



UK Government

RAF034/2526: Factors affecting the take-up of cooling adaptations

Technical annex

Authors

The research was conducted by Verian on behalf of the Department for Energy Security and Net Zero (DESNZ).

Views expressed in this report are from the relevant research agency, based on data collected from research participants and other evidence, and not necessarily those of the UK government.



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Annex 1. Rapid evidence assessment

1.1 Methodology

The REA considered academic and grey literature (i.e. research not published through traditional academic channels) referring to a range of cooling actions, including low effort behaviours, low-cost actions (such as installing blinds) and more substantive actions that involve upfront and ongoing costs. As well as research from the UK, international sources were included, prioritising geographies/contexts that have relevance to the UK (e.g. Germany).

We compiled a list of evidence from Google Scholar using Publish or Perish (version eight, [3]) to conduct the search and export the search results. We performed two searches, one per research question. For each, we entered search strings into the keywords search function (see Error! Reference source not found.) and applied a date filter consistent with the inclusion and exclusion criteria (see Error! Reference source not found.). Publish or Perish queries Google Scholar to obtain the results list, returning results that match the search terms anywhere in the searched documents (author, title, source, abstract, references etc).

We also conducted separate Google searches, to identify grey literature that may have been missed by the more academic search engines, using the same strings as used for the Google Scholar search.

Overall, we aimed to identify a longlist of around 50 papers. To select the final 15 reports prioritisation criteria included:

- **Year of publication:** newer evidence prioritised over older evidence
- **Paper type:** evidence reviews/meta-analyses, primary research prioritised
- **Relevance to the UK:** evidence from the UK prioritised over international evidence
- **Relevance to home cooling measures:** evidence specific to taking up home cooling measures prioritised above evidence related to similar behaviours (such as installing general decarbonisation measures in homes)
- **Type of cooling action:** coverage of a range of actions (e.g. low effort, low-cost behaviours as well as more substantial retrofitting)
- **Coverage of vulnerable groups:** evidence that covered vulnerable groups of interest was prioritised
- **Coverage of barriers and enablers:** evidence that explicitly referred to barriers and enablers of actions

Of the 15 papers, 2 were included at the request of the DESNZ team to provide context on the UK's built environment. These did not go through the selection criteria detailed above.

We reviewed the final 15 reports (listed in section 1.2 below), compiling data into a data extraction template.

We used the output to help identify groups to include in the research, the survey questionnaire and the qualitative research discussion guide.

1.2 Papers included

Table 1: Papers selected and their characteristics

Paper	Evidence type	Countries	Sample	Policy focus/relevance
Beckmann and others (2021)	Survey; Temperature measurement	Germany	General population	Adaptation measures in private households
DESNZ (2024) ¹	Literature review	England	n/a	Home energy efficiency measures
Erens and others (2021)	Survey	England	Those aged 75+; those aged 18–74 in poor health; other ('not vulnerable')	The Heatwave Plan for England (HWP) level 3 heat-health alert
Hass and others (2021)	Literature review	International, including UK (mainly USA, China and Australia)	n/a	Perceptions of extreme heat
Hoggett and others (2025)	Literature review	UK	n/a	Adoption of low-carbon cooling measures
Howarth and others (2019)	Review of policy measures	UK	n/a	Resilience to hot weather
Howarth and others (2024)	Review of policy measures	UK	Stakeholders (government, agencies, first responders, utilities, civil society)	Learning from the summer 2022 heatwaves
Johar and others (2025)	Literature review	International, not including UK (mainly high-income)	Some analysis of vulnerable subgroups	Community-based heat adaptation behavioural interventions
McLoughlin and others (2023)	Literature review	International, including UK	n/a	Communication intervention approaches

¹ This paper was included at the request of the DESNZ team.

Paper	Evidence type	Countries	Sample	Policy focus/relevance
Murtagh and others (2019)	Survey	England	General population	Householder installation of precautionary measures
Olson and others (2023)	Content analysis	USA	n/a	National Weather Services' forecasters' public communications
Valois and others (2020)	Mixed methods pilot	Canada	Those aged 65+	Cooling actions among older people
Voke and others (2025) ²	Case study	England	General population	Adapting homes to heat
Vu and others (2019)	Literature review	International, including UK (all high-income)	Those aged 65+	Heat prevention and adaptation actions among older people
Williams and others (2019) ³	Evaluation	England	Those aged 75+; those aged 18–74 in poor health; other ('not vulnerable')	The Heatwave Plan for England (HWP)

² This paper was included at the request of the DESNZ team.

³ Note that Williams and others (2019) included the results of the survey discussed in Erens and others (2021).

Annex 2. Quantitative research

2.1 Quantitative methodology

We recruited a sample of 1,607 survey respondents from Verian's random probability panel, Public Voice. This is a random probability panel with participants randomly selected from the Royal Mail Postcode Address File. We used a UK representative sample of 3,486 panellists, based on age, ethnicity, household composition, accommodation type (flat, [semi-]detached or terraced housing), ownership type (rent or own), health conditions, region of the country and whether they were rural or urban dwellers. We oversampled participants with health conditions to ensure robust analysis of participants with this characteristic. The full sample composition can be found in section 2.3 Quantitative sample.

Fieldwork was conducted between 6th and 28th January 2026. Emails, SMS messages and (for some panellists) posted letters were used to encourage response from sampled panel members. A total of 1,649 panel members completed the survey, a conversion rate of 47%.

The questionnaire is provided in section 2.4 Survey questionnaire. We excluded the fastest responses: those with a completion time less than 35% of the median. We additionally processed the numeric variables on monthly income, mortgage and rent payments and energy bill payments to derive an indicator of potential fuel poverty as follows:

- Values of reported income above the 95th percentile were presumed be to annual figures rather than monthly figures. We divided these values by twelve
- We treated any response to monthly income, mortgage and rent payments and energy bill payments of £1 as participants intending to not answer the question⁴. As such, we treated these responses as missing
- We calculated the indicator of potential fuel poverty as:

$$\text{monthly energy bill payments} / (\text{monthly income} - \text{monthly mortgage/rent payments}) * 100\%$$

This variable was calculated only where monthly income was not missing, and the sum of mortgage/rent payments and energy bill payments was less than monthly income

- Participants whose indicator of potential fuel poverty exceeded 10% were classified as potentially fuel poor

We report descriptive outcomes in report, weighted to be nationally representative (see below). We did not conduct significance testing of the survey results. The quantitative research considered many outcome measures (85) and subgroups (55), which means that if we had conducted statistical testing it is likely many results would have been false positives.

⁴ We note that the 'Prefer not to answer' option for these questions only became visible when respondents tried to skip the question.

2.2 Survey weighting approach

The survey results were weighted to ensure the final data were representative of the UK population of adults aged 16+. The respondent sample was weighted in three stages:

- **Survey base weight:** each respondent was assigned a base weight reflecting how likely they were to be selected from the panel. This was used as weight (1).
- **Propensity score weight:** a propensity score weight was estimated for each respondent using a set of recruitment survey variables. Technically, this weight represents the estimated odds of a respondent appearing in the weighted panel dataset rather than in the survey-base-weighted respondent dataset, when the latter is added to the former (i.e. respondents are present in both datasets). To avoid over-reliance on the model, the propensity score weight was constrained to fall within the inter-95th percentile range. This was used as weight (2).
- **Calibration to population benchmarks:** The product of weights (1) and (2) was used as the starting point for calibration, with values trimmed to lie between the 1st and 99th percentiles. The respondent sample was then calibrated to the latest available weighted ONS Annual Population Survey (2024), with respect to sex by age group and region. The calibration was performed using the classic raking algorithm, which is transparent, avoids negative weights, and preserves much of the sample's covariance structure.

To assess the representativeness of the weighted respondent dataset, we compared it to the base-weighted panel dataset across 355 category-level proportions derived from 92 recruitment survey variables (both demographic and non-demographic). The median difference between the two datasets was 1.0 percentage points, with 92% of differences falling within three percentage points.

The table below presents the population level data used to calculate the survey weights, based on the ONS Annual Population Survey (2024).

Variable	Category	% of population
Total sample	All	100%
Age/gender	Male 16-24	5.2%
	Male 25-34	8.6%
	Male 35-44	8.1%
	Male 45-54	8.2%
	Male 55-64	7.9%
	Male 65-74	6.3%
	Male 75+	4.6%
	Female 16-24	5.0%
	Female 25-34	8.4%

Variable	Category	% of population
	Female 35-44	8.2%
	Female 45-54	8.4%
	Female 55-64	8.3%
	Female 65-74	7.0%
	Female 75+	5.8%
Region	North East England	4.0%
	North West England	10.9%
	Yorkshire & The Humber	8.2%
	East Midlands	7.2%
	West Midlands	8.8%
	East of England	9.4%
	London	13.4%
	South East England	13.7%
	South West England	8.6%
	Northern Ireland	2.6%
	Wales	4.8%
	Scotland	8.4%

2.3 Quantitative sample

The following table sets out the quantitative sample; please note that sample sizes do not always sum to 100% due to excluded or missing values.

