	Rumney (Tredelerch)	CF3
SE Wales	Rhondda Cynon Taff	Abercynon	CF45
SE Wales	Rhondda Cynon Taff	Hirwaun	CF44
SE Wales	Rhondda Cynon Taff	Porth (Y Porth)	CF39
SE Wales	Merthyr Tydfil	Penydarren	CF47
SE Wales	Caerphilly	Aberbargoed (Aberbargod)	CF81
SE Wales	Caerphilly	Morgan Jones	CF83
SE Wales	Blaenau Gwent	Abertillery (Abertyleri)	NP13
SE Wales	Torfaen	Croesyceiliog South (Croesyceiliog - De)	NP44
SE Wales	Monmouthshire	Grofield	NP7

Area	Authority	Ward	Starting Postcode District
SE Wales	Newport	Gaer (Y Gaer)	NP20
SE Wales	Newport	Ringland	NP19

Source: Accent

2.17 The selected Wards and the randomly selected interview starting postcode district (first part of a postcode) for wave 4 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 4 survey, selected wards, authority and starting postcode district

Area	Authority	Ward	Starting Postcode District
N Wales	Isle of Anglesey	Llifôn	LL65
N Wales	Gwynedd	Groeslon (Y Groeslon)	LL54
N Wales	Conwy	Pensarn (Pen-sarn)	LL22
N Wales	Denbighshire	Llandyrnog	LL16
N Wales	Flintshire	Aston	CH5
N Wales	Flintshire	Gwernymynydd	CH7
N Wales	Wrexham	Ponciau	LL14
Mid Wales	Powys	Montgomery (Trefaldwyn)	SY15
Mid Wales	Ceredigion	Faenor	SY23
SW Wales	Pembrokeshire	Narberth (Arberth)	SA67
SW Wales	Carmarthenshire	Glanymor	SA16
SW Wales	Carmarthenshire	Pembrey (Pembre)	SA16
SW Wales	Swansea	Clydach	SA6
SW Wales	Swansea	Killay South (Cila - De)	SA2
SW Wales	Swansea	Mynyddbach (Mynydd-bach)	SA5
SW Wales	Neath Port Talbot	Briton Ferry West (Llansawel Gorllewin)	SA10
SW Wales	Neath Port Talbot	Lower Brynamman (Brynaman Isaf)	SA18
SE Wales	Bridgend	Bryntirion, Laleston and Merthyr Mawr (Bryntirion, Laleston a Merthyr Mawr)	CF32
SE Wales	Bridgend	Newcastle (Y Castellnewydd)	CF31
SE Wales	Vale of Glamorgan	Llantwit Major (Llanilltud Fawr)	CF61
SE Wales	Cardiff	Creigiau/St. Fagans (Creigiau/Sain Ffagan)	CF15

Area	Authority	Ward	Starting Postcode District
SE Wales	Cardiff	Gabalfa	CF14
SE Wales	Cardiff	Llandaff (Llandaf)	CF5
SE Wales	Cardiff	Pentwyn (Pen-twyn)	CF23
SE Wales	Rhondda Cynon Taff	Brynna	CF72
SE Wales	Rhondda Cynon Taff	Llantrisant Town (Tref Llantrisant)	CF72
SE Wales	Rhondda Cynon Taff	Rhondda	CF39
SE Wales	Merthyr Tydfil	Dowlais	CF48
SE Wales	Caerphilly	Cefn Fforest	NP12
SE Wales	Caerphilly	Penmaen	NP12
SE Wales	Blaenau Gwent	Rassau (Rasa)	NP23
SE Wales	Torfaen	Snatchwood	NP4
SE Wales	Monmouthshire	St. Christopher's	NP16
SE Wales	Newport	Pillgwenlly (Pilgwenlli)	NP20
SE Wales	Newport	Victoria	NP19

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 minimise 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 would 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.

2.22 For both waves 3 and 4 the number of face to face interviews were increased to overcome difficulty in obtaining the target number of responses to the survey. Face to face interviews were offered to any respondent, not just the vulnerable as described above. Up to eight face-to-face interviews were conducted each shift.

2.23 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.

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

Figure 2.2 – Wave 4 survey postcard

Description of Figure 2.2: English and Welsh language postcard with a link to the survey and a unique ID.

2.25 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

2.26 The questionnaire development comprised an evidence review, survey design, cognitive testing, pilot survey and final survey changes. Further details are given in the Wave 1 and 2 Methodology Report.

Changes following waves 1 and 2

2.27 The questionnaire for waves 3 and 4 was changed (Q22) to replace knowledge of Welsh Government's Net Zero target and the action Welsh Government is taking to help people make green choices, with knowledge on related topics including climate adaptation and the nature emergency.

