Deloitte.

The economic and social impact of disasters on children and young people

UNICEF Australia

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Deloitte Access Economics

Contents

Glossary

Acronym	Full name
ABR	The Australian Business Roundtable
AIHW	The Australian Institute of Health and Welfare
CYP	Children and young people
GP	General practitioner
IDMC	Internal Displacement Monitoring Centre
IHACPA	Independent Health and Aged Care Pricing Authority
IPCC	Intergovernmental Panel on Climate Change
LSAC	Longitudinal Study of Australian Children
PAF	Population-attributable fraction
PTSD	Post-traumatic stress disorder
SSP	Shared Socioeconomic Pathway
UNICEF	The United Nations Children's Fund
VSLY	Value of statistical life year

Executive summary

Background

Children and young people (CYP) in Australia face distinct and long-lasting consequences from disasters like bushfires and floods. In 2024, The Impact of Disasters on Children and Young People (2024) report prepared by Deloitte Access Economics for UNICEF Australia found the average annual cost to the economy could be up to $6.2 billion in a high disaster year, with those in remote areas, from lower socio-economic backgrounds, and Indigenous children more likely to be impacted. The study highlighted a lasting mark on the education, mental health and lifetime earnings of children and young people impacted by disasters.

Climate change is increasing the frequency and severity of hazards and extreme weather events. When combined with rising exposure and vulnerability, these hazards result in more frequent and costly disasters. This 2025 study expands on the previous report by quantifying additional costs of disasters among CYP using new data sources, and projecting total economic costs to 2060 under three of the Intergovernmental Panel on Climate Change (IPCC) Shared Socioeconomic Pathway (SSP) climate scenarios of global average surface temperatures rises, relative to pre-industrial levels:

- Low emissions SSP1-2.6 (+1.8 degrees warming by 2060)
- Mid-level emissions SSP2-45 (+2.2 degrees warming by 2060)
- High emissions SSP3-7.0 (+2.4 degrees warming by 2060).

In Australia, the increasing risk of disasters is driven by the convergence of climate change impacts and the growing concentration of people and assets in high-risk locations. Over the past 25 years, insured losses from disasters have steadily increased. In 2021, Deloitte Access Economics estimated that disasters cost the Australian economy $38 billion annually, with costs projected to rise to $73 billion by 2060. Floods remain the most costly hazard, followed by bushfires and storms. Disasters create both direct economic losses (e.g. property damage, emergency response) and social losses (e.g. mental health impacts, deaths, disrupted education). Social costs often persist longer and disproportionately affect vulnerable groups, especially children.

> "Research by Gibbs et al on the 2009 Black Saturday bushfires found that disaster-exposed children experienced declines in reading and numeracy, particularly in early school years, while other studies highlight both immediate and delayed impacts on educational outcomes."

Findings

Current economic and social costs

In an average year, disasters, such as natural hazards and extreme weather events, are estimated to impose approximately $6.3 billion in measurable economic and social costs for CYP in Australia – which is equivalent to $6,782 per disaster impacted CYP.[1]

This includes both lifetime impacts, such as lost income from disrupted education, and short-term effects, such as the cost of mental health treatment or displacement.

The most significant long-term cost is the loss in lifetime earnings associated with **reduced Year 12 completion rates ($5.3 billion)**. This is followed by the economic cost of **child abuse ($192 million)** and **disaster related death ($32 million)**.

Although long-term impacts account for the majority of the overall cost, several short-term effects also impose a significant burden. **Mental health costs, amounting to $662 million** within the first two years following a disaster, represent the largest of these short-term impacts. On top of this, **disruptions to youth employment, contribute $93 million** in lost wages annually, Other impacts include displacements – reflected through the **cost of temporary housing ($57 million)** for CYP unable to return to their homes, **preterm births ($22 million)** and **injuries ($1 million)**.

As outlined in the report, this may be a conservative estimate of the actual costs due to limited data availability for measuring and quantifying relevant outcomes, such as costs of mental health, disruption of employment, and physical injuries.

While most disaster related outcomes generate costs to both government and society, data constraints limit the ability to full estimate all costs to all parties. In particular, the cost of employment disruptions and deaths were estimated only for individuals while the cost of displacements and preterm births were estimated only for the government.

> "Our schools had to evacuate twice because risk of floods getting inside the school premises. To distract myself while the situation of the flooding has been going, I've been drawing and painting lots because it eases my mind and makes me forget about things."[ii]

[1] Note all costs in this report are expressed in 2025 dollars, regardless of the year that is being referred to

Table i: Lifetime costs of disasters for children and young people based on an average year, $ millions 2025

Domain	Cost	Cost incidence		Total
		Government	Societal	
	Lifetime costs			
Education and employment outcomes	Reduced year 12 completion rates	2,005	3,262	5,268
Social and disruptive outcomes	Child abuse	173	19	192
Physical health outcomes	Deaths	0	32	32
	Total lifetime costs	2,178	3,313	5,491
	Short-term costs			
Mental health outcomes	Mental health	556	106	662
Social and disruptive outcomes	Disruption to employment	0	93	93
Social and disruptive outcomes	Displacements	57	0	57
Physical health outcomes	Preterm births	22	0	22
Physical health outcomes	Physical injuries	0	0	1
	Total short-term costs	636	200	835
	Total CYP costs	**2,814**	**3,513**	**6,327**

Source: Deloitte Access Economics, 2025.

Table ii: Cost per disaster impacted CYP (based on an average year), $ per CYP, 2025

Domain	Cost	Cost incidence		Total
		Government	Societal	
	Lifetime costs			
Education and employment outcomes	Reduced year 12 completion rates	2,150	3,497	5,646
Social and disruptive outcomes	Child abuse	185	21	206
Physical health outcomes	Deaths	0	34	34
	Lifetime costs per impacted CYP	**2,335**	**3,552**	**5,886**
	Short-term costs			
Mental health outcomes	Mental health	596	113	709
Social and disruptive outcomes	Disruption to employment	0	100	100
Social and disruptive outcomes	Displacements	61	0	61
Physical health outcomes	Preterm births	24	0	24
Physical health outcomes	Physical injuries	0	0	1
	Short-term costs per impacted CYP	**681**	**214**	**895**
	Total costs per CYP	**3,016**	**3,765**	**6,782**

Source: Deloitte Access Economics, 2025.

Projected economic and social costs

Average annual cost increases

Australia has experienced a temperature increase of approximately 1.5 degrees Celsius since 1910, predominantly occurring after 1950, with each subsequent decade being warmer than the previous one. The hottest year was 2019, and 8 of the 9 warmest years have occurred since 2013. To keep Australia near this level, emissions must follow the low emissions SSP pathway, which estimates about +1.8-degree warming. Staying on this low-emissions track could limit disaster-related costs on CYP to around $8.3 billion by 2060.

