Black Summer

Australian newspaper reporting of the nation's worst bushfire crisis

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Australian newspaper reporting of the nation's worst bushfire season

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Australian newspaper reporting of the nation's worst bushfire season

KEY FINDINGS

- 49% of Black Summer articles were related to climate change. Compared to the reporting of Black Saturday, in which only 5% of articles related to bushfires and climate change, this was a marked increase.
- January saw the most reporting related to the fires as well as the most discussion of climate change. On average, 64% of bushfire-related articles mentioned climate change each day. The most coverage of climate change occurred on the 8th of January, amounting to 72% of articles that day. This coverage was spurred by three bushfire deaths in Victoria as the Gippsland fires raged.
- 29% of all coverage discussed climate change with depth and accuracy. 16% of all articles directly linked climate change to the fires.
- 12% of all coverage had calls for climate action, 52% of which was critical of the Coalition government and blamed them for the bushfire season.
- Denialism featured in 5% of reporting on climate change and bushfires.
- Just under 12% of overall articles blamed the Coalition government for exacerbating the fires through lack of climate action, lack of leadership or lack of funding to the State or Territory Rural Fire Services.
- 58% of the discussion of Scott Morrison as an effective leader occurred in News Corp publications, compared with 19% in Fairfax. Much of the positive discussion of his leadership came in late December in defence of his holiday to Hawaii.
- 4% of articles blamed the colloquially termed “greenies” or The Australian Greens party for the fires. 54% of discussion blaming “greenies” occurred in News Corp publications.
- 79% of the articles that blamed the Coalition government’s poor leadership and their failure to prevent the bushfires discussed climate change with depth and accuracy.
- In rank order, the most common narratives in the coverage of Black Summer were: triumph of humanity (18%), unstoppable power of nature (17%), loss of biodiversity (12%), health and fires (11%) and failure of planning (10%).

- At 18%, triumph of humanity was the most commonly featured narrative and described the heroic and selfless efforts of firefighters through the long fire season and the community spirit in the aftermath.

- At 17%, the unstoppable power of nature narrative was generally based on firsthand accounts that included descriptions of the fire's intensity, of hectares burned or of the destruction left behind.

- For the first time in Australian media coverage of bushfires, health was prominently discussed in relation to the fires, featuring in 11% of the coverage. Conversations around the health impacts of the fires were primarily motivated by very poor air quality in Sydney, Melbourne and Canberra as the bushfires raged. Some discussion also occurred around mental health.

- Similarly, biodiversity loss also featured heavily, appearing in 12% of articles. A significant proportion of these spoke about koalas, with the species mentioned 285 times across the sample.

- The failure of planning narrative appeared in only 10% of articles relating to climate change, compared to 41% of articles on Black Saturday. Instead of blaming a specific policy, like "stay or go", the failure of planning narrative was used to blame the Coalition government 42% of the time.

- The failure of planning narrative often linked the intensity of the fires to the Coalition government's inaction on climate change or cuts to the New South Wales Rural Fire Service (RFS). This narrative featured in criticism of the Prime Minister's December holiday to Hawaii.

- Firefighters were the most referenced experts in articles on climate change and bushfires, featuring in 19% of coverage, followed by politicians at 15% and scientists at 11%.

- When climate change was reported on accurately, politicians were mentioned most frequently (20%), followed by firefighters (19%) and scientists (18%). Denialist narratives most commonly featured the Prime Minister, in 12% of all denialist articles.

- 39% of articles related to climate change and the bushfires were published by News Corp. Of the overall accurate and in-depth coverage of climate change, News Corp made up 25%, while representing 59% of all denialist discussion of climate change.

- Fairfax was the second most frequent publisher, with 31% of all coverage. At 37%, Fairfax had the highest percentage of accurate and in-depth discussion of climate change, while making up 19% of denialism.

Word Cloud

FIGURE: *The most commonly used words in reporting on Black Summer and climate* change

INTRODUCTION

Scale of destruction and worst affected areas

Colloquially termed Black Summer, the 2019-20 Australian bushfire season was unprecedented in scale and destruction.[1] In the lead up to summer, Australia already saw active and unprecedented fires related to dry conditions; rainforests in southern Queensland went up in flames for the first time ever.[2] Every state and territory across Australia experienced fires with the most severe impacts felt across the southeast. The first reports of property loss during the fires were reported by the NSW Rural Fire Service (RFS) in early September.[3] Before summer had even seen its first month, the loss of bushland and biodiversity was dominating national media coverage and confronting the national psyche, with fires burning simultaneously across five states.[4]

By the end of January, more than 11 million hectares of bush, forest and parks had burnt nationally. To give an idea of scale, the 2019 Amazon fires, which saw a mass mobilisation of media outpouring and political scrutiny, burnt 890,000 hectares.[5] Australia's 2009 Black Saturday fires, which were some of the largest and most devastating bushfires in the nation's history, burnt 450,000 hectares.[6]

The extended fire season was devastating. Vital habitat for Australia's unique and endemic species was especially affected. The impacts on koalas featured heavily in the discussion of the fires. However, hundreds of thousands of native animals, often already endangered, were also affected.[7] Central to the widespread loss were two fires that swept across Kangaroo Island from the 20th of December to the 3rd of January. About a third of the island was burnt, totaling more than 150,000 hectares.[7] Home to an abundance of native wildlife and plant species, more than 100 species lost at least half of their known habitat.[7] An estimated 25,000 koalas - half of the island's koala population - were lost in these two fires alone.[7]

The destruction continued in East Gippsland, Victoria, on New Year's Eve, when 4,000 people in Mallacoota were cut off by an out of control bushfire and left stranded on the foreshore. Gripping images of the blood-red sky in Mallacoota and the eventual evacuation by the Navy made national and international news, with the Guardian declaring it Australia's bushfire day of terror".[8]

Climate conditions that shaped Black Summer

2019 was Australia's warmest year on record, with the annual national mean temperature 1.52°C above average. In the lead up to Black Summer, all states and territories set record high values for fire weather risk.[8] This is measured by the Forest Fire Danger Index (FFDI), which is calculated from a number of factors including long-term dryness, heat and weather. This unprecedented risk did not develop overnight: the Bureau of Meteorology (BOM) stated that "by the start of September 2019, much of eastern Australia was primed for high fire danger ratings." [9]

At this point, many parts of Australia were (and, as of the time of this report, still are) in the grip of widespread and intense drought. 2019 was the country's driest year on record since 1900, with national total rainfall 40% below the 1961–1990 average. This capped a multi-year period of below average rainfall. In late 2019 BOM remarked upon the extended rainfall deficiencies in the Murray Darling Basin, reporting that "there has not been a period of this average dryness that has lasted this long (34-months) in over 100 years." [9] Serious multi-year rainfall deficiencies also impacted coastal New South Wales, eastern Victoria, eastern South Australia, the east and north coasts of Tasmania and Western Australia's South West Land Division.[10]

This marathon dry period left the vegetation parched, making it potent fuel for bushfires. In late 2019, other climate factors came together to further elevate the fire risk. The Indian Ocean Dipole (IOD), a pattern of shifting warm water and corresponding rainfall movements in the Indian Ocean, was in a strongly positive phase in 2019. Positive IOD events like this are associated with low rainfall and humidity across Australia [9] Climate modelling suggests that the most severe of these events will become more frequent as the world warms.[11] Other climate drivers, such as a negative Southern Annular Mode (SAM), compounded the hot and dry conditions in spring.[9]