2.28 The updated surveys for wave 3 and 4 were not subject to cognitive or pilot testing.

Fieldwork

2.29 A summary of the fieldwork and responses for waves 3 and 4 are provided in Table 2.5 below.

Table 2.5 – Fieldwork summary

Region	Wave 3	Wave 4
Fieldwork dates	19/08/2024 – 23/09/2024	18/02/2025 – 30/03/2025
Postcards distributed	13,598	17,830
Surveys completed	939	1,001
Online completions	563	735
Face to face completions	376	266
Welsh language completions	10	22
Response rate	6.9%	5.6%

Source: Climate Change Perceptions and Actions Survey, wave 1 to 4, 2023 to 2025

2.30 The response rate by region for wave 3 is given in Table 2.6.

Table 2.6 – Wave 3 response rate by region

Region	Postcards distributed	Responses	Response rate
North Wales	1,914	85	4.4%
Mid Wales	652	59	9.0%
South West Wales	2,840	227	7.9%
South East Wales	8,192	567	6.9%
Total	13,598	938	6.9%

Source: Climate Change Perceptions and Actions Survey, wave 3 2024

2.31 The response rate by region for wave 4 is given in Table 2.7.

Table 2.7 – Wave 4 response rate by region

Region	Postcards distributed	Responses	Response rate
North Wales	3,451	103	2.9%

Region	Postcards distributed	Responses	Response rate
Mid Wales	751	49	6.5%
South West Wales	4,048	271	6.7%
South East Wales	9,580	573	5.9%
Total	17,830	1,001	5.6%

Source: Climate Change Perceptions and Actions Survey, wave 4 2025

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

Table 2.8 – Interviews by local authority

Region	Authority	Target	Wave 3	Wave 4
N Wales	Isle of Anglesey	23	7	11
N Wales	Gwynedd	38	9	17
N Wales	Conwy	39	18	18
N Wales	Denbighshire	31	24	12
N Wales	Flintshire	50	16	19
N Wales	Wrexham	43	11	26
Mid Wales	Powys	45	30	12
Mid Wales	Ceredigion	23	**29**	**37**
SW Wales	Pembrokeshire	41	20	37
SW Wales	Carmarthenshire	61	54	**73**
SW Wales	Swansea	78	**90**	**117**
SW Wales	Neath Port Talbot	46	**63**	44
SE Wales	Bridgend	46	**52**	43
SE Wales	Vale of Glamorgan	43	43	26
SE Wales	Cardiff	109	**117**	**212**
SE Wales	Rhondda Cynon Taf	77	**78**	70
SE Wales	Merthyr Tydfil	19	**29**	19
SE Wales	Caerphilly	57	**77**	**59**
SE Wales	Blaenau Gwent	22	**33**	**33**
SE Wales	Torfaen	30	**65**	21
SE Wales	Monmouthshire	30	**31**	**33**
SE Wales	Newport	49	42	**57**
	Total	1,000	938	996

Source: Climate Change Perceptions and Actions Survey, wave 1 to 4, 2023 - 2025

2.33 Analysis of the survey outputs are provided in the Wave 3 and Wave 4 Survey Outputs reports.

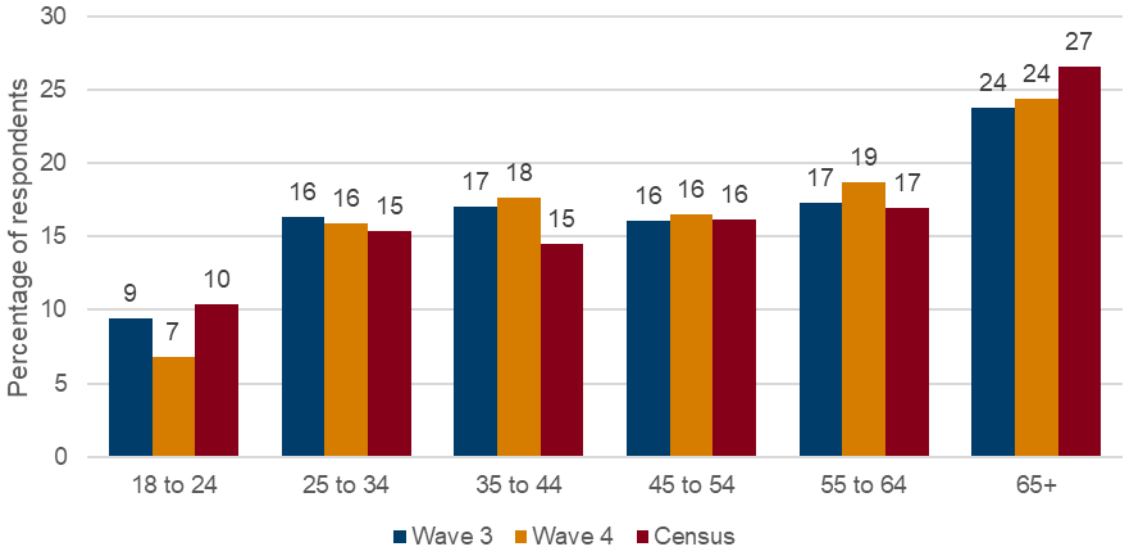
3. Sample demographics

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 waves 3 and 4 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 from waves 3 and 4 compared with 2021 census data for Wales – 'What age group do you fall into?'



Description of Figure 3.1: A column chart showing proportion of respondents in each age group from waves 3 and 4 compared to the 2021 census.

Source: Climate Change Perceptions and Actions Survey, wave 1 to 4, 2024 – 2025. Multiple choice. Questions asked of all. 'Prefer not to say' excluded. Base W3 = 937, Base W4 = 995.

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 onwards asked 'Would you describe yourself as'. Both questions allowed respondents to indicate 'prefer not to say'. As the question did not specify whether it

was asking for sex or gender, caution is recommended when interpreting these findings.

3.4 The responses from waves 3 and 4 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 from waves 3 and 4 compared with 2021 census data for Wales –'Would you describe yourself as?'

