

High heat and climate change at work

Report for the United Workers Union



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About this report

This report outlines findings from the 2020-2021 research project into heat stress and climate change, involving members of the United Workers Union (UWU). The project involved a national survey and interviews with UWU members, officials and staff. The project was jointly funded by the UWU and the University of Technology Sydney (UTS), and independently conducted by researchers at the UTS Climate Justice Research Centre.

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More information about the UTS Climate Justice Research Centre's work on climate change impacts for workers is available on our website, toohottowork.org.

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Executive summary

This report outlines findings of a research project into how UWU members across Australia experience and contend with high heat conditions at work, and their views on climate change and its impact on workers. Members also told us about the experience of the 2019-2020 bushfires in their workplace, and the impact of COVID-19 for managing high heat.

The UWU members who participated in this project work as teacher's aides, machine operators, warehouse workers, home carers, cleaners, firefighters, market researchers, veterinary nurses, horticulturalists, chefs, early childhood educators, paramedics, security and custodial workers, and more.

These members experience high heat in several ways. Most work indoors, but many without adequate cooling controls, in unventilated spaces, or near heat-generating equipment and machinery. Some work outside, where they are exposed directly to the elements. Other members work across many different indoor environments, such as clients' homes, with no control over the climate of these workplaces.

Exposure to heat in the workplace is not just a matter of daily temperature forecasts. Humidity levels, cooling controls, ventilation, sun protection, and the level of physical exertion required in a job are all relevant factors contributing to an individual's experience of heat. The ability of workers to rearrange or delay work tasks, take extra breaks, pace themselves, and stop work also determines how they experience and can manage high heat conditions.

Working environment and conditions

'Mainly there's not much ventilation. This is the biggest problem at work ... there's nothing exhausting the hot air out ...'.

- Most members surveyed work indoors only or outdoors less than 30% of the time. Only 15% of workers spend 70% or more of their time outdoors.
- Members generally feel heat most when outside, but for many there are certain indoor locations that involve challenging levels of heat.
- A third of members are regularly lifting loads of 10kg or more, adding another factor to managing high heat. Some members lift heavy loads over 40kg.
- Many members report existing cooling controls in their workplaces do not work properly, are broken, are ineffective in high temperatures, or are available only for customers and not staff.

Impacts of heat on UWU members

'... it's quite terrible. ... you drink way more water, so you're forced off the line, which puts pressure on you to work harder, which makes you sweat more and then tires you out. Essentially, it's just an all-round lose situation because you're hot, overheated, stressed and incredibly sweaty'.

- On hot days 58.1% of members say heat affects them 'quite a bit' or 'very much'. Less than 10% of members are only affected 'slightly' or 'not at all'.
- In the twelve-month period prior to the survey, 20.2% of members were unable to work at some point due to high heat. This included through having work cancelled, a work stoppage, or members' taking sick leave.
- Productivity demands impacting heat management, such as the inability to slow down or take breaks, are a common problem across industries.
- When exposed to heat at work members say they have experienced: fatigue (77.6%); headache (59.9%); poor concentration (50.1%); and nausea and dizziness (36.8%). These are all common symptoms of heat stress.
- Several workers described how they sometimes 'stopped sweating' or lost their appetites, common symptoms of heat-related illness.
- Workers described experiencing or witnessing a range of serious incidents at work, including passing out, seizures, stress, hospitalisation, and fatalities.

Responding to heat stress at work

'Like they've got a lot of stuff in writing saying if it's an extreme day, we'll rotate people, and everyone will get an extra five-minute break each hour. But that's rubbish. It just doesn't happen. You know, they say you can do it, but we just haven't got the manpower to be able to do that ...'.

- Members routinely take actions to protect their health and safety in high heat conditions. This includes through drinking more water and making use of personal protective equipment (PPE) such as hats, sunscreen, and ice vests.
- Although some employers provide cold water, ice blocks and PPE, many do not. Workers interviewed say they often have to bring their own supplies to work.
- Workers whose jobs are externally 'paced', for example by an inflexible roster or by the speed of machines, find it difficult or impossible to slow down or take additional breaks to hydrate and recover in high heat.
- For a number of workers the inability to take more frequent breaks in high heat conditions is related to inadequate staffing.

- Over half of members had never been issued with warnings, advice or information on high heat and heat stress.
- Almost half of members surveyed were unaware if there was a policy or procedure for managing heat stress and high heat in their workplaces.
- In workplaces that have heat policies, some members say it is impossible to get management to act in accordance with them.
- Only 2.4% of members had taken workplace action regarding heat stress issues. Of this group a third were successful and two thirds were unsuccessful.

COVID-19: Complications for heat stress

‘... wearing [a] plastic apron, face mask, eye protection and gloves makes me sweat profusely, causing dehydration, fatigue and headaches. It is impossible to work without a higher risk of causing an injury and [I] cannot perform at an efficient level of competence’.

- Over a third of members (37.5%) report they had to make changes at work due to COVID-19 regulations, and that these changes affected their management of the heat.
- The most common problem was increased heat stress associated with PPE, including the use of gowns, aprons, gloves, goggles, face masks, shields, and balaclavas.
- Other problems from PPE changes due to COVID-19 included exhaustion, excessive sweating, skin rashes, and difficulty breathing. New forms of PPE also made it difficult to handle equipment and perform tasks safely for some, such as sweating under gloves when operating machinery.
- High heat was also compounded by other COVID-19 changes, with:
 - altered, staggered or extended shift times requiring work to be completed in the hotter parts of the day.
 - reduced access to indoor and air-conditioned spaces due to social distancing.
 - higher workloads and the failure of management to bring on additional staff to cope.
 - performing new tasks in the hottest parts of the day, such as extra cleaning or managing contactless pick up and drop off of children.

Bushfires: Lack of preparation, lack of action

‘A lot of people had to wear masks. It was hot and there was one person who had to be taken off in the ambulance cos they couldn't really breathe. It was really bad ...’.

- Members advised there were insufficient procedures in place to deal with the smoke and ash emergency during the 2019-2020 bushfires, and insufficient OHS action taken by employers once the crisis was unfolding.

Climate change: Growing impacts at work

'I think so. I think we're incredibly lucky because of that La Niña thing this year. I think we've got some horrendous summers to cope with in the future. Yeah, I'm concerned about it for sure.'

- 56.2% of surveyed members thought climate change was impacting people's working conditions, 33.8% thought it was not, and 10% were unsure.
- In all states and territories 50% or more of members felt climate change was impacting people's working conditions.
- Younger members (under 30) were more likely to say that climate change was impacting people's working conditions, with almost 80% saying this was the case. There was no difference based on gender.
- Members in chemical manufacturing, professional and technical services, educational services, and agriculture were amongst those most likely to say climate change is impacting working conditions.
- Members in food services and repair and maintenance were amongst those least likely to say climate change was impacting working conditions.

Recommendations

In line with expert international medical advice, including in the August 2021 special research series on heat and health published by *The Lancet*, ‘all countries, local communities, and institutions need to adopt effective heat health action plans tailored to local conditions’ based on the scientific evidence that ‘the health dimensions of heat can no longer be overlooked’¹.

1. The Commonwealth and state and territory governments must urgently review the management of current and likely future impacts of climate change for workers. This must include addressing increasing heat and providing regulatory frameworks for strong protection in relation to heat stress and bushfire smoke. Workers, and their representative organisations, must be centrally involved in this process.
2. The Commonwealth and state and territory governments should convene sector-by-sector meetings – that include workers and their representative organisations – to work through the climate impacts particular to each sector and formulate sector specific regulatory frameworks.

Current OHS and industrial frameworks are inadequate to the task of dealing with the impacts of climate change and high heat. Current frameworks are also inadequately enforced.

3. The Commonwealth government must abolish restrictions on bargaining content within the industrial relations system, such that it is clear workers have the unambiguous right to bargain around climate change and its impacts in the workplace.
4. Employers are already required to provide adequate resourcing for at-risk workers, such as high standard personal protective equipment (PPE), adequate hydration while at work, regular breaks, acclimatisation protocols, and sufficient personnel to ensure workers can be relieved for recovery time in situations where they cannot stop work (such as emergencies). This is not occurring. Greater government oversight and enforcement are needed to ensure compliance.
5. Greater resources must be provided to unions and employers to train staff, including health and safety representatives, to ensure workers and employers understand their rights and legal duties in relation to heat stress.
6. Governments need to establish clear and accessible occupational health and safety pathways around heat stress and other impacts from climate change, which empower workers to take mitigating action without fear of reprisal.

¹ The Lancet (2021) ‘Health in a World of Extreme Heat’, *The Lancet*, 398:10301, p 641.

The conditions of a person's employment, their health, and their relative vulnerability, fundamentally shape their experience of heat stress.

7. Any review of national and state-based framework to protect workers from heat stress must address its impact on vulnerable workers, including workers with minimal rights and agency in the workplace.
8. Workers in casual, labour hire, on-demand and temporary migrant working arrangements must be afforded greater protections to ensure health and safety and fair income maintenance in periods when they need to work more slowly or take breaks.

There is a pressing need for further research on the OHS impacts of workplace heat and other forms of extreme weather, as well as current union activity in relation to the climate crisis.

9. A national, diverse industry study should be conducted, mapping current and likely future problems encountered by workers in attempting to manage the impacts of extreme weather changes being driven by climate change.
10. Further research is needed on workers' experiences of heat at work, their perceptions of climate change, and how the extreme weather impacts of climate change on workers might inform organising strategies.

Introduction

The 2021 report from the Intergovernmental Panel on Climate Change (IPCC) stresses that climate change is ‘already affecting every inhabited region across the globe [and] contributing to many observed changes in weather and climate extremes’². It states that each ‘of the last four decades has been successively warmer than any decade that preceded it since 1850’³. We are currently experiencing higher temperatures on average, more hot days, higher humidity, longer heatwaves, concurrent heatwaves and droughts, more frequent and intense bushfires, and compound flooding in some locations⁴. The impacts of these changes can push the physical capacity of workers beyond what is safe.

Heat from rising temperatures has been identified as a major threat to safe and decent working conditions, with workers increasingly compromised during the hottest months of the year⁵. Almost half of the global population are now exposed to high heat episodes, including more than one billion workers⁶. Where high heat is not managed appropriately the consequences include serious illness, adverse pregnancy outcomes, negative mental health impacts, and death. At the global level, a third of all heat-related deaths worldwide between 1991 and 2018 can be attributed to human-induced climate change⁷.

Extreme weather changes also impact productivity and employment and will do so on an increasing basis. The International Labor Organisation (ILO) reported that without action to arrest the problem, ‘uncontrolled climate impacts will cause damage to infrastructure, disrupt business activity, and destroy jobs and livelihoods on an unprecedented scale’^{8,9}. Based on ‘a

² IPCC (2021) ‘Summary for Policymakers’, in *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press: Cambridge, p 12.

<https://www.ipcc.ch/report/ar6/wg1/#SPM>

³ IPCC 2021, p 5.

⁴ IPCC 2021, p 11.