Attribution to climate change

Detection and Attribution (D&A) studies can be used to determine whether an event was made more likely by climate change. While many D&A studies exist for heat and rainfall extremes, D&A studies for fire events have only recently become possible. A D&A study for Black Summer is currently being worked on by a team of researchers, with results expected in early autumn.[12] Other recent studies have applied the D&A framework to other Australian fires in Queensland[13] and eastern Australia.[14] These studies generally show a clear link between increasing atmospheric carbon dioxide, high temperatures and a fire event. But other aspects of fire danger, like rainfall changes, are still difficult to examine.[13,14]

Because of these challenges, D&A analysis of fire is still an area of active research. Sanderson and Fisher, reflecting on these challenges, argued that scientists must strike a difficult balance in order to avoid either oversimplifying attribution or failing to attribute altogether.[15] For example, other lines of evidence demonstrate the link between climate change and elements of Black Summer:

> *"There is no doubt that the record [Australian] temperatures of the past year would not be possible without anthropogenic influence, and that under a scenario where emissions continue to grow, such a year would be average by 2040 and exceptionally cool by 2060."* [15]
>
> Sanderson and Fisher, 2020

Many of Australia's leading scientific organisations took a similar tack, releasing statements during Black Summer to highlight the links between climate change and fires. The Australian Academy of Science, an organisation of the nation's

top research scientists, released a statement in the second week of January noting the scale of the fires were unprecedented anywhere in the world. They commented that the scientific evidence base showed that warming due to human-induced climate change was seeing "an increase in the frequency and severity of extreme weather events."[16]

Similarly, the CSIRO noted that climate change had led to "longer, more intense fire seasons and an increase in the average number of elevated fire weather days as measured by the FFDI." Their statement also noted that 2019 had marked the nation's highest annual Forest Fire Danger Index on record.[17] This statement was echoed by the Bureau of Meteorology. In their Annual Climate statement [8], they noted:

> *"The combination of prolonged record heat and drought led to record fire weather over large areas throughout the year, with destructive bushfires affecting all states, and multiple states at once in the final week of the year."*
>
> Bureau of Meteorology, 2019

The lengthening of the fire season was projected even a decade ago. Economist Ross Garnaut's 2008 Climate Change Review said that projections of fire weather "suggest that fire seasons will start earlier, end slightly later, and generally be more intense" and that "this effect increases over time, but should be directly observable by 2020." [18]

Bushfire smoke and health

While the fires themselves were unprecedented, so too was the extent of the smoke pollution in Australian cities. Early season fires in NSW saw Sydney blanketed in smoke for much of December.[19] The dawn of the new decade saw Canberra join the list of smoke-choked cities, as it recorded the worst ranked air quality in the world.[20] When Melbourne's air quality reached similar levels a week later, the Environmental Protection Authority declared the levels of fine particles in the air necessitated a hazardous rating.[21] This also sparked major concerns from leading health experts on the wide-ranging health impacts of the bushfires, leading The Royal Australasian College of Physicians to suggest that the nation was in "uncharted territory." [22]

NASA documented that the huge plumes of smoke were not limited to Australian skies, travelling around the world via the upper troposphere and the lowermost stratosphere.[25] The bushfire smoke travelled from Australia's east coast across the Southern Ocean and looped back around again.

Political and policy contexts before and during Black Summer

In the months leading up to Black Summer, which included the 2019 federal election, much of the narrative from the sitting—and, subsequently, returned—Coalition government was that it was doing an adequate amount to address climate change risk. Its "Climate Solutions Package", which it took to the 2019 election, was based primarily around

continuing the "Emissions Reduction Fund", the centerpiece of Tony Abbott's climate policy.[23] The Climate Solutions Package also offered no plan to increase the renewable energy target beyond the existing target of 23.5% by 2020.

In April 2019, a selection of former fire and emergency chiefs referring to themselves as the Emergency Leaders for Climate Action wrote to Prime Minister Morrison requesting a meeting to discuss the unprecedented nature of the upcoming bushfire season.[24] Their letter called on both federal parties to recognise the need for additional firefighting assets to deal with the unparalleled upcoming fire threat. They repeated this request in May, following the Coalition's re-election, and again in September. The September request sought to find out why they had not been given a meeting despite being told they would by Minister for Energy and Emissions Reduction, Angus Taylor.[25]

At the beginning of Black Summer, the federal government was forced to defend its climate policy once again following the release of the 2020 Climate Change Performance Index report, which ranked Australia last in an assessment of 57 developed nations.[26] The government's defence of its position continually returned to highly repeated statements around Australia's commitment to achieving its target of a 26% reduction in greenhouse gas emissions on 2005 levels by 2030 in line with the Paris Agreement.[27]

As Angus Taylor was publicly declaring the government's commitment to climate action in line with the agreement, Australia was one of only three countries—along with Saudi Arabia and Brazil—to argue for the ability to continue using "carryover credits" from the Kyoto Protocol to meet their targets.[28] This drew considerable domestic and international criticism, especially as news of the extent of the fires reached global outlets.[29]

However, nothing drew the ire of the Australian public more than the news that Prime Minister Morrison had taken a family holiday to Hawaii as the country battled the worst bushfires it had ever seen.[30] The perceived lack of leadership at a time of national crisis appeared to mount unprecedented pressure on the government to drop its defensive rhetoric and adequately protect the nation.

The following weeks saw a mix of contradictory messaging from within the government. Suggestions that even the discussion of emissions reduction during a crisis were an attempt to score political points were juxtaposed with admissions from both Prime Minister Morrison and Deputy Prime Minister Michael McCormack that there were indeed connections between climate change and bushfires, and that they had always acknowledged this link.[31]

The importance of "adaptation and resilience" started dominating government rhetoric as the fires continued to burn, with the Prime Minister suggesting that, as Australia was already "carrying its load," the nation had no choice but to adapt to warmer conditions.[32] This was paired with other narratives that focused on the role of fuel load and hazard reduction in the escalating crisis. Prime Minister Morrison argued that hazard reduction burns were a more practical solution to hotter and drier conditions than emissions reduction.[33]

Australian attitudes to climate change in the lead up to of Black Summer

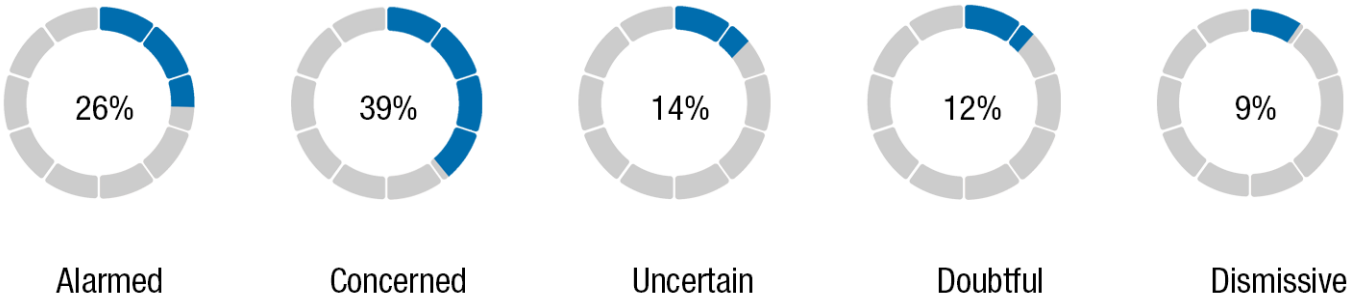
Until recent years, Australians had viewed climate change as a distant and intangible threat that wouldn't affect them.[34] This is significant in understanding climate change in Australia. Extreme weather events provide an opportunity for the Australian media to meaningfully explore this link in a way that avoids the "construal level theory." This theory suggests that the more Australians perceive climate change as "distant", the less urgent they judge it to be.[35]

