



AFTER THE fires

THE IMPACTS OF THE 2019-20 BLACK SUMMER BUSHFIRES ON THE WELLBEING OF EMERGENCY SERVICES PERSONNEL



Lawrence D, Ridders W, Houghton S, Hunt A, Bartlett J, Lawn S, Van Hooff M (2021) *After the Fires: The impacts of the 2019-20 black summer bushfires on the wellbeing of emergency services personnel*. Perth: Graduate School of Education, The University of Western Australia.





CONTENTS

Executive summary	2
Acknowledgements	5
Introduction.....	6
Involvement in responding to the 2019-20 bushfires	9
Engagement with the fires	10
Preparedness	15
Community criticism.....	15
Mental health and wellbeing.....	16
Suicidal thoughts and behaviours.....	19
Life-threatening experiences during the 2019-20 bushfire season.....	19
Traumatic events during the 2019-20 bushfire season	21
Cumulative trauma	24
Diagnosis of mental health conditions	26
Functional impairment associated with psychological distress	27
Use of services for mental health issues.....	28
Perceived need for help or support.....	29
Barriers to help seeking.....	32
Workplace culture.....	33
Commitment to volunteering.....	34
Impact of pandemic.....	35
Implications	36
Appendix 1: Participation in the survey, response patterns and weighting	40
Supplementary tables	41
References	42
Glossary	43
Additional information.....	47

EXECUTIVE SUMMARY

The bushfires of the 2019-20 Australian *Black Summer* fire season saw widespread destruction caused by fires of unprecedented magnitude, duration and intensity. In total, 33 lives were lost, more than 3,000 homes were destroyed, wildlife was decimated, and over 20 million hectares of community and farming land and national parks were burnt. All Australian states and territories were affected, with the most significant impact felt in New South Wales, Victoria, South Australia and Queensland. With a warming and drying climate, there is increasing risk of future extreme fire seasons. One important aspect of preparing for future fire seasons is ensuring the wellbeing of personnel who are called on to respond to the fires and protect our communities.

After the Fires aimed to investigate the impacts of the bushfires on emergency services personnel, address key gaps in knowledge about how to foster resilience and coping, and investigate how to deliver effective support for mental health and wellbeing to Australian bushfire first responders. Over 4,000 personnel across fire and rescue, rural fire and state emergency service (SES) agencies across Australia participated in the *After the Fires* survey. Survey data have been weighted to represent the full population of emergency services personnel in Australia.



Involvement in responding to the fires

- *After the Fires* estimated that 82,480 personnel were involved in responding to the Black Summer bushfires, including 64,500 volunteers and 17,980 employees, with volunteers representing 78% of responders.
- 66,300 personnel were directly involved in firefighting including 53,200 volunteers and 13,100 employees.
- Volunteers spent on average 3 weeks and employees on average 4 weeks responding to the fires. In addition, 30% of employees volunteered additional time, contributing on average an additional 3 weeks.
- 72% of volunteers and 73% of employees spent at least one night away from home, with volunteers spending on average 9 nights away from home and employees on average 14 nights away from home.
- 13,800 volunteers and 3,100 employees travelled interstate to help fight fires.

Mental health and wellbeing of personnel involved in the Black Summer bushfires

- Among personnel responding to the 2019-20 bushfires, 4.5% of volunteers and 5.1% of employees had probable PTSD at the time of the survey, representing an estimated 2,900 volunteers and 920 employees.
- 4.6% of volunteers and 5.5% of employees had very high psychological distress indicative of serious mental illness, representing an estimated 3,000 volunteers and 1,000 employees, compared with 4.0% of the Australian population.
- Additionally, 10.5% of volunteers and 14.5% of employees had high psychological distress indicative of less severe mental illness which would benefit from treatment, compared with 8.0% of the Australian population.
- 4.6% of volunteers and 4.9% of employees had seriously considered ending their own life in the year following the fires, 1.6% of volunteers and 2.3% of employees had a suicide plan, and 0.2% of volunteers and 0.3% of employees had attempted suicide. Rates of suicidal ideation and suicide plans were about twice as high as in the general population.

Experience of traumatic or life-threatening events

- 31% of volunteers and 25% of employees had felt there was a time when their life was threatened when responding to the 2019-20 bushfires.
- 22% of volunteers and 19% of employees had experienced one or more traumatic events that affected them deeply in the course of the 2019-20 bushfires.
- Overall 4,150 volunteers and 1,040 employees who were exposed to traumatic or life-threatening events during the bushfires had indicators of high need for mental health support – either probable PTSD, very high psychological distress or suicidal ideation. This is 2,540 and 520 personnel more than would have been expected to have such needs in the absence of the bushfires.

Support for mental health and wellbeing

- 58% of volunteers and 52% of employees with high need for mental health support – either probable PTSD, very high psychological distress or suicidal ideation – had not received any mental health treatment in the 12 months following the fires.
- Of those who received help, 32% of volunteers and 31% of employees reported that the help they received was provided through their organisation and the remainder obtained help outside of their organisation.
- Only 16% of volunteers and 22% of employees with high need for mental health support felt they received as much help as they needed.
- There are over 5,000 people who faced traumatic or life-threatening events while responding to the bushfires who have high need for mental health support, more than double the rate that would be expected. Around 1,000 of these have received a sufficient level of support for their needs.

Australia is highly dependent on volunteers to respond to major bushfires. While almost all available paid personnel were involved in the response to the 2019-20 bushfires, 78% of responding personnel were volunteers. It is likely that volunteers will continue to play a major role in responding to major bushfires in the foreseeable future. A challenge for our future bushfire preparedness is sustaining a volunteer workforce of sufficient size and capacity to be able to respond to large-scale events without overtaxing volunteers to the point where they are at risk of burnout or mental ill-health.

Over 5,000 personnel responding to the fires have high needs for mental health support, more than double the number that would be expected in the absence of events of this nature. While all emergency services agencies have policies and procedures in place to support the wellbeing of their personnel and provide support to those with mental health issues, an important issue to consider is how to build a capacity to scale up the level of support available following major disasters. In many areas available mental health supports are at or above capacity in ordinary times and have limited or no spare capacity to provide additional support when needed in the wake of major disasters. With a drying and warming climate increasing the likelihood of future significant fire events which could lead to increased workload and potential for exposure to trauma for volunteers, it is important to ensure that organisational capability to support wellbeing is increased proportionately.

As mental health concerns can emerge two years or more after the initial traumatic fire events, *After the Fires* research will continue over 2021-22 with a second wave of the survey and additional focus groups and interviews.

Acknowledgements

After the Fires was funded by the Australian Government Medical Research Future Fund. The study was conducted by The University of Western Australia in partnership with Flinders University, Military and Emergency Services Health Australia (MESHA), Roy Morgan Research and the Bushfire and Natural Hazards Cooperative Research Centre.

We would like to thank the following organisations and individuals whose support, cooperation and expertise were integral to the success of the study:

- The 19 participating fire and emergency services agencies: NSW Fire and Rescue, NSW Rural Fire Service, NSW State Emergency Service, Victoria Country Fire Authority, Victoria State Emergency Service, Queensland Fire and Emergency Services, South Australian Metropolitan Fire Service, South Australian State Emergency Service, South Australian Department of Environment and Water, Tasmania Fire Service, Tasmania State Emergency Service, WA Department of Fire and Emergency Services, Northern Territory Fire and Rescue Service, Northern Territory State Emergency Service, ACT Ambulance, ACT Fire and Rescue, ACT Rural Fire Service, ACT State Emergency Service, ACT Emergency Services Agency.
- Members of the Study's advisory group - Andrew Colvin APM OAM (Chair to 30 June 2021), Michael Baldi (Chair from 1 July 2021), Dr John Bates, Commissioner Ken Block, Susan Caracoussis OAM, Julie Edwards, Greg Jennings, Chris Killick-Moran, Ken Lay AO APM, Karen McColl, Scott Nowak, Associate Professor Tim Slade, Torben Soelvsteen.

INTRODUCTION

The 2019-20 *Black Summer* fire season was one of the most intense and sustained fire seasons ever experienced in Australia. Between August 2019 and March 2020, over 20 million hectares of community and farming land and national parks were burnt. In total, 33 people lost their lives and more than 3,000 homes were destroyed. An estimated three billion animals were killed or displaced by the fires. The economic cost of the fires has been estimated at over \$10 billion.

Through the Medical Research Future Fund, the Australian Government provided funding to investigate the health impacts of the bushfires, with funding provided in two streams - to investigate the physiological impacts of exposure to bushfire smoke and to examine the mental health impacts. The *After the Fires* study was funded as part of this second stream. *After the Fires* set out to investigate the impacts of the bushfires on the mental health and wellbeing of Australia's emergency services personnel. The study has focussed on volunteers and employees working within fire and rescue, rural fire and state emergency service agencies. The study aimed to address key gaps in knowledge about how to foster resilience and coping, and how to deliver effective support for mental health and wellbeing to Australian bushfire first responders.

The research was conducted by the same team that undertook the *Answering the Call* study on behalf of Beyond Blue in 2017-18. *Answering the Call* was the first National Mental Health and Wellbeing Study of Police and Emergency Services. The study provided the first national baseline measure of the mental health and wellbeing of first responders. It identified the high risk of exposure to traumatic events in emergency services, the impacts that cumulative exposure to traumatic events can have over the course of a career, and personal, cultural and organisational barriers that stand in the way of seeking help in a timely way if mental health issues emerge.

After the Fires was conducted by The University of Western Australia, in partnership with Flinders University, Military and Emergency Services Health Australia (MESHA), Roy Morgan Research and the Bushfire and Natural Hazards Cooperative Research Centre.



DFES Incident Photographer Evan Collis

The *After the Fires* study aimed to:

- (i) Quantify the short and long-term impacts of direct and indirect exposure to the 2019-20 bushfire events on the wellbeing and resilience of first responders
- (ii) Assess their need for support and use of support services
- (iii) Identify factors associated with resilience and effective coping, and
- (iv) Determine the best strategies to build resilience and protect mental wellbeing.

After the Fires comprises two parts:

- (a) A survey, which was conducted in 2020-21 (Wave 1) and will be conducted again in 2021-22 (Wave 2), including both paid and volunteer personnel in fire and rescue and state emergency services agencies. The survey measures first responders' engagement with the 2019-20 bushfires, their mental health and wellbeing, resilience, and need for and use of support services; and the cultural and organisational factors that may affect their wellbeing.
- (b) Qualitative research including a series of focus groups and individual interviews in communities most affected by the fires to further understand these impacts.

