Linking Climate Change and Health Impacts

Social research exploring awareness among Victorians and our healthcare professionals of the health effects of climate change

Research snapshot

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Grampians National Park, Victoria
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Climate change and health

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Introduction

The impacts of climate change on health and the cost of inaction

In the wake of the Paris Agreement, the World Health Organisation and *The Lancet*, widely considered the most authoritative journal in global medicine, described climate change as:

> *"the biggest global health threat of the 21st century."*

Globally, an average temperature rise of 1°C above pre-industrial levels has already resulted in extreme climatic changes such as intensified storms and floods, extended heatwaves and droughts, new infectious diseases, and destabilised food systems.

Without serious action to reverse the effects of climate change, health systems worldwide will have to cope with a growing crisis in both physical and mental health as inaction undermines progress towards the UN Sustainable Development Goals. The threat is considered so serious by the global medical community that *The Lancet* began to publish the 'Lancet Countdown Indicators' in 2017, an annual global evaluation of nations' responses to climate change, and the health impacts that could be avoided with a low carbon transition.

It is increasingly apparent that the impact of climate change on health will be costly. In November 2019, the global bank HSBC predicted the impacts of climate change will result in a five-fold increase in the cost of public health. This is a result of higher temperatures increasing the risk of heatstroke, dehydration and respiratory problems, as well as causing direct injuries and displacement from extreme weather, mental health issues due to disruption and loss, and the spread of disease and illness. The costs are expected to reach almost US$10 trillion (A$14.5 trillion) a year by 2050.

Conversely, the benefits of climate action for public health are great. The Climate and Health Alliance (CAHA) notes that the health benefits from climate mitigation policies reducing air pollution can offset the cost of implementation tenfold.

Here in Australia, CAHA asserts that a "substantial and growing body of scientific evidence is highlighting that the public health risks posed by climate change represent a health emergency." The Royal Australasian College of Physicians (RACP) reports that there are already noticeable health impacts occurring from environmental changes, and the Australian Medical Association (AMA) recognises climate change as a health emergency with clear scientific evidence indicating severe impacts for their patients. The Climate Council has found that major heatwaves have caused more deaths since 1890 than bushfires, cyclones, earthquakes, floods and severe storms combined. Since 1960, the number of record hot days in Australia has doubled, and climate change is resulting in longer, hotter and more intense heatwaves. Reduced productivity due to extreme heat is estimated to cost the Australian economy over $8 billion annually, with economic losses and health risks increasing every year (CAHA, 2017).

Victoria has already experienced direct physical health impacts from extreme events such as heatwaves, floods and bushfires. All are expected to intensify and occur with greater frequency due to climate change. Victoria has also experienced events expected to have significant indirect impacts on health, such as *E. coli* and blue-green algal blooms affecting water quality and food supply, Ross River Virus outbreaks, asthma thunderstorms, and air pollution from bushfires.

While many health organisations are aware that climate change is impacting human lives and health in multiple ways, Sustainability Victoria wanted to know whether Victorians – both the public and healthcare professionals on the ground – were making this link. Do Victorians understand that climate change threatens the essential ingredients of good health – clean air, safe drinking water, nutritious food supply, and safe shelter?

Research approach

Sustainability Victoria conducted statewide research to provide measures for community awareness and knowledge of the health impacts of climate change.

The research, undertaken in 2019, was conducted using an online methodology involving two separate surveys:

1. a community survey conducted among a representative sample of 3,060 Victorians aged 15 years and above
2. a health sector survey collecting feedback from over 700 Victorian healthcare professionals.

The sample size allows analysis of state results by standard demographics such as age, sex, income, housing status, education, and regional comparisons.

At a glance

What the research tells us

Gaps in awareness and knowledge of health conditions linked to climate change

- Victorian healthcare professionals are **already seeing climate change-related health conditions** in their communities such as thunderstorm asthma, heat stress or heatstroke, pollen-related allergies, and lung conditions from increased air pollution. Depression or severe anxiety related to climate change was noted by half of surveyed healthcare professionals and approximately one third (higher in regional areas) report dealing with insect-borne diseases and illnesses caused by contaminated food or water.
- Most healthcare professionals believe **the incidence of these health conditions will increase significantly over the next 10 years**, particularly **heat-related conditions and mental health** conditions linked to climate change. This increase in incidence will correspond with increased pressure on health services and health infrastructure due to climate change impacts.
- Healthcare professionals strongly believe **the public needs to be better informed about the health risks of climate change**. They see a role for healthcare professionals in helping raise awareness, however, **many indicate insufficient knowledge themselves**, and highlight the need for the full range of issues to be covered in undergraduate education for health-related professions and in on-going professional development training.

Young people are more aware of climate change-related health impacts and more likely to experience strong negative emotions

- The health impacts of climate change are more front-of-mind for young people and this demographic is potentially at higher risk of developing climate change-related mental health conditions. Around half of **young Victorians report extreme feelings of frustration, fear, sadness and outrage**. Also of note is that four out of five healthcare professionals (79 per cent) report feeling "overwhelmed" when thinking about the future impacts of climate change.

Public housing tenants are at high risk from climate change-related health impacts due to the poor thermal quality of Victoria's housing

- Healthcare professionals warn that **people living in poor quality housing** without efficient heating or cooling are **"extremely vulnerable"** to climate change health impacts. The majority (95 per cent) also advise that the **thermal properties of housing will become more important** as the frequency of extreme weather events increases. Currently, one third of healthcare professionals believe poor **quality housing is already a "major health problem" in Victoria**.

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At a glance

What the research tells us

- Many Victorians (51 per cent) are in housing that gets too cold during winter and too hot during summer**. Close to half (45 per cent) of those residing in public housing have reported leaving their homes during extreme temperatures** due to thermal discomfort.
- Victorians' **knowledge of healthy indoor temperatures is dangerously low** with around half significantly over or underestimating healthy temperatures during summer and winter. Given the potential harms to health, awareness of healthy home temperatures will need to be improved.