In the last five years, several studies have found that a perception gap exists: 75% of Australians report that they are concerned about climate change, but less that 50% believe that others share this concern.[36] This phenomenon, known as "pluralistic ignorance", has been found to inhibit engagement with climate change through self-silencing.[37] What's more, a 2017 study from the Climate Institute revealed a similar "consensus gap" which is that whilst 97% of climate scientists across the world accept that human-caused climate change is occurring, Australian's trust in this consensus view came in much lower at 57%.[38] This is significant because the perception of expert consensus can act as a "gateway" to changing beliefs about climate change, which in turn influences public opinion. In addition, false perceptions have the potential to undermine positive public engagement.[39]

Apart from research into the 'perception gap' and the 'consensus gap', several studies have also applied what is sometimes called 'segmentation analysis' and reported a division of five or six different levels of Australian audience engagement with climate change. These studies use what is known as Latent Profile Analysis (LPA), adapted from a foundation study conducted at the Center for Climate Change Communication.[40] LPA typically uses a range of variables representing four distinct constructs: global warming beliefs, issue involvement, policy preferences and behaviours, and it may also include climate literacy.

Firstly, building on the work of the Center for Climate Change Communication and the Yale Program in Climate Change Communication, Don Hine led a team of researchers in a study for the National Climate Change Adaptation Research Facility, published in 2013.[41] The study added environmental concerns, green self-identity, emotional connection with nature, perceived spatial proximity and potential effects, trust in authorities and distress. While the American studies came up with Six Americas based on their findings, Hine initially arrived at Five Australias: Alarmed, Concerned, Uncertain, Doubtful and Dismissive.

FIGURE: *Adapted from Hine et al, 2013: The Five Australias*



At around the same time, in a CSIRO study, Peta Ashworth and colleagues produced a study highlighting climate change literacy and concern, which delivered only 'Four Australias' — Engaged 27%, Concerned and Confused 36%, Disengaged 15% and Doubtful 23%.[42] The doubtful group also included a clear dismissive sub-group, meaning that splitting this group would also yield five Australias.

More recently, the proportionate size of these categories have shifted in a way that suggests that both community awareness and acceptance of climate change science are increasing. At the same time, a 2016 survey of households by Morrison et al. reported a decreased likelihood of thinking or talking about climate change with their peers, compared to 2011.[43] The study's authors suggested that this decrease reflects an "interest fatigue" and signaled the need for renewed engagement at a local level. Recent survey results have also indicated a strong Australian audience aversion to the politicisation of climate change information.[44] The same survey revealed a significant audience openness to receiving more climate change information via the media (44.76%), and that local climate impacts (46.65%) and historical data (45.22%) were more interesting to Australian audiences than global data.

Much research has acknowledged the impact the media has on Australian attitudes. The point of identifying these studies is to provide some background for whether Australian attitudes to climate change will likely shift as a result of Black Summer, and be able to track them accordingly in the future.

CODING METHODOLOGY

The database Factiva was used to compile articles published between the 1st of September 2019 and the 31st of January 2020. This start date was a week before the first NSW RFA media release that tallied properties lost in the current bushfire season. Within Australia, 139,351 articles were found related to the bushfires through this period and 68,619 were related to the bushfires and climate change (making 49% of the overall sample).

All articles analysed were from Australia. All articles from AAP were excluded from the sample. A limitation of this study is that it samples only 1% of articles. However, given the huge number of articles published throughout Black Summer, there are limitations to the analysis that can be done in a timely manner. What makes Black Summer different to other bushfire events in Australia's history is that it burned over months, causing unprecedented damage and impacts. The exceptional duration meant that methodologies used to study single day events, like Black Saturday,[45] were not appropriate. As such, this study only focused on climate change and bushfire reporting, with a sample of 1 in 100 across the period.

With exactly 700 articles, this is the largest sample that has been open coded on Australian media reporting of climate change and disasters. Narratives were drawn from earlier reviews of Australian media coverage as well as previous analysis of bushfire reporting of Black Saturday.[45–47] An open coding approach was used to look for new key narratives. Outlines of these narratives can be found in Appendix 1. Use of experts was also considered in the article analysis. John Cook's denialist categories, also detailed in Appendix 1, were used to code denialist articles.[48]

REPORT FINDINGS

Given the scale and length of the fire season, thousands of articles were published during Black Summer. Overall, January saw the most reporting related to the fires as well as the most discussion of climate change. The discussion of climate change became more prominent from November when the fire season intensified.

During September and October, climate coverage accounted for approximately 17% of overall daily reporting. This jumped to 48% for November, with a peak of 63% on the 11th of November related to Deputy Prime Minister McCormack's criticism of protestors. 39% of December's daily coverage of Black Summer discussed climate change. As the fires continued to rage, and Melbourne's air quality dropped, January saw the most discussion of climate change, averaging 64% each day. The highest proportion of articles discussing climate change was on January 8th with 72% of articles, prompted by three deaths in Gippsland.

Of all articles that mentioned climate change, only 34% were explicitly related to either accurate and in-depth or denialist discussion of the climate change and the fires. For the most part, climate change was mentioned in passing in the media and did not explicitly discuss the impacts of climate change on fire weather. Often climate coverage was driven by key moments, such as when former NSW Fire and Rescue Commissioner Greg Mullins spoke out about climate change, or when large scale protests occurred across the country.

Daily discussion of Black Summer

Discussion of climate change and overall bushfire reporting.

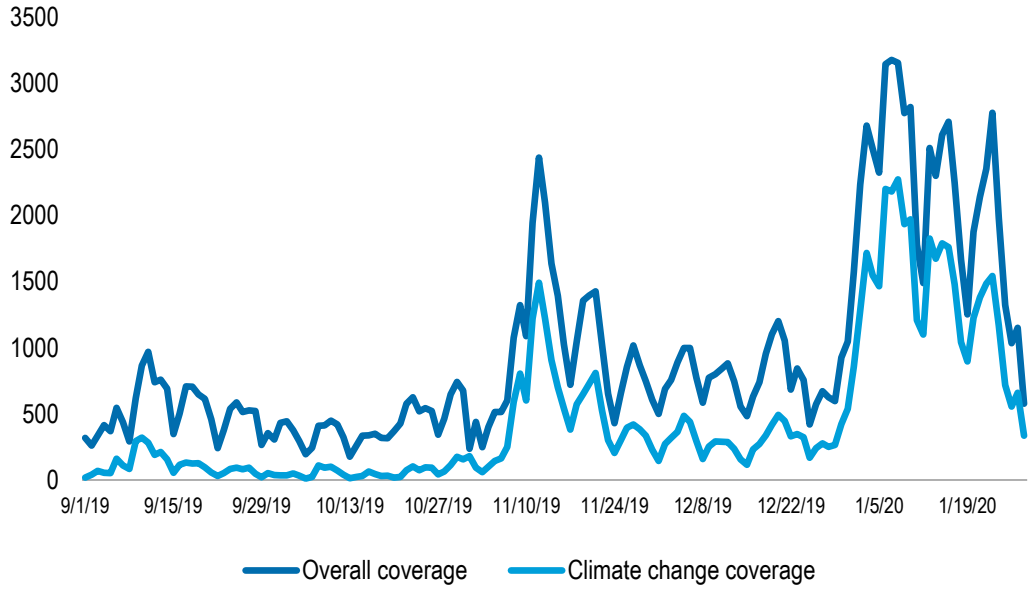


FIGURE: *Climate change and bushfire reporting was broken down for each day of the sample with key words used to find the total number of articles listed in Factiva on each topic.*