This report presents findings from the first wave of the *After the Fires* survey. Over 4,000 personnel across the fire and rescue, rural fire and SES sectors participated in the survey, including over 2,000 volunteers and almost 2,000 paid staff.

Survey data have been weighted to represent the full population of volunteers and employees across the fire and rescue, rural fire and SES sectors. All numbers and percentages presented in this report have been weighted to represent the population of employees and volunteers.

Confidence intervals can be used to assess the level of accuracy of survey estimates. A 95% confidence interval has been calculated for each estimate included in this report and only significant differences in the results have been noted in the text. When numbers were relatively small and apparent differences are more likely to be due to chance alone, this is also noted.

Answering the Call demonstrated that cumulative exposure to traumatic events can negatively affect the wellbeing of those called on to respond to critical incidents and emergencies. With a warming and drying climate, and the increasing risk of future significant fire events, understanding how to effectively support the wellbeing of volunteer and paid firefighters is a critical part of preparing our nation to respond effectively to future emergencies.

One critically important factor is recognising changes in wellbeing early and taking appropriate action to talk through issues and to seek help when it is needed.

Answering the Call found that all fire and rescue, rural fire and emergency services agencies across Australia have mental health and wellbeing programs and offer a range of supports to their personnel, but agencies with a high proportion of volunteers generally have fewer resources to support wellbeing. The location, scope and intensity of the 2019-20 bushfires meant that volunteers played a major role in responding to the fires. This study explores the roles that both volunteers and paid employees played, and the critical role of volunteers in responding to major bushfire events.

While cumulative exposure to traumatic events can have negative consequences, it is not just the nature of extreme events that has an impact, but how we respond to them. One critically important factor is recognising changes in wellbeing early and taking appropriate action to talk through issues and to seek help when it is needed. Often mental health issues develop slowly over a period of months or years. Early action can prevent the development of serious problems, and one of the issues that *After the Fires* sought to investigate was whether personnel involved have had the opportunity to process the events and whether those who may need support were receiving it.

Involvement in responding to the 2019-20 bushfires

There are an estimated 225,000 volunteers across the fire and rescue, rural fire and SES sectors across Australia, with the majority being rural fire service volunteers. In addition there are about 22,240 employees in the sector, including an estimated 18,200 operational firefighters.

Some 64,500 volunteers were involved in responding to the fires. While this represents less than 30% of all volunteers on the books across the country, evidence from previous studies suggests that the number of active volunteers is likely to be substantially lower than the total number of registered volunteers. As such, it is quite likely that the proportion of volunteers living in areas close to or affected by the fires who were involved in responding to the fires would be much higher.

The vast majority of employees in the sector were involved in the bushfire response. An estimated 17,980 paid staff were involved in responding to the fires, 81% of the paid workforce in the sector. The percentage of paid staff involved in responding to the bushfires was higher in the worst affected states, and was higher among fire agencies than SES agencies. Table 1 shows the number of volunteers and paid employees who were involved in the 2019-20 bushfire response.

Table 1: Personnel who played an active role in the 2019-20 bushfire response

Sector	Played an active role				Total
	Yes		No		
Volunteers					
Fire & Rescue (including Rural Fire)	57,800	29%	139,200	71%	197,000
SES	6,700	27%	18,200	73%	24,800
Total	64,500	29%	157,400	71%	221,800
Paid employees					
Fire & Rescue (including Rural Fire)	17,300	81%	4,000	19%	21,300
SES	680	73%	260	27%	940
Total	17,980	81%	4,260	19%	22,240

Of the 82,480 personnel across the sector actively involved in responding to the fires, 78% were volunteers. This highlights Australia's dependence on volunteers for responding to major bushfire events. Some paid staff were not located close to the fires, and fire agencies had to retain some staff outside of the bushfire response in order to maintain the capacity to respond to other emergencies during the bushfire season. As such, it is unlikely that a higher proportion of paid staff could have been deployed to the fire response.

Engagement with the fires

Table 2 shows a breakdown of the types of roles played by personnel involved in responding to the bushfires. An estimated 53,200 volunteers and 13,100 employees were directly involved in fighting fires, representing 83% of volunteers and 73% of employees active in responding to the fires. A higher proportion of employees played coordinating and logistical management roles.

Table 2: Roles played by personnel who played an active role in responding to the 2019-20 bushfires

Role ^a	Volunteers (%)	Employees (%)
Fighting fires	83	73
Operations support	41	46
Community support	28	17
Administrative support	16	19
Staging/basecamp	13	11
Rapid damage assessment	3	10
Other	6	9

a) Personnel could play multiple roles

Amongst volunteers, the average time spent responding to the bushfires was three weeks, while among employees the average time spent responding to the bushfires was one month (Figure 1). In addition to their paid roles, 30% of employees in the sector also volunteered their time to respond to the bushfires, on average committing three weeks of volunteer time (Table 3).

Figure 1: Time spent responding to bushfires among personnel who played an active role in responding to the 2019-20 bushfires

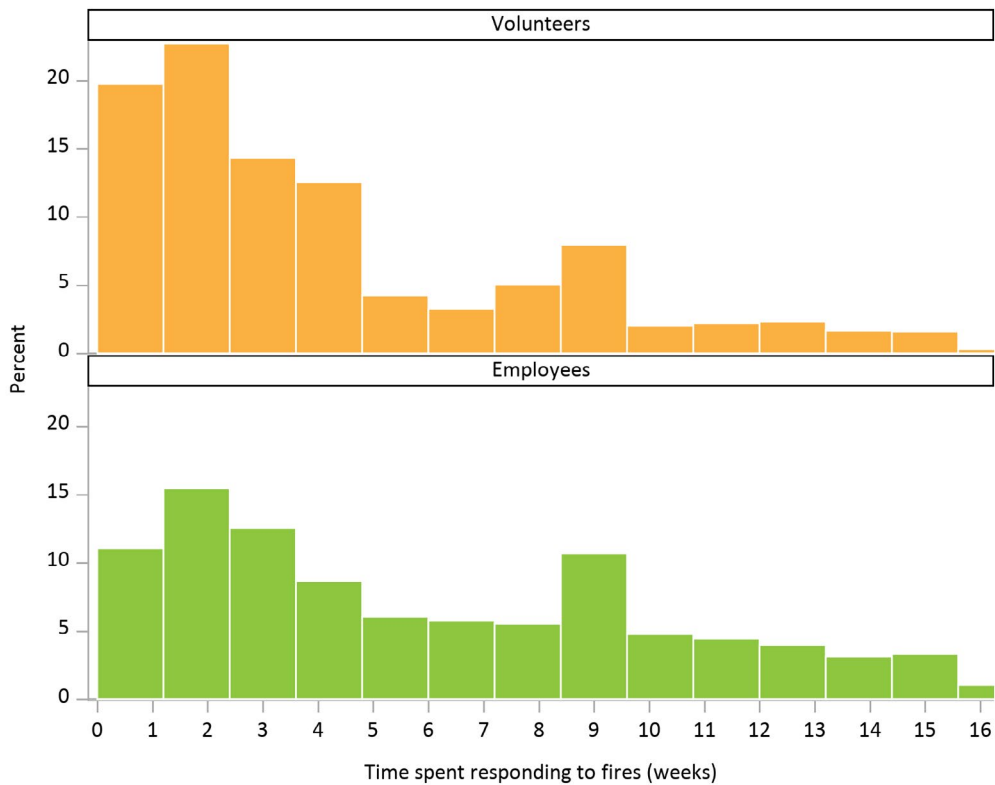


Table 3: Time spent responding to bushfires among personnel who played an active role in responding to the 2019-20 bushfires

Time spent	Volunteers (%)	Employees	
		In paid role (%)	In volunteer role (%)
None			70
Less than one week	14	10	6
1-2 weeks	24	20	8
3-4 weeks	23	19	6
1-2 months	16	17	4
Over 2 months	23	34	6

Time away from home

An estimated 72% of volunteers with active involvement in the bushfires spent one or more nights away from home while responding to the fires, with those going away spending an average of 9 nights away from home, and 17% of volunteers away from home for more than 14 nights over the fire season. This corresponds to an estimated 6,200 volunteers who spent more than 14 nights away from home while responding to the bushfires.

Similarly, an estimated 73% of employees with active involvement in the bushfires spent one or more nights away from home while responding to the fires, with an average 14 nights away from home among those who spent at least one night away from home, and 10% were away from home for more than 30 nights over the 2019-20 fire season.

Travel interstate

Excluding volunteers from the ACT who fought fires in NSW, 21% of volunteers involved in responding to the 2019-20 bushfires travelled interstate to assist with the bushfire response, representing an estimated 13,800 volunteers who travelled interstate. Excluding employees from the ACT who fought fires in NSW, 17% of employees responding to the 2019-20 bushfires travelled interstate to assist with the bushfire response, representing an estimated 3,100 employees travelling interstate. The majority of those travelling interstate travelled to NSW from other states to assist with the NSW fires.

Demographic characteristics

Table 4 shows demographic characteristics of volunteers and employees who played an active role in responding to the 2019-20 bushfires. Only 18% of volunteers and employees in the sector are female. In contrast to the Australian population, volunteers in particular have an older age distribution. While 16% of the Australian population is aged 65 years or older, 25% of volunteers in the sector are aged 65 years or over. Both within the volunteer and paid sectors, many people commit to extended careers in the service, with 33% of volunteers and 39% of employees having over 20 years' service, and 26% of volunteers and 28% of employees having between 11 and 20 years of service.