There is public support for further action on climate change with co-benefits for health

- More than 90 per cent of healthcare professionals believe that the Australian Government and the State Government **should be doing more to address climate change** and three quarters believe their own healthcare practice or organisation could be doing more.
- Most Victorians believe that **all levels of government should be acting on health and climate change**, and that the Australian and State Government should be leading the way. There is also strong support for actions and policy that would improve public health and mitigate climate change impacts:
  - **71 per cent agree** that **all new vehicles should have to meet strict environmental standards** to help ensure cleaner air and lower greenhouse gas emissions
  - **57 per cent agree** that Victorians should urgently be encouraged and **incentivised to shift to low emissions and cleaner powered vehicles**.
- Two thirds of Victorians agree that it is **cheaper to prevent climate change now** than to pay the price later. In November 2019, the global bank HSBC predicted the impacts of climate change in countries like Australia will result in a five-fold increase in the cost of public health - costs are expected to reach almost US$10 trillion (A$14.5 trillion) a year by 2050.

1. Community survey results

The following analysis is based on the feedback of a representative sample of 3,060 Victorians. The spread of sample across key demographics is shown below.

Age (years)	n	Sex	n	Location		Housing	n
15-29	**642**	Male	**1,351**	Regional	**1,031**	Home owner	**1,903**
30-44	**761**					Renter	**684**
45-59	**759**	Female	**1,701**	Metro	**2,030**	Public Housing	**120**
60+	**899**					With parents	**3**

1.1. Linking health and climate change

Health remains a top priority issue for Victorians. Climate change ranks lower in priority than the cost of living, jobs and the economy, housing affordability and crime.

Climate change impacts that most readily come to mind for Victorians are extreme weather events, hotter summers, the rising cost of energy and food, and environmental damage. Fewer spontaneously mention health effects (under 10 per cent), however, that figure almost doubles when respondents are asked to think about future impacts.

Victorians rank health as their top priority yet…

90%

haven't thought about how health is affected by climate change

Young people aged 15-17 years are significantly more likely than other age groups to spontaneously mention health when thinking about future climate change impacts (32 per cent compared to 17 per cent) and were also more likely than other age groups to have thought about this issue beyond "a little", (57 per cent of 15 to 29-year-olds have thought about climate change health impacts a "moderate" or "great amount" of time, compared to 45 per cent respondent average).

Although Victorians do not spontaneously link health impacts to climate change, when prompted, the connection is readily accepted with over half (58 per cent) recognising health as one of the main ways they are likely to be affected by climate change, (this increases to 73 per cent for the 15-24 years cohort). Furthermore, over half (56 per cent) believe that their health is currently affected by climate change to some extent, (37 per cent "a little", 14 per cent "moderately" and five per cent "greatly").

When prompted, the connection is readily accepted

58% recognise health as one of the main ways they are likely to be affected by climate change

Impacts	All Victorians	15-24	25-34	35-44	45-64	65+
Cost of living	67%	66%	70%	68%	68%	63%
Healthy environment	63%	66%	59%	60%	62%	60%
Human health	58%	73%	56%	50%	57%	57%

1.2. Environmental impacts linked to climate change

The specific environmental conditions most respondents (60-70 per cent) expect to become more common in Victoria over the next 10 years include:

- extreme heat
- drought
- air pollution
- natural disasters (floods, fires)
- increases in pollen/allergens.

Between 35 and 40 per cent thought that food and water contamination would become more common.

1.3. Health conditions linked to climate change

Specific health conditions that most respondents (60-65 per cent) expect to become more common over the next 10 years due to climate change include:

- heat stress and heat stroke
- lung complains from increased air pollution such as asthma and lung disease
- thunderstorm asthma
- pollen-related allergies.

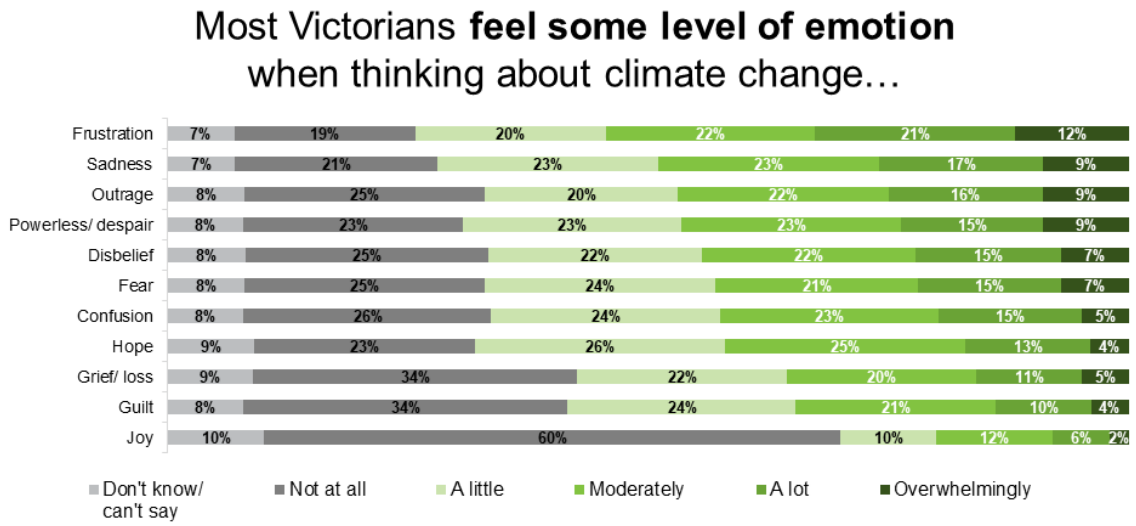
Other conditions, mentioned by around half of respondents, include:

- poor nutrition due to food quality or cost
- physical bodily harms linked to extreme events
- mental health, depression or severe anxiety related to climate change
- diseases carried by insects
- illness caused by contaminated food or water.