Key narratives in Black Summer reporting

Like reporting on other extreme weather events in Australia, such as Black Saturday, the most commonly featured narratives during Black Summer were triumph of humanity and the unstoppable power of nature.[45–47]

The triumph of humanity narrative was most commonly featured at 18% and described the heroic and selfless efforts of firefighters through this long fire season. It also described stories of communities coming together to help others in the aftermath. At 17%, the unstoppable power of nature narrative was generally based on firsthand accounts that included descriptions of the fire's intensity, of hectares burned or of the destruction that was left.

The failure of planning narrative appeared in only 10% of articles relating to climate change. Instead of blaming specific policy, the failure of planning narrative was used to blame the Coalition government 42% of the time.

This generally linked the intensity of the fires to the Coalition government's inaction on climate change or cuts to the NSW RFS. 79% of the articles blaming the Coalition government for its poor leadership and its failure to prevent the bushfires featured accurate and in-depth coverage of climate change. Use of the failure of planning narrative increased in response to Prime Minister Morrison's holiday to Hawaii.

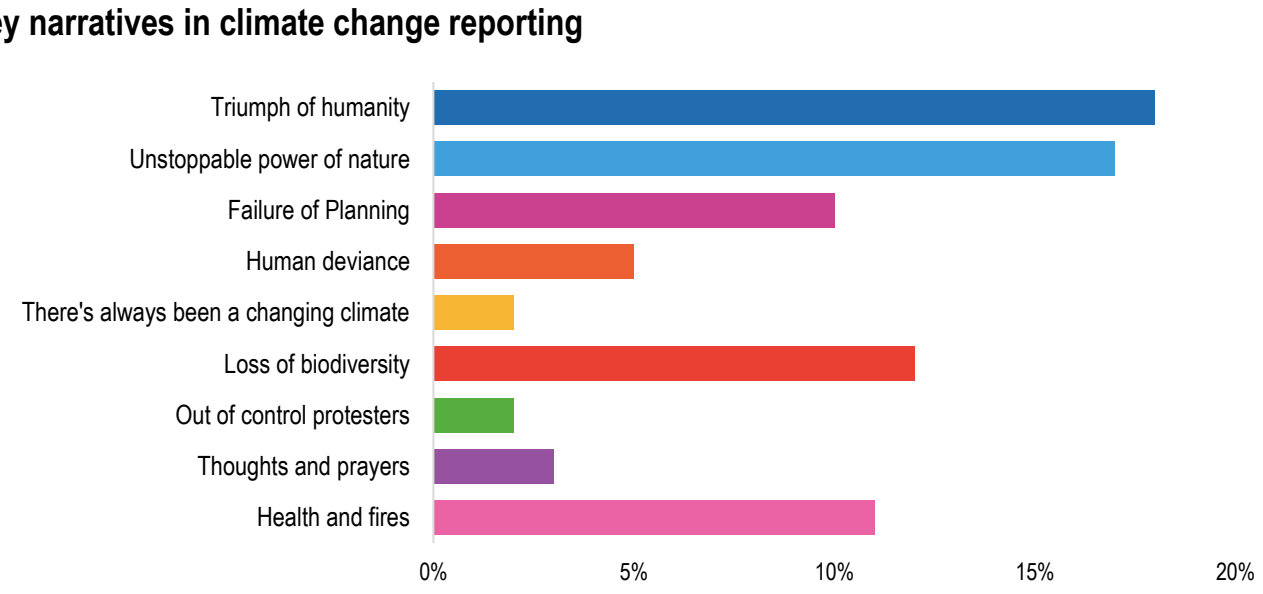


FIGURE: Narratives were classified based on previous research and narratives found through open coding. These categories are not mutually exclusive and a break down can be found in the appendix.

The human deviance narrative was featured less frequently in Black Summer than in the reporting of Black Saturday. Only 5% of articles linked the bushfires to arson, which was a significant decrease from the 21% recorded during Black Saturday. The thoughts and prayers narrative occurred in 2% of Black Summer coverage. Scott Morrison's speech in November, offering thoughts and prayers to victims, was the primary driver of the emergence of this narrative. The reporting of this speech was often framed in a critical way and accused the government of inaction with the fires, also related to the failure of planning narrative.

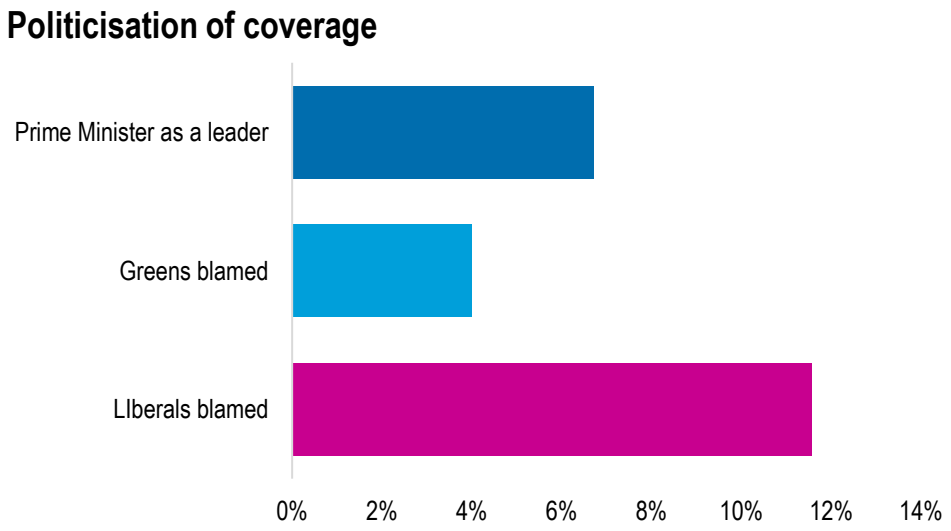


FIGURE: *Coverage of climate change is often politicised, in this sample much of the coverage either blamed or celebrated the Liberal (Coalition) government. Although some coverage looked at blaming the Greens.*

Black Summer saw several demonstrations around the country, and 2% of articles criticised the actions of protesters. It was in this sample that the out of control protestors narrative emerged. 84% of articles featuring this narrative appeared in News Corp publications. Overall, Extinction Rebellion (XR) were mentioned 33 times in the sample while School Strikes for Climate or student strikes were mentioned 87 times.