Table 4: Demographic characteristics of personnel who played an active role in responding to the 2019-20 bushfires

	Volunteers (%)	Employees (%)
Sex—		
Male	82	82
Female	18	18
Age group—		
Under 25 years	4	1
25 - 34 years	7	9
35 - 44 years	12	22
45 - 54 years	22	35
55 - 64 years	30	28
65 years and over	25	4
Length of service—		
Less than 2 years	6	6
2-5 years	15	11
6-10 years	19	15
11-20 years	26	29
21-30 years	18	23
More than 30 years	16	16
Location of usual workplace^a—		
Major cities	20	53
Inner regional	49	28
Outer regional	29	16
Remote or very remote	2	3

a) workplace or place of volunteer work

Leave for volunteering

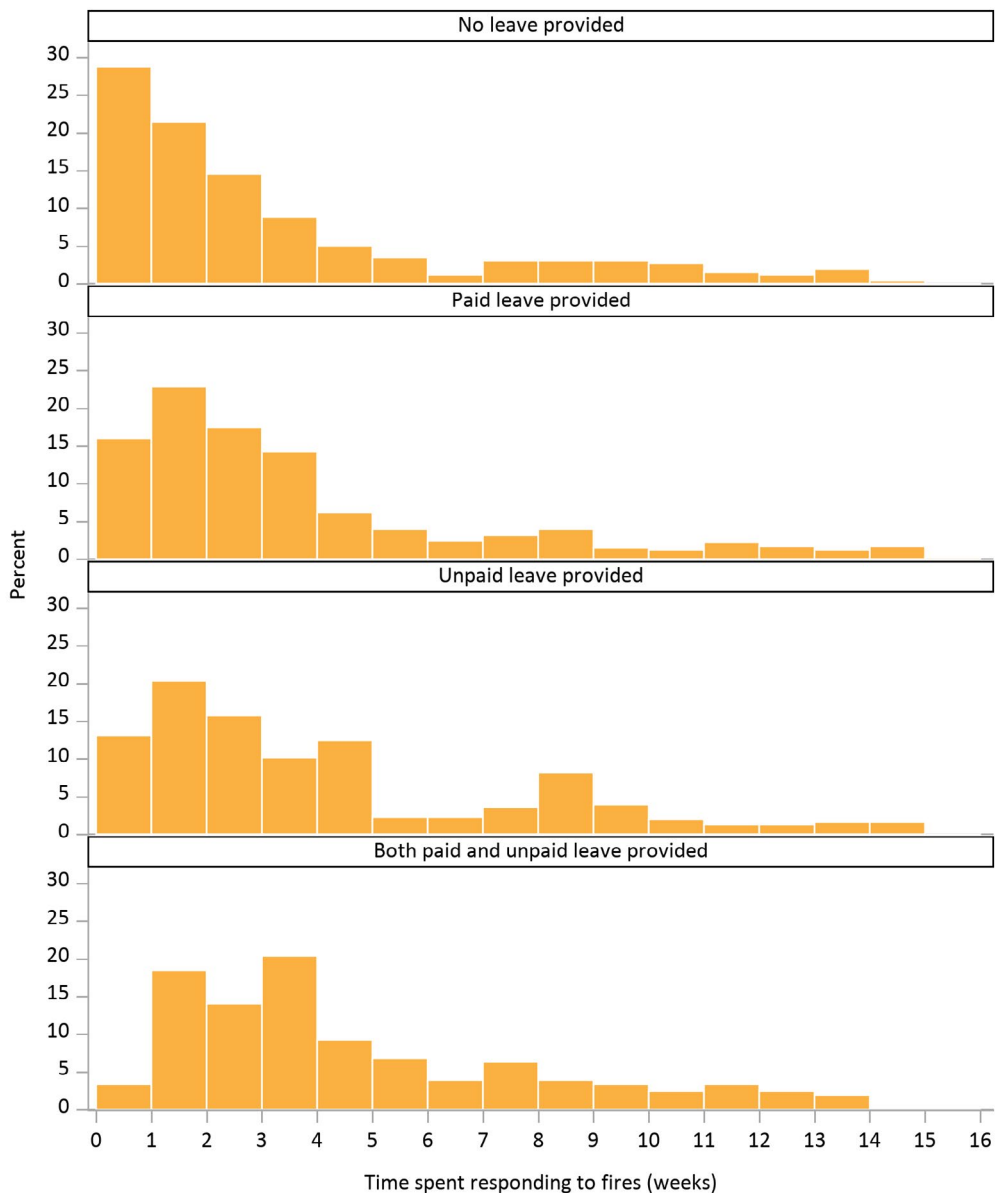
Of the 64,500 volunteers involved in responding to the 2019-20 bushfires, 66% were in other paid employment. Access to paid or unpaid leave to participate in volunteering is not universally available. Table 5 shows that 22% of volunteers were not provided with time off from their paid employment.

Table 5: Volunteers with paid employment: whether they were provided with time off to undertake their volunteer role

Provided with time off	(%)
No	22
Yes, paid	33
Yes, unpaid	26
Yes, both paid and unpaid	19

Volunteers with paid employment who have access to paid or unpaid leave to undertake their volunteering spent more time on average responding to the fires than those without access to leave. Those with no access to leave spent an average of 2 weeks responding, those with access to paid leave spend on average 2.6 weeks, those with access to unpaid leave spent on average 3.1 weeks and those with access to both paid and unpaid leave spent on average 3.7 weeks responding to the fires (Figure 2).

Figure 2: Volunteers with paid employment: time spent responding to the 2019-20 bushfires by access to paid or unpaid leave to undertake their volunteer role



Preparedness

Personnel were asked how well prepared they were for the 2019-20 bushfire season physically, psychologically and technically. While the majority of personnel reported that they were well prepared for the 2019-20 bushfire season, an estimated 7,300 volunteers (11%) and 3,500 employees (19%) reported that they were asked to take on roles for which they were not sufficiently trained. Additionally, 1,200 volunteers (2%) and 1,100 employees (6%) reported that they experienced a lot of stress or extreme stress due to lack of training. Table 6 shows respondents' levels of preparedness for the 2019-20 bushfire season physically, psychologically and technically. The majority of volunteers and employees had high levels of preparedness across all three domains.

Table 6: Preparedness for the 2019-20 bushfire season among personnel who played an active role in responding to the 2019-20 bushfires

Level of preparedness	Volunteers (%)	Employees (%)
Physically—		
Not at all prepared	2	1
Somewhat prepared	27	22
Well prepared	56	54
Very well prepared	15	23
Psychologically—		
Not at all prepared	4	4
Somewhat prepared	25	26
Well prepared	53	50
Very well prepared	19	20
Technical skills—		
Not at all prepared	1	1
Somewhat prepared	12	13
Well prepared	57	54
Very well prepared	30	32

Community criticism

While there was widespread community appreciation, respect and admiration for the personnel who responded to the bushfires, some communities suffered devastating impacts in the fires, and some responders have faced criticism relating to operational and other decisions taken. Volunteers were asked about experience of conflict with the community after the bushfire season. An estimated 11,000 volunteers (17%) reported that they had experienced criticism from or conflict with members of the community about the volunteer roles they played during the 2019-20 fires, and 2,300 (3.5%) reported that they experienced a lot of stress or extreme stress as a result.

Mental health and wellbeing

Measures

After the Fires employed several measures of wellbeing that were also used in *Answering the Call*. These include the Post-Traumatic Stress Disorder assessment scale (PTSD) (Kyron et al, 2021), the Kessler 10 measure of psychological distress (K10) (Kessler et al, 2002), the short form of the Warwick-Edinburgh Mental Well-being Scale (SWEMWBS) (Ng Fat et al, 2017), as well as questions about suicidal thoughts and behaviours. These allow comparison of the mental wellbeing of personnel in the three years since *Answering the Call* was conducted. In both surveys probable PTSD (see Glossary) was assessed using a scale that was specifically developed for *Answering the Call* and tailored to the emergency services sector to include the assessment of PTSD related to cumulative trauma exposure and not just a single traumatic experience. The surveys also included specific questions to assess the level of functional impairment associated with symptoms of PTSD.

The K10 psychological distress scale was used to measure psychological distress. It is widely used around the world in studies of mental health and wellbeing. The K10 primarily focusses on symptoms of depression and anxiety. The very high category on the K10 has been designed to match the definition of serious mental illness in the United States. Serious mental illness is defined as mental illness associated with serious functional impairment, which substantially interferes with or limits one or more major life activities, and people with very high psychological distress are likely to be in need of specialist mental health services. Using this definition, 3.7% of Australian adults have very high psychological distress, and among employed Australians working in professional occupations (such as doctors, nurses and teachers) 1.5% have very high psychological distress. The high category of the Kessler 10 scale is indicative of having a mental disorder, and people with high psychological distress are likely to benefit from mental health treatment.

The short form of the Warwick-Edinburgh Mental Wellbeing Scale (SWEMWBS) was used to assess positive mental wellbeing. It consists of 7 positively worded questions that cover both feelings and functioning. The scale was originally developed for use in the United Kingdom, and population reference data on the distribution of wellbeing are available for the adult populations of England and Scotland. The scale was designed so that the top 15% of the population would have high wellbeing, and the bottom 15% would have low wellbeing.

Changes in wellbeing since 2017-18

To facilitate a valid comparison between Answering the Call and After the Fires, the *Answering the Call* data used here has been limited to personnel working in the fire and rescue, rural fire and State Emergency Service sectors.

In *Answering the Call*, all three measures (PTSD, K10, SWEMWBS) showed higher rates of poor mental health and lower levels of wellbeing across the police and emergency services sector compared to the general adult population. There have been a number of changes in policy, practice and programs relating to mental health and wellbeing since *Answering the Call* in 2017-18. Agencies have continued to develop and implement workplace mental health programs, there are ongoing efforts across the sector to reduce the stigma associated with mental health issues and encourage more open conversations. Government inquiries, including the Senate inquiry into the people behind 000, have shone light onto the issue of mental health and wellbeing in the emergency services sector (Senate Education and Employment References Committee, 2019).

After the Fires showed that among volunteers there was little change in rates of mental health issues and wellbeing. Among employees, there have been reductions in mental health issues and improvements in wellbeing between 2017-18 and 2020-21. The rate of probable PTSD declined from 9.0% to 5.1% (Figure 3), the rate of very high psychological distress declined from 8.2% to 5.5%, while the rate of high psychological distress declined from 19.2% to 14.5% (Figure 4) and the rate of low wellbeing decreased from 28.8% to 24.8% (Figure 5). While these rates remain higher than general population rates, they are positive signs of improvement in mental wellbeing within the sector.