Male and Female	Wave 3 Survey	Wave 4 Survey	2021 Census
Male	46%	48%	48%
Female	53%	51%	52%
Prefer not to say / Other	1%	1%	-

Source: Climate Change Perceptions and Actions Survey, waves 3 and 4, 2024 – 2025. Multiple choice. Questions asked of all. 'Prefer not to say' excluded. Base W3 = 937, Base W4 = 1,000.

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

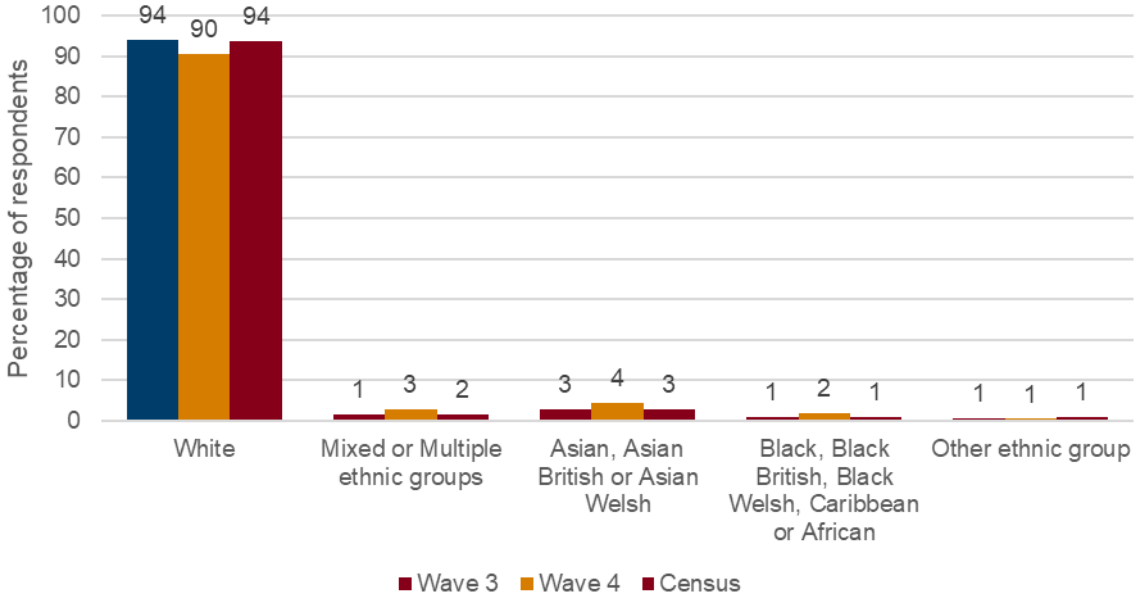
3.5 The proportion of respondents of both surveys identifying as male or female align broadly with the census data.

Ethnicity

3.6 The ethnicity responses from waves 3 and 4 are presented in

3.7 Figure 3.2 alongside 2021 census data for Wales.

Figure 3.2 – Ethnicity responses from waves 3 and 4 compared to 2021 census data for Wales – 'What is your ethnic group?'



Description of Figure 3.2: A column chart showing proportion of respondents in ethnicity groups from waves 3 and 4 compared to the 2021 census.

Source: Climate Change Perceptions and Actions Survey, waves 3 and 4, 2024 – 2025. Multiple choice. Questions asked of all. ‘Prefer not to say’ excluded. Base W3 = 934, Base W4 = 981.

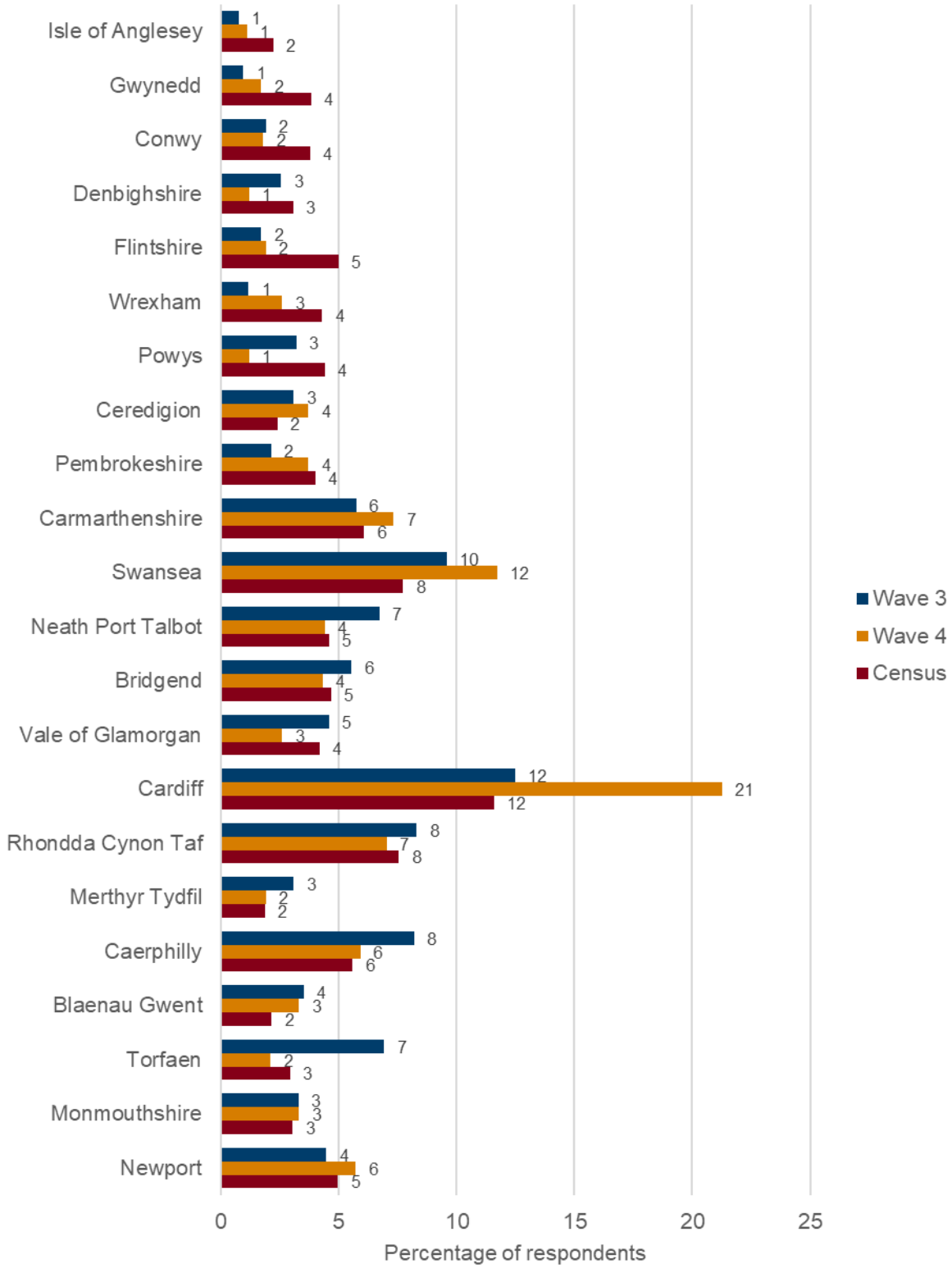
Census data: 2021 UK Census, TS021 Ethnic group.