Category		Number (unweighted)	% (unweighted)	Number (weighted)	% (weighted)
Total		1,607	100%	1,607	100%
Age^[a]	18–24	137	9%	175	11%
	25–34	227	14%	266	17%
	35–44	298	19%	259	16%
	45–54	261	16%	262	16%
	55–64	280	17%	253	16%
	65+	376	23%	356	22%
Sex^[a]	Male	745	46%	779	49%
	Female	849	53%	813	51%
Health	Stamina, breathing or fatigue condition	258	16%	220	14%
	Sensory condition	215	13%	187	12%
	Movement condition	286	18%	215	13%
	Cognitive condition	245	15%	208	13%
	Mental health condition	307	19%	254	16%
	Other condition	61	4%	37	2%

Category		Number (unweighted)	% (unweighted)	Number (weighted)	% (weighted)
	No health condition	815	51%	918	57%
Subjective perceived risk of overheating	Yes	470	29%	412	26%
	No	1,137	71%	1,195	74%
Experienced overheating yourself	Yes	386	24%	339	21%
	No	1,221	76%	1,268	79%
Experienced overheating in others	Yes	327	20%	311	19%
	No	1,280	80%	1,296	81%
Ethnicity^[a]	Any ethnic minority	161	10%	166	10%
	White British or other White background	1,092	68%	1,085	67%
Has caring responsibility	Yes	171	11%	151	9%
	No	1,084	67%	1,101	69%
Educational attainment	No academic/vocational attainment	114	7%	133	8%
	Non-degree qualification	663	41%	691	43%
	Degree qualification	478	30%	426	26%
Young children (<5) in household	Yes	141	9%	145	9%
	No	1,466	91%	1,462	91%

Category		Number (unweighted)	% (unweighted)	Number (weighted)	% (weighted)
Number of people in the household	Single-adult household	226	14%	223	14%
	Multi-adult household	1,357	84%	1,358	85%
Potentially fuel poor	Yes	458	29%	442	27%
	No	914	57%	932	58%
Ability to make changes to the house	Yes, both inside and outside	1,078	67%	1,081	67%
	Yes, inside only	255	16%	242	15%
	No	274	17%	284	18%
Locality ^[a]	Urban	1,287	80%	1,270	79%
	Rural	273	17%	285	18%
Nation ^[a]	England	1,361	85%	1,351	84%
	Northern Ireland	38	2%	43	3%
	Scotland	133	8%	135	8%
	Wales	75	5%	77	5%
Accommodation type	Flat	327	20%	313	20%
	(Semi-) detached	849	53%	882	55%
	Terraced	373	23%	361	22%
Occupation type ^[a]	Own	965	60%	940	58%

Category		Number (unweighted)	% (unweighted)	Number (weighted)	% (weighted)
	Rent or other type	642	40%	667	42%
Knowing definition of Net Zero	Yes	872	54%	856	53%
	No	735	46%	751	47%
Number of Net Zero actions taken	0	70	4%	83	5%
	1–3	313	19%	343	21%
	4–6	574	36%	568	35%
	7–9	485	30%	463	29%
	10+	128	8%	116	7%

[a] This variable was drawn from panel data rather than asked in the survey

2.4 Survey questionnaire

Question names are denoted with bold text; Script instructions are denoted within square brackets.

Introduction

[ASK ALL]

[SINGLE CODE]

Welcome to the latest Public Voice survey. Verian, an independent social research agency, is conducting this survey for the Department of Energy Security and Net Zero (DESNZ). This survey is about actions you can take to keep yourself cool during particularly hot weather.

The survey will take around 15 minutes to complete and you will receive a £10 voucher for your time.

Taking part in the survey is voluntary and you don't have to answer any questions that you don't want to. The information you provide will be used only for research purposes. The survey results will be shared with DESNZ, but they will not see your individual responses and the research findings will not identify you.

You can read our privacy policy by visiting www.pvoice.co.uk/. Your answers will be processed in compliance with the Data Protection Act 2018 and General Data Protection Regulation.

If you are happy to continue to the survey, please click 'Next'.

ACCOMMODATION_TYPE

[ASK ALL]

[SINGLE CODE]

In what type of accommodation do you live?

1. Flat (purpose built)
2. Flat (in a house or maisonette)
3. Semi-detached house
4. Detached house
5. End terrace house
6. Mid terrace house
96. Other

OCCUPATION_TYPE

[ASK ALL]

[SINGLE CODE]

In which of these ways do you occupy this accommodation?

1. Own it outright
2. Bought it with the help of a mortgage or loan
3. Pay part rent and part mortgage (shared ownership)
4. Rent it
5. Live here rent-free (including rent-free in relative's/friend's property)
96. Other

CHANGE_POSSIBILITY

[ASK ALL]

[SINGLE CODE]

Are you allowed to make changes to your accommodation? For example, making renovations or remodelling your accommodation?

1. Yes, both outside and inside
2. Yes, but not on the outside (e.g., painting outside walls or roof installations)
3. No

ENJOYMENT

[ASK ALL]

[SINGLE CODE]

For the next couple of questions, we want to ask you about what you might do during periods of particularly hot weather.

To help you think about this, imagine that it is the middle of summer. For several days, temperatures have been much higher than usual – around 30°C during the day and staying warm overnight. You're aware that this could last for a while.

Which of these statements best describes how you feel about particularly hot weather as described?

1. I really like particularly hot weather
2. I quite like particularly hot weather
3. I don't mind particularly hot weather
4. I don't like particularly hot weather much
5. I don't like particularly hot weather at all

AWARENESS_SIMPLE

[ASK ALL]

[MULTI CODE]

Below are some actions you could do to keep yourself cool during particularly hot weather.

Before today, were you familiar with any of these actions for keeping cool? Please tick all that apply.

1. Open windows at night
2. Keep windows closed during the hottest parts of the day
3. Use a standing fan or table fan
4. Close existing curtains or blinds during the day
5. Switch off unnecessary appliances or lights
96. None of the above *[exclusive]*

TAKEUP_SIMPLE

[ASK IF AWARENESS_SIMPLE != 97 (None of the above)]

[MULTI CODE]

And have you taken any of these actions before in particularly hot weather?

[PIPE LIST OF ALL TICKED OPTIONS IN AWARENESS_SIMPLE]

97. None of the above *[exclusive]*

EFFECTIVE_SIMPLE

[ASK IF AWARENESS_SIMPLE != 97 (None of the above) AND TAKEUP_SIMPLE != 97 (None of the above)]

[SINGLE CODE, ACCORDION GRID]

And how effective were these actions at keeping you cool?

[QUESTIONS]

[PIPE LIST OF ALL TICKED OPTIONS IN TAKEUP_SIMPLE]

[RESPONSES]

1. Not at all effective
2. Not very effective
3. Neither effective nor ineffective
4. Somewhat effective
5. Very effective
99. Not sure

EFFECTIVE_2_SIMPLE

[ASK IF ANY OPTIONS ARE UNTICKED IN AWARENESS_SIMPLE OR TAKEUP_SIMPLE]

[SINGLE CODE, ACCORDION GRID]

For the actions below that you said you weren't familiar with or have not taken, how effective do you expect these would be at keeping you cool?

[QUESTIONS]

[PIPE LIST OF ALL UNTICKED OPTIONS IN AWARENESS_SIMPLE OR TAKEUP_SIMPLE]

[RESPONSES]

1. Not at all effective
2. Not very effective
3. Neither effective nor ineffective
4. Somewhat effective
5. Very effective
99. Not sure

AWARENESS_INTERNAL

[ASK ALL]

[MULTI CODE]

Below are some other things you could do to keep yourself cool during particularly hot weather. These actions involve installing things **inside** your accommodation.

Before today, were you familiar with any of these actions for keeping cool?

Please tick all that apply.

1. Install internal blinds on windows exposed to direct sunlight
2. Install shutters on windows exposed to direct sunlight
3. Install thermally lined curtains on windows exposed to direct sunlight
4. Add a solar reflective film to the inside of window panes
5. Add internal insulation to lofts or walls
6. Add internal insulation to hot water pipes
7. Install air conditioning units
8. Install integrated blinds to windows
9. Replace window panes with water-filled glass panels
97. None of the above *[exclusive]*

TAKEUP_INTERNAL

[ASK IF AWARENESS_INTERNAL != 97 (None of the above)]

[MULTI CODE]

And have you taken any of these actions before? This does not have to be where you live currently.

[PIPE LIST OF ALL TICKED OPTIONS IN AWARENESS_INTERNAL]

97. None of the above *[exclusive]*

EFFECTIVE_INTERNAL

[ASK IF AWARENESS_INTERNAL != 97 (None of the above) AND TAKEUP_INTERNAL != 97 (None of the above)]

[SINGLE CODE, ACCORDION GRID]

And how effective were these actions at keeping you cool?

[QUESTIONS]

[PIPE LIST OF ALL TICKED OPTIONS IN TAKEUP_INTERNAL]

[RESPONSES]

1. Not at all effective
2. Not very effective
3. Neither effective nor ineffective
4. Somewhat effective
5. Very effective
99. Not sure

EFFECTIVE_2_INTERNAL

[ASK IF ANY OPTIONS ARE UNTICKED IN AWARENESS_INTERNAL OR TAKEUP_INTERNAL]

[SINGLE CODE, ACCORDION GRID]

For the actions below that you said you were not familiar with or have not taken, how effective do you expect these would be at keeping you cool?

[QUESTIONS]

[PIPE LIST OF ALL UNTICKED OPTIONS IN AWARENESS_INTERNAL OR TAKEUP_INTERNAL]

[RESPONSES]

1. Not at all effective
2. Not very effective
3. Neither effective nor ineffective
4. Somewhat effective
5. Very effective
99. Not sure

AWARENESS_EXTERNAL

[ASK ALL]

[MULTI CODE]

Below are some other things you could do to keep yourself cool during particularly hot weather. These actions involve installing things **outside** your accommodation.

**Before today, were you familiar with any of these actions for keeping cool?
Please tick all that apply.**

1. Install fixed shading (e.g., shutters or awnings) on windows or doors
2. Install external removable shade on windows or doors (e.g., detachable blinds)
3. Paint external window panes or walls with white solar reflective paint
4. Add a solar reflective film to the outside of window panes
5. Add solar reflective surface material on roofs
6. Replace windows to increase how far they can open
7. Install a heat pump that offers cooling (i.e., reversible heat pumps)
8. Put up a shade sail or canopy, shade umbrella or gazebo (i.e., external wall shading)
97. None of the above *[exclusive]*

TAKEUP_EXTERNAL

[ASK IF AWARENESS_EXTERNAL != 97 (None of the above)]

[MULTI CODE]

And have you taken any of these actions before? This does not have to be where you live currently.

[PIPE LIST OF ALL TICKED OPTIONS IN AWARENESS_EXTERNAL]

97. None of the above *[exclusive]*

EFFECTIVE_EXTERNAL

[ASK IF AWARENESS_EXTERNAL != 97 (None of the above) AND TAKEUP_EXTERNAL != 97 (None of the above)]

[SINGLE CODE, ACCORDION GRID]

And how effective were these actions at keeping you cool?

[QUESTIONS]

[PIPE LIST OF ALL TICKED OPTIONS IN TAKEUP_EXTERNAL]

[RESPONSES]

1. Not at all effective
2. Not very effective
3. Neither effective nor ineffective
4. Somewhat effective
5. Very effective
99. Not sure

EFFECTIVE_2_EXTERNAL

[ASK IF ANY OPTIONS ARE UNTICKED IN AWARENESS_EXTERNAL OR TAKEUP_EXTERNAL]

[SINGLE CODE, ACCORDION GRID]

For the actions below that you said you were not familiar with or have not taken, how effective do you expect these would be at keeping you cool?

[QUESTIONS]

[PIPE LIST OF ALL UNTICKED OPTIONS IN AWARENESS_EXTERNAL OR TAKEUP_EXTERNAL]

[RESPONSES]

1. Not at all effective
2. Not very effective
3. Neither effective nor ineffective
4. Somewhat effective
5. Very effective
99. Not sure

ADOPT_SIMPLE

[ASK ALL]

[SINGLE CODE, ACCORDION GRID]

For the next question, imagine we are in the middle of summer and that a hot weather alert has been issued for at least three consecutive days. As before, to help you think about this, imagine that several days with temperatures around 30°C during the day (and staying warm overnight) are coming, and you are considering how to keep yourself and those you live with cool.