According to the Federal Department of Climate Change, Energy, the Environment and Water (DECCEW), Australia is currently projected to reduce emissions by 42.6% from 2010 levels by 2030,[iii] which would bring per capita emissions down to 10.5 tonnes. While this reflects significant progress from 2010 levels, it leaves Australia emitting well above the global level of average emissions per capita required for the mid-level pathway (approximately 4.67 tonnes per person). This suggests that Australia's policies are most aligned with the mid to high SSP scenario, and far above the trajectory for the low emissions scenario (SSP1-2.6).

Under the mid-level emissions scenario (SSP2-4.5), where average surface temperatures are projected to rise to 2.2 degrees above 1850-1950 levels, the average annual cost of disasters affecting CYP is projected to increase by 65%, from $6.3 billion per year in 2025 to $10.4 billion per year (in 2025 dollars) by 2060.

Under the high emissions scenario, where average surface temperatures are projected to rise 2.4 degrees above 1850-1950 levels, average annual costs on CYP in Australia could reach $12.1 billion, or 91% above 2025 levels. Investment in mitigation, whereby global temperature rises stay clear of the high emissions pathway and instead align with the low emissions scenario, could help reduce costs to CYP by up to $3.8 billion annually.

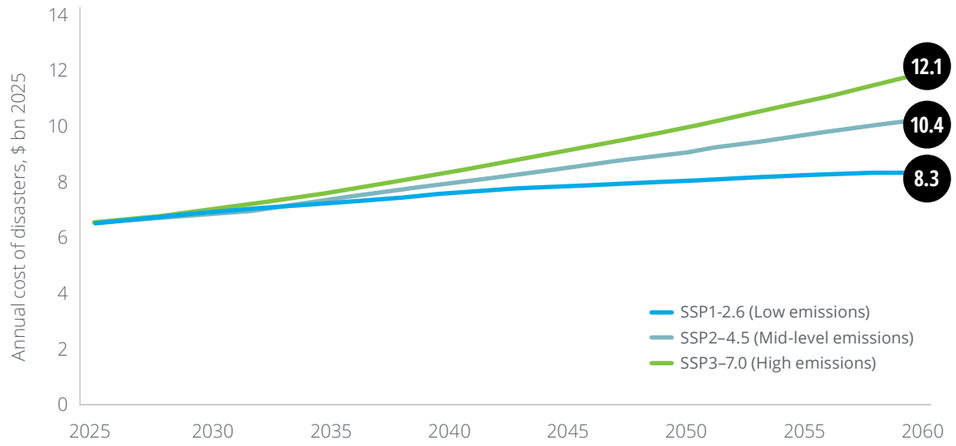
Table iii: Average annual costs of disasters for CYP in 2060, $ billions 2025

	High emissions (SSP3-7.0)	Mid-level emissions (SSP2-45)	Low emissions (SSP1-2.6)
Average surface temperature rise above 1850-1950 levels by 2060	+2.4 degrees	+2.2. degrees	+1.8 degrees
Average annual CYP costs in 2060	$12.1	$10.4	$8.3
Increase in annual costs between 2025 and 2060 (%)	91%	65%	32%
Variation from low scenario ($)	$3.8	$2.1	-
Variation from low scenario (%)	45%	25%	-

Source: Deloitte Access Economics, 2025.

The projected pathways of average annual costs to CYP are shown in Chart i. These estimates should be interpreted as the expected value (average) of future potential costs. This is because the estimates are based on historical averages and projected based on IPCC climate modelling. The estimates are constrained by both "known-unknowns" (factors we are aware of but cannot accurately quantify, such as the exact timing, frequency or magnitude of future disasters), and "unknown-unknowns" (factors we have not been able to model), including cascading effects across different costs, cumulative effects across multiple disasters, or systemic tipping points (e.g., permanent ecosystem loss, infrastructure failure, or compounding events like fires following floods).

Chart i: Estimated time path of total costs to children and young people by emissions scenario, $ billions 2025



Source: Deloitte Access Economics, 2025.

Implications

This report provides socio-economic cost estimates in relation to how disasters affect CYP in Australia - undermining mental health, education, housing stability, future workforce productivity, and long-term economic outcomes. It also underscores the growing financial burden, especially under a warming climate, with projected costs set to rise significantly over time.

Key insights

Children are already highly exposed to disasters, and future costs will rise steeply as hazards and extreme weather events become more frequent and severe. Without stronger mitigation, these costs will accelerate rapidly with climate change.

Education loss is the largest driver of the overall economic burden on CYP, which can reduce the productivity of Australia's future workforce.

Short-term impacts, particularly on mental health, displacement, and employment, carry high immediate costs to State and Federal governments, and risk lasting harm to communities.

Without urgent climate action, disaster-related costs to children will escalate, reinforcing the need for child-focused climate resilience and adaptation policies. State-level differences in disaster risk require targeted place-based disaster strategies tailored to CYP needs.

The gaps in data to inform disaster outcome and cost estimates suggest the full scope of disaster impacts on CYP is under-appreciated, highlighting the need for more research and monitoring with CYP in mind. For instance, age-specific data collection of CYP facing displacement and accessing medical services should be collected and made public.

A more coordinated approach, such as a national children's disaster framework, would help ensure that the unique risks facing CYP are consistently considered and addressed across jurisdictions.

To reduce these growing risks, this report calls for greater investment in child-centred place-based support, including mental health services, educational continuity, and stable housing. It also emphasises the value of pursuing lower-emissions pathways to limit future costs. All levels of government should integrate child-specific considerations more consistently into disaster risk assessments, climate adaptation strategies for key social service sectors upon which children rely to survive and thrive, and recovery frameworks - including a specific disaster framework for CYP. Finally, a dedicated focus on intersectional age-disaggregated data on long-term disaster impacts can enable more effective, evidence-based policy responses that better protect CYP wellbeing.

Key insights

The current costs

$6.3 billion

Average annual cost of disasters to CYP in Australia in 2025

Equivalent to 1 in 6 children and young people

The growing risk

The economic burden of disasters on children and young people is substantial and driven primarily by education loss

Average annual costs by 2060 could be
$8.3 billion
under a low emissions scenario

$10.4 billion
Average annual cost of disasters to CYP in Australia in 2060 under a mid level emissions scenario

Average annual costs by 2060 could be
$12.1 billion
under a high emissions scenario

Children are already highly exposed and future costs will surge with increasing intensity and frequency of natural disasters

$192 million
annual average costs increased child abuse

$662 million
annual average mental health costs

$5.3 billion
annual average loss of lifetime income due to reduced rates of year 12 completion

To help reduce the growing impact of disasters on children and young people, the report highlights the importance of placing greater emphasis on child-centred investments in areas such as mental health support, educational continuity, and housing stability.