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

Location

3.9 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 from waves 3 and 4 compared with 2021 census data for Wales – 'In which Local Authority do you live?'



Description of Figure 3.3: A bar chart showing proportion of respondents living in each of Wales' local authorities in waves 3 and 4 compared to the 2021 census.

Source: Climate Change Perceptions and Actions Survey, waves 3 and 4, 2024 – 2025. Multiple choice. Questions asked of all. 'Prefer not to say' excluded. Base W3 = 938, Base W4 = 996.

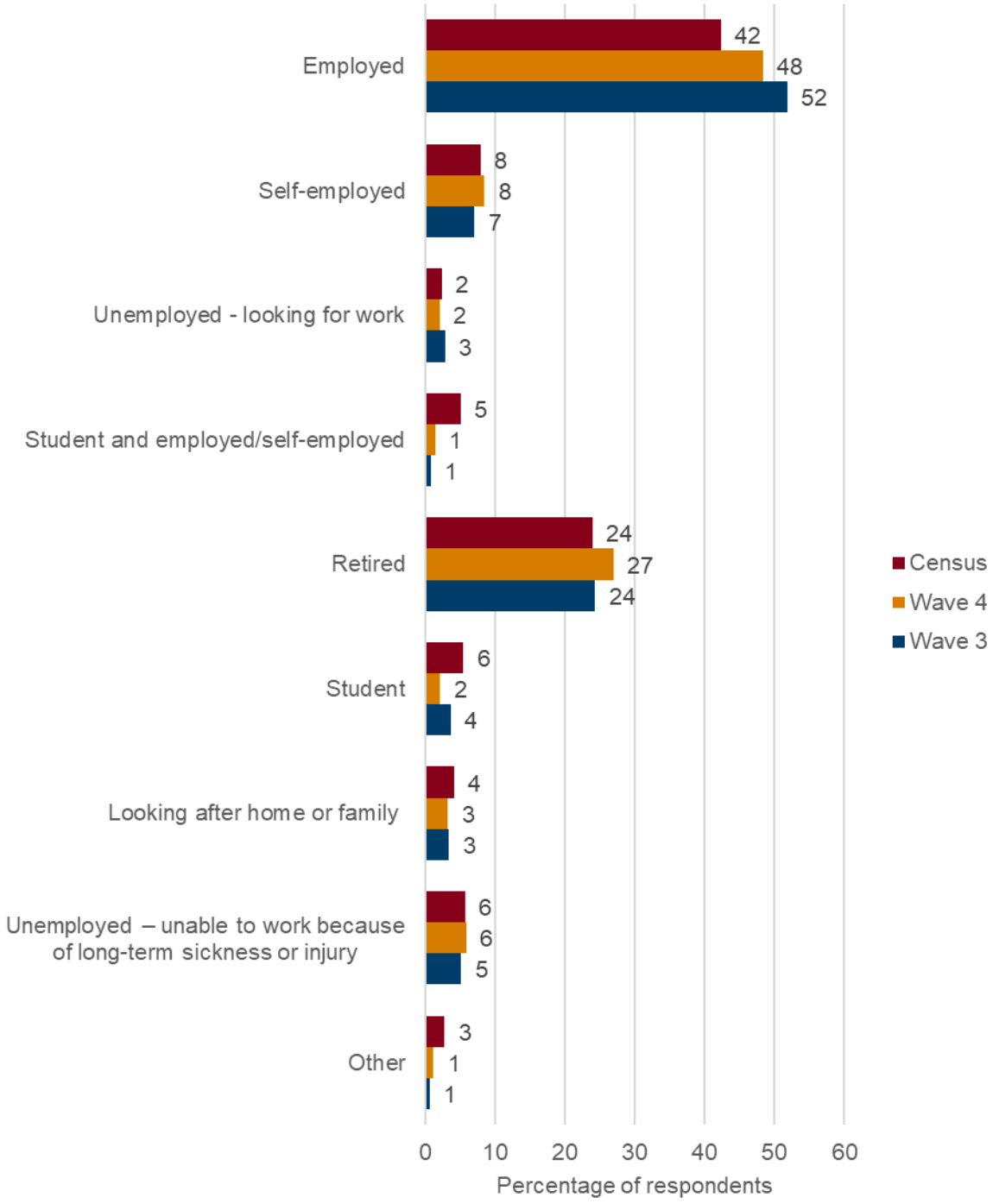
Census data: 2021 UK Census, TS007 Age by single year.