For the first time in Australian media coverage of bushfires, health was prominently discussed in relation to the fires, featuring in 11% of the coverage. Conversations around the health impacts of the fires were primarily motivated by very poor air quality in Sydney, Melbourne and Canberra as the bushfires raged. Some discussion also occurred around mental health. Similarly, the loss of biodiversity narrative also featured heavily, appearing in 12% of articles. A significant proportion of these spoke about koalas, with the species mentioned 285 times across the sample.

Indigenous land management practices, such as traditional burning, were also discussed in the media coverage. These practices were mentioned 55 times throughout the sample, and they were almost always discussed in the context of a failure of planning, contending that Indigenous burning practices could have been used to manage bushfire risk.

Discussion of climate change

Overall, 29% of all coverage discussed climate change with depth and accuracy, and 16% of all articles directly linked climate change to the fires.

15% of the overall sample accurately described Black Summer as unprecedented and 9% contextualised this with broader discussion of climate trends and discussion of science. In the discussion of science, scientists were the most commonly featured experts, featured in 30% of articles. 12% of all articles discussing climate change had calls for climate action and 52% of these were critical of the Coalition government.

Accurate and in-depth coverage of climate change

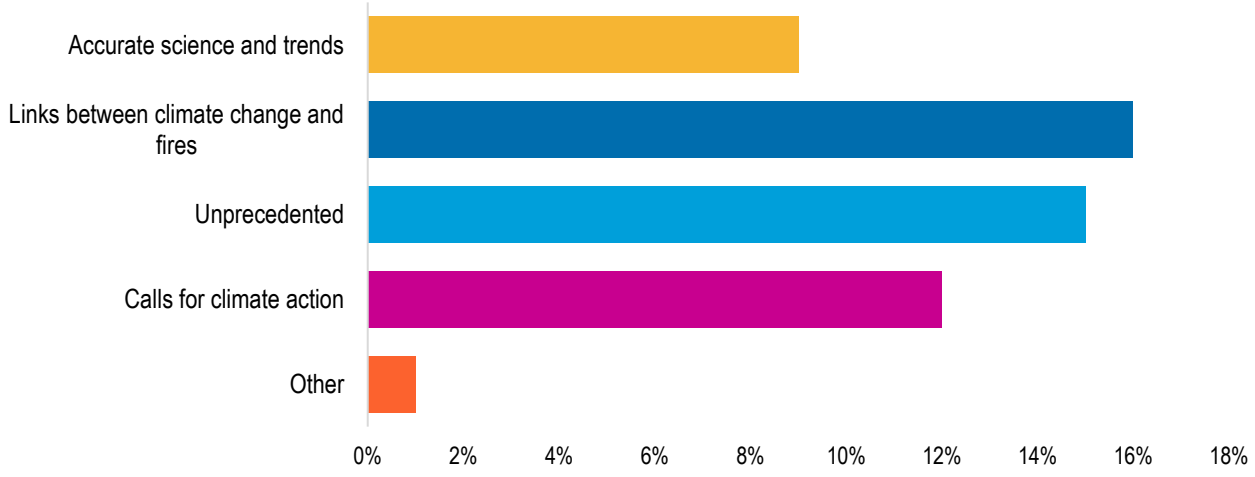


***FIGURE**: Accurate and in-depth reporting of climate change had a number of elements, discussion of science and trends, direct links being drawn between climate change and the fires, discussion of the unprecedented nature of the event or in depth demands for action or policy to manage climate change.*

Climate denialism only featured in 5% of reporting on climate change and bushfires. Cook's denialist narratives were each featured in about 2% of the sample, apart from there's no hope, which featured less than 1% of the time.[48] It's not us was the most commonly featured denialist narrative in the sample. This was often expressed with the sentiment that Australia only accounts for 1.3% of global emissions and therefore could not be blamed for an intensification of the bushfire season.

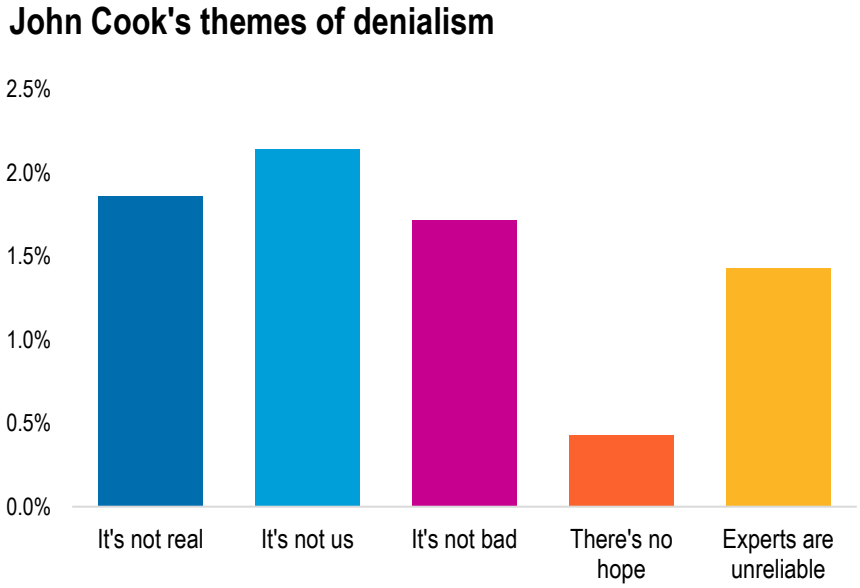


FIGURE: *John Cook outlines five types of climate denialism that were coded for in this study. A breakdown of these can be found in the appendix.*

The it's not real narrative, which speculated whether climate change exists, was featured second most frequently. It's not bad speculated whether climate change would have more positive than negative impacts. This was often presented with the narrative that there's always been a changing climate, and these changes have spurred the Australian bushfire seasons (also occurring in 2% of articles). The experts are unreliable narrative speculated on the underlying agendas of climate scientists, the RFS, and progressive politicians in advocating for climate action. Finally, there's no hope outlined that any climate action would make little difference or would come at a tremendous cost and, as such, should not be undertaken.

Experts featured in reporting

Firefighters were the most referenced experts in articles on climate change and bushfires, featuring in 19% of coverage, followed by politicians at 15% and scientists at 11%. The other category was made up of a diverse range of experts such as activists, priests and often farmers.

There was particular focus on the impact of long-term drought and fires on farmers, with the impacts of smoke on viticulture regularly discussed. When climate change was reported on accurately, politicians were mentioned most frequently (20%), followed by firefighters (19%) and scientists (18%). Denialist narratives most commonly featured politicians (21%) or specifically the Prime Minister (12%).