⁵ IPCC (2018) ‘Impacts of 1.5°C Global Warming on Natural and Human Systems’, in IPCC, *Global Warming of 1.5°C*. <https://www.ipcc.ch/sr15/>

⁶ Ebi, Kristie L et al. (2021) ‘Hot Weather and Heat Extremes: Health Risks’, *The Lancet*, 398: 10301, pp 698 - 708. [https://doi.org/10.1016/S0140-6736\(21\)01208-3](https://doi.org/10.1016/S0140-6736(21)01208-3)

⁷ Vicedo-Cabrera, A M et al. (2021) ‘The Burden of Heat-related Mortality Attributable to Recent Human-induced Climate Change’, *Nature Climate Change*, 11, pp 492–500. <https://www.nature.com/articles/s41558-021-01058-x>

⁸ ILO (2020) ‘The Role of the ILO in Addressing Climate Change and a Just Transition for All’, Report from the Policy Development Section, Employment and Social Protection Segment, to the Governing Body, 338th Session, 12–26 March 2020, Geneva, GB.338/POL/1.

https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---relconf/documents/meetingdocument/wcms_736774.pdf. Viewed 16 August 2021.

⁹ See also: ILO (2019) *Working on a Warmer Planet: The Impact of Heat Stress on Labour Productivity and Decent Work*, Geneva. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_711919.pdf.

global temperature rise of 1.5°C by the end of the twenty-first century, and also on labour force trends', the ILO projects that in 2030 '2.2 per cent of total working hours worldwide will be lost to high temperatures — a productivity loss equivalent to 80 million full-time jobs'¹⁰.

Occupational health problems will increase unless action is taken to abate climate change, as there is greater risk for workers associated with higher degrees of global warming. However, health experts argue excess deaths and many health risks arising from heat stress are preventable with appropriate heat action plans¹¹. Of course, mitigating the unfolding impacts of climate change in the workplace is not enough. Reducing emissions to halt the progression of climate change is critical, and many unions in Australia and abroad are calling for a well-planned industry transition, one which would support their members' rights to decent work. Of course, mitigating the unfolding impacts of climate change is not enough. Unions have a role in campaigning to act on the causes of climate change in the interests of their members and humanity at large.

It is important to recognise that workplace heat is not simply or only a matter of the weather. High heat and its attendant risks are also related to a number of other factors, including: the nature of the industry and job; the working environment and conditions; the presence or absence of heat management policies in the workplace; and a worker's ability to take measures to mitigate the impacts of high heat (worker agency). The ability to manage heat and its associated risks is also highly individualised, and related to a person's level of physical fitness, whether they have medical conditions, how acclimated to the prevailing heat they are, and whether they have had training and can recognise signs of heat stress.

Many members who were interviewed and surveyed as part of this project work in environments lacking ventilation and adequate cooling controls. They are also required to work at rates of production which are incompatible with some of the most fundamental heat management strategies, such as taking rest breaks and slowing down. Hotter, longer, and more frequent heat waves threaten to exacerbate this already precarious situation.

Recent tragic deaths of workers have underscored the seriousness of heat-related work. In August 2021 the Coroners Court of Queensland published findings from their investigation into the 2017 death of Oliver Caramin, a Belgian national who worked as a fruit picker.¹² Mr Caramin died of multiple organ failure, due to or as a consequence of heat stroke, after working at a 'moderate' rate of work in 40°C heat (32°C in the shade), with 'inadequate' protection from the sun. The Office of Industrial Relations (OIR) found that there was pressure 'placed on the workers to continue picking and packing pumpkins notwithstanding a number of workers raising

¹⁰ ILO 2019, p 13.

¹¹ Ebi et al 2021.

¹² https://www.courts.qld.gov.au/_data/assets/pdf_file/0008/691775/nif-caramin-o-20210820.pdf

concerns about the environmental conditions on the day'¹³. No shade was made available to Mr Caramin or his co-workers, adequate training was not provided, and there was no risk assessment or safe work procedure. The OIR found that 'the employer's failure to adequately assess the environmental conditions ... was a significant contributing factor to Mr Caramin's death'¹⁴.

Unfortunately these conditions — a lack of shade, inadequate training, the absence of proper heat management policies or procedures, and productivity pressures — are familiar to many workers, including those who have contributed to this report.

What is heat stress?

'Heat stress' refers to heat received in excess of the level which a body can tolerate without some physiological impairment. As the ILO describes:

Above a certain threshold of heat stress, the body's internal regulation mechanisms are no longer capable of maintaining body temperature at a level required for normal functioning. As a result, there is an increased risk of discomfort, of limitations in physical functions and capabilities, and ultimately also of injuries and heat-related illnesses¹⁵.

In extreme heat, workers may become severely dehydrated, nauseous, dizzy, fatigued, irritable and stressed. Workers labouring in high heat may also be more prone to lapses in concentration, and may suffer from reduced decision-making abilities, leading to accidents. They may also develop potentially fatal heat illnesses, such as heatstroke.

Heat impacts workers at even moderate temperatures, and there is reduced labour productivity above 24–26°C, but once temperatures rise to '33–34°C, a worker operating at moderate work intensity loses 50 percent of his or her work capacity'¹⁶.

While all workers are affected, certain groups of workers are particularly at risk. These are:

- Outdoor workers, especially those who are weather exposed and involve physical exertion. This includes workers in agriculture, construction, emergency repair work, transport, and tourism.
- Workers who labour inside in poor climate-controlled environments, or where the nature of their work is heat exposed. This includes manufacturing workers, workers in schools

¹³ Section 15.ii. https://www.courts.qld.gov.au/_data/assets/pdf_file/0008/691775/nif-caramin-o-20210820.pdf

¹⁴ Section 15.iv. https://www.courts.qld.gov.au/_data/assets/pdf_file/0008/691775/nif-caramin-o-20210820.pdf

¹⁵ ILO 2019, p 17.

¹⁶ ILO 2019, p 13.

without air conditioning such as cleaners and teacher's aides, and workers in industries like home care (who move between various mostly enclosed environments, from client's homes to the outdoors and into very hot cars).

- Workers who move between different climates as part of their work, such as moving between extreme heat and cold, such as in food preparation and warehouses.
- Workers whose roles expose them to situational extreme heat, such as emergency personnel and firefighters.

A recent investigation of workplace accidents in California, examining injury claims in the largest compensation system in the United States, found that hotter temperatures caused increased workplace injuries significantly. This was the case in 'both outdoor and indoor settings (e.g. manufacturing, warehousing), and for injury types ostensibly unrelated to temperature (e.g. falling from heights), with the 'risks [being] substantially larger for men versus women; for younger versus older workers; and for workers at the lower end of the income distribution'¹⁷. In a similar Australian study across Melbourne, Perth and Brisbane, researchers found that the 'relationship between injury and ambient temperature appears to be variable depending on location and climate' but that in general 'work-related injuries and illnesses appear to be more common at higher temperatures than lower temperatures'¹⁸.

Workers who are less secure, temporary workers, piece workers, on-demand workers, and migrant workers, are just some of the groups who are at greater risk. The level of organisation of workers in an industry, or a workplace, also appears correlated to an employee's experience of heat stress. Older workers, those experiencing menopause, and those who have health conditions, can also struggle in hotter weather. High heat also impacts work in less direct ways, such as through poor sleep during a heat wave which can make it harder to work safely the next day. Similarly, poor sleep or working in extreme heat can impact cognitive function and make the drive to and from work more dangerous.

There is limited — although, thankfully, growing — qualitative research on how people experience heat stress in Australian workplaces.¹⁹ This study of UWU members is an important step in developing a detailed picture of the impacts and problems of heat stress for workers,

¹⁷ Park, R Jisung, Nora Pankratz, A Patrick Behrer (2021) *Temperature, Workplace Safety, and Labor Market Inequality*, IZA Institute of Labor Economics, Discussion Paper No 14560. <http://ftp.iza.org/dp14560.pdf>.

¹⁸ Varghese, Blesson M et al. (2019) Geographical Variation in Risk of Work-related Injuries and Illnesses Associated with Ambient Temperatures: A Multi-city Case-crossover Study in Australia, 2005–2016, *Science of the Total Environment*, 687, pp 898-906.

¹⁹ For instance, see: Williams, Susan et al. (2020) 'Workers' Health and Safety in the Heat: Current Practice in Australian Workplaces', *Policy and Practice in Health and Safety*, 18:2, 67-79. See also: Carter, Sarah et al. (2020) 'The Impact of Perceived Heat Stress Symptoms on Work-related Tasks and Social Factors: A Cross-sectional Survey of Australia's Monsoonal North', *Applied Ergonomics*, 82, 1-8.

especially those working indoors. There is a need to build on this project in several ways, and we discuss how this might be done at the end of the report.

Methodology

This report presents findings from a research project on the experience of heat stress by UWU members, including how they and management have responded to extreme temperatures at work. The survey also asked members' views on the impact of climate change for the performance of work. Members were also asked about workplace changes due to COVID-19, and whether this impacted their experience of heat.

The project involved interviews with UWU members and a national survey. We completed scoping interviews with officials and staff prior to the project commencing and were given access to anonymised data from a UWU survey of home care workers about heat and uniforms. The research team also observed the union's Extreme Weather at Work OHS training.

Semi-structured telephone interviews were conducted with 16 UWU members between September 2020 and March 2021. These members worked in manufacturing (NSW and Victoria), utilities (South Australia), home care (Western Australia and NSW) and early child education and care (ECEC) (Northern Territory). The interviewees were aged between 23 and 63, with an average age of 49. These members were 10 men, 5 women and one non-binary member. Interviewees were recruited via union staff, who provided contact details of members who indicated they wished to be interviewed by the research team. The interviews were used to explore a range of issues in detail, with most conducted prior to the release of the survey. Interviews were transcribed and coded in NVIVO (qualitative text coding software) to identify themes. Recruiting interviewees was very difficult and time consuming as UWU members and union staff have been under enormous pressure during the pandemic, and the efforts of all concerned are greatly appreciated.

A national survey of members in the Allied division of the UWU was undertaken. The survey was distributed to those who subscribe to the main UWU email list and are assigned to the Allied division. The survey was open for 16 days in February 2021. An initial email seeking responses went to 17,547 members, and a reminder email was sent to 17497 members five days before the survey closed.²⁰ The open rate of the emails was 29.7% and 30.3% respectively. The geographic location of members is detailed in Table 1, which shows a response rate of 4.5%. It was not possible to estimate a response rate from members who

²⁰ The difference in the number of recipients is related to members who unsubscribed from the list or stopped being a member.

opened the emails. However, the response rate from those who did open and read the email would be significantly higher than 4.5%.

In our analysis we have included members who completed some or all of the first nine demographic and job role questions and moved on to the 26 questions about heat stress, COVID-19 and climate change. This resulted in 798 respondents being included in analysis, from the 944 members who opened and commenced the survey by answering at least one question. Questions were not compulsory, giving members the ability to opt out of any question they did not want to respond to, or was not relevant to them, and still complete the survey. As such, the number of responses varies between questions and is indicated throughout the report.

TABLE 1: Survey response rate by location

	Number emailed	Percentage of total emailed	Number completed	Percentage of completions	Response rate
Queensland	6236	35.5%	454	56.9%	7.3%
South Australia	2259	12.9%	102	12.8%	4.5%
Northern Territory	1971	11.2%	80	10%	4.1%
Victoria	3454	19.7%	73	9.1%	2.1%
New South Wales	1579	9%	35	4.4%	2.2%
Western Australia	1043	5.9%	29	3.6%	2.8%
Tasmania	665	3.8%	19	2.4%	2.9%
Australian Capital Territory	15	0.1%	3	0.4%	20%
Unknown	325	1.9%	3	0.4%	0.9%
Total	17,547		798		4.5%

Members in Queensland (7.3%) and the Australian Capital Territory (ACT) (20%) completed the survey at higher rates, although the total number of members in the latter is very small. Members in Victoria, New South Wales (NSW), Western Australia and Tasmania completed the survey at lower rates. Apart from the ACT and Western Australia, the likelihood of a member completing the survey may be linked to locations that are on average hotter and/or have higher humidity.