3.10 The proportion of respondents of both surveys is broadly in line with the census data. However, Cardiff exceeds the expected proportion in wave 4 by 9 percentage points. This is due to a higher response rate to the survey in this area, in wave 4 the number of responses was nearly two times the target (Table 2.7).

Work status

3.11 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 from wave 3 and 4 compared with 2021 census data for Wales – 'Which of the following best describes your work status?'



Description of Figure 3.4: A bar chart showing proportion of respondents' economic activity in waves 3 and 4 compared to the 2021 census.

Source: Climate Change Perceptions and Actions Survey, waves 3 and 4, 2024 – 2025. Multiple choice. Questions asked of all. 'Prefer not to say' excluded. Base W3 = 931, Base W4 = 967.

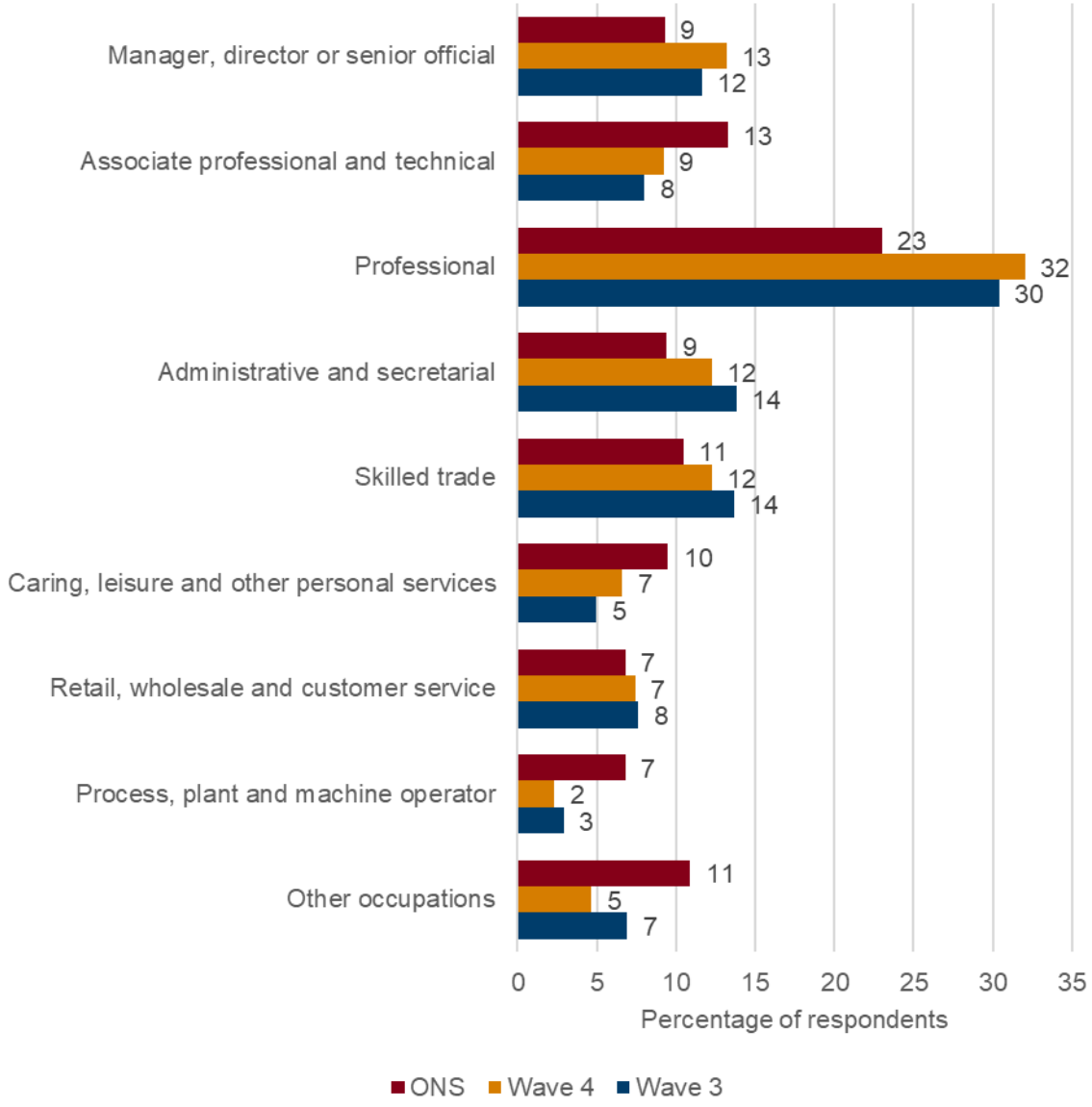
Census data: 2021 UK Census, TS066 Economic activity status

3.12 The economic activity of the respondents of both surveys align with the census data, although both saw a higher proportion of employed individuals and fewer students in comparison to the census.