For each of the actions below, how likely would you be to take this action?

Please keep in mind what you would be able to do in real-life, considering any factors which may limit your physical or practical ability.

[QUESTIONS]

1. Open windows at night
2. Keep windows closed during the hottest parts of the day
3. Use a standing fan or table fan
4. Close existing curtains or blinds during the day
5. Switch off unnecessary appliances or lights

[RESPONSES]

1. Very unlikely
2. Unlikely
3. Neither likely nor unlikely
4. Likely
5. Very likely

ADOPT_1YEAR_INTRO

[SHOW IF CHANGE_POSSIBILITY != 3 (no change)]

[TEXT ONLY]

For the next couple of questions, we are interested in actions which may take longer to carry out. For these questions, imagine that you are looking to prepare yourself for periods of particularly hot weather that might happen next summer (with temperatures around 30°C during the day and staying warm overnight).

ADOPT_INTERNAL_1YEAR

[ASK IF CHANGE_POSSIBILITY != 3 (no change)]

[SINGLE CODE, ACCORDION GRID]

Below, we list things you could install **inside** your accommodation.

How likely would you be to take the actions below?

Please keep in mind what you would be able to do in real-life, considering any factors which may limit your physical or practical ability. Note that some of these actions may require hiring trained professionals.

[QUESTION]

1. Install internal blinds on windows exposed to direct sunlight
2. Install shutters on windows exposed to direct sunlight
3. Install thermally lined curtain on windows exposed to direct sunlight
4. Add a solar reflective film to the inside of window panes
5. Add internal insulation to lofts or walls
6. Add internal insulation to hot water pipes
7. Install air conditioning units
8. Install integrated blinds to windows
9. Replace window panes with water-filled glass panels

[RESPONSES]

1. I am not allowed to make this change
2. Very unlikely
3. Unlikely
4. Neither likely nor unlikely
5. Likely
6. Very likely
7. I have already done this

ADOPT_EXTERNAL_1YEAR

[ASK IF CHANGE_POSSIBILITY = 1 (change possible)]

[SINGLE CODE, ACCORDION GRID]

Below, we list things you could install **outside** your accommodation.

How likely would you be to take the actions below?

Please keep in mind what you would be able to do in real-life, considering any factors which may limit your physical or practical ability. Note that some of these actions may require hiring trained professionals.

[QUESTIONS]

1. Install fixed shading (e.g. shutters or awnings) on windows or doors
2. Install external removable shade on windows or doors (e.g. detachable blinds)
3. Paint external window panes and walls with white solar reflective paint
4. Add a solar reflective film to the outside of window panes
5. Add solar reflective surface material on roofs
6. Replace windows to increase how far they can open
7. Install a heat pump that offers cooling (i.e. reversible heat pumps)
8. Put up a shade sail or canopy, shade umbrella or gazebo (i.e. external wall shading)

[RESPONSES]

1. I am not allowed to make this change
2. Very unlikely
3. Unlikely
4. Neither likely nor unlikely
5. Likely
6. Very likely
7. I have already done this

FACILITATORS_INTRO

[SHOW TO ALL]

[TEXT ONLY]

For the next questions, we want to ask you about possible reasons why you would or would not take some of the actions you have seen in this survey so far.

PRIORITY

[ASK ALL]

[SINGLE RESPONSE]

Compared to other challenges relating to where you live, how important is addressing overheating to you?

1. Very unimportant
2. Unimportant
3. Neither important nor unimportant
4. Important
5. Very important

KNOWLEDGE_EXTERNAL

[ASK ALL]

[SINGLE CODE, ACCORDION GRID]

Do you think you would know how to make each of the below changes, either by doing it yourself or asking someone else, to the *outside* of your accommodation?

[QUESTIONS]

1. Install fixed shading (e.g., shutters or awnings) on windows or doors
2. Install external removable shade on windows or doors (e.g., detachable blinds)
3. Paint external window panes or walls with white solar reflective paint
4. Add a solar reflective film to the outside of window panes
5. Add solar reflective surface material on roofs
6. Replace windows to increase how far they can open
7. Install a heat pump that offers cooling (i.e., reversible heat pumps)
8. Put up a shade sail or canopy, shade umbrella or gazebo (i.e., external wall shading)

[RESPONSES]

1. Yes
2. No

KNOWLEDGE_INTERNAL

[ASK ALL]

[SINGLE CODE, ACCORDION GRID]

Do you think you would know how to make each of the below changes, either by doing it yourself or asking someone else, to the *inside* of your accommodation?

[QUESTIONS]

1. Install internal blinds on windows exposed to direct sunlight
2. Install shutters on windows exposed to direct sunlight
3. Install thermally lined curtains on windows exposed to direct sunlight
4. Add a solar reflective film to the inside of window panes
5. Add internal insulation to lofts or walls
6. Add internal insulation to hot water pipes
7. Install air conditioning units
8. Install integrated blinds to windows
9. Replace window panes with water-filled glass panels

[RESPONSES]

1. Yes
2. No

CONFIDENCE_YOURSELF

[ASK ALL]

[SINGLE CODE, ACCORDION GRID]

Some actions you have seen so far require things to be installed in or around your house. How confident would you be to do these things yourself?

[QUESTIONS]

1. Install internal blinds on windows exposed to direct sunlight
2. Install shutters on windows exposed to direct sunlight
3. Install thermally lined curtain on windows exposed to direct sunlight
4. Add a solar reflective film to the inside of window panes
5. Add internal insulation to lofts or walls
6. Add internal insulation to hot water pipes
7. Install integrated blinds to windows
8. Install fixed shading (e.g., shutters or awnings) on windows or doors
9. Install external removable shades on windows or doors (e.g., detachable blinds)
10. Paint external window panes or walls with white solar reflective paint
11. Add a solar reflective film to the outside of window panes
12. Add solar reflective surface material on roofs
13. Put up a shade sail or canopy, shade umbrella or gazebo (i.e., external wall shading)

[RESPONSES]

1. Not at all confident
2. Not very confident
3. Neither confident nor unconfident
4. Somewhat confident
5. Very confident

AFFORDABILITY

[ASK ALL]

[SINGLE CODE]

Thinking about your current financial situation (including your income, level of savings and financial support), how much would you be able to afford to install cooling measures in your accommodation?

Think about what you could afford as a one-off payment rather than as a recurring payment.

1. I would not be able to afford any additional expense
2. £1 - £49
3. £50 - £99
4. £100 - £499
5. £500 - £999
6. £1,000 - £4,999
7. £5,000 - £9,999
8. £10,000 or more

TRUST_INSTALLERS

[ASK ALL]

[SINGLE CODE]

Some cooling measures may need to be installed by a professional. How much would you trust a professional to install cooling measures in your accommodation like those you've seen in this survey?

1. Not trust at all
2. Trust a little
3. Trust somewhat
4. Trust a lot
5. Trust completely

COMMS_INTRO

[SHOW TO ALL]

[TEXT ONLY]

The next couple of questions ask about where you get information on keeping yourself and those around you cool during particularly hot weather.

As before, to help you think about this concretely, imagine that a hot weather alert has been issued for at least the next three days. Temperatures around 30°C during the day (and staying warm overnight) are coming, and you are considering how to keep yourself and those you live with cool.

INFORMATION_SEARCH

[ASK ALL]

[MULTI CODE]

Where would you look for information on what you can do to keep yourself and those you live with cool? Please tick all that apply.

1. Central government websites (e.g., GOV.UK or the Met Office)
2. My local council (e.g., council website or door-to-door pamphlets)
3. The NHS
4. Newspapers and news websites
5. TV or radio
6. Social media
7. Friends and family
8. Emergency notifications
9. Somewhere else, please specify *[open text response]*
10. I would not look for information on this *[exclusive]*

INFORMATION_RECEIVED

[ASK ALL]

[MULTI CODE]

And where have you previously received information on keeping yourself and others cool?

1. Central government websites (e.g., GOV.UK or the Met Office)
2. My local council (e.g., council website or door-to-door pamphlets)
3. The NHS
4. Newspapers and news websites
5. TV or radio
6. Social media
7. Friends and family
8. Public health awareness campaigns, such as the government's "Beat the Heat" campaign
9. Emergency notifications
10. Somewhere else, please specify *[open text response]*
11. Don't recall *[exclusive]*
12. I have not previously received this type of information *[exclusive]*

INFORMATION_USEFUL

[ASK IF INFORMATION_RECEIVED != 10 (Don't recall) AND INFORMATION_RECEIVED != 11 (Not previously received this information)]

[SINGLE CODE, ACCORDION GRID]

How helpful was the information you received via these sources?

[QUESTIONS]

[PIPE LIST OF ALL TICKED OPTIONS IN INFORMATION_RECEIVED]

[RESPONSES]

1. Very helpful
2. Somewhat helpful
3. Neither helpful nor unhelpful
4. Somewhat unhelpful
5. Very unhelpful

INFORMATION_TRUST

[ASK ALL]

[MULTI CODE]

Which of these sources would you trust to give you accurate information about how to keep cool during hot weather?

1. Central government websites (e.g., GOV.UK or the Met Office)
2. My local council (e.g., council website or door-to-door pamphlets)
3. The NHS
4. Newspapers and news websites
5. TV or radio
6. Social media
7. Friends and family
8. Public health awareness campaigns such as the government's "Beat the Heat" campaign
9. Emergency notifications
97. None of above *[exclusive]*

NET_ZERO_AWARENESS

[ASK ALL]

[SINGLE CODE]

Which of the following definitions do you think best explains the concept of 'Net Zero'?

1. The amount of greenhouse gas emissions produced by the UK is zero
2. The amount of greenhouse gas emissions produced by the UK is equal to or less than the emissions removed from the environment
3. The temperature rise caused by greenhouse gas emissions produced by the UK is zero
99. Not sure/don't know

NET_ZERO_ACTIONS

[ASK ALL]

[MULTI CODE]

Which actions, if any, have you taken to reduce your greenhouse gas emissions?