Most respondents to the survey were women, about two thirds to one third compared to men, and there were a small number of non-binary respondents (see Table 2). The age of respondents spanned from 17 to 77 years old, but almost 60% of respondents were aged between 41 and 60 years old. The largest group of respondents was in the 51-60 years age bracket (34.7%) (see Table 3).

We note that although respondents were happy to provide their gender, employment contract, and how long they had worked in the industry — with very few respondents skipping those questions — members were less willing to provide their age, with 193 members (almost a quarter of respondents) avoiding that question.

TABLE 2: Respondents by gender

	Number	Percentage
Woman (including trans)	539	67.8%
Man (including trans)	250	31.4%
Non-binary	6	0.8%
I use a different term (please specify)	0	0%
Total	795	

TABLE 3: Respondents by age

	Number	Percentage
20 and under	8	1.3%
21-30	43	7.1%
31-40	88	14.5%
41-50	145	24%
51-60	210	34.7%
61-70	109	18%
71-80	2	0.3%
Total	605	

Table 4, overleaf, sets out the contract type of those surveyed. 73.9% of respondents worked in ongoing / permanent roles (full time and part time), 16% were fixed term, 9.6% were casual, and only 0.1% (one respondent) was employed through a labour hire company. Most members (79.4%) had been in their industry for over five years, and most (69.6%) had been in the same job for more than five years (see Table 5 and 6, respectively).

Close to half of the members surveyed worked shifts or days of between 7-9 hours (48.9%), just over a third worked between 4-6 hours (34.7%), and 12.4% worked ten hours or more per shift or day (see Table 7). This means, overall, this survey more heavily reflects the experiences and views of members in more secure jobs and who are working shifts or workdays of around 8 hours.

Members were asked to nominate the industry they work in, from a list of Australian Bureau of Statistics (ABS) industry classifications. Although members with quite diverse occupations completed the survey, the overrepresentation of certain groups should be kept in mind in understanding the findings in this report.

Table 4: Respondents by contract type

	Number	Percentage
Casual	76	9.6%
Fixed term full time	78	9.6%
Fixed term part time	48	6%
Fixed term (unspecified)	3	0.4%
Full time ongoing (permanent)	412	51.9%
Part time ongoing (permanent)	175	22%
Labour hire	1	0.1%
Other	1	0.1%
Total	794	

Table 5: Respondents by time in industry

	Number	Percentage
Less than six months	7	0.9%
6 months - 1 year	14	1.8%
1 year - 3 years	62	7.9%
3 years - 5 years	79	10.1%

5+ years	624	79.4%
Total	786	

The largest group of respondents were those working in the educational services industry (see Table 8). This was a result of members in educational services being numerically greater in the Allied division to other industries, but also because they responded to the survey at a high rate compared to all other industry groups (see Table 1). Of these respondents: about two thirds worked as teacher's aides, Auslan interpreters and in similar support roles; almost a third worked as cleaners and janitors in schools; and a handful worked in non-teaching organisational roles such as a facilities officer and an OHS support officer. More than a quarter of all members who participated in the survey were from middle-aged women (aged 45-60) working in educational services in Queensland (n=235), and three quarters of those were in permanent jobs.

Table 6: Respondents by time in current role

	Number	Percentage
Less than six months	16	2%
6 months - 1 year	23	2.9%
1 year - 3 years	99	12.6%
3 years - 5 years	101	12.9%
5+ years	546	69.6%
Total	785	

TABLE 7: Usual length of shift or working day

	Number	Percentage
Less than 1 hour	1	0.1
2-3 hours	14	1.8
4-6 hours	276	34.7
7-9 hours	389	48.9
10+ hours	99	12.4
Highly variable	13	1.6
Other	4	0.5

Total	796	
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Table 8: Respondents by industry

	Number	Percentage
Educational services	348	48.1%
Health care services, except hospitals	65	9%
Miscellaneous and not specified manufacturing	28	3.9%
Food services and drinking places	27	3.7%
Transportation and warehousing	24	3.3%
Utilities	18	2.5%
Construction	17	2.3%
Other information services	17	2.3%
Machinery manufacturing	16	2.2%
Administrative and support services	15	2.1%
Professional and technical services	14	1.9%
Chemical manufacturing	11	1.5%
Food manufacturing	11	1.5%
Hospitals	11	1.5%
Other (industries with under ten respondents)	102	14.1%
Total	724	

Working environment and conditions

Several factors contribute to how hot a working environment is, including the availability of cooling controls such as fans and air-conditioning, the level of ventilation, and exposure to the sun.

Most members surveyed either only worked indoors, or only worked outdoors for less than 30% of the time (see Table 9). 15% of workers spent 70% or more of their time outdoors. 38.7% of members said their workplace was well or very well ventilated, and almost half said their workplace had reasonable ('average') ventilation (see Table 10). 17.3% of those surveyed said their workplaces were poorly or very poorly ventilated. Dealing with high heat can also be complicated by humidity, and how physically exerting a job is. Some members had to lift heavy loads as part of their job (see Table 11), which can increase the risk of heat stress, and a third of members surveyed are regularly lifting loads of 10kg or more.

TABLE 9: Time spent outdoors at work

	Number	Percentage
I only work indoors	117	14.7
1-10%	163	20.6
11-20%	136	17.1
21-30%	92	11.6
31-40%	53	6.7
41-50%	53	6.7
51-60%	32	4.0
61-70%	28	3.5
71-80%	25	3.1
81-90%	39	4.9
91-99%	33	4.2
I only work outdoors	23	2.9
Total	794	

TABLE 10: Ventilation of indoor areas of workplace

	Number	Percentage
Very poorly ventilated	47	6.1
Poorly ventilated	86	11.2
Average	337	43.9
Well ventilated	218	28.4
Very well ventilated	79	10.3
Total	767	

TABLE 11: Does your job involve heavy lifting?

	Number	Percentage
No	341	42.8
Yes - up to 10kg	185	23.2
Yes - up to 20kg	156	19.6
Yes - up to 40kg	52	6.5
Yes - more than 40kg	63	7.9
Total	797	

Unsurprisingly, most members feel the heat most when they are outside, exposed to the weather directly. However, for others they feel hottest at work in specific areas of the workplace, including indoor locations. For example: *unventilated/un-airconditioned work shed* (air reporting officer, Northern Territory); *in the sheds cutting up material* (teacher's aide, Queensland); *inside the plant* (plant operator, Western Australia); *in residents' bedrooms with heaters on* (personal carer, Queensland); *in the mill room - small, with little cooling, and directly in front of sunlight* (development chemist, Victoria).

Many members noted that they most feel the heat near heat-generating equipment and machines. These members included machine operators, forklift drivers, cleaners, chefs, brewery technicians, welders, and medical workers, working next to ovens, deep fryers, washing machines, gas dryers, electronics (computer printers/scanners), air-conditioning equipment, packing machines, and other machinery in factories and warehouses.

Often it was a combination of factors — proximity to hot equipment/machines, inadequate climate controls or cooling mechanisms, and/or a lack of ventilation — which contributed to high ambient heat in workplaces.

In interviews, some members working in factories mentioned that some machines do not fare well in the high heat, either. One member working as a technician in a factory in Victoria noted:

...when the summer comes, [the] machines don't work that good anyway because they have a lot of heat related problems as well. ... fans make it worse as well, because they take all the heat up from the machine and blow it to the site. So that's a little bit of [a] problem as well. Mainly there's not much ventilation. This is the biggest problem at work ... there's nothing exhausting the hot air out of it.

Others noted that the hottest part of their workplace was under or near skylights, or too far away from ventilation and cooling controls. One NSW member in manufacturing commented that '[t]owards the middle of the factory there's no open-air space, no doors, nothing'.

TABLE 12: Members with access to cooling controls in their workplace (select all relevant)

	Number	Percentage (of total respondents)
Fixed air conditioning	602	75.4
Fixed fans	364	45.6
Portable fans	91	11.4
None listed	79	9.9
Portable air conditioning / evaporative coolers	36	4.5
Other measure	35	4.38
Cooling controls inaccessible, broken or unreliable	25	3.13
Additional comment	8	1

Most members surveyed had access to cooling controls in their workplace, including fixed air-conditioning (75.4%), fixed fans (45.6%), portable fans (11.4%), and portable air conditioning / evaporative coolers (4.5%) (see Table 12, above). However this was quite variable across industries. For example, 93.7% of members in educational services had access to fixed air conditioning in their workplace, compared to only 31.3% of members in machinery manufacturing. That said, even for those in educational services there are times when they are heat exposed, such as playground duties, which can also occur at the hottest time of the day. Notably, 44.4% of surveyed members in the utilities sector had access to none of the cooling

controls mentioned, significantly higher than the average and a reflection of spending substantial time outdoors. Other members noted that existing cooling controls (air-conditioning, fans) did not work properly, were broken, were ineffective in high temperatures (37°C+), or were available only for customers and not staff.

It was common for cooling controls to only be available to members for some of their working day or week, either because these controls were only available in areas of a worksite, or because the 'workplace' encompassed many different environments. For example, one aged care support worker in Queensland said:

As my job takes me into people's houses the level of cooling controls is extremely variable. I would say portable fans are the most common and air-conditioners the least. Some clients do have air-conditioning but will not use it.

This worker was not alone in noting that some clients were unwilling to use air-conditioning, usually because of the cost of running it. As the Victorian Council of Social Services note in their recent report 'Feeling the Heat', low-income households 'are more vulnerable to energy costs and spend up to five times more of their disposable income on electricity' and some households 'will limit their use of air-conditioning to avoid high energy bills, while others cannot afford an air-conditioner at all'²¹ (VCOSS 2021, p 9). The problem of lack of air-conditioning, fans, and overall ventilation was raised by many home care workers in the UWU's own survey of them earlier this year, inquiring into issues around uniforms and heat.

²¹ Victorian Council of Social Services (2021) *Feeling the Heat Report*, May 2021, p 9. <https://vcoss.org.au/wp-content/uploads/2021/06/Feeling-the-Heat.pdf>

Impacts of heat on UWU members

Despite the wide range of jobs and locations members were based in, and high levels of access to cooling in some industries, most workers were somewhat or greatly impacted by heat on hot days (90.7%). On hot days, 58% of the 775 members who responded said heat affected them 'quite a bit' or 'very much'. This was also the case for most of the members who were interviewed.

Less than 10% of workers surveyed reported that they were never or rarely affected by the heat on hot days. Of this group, 28% only worked indoors, and 44% worked outdoors less than 20% of the time. Positively, 63% of this group said they worked in an environment which was 'well ventilated' or 'very well ventilated'.