01
Background

1.1 | Climate change and disasters in Australia

This report is an update to the impact of disasters on children and young people (CYP) (2024) prepared by Deloitte Access Economics for UNICEF Australia. The previous study used data from the Longitudinal Study of Australian Children (LSAC) survey data which reports on many characteristics of children over time. It focused on a subset of outcomes using LSAC data, and the costs were estimated as the average annual cost of disasters to CYP in a representative year quantified in monetary terms. The report found that children and young people face additional and unique challenges post-disasters, and these impacts might be long-lasting and warrant further research to assess how costs might rise with climate change.

Natural hazard and extreme weather events are increasing in both frequency and severity globally. In Australia, this trend is particularly concerning given the nation's unique climate and geography.[4] When these hazards interact with exposure and vulnerability, such as through unprepared communities or infrastructure, they result in disasters. Over the last 25 years, the financial cost of such disasters in Australia has risen steadily, as reflected in increasing insurance claims for extreme weather. Disasters cause widespread economic and social harm to individuals, families, communities, businesses, and governments, with both economic and social impacts. Economic impacts include direct financial losses, such as damage to infrastructure, property destruction, crop losses and emergency response costs. Social impacts encompass loss of life, mental and physical health impacts, disrupted education, and reduced community engagement.[5] Many people develop post-traumatic stress disorder (PTSD), anxiety or depression following a disaster.[6] These social costs often outlast financial or economic costs due to their deeper and more persistent social and environmental consequences. In 2021, Deloitte Access Economics estimated that disasters cost the Australian economy $38 billion annually, including both economic and social impacts. This figure is projected to reach at least $73 billion by 2060.[7] Floods are the most costly disaster type, with average annual losses of $8.8 billion in 2021.[8] Climate change is contributing to the increasing frequency and severity of such events, significantly driving up socio-economic costs of disasters across Australia.

This rise is driven by three key factors: climate change, population growth in hazard-prone areas, and the increasing real value of assets. A warming atmosphere is fuelling more extreme weather events like heatwaves, droughts, floods, and storms.[9] Meanwhile, growing populations in high-risk areas are placing more people and infrastructure in harm's way.[10] For instance, Brisbane continues to expand into historically flood-prone areas - compounding vulnerability.[11] Similarly, Canberra's urban boundary has expanded rapidly, with a 40% growth in its building footprint since 2004, placing new developments increasingly in areas at risk of bushfire.[12]

1.2 | Children and young people experience unique costs

Natural hazards and extreme weather events affect everyone, but CYP are especially vulnerable. Their age, developmental stage, and the likelihood of a disaster being their first major traumatic experience all contribute to heightened sensitivity. Indirect exposure through media and social media can further compound these effects.[13]

CASE STUDY

2019-20 Black Summer Bushfires: Lasting emotional and developmental impacts on children[14]

In the summer of 2020, bushfires tore through a small town on the South Coast of New South Wales, burning the area around ten-year-old Jack's (not his real name) home. Jack and his siblings were evacuated to their grandmother's house while their mother stayed behind, causing significant distress. The return journey – normally two hours – took eleven hours through thick smoke. Though their home was spared, it was filled with ash and smoke, and they had no electricity for days. Smoke lingered for weeks, forcing the children to stay indoors.

The experience left lasting emotional scars. Jack became quiet and withdrawn, startling easily, and his teacher noticed his reduced concentration and social engagement. His younger sister became "clingy" and was frightened by the sound or sight of fire trucks. The prolonged disruption affected routines, social interactions, and their sense of safety.

As part of the Bushfire Recovery Program, Jack saw a multidisciplinary care team including a psychiatrist, paediatrician, dietitian, occupational therapist, and social worker. Between appointments, he joined recreational activities like dodgeball and boxing, while his sister enjoyed craft and sensory play. Their mother received additional psychological support and practical guidance on supporting children after trauma – re-establishing routines, spending special time together, child-led play, shared reading, emotion coaching, and the importance of self-care.

Recovery was complicated by the onset of COVID-19 restrictions, which disrupted schooling and limited contact with extended family. Despite these challenges, ongoing support through Telehealth and planned school-based programs gave the family hope. Jack's story highlights how disasters can have profound and lasting impacts on children's emotional wellbeing, education, and development – and how coordinated, early intervention is crucial for recovery.

Psychological impacts are often more severe in this group. Many children lack the ability to express emotional trauma, which can appear instead as behavioural changes or sleep disturbances. A UNICEF Australia report observed increased disruptive behaviour in children following floods, particularly during rainfall.[15] For nearly one third of affected children, mental health issues persist beyond the immediate aftermath, especially when disasters are experienced repeatedly. One study found that children exposed to a disaster before age five are 15.7% more likely to develop a lifetime mood, anxiety or substance use disorder.[16]

Disasters can also disrupt education. An Australian study found that students in bushfire-affected schools showed smaller-than-expected gains in reading and numeracy between Years 3 and 5.[17] Emerging evidence suggests early trauma can affect brain development, leading to long-term impacts on learning and functioning.[18]

Children's recovery is also closely tied to their caregivers. Financial stress on families after a disaster can affect children's wellbeing, and the way parents and teachers respond plays a critical role in shaping their long-term outcomes.

Current Australian policy settings often do not adequately consider the unique needs and vulnerabilities of CYP in the context of disasters. While national frameworks, such as the National Disaster Risk Reduction Framework[19] and Australia's National Climate Resilience Adaptation Strategy,[20] acknowledge the importance of community resilience, they largely treat the population as a homogenous group. Children are rarely addressed as a distinct cohort with specific developmental, psychological and social needs. As a result, disaster planning, response and recovery efforts frequently overlook tailored supports, such as child-focused mental health services, education continuity strategies, and family-centred recovery programs. This lack of targeted consideration can leave children more exposed to long-term harm, despite growing evidence that they experience disproportionate and lasting impacts from disasters.

1.3 | Objective and structure of this report

Expanding on the previous report for UNICEF, Deloitte Access Economics was engaged to estimate the impact of disasters on children and young people, and project the socio-economic cost of these impacts. This study builds on the previous report by quantifying additional costs based on new data sources and projecting total economic costs to 2060 under different IPCC climate change scenarios.

The report is structured as follows:

Chapter 02 | **Analytical framework**
This chapter outlines the approach taken to estimate and monetise the historical and future economic and social cost of disasters on CYP.

Chapter 03 | **Findings**
This chapter presents historical and future costs from the analysis, including the historical economic and social costs of disasters for CYP, the future economic and social costs and an approximate state by state breakdown of costs.