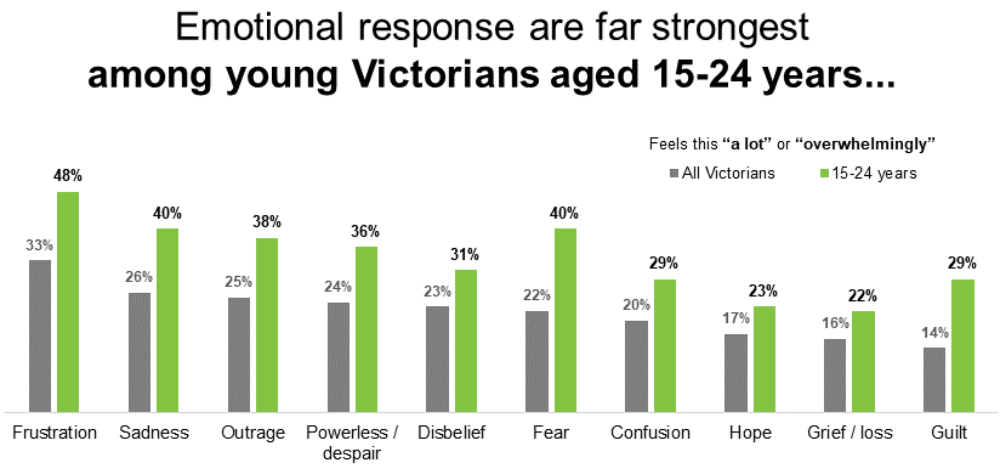
Significant proportions of the public, however, remain unaware of a range of health conditions that health professionals believe will become more common, and in some instances, the people most likely to be unaware are those most 'at risk' of the condition. For example, young men and older people were less likely to be aware of heatstroke and heat stress, yet it is people from these sub-groups who are most vulnerable to these health conditions.

1.4. Emotional responses to climate change and eco-anxiety

The majority of Victorians (75 per cent) feel some level of frustration when they think about climate change. They also feel sadness, (72 per cent), despair (70 per cent), outrage and fear (67 per cent each). Worryingly, significant proportions of respondents (one quarter to one third) report feeling these negative emotions beyond moderate, i.e., “a lot” or at an “overwhelming” level.



Strong emotions in relation to climate change are significantly more likely to be experienced by younger respondents, with around 40 to 50 per cent reporting strong, negative feelings of frustration, fear, sadness and outrage. To some extent these emotions are also felt by other Victorians, however, not at the strong or extreme levels reported by younger respondents.

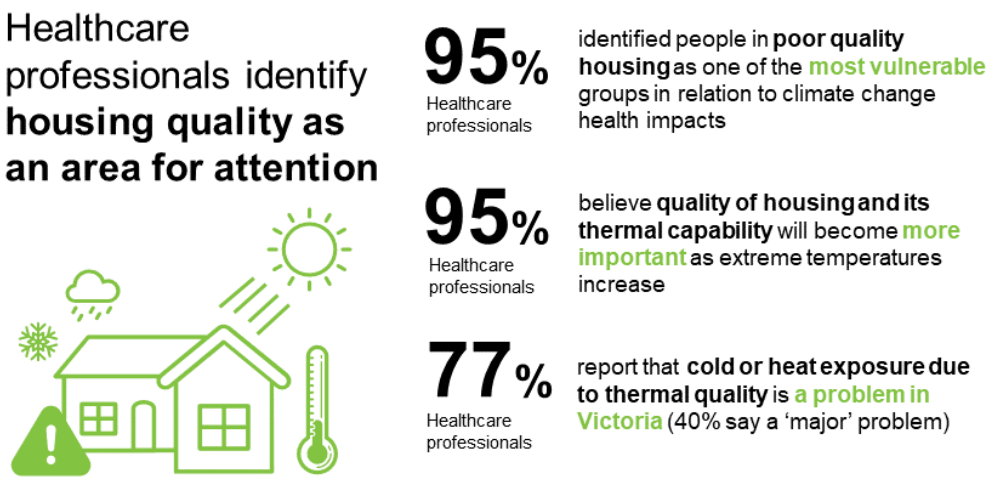


A general sense of feeling “overwhelmed” when thinking about the future impacts of climate change is also higher among young Victorians, 59% of 15-24 year-olds compared to 41% of Victorians, and even higher among healthcare professionals (79 per cent), particularly young healthcare professionals (84 per cent of those age 18-39 years).

1.5. Health and thermal comfort of housing

As climate change impacts increase, the thermal quality of housing is recognised by most Victorians (approximately 70 per cent) as an area of increasing importance to health and wellbeing.

Healthcare professionals warn that poor thermal qualities in housing is already a problem in Victoria (40 per cent say it is a “major” problem), and will become more problematic as temperature extremes increase. They also identify people living in poor quality housing as “one of the most vulnerable groups” in relation to climate change and health impacts.



When asked about thermal comfort at home during winter and summer, half of Victorians reported been colder than they would have like last winter and slightly more (54 per cent) said their home had been too hot last summer. These figures increase significantly for those living in public housing (61 per cent and 65 per cent respectively).

During times of extreme heat 19 per cent of Victorians have had to leave their home because it was too hot to stay in. Similarly, 8 per cent have left their home because it was too cold. For Victorians in public housing, almost half (45 per cent) have had to leave their home at some point because of extreme heat or cold. When their homes got too hot or cold, Victorians went to movie theatres (21 per cent), swimming pools (19 per cent), libraries (13 per cent) and community centres (seven per cent).