1. Walk, cycle or use wheelchair
2. Use public transport
3. Minimise food waste
4. Recycle household waste
5. Switch boiler to heat pump or other low carbon heating system (e.g., heat pump or biomass boiler, but not including any form of gas boiler, oil, or coal heating)
6. Switch to driving an electric vehicle (battery or plug-in hybrid) instead of a petrol/diesel vehicle
7. Choose to buy energy efficient appliances (e.g., fridge or washing machine)
8. Minimise the energy used at home (e.g., washing at lower temperatures, only heating rooms in use)
9. Install insulation / draught proofing at home
10. Reduce the amount of water used at home (e.g., taking shorter showers, turning tap off when brushing teeth)
11. Adopt a more sustainable diet (a diet rich in plant-based and whole foods)
12. Re-use and repair items more
13. Move money to greener bank/pension provider
14. Plan holidays using train, boats, and/or coach/bus to reach destination
97. None of the above *[exclusive]*
99. Don't know *[exclusive]*

DEMOS_INTRO

[SHOW TO ALL]

[TEXT ONLY]

Finally, we would like to ask you some questions about yourself and your household.

OVERHEATING_EXPERIENCE

[ASK ALL]

[MULTI CODE]

Have you, or someone you know, felt seriously unwell from overheating during particularly hot weather for your area? For example, suffering from heat exhaustion or a heatstroke, which might include dizziness, headaches, cramping or nausea? Please tick all that apply.

1. Yes, I have experienced this myself
2. Yes, someone in my household has experienced this
3. Yes, someone I know outside my household has experienced this
4. No *[exclusive]*

OVERHEATING_RISK_SELF

[ASK ALL]

[SINGLE CODE]

Do you think of yourself as someone who is more at risk of overheating during particularly hot weather?

1. Yes
2. No

YOUNG_CHILDREN

[ASK ALL]

[SINGLE CODE]

Does your household include any children younger than 5 years old?

1. Yes
2. No
98. Prefer not to say

HEALTH_CONDITIONS

[ASK ALL]

[MULTI CODE]

Do any of these conditions or illnesses affect you? Please consider conditions that last or are expected to last 12 months or more.

1. Vision (for example blindness or partial sight)
2. Hearing (for example deafness or partial hearing)
3. Mobility (for example walking short distances or climbing stairs)
4. Dexterity (for example lifting and carrying objects, using a keyboard)
5. Learning or understanding or concentrating
6. Memory
7. Mental health
8. Stamina, breathing or fatigue
9. Socially or behaviourally (for example associated with autism spectrum disorder (ASD) which includes Asperger's, or attention deficit hyperactivity disorder (ADHD))
96. Other
97. None of the above *[exclusive]*
98. Prefer not to say *[exclusive]*

INCOME

[ASK ALL]

[NUMERIC]

What is your *monthly* household take home pay after tax?

This includes earnings from employment or self-employment, income from benefits and pensions, and income from other sources such as interest from savings.

Please provide your answer in pounds. For example, if your answer is one thousand pounds per month, please write 1000

1. *[Open response: numeric only. £1.00 - £99,999.99]*
98. Prefer not to answer *[exclusive; show only if participant tries to skip question]*

MORTGAGE

[ASK IF OCCUPATION_TYPE = 2 (mortgage) OR 3 (part mortgage, part rent) OR 4 (rent)]

[NUMERIC]

How much is your *monthly* [PIPE:

- *IF OCCUPATION_TYPE = 2: mortgage*
- *IF OCCUPATION_TYPE = 3: combined mortgage and rent*
- *IF OCCUPATION_TYPE = 4: rent]*

payment?

Please provide your answer in pounds. For example, if your answer is one thousand pounds per month, please write 1000

1. *[Open response: numeric only. £1.00 - £99,999.99]*
98. *Prefer not to answer [exclusive; show only if participant tries to skip question]*

FINANCIAL_WELLBEING

[ASK ALL]

[SINGLE CODE]

How well would you say you are managing financially these days?

Would you say you are...

1. Living comfortably
2. Doing alright
3. Just about getting by
4. Finding it quite difficult
5. Finding it very difficult
99. Don't know
98. Prefer not to say

HOME_HEATING

[ASK ALL]

[SINGLE CODE]

How well do you feel you are able to heat your home?

1. Very well
2. Quite well
3. Fairly well
4. Not very well
5. Not at all well

ENERGY_BILLS

[ASK ALL]

[NUMERIC]

How much do you typically spend on energy bills *per month*?

Please provide your answer in pounds. For example, if your answer is one thousand pounds per month, please write 1000

1. *[Open response: numeric only. £1.00 - £99,999.99]*
98. Prefer not to answer *[exclusive; show only if participant tries to skip question]*

Debrief

[ASK ALL]

[TEXT ONLY]

Thank you for your time completing in this survey conducted by Verian on behalf of the Department for Energy Security and Net Zero. Please click “Next” to submit your answers.

2.5 Survey data on subjective perception of overheating risk

To assess whether participants' subjective perception of being at risk of overheating corresponds with groups of people that are known to be susceptible to overheating, we cross-tabulated subjective perception of being at risk of overheating (OVERHEATING_RISK_SELF) against:

- Age
- Having health conditions
- Living in a single adult household; and,
- Being potentially fuel poor

Results have been weighted to be nationally representative.

Age

Older adults (65+) are more at risk of overheating. The survey analysis shows that participants aged 65+ more often saw themselves as being at risk, though differences between age groups were minimal, and the pattern across age is not uniform.

Age	Percentage of participants perceiving themselves as being at risk of overheating
18-24	23%
25-34	26%
35-44	22%
45-54	28%
55-64	24%
65+	29%

Health conditions

People with chronic illness or disabilities are known to be more at risk of overheating. The survey analysis showed participants with any of the health conditions listed in the survey more often saw themselves as being at risk.

Overall	Percentage of participants perceiving themselves as being at risk of overheating
Any health conditions	43%
No health conditions	13%

Stamina, beathing or fatigue condition	Percentage of participants perceiving themselves as being at risk of overheating
No	20%
Yes	63%

Sensory condition	Percentage of participants perceiving themselves as being at risk of overheating
No	24%
Yes	41%

Movement condition	Percentage of participants perceiving themselves as being at risk of overheating
No	20%
Yes	60%

Cognitive condition	Percentage of participants perceiving themselves as being at risk of overheating
No	22%
Yes	47%

Mental health condition	Percentage of participants perceiving themselves as being at risk of overheating
No	21%
Yes	52%

Other health condition	Percentage of participants perceiving themselves as being at risk of overheating
No	25%
Yes	70%

Living alone

Socially isolated individuals are known to be more at risk of overheating. For the analysis below, we have defined someone as potentially socially isolated if they live in a single adult household, rather than in a multi-adult household. Participants in single adult households more often saw themselves as being at risk.

Number of people in household	Percentage of participants perceiving themselves as being at risk of overheating
Single adult household	39%
Multi-adult household	24%

Potentially fuel poor households

People living in low-income households or poor housing are known to be more at risk of overheating. For this analysis, we have looked at households we identified as being potentially fuel poor. We identified households as potentially fuel poor if their monthly energy bills exceeded 10% of their monthly income, after rent or mortgage payments. Participants identified as potentially fuel poor more often saw themselves as being at risk.

Flagged as potentially fuel poor	Percentage of participants perceiving themselves as being at risk of overheating
No	22%
Yes	31%

2.6 Survey data on priority of addressing overheating compared to other challenges

To assess whether groups that are known to be susceptible to overheating also experienced overheating as a priority, we cross-tabulated this sense of priority against:

- Age
- Having health conditions
- Living in a single adult household
- Being potentially fuel poor; and
- Having children aged 5 or younger in the household

Results have been weighted to be nationally representative. The percentage below show the proportion of participants who said that addressing overheating was important or very important to them.

Age

The survey analysis shows that participants aged 65+ less often said that addressing overheating was a priority compared to other challenges where they live.

Age	Percentage of participants saying that addressing overheating is important or very important
18-24	39%
25-34	50%
35-44	49%
45-54	40%
55-64	36%
65+	39%

Health conditions

The survey analysis showed participants with any of the health conditions listed in the survey more often said that addressing overheating was a priority.

Overall	Percentage of participants saying that addressing overheating is important or very important
Any health conditions	48%
No health conditions	38%

Stamina, beathing or fatigue condition	Percentage of participants saying that addressing overheating is important or very important
No	41%
Yes	49%

Sensory condition	Percentage of participants saying that addressing overheating is important or very important
No	41%
Yes	52%

Movement condition	Percentage of participants saying that addressing overheating is important or very important
No	41%
Yes	51%

Cognitive condition	Percentage of participants saying that addressing overheating is important or very important
No	41%
Yes	49%

Mental health condition	Percentage of participants saying that addressing overheating is important or very important
No	40%
Yes	56%

Other health condition	Percentage of participants saying that addressing overheating is important or very important
No	42%
Yes	58%

Living alone

For the analysis below, we have defined someone as potentially socially isolated if they live in a single adult household, rather than in a multi-adult household. Participants in single adult households more often said that addressing overheating was a priority.

Number of people in household	Percentage of participants saying that addressing overheating is important or very important
Single adult household	48%
Multi-adult household	41%

Potentially fuel poor households

For this analysis, we have looked at households we identified as being potentially fuel poor. We identified households as potentially fuel poor if their monthly energy bills exceeded 10% of their monthly income, after rent or mortgage payments. Participants identified as potentially fuel poor more often said that addressing overheating was a priority.

Flagged as potentially fuel poor	Percentage of participants saying that addressing overheating is important or very important
No	39%
Yes	46%

Having young children (5 years old or younger) in the household

Parents with children aged 5 or younger in their household more often said that addressing overheating was a priority compared to other challenges where they live.

Number of people in household	Percentage of participants saying that addressing overheating is important or very important
Young children (< 5) present	54%
No young children in the household	41%

Annex 3. Bayesian Belief Network

3.1 Causal pathway analysis

A Bayesian Belief Network (BBN) is a way of mapping out how different factors influence each other based on the patterns we see in the data. It works by identifying which variables are connected, estimating the strength of those connections and then using the model to explore how changes in one area might affect another.

The analysis had two steps. First, we cleaned and organised the survey data and identified the factors that really influence home cooling measure adoption behaviour. Second, we built Bayesian Network models for simple, internal and external measures to show how these behaviours connect and what drives them. Together, these steps provide a clear picture of what increases or decreases the likelihood of adopting cooling measures.

We had a sample of 1,607 survey responses, which is enough to build a reliable model of how different factors are connected. Because the Bayesian Network is built from survey data rather than an experiment, the results show likely causal links but cannot prove causality.

3.2 Stage 1: Data preparation and feature selection

Stage 1 focused on cleaning, standardising and preparing the survey data so all modelling was based on consistent and reliable inputs. This included recoding key variables, producing clean datasets for causal and predictive analysis and checking that all the variables we planned to use were suitable for the Bayesian Belief Network (BBN) and regression analysis.