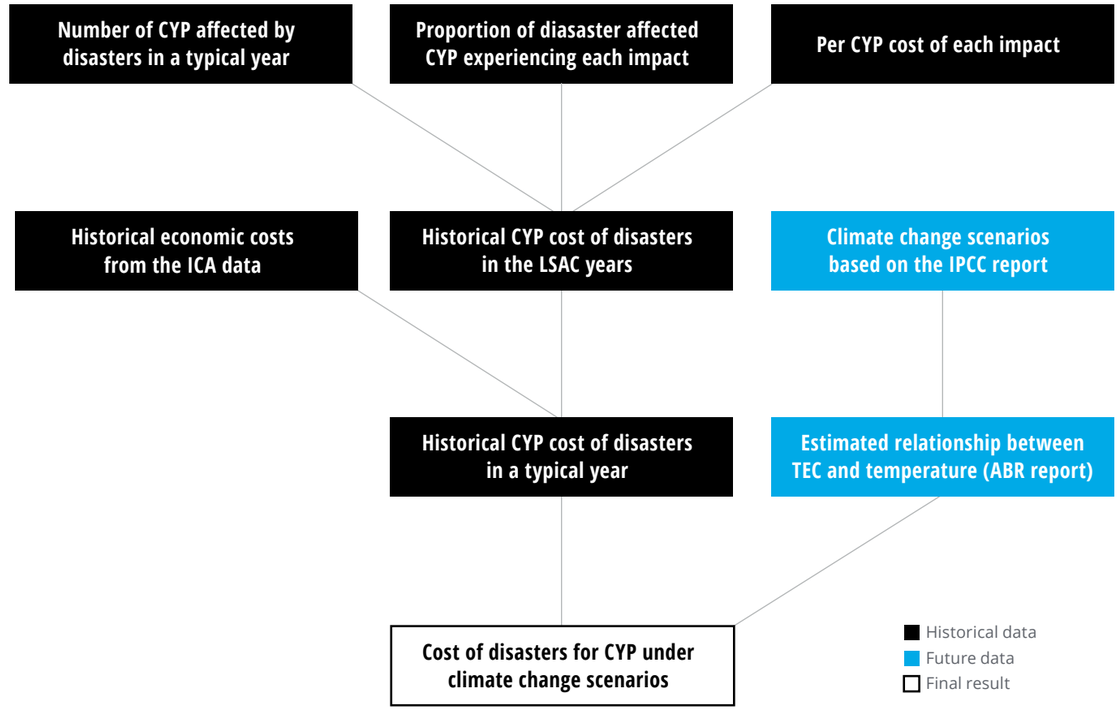
Chapter 04 | **Implications**
This chapter presents the key findings from the results and implications that the findings of this report may have for government.

02
Analytical framework

2.1 | Overview of modelling framework

This report builds on the analytical framework established in the previous Deloitte-UNICEF Australia study, which estimated the annual average costs to CYP affected by disasters in a typical year. The annual average costs were based on data on the number of CYP impacted by disasters and costs of these impacts between 2010 and 2021. The 2024 analysis relied primarily on data from the Longitudinal Study of Australian Children (LSAC), enabling a detailed and robust estimation of disaster impacts across a range of outcome domains, including education, health, housing stability, and future productivity.

Figure 2.1 Overview of modelling framework



In this report, a similar methodological approach is applied to reassess the economic impact of disasters on CYP. However, this study expands the evidence base by integrating findings from recent literature and supplementary studies. These sources have been used to refine assumptions, enhance cost estimates for certain domains where LSAC data alone was limited, and provide greater clarity on short- and long-term impacts on CYP. For the purpose of this report, CYP are defined as people under 25 years old (0 to 24).

This report also incorporates forward-looking analysis by projecting the economic costs of disasters affecting CYP under three climate change scenarios. These projections adopt a similar top-down approach used in the Deloitte Australian Business Roundtable (ABR) reports but are updated to align with the most recent climate modelling– the Intergovernmental Panel on Climate Change (IPCC) Shared Socioeconomic Pathway (SSP) scenarios. By doing so, the analysis captures both the changing frequency and severity of natural hazard and extreme weather events and their likely future impact on CYP outcomes, offering a scenario-based view of long-term expected socio-economic risk. A 7% discount rate is used for forecasting models following the guidance from the Commonwealth Office of Best Practice Regulation (OBPR). This approach allows for a robust assessment of both current and future economic costs, supporting informed policy and investment decisions aimed at mitigating the impact of disasters on Australia's youngest population. In addition, a zero-discount rate scenario is also modelled as a representation of an intergenerationally equitable perspective, whereby current and future costs are weighted equally.

2.2 | Identifying CYP impacted by disasters

To identify CYP who had experienced one or more disasters in the LSAC dataset, disaster exposure was determined using responses to relevant survey questions across selected waves. In Waves 4 to 7 (2010, 2012, 2014, and 2016), parents were asked whether they or the other parent had, in the past 12 months:

- Lived in a drought-affected area; or
- Had their home or local area affected by bushfire, flooding, or a severe storm.

In Waves 9.1 and 9.2 (2020 and 2021), the LSAC survey introduced a revised question asking participants whether they had been affected by any of the following extreme weather events or disasters in the past 12 months, with response options including bushfire, drought, flood, storm or hail, cyclone, and other. For this report, survey responses relating to storms and hail in 2020 and 2021 were excluded from the estimated average annual share of disaster-affected CYP. This adjustment was applied because while storms and hail cause significant property damage, their long-term economic and social impacts on CYP are generally less severe than those from bushfires, floods, and droughts. These disaster related questions were not asked in LSAC waves 1, 2, 3, and 8 (2004, 2006, 2008, and 2018) and these waves were therefore excluded from this analysis.

2.3 | A new framework that extends the previous Deloitte analysis

Our previous report estimated a total economic cost of $3.1 billion per year. That analysis focused on producing a robust estimate of disaster-related costs specifically using LSAC data and was therefore limited to the outcomes captured within that dataset. For example, cost components, such as child abuse, were not consistently included across all survey waves and were excluded from the original analysis.

In this report, we have expanded the evidence base by incorporating findings from peer-reviewed literature and additional public reports to address these data gaps. This has allowed us to include a broader range of outcomes, such as child abuse, mortality, injury, displacement, and income loss due to employment disruption. These additions provide a more comprehensive estimate of the economic costs associated with disasters affecting CYP.

To improve the comprehensiveness of economic cost estimates, we extended the Deloitte analysis to include additional domains and outcomes. This approach supplemented LSAC-derived parameters with data drawn from relevant literature and reports, covering mental health, physical health, social harm, disruptive effects, as well as education and employment outcomes.