Use of experts in climate change reporting

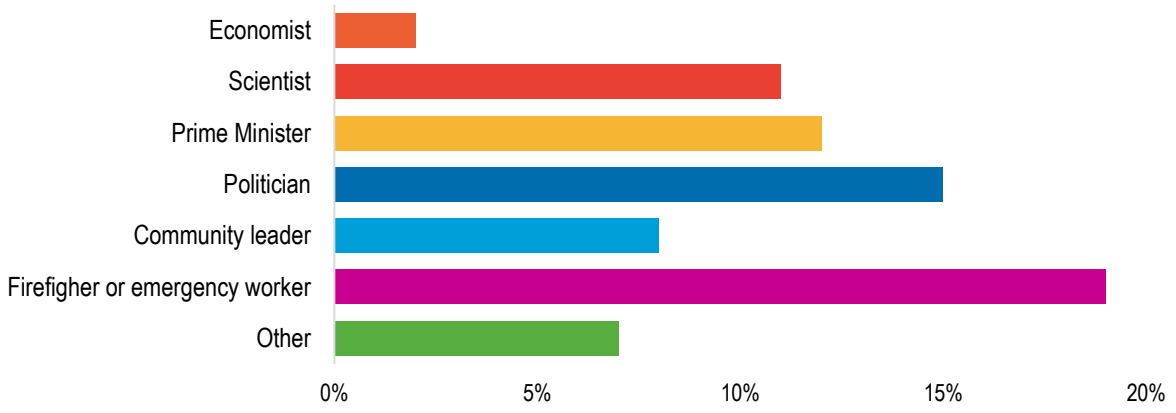


FIGURE: *Different experts can be skilled communicators of the link between climate change and bushfires, as well each expert is trusted differently by audience. A breakdown of this trust can be found in the appendix.*

Use of experts in climate change reporting

Experts featured in accurate or denialist coverage

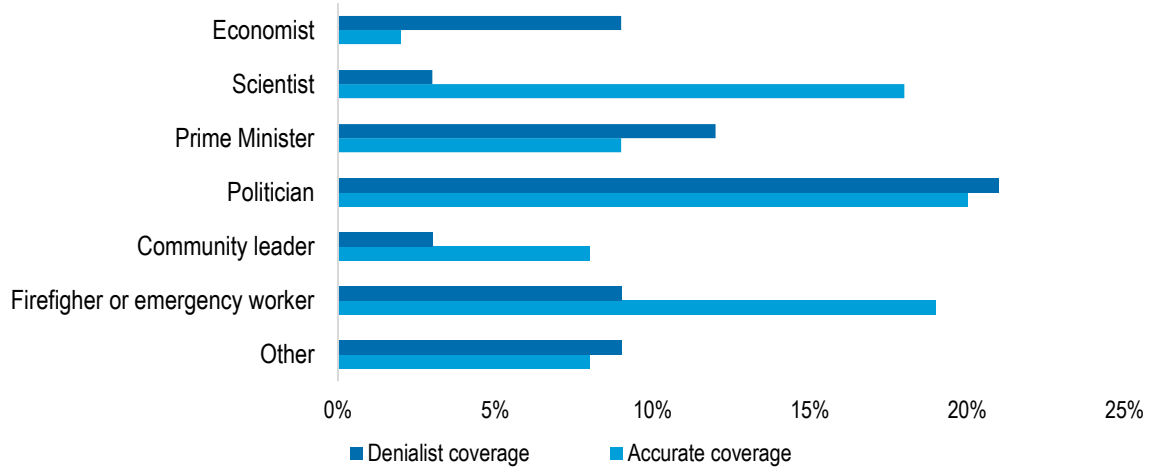


FIGURE: *Different experts are given different weighting in denialist or accurate coverage; this is significant as experts are often trusted communicators of climate change and bushfires. A breakdown of this trust can be found in the appendix.*

Ownership of climate change reporting and its relationship to accuracy

Of the articles analysed, 39% of articles related to climate change and the bushfires were published by News Corp. Of the overall accurate and in-depth coverage of climate change, News Corp made up 25%. While only 5% of overall coverage in the sample was denialist, 59% of this was featured in News Corp, making up 3% of all articles analysed.

Fairfax was the second most frequent publisher, with 31% of coverage. At 37%, Fairfax had the highest percentage of accurate and in-depth discussion of climate change, while making up 19% of all denialism. APN Newspapers published 16% of all denialist articles. The ABC had no cases of denialism and SBS featured one denialist article, which was a reprint of Barnaby Joyce's Christmas speech.

Ownership of bushfire reporting

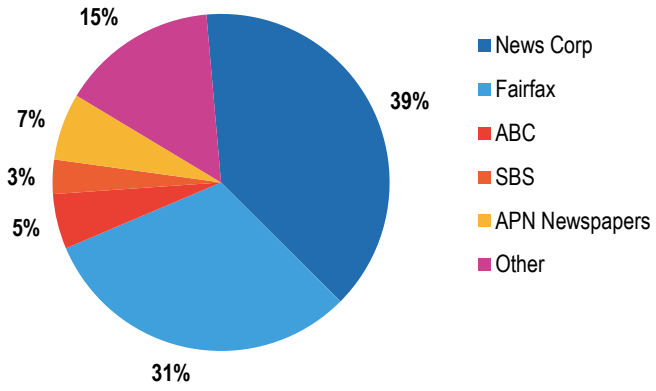


FIGURE: *Ownership of the articles in this study was tallied; it should be noted that this is only 1% of overall reporting and does not account for audience numbers.*

Ownership of climate coverage

Ownership of accurate or denialist coverage of climate change

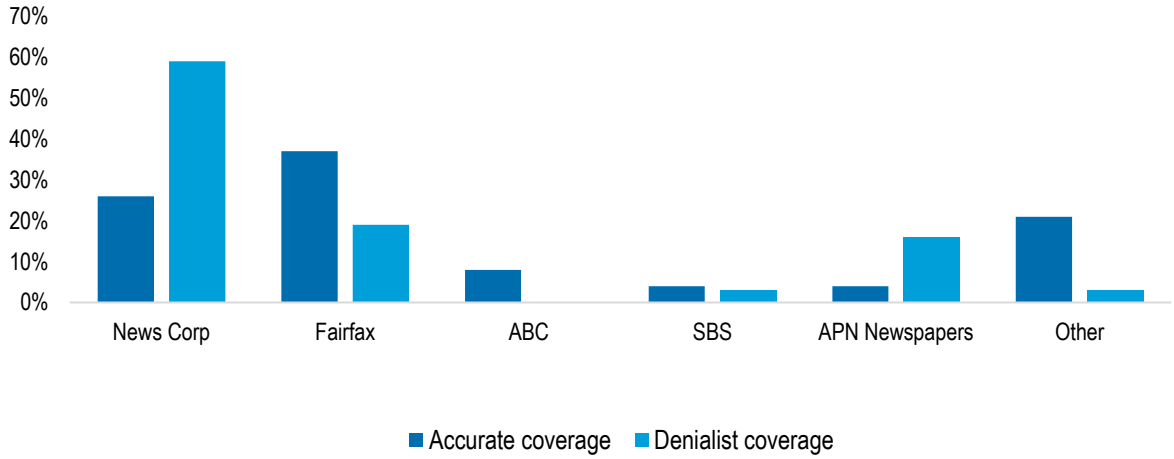


FIGURE: *A relationship was found between newspaper ownership and accurate or denialist coverage.*

Comparison of Black Saturday and Black Summer reporting

The study of Black Saturday media reporting looked at a sample of 170 articles related to climate change and compared this to a sample of 355 articles related to just the fires.[45]

With a sample taken five days before and after the event, it found that only 5% of articles overall referenced climate change. Ten years later, the reporting of Black Summer mentioned climate change in 49% of articles; an increase by a factor of almost 10.