Figure 3: Rates of probable PTSD in fire and rescue, rural fire and SES personnel in 2017-18 and 2020-21

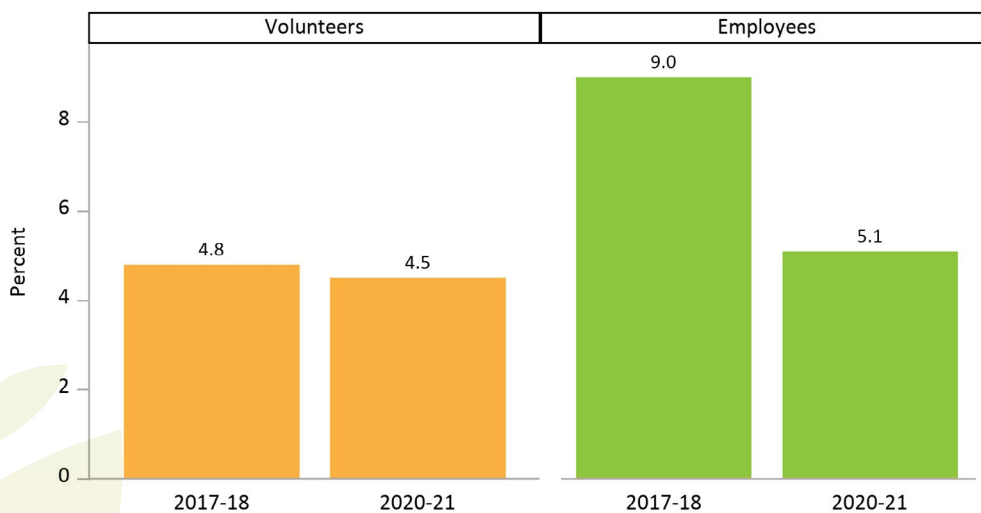
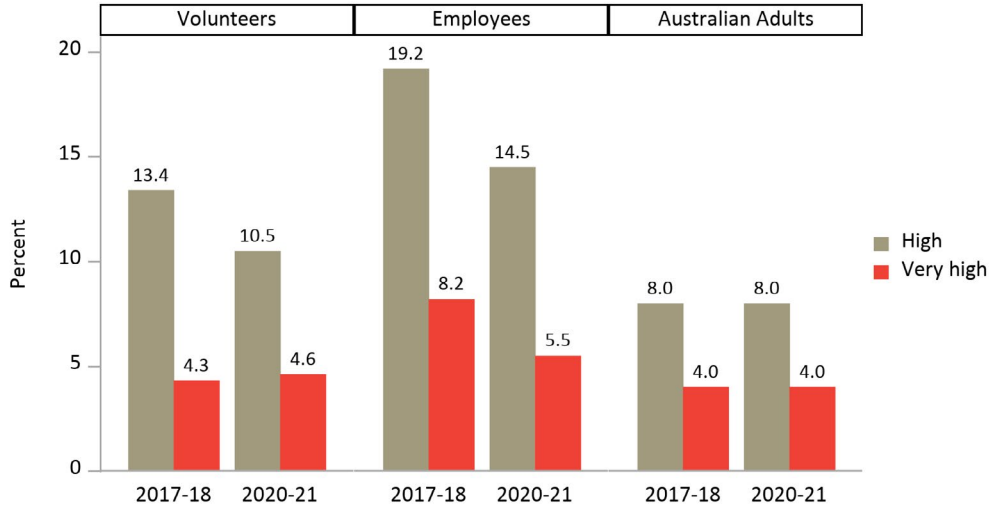


Figure 4: Rates of psychological distress (K10) in fire and rescue, rural fire and SES personnel in 2017-18 and 2020-21

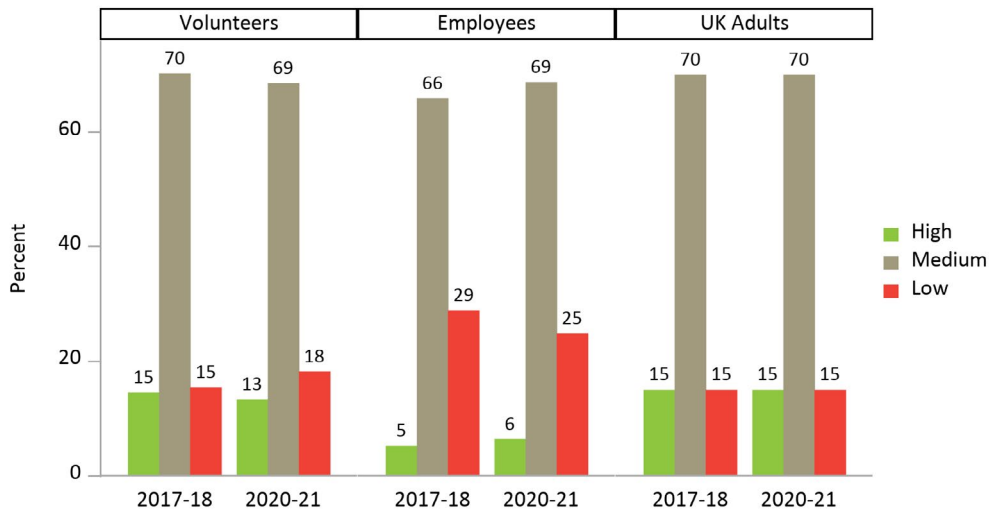
Figure compares personnel who played an active role in the 2019-20 bushfires, with personnel in the fire and rescue, rural fire and state emergency services sectors in Answering the Call.



fire and state emergency services sectors in Answering the Call.

Figure 5: Rates of mental wellbeing (SWEMWBS) in fire and rescue, rural fire and SES personnel in 2017-18 and 2020-21

Figure compares personnel who played an active role in the 2019-20 bushfires, with personnel in the fire and rescue, rural fire and state emergency services sectors in Answering the Call.



Suicidal thoughts and behaviours

Personnel were asked if in the past 12 months they had seriously thought about ending their own life, if they had a plan to do so, and if they had attempted suicide. Overall, 4.6% of volunteers and 4.9% of employees reported that they had seriously thought about ending their own life in the 12 months prior to the survey, while 1.6% of volunteers and 2.4% of employees said they had a suicide plan, and 0.2% of volunteers and 0.3% of employees said that they had attempted suicide in the past 12 months (Table 7). These rates were similar to those reported in *Answering the Call*. In comparison, in the 2007 Australian National Survey of Mental Health and Wellbeing (Slade et al, 2009), 2.3% of Australian adults had seriously thought about ending their own life in the 12 months prior to the survey, 0.6% of adults said that they had a suicide plan, and 0.4% of adults reported that they had attempted suicide in the 12 months prior to the survey.

Some 16% of volunteers and 6% of employees said that their thoughts about suicide had decreased since the bushfires, while 27% of volunteers and 34% of employees reported that their thoughts about suicide had increased since the bushfires. These rates correspond to an estimated 790 volunteers and 250 employees who reported a negative impact on their suicidal ideation as a result of their experiences with the 2019-20 bushfires.

Table 7: Suicidal thoughts and behaviours in the past 12 months

	Volunteers (%)	Employees (%)
Suicidal ideation	3,025 (4.6%)	890 (4.9%)
How did the experiences of the bushfires impact on your thoughts about taking your own life?		
No impact	57%	60%
A positive impact (they became less)	16%	6%
A negative impact (they became worse)	27%	34%
Suicide plan	1050 (1.6%)	430 (2.3%)
Suicide attempt	100 (0.2%)	50 (0.3%)

Life-threatening experiences during the 2019-20 bushfire season

Participants were asked if, in the course of responding to the 2019-20 bushfires, there was a time when they felt that their life was threatened. An estimated 31% of volunteers and 25% of employees reported that they had felt that their life was threatened.

Among personnel who said that their life had been threatened, there were higher proportions who reported indicators of poor mental health at the time of the After the Fires survey, approximately 9-12 months after the end of the fire season. Amongst volunteers who had experienced a life-threatening situation, the rate of probable PTSD was 9.1% compared with 2.4% among those without this experience. Among employees, 11.0% of those whose life was threatened during the fires had probable PTSD compared with 3.3% of those who had not experienced a life-threatening situation. Similarly, there were higher rates of high and very high psychological distress, lower rates of wellbeing, and higher rates of suicidal thoughts and behaviours among those whose life had been threatened during the bushfires (Table 8).

Table 8: Mental wellbeing of personnel who felt their life was threatened during the 2019-20 bushfires

Wellbeing indicator	Was there a time when you felt that your life was threatened?	
	No (%)	Yes (%)
Volunteers		
Proportion of volunteers	68.9	31.1
Probable PTSD	2.4	9.1
K10 Psychological distress—		
Low	71.6	49.2
Moderate	17.7	25.9
High	7.3	17.6
Very high	3.4	7.3
Warwick-Edinburgh Mental Wellbeing—		
Low	15.7	23.8
Medium	71.1	62.7
High	13.2	13.5
Suicidal behaviours—		
Suicidal ideation	3.2	7.6
Suicide plan	1.0	2.9
Suicide attempt	0.0	0.5
Employees		
Proportion of employees	74.9	25.1
Probable PTSD	3.3	11.0
K10 Psychological distress—		
Low	59.3	45.2
Moderate	23.8	26.1
High	12.4	20.1
Very high	4.5	8.6
Warwick-Edinburgh Mental Wellbeing—		
Low	21.9	28.4
Medium	71.1	65.6
High	7.0	6.0
Suicidal behaviours—		
Suicidal ideation	3.9	7.8
Suicide plan	1.8	3.9
Suicide attempt	0.2	0.6

Traumatic events during the 2019-20 bushfire season

Participants were also asked if in the course of responding to the 2019-20 bushfires, they experienced a traumatic event that affected them deeply. An estimated 22% of volunteers and 19% of employees reported that they had experienced one or more such events.

There was some, but not complete, overlap between having experienced a situation where they felt that their life was threatened and having experienced a traumatic event that affected them deeply in the course of the bushfires. An estimated 13.6% of volunteers reported that they had experienced a traumatic event that affected them deeply and a situation where they felt that their life was threatened, 17.5% said they had experienced a life-threatening situation but not a traumatic event that affected them deeply, and 7.8% reported they had experienced a traumatic event but not a life-threatening situation. Similarly, 10.5% of employees reported they had



Fire and Rescue NSW

experienced a traumatic event that affected them deeply and had felt that their life was threatened, 14.6% said they had experienced a situation where they felt their life was threatened but had not experienced a traumatic event that affected them deeply, and 8.7% reported they had experienced a traumatic event that affected them deeply but not a life-threatening situation.

There were higher rates of poor mental health among those who had experienced a traumatic event that affected them deeply during the bushfires. Amongst volunteers who had experienced a traumatic event, the rate of probable PTSD

was 13.0% compared with 2.2% among those who did not experience a traumatic event and among employees 12.3% of those who had experienced a traumatic event had probable PTSD compared with 3.5% of those who had not. Similarly there were higher rates of high and very high psychological distress, lower rates of wellbeing, and higher rates of suicidal thoughts and behaviours among those who had experienced a life-threatening situation (Table 9).