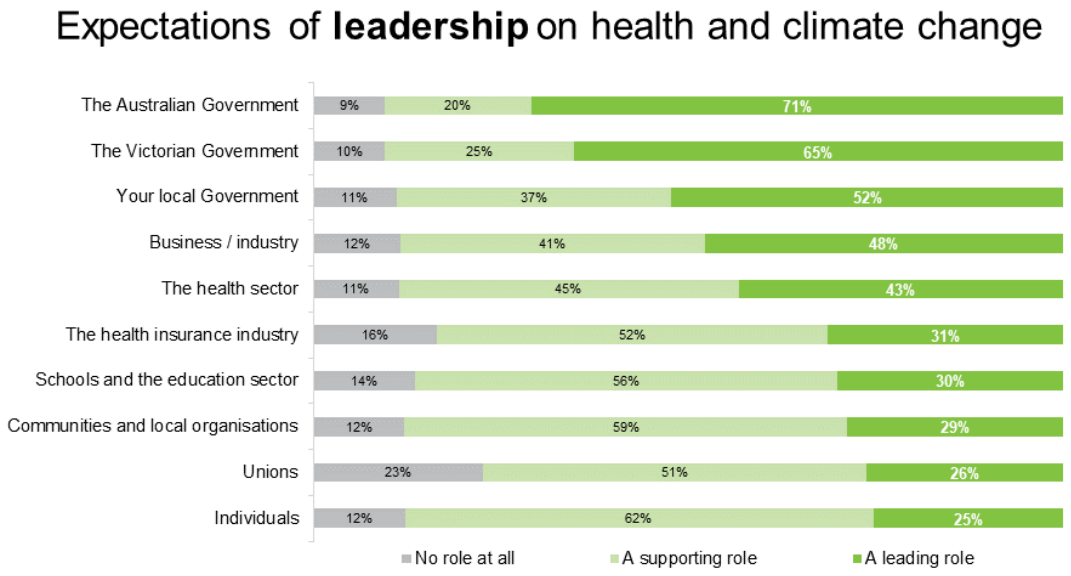
As weather extremes increase, communities will need to be prepared!

1.6. Knowledge of healthy temperatures in home

Victorians' knowledge of healthy indoor temperatures is low with around half significantly over or underestimating healthy temperatures during summer and winter. Approximately half thought home temperatures *above 30°C* and *below 13°C* were acceptable, however, the 'healthy range' is between 18°C and 26°C. Given the potential harms to health, and recent media coverage of the increase in hypothermia among older people, awareness of healthy home temperatures, along with the importance of energy efficiency and thermal quality of the home, will need to be raised among Victorians and reinforced by healthcare professionals.

1.7. Expectations of leadership on the issue

The majority of Victorians believe that all levels of government should be acting on health and climate change, and that the Australian and State Government should be leading the way. Local government should also be taking action, with just over half of Victorians believing that their local government should be leading action on this issue. The health sector was also expected to be acting, although respondents were split on whether it should be a leading or supporting role (43 per cent and 45 per cent respectively).



1.8. Strong support for actions and policy on health and climate change

Victorians show strong support for actions and policy that would improve health and help mitigate climate change:

- 71 per cent agree that all new vehicles should have to meet strict environmental standards to help ensure cleaner air and lower greenhouse gas emissions
- 57 per cent agree that Victorians should urgently be encouraged and incentivised to switch to low emissions and cleaner powered vehicles
- 67 per cent agree that it is cheaper to prevent climate change now than to pay the price later.

In terms of actions related to day-to-day travel, Victorians are thinking of walking or cycling more (41 per cent), using public transport (34 per cent), reducing car trips (27 per cent), carpooling (14 per cent), or switching to an electric or low emissions vehicle (11 per cent).

71% Victorians

Agree that **new vehicles should meet strict environmental standards** to ensure cleaner air and lower greenhouse gas emissions

58% Victorians

Agree that Victorians **should be encouraged and incentivised** to shift to low emissions vehicles

67% Victorians

Think that it's **cheaper to act on climate change now** than to pay the price later

1.9. Coping capacity and vulnerable groups

When asked about coping with climate change impacts, around one-quarter thought they would cope poorly financially, 17 per cent felt they would cope poorly physically and 15 per cent felt they would cope poorly mentally.

Those more likely than their counterparts to think they will cope poorly include:

- females
- those already in poor health
- those living in public housing.

In relation to mental health, young respondents aged 15-29 years were significantly more likely than other age groups to think they would cope poorly (25 per cent compared to 15 per cent average).

Among Victorians in **poor health**:

- 35 per cent feel they will cope poorly overall (compared to 14 per cent of other Victorians)
- 26 per cent feel they will cope poorly socially (9 per cent of other Victorians)
- 30 per cent feel they will cope poorly mentally (14 per cent of other Victorians)
- 43 per cent feel they will cope poorly physically (15 per cent of other Victorians)
- 43 per cent feel they will cope poorly financially (23 per cent of other Victorians)

Among Victorians **living in public housing**:

- 28 per cent feel they will cope poorly overall (compared to 15 per cent of other Victorians)
- 17 per cent feel they will cope poorly socially (10 per cent of other Victorians)
- 28 per cent feel they will cope poorly mentally (14 per cent of other Victorians)
- 31 per cent feel they will cope poorly physically (16 per cent of other Victorians)
- 40 per cent feel they will cope poorly financially (23 per cent of other Victorians)

These results indicate that support needs to be focused on these groups and care needs to be taken to avoid overwhelming vulnerable cohorts of Victorians who may experience a sense of powerlessness — or become more distressed or anxious — about the issue.

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1.10. Information needs, preferred channels and trusted sources

Approximately one in five Victorians (18 per cent) feel confident in their level of knowledge on the health impacts of climate change, increasing to just over one quarter (27 per cent) among respondents aged 15 to 29 years.

Approximately three quarters of Victorians were interested in knowing more about the health impacts of climate change and actions that will benefit health while mitigating climate change impacts, including one third who indicated they had “strong” interest. Similar proportions are also interested in knowing more about local government actions and what the health system is doing to adapt to climate change.