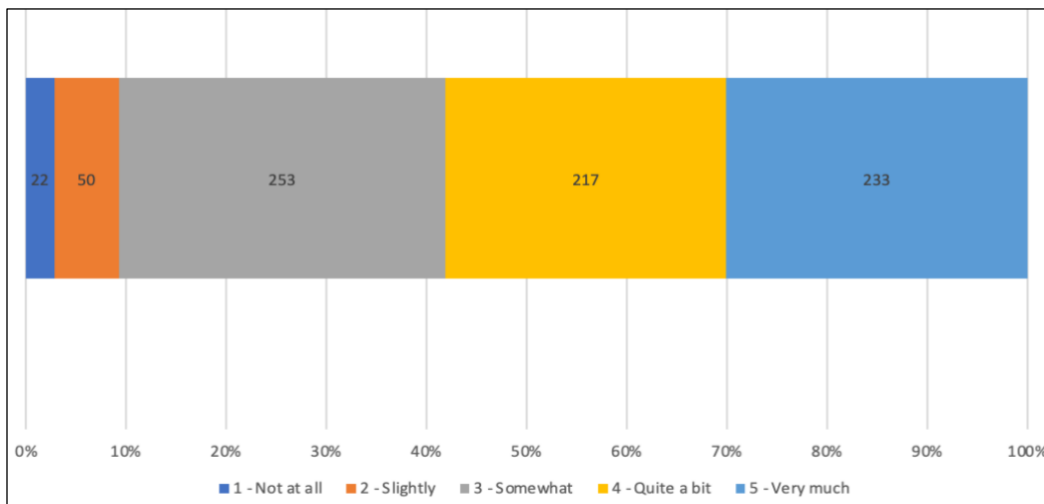


FIGURE 1: Effect of heat on workers on hot days

In the twelve-month period prior to the survey, 20.2% of the 772 members who responded were unable to work at some point due to high heat. This included either through having work cancelled, a work stoppage, or sick leave.

When exposed to heat at work, many members regularly experience fatigue, headache, nausea, thirst, excessive sweating and dehydration, all common symptoms of heat stress. Some workers also described how they sometimes 'stopped sweating' or lost their appetites, common symptoms of heat-related illness (see Table 13).²²

They also report having slower reaction times, feeling irritable or angry and finding it harder to concentrate. These cognitive impacts are consistent with research which finds that high heat

²² <https://www.health.nsw.gov.au/environment/factsheets/pages/heat-related-illness.aspx>

conditions are linked with reduced mental capacity of workers²³. In interviews and surveys, members described how high heat environments at work provoked feelings of irritability, increased stress levels, and — as one person put it — led to ‘mental health deterioration over time’.

In interviews, members variously described working in the high heat as feeling ‘out of it’ and ‘like a zombie’, like having ‘a really severe hangover’, being a machine operating on ‘remote control’, and being ‘zonked the hell out’.

TABLE 13: Symptoms from exposure to high heat at work

	Number	Percentage (of total respondents)
Nausea and/or dizziness	294	36.8
Headache	475	59.5
Sickness	134	16.8
Poor concentration	400	50.1
Slower reaction time	305	38.2
Irritability and/or anger	341	42.7
Tiredness and/or fatigue	619	77.6
Other (dehydration or thirst)	6	0.8
Other (effects from sun)	3	0.4
Other (cognitive impacts)	5	0.6
Other (sweating)	13	1.6
Other (other)	13	1.6

In interviews, some home care workers noted that they have an ageing workforce, including many menopausal women who are increasingly susceptible to the heat. One worker said:

I know that some women ... really can't cope in the heat because of menopausal symptoms [...] Older, older people. You don't, you don't sweat when you get older. So you know, that actually means that you're more, you know, you don't sweat as much. [...]

²³ S Rowlinson, A Y Jia, B Li B and C C Ju (2014) Management of climatic heat stress risk in construction: A review of practices, methodologies, and future research. *Accident Analysis and Prevention*, vol 66, pp 187-198.

And a lot of people or as they get older, their kidneys don't function as well. [...] I've actually got kidney problems, too ... I have read that if you've got kidney issues, you're more vulnerable to heat stress as well.

...with the hot flashes, you nearly pass out with that, with our hot uniform on top that doesn't breathe.

In the UWU's own survey of 487 home care workers about uniforms and heat, workers detailed significant issues to do with the suitability of uniforms and managing high heat. These issues related to the materials used, their design, and breathability. Many members drew links to issues of workloads, timing of the work over the day, lack of breaks, and the short travel times allowed between clients which limited recovery. When asked to rate the appropriateness of their uniform on a hot day, 64.4% rated it 1 (the worst rating), 18.7% rated it 2, 11.3 % rated it 3 (neutral), 3.7% rated it 4 and 1.9% rated it 5 (the best rating). On hot days about a third of workers said they wore their own clothes, a third of workers said they did not, and a third said they were not permitted to do this. Only around 50% of members were aware they had the right to cease work on paid time if there is a serious and imminent risk to their safety.

Productivity demands impacting heat management were a problem across many industries. In the workplace, high heat conditions often produce a vicious cycle: as workers are forced to mitigate the adverse impacts of the heat, it becomes increasingly difficult for them to 'keep up', particularly if no one is acting on the workload pressures they face. One manufacturing worker in NSW summarised this predicament:

Essentially, it's quite terrible. You use way more water, you drink way more water, so you're forced off the line, which puts pressure on you to work harder, which makes you sweat more and then tires you out. Essentially, it's just an all-round lose situation because you're hot, overheated, stressed and incredibly sweaty.

Due to the cumulative effects of heat, many workers suffer particularly towards the end of their shift, travelling to and from work, at home after they get home from work, or in the latter half of a high-intensity work week. Some of workers described in interviews how the heat 'catches up' with them:

I have come in from some on-calls where I've done over 102 hours in a week, dry retching and throwing up, just from all the heat exhaustion and just doing 16 hour shifts 7 days a week ... you even feel it after those hot days have gone, for a couple of days, like if you've had a seven-day week stint (Utility worker, South Australia).

... there will be days where you work all day in the hot weather, and you actually get home, have a shower, and you feel alright, and then about you know, eight o'clock, nine o'clock at night you just get a thumping headache. You know and that's just ... what you've done has finally caught up with you (Utility worker, South Australia).

If you go home after a long day, you just kind of want to stare at the ground for ten, fifteen minutes, until you, I don't know, become alive again (Manufacturing worker, New South Wales).

Caring for others

Many UWU members are employed in jobs where they are directly responsible for the care, health, and safety of others and are concerned about how high heat affects them. One homecare worker described her concerns in this way:

... we do actually worry about our clients in the heat. I know I said that before, but we do because you're more likely to have somebody end up in hospital because of heat stress. With older you know, vulnerable people, older people that we're trying to look after ourselves, but we try to look after people and so it is actually emotionally stressful as well.

Teachers noted that high heat can lead to increased behavioural incidents, vomiting, stress and anger among students. Homecare and healthcare workers witnessed patients suffering heat stress and exhaustion. An administration officer working in a non-air-conditioned environment was concerned that visitors were uncomfortable and overheated while having to wait at reception.

Serious incidents

Nearly 20% of survey respondents were aware of serious incidents relating to the heat, involving either them or their coworkers. These incidents involved:

- Being forced to work in extreme temperatures (40-48°C heat) without relief.
- Workers and those in their care (including students) suffering seizures.
- Behavioural incidents in schools.
- Workers suffering from heat exhaustion, stroke, stress, and illness.
- Workers and students vomiting.
- Workers collapsing and passing out.
- Workers going home sick, stopping work, and going home.
- Hospitalisations of workers and patients.
- Fatalities of coworkers and patients.

Survey respondents and interviewees also described serious workplace incidents. One worker recalled a particularly difficult week, working outdoors on roads around 48°C temperatures. The bitumen was sticking to his boots, and he said it 'took days to recover'.

Responding to heat stress

Preventing and responding to heat stress in the workplace is a challenge for many members. Members' ability to effectively manage the impact of heat stress is related to: their access to basic cooling measures, such as water, ice and PPE; their relative control over their working environment, including their ability to move to access cooling controls, 'pace' themselves and slow down, and rearrange or reschedule tasks; and the existence of heat management policies or procedures at work.

All interviewees took individual measures to cool themselves down to protect their health and safety in high heat conditions. These included drinking more water and making use of PPE such as hats, sunscreen, and ice vests. Although some employers provided cold water, ice blocks and PPE, many did not, and the workers interviewed often brought their own supplies to work.

TABLE 14: Employer provided items to help manage heat (select all relevant)

	Number	Percentage (of total respondents)
Water	316	39.6%
Drinking fountains	267	33.5%
Sunscreen	243	30.5%
Ice blocks / ice creams	125	15.7%
Special drinks (like those with electrolytes)	111	13.9%
Portable fans or evaporation units	81	10.2%
Clothing	51	6.4%
Cooling vests	28	3.5%
Other (air conditioning or fans)	7	0.9%
Other (neck ties)	3	0.4%
Other (shade or shelter)	3	0.4%
Other (multiple)	1	0.1%
Other (other)	13	1.6%
None selected	249	31.2%

The most common items supplied by employers on hot days were water and sunscreen (see Table 14, above). Smaller numbers of members had ice blocks, special drinks, fans, and PPE provided to them. However, as discussed in the section on the impacts of COVID-19 later in this report, the use of new forms of PPE has also exacerbated the impacts of heat for many members.

Heat management in different working environments

On hot days, some workers can move to relatively cooler areas of their workplace, such as a lunchroom, a lower level of a factory, a shaded or sheltered area, or an air-conditioned space — although this has been more limited during the pandemic. For others, making these simple adjustments is not possible, because climate controls are unavailable or inaccessible in their workplace. One homecare worker in NSW, who drives between different clients' houses to support them to take showers and complete domestic tasks, noted:

Some clients' places — well, they won't put on the air conditioner. So, it can be very hot. Especially when we give showers, we've got steam in the showers [and clients] won't allow us to open up windows — nearly pass out from the steam [when] that's happening, which also robs the oxygen in the room with so much steam

In interviews, manufacturing workers talked about how unlikely it was that companies were going to install effective climate controls in factories, as the costs would be too high. One manufacturing worker in Victoria said:

We all say how hot it is, and we're all in the same situation, it's not as if sort of, 'oh yeah, what can we do about it?' Unless (laughs) they're gonna air condition the factory, and there's no way they're gonna do that, we've really got to just put up with it ... There may be some water if they know one of those stinking hot days are coming. But that just doesn't do much really.

Other common measures for managing in the heat — taking breaks, slowing down or pacing, and rearranging or rescheduling work tasks — were again only available to some workers. One manufacturing worker, working on a production line in a factory in Victoria, said: 'I try to pace myself in a way where (the bosses) can understand that I'm working within my limits, and that I'm not overheating myself'. This worker felt able to pace himself a little, but noted his employer had never 'explicitly' told him or his coworkers to slow down. He said: 'they're just more trying to say 'don't overwork yourself', but at the same time 'don't slack off'.

Workers whose jobs are externally 'paced' — for example by a tight roster in the case of many homecare workers, or by the speed of machines, in the case of manufacturing workers — found it more difficult or even impossible to slow down or take additional breaks. Some said they were unable to leave 'their machines', or to take short breaks without stopping production and creating more work for themselves. As one manufacturing worker in Victoria said:

It comes down to the speed of machines. And the sort of ... planning. There's no — everything is urgent. Everything has to be done now. 'Come on. We need it done now. We need it done. It's got to be done today.'