Among volunteers who had experienced both a traumatic event and a life-threatening event, the prevalence of probable PTSD was 16.0%, and an additional 9.4% had symptoms of PTSD with impairment of functioning but did not meet all diagnostic criteria for PTSD. In this same group, 26.2% had high psychological distress and 10.7% had very high psychological distress. Among employees who had experienced both, the prevalence of probable PTSD was 17.2% and 10.1% had sub-threshold symptoms of PTSD with impairment of functioning but did not meet all diagnostic criteria for PTSD (see Glossary). In this same group, 21.7% had high psychological distress and 13.2% had very high psychological distress.

Table 9: Mental wellbeing of personnel who experienced traumatic event(s) which deeply affected them in the course of their work during the 2019-20 bushfire season

Wellbeing indicator	Traumatic event experienced in the course of work during the 2019-20 bushfire season?	
	No (%)	Yes (%)
Volunteers		
Proportion of volunteers	78.5	21.5
Probable PTSD	2.2	13.0
K10 Psychological distress—		
Low	69.8	46.0
Moderate	19.1	24.3
High	7.9	19.9
Very high	3.2	9.8
Warwick-Edinburgh Mental Wellbeing—		
Low	16.1	26.2
Medium	70.2	62.2
High	13.7	11.6
Suicidal behaviours—		
Suicidal ideation	3.7	8.0
Suicide plan	1.0	3.9
Suicide attempt	0.0	0.7
Employees		
Proportion of employees	80.7	19.3
Probable PTSD	3.5	12.3
K10 Psychological distress—		
Low	59.3	40.9
Moderate	23.3	29.2
High	13.1	19.4
Very high	4.3	10.5
Warwick-Edinburgh Mental Wellbeing—		
Low	20.6	35.8
Medium	72.0	60.2
High	7.4	4.0
Suicidal behaviours—		
Suicidal ideation	3.7	10.0
Suicide plan	1.7	5.1
Suicide attempt	0.2	0.7

Impact of traumatic events on mental health and wellbeing

The rates of probable PTSD, high or very high psychological distress and suicidal ideation were higher in people who had experienced a traumatic event and/or life-threatening situation while responding to the 2019-20 bushfires. The study has found that over 5,000 personnel responding to the fires, mostly volunteers, have probable PTSD, very high psychological distress or suicidal ideation, indicating high needs for mental health support (Table 10). This was more than double the number that would be expected in the absence of events of this nature. In order to estimate the magnitude of the impact of traumatic experiences during the 2019-20 bushfires, the number of cases that would have been expected in people who experienced traumatic events was calculated for comparison assuming that these problems occurred at the same rate as in the group who did not have these experiences during the bushfires. This was used to calculate the number of cases in excess of expectations.

Table 10: Number of cases of probable PTSD, psychological distress or suicidal ideation among personnel exposed to either a life-threatening situation or a traumatic event in the 2019-20 bushfires compared to the expected number based on rates among people who didn't experience these traumatic situations

Wellbeing indicator	Number of cases	Expected number based on rates in remainder of workforce	Excess number of cases
Volunteers			
Probable PTSD	2,260	450	1,810
Very high psychological distress	1,900	720	1,180
High or very high psychological distress	5,970	2,520	3,450
Suicidal ideation	1,820	770	1,050
Probable PTSD, Very high psychological distress or suicidal ideation	4,150	1,610	2,540
Probable PTSD, High or very high psychological distress or suicidal ideation	6,680	3,150	3,530
Employees			
Probable PTSD	610	210	400
Very high psychological distress	520	280	240
High or very high psychological distress	1,710	1,070	640
Suicidal ideation	500	200	300
Probable PTSD, Very high psychological distress or suicidal ideation	1,040	520	520
Probable PTSD, High or very high psychological distress or suicidal ideation	1,880	1,150	730

This provides an estimate of the number of additional personnel who may be in need of support following the bushfires. Overall, 4,150 volunteers and 1,040 employees who were exposed to traumatic events or life-threatening experiences during the bushfires had indicators of high need for mental health support – probable PTSD, very high psychological distress or suicidal ideation. This is 2,540 volunteers and 520 employees more than would have been expected to have such needs in the absence of the bushfires.

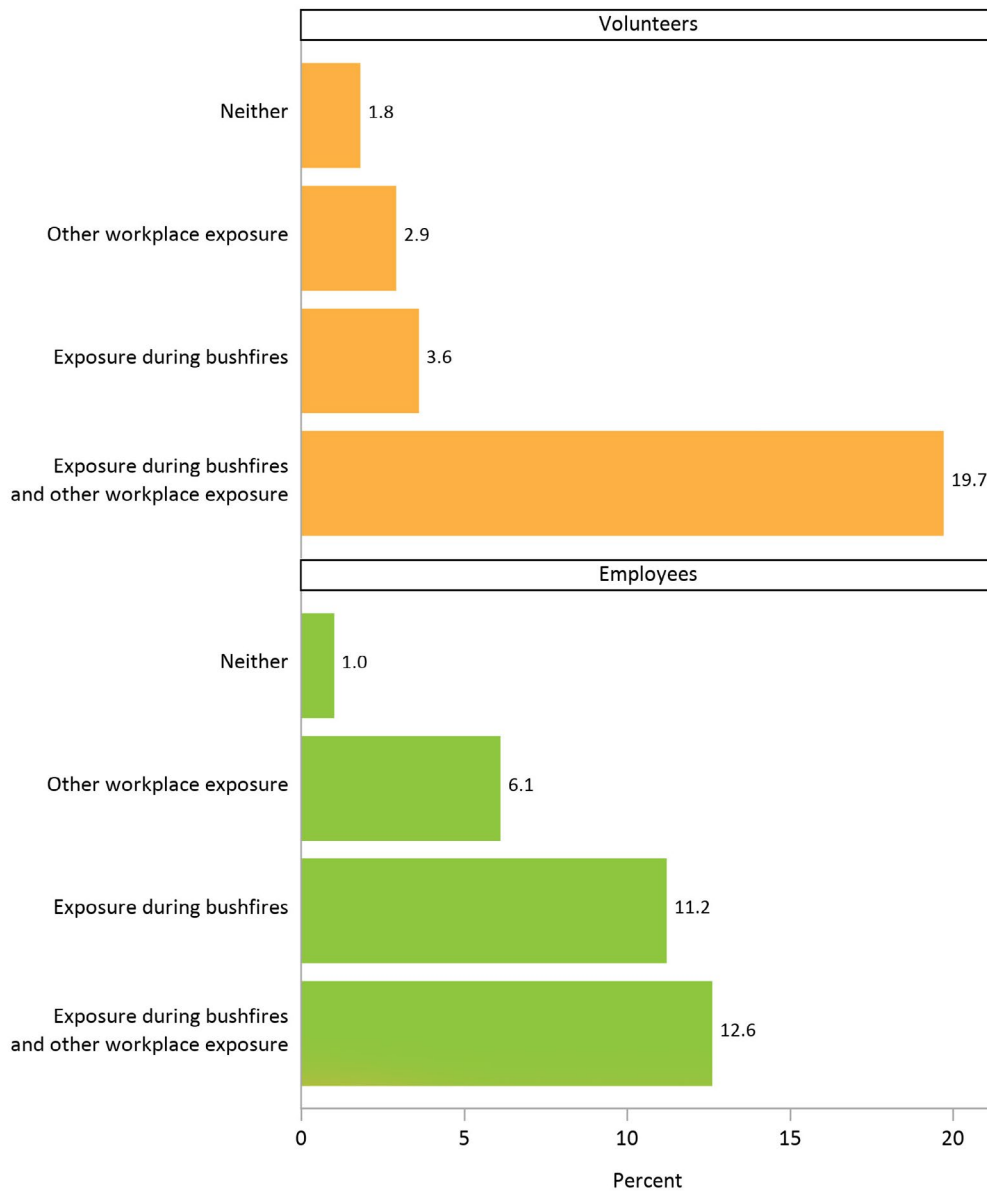
Cumulative trauma

Answering the Call found that cumulative exposure to traumatic events over the course of a career was the main pathway to developing mental health problems in the emergency services sector, more often than the impact of any single traumatic experience.

Among volunteers who experienced a traumatic event while responding to the 2019-20 bushfires, 58% reported that they had experienced other traumatic events that had affected them deeply in the course of their volunteer work not related to the 2019-20 bushfires. Among volunteers who had not experienced a traumatic event in the course of their volunteer work, the rate of probable PTSD was 1.8%. Among those who had experienced traumatic events in the course of their volunteer work but did not have a traumatic experience as part of responding to the bushfires, the rate of probable PTSD was 2.9%. Among those volunteers who had experienced a traumatic event while responding to the bushfires but had no other history of volunteer exposure to traumatic events, the rate of probable PTSD was 3.6%. Among those who had experienced a traumatic event while responding to the bushfires and had also experienced other traumatic events in the course of their volunteer work, the rate of probable PTSD was 19.7% (Figure 6).

Among employees who experienced a traumatic event while responding to the 2019-20 bushfires, 77% reported that they had experienced other traumatic events that had affected them deeply in the course of their work not related to the 2019-20 bushfires. Among employees who had not experienced a traumatic event in the course of their work, the rate of probable PTSD was 1.0%. Among those who had experienced traumatic events in the course of their work but did not have a traumatic experience as part of responding to the bushfires, the rate of probable PTSD was 6.1%. Among those who had experienced a traumatic event while responding to the bushfires but had no other history of work exposure to traumatic events, the rate of probable PTSD was 11.2%, and among those who had experienced a traumatic event while responding to the bushfires and had also experienced other traumatic events in the course of their work, the rate of probable PTSD was 12.6% (Figure 6).

Figure 6: Probable PTSD by exposure to traumatic events in the bushfires and other workplace exposure to trauma



As well as collecting information about involvement in the 2019-20 bushfires, participants in the survey who had sub-threshold symptoms of PTSD (see Glossary) were asked if their feelings or reactions were mainly due to one particular event or a series of events. The majority of personnel with probable PTSD or sub-threshold symptoms of PTSD reported that their symptoms were related to a series of events (Table 11).