2.3.1 | Distinction between lifetime costs and short-term costs

Of these domains, our research supported monetising the economic costs across several specific areas, including mental health, physical health, deaths, child abuse, displacements, education, and employment disruption. Lifetime costs were estimated for education, child abuse, and deaths, whereas only short-term costs were estimated for the remaining domains. This distinction does not reflect the absence of long-term consequences, but rather limitations in available data, the quality of current evidence, and the necessity of avoiding double counting of costs. For example, while early-life mental illness can lead to lasting health and socio-economic consequences, reliable data to estimate lifetime mental health costs—excluding significant overlap with educational and occupational outcomes already accounted for within our educational domain—were not available. Consequently, our analytical framework takes care to incorporate only healthcare-related mental health costs within a two-year timeframe following disasters.

Figure 2.2 highlights the four domains explored in the modelling framework of this study, and the detailed explanation of the modelling methodology can be found in the Appendix. The four domains are discussed below:

2.3.2 | Mental health outcomes

Disasters have a profound impact on the mental health of CYP people in Australia, with effects that can emerge immediately or develop over time. Acute stress reactions are common in the immediate aftermath, often manifesting as sleep disturbances, clinginess, irritability, or physical complaints, such as headaches or stomach pain. In the weeks and months following a disaster, some children may develop adjustment disorders, characterised by difficulty coping with changed circumstances or disrupted routines.

More severe and enduring conditions, such as post-traumatic stress disorder (PTSD), depression, anxiety, and panic disorders have also been documented, particularly in cases where children experience personal loss, displacement, or ongoing exposure to traumatic reminders. A longitudinal study of children affected by the 2009 Black Saturday bushfires found elevated rates of PTSD and depression even three to four years after the event.[21] Similarly, research by Gibbs et al. (2013) on children affected by flooding in Queensland showed increased symptoms of anxiety and emotional distress.[22] These mental health issues can significantly affect children's development, academic engagement, and social relationships.

Over the long term, unresolved mental health conditions in childhood are associated with increased risk of poor educational attainment, unemployment, lower lifetime earnings, and greater dependence on health and social services in adulthood. They are also linked to higher rates of substance misuse and chronic physical health conditions later in life, amplifying the social and economic burden over time.[23] Despite the high prevalence of post-disaster mental health conditions, access to appropriate services remains uneven, particularly in rural or low-resource areas, further exacerbating the long-term impact on affected CYP.

Due to limited data availability, this study models mental health outcomes using a single aggregate measure derived from validated mental health screening instruments. Specifically, CYP were identified as experiencing mental health issues if they scored 8 or higher on the Short Mood and Feelings Questionnaire (SMFQ), which was included in LSAC Waves 5 to 8. In Waves 9.1 and 9.2, CYP with a total score above 20 on the Kessler Psychological Distress Scale (K10) were also classified as likely experiencing mental health concerns. While these tools provide a useful indication of emotional wellbeing, specific conditions, such as anxiety, depression, and PTSD are not modelled separately in this analysis. Long-term mental health outcomes are excluded from the model due to several limitations:

- Lack of quantifiable and consistent evidence on the long-term duration of mental health impacts following a disaster.[24]
- Although multiple studies, including systematic reviews, show that mental health issues in childhood are associated with increased risk of mental illness in adulthood, the degree and persistence of this risk vary across studies and are often difficult to quantify due to challenges in long-term follow-up.
- Many downstream effects of mental health, such as relationship quality and social functioning, are difficult to measure and are not readily monetisable. Other outcomes that can be monetised, such as educational attainment and lifetime earnings, are already accounted for in separate domains within this report.
- Mental health diagnoses and treatments are not as consistently defined or standardised as those for physical health, making it difficult to assign reliable lifetime cost estimates.

2.3.3 | Physical health outcomes

Preterm births

Through a study of almost 20 million births over a 10-year period in the United States, evidence shows a correlation between tropical cyclones and a marginally increased rate of preterm births. While the research focuses on cyclones, the factors that contribute to the increased risk of preterm birth - psychological stress caused by the incident, and lack of access to medical facilities – are shared by other types of disasters as well (Sun et al., 2020).[25] Although no studies in Australia have quantified the number of births affected by disasters, it remains a recognised risk.

Physical injuries

In Australia, disasters, such as bushfires, floods, and extreme weather events, pose serious risks to the physical health of children and young people. Although the healthcare system costs for most cases are relatively low, immediate physical injuries are common during disaster events, including burns, lacerations, and fractures, particularly in regions affected by bushfires and flash floods (Mitchell et al., 2010).[26] Tragically, some disasters also result in child fatalities, as documented during events, such as the 2009 Black Saturday bushfires.

Beyond acute injuries, disasters can have lasting health effects. For example, exposure to bushfire smoke has been linked to increased emergency department presentations for respiratory conditions in children, particularly asthma (Johnston et al., 2020).[27] Floods and heatwaves can lead to waterborne illnesses, dehydration, and exacerbation of chronic conditions, such as diabetes and epilepsy, when medical services are disrupted. Additionally, disasters can result in food insecurity and malnutrition, especially for children in displaced households or remote communities with limited access to nutritional support. These health challenges are compounded by reduced access to routine care and medication during and after disasters, contributing to long-term health vulnerabilities. Children, due to their developmental stage and dependence on caregivers, are particularly susceptible to these compounding risks, underscoring the need for targeted public health responses. In this report, the analysis focuses on disaster-related injuries among CYP, while other long-term physical health outcomes and associated costs are not included due to limited data availability.

Deaths

Numbers of deaths of CYP resulting from disasters in Australia are low (less than five in a typical year), however the human and economic costs per death are extremely high. Disaster related deaths are likely to become more common as disasters increase in frequency and severity.

2.3.4 | Social harm and disruptive outcomes

Child abuse

Evidence suggests that the risk of child abuse increases following disasters due to heightened household stress, economic hardship, displacement, and reduced access to support services. Studies have documented a rise in both physical and emotional abuse in the aftermath of major disasters. For example, Curtis et al. found a significant increase in child protection reports in disaster-affected communities in Australia.[28] International research also supports this trend. A systematic review by Keeshin and Campbell highlighted consistent associations between disasters and increased incidence of child maltreatment across multiple contexts.[29] Additionally, UNICEF has reported that post-disaster conditions often weaken child protection systems, making children more vulnerable to neglect, exploitation, and abuse.[30] These findings underscore the importance of incorporating child safety considerations into disaster preparedness and recovery frameworks. In this report, the likelihood of child abuse is estimated using data from Curtis et al., and the lifetime costs are based on the estimates provided by McCarthy, Molly M., et al.[31]

Displacements

Permanent displacement is another significant but often underreported consequence of disasters in Australia. Following major events, such as bushfires, floods, and cyclones, some households are unable to return to their homes due to destruction, land instability, or prolonged infrastructure loss. The Climate Council estimates that approximately one in 25 Australians could face permanent displacement by 2030 as a result of worsening climate-related disasters.[32] This issue is particularly acute in rural and regional communities, where reconstruction may be financially or logistically unfeasible. For CYP, permanent displacement can disrupt education, social networks, and access to essential services, while also contributing to psychological stress and a sense of instability. Although some temporary relocation costs are typically addressed through emergency response systems, permanent displacement poses complex, long-term challenges for housing, community planning, and social cohesion. To avoid potential double counting in the model, many of these long-term impacts are not monetised in this analysis, only short-term government housing support costs are included.