Often the inability to take necessary breaks was related to how 'lean' a workforce was, and whether there were enough staff available to relieve people on breaks. In other words, it was not simply or necessarily because of the nature of the work, but because employers in these workplaces had made a choice to reduce the number of workers rostered on at one time. One manufacturing worker in Victoria said that it 'used to be much more easy [to take breaks], but they've cut labour back now. So [it's] far more difficult'. Another manufacturing worker based in NSW said '[people often say] they're fatigued, and that's because [management] did chop the numbers and they're running around'. A third manufacturing worker, in Victoria, agreed:

They've cut the numbers down on the floor of labour. So people are doing a lot more. So you know, they're all feeling fatigued. That's for sure. Because you know, you have people taking days off. So yeah, it definitely, you know, would be impacting them a lot more, because they're operators and they would be running around pretty much all day, every day ... it's just the way, you know, management thinks ... save money, cut people. You know, it just doesn't work. Especially with an ageing workforce. Especially.

Policies, procedures, and responses by managers

Almost half of members surveyed were unaware whether there was a policy or procedure for managing heat stress and high heat in their workplace (see Table 15). For members who were aware of a policy and/or procedure in their workplace for managing heat, the most common provisions in those documents were: the ability to take additional rest breaks at a particular temperature, the provision of chilled water, and changes to the structure of work to avoid the hottest part of the day (see Table 16, overleaf). Only a quarter of members were aware of a provision to stop work at a particular temperature in their workplace.

TABLE 15: Policies and/or procedures for managing high heat in place

	Number	Percentage (of total respondents)
Yes, there is a policy and/or procedure	197	26.2
No, there is no policy and/or procedure	197	26.2
I'm not sure	357	47.6
Total	751	

TABLE 16: Awareness of contents of heat policy/procedure (members where a policy/procedure is in place only, select all relevant)

	Number	Percentage (of total respondents)
Additional rest breaks at a particular temperature	83	42.1
Provision of chilled water	77	39.1
Changes to the structure of work to avoid the hottest part of the day	77	39.1
Training in detection, prevention, and treatment of heat stress to all staff including management	58	29.4
Stop work at a particular temperature	48	24.4
Provision of electrolyte drinks	46	23.4
Provision of ice blocks / icy poles	43	21.8
Training in detection, prevention, and treatment of hyperthermia to all staff including management	32	16.2
Provision of access to air-conditioned transport to and from work during heatwaves	29	14.7
Reduction in productivity required	28	14.2
Provision of on-site shower facilities	25	12.7
Cease operation of parts of plant/processing lines that are most exposed to heat when necessary	13	6.6
Regular breaks in air-conditioned area	2	1.0
None selected	31	15.4

We asked members whether their employer had ever issued them with a warning, advice or information about high heat or heat stress. Over half of the respondents said they had never been issued with such information (53.1%), around a third said they had received this sort of advice (35.8%), and 11.1% were unsure.

In interviews, some manufacturing and utilities workers noted that they had toolbox meetings on very hot days, where managers issued informal verbal warnings about the high heat and encouraged workers to 'take it easy'. One utilities worker in South Australia reported:

Yeah, we do get some toolbox meetings. So, conversations. My district leader's really good for that now. So, we get some conversations around heat stress, what we should be doing, shade, sunscreen, all that sort of stuff. And we generally, sort of before summer especially, we'll have some toolbox meetings or conversations around that.

However, what made a difference for many of these workers was whether the informal warnings were accompanied by procedures or policies for hot weather — such as an allowance to take additional breaks — and whether those policies were easily enforceable. One manufacturing worker in Victoria said that although a new heat policy had been signed into their enterprise agreement the year before, it is unclear how it could be practically enforced as there is no clear system for taking additional breaks, there is no temperature gauge in the workplace, and nobody knows where to physically locate the heat policy.

Another manufacturing worker in Victoria outlined similar problems with enforcing verbal guidelines and advice:

... they just say 'look, just take it easy. Try and relax. It's going to be a hot day'. Well, we know that and, it's like, they can say as much as you want, but it doesn't change the fact that it's going to be a hot day. They don't say, 'oh we can put an extra bloke on' or say we can have an extra break or. Like they've got a lot of stuff in writing saying if it's an extreme day, we'll rotate people, and everyone will get an extra five-minute break each hour. But that's rubbish. It just doesn't happen. You know, they say you can do it, but we just haven't got the manpower to be able to do that ...

One utility worker in South Australia had worked in his workplace for nearly 12 years and had 'tried to get a heat policy in every year', as well as for there to be more workers to a crew. 'It always gets fobbed away by management', this worker said.

Taking action

Only a very small proportion of members (2.4% of respondents) had taken industrial or workplace action regarding a heat stress issue. Of this group, 58.8% reported that their action was unsuccessful, and 35.3% reported that their action was successful. For one respondent, their action or dispute was ongoing at the time of the survey. Examples included those outlines in Table 17, overleaf.

Table 17: Examples of workplace action on heat stress

Member	Action taken	Outcome	Explanation (quotes)
Full-time OHS officer, female, NSW	<i>Requested that management (who work in air conditioned offices) jump on the line for half an hour a day on very hot/humid days to show solidarity / teamwork in horrible conditions (and to put this in the workplace temperature policy/procedure)</i>	Unsuccessful	<i>Answer was a solid "NO".</i>
Full-time youth engagement officer, female, Northern Territory	<i>I only spoke with my direct line manager about my concerns regarding the ongoing struggle with fighting the heat ... I have also raised many times the fact that our workplaces have no cooling systems and that we are constantly working above 40 degrees heat.</i>	Unsuccessful	<i>He took no action. Nothing has been done.</i>
Full-time forklift operator, male, NSW	<i>Requesting air-conditioning units in new forklifts</i>	Unsuccessful	<i>It's a cost factor that the company will not accept over our well being.</i>
Full-time construction / maintenance worker, male, South Australia	<i>Personally refused to work on [a] particular day until safety measures were put in place. Threatened company with escalation to Safework South Australia.</i>	Successful	
Fixed term full-time wastewater treatment plant operator, male, South Australia	Not described	Unsuccessful	<i>Manager's response was "what's the difference between a 38 degree day & a 45 degree day". Didn't listen to us workers & made us work 9 hours in the heat, 2 days in a row.</i>
Fixed term full-time special needs teacher's aide, female, Queensland	Not described	Unsuccessful	<i>... they said it was legal and if I didn't like it I could leave.</i>
Casual market research interviewer (face-to-face), female, Victoria	Not described	Successful	<i>heat procedures were put into workplace policies.</i>

COVID-19: Complications for heat stress

The COVID-19 outbreak in Australia resulted in rapid changes to daily life. Workers in many industries quickly adapted to new conditions, including changes to workloads, shift times, uniforms, and access to work sites. These changes were not without their challenges however, including impacts on heat stress and other workplace safety issues.

Over a third of those surveyed (37.5%) reported they had to make changes at work during the pandemic which affected their experience of the heat, while 62.5% said there had been no impact on their experience of the heat.

The negative impacts ranged from milder issues such as heat discomfort from wearing masks, through to significant problems stemming from intensified workloads or wearing full PPE in non-air conditioned spaces. Some changes led to new heat stress issues that had not existed previously. Social distancing and changes to work tasks also led to increased time outside, or needing to perform extra work (like cleaning) in the hottest part of the day. An open-ended question asking members if COVID-19 had impacted work duties was coded for the primary experience that each member raised (see Table 18).

Table 18: Key impact of COVID-19 on work duties

	Number	Percentage (of total respondents)
PPE	201	68%
Time outside	17	5.7%
Extra duties	16	5.4%
Extra hours	11	3.7%
Hotter work location	11	3.7%
Increased intensity	3	1%
Restricted indoor access	3	1%
Work from home	2	0.7%
Cognitive impact	2	0.7%
Other	30	10.1%
Total	296	

The most common problems with increased heat stress were associated with PPE, including the use of gowns, aprons, gloves, goggles, and face masks, shields, and balaclavas. Members using PPE experienced higher than usual levels of heat, fatigue, sweating, skin rashes, and difficulty breathing. Members described wearing PPE during high heat for an entire shift as 'debilitating' and 'stifling', noting that wearing PPE 'adds to the effects of the heat'. This experience was at times compounded by altered or extended shift times and higher workloads, especially for essential workers like cleaners and healthcare personnel. As one blood collection member in Queensland noted:

PPE is so hot it makes you feel just horrible and there is no relief from it for the whole shift. Bottled water is given to workers, but breaks are hard to get because staffing is low, and demand is overwhelmingly high.

Members also reported that changes to shift times resulted in outdoor work being completed during the middle of the day rather than in the morning or evening, and an increased amount of higher intensity work (such as the cleaning of outdoor equipment and drinking fountains in educational settings). Some members advised they were not provided with additional time to complete higher workloads, or the ability to take extra breaks to account for the heat effects of working in PPE.

Reduced access to air-conditioned spaces was also raised. This included people directed to work from home who did not have air conditioning or could not afford the expense of running it all day. Restrictions on the number of people allowed in break rooms, due to social distancing regulations, forced members to take their breaks outside or seek other spaces to rest in. A pathology courier in QLD noted that the 'extra time required to adhere to covid protocols [was] not factored into daily routines'. Another health worker who worked in a mobile vehicle stated 'we are now wearing long sleeved gowns, masks, and shields. The air cons in the vans are at least 40 years old, and really don't do the job'. A NT based paramedic made the point that cooling and ventilation can be a problem in the industry, and that PPE can compound problems of heat stress such as:

Wearing of PPE in patient's poorly ventilated or non-air-conditioned houses.
Decontamination of vehicles whilst wearing full PPE including gown, goggles, [and] gloves on top of heavy wearing uniform. Wearing this PPE for long periods of time.

While some members reported increased access to water and other items to assist them, others said there was no access to water, that it was difficult to consume it or take a break, and that access to cooling showers had been stopped.

Cleaners in a range of education, health and other settings described significantly increased workloads and that some tasks had to be done outside in the hottest parts of the day, such as cleaning play equipment. One school cleaner noted that heavy work, like vacuuming, now had to be completed without air conditioning running. Cleaners in meat works found the use of

heavy PPE, including full coverage and balaclavas in what is a high-risk transmission situation, particularly difficult to cope with. One WA based cleaner noted that:

... wearing [a] plastic apron, face mask, eye protection and gloves makes me sweat profusely, causing dehydration, fatigue and headaches. It is impossible to work without a higher risk of causing an injury and [I] cannot perform at an efficient level of competence. Goggles make it hard to see due to fogging up.

This worker was not alone in pointing to other OHS problems created by using PPE, such as sweating under gloves making it difficult to handle equipment and perform tasks. Another worker, who wears glasses, noted masks caused fogging and this could be dangerous while driving machines. Another noted that PPE masks limit peripheral vision, the 'lower scope of vision making moving up and down steps hazardous'. A veterinary nurse pointed out various complications such as:

Having to consult with the public outdoors instead of indoors, having to bring animals in without owners means more walking, heavy lifting, more time pressures so having to run instead of walk. Ongoing understaffing issues exacerbate all of the above.

Several workers indicated PPE had increased heat stress and caused cognitive problems. A laundry worker in WA reported that:

Wearing a mask at work, and with the heat and plastic shields put in place to protect us from the 1.5 metre rule, I've experienced fatigue, brain fogginess, and become extremely flustered with the heat, due to little circulation in some areas.