Table 11: Personnel with Probable PTSD or sub-threshold PTSD symptoms, number of contributing events

Number of stressful experiences	Volunteers		Employees	
	Probable PTSD (%)	Sub-threshold PTSD symptoms (%)	Probable PTSD (%)	Sub-threshold PTSD symptoms (%)
One event	8.2	20.5	1.7	6.2
A few events	47.5	45.1	26.6	32.0
Many events over a period of time	44.3	34.4	71.7	61.8

Diagnosis of mental health conditions

Participants were asked if they had ever been diagnosed with a mental health condition, if they still had the condition, and how long ago it was diagnosed. Overall, 17% of personnel reported having a current diagnosed mental health condition, and of these personnel one in eight (12%) reported being first diagnosed with the condition since the 2019-20 bushfires (Table 12).

Table 12: Current diagnosed mental health conditions, and proportion first diagnosed since the 2019-20 bushfires

Mental health condition	Proportion with diagnosed condition		Proportion first diagnosed since bushfires	
	Volunteers (%)	Employees (%)	Volunteers (%)	Employees (%)
Any	17.1	17.2	12	14
PTSD	7.6	7.2	13	11
Depression	11.8	10.6	11	11
Anxiety	9.8	9.5	10	16

Functional impairment associated with psychological distress

Participants who were experiencing psychological distress were asked about the impact of this distress on their day to day lives. Participants were asked how many days in the last four weeks they were totally unable to work or manage day-to-day activities due to their feelings of psychological distress and how many days they had to cut down on what they did. Additionally, they were asked to rate the level of interference caused by their feelings of distress in four domains of life: home management, work, family and social life, which were combined to provide an overall measure of functional impairment.

An estimated 11.3% of volunteers and 12.0% of employees were unable to work on at least one day in the last four weeks due to feelings of psychological distress, and 11.0% of volunteers and 12.7% of employees had to cut down on their work for four or more days over the last four weeks (Table 13).

Table 13: Days out of role in last four weeks due to feelings of psychological distress among personnel who played an active role in responding to the 2019-20 bushfires

Days out of role	Volunteers		Employees	
	Unable to work (%)	Had to cut down (%)	Unable to work (%)	Had to cut down (%)
None	88.7	78.2	88.0	75.3
1-3	7.5	10.8	8.6	12.4
4-7	2.3	5.7	2.2	8.6
8 or more	1.5	5.3	1.2	3.7

An estimated 4,300 volunteers (6.5%) reported that they had taken time off work from their paid job in the past 12 months due to stress or mental health reasons caused by their volunteer work, and 1,600 employees (17%) reported they had taken time off work during the past 12 months due to stress or mental health reasons caused by their work.

An estimated 3.8% of volunteers and 4.3% were experiencing severe distress across home management, work, family and social life, and 5.8% of volunteers and 8.3% of employees were experiencing moderate distress (Table 14).

Table 14: Functional impairment due to feelings of psychological distress among personnel who played an active role in responding to the 2019-20 bushfires

Functional impairment	Volunteers (%)	Employees (%)
None	77.5	68.5
Mild	12.9	18.9
Moderate	5.8	8.3
Severe	3.8	4.3

Participants experiencing psychological distress were asked if traumatic events experienced in the course of the 2019-20 bushfires contributed to them feeling this way. An estimated 42.4% of volunteers and 33.0% of employees reported that traumatic events experienced in the course of the 2019-20 bushfires did contribute to them feeling this way.

Participants experiencing psychological distress were also asked how much their feelings had changed since before the 2019-20 bushfires. While 17.6% of volunteers experiencing psychological distress reported that their distress had improved since the bushfires, while 50.0% reported that their distress had worsened since the bushfires. Similarly, 16.0% of employees experiencing psychological distress reported their distress had improved since the bushfires, 43.2% reported their distress had worsened since the bushfires (Table 15).

Table 15: Personnel experiencing psychological distress, change in these feelings since before the 2019-20 bushfires

How much have these feelings changed?	Volunteers (%)	Employees (%)
Much improved	4.4	4.3
Slightly improved	13.3	11.8
No change	32.3	40.7
Slightly worse	33.2	33.2
Much worse	16.8	10.0

Use of services for mental health issues

Personnel who had probable PTSD, very high psychological distress or suicidal ideation were asked if they received treatment in the previous 12 months for an emotional or mental health condition (Table 16). Among volunteers who were receiving mental health treatment, 20% reported that the service was provided through their organisation, while among employees receiving mental health treatment, 36% reported that the service was provided through their organisation.

Table 16: Personnel experiencing probable PTSD, very high psychological distress, or suicidal ideation – receipt of treatment in previous 12 months for an emotional or mental health condition

Treatment received	Volunteers (%)	Employees (%)
None	57	53
Counselling	11	11
Medication	13	17
Both counselling and medication	19	19



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Perceived need for help or support

After the Fires used a model of perceived needs for help with mental health or emotional wellbeing that splits people with probable PTSD, very high psychological distress or suicidal ideation into two categories—those who received help and those who did not. Those who did not receive help were further subdivided into those who did not believe they had a problem, despite reporting symptoms of mental health issues and associated impairment, those who recognised they had a problem but did not think they needed any help, and those who recognised a need for help but did not seek or receive help. Those who did receive help were asked if they received sufficient help or needed more help for their mental health concerns.

Figure 7 shows perceived needs for help among personnel with probable PTSD, very high psychological distress or suicidal ideation who would be expected to have high need for mental health support. Some 52.4% of volunteers and 39.9% of employees with indicators of high need for mental health support did not receive any help. The proportion of those with high needs who did not believe they had a problem or needed help suggests there are still issues to be addressed with mental health literacy in the sector, in terms of understanding what types of mental health issues can be treated and what types of treatments are available. Overall only 16.0% of volunteers and 22.0% of employees with high needs reported receiving sufficient help for their needs, suggesting that among those who do seek help there are still issues to resolve regarding access to appropriate and sufficient levels of support.

Figure 7: Perceived need for help among personnel with probable PTSD, very high psychological distress or suicidal ideation

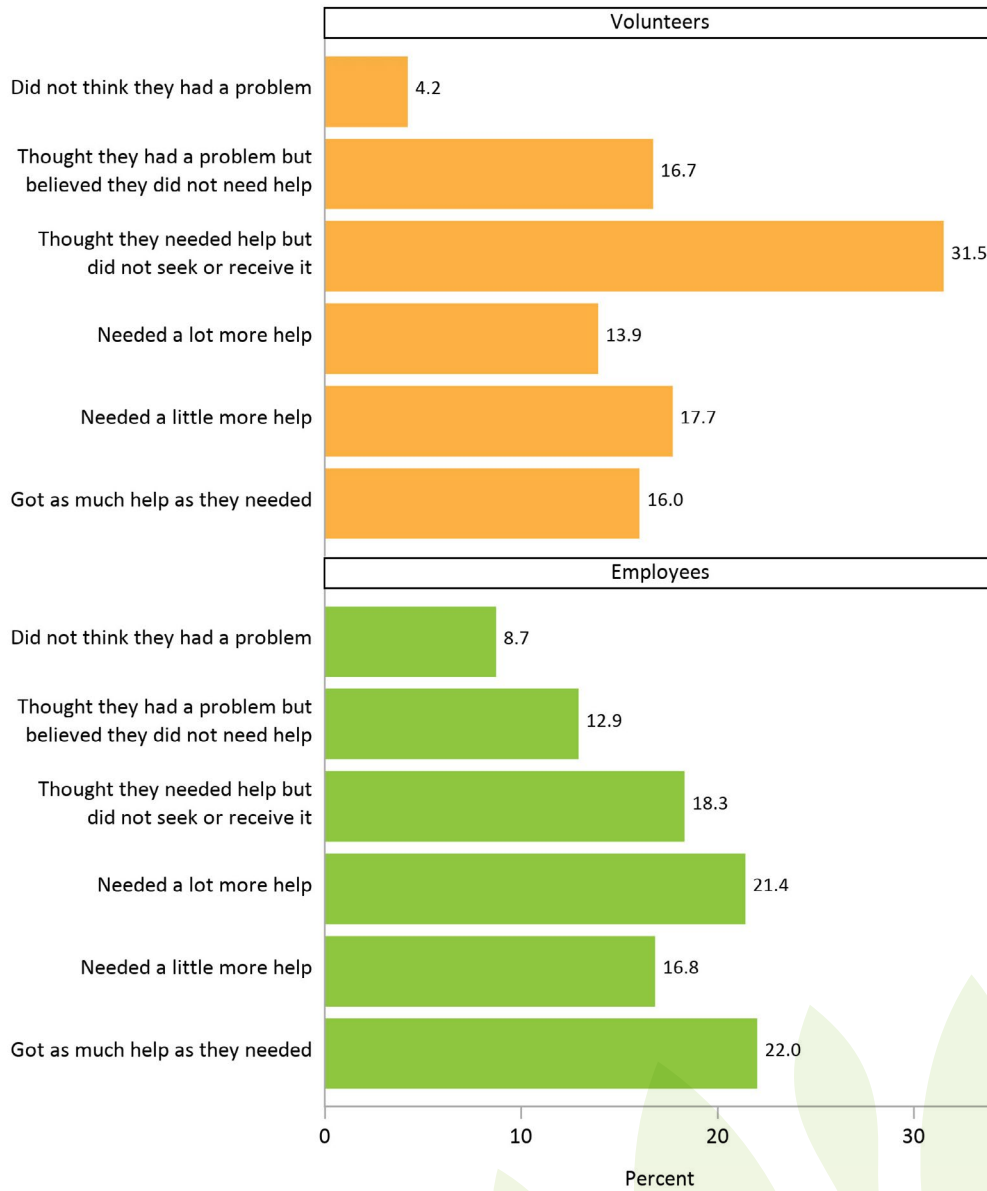


Table 17 compares levels of perceived need for help among personnel with probable PTSD or high or very high psychological distress between *Answering the Call* and *After the Fires*. There was little evidence of change in levels of perceived need between the two surveys. Still less than one in five volunteers or employees with either probable PTSD or high or very high levels of psychological distress felt that they had received sufficient help for their needs. This suggests that it is unlikely to be changes in individual levels of receiving help that would be associated with general improvements in the mental health of the workforce. Volunteers with probable PTSD or high psychological distress were more likely to think they needed help but not seek it in 2020-21, and fewer volunteers received as much help as they needed.