Parental financial stress

It is well established that parental financial hardship can adversely affect children's wellbeing and contribute to developmental disadvantage. For instance, an analysis conducted by the Australian Institute of Family Studies, using LSAC data, demonstrates that both cognitive and socio-emotional outcomes in children are influenced by their parents' financial and employment circumstances. Further, a report titled "The Economic Impacts of Direct Natural Disaster Exposure" that was published on Econstor estimated a 16% increase in financial hardship following disasters - relative to a sample mean of 0.44 - and a 2.3 percentage point increase in the probability of families experiencing three or more concurrent hardships. These findings suggest that although children may not directly bear the financial losses incurred by disasters, they are nonetheless likely to experience significant secondary impacts through their families' economic stress. These impacts can manifest emotionally and may also affect children's day-to-day lives, including access to learning and development opportunities. However, due to potential overlap with effects already captured in the mental health and education domains, and the current lack of disaggregated data to isolate the unique effects of financial hardship, these costs have not been separately included in our modelling framework.

2.3.5 | Education and employment outcomes

Reduced rates of year 12 completion

Disasters significantly disrupt the lives of CYP through the destruction of school infrastructure, extended closures, reduced attendance, and broader socioeconomic impacts on households. For example, Ex-Tropical Cyclone Alfred alone, caused 2.3 million child-days of lost learning in 2025.[33] Schools are also often repurposed as evacuation centres or temporary accommodation facilities due to their size and location in communities. These disruptions can cause students to fall behind, leading to poorer academic performance and lower rates of school completion.

Research on the 2009 Black Saturday bushfires found that children exposed to the disaster experienced declines in reading and numeracy scores, particularly in Years 3 and 5. Writing, spelling, and grammar appeared less affected. Other studies similarly highlight that disaster-related interruptions to learning can have both immediate and delayed impacts on educational outcomes. Reduced attendance due to damaged infrastructure further compounds these effects, particularly in early schooling years when foundational skills are developed. In some cases, the educational impacts of disasters may emerge only after a delay, making them difficult to detect in the short term.

These educational setbacks have critical implications for future employment outcomes. Educational attainment strongly influences employment prospects, with higher levels of education associated with greater job stability, higher wages, and increased participation in the labour market. Conversely, students who fail to complete secondary education are more likely to experience unemployment, insecure work, and lower lifetime earnings. In turn, this can result in a less productive workforce, lower tax receipts and higher outlays to government. As such, the disruption to education caused by disasters can lead to long-term disadvantage in young people's economic opportunities and overall wellbeing. Hence, the year 12 completion rate and the impact on life-time income, tax and welfare system difference between disaster affected CYP and their peers is used as the measurement for the cost of disasters for CYP education in this report.

Disruption to employment

Disasters can also directly affect young people's employment outcomes, particularly for older adolescents and those entering the workforce. Disruptions to local economies, reduced job opportunities, and increased household responsibilities following a disaster may delay workforce entry or restrict employment options. For example, the 2022 floods in northeastern NSW significantly damaged the Lismore TAFE campus, with over 190 rooms affected. This highlights how disaster damage to education and skills facilities can derail learning and training pathways.[36] While some research suggests that disasters may lead to new job creation during reconstruction phases,[37] in the short term, young people often face employment interruptions or temporary job loss due to economic instability in affected communities. As such, short-term employment impacts are also incorporated into the modelling framework presented in this report.

CASE STUDY

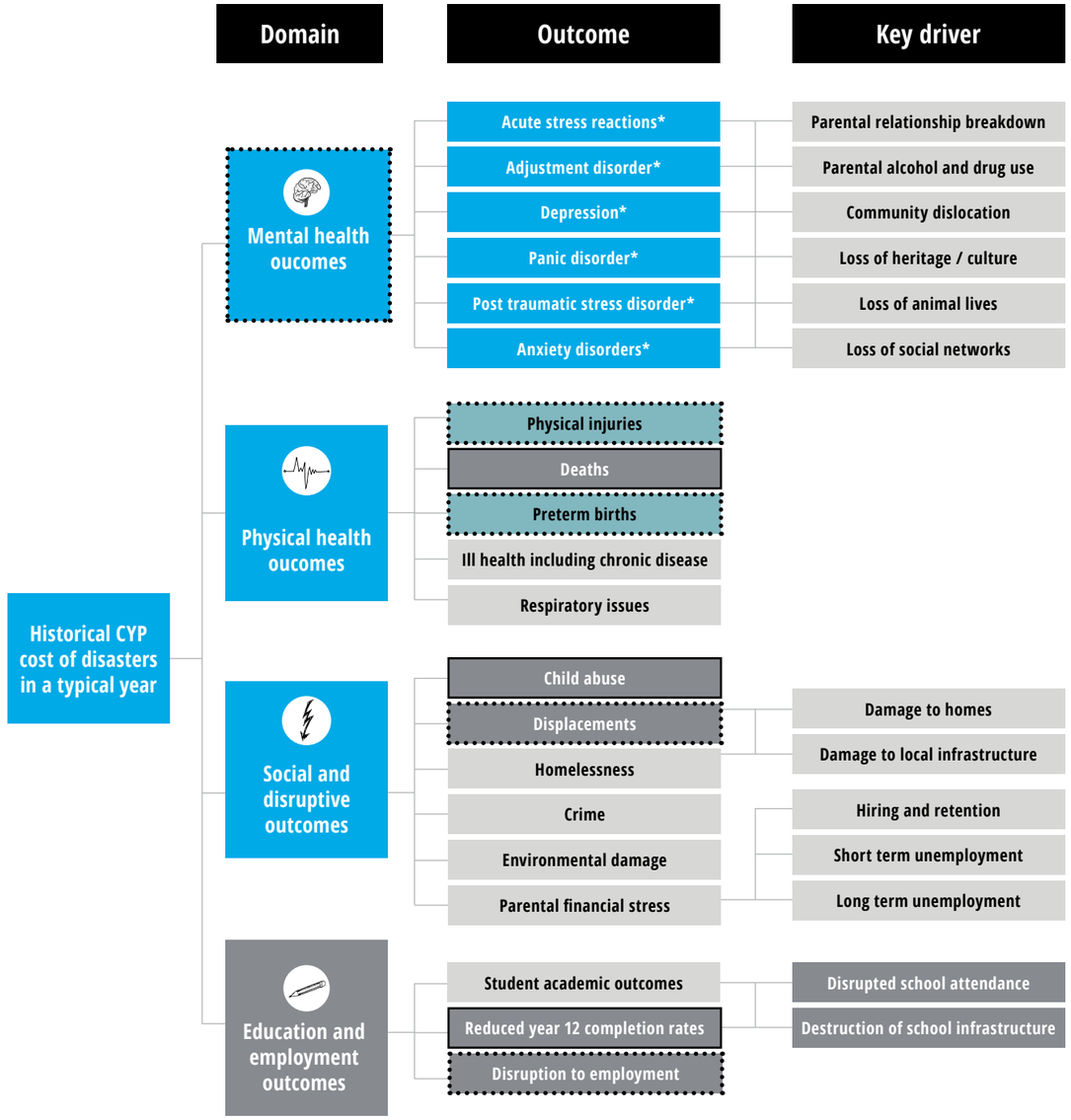
2022 Floods –Infrastructure damage and community isolation in the Northern Rivers