This first stage ensured that only those predictor variables that added unique information were used in the BBN, so the network could identify meaningful and reliable causal relationships rather than patterns caused by random noise or variables that overlap too much with each other.

Variable preparation and standardisation

We created two cleaned and organised datasets for the analysis. One was used to build the Bayesian Belief Network (BBN), with key background variables treated as fixed inputs. The other dataset, which was fully numeric, was used for the regression models, checks and correlations. We also applied survey weights described above so the results properly represented the population, and we standardised the predictors so everything was measured on the same scale.

Feature selection framework

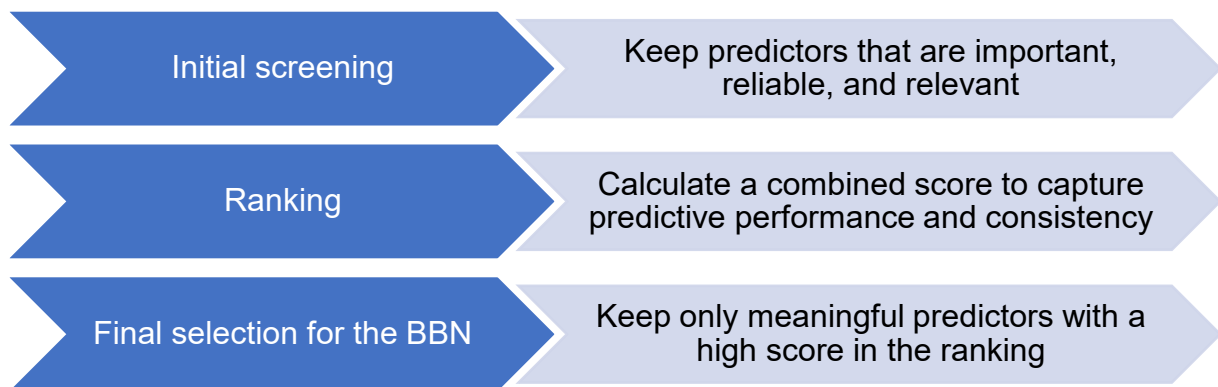
The Feature Selection Framework is the process we used to decide which variables (predictors) were strong, reliable and useful enough to include in the final model.

To do this, we looked at each predictor from four angles:

- How important it is for explaining behaviour (Relative Weight Analysis)
- Whether it adds something unique rather than repeating another variable (LASSO)
- Whether it does not overlap too much with others (Variance Inflation Factor)
- Whether it makes sense to include based on theory and logic

We used different methods because each one checks something slightly different. Together, they help us avoid keeping any weak, unreliable or redundant variables.

The selection process involved the following steps:



To make everything comparable, we converted all scores to the same scale (z-scores). A z-score is a way of saying how far a number is from the average, using standard deviations.

3.3 Stage 2: Causal pathway analysis pipeline

For each type of cooling action described in the main report (simple, internal and external), we built a simplified model to focus only on how adoption was measured in the survey. This model looked at how people's answers to individual survey questions related to their overall level of adoption for each type of cooling measure. Overall adoption could not be observed directly, so it was treated as an underlying concept or "latent construct" influencing how people responded to the survey questions. The simplified model was used to check whether the survey questions consistently reflected this underlying adoption level, and whether participants' answers to the questions corresponded in the way we would expect based on prior evidence and theory.

We did this first so we could confirm the behavioural groups made sense before adding the causal connections.

Data preparation and variable structuring

We took the cleaned BBN data and organised all the variables we needed including the predictors, the adoption metric for each cooling measure, the questions that feed into it and the intensity score. The intensity score, grouped as none, low and high, shows how strongly someone carries out the behaviour, not just whether they do it at all. We then turned everything into clear categories so the model could read them properly and created a separate dataset for each behaviour group, so the process was easy to check and audit.

Structure learning

We built the Bayesian Network so that the latent adoption construct was the only variable allowed to influence the individual adoption metrics for each cooling measure and the intensity score. This ensured the adoption outcome was the driving factor behind the answers, not the other way around.

To find the best-fitting network, we used a search method that explores lots of possible structures and chooses the one that fits the data well while staying simple. To do this we used the Bayesian Information Criterion (BIC) score to help choose a model that fits the data well without becoming too complicated. Missing responses were treated as their own category, so we did not have to drop any responses from the analysis.

To make the model more reliable, we repeated this process 1,000 times and combined the results to produce a stable final version. We then converted this into a model where the direction of influence between variables is clearly defined. In the initial version, links only show that two variables are related. In the final version, the links indicate which variable is influencing the other. Overall, relationships fall into three categories: cases where one variable clearly influences another, cases where the influence runs in the opposite direction, and cases where the direction of influence cannot be determined with confidence.

Finally, we estimated how likely participants are to adopt cooling measures in the future, using survey weights to ensure the results reflect the wider population. We checked that the model was working as intended before loading it into software that allows quick 'what-if' testing. The resulting probability tables act like simple 'if-then' look-ups, showing how the likelihood of one outcome changes when another factor changes.

Diagnostics and output generation

We produced a range of diagnostic outputs, including tables showing which connections were strongest, heatmaps of correlations and visual network maps. We also calculated how much each predictor increased or reduced the chances of adoption ('lifts') and how adoption changed when a predictor was set to a specific level ('conditional effects').

We ran the full modelling process separately for each adoption type (simple, internal, and external), using the corresponding adoption metric and question set each time. In creating the network maps, for each group we used line styles based on natural breaks in connection strength to keep the maps clear and easy to interpret. Variables collected in the survey that directly influenced adoption were also labelled with simple probability categories (High, Medium, Low), and the top three adoption actions were highlighted on the right-hand side of each map.

3.4 Software environment

Data preparation and feature selection

Library	Purpose	Application
dplyr	Data preparation	Cleaning, filtering, selecting and transforming variables
tidyr	Data preparation	Reshaping, pivoting and organising datasets into tidy formats
readr	Data preparation	Importing survey data quickly and safely
car	Diagnostics	Calculates VIF to check multicollinearity
glmnet	Modelling	Performs LASSO for penalised variable selection
rwa	Modelling	Computes Relative Weights to assess predictor importance
psych	Diagnostics	Produces polychoric correlations for ordered variables
ggplot2	Visualisation	Creates plots and heatmaps used in diagnostics

Causal pathway analysis pipeline

Library	Purpose	Application
dplyr	Data preparation & utilities	Data cleaning, filtering, selecting, transforming
tidyr	Data preparation & utilities	Reshaping and organising data into tidy formats
stringr	Data preparation & utilities	String cleaning and pattern handling
forcats	Data preparation & utilities	Factor recoding and level management
purrr	Data preparation & utilities	Functional mapping and iteration
readr	Data preparation & utilities	Fast, reliable data import
glmnet	Modelling & feature selection	LASSO for penalised variable selection
rwa	Modelling & feature selection	Relative Weights Analysis for predictor importance
broom	Modelling & feature selection	Tidying model outputs into usable data frames
bnlearn	Bayesian network learning & inference	Structure learning, bootstrap averaging, CPT fitting
gRain	Bayesian network learning & inference	Probabilistic inference, evidence propagation, simulations
polycor	Bayesian network learning & inference	Polychoric and polyserial correlations for ordinal predictors
ggplot2	Visualisation	Plots, diagnostics, heatmaps
Rgraphviz	Visualisation	DAG plotting using Graphviz
scales	Additional helpers	Colour scales, transformations, labelling
utils	Additional helpers	General R utilities (file handling, table ops, etc.)

Annex 4. Qualitative research

4.1 Qualitative methodology

Approach

At the outset of the research, DESNZ and Verian held a scoping workshop to agree the sample and structure of the qualitative phase. Verian then developed a discussion guide and stimulus materials for the interviews with input from DESNZ.

Verian conducted 40 one-hour online semi-structured interviews. Discussions explored participants' perceptions of the impact of hot weather, cooling measures taken in the past, which cooling measures they would be open to taking up in the future and reasons for this, what information they had seen on hot weather and cooling measures, and what information they would expect to receive. The full discussion guide and stimulus materials can be found in Section 4.4 and 4.5.

Analysis

A thematic framework was developed, based primarily on the overarching research questions and the more detailed questions included in the discussion guide. Verian researchers inputted qualitative data into this framework from the following sources: the notes taken by each moderator during and after each interview; interview recordings; and analysis discussions with members of the research team. These data were organised into the framework and evidenced with verbatim quotes from participants. Researchers then conducted further analysis to combine and cross-reference the findings across the participant groups. This process highlighted commonalities and variations between groups.

4.2 Qualitative sample

Verian recruited a sample of 40 participants. The sample was devised to cover key groups of interest, and a range of property types, incomes and demographics. The key groups of interest were people aged over 65, people with a child under 5, pregnant people, people who were socially isolated, and people who were disabled or had long-term health conditions or were living with disabled people or people with long-term health conditions.

The sample composition is set out below.

40x 60-minute in-depth interviews

The achieved sample is set out below.

Category	Sub-Category	Achieved
Specific groups	Over 65	10
	With child under 5	10
	Pregnant	6
	Aged 18-64	16
Age	18-24	40
	25-34	0
	35-44	11
	45-54	3
	55-64	2
	65+	10
Gender	Male	17
	Female	21
	Other	2
Ethnicity	White	23
	Black/African/Caribbean/Black British	4
	White and Black African	1
	White and Black Caribbean	1
	Indian	1
	Bangladeshi	2
	Chinese	2
	Pakistani	2
	Mixed White and Asian	2
	Any other Mixed/Multiple Ethnic Background	2
Region	East of England	0
	East Midlands	2
	Greater London	11
	North East	1
	North West	4

Category	Sub-Category	Achieved
	Northern Ireland	1
	Scotland	4
	South East	5
	South West	4
	Wales	2
	West Midlands	2
	Yorkshire and Humber	4
Area Type	City centre	3
	Urban	16
	Suburban residential	13
	Rural residential	1
	Rural village	5
	Rural isolated	2
Tenancy	Social renter	15
	Private renter	10
	Homeowner (outright)	7
	Homeowner (mortgage)	8
	Other	0
HMO/Shared House	Yes	5
	No/not relevant	35
Type of Property	Detached house	5
	Semi-detached house	9
	Bungalow	5
	Terraced house	6
	Flat / apartment	15
Climate Discussion	At least daily	6
	At least weekly	16
	At least monthly	8
	Less than once a month	8
	Never	2
Climate Actions	Always	9
	Most of the time	17

Category	Sub-Category	Achieved
	Sometimes	10
	Rarely	4
	Never	0
Income	<£20,000	10
	£20,001 - £30,000	7
	£30,001 - £40,000	10
	£40,001 - £50,000	5
	£50,001 - £60,000	3
	£60,001 - £80,000	3
	£80,001 - £100,000	1
	>£100,000	1
	I would rather not say	0
Disabilities	Mental Health	4
	Mobility/dexterity	11
	Stamina/breathing	6
	Metabolic	4
	Sensory	1
	Neuro-diverse	5
	Other	4
With Long Term Health Conditions	Over 65	5
	With child under 5	3
	Pregnant	2
	Aged 18-64	11
Living with someone with a Long Term Health Condition	Yes	11
	No	29
Children	Yes – under 5	10
	Yes – aged 5-10	6
	Yes – aged 11-16	5
	No	24

Category	Sub-Category	Achieved
Friends and Family Score	5 and under	17
	6+	23

4.3 Qualitative recruitment screener

Q1. Introductions

"Good morning/afternoon, my name is X and I am calling from X, an independent research organization. We are recruiting participants on behalf of Verian, who have been commissioned by the Department for Energy Security and Net Zero (DESNZ) to carry out this research.