Table 17: Perceived need for help among personnel with probable PTSD or high or very high psychological distress in 2017-18 compared with 2020-21

Perceived need for help	Answering the Call (%)	After the Fires (%)
Volunteers		
Did not think they had a problem	13.7	7.8
Thought they had a problem but believed they did not need help	29.0	28.1
Thought they needed help but did not seek or receive it	14.0	26.0
Needed a lot more help	8.6	11.4
Needed a little more help	12.1	11.0
Got as much help as they needed	22.6	15.6
Employees		
Did not think they had a problem	10.3	13.8
Thought they had a problem but believed they did not need help	25.3	19.6
Thought they needed help but did not seek or receive it	18.8	17.9
Needed a lot more help	12.6	13.6
Needed a little more help	17.3	16.3
Got as much help as they needed	15.7	18.9

Table compares personnel who had probable PTSD or high or very high psychological distress who played an active role in the 2019-20 bushfires, with personnel who had probable PTSD or high or very high psychological distress in the fire and rescue, rural fire and state emergency services sectors in Answering the Call.

Barriers to help seeking

Personnel who perceived a need for help with mental health issues who either did not seek help or delayed seeking help at least three months after the first time they felt they needed help were asked about barriers to help seeking. There was some evidence of a reduction of numbers of personnel in the sector reporting barriers to help seeking, particularly among employees between the *Answering the Call* survey and the *After the Fires* survey (Table 18). The most common barrier to help seeking remains wanting to deal with problems informally either by themselves or with family and friends, suggesting that personnel in the sector with emerging mental health needs may still be waiting rather than seeking formal help when problems first arise.

Table 18: Barriers to seeking help among employees who perceived a need for help with mental health issues who either did not seek help or delayed seeking help, 2017-18 compared with 2020-21

Barrier	Answering the Call (%)	After the Fires (%)
Volunteers		
Wouldn't know where to get help	13.2	11.1
Would have difficulty getting time off work	20.4	14.1
Wouldn't be able to do it confidentially	24.7	18.9
Would harm my career prospects	23.3	20.7
People would treat me differently	34.5	32.0
Would be seen as weak	27.1	26.3
Would stop me doing operational work	17.2	17.4
Would be a burden to my team or family	23.9	21.2
Prefer to deal with problems informally	67.2	68.8
Would negatively impact my colleagues	33.9	21.2
Don't believe treatments are effective	12.4	13.3
Don't trust mental health professionals	11.1	13.0
Unable to access support due to COVID	-	9.1
Employees		
Wouldn't know where to get help	10.0	9.9
Would have difficulty getting time off work	22.0	17.5
Wouldn't be able to do it confidentially	36.7	27.4
Would harm my career prospects	43.9	35.1
People would treat me differently	48.0	40.7
Would be seen as weak	38.8	33.8
Would stop me doing operational work	37.7	31.8
Would be a burden to my team or family	36.9	28.9
Prefer to deal with problems informally	74.9	74.6
Would negatively impact my colleagues	43.9	25.0
Don't believe treatments are effective	12.1	8.9
Don't trust mental health professionals	9.4	8.0
Unable to access support due to COVID	-	7.7

Table compares personnel who played an active role in the 2019-20 bushfires, with personnel in the fire and rescue, rural fire and state emergency services sectors in Answering the Call.

Workplace culture

Measures of organisational stigma and support for mental health issues show small but consistent improvements between *Answering the Call* and *After the Fires* (Table 19). Note that these measures were only included for employees in *Answering the Call*, and have been asked of volunteers for the first time in *After the Fires*. It is possible that improvements in workplace culture and practices may have contributed to general improvements in mental health in the sector since *Answering the Call*.

Table 19: Indicators of workplace culture in 2017-18 compared with 2020-21: Proportion who agree or strongly agree

	Answering the Call (%)	After the Fires (%)
Volunteers		
My manager is clearly supportive of those experiencing mental health-related issues	-	64
My immediate colleagues are clearly supportive of those experiencing mental health-related issues	-	68
I believe my organisation is committed to making changes that promote mental health and wellbeing	-	66
I believe my organisation has the skills and resources to make changes that promote mental health and wellbeing	-	56
We have regular discussions and/or debriefs about issues we have experienced in the course of our work	-	63
Employees		
My manager is clearly supportive of those experiencing mental health-related issues	55	62
My immediate colleagues are clearly supportive of those experiencing mental health-related issues	59	68
In my organisation, when people recover from a mental illness, their career is unaffected	18	23
I believe my organisation is committed to making changes that promote mental health and wellbeing	56	59
I believe my organisation has the skills and resources to make changes that promote mental health and wellbeing	46	51
We have regular discussions and/or debriefs about issues we have experienced in the course of our work	54	60

Table compares personnel who played an active role in the 2019-20 bushfires, with personnel in the fire and rescue, rural fire and state emergency services sectors in *Answering the Call*.

Commitment to volunteering

Volunteers were asked whether their experience of the 2019-20 bushfires impacted on their commitment to volunteering (Table 20). Overall, commitment to volunteering was strengthened for a substantial proportion of volunteers, and a much smaller proportion of volunteers indicated their commitment to volunteering lessened after the bushfires. This was particularly notable among younger volunteers. Almost 60% of volunteers under 25 years, and 40% of volunteers aged 25-34 were more committed to volunteering after the 2019-20 bushfires.

Table 20: Commitment to volunteering by age group

Age group	Has the experience of the 2019-20 bushfires changed your commitment to volunteering in the emergency services in the future?		
	I am more committed to volunteering (%)	My commitment hasn't changed (%)	I am less committed to volunteering (%)
Less than 25 years	57	41	2
25 - 34 years	40	50	10
35 - 44 years	25	70	5
45 - 54 years	20	73	7
55 - 64 years	17	74	9
65 years or over	16	80	4
Total	22	72	6



DFES Incident Photographer Evan Collis

Impact of pandemic

COVID-19 was first detected in Australia in January 2020, and lockdowns started in March 2020, very soon after the end of the 2019-20 bushfire season. This may have impacted on personnel's connections with colleagues, particularly for volunteers who may not have been able to attend regular training sessions in the aftermath of the fires.

Respondents were asked about the impact of the COVID-19 pandemic on their mental health and wellbeing and on their income (Table 21). An estimated 36% of volunteers and 40% of employees indicated a small negative impact on their mental health and 7% of volunteers and 6% of employees indicated a large negative impact. An estimated 31% of volunteers and 25% of employees reported reduced income.

Table 21: Impact of COVID-19 pandemic

	Volunteers (%)	Employees (%)
Impact on mental health and wellbeing—		
Large positive impact	1.5	1.8
Small positive impact	6.1	6.0
No impact	49.9	46.1
Small negative impact	35.6	40.3
Large negative impact	6.9	5.8
Impact on income since March 2020—		
Reduced a lot	14.5	8.7
Reduced a little	16.5	16.8
About the same	58.3	65.5
Increased a little	9.0	7.7
Increased a lot	1.7	1.3

Implications

While almost all available paid personnel were involved in the response to the 2019-20 bushfires, 78% of responding personnel were volunteers, demonstrating that Australia is highly dependent on volunteers to respond to major bushfire events. It is likely that volunteers will continue to play a major role in responding to major bushfires in the foreseeable future. As such, a critical part of planning for future major fire events is ensuring that Australia has a sustainable volunteer workforce. The Royal Commission into National Natural Disaster Arrangements (2020) emphasised the importance of planning for and ensuring enhanced preparedness for responding to natural disasters. A series of recommendations have been made and are currently being progressed by government to ensure that procedures, equipment and skills are upgraded to ensure an enhanced level of preparedness for future disasters. The results from *After the Fires* also highlight the importance of supporting mental health and wellbeing as part of preparedness for future disasters.

Intense work demands sustained over a long period can also pose a risk to wellbeing. One of the many challenges of the 2019-20 fires was their duration and intensity, which saw many volunteers undertaking challenging levels of work for long periods of time. This can both expose people to risk of burnout and also negatively impact people if they don't have time to process the experience of one event before moving on to the next. One of the findings of *Answering the Call* was the importance of taking a break after attending a particularly traumatic or intense event before going on to the next job. In large-scale disasters, it is not always possible to take time out, and first responders will keep working as long as they are needed and are able to. A challenge for our future bushfire preparedness is sustaining a volunteer workforce of sufficient size and capacity to be able to respond to large-scale events without overtaxing volunteers to the point where they are at risk of burnout. This means both maintaining the existing volunteer workforce through providing the support, training and resources they need, and recruiting and training new volunteers in recognition of the increasing demands being placed on existing volunteers through more intense fire seasons.

The study has found that over 5,000 personnel responding to the fires, mostly volunteers, have PTSD, very high psychological distress or suicidal ideation indicating high needs for mental health support. This was more than double the number that would be expected in the absence of events of this nature. While all emergency services agencies have policies and procedures in place to support the wellbeing of their personnel and provide support to those with mental health issues, an important issue to consider is how to build a capacity to scale up the level of support available following major disasters. In many areas, available mental health supports are at or above capacity in ordinary times and have limited or no spare capacity to provide additional support when needed in the wake of major disasters.

Another factor that needs to be considered in future planning is how the changing nature of bushfires in Australia might contribute to the impact of cumulative trauma. *Answering the Call* has shown that it is often the repeated exposure to major traumatic events rather than just the impact of isolated traumatic events that is the major risk factor for developing mental health issues, a finding confirmed by many other studies (e.g. Centre for Traumatic Stress Studies, 2017). If the frequency and intensity of bushfires continues to increase, there is the potential for personnel involved in the 2019-20 fires to be involved in more fire events in the future. The high proportion of available personnel who were involved in the fires, and the high numbers that experienced traumatic events during the fires, could increase the number of personnel experiencing cumulative traumas over their careers in the event of subsequent disasters.

The nature of emergency services work means that it is not always possible to shield personnel from exposure to traumatic events. How teams and organisations respond in the wake of traumatic events can also have a significant impact on wellbeing. There are some encouraging signs in the *After the Fires* results of some overall improvements in mental health amongst the



DFES Incident Photographer Wade Ranson

paid workforce, along with improvements in workplace culture. Organisations should be encouraged to continue with reforms in this area to seek further improvements. In contrast there was little evidence of overall change in wellbeing among volunteers. To date, organisations with predominantly paid workforce have been better equipped and have more programs and resources to support employee wellbeing than has been the case in the volunteer sector, as historically there were differences in the level of intensity and amount of engagement with major fires between volunteers and paid staff. Particularly in light of the high reliance on volunteers in responding to the 2019-20 bushfires, it may be appropriate to consider how supports that are provided to paid firefighters can be extended to be more available to volunteers.