One worker noted that while COVID-19 protocols were initially followed in their workplace, they were not maintained after the first wave was controlled, including during further periods of community transmission. This NSW based manufacturing worker stated:

Early 2020 shifts were staggered with an introduction of an afternoon shift. However, with recent peaks in cases staggered shifts have not been reintroduced. [The company] has not been following COVID guidelines — specifically no maximum occupancy on rooms, appropriate hygiene procedures not followed with communal soap still being used in bathrooms, materials to clean equipment between use not being [supplied] or time allowed to do [this work], social distancing not being followed correctly, and much more.

Finally, in one upsetting outcome, one health worker reported that 'a patient died from heat stress while having to wait ... in their car, due to COVID restrictions'.

Bushfires: Lack of preparation, lack of action

It is now well established that climate change is driving new and more intense bushfire patterns. A study of the 2019-2020 'Black Summer' bushfire season in Australia, by scientists at the World Weather Attribution Consortium, found that a conservative estimate of the increased risk of an extreme fire season was 30%²⁴.

During the 2019-2020 bushfire season, severe bushfires affected every state and territory in the country and some members contended with both high heat and smoke. While several unions and workplaces stopped work, this was difficult to do in other locations.

One member, a quality assurance officer and process worker working at a manufacturing site in western Sydney, stated they just 'worked through it'. They were instructed to wear a mask to prevent them breathing in 'sticky smoke', and he described the experience as 'kinda dystopic'. Another member, who works at a factory in southwest Sydney, found breathing difficult as they 'had smoke coming right through the factory'. In southeast Melbourne, manufacturing members brought their own masks to work to try to manage the smoke which had 'covered' their workplace. One commented that their employer provided members with 'a thing to tie over' their noses and mouths which they could dampen with water. However, as there is 'really no insulation [in the] huge shed' where most people worked, 'a lot of people were really struggling'. This member recalled:

I think we were allowed to open some doors that we were not normally allowed to open. But that really didn't help because the smoke was outside, so it was probably better off keeping them shut.

One member working in care in Wollongong ran her air conditioner to escape the heat but could not escape the smoke in her car. The smoke and the 'stifling heat' compounded. One homeware worker experienced asthma for the first time in 25 years due to the amount of smoke in the air and had to get a prescription for a puffer. Another member called an ambulance to the factory for a colleague who had a severe asthma attack due to the smoke.

Overall, information provided by members indicated insufficient forward planning for the smoke and ash emergency in the 2019-2020 summer, and insufficient evidence based OHS action taken once the crisis began to unfold.

²⁴ van Oldenborgh, G J et al (2021) 'Attribution of the Australian bushfire risk to anthropogenic climate change', *Natural Hazards and Earth System Sciences*, vol 21, pp 941–960. <https://doi.org/10.5194/nhess-21-941-2021>

Climate change: Growing impacts at work

The CJRC has been investigating climate change related heat impacts on workers in a range of industries over the last few years. While there is growing epidemiological and occupational health research into how climate change related heat stress is impacting workers, less research has been conducted into how workers experiencing these changes articulate and make sense of them.

Do members think climate change is impacting working conditions?

UWU survey participants were asked whether they thought climate change was impacting people's working conditions, and if so how (open-ended question). Approximately 40% of respondents skipped the question or provided a response that was not related. Of those providing a clear response (n=459) 56.2% said climate change was impacting people's working conditions, 33.8% thought it was not, and 10% were unsure (see Table 19).

Table 19: Do you think climate change is impacting people's working conditions?

	Number	Percentage
Yes	258	56.2%
No	155	33.8%
Unsure	46	10%
Total	459	

Younger members (under 30) were more likely to say that climate change was impacting people's working conditions, with almost 80% saying this was the case (see Figure 2 and 3, overleaf). This is consistent with social attitudes surveys measuring overall concern about the impacts of climate change, as concern is greatest amongst younger people. For the groups in the 31-70 age brackets, those who felt climate change was impacting people's working conditions were largely in the range of 50-60%.

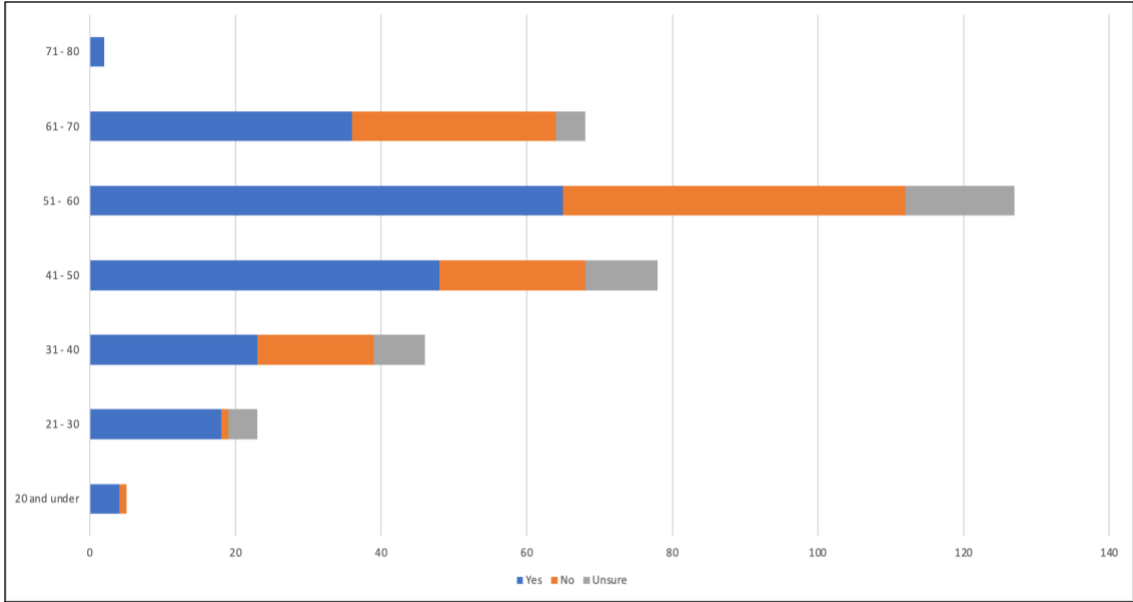


Figure 2: Do you think climate change is impacting people's working conditions? (by age)

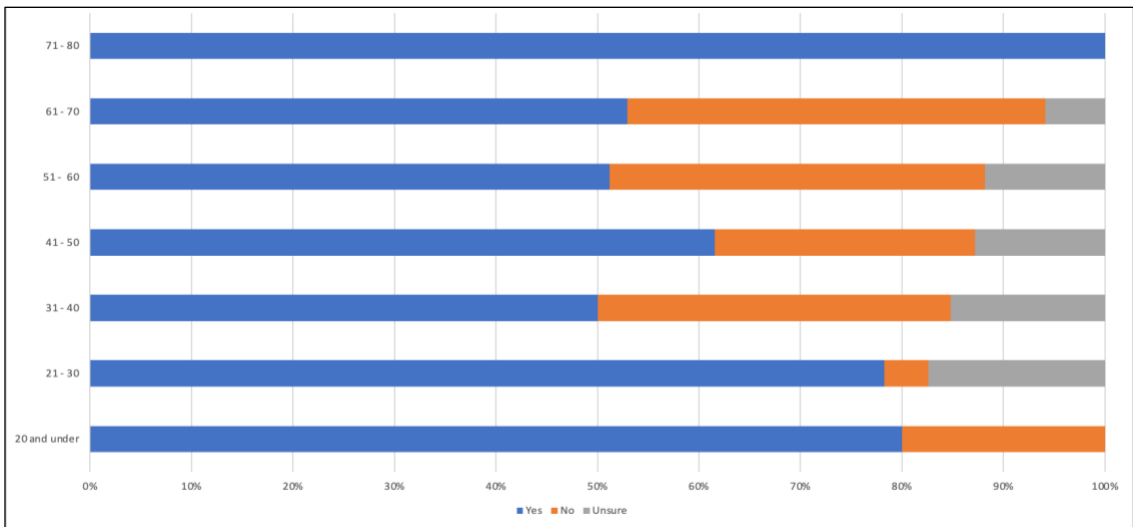


Figure 3: Do you think climate change is impacting people's working conditions? (by proportion of age bracket)

There was no significant difference between the views of women and men on this question (and too few non-binary respondents (n=2) to draw any comparisons). This result is dissimilar to social attitudes surveys measuring overall concern about the impacts of climate change, which tend to show a more widespread or deeper concern amongst women.

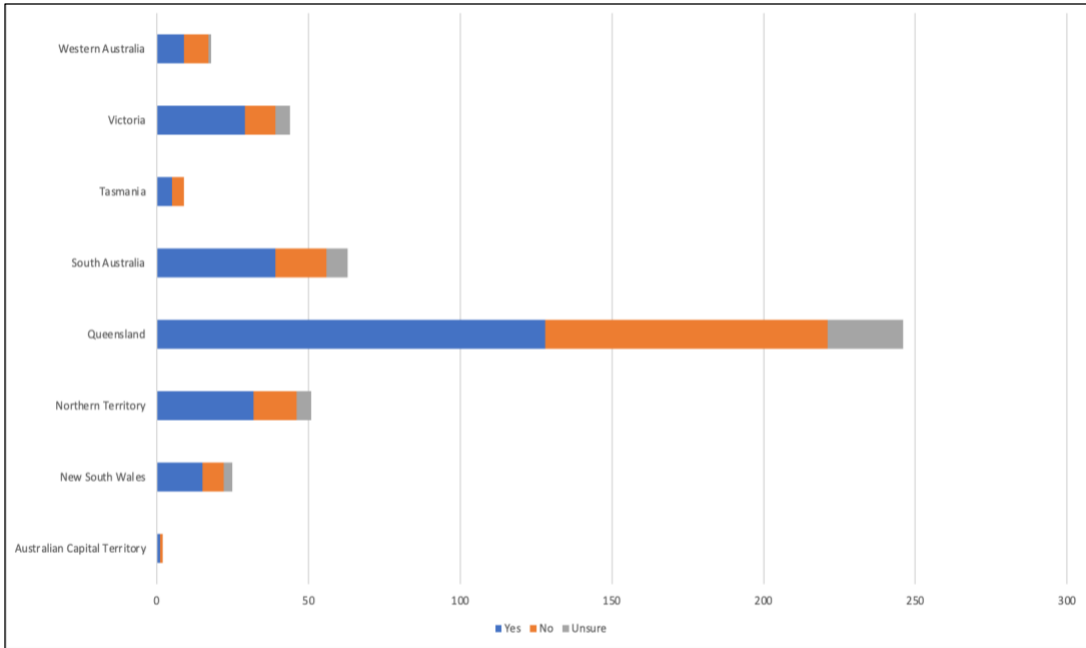


FIGURE 4: Do you think climate change is impacting people's working conditions? (by location)