When it came to denialism, of the 170 articles related to climate change analysed in Black Saturday, 34 were denialist, making up 20% of the sample. In Black Summer, 5% of the overall sample was denialist in nature—a considerable drop.

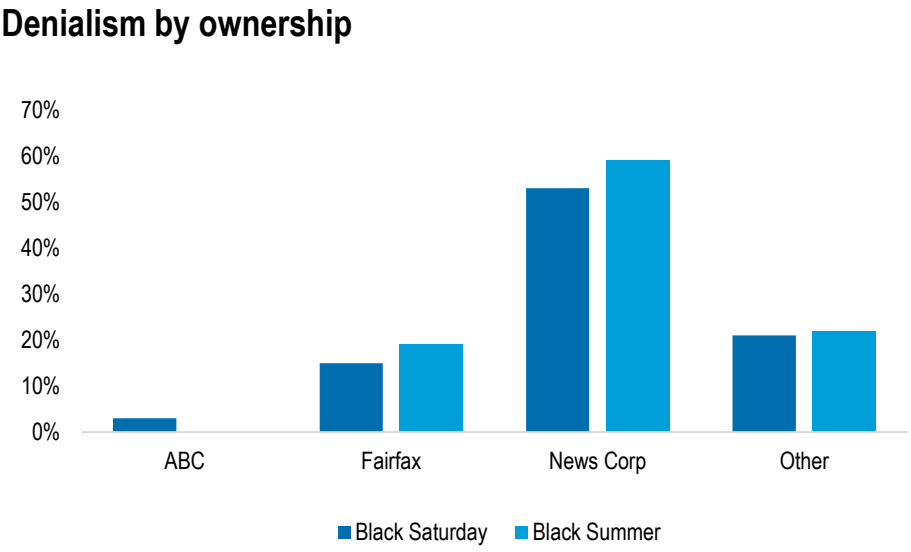


FIGURE: *For both events, News Corp had the highest percentage of denialist coverage.*

For the most part, Black Saturday saw a higher percentage of articles use a selection of narratives to frame climate change reporting. Despite there being more mentions of climate change in the coverage of Black Summer, these articles on average saw less in-depth coverage overall. That said, 203 articles (29%) in the sample had in-depth and accurate climate change coverage [45]

In the Black Saturday coverage, a relationship was found between the discussion of climate change and the failure of planning and unstoppable power of nature narratives.[45] Along with the human deviance narrative, these were used in a higher proportion of articles for Black Saturday than Black Summer.

A key point of difference between the two analyses was a slight increase in the use of the triumph of humanity narrative in Black Summer reporting. In Black Summer this was the most commonly used narrative, as opposed to the unstoppable

power of nature in Black Saturday reporting. The triumph of humanity narrative was directly related to the recognition of firefighters, and Black Summer saw them emerge as the most heavily referenced experts in climate change reporting.

There were also changes in the use of the failure of planning narrative in Black Summer. In 2009, the failure of planning narrative tended to critique the stay or go bushfire response policy. Overall, the coverage of the federal government and its response was mostly positive. It also appeared in 41% of articles relating to climate change. Ten years on during Black Summer, the failure of planning narrative was primarily used to attack the Coalition government and only appeared in 10% of articles. This criticism stemmed from the Coalition's lack of climate policy, Australia's growing emissions, and its dismissal of renewables and Indigenous land management practices.

Comparison of narratives

Narratives featured in climate change and bushfire reporting

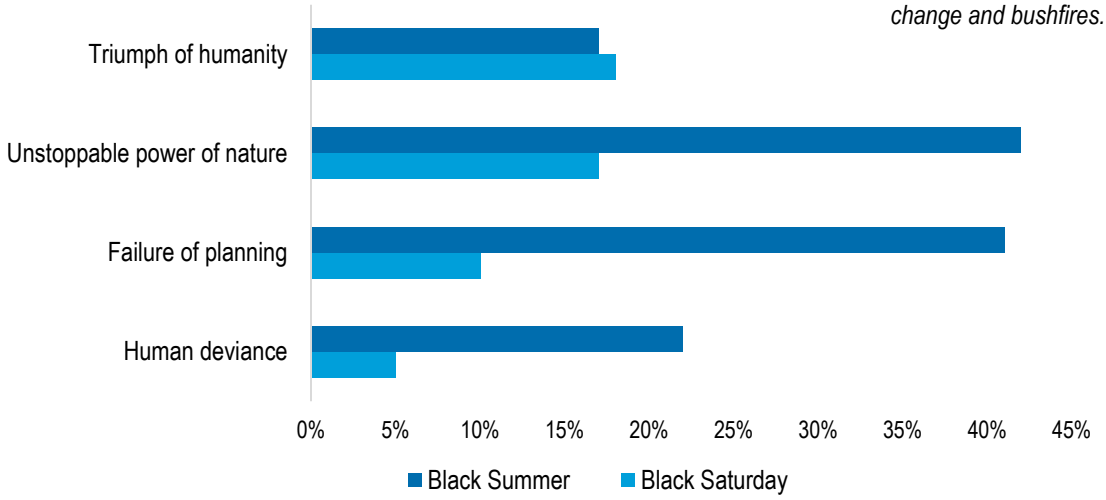


***FIGURE**: Narratives for each event compare articles covering both climate change and bushfires.*

Black Summer also saw new narratives emerge. The loss of biodiversity narrative was heavily featured, with articles focusing on the devastating impacts that the fires had on native wildlife. Additionally, the discussion of the health impacts of climate change had prominence for the first time in recent reporting. While the Black Saturday coverage in 2009 gave some mention to the mental health of survivors, by 2020, 11% of articles framed the fires as a health concern. This was framed around impacts on both mental and respiratory health, following several months of compromised air quality after smoke lingered across the south east of Australia.

For the first time in Australian bushfire reporting, religious coverage appeared after Scott Morrison's "thoughts and prayers" statement, with articles contending the main course of action would be to pray for victims. This was observed in 3% of articles. Further, widespread climate related protests throughout the bushfire season also saw the vilification of protestors in 2% of articles.

Black Summer saw a significant increase in the coverage of firefighters but reduced coverage of politicians and scientists. The climate change coverage of scientists decreased significantly from 21% in Black Saturday to 11% in Black Summer.

Furthermore, when politicians did feature in the 2020 coverage of climate change, it was in a different context. In Black Saturday, politicians were featured in 14% of denialist articles, with the primary intention of these articles being to attack climate policy. Many of these articles were specifically used to attack the Greens for their calls for climate action, making up 18% of overall denialism.