More than three-quarters **would like to know more** about the following…

- The health impacts of climate change (77%)
- How to reduce emissions and help stop climate change getting worse (77%)
- What behaviours will benefit health and also mitigate against climate change? (78%)

Preferred channels

Preferred channel by far is **television**

One third also mentioned:

Websites
DHHS, DELWP & BOM and local council

Radio

Newspapers
State & National

The **most trusted sources** for providing information on health impacts of climate change are emergency services organisations, health professionals, General Practitioners and climate scientists.

2. Healthcare professionals' survey results

2.1. Engagement high

Interest in climate change health impacts is strong among healthcare professionals, with eight in 10 stating they are "very interested". Most healthcare professional respondents (92 per cent) believe that climate change is a serious problem that needs immediate action, while over half (56 per cent) have thought about climate change health impacts "a great deal".

Most healthcare professionals, 79 per cent, at times feel overwhelmed when thinking about the future impacts of climate change – double the proportion of the public.

94%
of GPs and nurses are **very interested in health and climate change** and **over half say it's on their mind a 'great deal' of the time**

79%
of **healthcare professionals** feel overwhelmed when thinking about the future impacts of climate change **(compared to 41% of public)**

Public health and health services already being impacted

Just over 80 per cent all healthcare respondents believe that climate change is already impacting public health in Victoria, "a little" (22 per cent), "moderately" (38 per cent) or "greatly" (24 per cent), and 91 per cent believe public health will be impacted in 10 years' time (7 per cent "a little", 27 per cent "moderately" and 57 per cent "greatly").

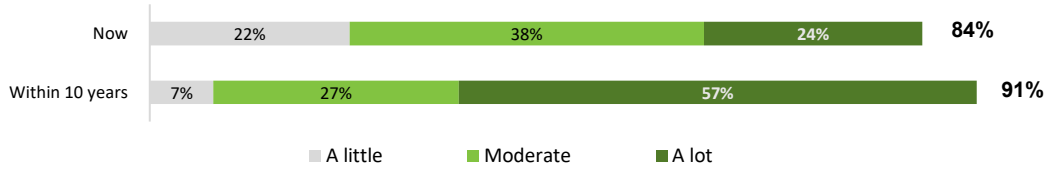
84%
Healthcare professionals say **climate change is already harming public health**

57%
say within 10 years the impact of climate change on public health will be significant

Over half (54 per cent) believe that the state's health services and infrastructure is already being affected by climate change (either moderately, 34 per cent, or greatly, 20 per cent), and eight in 10 (82 per cent) believe they'll be impacted over the next 10 years (32 per cent moderately and 54 per cent greatly).

A sizeable proportion of healthcare professionals have already experienced disruptions in their own practice or organisation as a result of extreme weather events. These disruptions include staff absenteeism (44 per cent), increased demand for services (41 per cent), and effects on staff health (34 per cent).

Climate change - Impact on public health



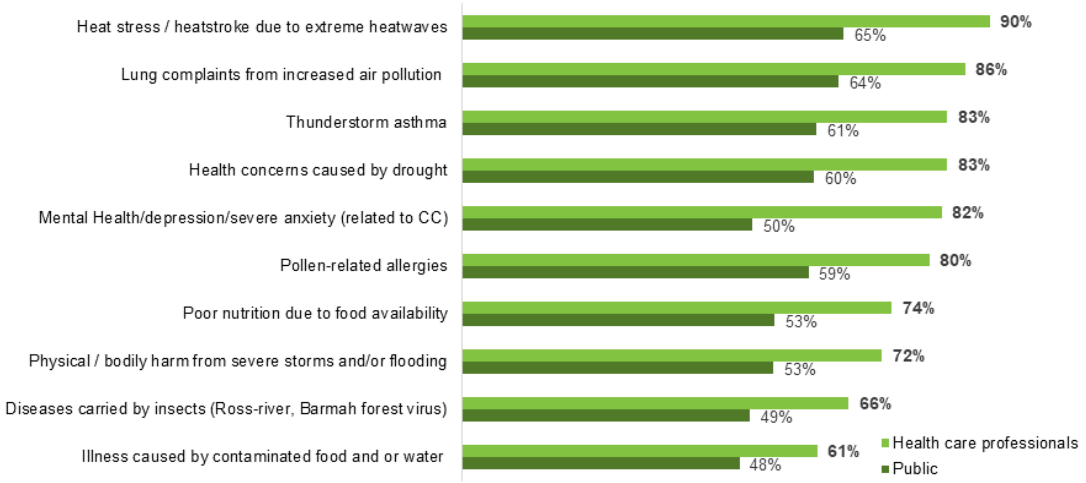
2.2. Health conditions linked to climate change

Between 60-70 per cent of healthcare professional respondents report already seeing climate change-related health conditions in their community, such as thunderstorm asthma, heat stress or heatstroke, pollen-related allergies and lung conditions from increased air pollution. Approximately half (51 per cent) report mental illness such as depression or severe anxiety related to climate change, while just over one third report seeing conditions related to drought, bushfires and poor nutrition. Disease carried by insects was lower, reported by 29 per cent, as was diseases caused by contaminated food or water (23 per cent).

The clear majority of healthcare professional respondents believed the incidence of these health conditions will increase significantly over the next 10 years. Mental health conditions related to climate change and heat stroke / heat stress had the highest proportion of healthcare professionals predicting that they would become “a lot more common”.

Healthcare professionals were more likely than the public to believe that each of these climate change health-related conditions would increase over the next 10 years, as shown in the graph below.