Occupation

3.13 Respondents were asked to select the occupational group to which the household's main income earner belonged . 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 for waves 3 and 4 compared with 2022 annual population survey - Which occupational group the chief income earner in your household belongs to?



Description of Figure 3.5:A bar chart showing proportion of respondents occupational group in waves 3 and 4 compared to 2022 ONS data

Source: Climate Change Perceptions and Actions Survey, waves 3 and 4, 2024 – 2025. Multiple choice. Questions asked of all. 'Prefer not to say' excluded. Base W3 = 723, Base W4 = 727.

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

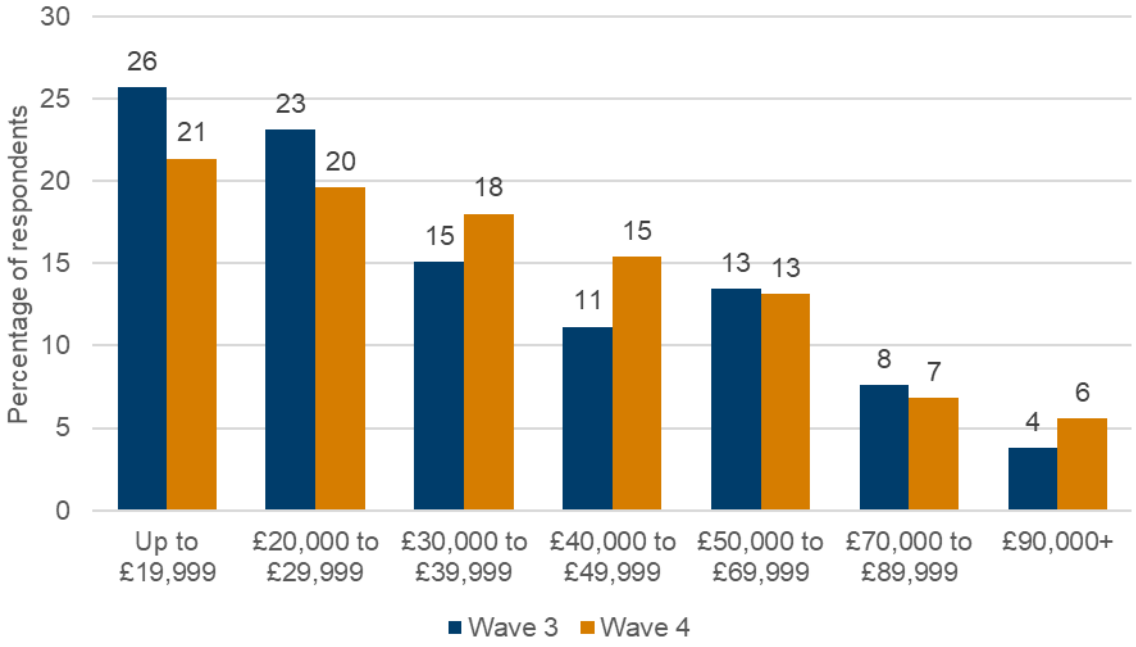
3.14 The comparison of the survey responses with the census dataset shows that a higher proportion of the survey respondents are in professional occupations. This

may be because the survey only asked the occupation of the head of the household, whereas the ONS data includes all members of the household over the age of 16. 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

3.15 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 responses from wave 3 and 4 – ‘Please indicate the approximate income of your household per year (before tax and any other deductions)?’



Description of Figure 3.6: A column chart showing household income for waves 3 and 4.

Source: Climate Change Perceptions and Actions Survey, waves 3 and 4, 2024 – 2025. Multiple choice. Questions asked of all. ‘Prefer not to say’ excluded. Base W3 = 735, Base W4 = 805.

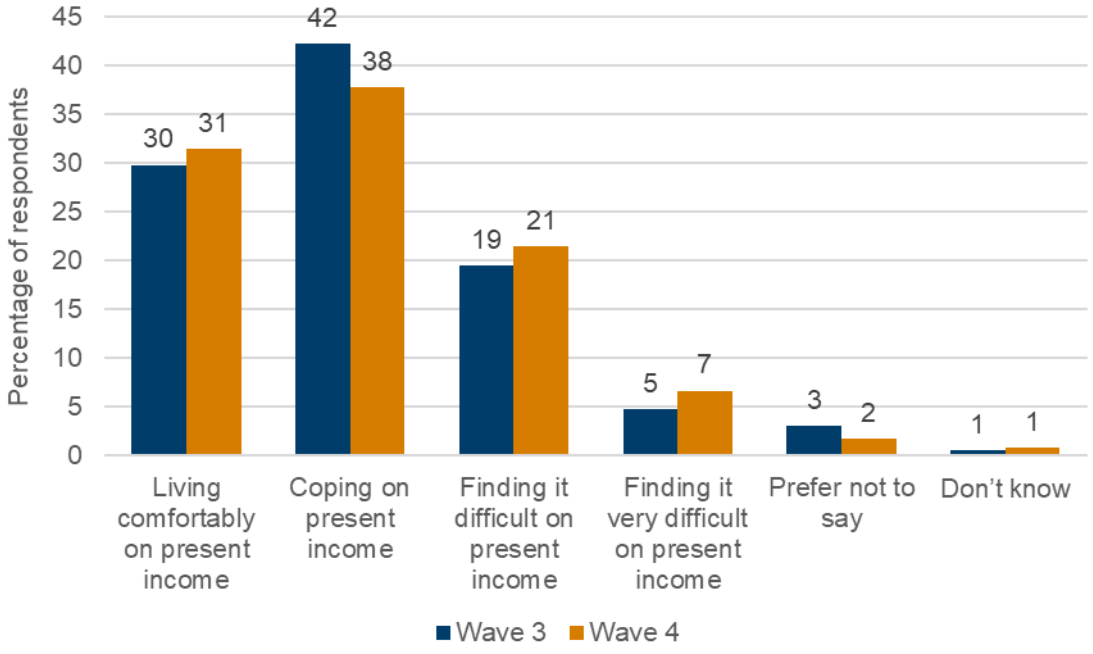
3.16 In wave 3, 17% selected “Prefer not to say” and 5% selected “Don’t know” in response to this question. This was similar in wave 4, 15% selected “Prefer not to say” and 4% selected “Don’t know”.