The Department would like to understand how people have been adapting to the increasingly warmer temperatures in the summer, and how they can best provide advice and support about keeping cool.

Please note:

- The research is completely voluntary
- The discussion will take place online, last 60 minutes and be with a researcher from Verian.
- You will be asked to share your perspective and there are no wrong or right answers
- You will not incur any costs taking part in the research. We will offer you £40 for your participation and to thank you for your time.
- This research will be conducted in accordance with the MRS Code of Conduct, which means that it adheres to the ethical, legal, and professional standards of the industry.
- Verian is completely independent from our client, DESNZ.
- Your information will be used for research purposes only.
- Verian will not pass your personal details on to anyone outside of their research team. DESNZ will not have access to any of your personal information. Quotes may be taken and used in the reporting for this project, but these will be anonymised; your name will not be used.

Would you be interested in taking part?

99. Yes

100. No

DO NOT RECRUIT IF ANSWER 'NO'

Q2. Zoom tech

The research involves an online video and so you will need:

- a current and working email account that you check regularly
- broadband internet (not dial-up)
- a PC, laptop or tablet with a camera and built-in mic that can connect to the internet.

Please note that smartphones cannot be used for this research.

Do you have access to all of these? If not, we can send you a physical, printed out version of the materials and conduct the interview via telephone call instead.

1. Yes
2. No

IF NO, RECRUIT FOR DEPTHS 3 AND 4

Q3. Zoom consent

ONLY ASK THOSE WHO ANSWER “YES” IN Q2

Participation in the online discussion will involve the following:

- A Zoom video call with a Verian researcher which will last 60 minutes
- Ahead of the interview, you will receive an email with a link to join at the set date/time. This email will also contain Zoom's terms and conditions of use for your information
- You will also be sent a Zoom consent form by email for the session – please can you read it and reply to the email stating that you have read and understood it
- At the time of the interview, please click on the Zoom link you have received to join the discussion - you will be asked to enter your name (this should just be your first name and the first initial of your surname)

On this basis, are you comfortable and happy to take part in this research?

1. Yes
2. No

CLOSE IF “NO”

Q4. Tenancy

Do you rent, or own the home you live in? If you rent, are you renting from a private landlord, or a council or housing association?

1. Social renter
2. Private renter
3. Homeowner (own outright)
4. Homeowner (with mortgage)
5. Other: please explain

MIN 15X CODE 1

MIN 10X CODE 2

ASK IF Q4 = CODE 1/2 (renters)

Q5. Tenancy

If you rent, do you live with 2 or more other people that are not part of your household (i.e. you live in a shared house or HMO)?

1. Yes
2. No

MIN 5X CODE 1

Q6. Type of Property

What type of property is your home?

1. Detached house
2. Semi-detached house
3. Terraced house
4. Bungalow
5. Flat / apartment
6. Other (please record)

RECRUIT MIN 15X CODE 5

RECRUIT MIN 7X CODE 3

RECRUIT MIX OF CODES 1, 2 AND 4

ASK IF Q6 = 5 (Flat / apartment)

Q7. Size of Property

How many floors are in your apartment building?

1. 1-3 Floors
2. 4-7 Floors
3. 7-10 Floors
4. 11-15 Floors
5. 16+ Floors

RECRUIT A MIX

ASK IF Q7 = 5 (Flat / apartment)

Q8. Storey

Which floor of your apartment building do you live on?

1. Ground floor
2. Mid floor
3. Top floor
4. Other (please record)

RECRUIT A MIX

Q9. Climate discussion

On average, how often do you talk about climate change with others (e.g. friends, family, neighbours or colleagues)?

1. At least daily
2. At least weekly
3. At least monthly
4. Less than once a month
5. Never

RECRUIT A MIX

Q10. Climate actions

Some people will choose to take actions to reduce their carbon emissions, and others may choose not to. How often do you carry out actions to reduce your own carbon emissions?

Some examples of actions to reduce carbon emissions are:

- Walk, cycle or use wheelchair
 - Use public transport
 - Plan holidays using train, boats, and/or coach/bus to reach destination
 - Drive an electric vehicle (battery or plug-in hybrid) instead of a petrol/diesel vehicle
 - Reduce the amount of water used at home (e.g. taking shorter showers, turning tap off when brushing teeth)
 - Eat a sustainable diet (a diet rich in plant-based and whole foods)
 - Minimise food waste
 - Buy energy efficient appliances (e.g. fridge or washing machine)
 - Buy more second-hand items (e.g., clothes, furniture) and fewer new items
 - Repair/re-use items
 - Recycle household waste
1. Always
 2. Most of the time
 3. Sometimes
 4. Rarely
 5. Never

RECRUIT A MIX

ASK ALL

Q11. Cooling measures

Thinking back to a time when it was unusually hot (e.g. last summer, when the UK reached temperatures of 35C), did you do any of the following specifically to reduce the impact of the hot weather?

Select all that apply

	I did this	I haven't done this, but might consider doing it	I haven't done this and am unlikely to consider doing it
Open windows at night			
Keep windows closed during the hottest parts of the day			
Use a standing fan or table fan			
Close existing curtains or blinds during the day			
Switch off unnecessary appliances or lights			
Install internal blinds or shutters on windows exposed to direct sunlight			
Install thermally lined curtains on windows exposed to direct sunlight			
Install integrated blinds on windows exposed to direct sunlight			
Add a solar reflective film to the inside of window panes			
Add internal insulation to hot water pipes, lofts or walls			
Install air conditioning units			
Install external fixed shading (e.g., shutters or awnings) on windows or doors			
Install external removable shade on windows or doors (e.g., detachable blinds)			
Paint external window panes or walls with white solar reflective paint			
Add a solar reflective film to the outside of window panes or add solar reflective surface material on roofs			
Replace windows to increase how far they can open			

	I did this	I haven't done this, but might consider doing it	I haven't done this and am unlikely to consider doing it
Install a heat pump that offers cooling (i.e., reversible heat pumps)			
Put up a shade sail or canopy, shade umbrella or gazebo (i.e., external wall shading)			
None of the above			

RECRUIT A MIX OF THOSE THAT HAVE AND HAVE NOT TAKEN UP MEASURES

AIM FOR SOME PEOPLE WHO HAVE DONE ACTIONS 6-18

ASK ALL

Q12. Region

Which part of the country do you live in?

1. Greater London
2. South East
3. South West
4. West Midlands
5. North West
6. North East
7. Yorkshire and the Humber
8. East Midlands
9. East of England
10. Wales
11. Scotland
12. Northern Ireland

RECRUIT A MIX

Q13. Area

Which phrase best describes the area where you live?

1. City centre
2. Urban
3. Suburban residential
4. Rural residential
5. Rural village
6. Rural isolated

RECRUIT A MIX OF URBAN, SUBURBAN, AND RURAL

Q14. Age

What age were you on your last birthday?

Please record:

RECRUIT 10x 65+

RECRUIT MIX OF 18-64 FOR REST OF SAMPLE, AIMING FOR A MIX WITHIN EACH GROUP

Q15. Gender

How do you describe your gender?

1. A man (including trans man)
2. A woman (including trans woman)
3. Non-binary
4. In another way
5. Prefer not to say

RECRUIT A MIX

Q16. Children

Do you have children under 16 living at home with you? Select all that apply

1. Yes – under 5 years old
2. Yes – aged 5-10
3. Yes – aged 11-16
4. No

RECRUIT MIN 10x CODE 1

RECRUIT 15X CODE 2-3

RECRUIT 15X CODE 4

Q17. Family

Are you currently pregnant?

1. Yes
2. No

RECRUIT MINIMUM 6x CODE 1

Q18. Social Isolation

Please consider your answer to the following questions.

Family members - Considering the people to whom you are related by birth, marriage, adoption, etc...

Friendships – Considering all of your friends including those who live in your neighbourhood

How many friends and family members do you see or hear from more than once a month?	0 = none	1 = 1	2 = 2	3 = 3 or 4	4 = 5-8	5 = 9+
How many friends and family members do you feel at ease with that you can talk about private matters or call on for help?	0 = none	1 = 1	2 = 2	3 = 3 or 4	4 = 5-8	5 = 9+

ADD UP SCORES FOR EACH, GIVING EACH SCORE 0-10

RECRUIT MIN 7X WITH A SCORE UNDER 6 (MAX 4X AGED OVER 65)

Q19. Ethnicity

Which of these options best describes your ethnicity?

White:

1. English/Welsh/Scottish/Northern Irish/British
2. Irish
3. Gypsy or Irish Traveller
4. Roma
5. Any other White background, please describe

Mixed/multiple ethnic backgrounds:

6. White and Black Caribbean
7. White and Black African
8. White and South Asian
9. White and East / South East Asian
10. Any other Mixed/Multiple ethnic background, please describe

South Asian or South Asian British:

11. Indian
12. Pakistani
13. Bangladeshi
14. Sri Lankan
15. Other South Asian / South Asian British background

Black/African/Caribbean/Black British:

16. African
17. Caribbean
18. Any other Black/African/Caribbean background, please describe

East or South East Asian British

19. Chinese
20. Filipino
21. Japanese
22. Korean
23. Malaysian
24. Thai

25. Vietnamese

26. Other East or south East Asian / East or South East Asian British background

Middle Eastern / Middle Eastern British:

27. Iranian

28. Iraqi

29. GCC Countries (Saudi Arabia, Qatar, Oman, UAE, Kuwait, Yemen)

30. Kurdish

31. Other Middle Easter / Middle Eastern British background

Turkish / Turkish British:

32. Turkish

33. Turkish Cypriot

North African / North African British:

34. Algerian, Egyptian, Libyan, Moroccan, Tunisian

35. Other North African / North African British background

Other ethnic group:

36. Any other ethnic group

RECRUIT A MIX, WITH MIN 8X CODE 6-36

Q20. Income

What is your total household income per year?