The public’s view of health conditions that could become more common due to climate change, **differs significantly from the views of health care professionals**



2.3. Most vulnerable groups

According to healthcare professionals, those in society who are most vulnerable to climate change health impacts include the poor and disadvantaged and/or those in poor quality housing without efficient heating or cooling, those with existing health conditions, people aged over 65 years, residents of remote areas and indigenous populations – are all considered "extremely vulnerable" by the majority (70 per cent or more) of healthcare professional respondents.

Approximately 40 per cent of healthcare professionals believed poor quality housing is a "major problem" in Victoria with a further 36 per cent saying it is "somewhat" of a problem, 39 per cent believe it to be a "major" problem during cold months and 43 per cent said a "major" problem during summer months.

The importance of housing quality will be increasingly pivotal to public health with almost all healthcare professionals (95 per cent) agreeing that the thermal properties of housing will become more important as climate change increases the frequency of extreme weather events.

Healthcare professionals identify **housing quality as an area for attention**

95% Healthcare professionals identified people in **poor quality housing** as one of the **most vulnerable** groups in relation to climate change health impacts

77% Healthcare professionals report that **cold or heat exposure due to thermal quality** is **a problem in Victoria** (40% say a 'major' problem)

Quality of housing and its thermal capability will be **more important** as extreme temperatures increase

2.4. Expectations of action

The clear majority of healthcare professionals believe that all levels of government, business and industry, individuals, the health sector, schools and community groups should all be doing more to protect Victorians from the health impacts of climate change. Over 90 per cent believed that the Australian Government and the State Government should be doing more.

Four in five healthcare professionals (83 per cent) agreed that health services and health organisations should be leading action on climate change to ensure the temperature rise remains under two degrees, and three quarters believed their own practice or organisation could be doing more on this front.

91% Healthcare professionals

Believe **Vic government should be doing more to protect people** from health problems related to climate change

85% Healthcare professionals

Believe the **health sector should be doing more to protect people** from health problems related to climate change

76% Healthcare professionals

Believe **their own practice** or organisation **could be doing more** on this front

46% Healthcare professionals

Agree that **action to help tackle climate change is already happening or is on the agenda** in their organisation

2.5. Informing the public

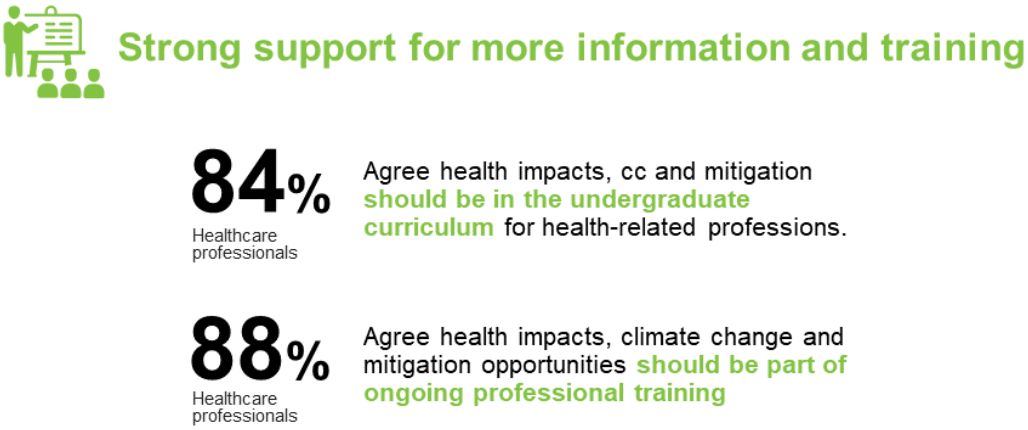
Most surveyed healthcare professionals (93 per cent) felt that the public needed to be better informed about the link between climate change and health and the link between air pollution and health.

The majority (86 per cent) also agreed that healthcare professionals have a role to play in informing the public about the health impacts of climate change. However, only 26 per cent currently discuss such issues with their patients or clients (the figure increases to 42 per cent among GPs). This may be due to lack of confidence in their level of knowledge as only one third (33 per cent) agreed that they were sufficiently informed on the health impacts of climate change (increasing to 46 per cent among GPs and specialists). In addition, only around one third felt “very” comfortable discussing the range of climate change issues with patients or clients.

2.6. Gaps in training and professional development for healthcare professionals

Less than one quarter felt there were sufficient education and training opportunities currently available. These results clearly indicate a gap in education and professional training opportunities for healthcare professionals to remain up-to-date and well informed on issues related to climate change health and wellbeing.

Almost nine in 10 (88 per cent) agreed that health impacts, climate change and mitigation opportunities should be part of ongoing professional training, and most (84 per cent) believed that the subject matter should be thoroughly addressed in the undergraduate curriculum for all health-related professions.



2.7. Information channels

Healthcare professionals currently use online news sources and mass media channels such as television and radio to keep informed on health and climate change. State and national newspapers were also used. This was highest among doctors, while social media was used more by allied health professionals and nurses. Various websites, such as the Bureau of Meteorology (BOM), World Health Organisation, Department of Health and Human Services (DHHS) and others, were used by significant proportions (around 30 per cent), as were scientific journals, and professional member organisations or unions. Outside mass media channels, use and preferences varied dependent on type of health professional (eg. doctors, nurses, allied healthcare professional, and specialists) as described below.

GPs: Information channels most commonly used by GPs include generic media outlets such as online news sources, television, national newspapers and radio. Just under half also use scientific/medical journals and specialist health organisations such as the AMA.