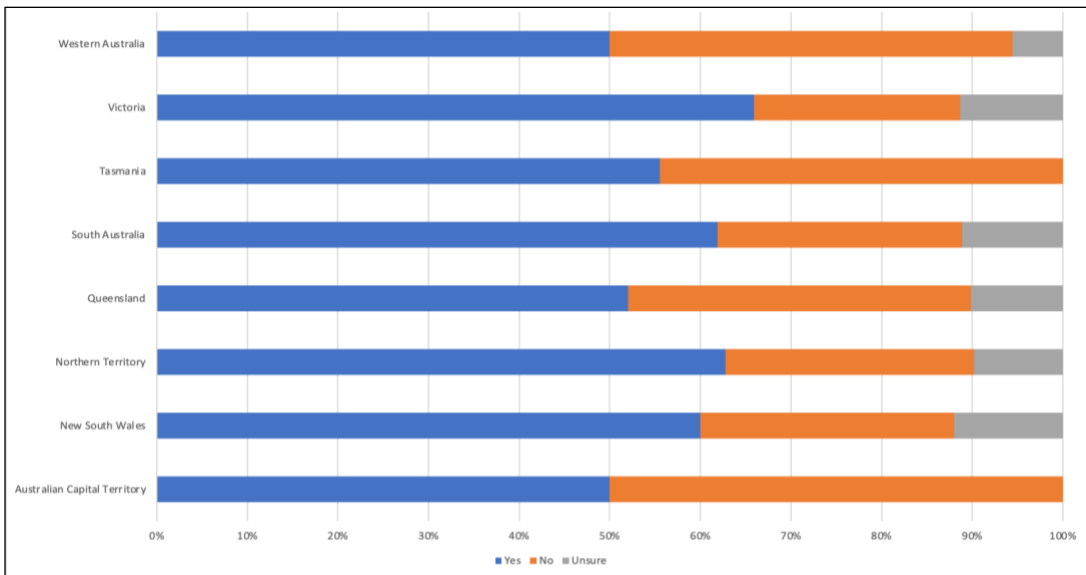


FIGURE 5: Do you think climate change is impacting people's working conditions? (by proportion of location)

In all states and territories 50% or more of the respondents felt climate change was impacting people's working conditions (see Figure 4 and 5 above), although there were differences of up to 15% across the states and territories. Members in Queensland and Western Australia were less likely to say they thought climate change was impacting working conditions. Sentiment was

strongest in Victoria, the Northern Territory and South Australia, where over 60% of members thought climate change was impacting people’s working conditions.

Regarding industry, there was notable variation in the views between members (see Figure 6 and Figure 7).

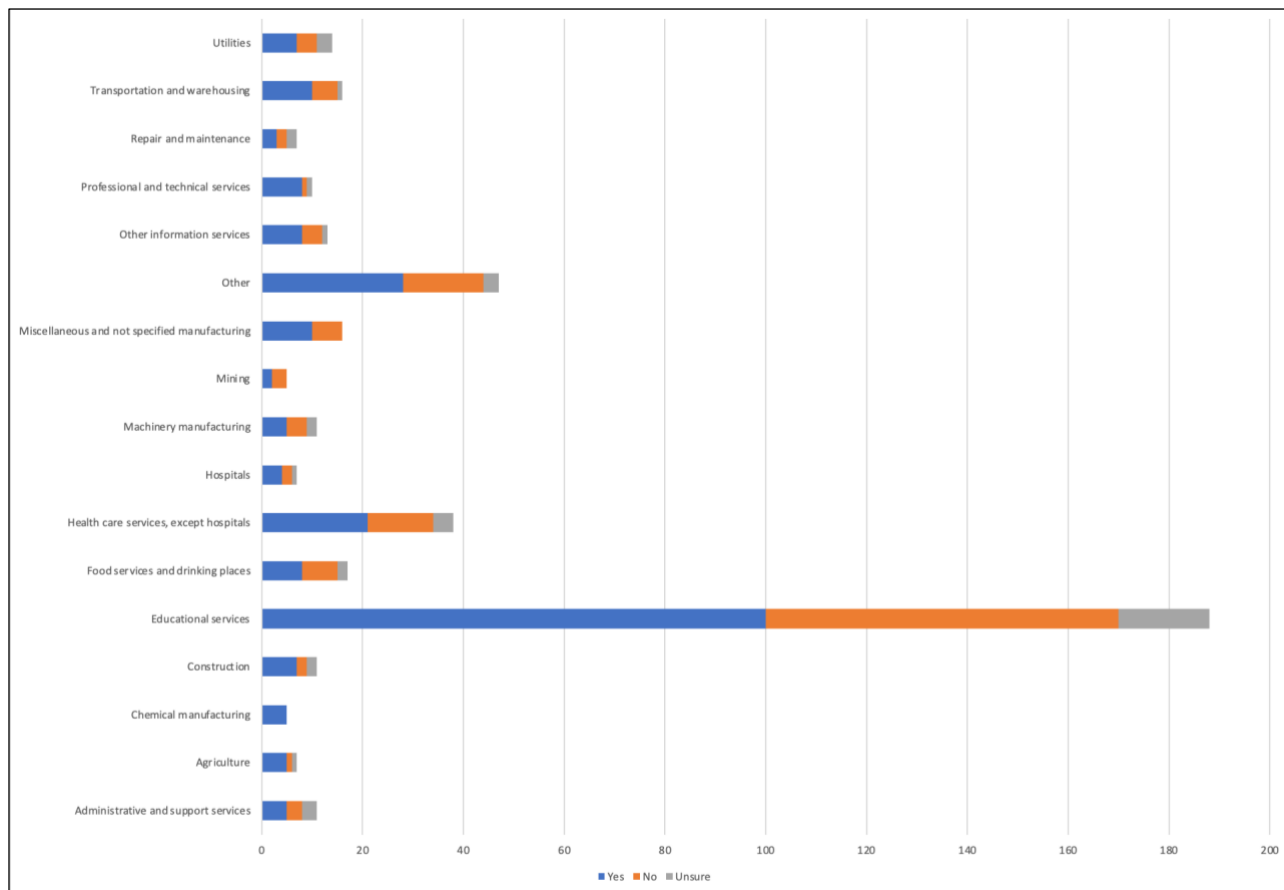


FIGURE 6: Do you think climate change is impacting people's working conditions? (by industry)

Members in chemical manufacturing, professional and technical services, educational services, and agriculture were amongst those more likely than not to say climate change is impacting working conditions. Members in food services and repair and maintenance were amongst those less likely than to say climate change was impacting working conditions. However, given the small sample size for many of the industries this information is indicative only²⁵.

²⁵ The industries placed in the 'other' category in Figure 6 and Figure 7 are those with less than five responses (members having to have answered both the industry question and the climate change question to be included). Those industries are: accommodation; armed services; arts, entertainment and recreation; beverage and tobacco products; electrical equipment, appliance manufacturing; finance; food manufacturing; forestry, logging, fishing, hunting and trapping; membership associations and

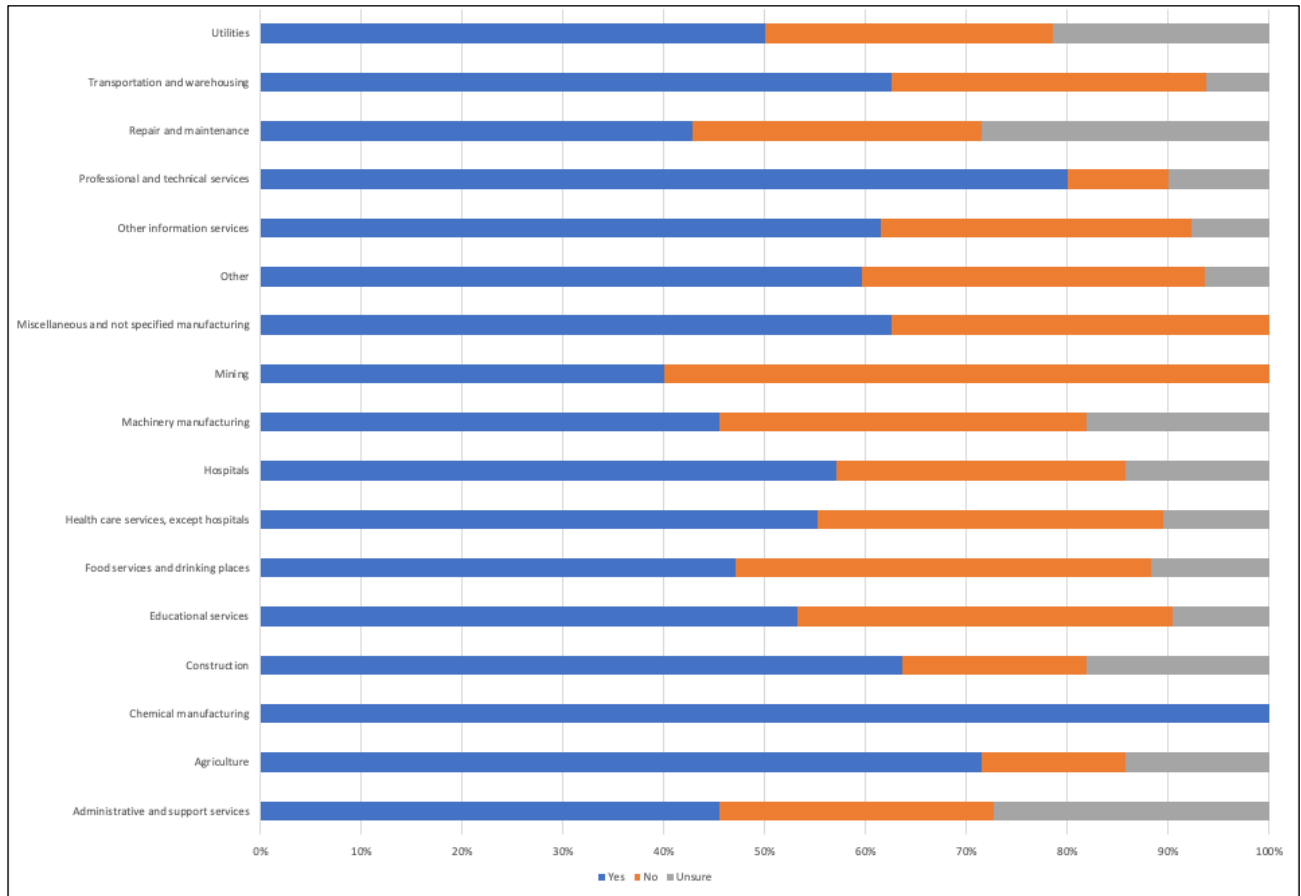


FIGURE 7: Do you think climate change is impacting people's working conditions? (by proportion of industry)

Climate change and work: What did members tell us?

Some members felt that climate change was not impacting working conditions, and most of these members did not elaborate further. Other members explained that they did not believe climate change is occurring or that, even if it is getting hotter, it is not being induced by human activity ('things go in cycles'). Several members simply stated that Australia, or their state or territory, had always been hot. Two members pointed the finger at employers as the primary cause of heat stress, stating they 'seem to be going backwards in the way they treat the

organisations; personal and laundry services; petroleum and coal products; plastics and rubber products; primary metals and fabricated metal products; public administration; retail trade; social assistance; telecommunications; textile, apparel, and leather manufacturing; waste management; and, wholesale trade.

common working man' or that management was being 'tight' in supplying the right PPE and suitable equipment.

Some members felt unsure what to believe about climate change. This group of members said that they had not done enough research to know, that they had not thought about it previously, or that they 'really [didn't] know enough to have a valid opinion'. Others agreed it was getting hotter for them at work, but they were unsure whether this was related to climate change or because they were getting older.

Members who thought climate change is impacting working conditions gave more detailed responses in this question, compared to both those who said it is not impacting or those who were unsure.