1. Less than £20,000 per year
2. Between £20,001 and £30,000 per year
3. Between £30,001 and £40,000 per year
4. Between £40,001 and £50,000 per year
5. Between £50,001 and £60,000 per year
6. Between £60,001 and £80,000 per year
7. Between £80,001 and £100,000 per year
8. More than £100,000 per year
9. I would rather not say

RECRUIT MIN 16X CODE 1-2

RECRUIT A MIX FOR THE REMAINDER

RECRUIT MAX 5X CODE 9

Q21. SEG

Please choose one of the below that best describes the occupation of the chief income earner in your household.

1. High managerial, administrative or professional – e.g. doctor, lawyer, company director (50+ people, judge, surgeon, school headmaster etc. (A)
2. Intermediate managerial, administrative or professional e.g. school teacher, office manager, junior doctor, bank manager, police inspector, accountant etc. (B)
3. Supervisor, clerical, junior management, administrative or professional e.g. policeman, nurse, secretary, clerk, self-employed (5+ people) etc. (C1)
4. Skilled manual worker e.g. mechanic, plumber, electrician, lorry driver, train driver etc. (C2)
5. Semi-skilled or unskilled manual worker e.g. baggage handler, waiter, factory worker, receptionist, labourer, gardener etc. (D)
6. Housewife/ Househusband (E)
7. Unemployed
8. Student
9. Retired or on state pension
10. Retired with a company/state pension

RECRUIT A MIX

Q22. Health

A. Do you consider yourself to be a disabled person or to have an impairment or long-term (lasting over 12 months) health condition that impacts your day to day activities and working life?

Please record:

B. What is the nature of your impairment or long-term health condition?

Clarify if needed that the participant can give multiple answers.

Please classify using the following list – read out the conditions if this is helpful for the participant.

1. Mental health conditions, which could include mood disorders (e.g. depression, anxiety, bipolar disorder), psychotic disorders (e.g. schizophrenia), eating disorders or personality disorders
2. Mobility or dexterity impairment (e.g. arthritis, tendonitis carpal, tunnel syndrome)
3. Stamina or breathing impairments (e.g. asthma)

4. Metabolic impairment (e.g. diabetes, thyroid condition)
5. Sensory impairment (e.g. sight or hearing impairment)
6. Neuro-diverse conditions (e.g. Autism Spectrum Disorder or Attention Deficit Hyperactivity Disorder)
7. Other (please specify):

Please record:

RECRUIT MAX 3X CODE 1

RECRUIT MIN 1X CODE 4

RECRUIT MIN 3X CODE 3

RECRUIT MIN 3X CODE 2

RECRUIT MIN 2X WITH LONG-TERM HEALTH CONDITION IN EACH OF THE FOUR GROUPS

RECRUIT MAX 6X WITH LONG-TERM HEALTH CONDITION IN OVER-65 GROUP

Q23. Health

Do you live in the same household as someone who considers themselves to be a disabled person or to have an impairment or long-term (lasting over 12 months) health condition that impacts their day to day activities and working life?

Please record:

RECRUIT MIN 5X LIVING WITH SOMEONE WITH A LONG-TERM HEALTH CONDITION

Invitation and confirmation

Q24. Invitation

We would like to invite you to take part in this research, which involves joining a 60-minute online interview with an independent Verian researcher. This session will explore the way in which people keep cool in hot weather.

As a thank you for your time, you will receive £40, which will be paid after you have completed the session.

The discussions will take place in January and February of 2026.

With your permission, the session will be recorded for research purposes and client representatives might be present to observe. Everything you share will be treated confidentially and anonymously.

You do not need any prior knowledge to take part. We are not testing knowledge - we are simply interested in your views and experiences.

Q25. Interview preparation

Are there any adjustments we could make to ensure that you can access the research in a way that is right for you? This may include things like sending questions over beforehand so you can prepare or by providing a BSL interpreter, or something else.

Any support that could be provided:

LET THE RESEARCH TEAM KNOW WHAT THEY WILL NEED TO DO IF THIS IS RELEVANT

Q26. Privacy policy

As part of our commitment to protecting your rights, please note that Verian's privacy policy can be accessed on our website, www.veriangroup.com/uk-surveys. We can also provide you with a written copy of the policy

I confirm that the participant has been made aware of how to access the privacy policy.

4.4 Interview discussion guide

1. Introduction (3 minutes)

Aim: Introduce research, reassure about confidentiality, and set tone of discussion

Moderator should familiarise themselves with participant's responses to the screener survey and use this to understand their context and probe around specific cooling measures the participant has said they have taken where relevant in the interview.

Moderator introduction

- Introduce moderator and Verian
- Research is being conducted on behalf of Department for Energy Security and Net Zero (DESNZ)
- DESNZ wants to understand more about what people know about how to stay cool during periods of particularly hot weather
- Interview will last 60 minutes – if we move the conversation on at any point that is just to ensure we can finish on time
- Research is voluntary – you are free to pause or end at any time without giving a reason
- Research is confidential and anonymous – no personal details will be shared with DESNZ or publicly
- Any questions?

Recording:

- Ask participant for permission to record, then start recording

Participant background

- Can you tell me a bit about your home?
 - How old is your home? Is it a new-build or an older house/flat?
 - Do you own or rent your property?
- Who lives with you, if anyone?
 - (If appropriate, for those with children) How old are they?
 - When are you and the people you live with normally at home during the day?

2. Overall perceptions of impact of particularly hot weather (5 minutes)

Aim: Understand who participants think is most at risk from extreme heat and what the impact is on them and their household

Reflections on particularly hot weather

“I’d like to ask you about weather in the UK over the last few years.”

- Have you noticed any periods of particularly hot weather over the last few years?
 - What do you remember about these?
- Has particularly hot weather affected you? In what way?
- How has it affected anyone in your household, if at all?
- How likely do you think it is that we will experience more particularly hot weather in the future?

Perception of risk

- What do you think are potential risks associated with hot weather, if any?
 - Who do you think particularly hot weather affects?
 - Moderator to listen out for if they identify themselves / their household
 - Why?
- Do you think there are some people who are more at risk when experiencing particularly hot weather?
- (If not covered above) To what extent do you think you personally are at risk from particularly hot weather? Why / why not?
- (If not covered above, and if relevant) To what extent do you think members of your household are at risk from particularly hot weather? Why / why not?

“Research has shown that some people are more at risk from heat, including adults aged 65+, children under 5, people with chronic illnesses or disabilities, those who are pregnant, those who are socially isolated and those who live in lower quality housing.”

- To what extent does this change whether you think you or anyone else in your household is at risk in particularly hot weather? Why?

3. Cooling measures taken in the past (15 minutes)

Aim: Understand what actions they took to stay cool around their home, and what drove them to take those actions

Previous actions

“Now I’d like you to think back to a time when you remember it being particularly hot.”

If needed:

“In July 2022, temperatures exceeded 40 °C for the first time. Last summer (2025) surpassed all previous records as the warmest summer ever recorded in the UK. It featured four separate heatwaves, and a maximum temperature of 35.8 °C in Kent. Rail services were disrupted as tracks buckled, roads softened under the heat, and water companies urged people to conserve supplies.”

- Do you remember what it was like to live in your property during that period of particularly hot weather?
- Do you remember whether you took any actions around your home to keep cool during that particularly hot weather?
 - Allow spontaneous responses and then prompt around what they mentioned in the screener and/or:
 - Anything they did with windows
 - Anything they did with blinds / curtains
 - Any technology / devices they used
 - Any changes to their behaviour

For each action taken, ask:

- [Very simple actions (e.g. opening windows, closing blinds, using fan)] Can you talk me through when you would open them / close them / use the fan and why?
- [Other actions] What prompted you to take this action?
- Why did you decide to do this action?
- [All] How long have you been doing this / How did you know that this was something you could do to keep cool?
- Where did you hear about this/from whom?
- Did you do this action in combination with any other actions?
- How effective were these actions at keeping you cool?

Note to use STIM A (actions carried out) if useful to jog participant’s memory.

Actions considered & future actions

- Was there anything you considered doing to keep cool during the particularly hot weather, but didn't do in the end?
 - Why did you not end up doing this?
- Is there anything else you've heard about as a way to stay cool, but haven't done?
 - What prevented you from doing it?
- Is there anything you might do in the future to stay cool?

4. Potential cooling measures (15 minutes)

Aim: To explore existing awareness of cooling measures, their likelihood of adopting these and what the barriers and facilitators of adoption are

"Now I want to talk about other potential actions you could take to stay cool, and how feasible or appealing these are to you."

Actions might consider

"When you were volunteering to take part in this research, these are things you said you might consider doing."

STIM B (Actions considered)

For each action they might consider doing:

- Had you heard of this action before?
 - If yes, how did you hear about this?
 - Probe: messenger, channel
- Why would you consider taking this action?
 - What is appealing about it?
- Would there be any potential challenges with taking this action – if so, what?
 - What might prevent you from doing it?

Allow spontaneous response around barriers, noting which COM-B factors they relate to. If needed:

- Would you know how to do this? How effective do you think this might be?
- Is there anything that would stop you from physically being able to do this?
- How appealing is this to you?
- Are there any other factors stopping you from doing this?
 - What would need to happen to make this possible / desirable for you? What questions do you have about taking this action, if any?
- What questions do you have about taking this action, if any?

- If key issue is cost or landlord permission: Imagining that cost/permission is not an issue, would you want to take this action?
- What is/isn't desirable about taking it?
- What other barriers might you face in taking it?
- What would you need to overcome these?

After all options have been discussed:

- Are there any combinations of actions you feel you'd be likely to do together? Why?
- Would taking any of these actions make you less likely to do another of the actions?
- What would be the one action here you would be most likely to think was worth taking? Why?

Actions unlikely to consider

STIM C (Actions unlikely to consider)

"When you were volunteering to take part in this research, these are things you said you would be unlikely to consider doing."

- Had you heard of any of these actions before?
 - If yes, how did you hear about them?
 - Probe: messenger, channel

Allow the participant to pick 1-2 to talk about, then researcher to ask about 1-2 more

- Why would you be unlikely to consider taking this action?
- What would the potential challenges be with taking this action?