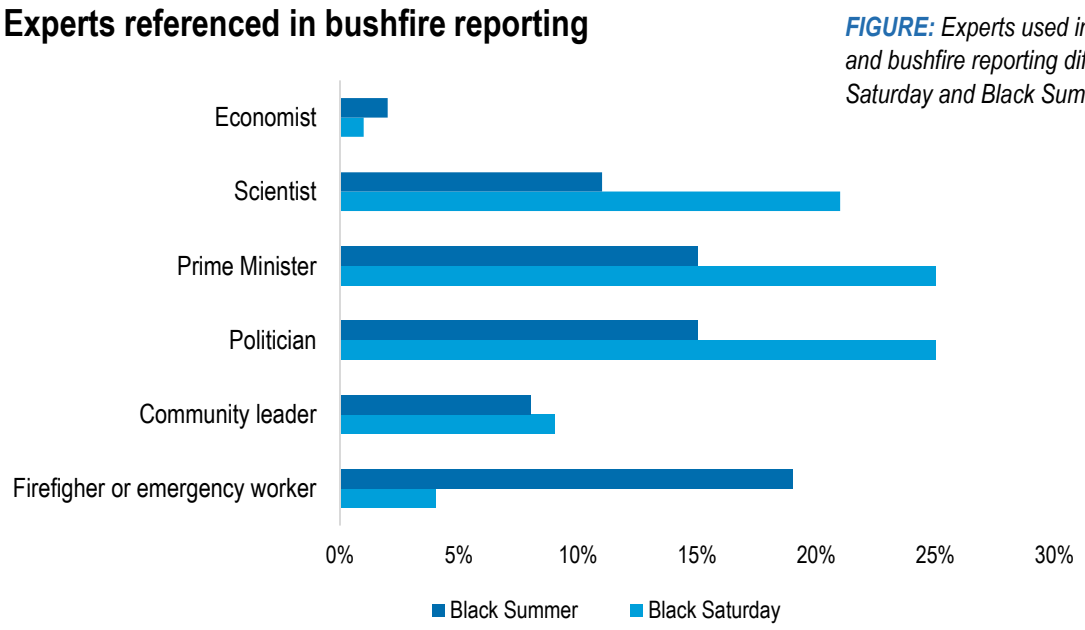


FIGURE: *Experts used in climate change and bushfire reporting differed in Black Saturday and Black Summer.*

In Black Summer, 21% of denialist articles referenced politicians and approximately a third were used to attack the Greens. Denialist coverage also celebrated Deputy Prime Minister McCormack and Prime Minister Morrison's denial of the link between bushfires and climate change, with 12% of denialist articles referencing the Prime Minister directly.

Lastly, in 2009 Prime Minister Kevin Rudd spoke openly about climate change in his statement to the media before he suspended Parliament, deployed the military and pledged millions of dollars of federal funding on the 9th of February, just two days after the disaster. In contrast, in 2019, Prime Minister Scott Morrison did not acknowledge the link between the fires and climate change until January 2020, and actively denied the link in November.[49] He also didn't deploy the military until January, despite the unprecedented size and scale of the disaster. It should be noted that Kevin Rudd appeared 130 times in a sample of 170 articles about climate change, and in a sample of 700, Scott Morrison only appeared 177 times, most of which were heavily critical of the Prime Minister's actions.

APPENDICES

Appendix: Narratives codes and definitions

Expert opinions

Trusted sources are one of the most effective means of climate change communication. In 2017 the Monash Climate Change Communication Research Hub surveyed 750 Australians and found firefighters, climate scientists and farmers were the most trusted communicators of climate information. The most commonly featured experts in Black Summer reporting were politicians. Politicians were the least trusted group when Australian's were surveyed in 2017. Overall, experts featured in reporting were:

- Economists
- Scientists
- Community leaders
- Firefighters
- Politicians

Accurate discussion of climate change

Accurate discussion of climate change is discussion that accurately represents the observed or future impacts of climate change with in-depth reporting. These can range from the direct changes to the climate from rising emissions to secondary impacts such as on health. This discussion can be measured as accurate discussion of the science, discussion of the intensification of extreme weather events, calls for climate action and links between Black Summer's unprecedented nature and climate change.

Denialist discussion of climate change

Denialist discussion of climate change does not accurately represent the impacts of climate change and can often be based around fear mongering or complacency. Often in reporting, this misinformation denied the existence or anthropogenic origins of climate change. Cook describes five categories of climate misinformation:

- It's not real: this denialist narrative outright denies the impacts or existence of climate change.
- It's not us: this narrative denies the anthropogenic origins of climate change.

- It's not bad: this narrative often dismisses the impacts of climate change as trivial or will focus on the positives of increased climate change or emissions, such as carbon fertilization.
- There's no hope: this narrative either looks at the harmful impacts of climate action, in the Australian context often the impact of climate action on the economy; or will present climate change as inevitable and unavoidable. In the latter case, it frames climate action as unnecessary, as any action will be ineffective.
- Experts are unreliable: this denialist narrative questions or discredits science and scientists, often projecting ulterior motives to climate research.

Failure of planning narrative

This narrative blames politicians or governments responsible for damage caused by extreme weather events or climate change. This narrative blames human inaction or negligence for impacts or damages. This is particularly focused on politicians who have acted in a way that exacerbates the problems faced by ordinary citizens. In the context of Black Summer, this narrative often blamed the federal Coalition government for the fires because of its lack of climate action.

Health impacts

This narrative looks at the secondary impacts of fires on health. In the context of Black Summer, the narrative focused the impacts of smoke on public health, as much of southeastern Australia, including Melbourne, Sydney and Canberra, saw air quality drop to dangerous levels. The impacts of disasters on mental health were also featured.

Loss of biodiversity narrative

Loss of biodiversity as a narrative focuses on the impacts of a disaster on native biodiversity. This does not include the human impacts of a disaster, though sometimes the actions of volunteers or humans are mentioned. The primary framing of the disaster is on flora and fauna and their importance to Australia's natural environment or identity. In Black Summer reporting, this regularly highlighted the importance of native, endemic species affected by the bushfires and heavily referenced the fatalities to koalas.

Out of control protestors narrative

This narrative negatively represents protests and frames climate change as a highly politicised issue predominantly supported by inner-city protestors. This narrative focused on the actions of those in cities and framed their actions as selfish, hysterical, inconsiderate or illegal. The narrative represents the actions of protestors as disproportionate and proposes an agenda for them that is unrelatable to the reader. In the context of Black Summer reporting, this was often

juxtaposed by the idea of "quiet Australians" in the country or fire-affected areas who were not behaving in a way that is unlawful or inconvenient to others.

Triumph of humanity narrative

This narrative focuses on the power of people and communities to overcome the power of nature. This can include acts of altruism or resilience in the face of hardship. Generally, this narrative focuses on individuals or communities coming together to help others in the face of extreme conditions. This narrative is the most commonly featured in Black Summer reporting, where it presented the heroism and sacrifices of firefighters.

There's always been a changing climate narrative

This narrative reiterates the impacts of historical disasters and compares them to current events. This narrative will often highlight that resilience to disasters is part of living in Australia and dismiss the idea of the intensification of extreme weather events. Often this relates to the lived memory of disasters and in the context of Black Summer reporting referenced historical events such as the 1939 Black Friday fires.

Thoughts and prayers

This narrative is overwhelmingly religious and frames the disaster as an act of God or highlights the importance of thoughts and prayer in disaster recovery, rather than tangible actions. This narrative featured more commonly after Prime Minister Morrison offered thoughts and prayers to bushfire victims.

Unstoppable power of nature narrative

The unstoppable power of nature highlights the power of extreme weather events. This narrative focuses on how powerless humans are in the face of disaster events. The lack of control we have over disasters is generally juxtaposed by the destructive power of extreme weather events. In Black Summer, the destruction of fires was highlighted with first person accounts of the fires and descriptions of the destruction caused.

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