3.17 The average household income of survey respondents was £38,800 in wave 3, and £40,800 in wave 4. 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.

3.18 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[3]. 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 3 (£38,800), but lower than that of wave 4 (£40,800). The low response rate to this question (78% response in wave 3, 81% in wave 4) should be borne in mind when interpreting results using these data.

3.19 Respondents were asked how they felt about their annual household income. The responses are presented in Figure 3.7.

Figure 3.7 – Annual household income responses from wave 3 and 4 – 'Which of the following comes closest to how you feel about your household's income these days?'



Description of Figure 3.7: Column chart showing how wave 3 and 4 respondents felt about their household income

Source: Climate Change Perceptions and Actions Survey, waves 3 and 4, 2024 - 2025. Multiple choice. Questions asked of all. Base W3 = 939, Base W4 = 1001.

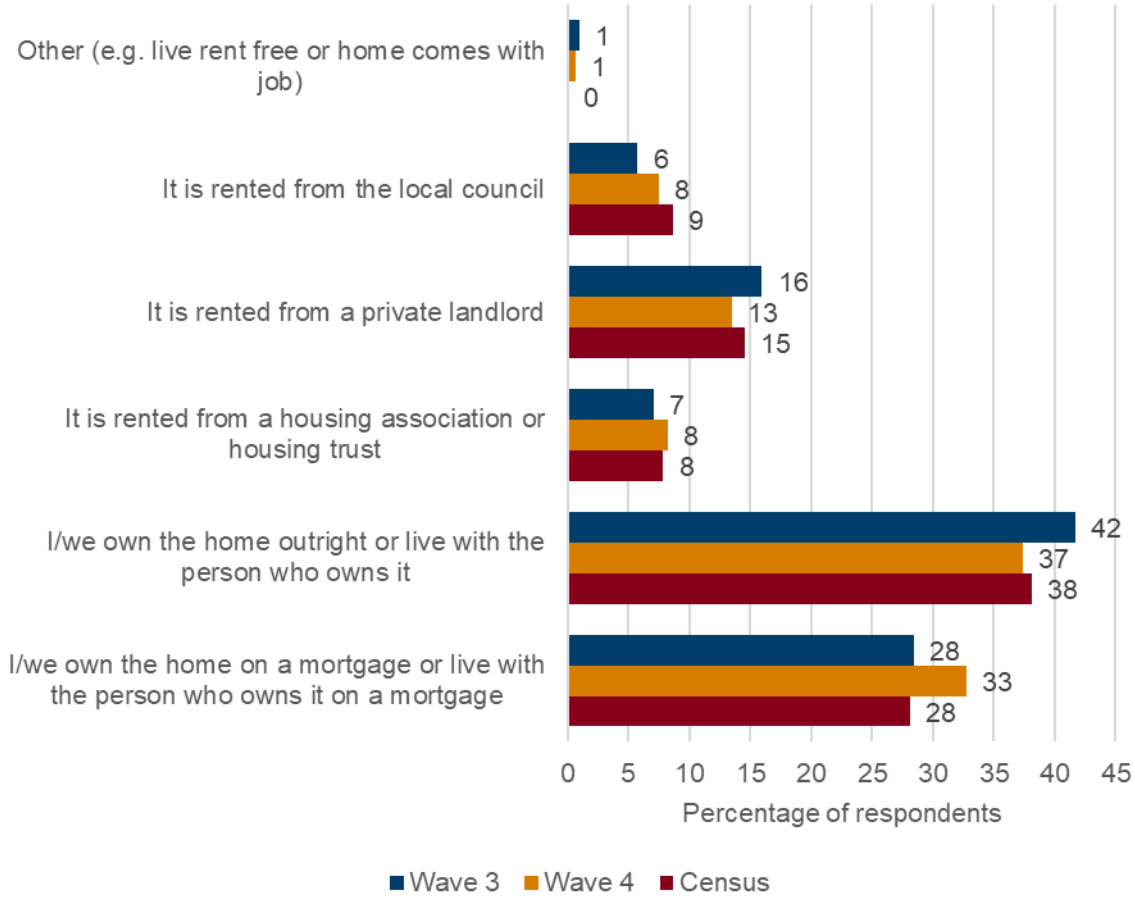
3.20 In both waves, around a quarter of the respondents (24% in wave 3, 28% in wave 4) stated that they were finding it difficult or very difficult on the current household income.