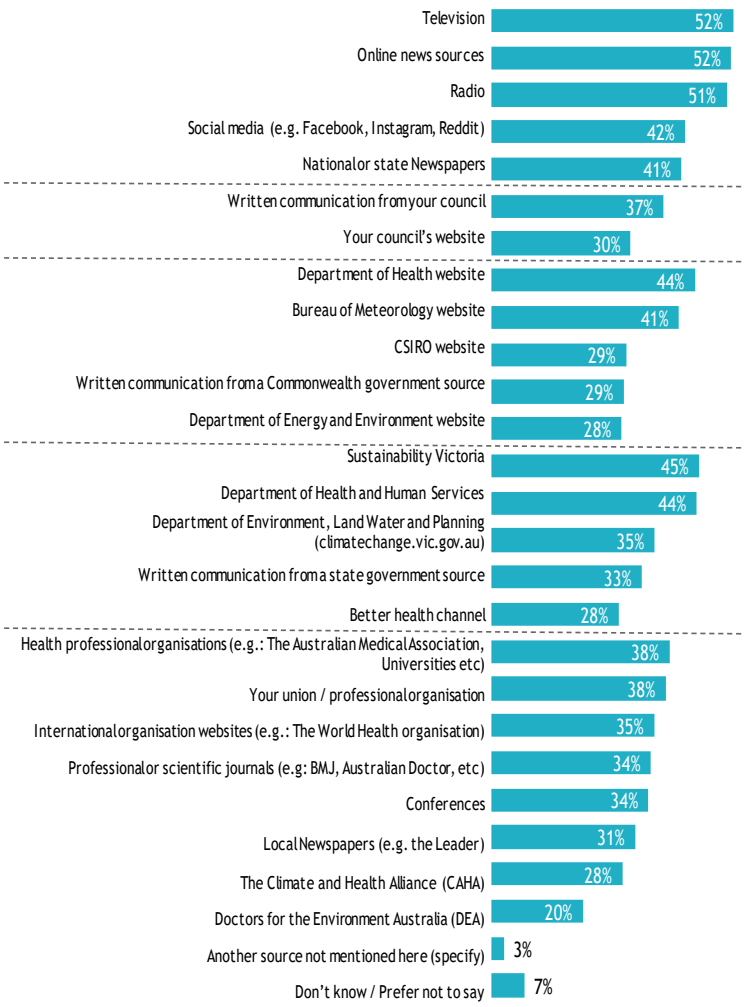
While online news sources remain popular, results indicate that GPs would prefer to source information from more specialist, health-related organisations and health departments.

Nurses: Information channels most commonly used by nurses include online news sources, television, social media and their union /professional organisation (e.g. ANMF). These channels closely reflect their preferences however more would like information from the radio. The top four preferences for nurses were TV, radio, online news and their union / professional organisation.

Allied Healthcare Professionals: Current information channels are social media, online news sources and television. While these are their preferred channels there is also a desire for more information on the radio, the BOM website and via specialist medical organisations such as health departments and professional organisations such as the AMA.

Medical specialists: Current channels for information include online news sources, professional journals and information from Doctors for the Environment. Radio, national newspapers and health professional organisations such as the AMA were also popular. These current channels closely reflect their preferred channels with scientific journals and DEA topping the list.

Preferred channels for climate change and health information are shown below:



		GPs	Nurses	Allied Health	Specialists
Television	Media	39%	61%	47%	31%
Online news sources	Media	49%	53%	54%	47%
Radio	Media	37%	56%	50%	45%
Social media (e.g. Facebook, Instagram, Reddit)	Media	21%	49%	55%	35%
National or state Newspapers	Media	38%	40%	41%	51%
Written communication from your council	Local government sources	36%	37%	35%	24%
Your council's website	Local government sources	19%	34%	27%	16%
Department of Health website	Commonwealth government sources	45%	45%	36%	37%
Bureau of Meteorology website	Commonwealth government sources	31%	41%	46%	39%
CSIRO website	Commonwealth government sources	23%	29%	32%	37%
Written communication from a Commonwealth government source	Commonwealth government sources	31%	29%	28%	18%
Department of Energy and Environment website	Commonwealth government sources	17%	31%	23%	27%
Sustainability Victoria	State government sources	28%	49%	51%	41%
Department of Health and Human Services	State government sources	42%	44%	47%	37%
Department of Environment, Land Water and Planning (climatechange.vic.gov.au)	State government sources	26%	37%	32%	35%
Written communication from a state government source	State government sources	36%	30%	31%	31%
Better health channel	State government sources	27%	28%	28%	20%
Health professional organisations (e.g.: The Australian Medical Association, Universities etc)	Other sources	52%	31%	46%	55%
Your union / professional organisation	Other sources	22%	53%	29%	20%
International organisation websites (e.g.: The World Health organisation)	Other sources	28%	35%	35%	43%
Professional or scientific journals (e.g: BMJ, Australian Doctor, etc)	Other sources	44%	29%	35%	59%
Conferences	Other sources	33%	37%	29%	35%
Local Newspapers (e.g. the Leader)	Other sources	23%	36%	27%	14%
The Climate and Health Alliance (CAHA)	Other sources	17%	30%	24%	31%
Doctors for the Environment Australia (DEA)	Other sources	28%	12%	10%	57%
Another source not mentioned here (specify)	Other sources	2%	1%	0%	8%
Don't know / Prefer not to say	Other sources	4%	7%	5%	8%

Source: E6b. And in the future, how would you prefer to be informed/kept updated on the issues of health and climate change?
Base: 2019 Healthcare Professionals, unweighted, n=760. GPs, n=132; Nurses, n=342; Allied Health Professionals, n=78; Medical Specialists, n=49.

3. Focus areas for further action

The health impacts of climate change are gaining more media traction as high profile global and national health organisations highlight their concerns and the urgent need for action. In Victoria, local stories have emerged of overloaded emergency departments during extreme weather events and elderly patients being treated for hypothermia.

The recent bushfires, which indirectly affected three-quarters of Australians[1], and resulting hazardous air quality which saw Sydney, Canberra and Melbourne each experience periods of the "worst air quality in the world" has provided a direct demonstration of the link between health and climate change and the fact that climate change is having an impact now (rather than the future).