Many members said climate change was altering weather patterns and causing or contributing to hotter weather, more humid conditions, heat waves, and a variety of weather events including natural disasters. They described the hotter weather as 'harsher', 'more extreme', 'aggressive' and 'biting'. Members described a range of consequences for working conditions, including: greater difficulty working outside or doing physical labour; decreased productivity; insufficient procedures to adapt to changes; it being hotter indoors; buildings that once could be cooled by open windows now needing air conditioning; and air conditioning no longer coping with heat waves or increased humidity. In short, as one member put it, 'workplaces are not keeping up with changes to the environment'.

'Weather patterns are changing, and global warming is affecting how and what we do', stated a ranger from WA Parks and Wildlife. A member working in SA as a maintenance worker told us that:

The days are longer and are a lot hotter than they were previously and also with the random rainfall in the summer months in Australia makes you question what is really happening with the climate.

A few respondents drew a link between climate change and bushfires, as well as floods and drought. A significant number of respondents talked about 'extreme weather', including drawing links with climate change. A teacher's aide in an agricultural region of Queensland stated that climate change was not only leading to hotter and drier weather, but there was the 'flow on of drought'. Some members also drew links between climate change and increased pollution, impacts on the ozone layer, deforestation, and bushfires. A manufacturing worker from Victoria put it like this:

Like ... we have discussions at work about climate change. You got guys saying, you know, 'we've had bushfires as long as I've been here', but definitely not to the extent that we've been having the last, you know, decade or so. They've definitely become a lot more frequent. So, yes, definitely. Definitely gotten worse, for sure. And you see the temperatures in the sea levels, you know, the sea constantly rising where people say, 'nah climate, just a load of crap'. It's just delusional.

Many members working in schools, as teaching aides and assistant roles, said they were worried about the impacts of climate heat in their workplaces now and into the future. They reported that in high heat it is hard for staff to keep students focused on their work, that pupils are increasingly irritable, that behavioural incidents increase, and that this adds to the stress

staff are under. Many members working in schools mentioned broken or non-existent air conditioning in classrooms. As one Queensland educator said:

I think [climate change] is [impacting on working conditions]. Living on a remote island, where we only have 2 seasons, wet and dry. In the dry season, it gets really hot, and it is not good especially for children and teachers working in classrooms with air conditioning not working. Everyone gets moody and restless because of the heat, and it affects learning and listening.

Similarly, on the issue of how climate-related changes at work were causing increased stress, an aged care support worker in Queensland said:

Yes [I do think climate change is impacting working conditions]. Rising heat makes it harder to work. In aged care it creates more stress on both the worker and the client. The 2019/2020 bushfires affected some of the areas and clients I work with. For me this created uncertainty and fear. When I asked my supervisor what would happen if I got stuck somewhere due to a fire, she was unable to answer beyond saying that we should take any clients we were visiting with us.

A homecare worker from Western Australia made a very similar point in an interview, and described a meeting where she raised questions about planning for the care of their clients should there be an emergency. She argued that one lesson from the COVID-19 pandemic is that the future impacts from climate change require immediate action and planning, to protect workers and clients:

... team leader [asked] 'has anybody else got any questions?' ... I said, 'well, what happens if, for some reason, we can't get out to visit our clients, you know they're stuck at home, and we can't get out?' ... then we had the pandemic. So, it actually came true and there was no plan, because they all laughed and said 'no, that would never happen'. But climate change is something that I think they should be planning for. ... how are we going to look after people in their homes if we can't even leave our own homes because it's too hot?

Teacher's aides based in Queensland reported that changed weather patterns and increasingly hot summers had resulted in: a school running out of tank water; conditions where it is far too hot to let students play outside; and more frequent cyclones and intense weather events where they are required to work through heavy rain and wind events. Several members felt that staff should be allowed to have indoor playground duty to protect themselves from the heat, as well to ensure adequate sun and melanoma protection for both staff and students. One member explained how climate change is creating a cocktail of problems in their workplace:

[In Far North Queensland] floods, fires, and high heat directly affect the working environment for both students and staff. On more than one occasion, a student has fainted or I have been too sick to continue working, or I have called in sick because of heat sickness from the previous day.

Older members were also able to reflect on the impact of climate change over their lives and careers:

There have been examples of extreme heat here in the tropics in recent years, that I do not recall in my lifetime before, [in] 55 years. I have lived most of my life in Queensland,

so I am aware of our climate. Extreme heat is extremely dangerous to outdoor workers. This unfortunately seems to be overlooked by climate change deniers or perhaps they exist only in air conditioning. I recall my husband who was a cabinetmaker in this climate in recent years having to change clothes 3 times in a day as each set became soaked with sweat. He worked in a tin warehouse with floor fans he had to buy for himself.

A firefighter in the NT also drew attention to the cost impacts of higher temperatures on the industry:

It is accepted that climate change is going to impact firefighting into the future and that there will be a cost associated with these changes. We may need to increase our manning to allow for reduced exposure to heat at incidents. i.e. we often do multiple durations in breathing apparatus. We may need more firefighters so that we only do one duration instead.

This is consistent with what workers and officials in emergency services have told us in previous research. There is a growing question of resourcing as state budgets for firefighters and fire stations are cut back or do not increase with population growth.

Several respondents said they were 'lucky' or relieved that the most recent 2020/2021 summer had been slightly cooler, but they knew hotter summers would return. One woman working in manufacturing in NSW told us:

I think we've got some horrendous summers to cope with in the future ... I'm concerned about it for sure. It seems to be [connected to climate change]. I'm 100% convinced. I can remember, I think it was only three years ago or something, and we had something like 46 degrees, like five days in a row. I've never experienced that in my life. I'm 51. So, I think it is getting worse.

Of course, many members were able to draw on their experience over several decades, and across different industries, in telling us about the impacts of climate change on working conditions. One utility member in his forties, working in South Australia, described his experiences like this:

I've worked in shearing sheds with no air conditioning, and stuff like that. Now I remember working 44-degree days back then, and 44-degree days now, and I've had this conversation with the [UWU] organiser, if you're working on a bitumen road, and you're standing right next to that road, the heat there is something 56 or 60 degrees ... I can tell you now when you're down in that hole, in a bitumen road, especially in the city around concrete areas, even out in the country, there's real heat. And they just get hotter and hotter every summer. And I know this will sound funny, cos my dad doesn't believe in climate change, he's one of those old school farmers who is like 'nup, no, it's not happening', but 100%. The sun seems to have a real harsher heat to it, even on 30-degree days, it really does seem a lot hotter, so there's no doubt in my mind that climate change is happening.

Some members were critical of employers' failure to improve working conditions as it was not profitable. A member working in health care said that the impacts of climate change might be

mitigated by changing shift times to cooler parts of the day, but that 'no one wants to pay the penalty rates'. Another member, working in warehousing in South Australia, said:

Companies will put solar on roofs to power robots then put in air conditioning to keep the robots cool. So there is an effort to help climate change which is positive, but not to improve working conditions. Stock and money matter, not people.

One young process worker in manufacturing in NSW was particularly despairing about the future considering climate change, and stated in an interview:

I've only been on this earth for like 23 years and ... you see all the pollution coming out of these factories and I don't think that could be very good for a glowing green planet. ... I would say that, yeah, climate change is sort of ruining this earth and we're left to die I suppose.

Throughout the survey and in interviews, members noted other factors at play impacting heat stress, including: higher workloads; staff shortages resulting in increased pace of work and longer hours; the impact of COVID-19 and PPE; and, the fact they were getting older, or had declining physical fitness. While many respondents indicated heat stress is a critical health and safety issue for them or in their workplace, not all drew the link to climate change.

There also appears to be a small number of members who do not view the issue of climate change as 'union business'. While it did not come up in the survey or interviews, on the UWU Facebook page when the first Climate Action Group Meeting was announced (in May 2020) some members commented that the initiative was not an appropriate use of union resources or not something the union should be focusing on. For these members, initiatives like the Extreme Weather at Work training have the potential to demonstrate why unions need to be involved in organising and campaigning on the issue of climate change.

UWU climate initiatives

The UWU has taken a public and proactive approach to climate action, including by investigating the impacts of climate change for members and involving members in action on this issue. In addition to national policy initiatives seeking greater government action on climate change and general member education, the union has several key workplace initiatives.

Extreme Weather at Work training

In winter 2020 the union began running a new OHS training workshop, Extreme Weather at Work. The workshop involves members in discussions about the current and potential impacts of climate change for workers, current regulatory frameworks to manage the OHS problems, workers' rights, and employer responsibilities. The training aims to provide the following outcomes for members:

- Understand and feel confident articulating that employers are responsible for controlling all known workplace risks to workers health and safety, including any stemming from extreme weather and climate change.
- Feel confident they can cease work, on paid time, whenever there is a serious and imminent risk to health and safety.
- Be able to identify and recognise the impacts of extreme weather and climate change on workers and workplaces.
- Begin to identify actions they can take in their industry and workplaces around extreme weather and climate change.

Climate Action Group

In May 2020 the union held its first Climate Action Group meeting. Any member can join this group, and initial meetings, involving hundreds of members, set initial priorities for the union's climate work as follows:

- Establishing Occupation Health & Safety training around extreme weather at work.
- Working with other unions and non-profit organisations to build cross-movement solidarity and collaborate around climate justice and just transitions.
- Hold regular meetings and create online spaces through which UWU members can communicate and work together to build or work toward climate justice.

This group was reinvigorated in the aftermath of the 2019-2020 bushfires, which for many members brought home the realities of climate change driven weather changes.

Social movement, civil society, and academic engagement

The union has taken a variety of other actions including backing initiatives for a just transition, forming alliances with student climate strikers, and supporting new climate leaders in the union. The union has also partnered with the Hunter Jobs Alliance, the University of Sydney's 'A Real Deal' initiative, and our UTS Too Hot to Work initiative.

Climate Disaster Relief Fund

In the aftermath of the Black Summer fires the union also established a sizable Climate Disaster Relief Fund, which provides financial and legal support to members directly impacted by the fires and those who will be impacted by future climate disasters, as well as members who volunteered with an emergency service organisation during the bushfire crisis.

Cooperative Power

Alongside other unions and community organisations, the UWU has established Cooperative Power. The non-profit cooperative provides environmentally friendly electricity at affordable rates, using any surplus to fund projects related to its environmental and social initiatives.

Further research

This project has sought to better understand the experience UWU members have of high heat in the workplace, and whether members see this as connected to climate change. Members also spoke to us about other climate change driven extreme weather impacts, most particularly the impact of the 2019-2020 bushfires. Many members registered their concern that their working conditions could worsen if employers were not forced to introduce better health and safety protections, and if climate change is not abated.

Beyond this study there is a pressing need for a national study into the impacts of climate change — current and emerging — across the Australian workforce. Such a study should provide greater clarity on workers' attitudes to climate change, its connection with their working conditions, and their views on what should be done to address it. Such research could inform wider union activity on this pressing OHS issue, as well as union leadership on dealing with the climate crisis more broadly.

In this and our previous projects, workers have told us that climate change is already a live discussion at work. This is particularly the case during events like the bushfires or on high heat days. Future research could explore how workers are experiencing climate-related impacts in the workplace, and how stakeholders including unions could successfully organise in relation to both health and safety dimensions of heat and the causes of climate change itself. In this vein, the United Workers Union (UWU) might consider an evaluation project to assess the results from the Extreme Weather at Work training, and whether it can be enhanced based on the information provided by members during this project.

Encouragingly there is indicative evidence from this and our other projects that some members want to take greater action on the impacts of climate change in their workplaces.