[3] "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).

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 from waves 3 and 4 compared with 2021 census data for Wales – 'Does your household own or rent your accommodation?'



Description of Figure 3.8: Bar chart showing proportion of respondents' tenure status in wave 3 and 4 compared to the 2021 census.

Source: Climate Change Perceptions and Actions Survey, waves 3 and 4, 2024 - 2025. Multiple choice. Questions asked of all.. 'Don't know' and 'Prefer not to say' excluded. Base W3 = 920, Base W2 = 971.

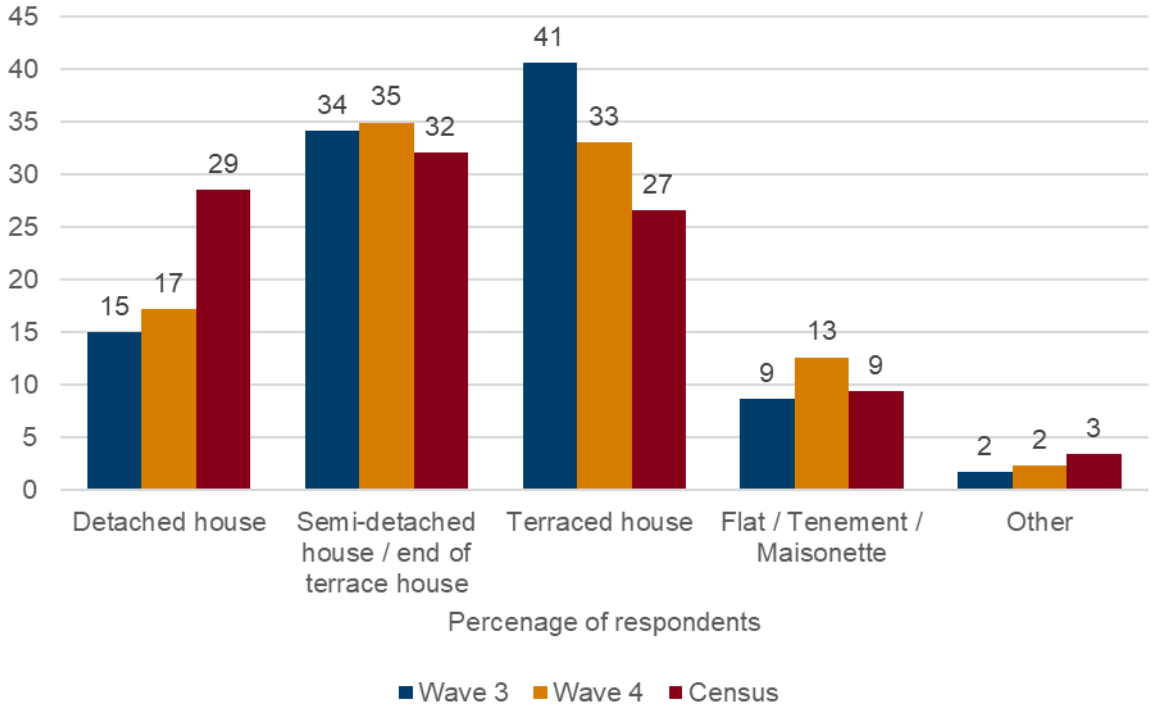
Census data: 2021 UK Census, TS054 Tenure.

3.22 The tenure proportions of the respondents of both surveys are broadly in line with the census data, although in both waves of the survey data there are slightly more home-owners than the census data (70% in both wave 3 and 4 compared to 66% in census), and slightly fewer renters than the census data (29% in both wave 3 and 4 compared to 31% in census).

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 from waves 3 and 4 compared with 2021 census data for Wales – 'What type of property does your household live in?'



Description of Figure 3.9: A column chart showing proportion of respondents' property type in waves 3 and 4 compared to the 2021 census. I

Source: Climate Change Perceptions and Actions Survey, waves 3 and 4, 2024 – 2025. Multiple choice. Questions asked of all. 'Prefer not to say' and 'Don't know' excluded. Base W3 = 927, Base W4 = 985.

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, both surveys show variation when compared to census data for detached and terraced housing. The surveys have a lower proportion of detached houses and a higher proportion of terraced houses than the census. 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 and related topics including climate adaptation and the nature emergency. 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 3 fieldwork was undertaken in August and September 2024. A total of 939 surveys were completed for Wave 3, with a response rate of 6.9%. Wave 4 fieldwork was undertaken in February and March 2025. A total of 1,001 surveys were completed for Wave 4, with a response rate of 5.6%.

4.5 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.

4.6 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

4.7 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.

4.8 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.

4.9 The survey's findings may have been influenced by the media environment. Items that were topical in the media at the time of the survey could have affected the strength of feeling expressed by respondents, potentially exaggerating certain attitudes or concerns in ways that do not accurately represent long-term views.

4.10 The Climate Action Wales Public Engagement Strategy discusses ambitions to explore the knowledge and actions of 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.

4.11 Lastly, the survey's analysis was exclusively bivariate, meaning it only considered the relationship between two variables at a time. This approach does not capture how multiple factors may interact to influence individuals' attitudes and behaviours around climate change. It is possible that observed associations between

demographic variables and climate change attitudes or behaviours could be explained by confounding variables. Multivariate analysis would provide a more nuanced understanding of the determinants of climate change perceptions and actions, and would allow controlling for confounding relationships.