The 2022 floods in the Northern Rivers devastated critical infrastructure, cutting communities off from essential services for days and in some cases weeks. Transportation networks were among the hardest hit, with an estimated 90% of roads in Lismore City Council's area – over 1,200 km – damaged or destroyed. Paved streets were ripped up, bridges and culverts washed away, and landslides severed hinterland connections. Lismore faced a road repair bill of $150–$200 million.[34]

In the wider region, nearly every major route was affected. Sections of the Bruxner and Pacific Highways were closed, isolating communities. The Tweed Shire reported more than 3,700 instances of road damage, over double the damage from the 2017 floods, with an estimated $90 million repair bill. For days, some towns were accessible only by boat or helicopter, delaying emergency services, medical care, and supply deliveries.

For CYP, this isolation meant prolonged school closures, cancelled medical appointments, and limited access to safe spaces or peer support networks. The retail sector, which employs many CYP who rely on casual wages, was also significantly impacted with tourism dropping to unseasonally low levels. In flood-affected communities, education was interrupted, youth activities were suspended, and recovery services were slow to reach those in need – compounding the social and emotional impacts of the disaster.[35]

Figure 2.2: Cost components considered in the analysis



Note: * individual mental health outcomes are illustrative of the broad suite of mental health conditions being captured in the estimate however costs were not estimated separately for each condition. Source: Deloitte Access Economics, 2025.

2.4 | Climate change scenarios and future costs

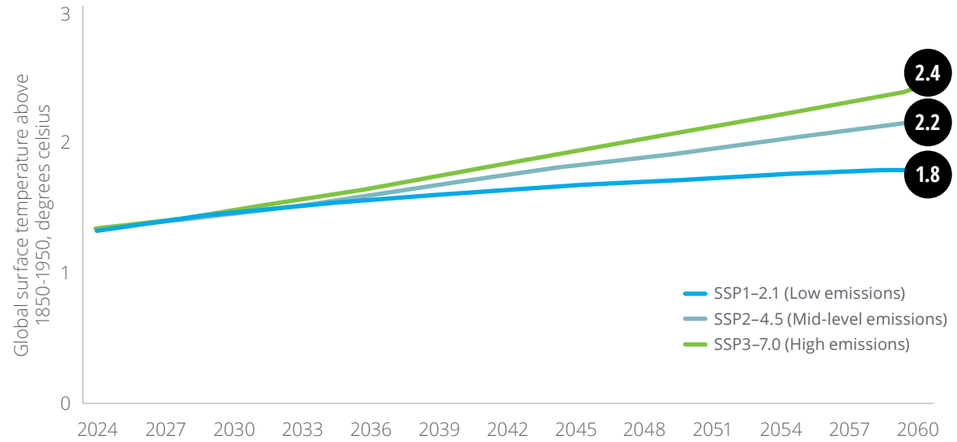
The historical annual average costs were projected out to 2060 using publicly available information from the Deloitte ABR report on the relationship between temperature changes and disaster costs.[38] The estimated socio-economic costs to CYP were projected forward based on the modelled relationship between future temperature changes and disaster costs. The most recent publicly available 2024 IPCC SSP climate change scenarios were used as the source for the forecasted temperature changes.[39] The mid-level emissions scenario (SSP2-4.5)[2] was selected as the core scenario for the report, representing a plausible future scenario (which appears to align with Australia's current policy trajectory). The high-level emissions scenario (SSP3-7.0) was used to assess how much higher costs could be if climate action was limited, and the low emissions scenario (SSP1-2.6) was used to assess what costs could be avoided if strong climate action resulted in lower emissions.

The modelling in this report is based on global emissions projections from the latest IPCC report. The three IPCC SSP scenarios used in this report are shown in Chart 2.1. Under the mid-level emissions scenario (SSP2-4.5) – which the core results of this report are modelled on - the global average surface temperature is projected to rise 2.17 degrees above 1850-1950 levels by the year 2060. For the high emissions scenario (SSP3-7.0) this number is 2.44 degrees and for the low emissions scenario (SSP1-2.6) its 1.78 degrees. All three of these scenarios exceed the 1.5-degree target limit set by the Paris Agreement[40] beyond which, increasingly severe impacts on the planet, including rising sea levels, threats to ecosystems and more extreme weather events will occur.

For the mid-level emission scenario (SSP2-4.5) to be reached, global emissions would need to remain around current levels of 4.67 tonnes per person until 2050 while for the low emissions scenario (SSP1-2.6) to be achieved, global emissions would need to decline to net zero by 2070.[41,42] Current Australian projections by the Federal Department of Climate Change, Energy, the Environment and Water (DCCEEW) forecast a 42.6% decrease on Australia's 2010 emissions levels by 2030. This is just slightly behind the Australian Government's target of 43%.[43] This would bring Australia's per capita emissions down from 18.3 tonnes per person in 2010 to 10.50 tonnes per person by 2030. This would leave Australia's per capita emissions approximately 2.2 times greater than the global per capita emissions required to achieve the mid-level emissions scenario (SSP2-4.5) and approximately 2.6 times greater than the per capita requirement to reach the low-level emission scenario (SSP1-2.6) – if calculated based on an assumption of a linear decline from 4.67 tonnes per person globally in 2023 to net zero by 2070.

[2] The SSP-RCP scenarios (sometimes referred to as the 'SSPX-Y scenarios') combine the baseline SSPs with Representative Concentration Pathways (RCP) scenarios from the IPCC's fifth assessment reporting period (AR5). The first number 'X' in the SSPX-Y acronym refers to the baseline SSP scenario. The second number 'Y' refers to the RCP radiative forcing levels. For example, 'SSP1-1.9' is a scenario that combines SSP1 with 1.9 W m-2 radiative forcing in 2100 (RCP1.9).