This research presents clear opportunities for action in key areas including:

- **increasing awareness and preparedness** of the public and Victorian-based health professionals on the health impacts of climate change;
- developing policy and programs focused on **improving the thermal qualities of Victoria's houses**, particularly in public housing;
- developing programs and support to **build resilience and preparedness within the health services** and our health systems' infrastructure; and
- Coordinating approaches to combat the expected **increase in mental health conditions** connected to climate change.

It is envisaged that the opportunities outlined above will be further developed collaboratively with key stakeholders.

[1] [1] ANU poll published in the Guardian, 18/2/2020
https://www.theguardian.com/australia-news/2020/feb/18/coalitions-handling-of-bushfires-causes-substantial-decline-in-support-anu-poll-finds

4. Additional information

4.1. Methodology and sample information

This research was conducted in partnership with Melbourne-based consultancy, *WhereTo Research. WhereTo Research* has expertise in government and social research and was selected through a competitive tender process.

4.1.1 Community survey

Data collection

An online survey methodology was used for this research. The survey questionnaire contained a mix of open and closed questions and took respondents (on average) 15 minutes to complete. The quantitative survey was followed up with six focus groups to explore the kinds of information that Victorians may be interested in receiving in relation to health and climate change.

Questionnaire development

The survey instrument used for online research underwent rigorous development and refinement and was shared among a range of our stakeholders for input. A small sample of Victorians (n=10) was recruited to assist with thorough cognitive testing of the survey. This helped to ensure that the survey items were well understood, concise, measured what we intended them to measure, were easy to complete without being unnecessarily long and had response lists that were exhaustive but unrepetitive. The survey commenced mid 2019 a few weeks after the 2019 Federal election.

Sampling

The large sample was designed to ensure any statistically significance differences between regions could be detected. Surveys were completed by a diverse and representative sample of n=3,061 Victorians (see table below for full sample detail). In a bid to minimise any sampling bias that might result from the recruitment methods used by individual panel companies, the sample for this research was obtained from five different panel providers.

Given the need to achieve a robust sample of all Victorians, a minimum of 100 interviews per region was aimed for, and certain regional communities (Central Highlands, Goulburn, Greater South Coast, Mallee, Oven Murray and Wimmera) were purposely oversampled. Given this oversampling, and other minor demographic skews, the community sample was then weighted by age, gender and location based on demographic details from the latest ABS census statistics.

Demographic details of the survey sample are shown in the following tale.

Sample: respondent characteristics for community survey

Demographic	Cohort	Sample Achieved	Unweighted %	Max Margin of Error (+/-)
	TOTAL	n=3,061	100%	1.8%
Regional Locations	Barwon	n=134	4%	8.5%
	Central Highlands	n=112	4%	9.3%
	Gippsland	n=126	4%	8.7%
	Goulburn	n=132	4%	8.5%
	Greater South Coast	n=107	3%	9.5%
	Loddon Campaspe	n=108	4%	9.4%
	Mallee	n=107	3%	9.5%
	Oven Murray	n=110	4%	9.3%
	Wimmera	n=95	3%	10.1%
Metropolitan Alliances Groupings	Western Alliance for Greenhouse Action	n=478	16%	4.5%
	Northern Alliance for Greenhouse Action	n=520	17%	4.3%
	Eastern Alliance for Greenhouse Action	n=496	16%	4.4%
	South East Councils Climate Change Alliance	n=476	16%	4.5%
Age	15-24	n=437	14%	4.7%
	25-34	n=497	16%	4.4%
	35-44	n=469	15%	4.5%
	45-54	n=502	16%	4.4%
	55-64	n=514	16%	4.3%
	65-74	n=416	14%	4.8%
	75+	n=236	8%	6.4%
Gender	Male	n=1,351	44%	2.7%
	Female	n=1,701	56%	2.4%
SES	Low	n=598	20%	4.0%
	Medium	n=1,431	47%	2.6%
	High	n=1,031	34%	3.1%

Note, not all respondents answered all demographic questions

4.1.2 Healthcare professionals survey

A separate survey was developed for healthcare professionals and conducted in parallel to the community survey. This survey was also conducted using an online methodology and cognitively tested with a small group of healthcare professionals prior to administration. On average the survey took 8 minutes to complete.

Sample for this cohort was sourced by sending a survey link to relevant stakeholder organisations for distribution. Organisations who helped distribute the survey included the Department of Human Service and Health (DHHS), The Australian Nursing and Midwifery Association (ANMF) the Primary Health Networks, Doctors for the Environment (DEA) and the Climate and Health Alliance (CAHA). Given that the views of these healthcare professionals may not be representative of the broader population, care must be taken when interpreting these results. It should be noted, however, that a sample of 100 GPs was purchased from a commercial sample provider and used to validate responses obtained from the stakeholder-distributed sample. When comparing GPs from both samples, attitudes and perceptions differed very little, and there was nothing to suggest that insights from the stakeholder sample were not useful or sound.

Sample – respondent characteristics for healthcare professionals survey

	Cohort	Sample Achieved	Unweighted %	Max Margin of Error (+/-)
Occupation*	TOTAL	n=660	100%	4%
	GP	n=132	5%	17%
	Nurse	n=342	52%	5%
	Allied health professional	n=78	12%	11%
	Medical specialist	n=49	7%	14%
	Mid-wife	n=26	4%	19%
	Aged care worker	n=7	1%	37%
	Social worker	n=18	3%	23%
	Community health worker	n=23	3%	20%
	Health promotions officer	n=28	4%	19%
	Other health officer/ PHN staff member	n=14	2%	26%
	Admin	n=10	2%	31%
	Other	n=71	11%	12%
Age (3% left blank)	18-39	n=245	37%	6%
	40-54	n=226	34%	7%
	55-70	n=172	26%	7%
Location (2% left blank)	Metropolitan	n=399	60%	5%
	Regional	n=254	38%	6%

*Respondents could nominate more than one response for occupation, e.g., nurse and midwife

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