Allow spontaneous response around barriers, noting which COM-B factors they relate to. If needed:

- Would you know how to do this? How effective do you think this might be?
- Is there anything that would stop you from physically being able to do this?
- How appealing is this to you?
- Are there any other factors stopping you from doing this?
- What would need to happen to make this possible / desirable for you?

5. Information sources (15-20 minutes)

Aim: Understand from where and whom participants have heard/would expect to hear information from

"I now want to talk about where you have received information on what to do during periods of particularly hot weather, or where you'd expect to receive this information."

Note that some of this may have been covered in earlier sections, so moderator to adjust as appropriate.

Information they have seen

- Do you remember hearing / seeing any information about the risks of particularly hot weather or how to stay cool?
 - If so, what do you remember finding out?
 - If so, where and when did you hear this information
 - Probe around messenger, channel, and timing
- Why do you think it captured your attention?
 - Was there anything about the wording, images, timing or who shared it?
- What was good about it?
- Could anything have been improved?

Messengers, channels and content

- What type of information would you expect to receive about how to stay cool?
 - Type of information
 - Level of detail / length
 - Tone
- Who would you expect to be giving you this?
- Where would you expect to see this information?
- When would you expect to receive this information?
- How far in advance of particularly hot weather?

Gather spontaneous answers then use STIM D (messengers) & STIM E (channels).

Probe:

- Messengers: which of these they would expect to hear from, which they would trust the most and why, which they think would capture their attention best
- Channels: whether they use any of these channels, which they think would capture their attention best
- Which combination would work best for action considered most worth taking

Potential messages

“I’d now like us to think about potential messages or phrases. I’m going to show you some potential messages that could be used to capture your attention”

Show STIM F (potential messages) and gauge:

- Which they think would best capture their attention and why
- Which they do not find appealing / motivating and why
- Any suggested improvements
- Would it work for action considered most worth taking

“One challenge is that often people think they are not at risk from particularly hot weather when they might be”

- What do you think might help people like you pay attention to potential risks?
- What do you think might help others who are more likely at risk to pay attention to potential risks?
- Prompt with the list of those particularly at risk if participants unsure: adults aged 65+, children under 5, people with chronic illnesses or disabilities, those who are pregnant, those who are socially isolated and those who live in lower quality housing
- What would prompt **you specifically** to consider the risks?

Note spontaneous answers and then use Stim G (risk perception messages):

- Which they think would best capture their attention and why
- Which they do not find appealing / motivating and why

6. Final reflections and close (5 minutes)

Aim: Gather final reflections and wrap up the interview

Close

- Overall, what do you think is the biggest thing stopping you from taking up measures / actions to stay cool?
- Which are the measures / actions you would be most willing to do (that you don’t do currently)?
- Overall, what do you think would be the best way to get your attention if someone wanted you to take actions to stay cool in particularly hot weather?
- Is there anything else you feel we’ve not covered or you want to discuss more?
- Clarify incentive arrangements
- Thank and close

4.5 Research stimulus materials

Participants were shown stimulus on PowerPoint Slides presented by the moderator.

Stimulus A: Actions Carried Out:

N.B. Stimulus adapted to each participant to include only the options they chose as 'I did this' in the recruitment screener.

[Slide reads an adapted version of]

- Open windows at night
- Keep windows closed during the hottest parts of the day
- Use a standing fan or table fan
- Close existing curtains or blinds during the day
- Switch off unnecessary appliances or lights
- Install internal blinds or shutters on windows exposed to direct sunlight
- Install thermally lined curtains on windows exposed to direct sunlight
- Install integrated blinds on windows exposed to direct sunlight
- Add a solar reflective film to the inside of window panes
- Add internal insulation to hot water pipes, lofts or walls
- Install air conditioning units
- Install external fixed shading (e.g., shutters or awnings) on windows or doors
- Install external removable shade on windows or doors (e.g., detachable blinds)
- Paint external window panes or walls with white solar reflective paint
- Add a solar reflective film to the outside of window panes or add solar reflective surface material on roofs
- Replace windows to increase how far they can open
- Install a heat pump that offers cooling (i.e., reversible heat pumps)
- Put up a shade sail or canopy, shade umbrella or gazebo (i.e., external wall shading)

Stimulus B: Actions Might Consider:

N.B. Stimulus adapted to each participant to include only the options they chose as 'I haven't done this but might consider doing it' in the recruitment screener.

[Slide reads an adapted version of]

- Open windows at night
- Keep windows closed during the hottest parts of the day
- Use a standing fan or table fan
- Close existing curtains or blinds during the day
- Switch off unnecessary appliances or lights
- Install internal blinds or shutters on windows exposed to direct sunlight
- Install thermally lined curtains on windows exposed to direct sunlight
- Install integrated blinds on windows exposed to direct sunlight
- Add a solar reflective film to the inside of window panes
- Add internal insulation to hot water pipes, lofts or walls
- Install air conditioning units
- Install external fixed shading (e.g., shutters or awnings) on windows or doors
- Install external removable shade on windows or doors (e.g., detachable blinds)
- Paint external window panes or walls with white solar reflective paint
- Add a solar reflective film to the outside of window panes or add solar reflective surface material on roofs
- Replace windows to increase how far they can open
- Install a heat pump that offers cooling (i.e., reversible heat pumps)
- Put up a shade sail or canopy, shade umbrella or gazebo (i.e., external wall shading)

Stimulus C: Actions Unlikely to Consider:

N.B. Stimulus adapted to each participant to include only the options they chose as 'I haven't done this, and am unlikely to consider doing it' in the recruitment screener.

[Slide reads an adapted version of]

- Open windows at night
- Keep windows closed during the hottest parts of the day
- Use a standing fan or table fan
- Close existing curtains or blinds during the day
- Switch off unnecessary appliances or lights
- Install internal blinds or shutters on windows exposed to direct sunlight
- Install thermally lined curtains on windows exposed to direct sunlight
- Install integrated blinds on windows exposed to direct sunlight
- Add a solar reflective film to the inside of window panes
- Add internal insulation to hot water pipes, lofts or walls
- Install air conditioning units
- Install external fixed shading (e.g., shutters or awnings) on windows or doors
- Install external removable shade on windows or doors (e.g., detachable blinds)
- Paint external window panes or walls with white solar reflective paint
- Add a solar reflective film to the outside of window panes or add solar reflective surface material on roofs
- Replace windows to increase how far they can open
- Install a heat pump that offers cooling (i.e., reversible heat pumps)
- Put up a shade sail or canopy, shade umbrella or gazebo (i.e., external wall shading)

Stimulus D: Messengers

[Slide reads]

- Local Authority
- Weather Service
- NHS
- Central Government
- News/Broadcasters
- Emergency Services
- Local Doctor/GP
- Schools
- Celebrities/known figures
- Religious leaders/institutions
- Other community groups
- Community health worker
- Charities/advice services
- Employer
- Private companies
- Public transport providers

Stimulus E: Channels

[Slide reads]

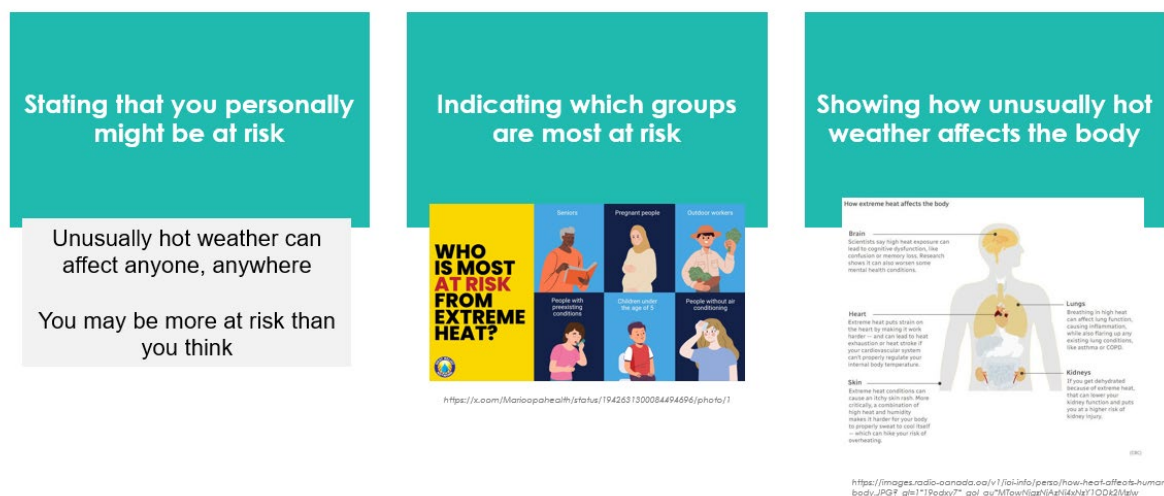
- Radio
- Physical (e.g. posters, buses, leaflets)
- Online
- TV/streaming services
- Text alerts
- Social media
- Documentary/podcast/programme
- Warning system (alerts on phones)

Stimulus F: Messages 1

[Slide reads]

- F1: Protecting yourself and your family from heat risks has many benefits – from staying cool to reducing your risk of heat stroke and other illnesses
- F2: Many ways to stay cool are simple and easy to implement
- F3: More and more people are taking actions to prepare themselves for unusually hot weather
- F4: Whilst particularly hot weather can be enjoyable, it also comes with risks. Particularly hot weather can lead to illness, death and lasting health consequences

Stimulus G: Risk Perception Messages



[Slide reads]

- Stating that you personally might be at risk: Unusually hot weather can affect anyone, anywhere. You may be more at risk than you think.
- Indicating which groups are most at risk: Image including the text:
 - Who is most at risk from extreme heat?
 - Seniors, Pregnant people, Outdoor workers, People with pre-existing conditions, Children under the age of 5, People without air conditioning.
- Showing how unusually hot weather affects the body: Image including the text:
 - Brain: Scientists say high heat exposure can lead to cognitive dysfunction, like confusion or memory loss. Research shows it can also worsen some mental health conditions.
 - Heart: Extreme heat puts strain on the heart by making it work harder – and can lead to heat exhaustion or heat stroke if your cardiovascular system can't properly regulate your internal body temperature.
 - Skin: Extreme heat conditions can cause an itchy skin rash. More critically, a combination of high heat and humidity makes it harder for your body to properly sweat to cool itself – which can hike your risk of overheating.
 - Lungs: Breathing in high heat can affect lung function, causing inflammation, while also flaring up any existing lung conditions, like asthma or COPD.
 - Kidneys: If you get dehydrated because of extreme heat, that can lower your kidney function and puts you at higher risk of kidney injury.

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