The nature of volunteer firefighting has been considered by other groups that have investigated the 2019-20 bushfires and the response to those fires. There is a recognition that the time commitment of volunteers is increasing and that it is important to ensure that volunteers have access to appropriate equipment and infrastructure, and suitable training opportunities. As the nature of volunteer firefighting evolves, it is also important to ensure that organisational capability to support wellbeing is increased proportionately.

The study results also highlight the need to continue investigating some of the barriers to obtaining appropriate support for people with emerging mental health issues. That only about 20% of those with indicators of high needs for mental health support have received a sufficient level of help, hardly changed from *Answering the Call* three years previously, indicates that there is still substantial progress to be made in this area. Both *Answering the Call* and *After the Fires* found that many personnel are concerned about adverse career impacts and being taken away from operational work if they raise mental health concerns. The emergency services continue to have a culture of personnel believing that they need to be strong and impervious to the situations they experience in order to support their communities in times of need and that mental health issues would undermine this appearance of strength. In reality, the overwhelming majority of volunteer and paid firefighters do the work they do because they want to serve their communities and help in times of need. Naturally, they care about their communities and are likely to be impacted, as anyone would be, when they witness disasters befalling their communities. Changing this longstanding culture will be a slow process, but it is a vitally important step to supporting the wellbeing of firefighters and other first responders. Ignoring emerging mental health issues, waiting to see if they go away, or if they can be handled informally, can lead to worsening symptoms, higher levels of functional impact, greater levels of impairment and longer recovery times and reduced likelihood of complete recovery when people finally do seek help.

Over 5,000 personnel responding to the fires have PTSD, very high psychological distress or suicidal ideation. Only about 20% have received a sufficient level of help.



APPENDIX 1: PARTICIPATION IN THE SURVEY, RESPONSE PATTERNS AND WEIGHTING

A total of 4,136 people participated in the Wave 1 survey, including 2,147 volunteers and 1,989 paid staff. Each participating organisation provided the survey team with a breakdown of the demographics of their paid and volunteer workforce, by gender, age group, rank and area. Where they were able to, we also asked agencies to provide a breakdown of the participation of their staff and volunteers in responding to the 2019-20 bushfires.

Amongst paid employees, the distribution of the participants in the survey very closely matched the distribution of the workforce. Amongst volunteers, the comparison showed the sample matched the volunteer workforce by gender, but there was a higher proportion of survey participants among older age groups. More active volunteers (i.e. volunteers who more regularly participate in brigade activities) and volunteers who were involved in responding to the bushfires were more likely to participate in the survey. This was particularly noticeable in terms of responding to the 2019-20 bushfires. Over 80% of the volunteer sample played an active role in responding to the 2019-20 bushfires. Based on information provided by the agencies in combination with the survey data, we have estimated approximately 64,500 volunteers nationwide were involved in responding to the 2019-20 fires. Agencies reported that there are around 250,000 volunteers in fire and rescue, rural fire, fire and emergency, and SES organisations across the country. Based on our experience with Answering the Call, it appears that maintaining accurate records of volunteer members can be challenging and a number of agencies have people on their books who are unlikely to have participated in active volunteering for lengthy periods. A similar pattern was observed in Answering the Call where more active volunteers were more likely to participate in the survey. Response rates were much lower among non-active volunteers.

Survey responses have been weighted based on the demographic characteristics of each organisation's paid and volunteer workforce so that estimates from the survey can be made to represent the population of paid employees in fire and rescue and emergency services, and active volunteers in the sector.

SUPPLEMENTARY TABLES

Supplementary Table 1: Mental wellbeing of personnel in 2017-18 compared with 2020-21

Wellbeing indicator	Answering the Call (%)	After the Fires (%)
Volunteers		
Probable PTSD	4.8	4.5
K10 Psychological distress—		
Low	57.4	64.7
Moderate	24.9	20.2
High	13.4	10.5
Very high	4.3	4.6
Warwick-Edinburgh Mental Wellbeing—		
Low	15.4	18.2
Medium	70.2	68.5
High	14.5	13.3
Employees		
Probable PTSD	9.0	5.1
K10 Psychological distress—		
Low	42.2	54.5
Moderate	30.4	25.4
High	19.2	14.5
Very high	8.2	5.5
Warwick-Edinburgh Mental Wellbeing—		
Low	28.8	24.8
Medium	65.9	68.7
High	5.2	6.5

Table compares personnel who played an active role in the 2019-20 bushfires, with personnel in the fire and rescue, rural fire and state emergency services sectors in Answering the Call.

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GLOSSARY

Mental health conditions

Participants were asked if they had been told by a doctor or medical professional that they had any of the following conditions:

- Panic disorder
- Social anxiety disorder
- Post-traumatic stress disorder (PTSD)
- Obsessive-compulsive disorder (OCD)
- Generalised anxiety disorder
- Any other anxiety conditions
- Depression
- Attention Deficit Disorder (ADD)/Attention Deficit Hyperactivity Disorder (ADHD)
- Schizophrenia
- Bipolar disorder or any other psychosis
- Alcohol or drug dependence

Panic disorder, social anxiety disorder, OCD, Generalised anxiety disorder and any other anxiety conditions have been grouped as anxiety disorders.

Participants who reported having been told by a medical professional that they had a mental health condition were also asked if they still had that condition.

Mental wellbeing

The short form of the Warwick-Edinburgh Mental Wellbeing Scale (SWEMWBS) was used to assess mental wellbeing. It consists of seven positively worded questions that cover both feelings and functioning. The scale was originally developed for use in the United Kingdom, and population reference data on the distribution of wellbeing is available for the adult populations of England and Scotland. The scale was designed so that the top 15% of the population would be identified as having high wellbeing, and the bottom 15% would be identified as having low wellbeing.

Physical health

Physical health was assessed with the single question, 'In general, how would you describe your physical health?' with options of excellent, very good, good, fair and poor.

Probable Post-traumatic stress disorder (PTSD)

PTSD may develop after experiencing or witnessing a traumatic event, such as serious injury or death. Among police and emergency services personnel, PTSD may also develop after being exposed to details of traumatic events multiple times. Characteristic symptoms of PTSD include persistent re-experiencing of the traumatic event or events, persistent avoidance of situations or activities or other things that are reminders of traumatic events, numbing of emotional responses including feeling detached from other people, and symptoms of increased arousal such as difficulty sleeping, difficulty concentrating, irritability and angry outbursts, being easily startled and hypervigilance.

After the Fires used the same scale to assess PTSD as was used in Answering the call. Probable PTSD has been assessed using an adaptation of the PCL-5 PTSD screening scale. The formal diagnostic criteria for PTSD specify that symptoms must last for a minimum of one month and they must be associated with clinically significant distress or functional impairment. The adapted scale included additional questions designed to assess the level of functional impairment associated with symptoms of PTSD.

The scale was adapted for three reasons:

- (i) The PCL-5 and most other PTSD screening scales ask symptom questions in relation to a specific event which may be less appropriate for a population where the impact of cumulative exposures to trauma may be more significant;
- (ii) the PCL-5 does not assess DSM-5 criterion G that “the disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning”; and
- (iii) the adapted scale included a measure of severity consistent with the approach taken in Australia’s National Survey of Mental Health and Wellbeing.

DSM-5 defines 7 symptom clusters for PTSD:

- A: Exposure to traumatic event (includes repeated or extreme exposure to aversive details of traumatic events in first responders).
- B: The traumatic event is persistently re-experienced.
- C: Persistent avoidance of stimuli associated with the trauma
- D: Negative alterations in cognitions and mood associated with the traumatic event
- E: Marked alterations in arousal or reactivity
- F: Duration of the disturbance is more than one month.
- G: The disturbance causes clinically significant distress or impairment of functioning.

Respondents were considered to have probable PTSD if they met the criteria for all of the clusters A-G. Respondents who did not meet all the criteria for probable PTSD, but who met 3-5 symptom clusters A-F and had cluster G clinically significant distress were considered to have sub-threshold PTSD.

Psychological distress

The Kessler Psychological Distress Scale (K10) is a widely used instrument designed to measure levels of psychological distress. The Kessler 10 scale is used in many national studies and is useful for comparing different populations.

The K10 is based on 10 questions about negative emotional states in the four weeks prior to interview. The K10 is scored from zero to 40, with higher scores indicating higher levels of distress. Scores are categorised as follows:

- 0 -5 Low levels of psychological distress
- 6-11 Moderate levels of psychological distress
- 12-19 High levels of psychological distress
- 20-40 Very high levels of psychological distress.

The very high category on the K10 has been designed to match the definition of serious mental illness in the United States. Serious mental illness is defined as mental illness associated with serious functional impairment, which substantially interferes with or limits one or more major life activities.

Participants were also asked four questions about how much their psychological distress interfered with home management (cleaning, shopping, cooking, gardening), ability to work or undertake volunteer work, ability to form and maintain close relationships, and on their social life.

Service use

The use of all health and organisational support services, and telephone and online services where these provided structured or personalised information.

Stressful events

Participants were asked if they had experienced a stressful event or series of events that deeply affected them. The survey identified if this happened while working or volunteering in the emergency services sector, while working or volunteering elsewhere, or outside of work.

Participants who had experienced a stressful event at work were asked if the event or events were:

- traumatic event(s) in the course of their work
- personal injury received in the course of their work
- dismissal from, or demotion in their work
- being forced out of their job
- issues associated with poor management or being treated badly by managers
- conflict with other people they work closely with.

Suicidal behaviours

Suicidal thoughts and behaviours include suicidal ideation (serious thoughts about taking one's own life), making suicide plans and suicide attempts where the self-injury is intended to end in one's own death.

Participants were asked if they had ever had suicidal ideation, made suicide plans or attempted suicide, and whether they had suicide ideation, made a plan or attempted suicide in the past 12 months. Respondents who reported high levels of distress or who had suicidal thoughts or behaviours in the past 12 months were offered the opportunity to confidentially contact the Beyond Blue Support Service, Lifeline or other crisis support services.

After the Fires: The impacts of the 2019-20 black summer bushfires on the wellbeing of emergency services personnel.

ISBN: 978-1-74052-957-0

After the Fires was conducted by The University of Western Australia in partnership with Flinders University, Military and Emergency Services Health Australia (MESHA), Roy Morgan Research and the Bushfire and Natural Hazards Cooperative Research Centre. The study was funded by the Australian Government Medical Research Future Fund.



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