Chart 2.1: Chart 2.1: Global surface temperature changes under select IPCC SSP scenarios



Source: Intergovernmental panel on climate change, 2024.

In line with standard economic evaluation practice, this report applies a 7 per cent discount rate to future cost projections to reflect the time value of money, recognising that a dollar today is worth more than a dollar in the future due to its earning potential. However, this approach places less weight on costs borne by future generations. To reflect an intergenerationally equitable perspective, an alternative projection applying a zero per cent discount rate is also presented, treating costs to future generations equally with those incurred today. Despite this, the results remain conservative: the calculation of lifetime costs such as lost earnings and education impacts are also discounted back to 2025, meaning the full long-term burden on CYP may be understated even under the zero-discount rate scenario.

03
Findings

3.1 | Key findings

The annual average economic and social cost associated with CYP affected by disasters in Australia is estimated to be approximately $6.3 billion, which is equivalent to $6,782 per disaster-impacted CYP.[3] This estimate includes both long-term and short-term impacts across each of the domains considered in the analysis of this report. Under a mid-level emissions climate change scenario, the average annual cost of disasters affecting CYP is projected to increase by 65%, from $6.3 billion in 2025, to $10.4 billion in 2060, with most of these costs attributable to lost educational outcomes (not completing year 12), and mental health impacts on CYP. At a time when Australia's productivity is lagging, without targeted attention to reduce the impact on CYP, the productivity and prosperity of Australia's future workforce is at risk.

[2] Note all costs in this report are expressed in 2025 dollars, regardless of the year that is being referred to.

3.2 | Current average annual costs

The annual average economic and social cost associated with CYP affected by disasters in Australia is estimated to be approximately $6.3 billion in 2025, which is equivalent to $6,782 per disaster impacted CYP. This estimate includes both long-term and short-term impacts across each of the domains considered in the analysis of this report and should be interpreted as a conservative baseline estimate of the cost on CYP in an average year. The estimate is inherently conservative because it only includes a subset of the full costs of disasters for CYP that could be quantified with available data.

Among cost components for which lifetime impacts could be estimated, education emerges as the most significant contributor. Using projected lifetime income loss due to not completing Year 12 as a proxy, the cost of disrupted education is estimated at $5.3 billion – the vast majority of which is attributable to lost earnings and lower tax receipts to government – meaning it currently costs around $5,646 per disaster impacted child. Child abuse, which has been shown to increase in the aftermath of disasters, contributes an estimated $192 million per annum on average or $206 per disaster impacted child, while the economic cost associated with deaths of CYP is projected at $32 million annually.

For domains where lifetime costs could not be reliably estimated, substantial short-term impacts remain. Mental health is the most significant in this category, with an estimated $709 per disaster impacted CYP and amounting to a total $662 million in treatment-related costs incurred within the first two years following a disaster. Disruptions to youth employment, contribute $93 million in lost wages annually, approximately $100 per disaster affected CYP. Additional impacts include displacements - reflected through the cost of temporary housing for CYP unable to return to their homes – ($57 million in total and $61 per CYP) preterm births ($22 million in total) and injuries ($1 million in total).

Table 3.1: Total costs of disasters on CYP (based on an average year), $ millions, 2025

Domain	Cost	Cost incidence		Total
		Government	Societal	
	Lifetime costs			
Education and employment outcomes	Reduced year 12 completion rates	2,005	3,262	5,268
Social and disruptive outcomes	Child abuse	173	19	192
Physical health outcomes	Deaths	0	32	32
	Total lifetime costs	**2,178**	**3,313**	**5,491**
	Short-term costs			
Mental health outcomes	Mental health	556	106	662
Social and disruptive outcomes	Disruption to employment	0	93	93
Social and disruptive outcomes	Displacements	57	0	57
Physical health outcomes	Preterm births	22	0	22
Physical health outcomes	Physical injuries	0	0	1
	Total short-term costs	**636**	**200**	**835**
	Total CYP costs	**2,814**	**3,513**	**6,327**

Source: Deloitte Access Economics, 2025.

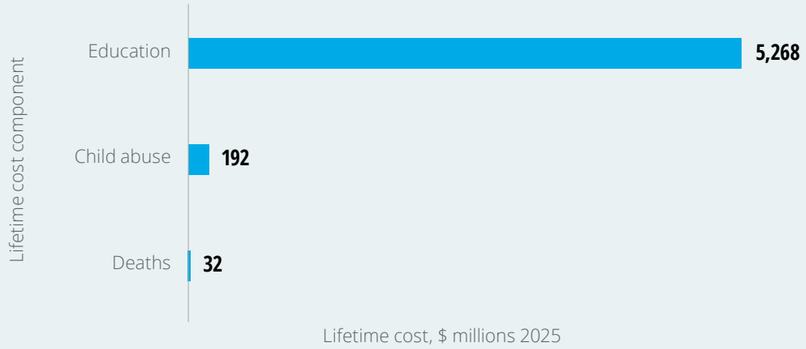
Table 3.2: Cost per disaster impacted CYP (based on an average year), $ per CYP, 2025

Domain	Cost	Cost incidence		Total
		Government	Societal	
	Lifetime costs			
Education and employment outcomes	Reduced year 12 completion rates	2,150	3,497	5,646
Social and disruptive outcomes	Child abuse	185	21	206
Physical health outcomes	Deaths	0	34	34
	Lifetime costs per impacted CYP	2,335	3,552	5,886
	Short-term costs			
Mental health outcomes	Mental health	596	113	709
Social and disruptive outcomes	Disruption to employment	0	100	100
Social and disruptive outcomes	Displacements	61	0	61
Physical health outcomes	Preterm births	24	0	24
Physical health outcomes	Physical injuries	0	0	1
	Short-term costs per impacted CYP	681	214	895
	Total costs per impacted CYP	**3,016**	**3,765**	**6,782**

Source: Deloitte Access Economics, 2025.

3.2.2 | Lifetime costs

Chart 3.1: Estimated annual average lifetime current average costs of disasters for CYP



Source: Deloitte Access Economics, 2025

3.2.2.1 | Reduced rates of year 12 completion

The analysis shows that:

- Disasters are estimated to reduce the likelihood of Year 12 completion by 4.2%, resulting in a total lifetime income loss of approximately $5.3 billion for all children affected by disasters in a typical year.

Education related costs were estimated using a similar methodology as outlined in the previous report, where it was econometrically estimated that disasters reduce the likelihood of Year 12 completion by 4.2% among affected CYP (adjusting for current completion rates and controlling for a range of social and demographic factors). This proportion was applied to the estimated population of disaster affected senior secondary students to estimate the average number who would not complete year 12 due to being impacted by a disaster. For this report, updated estimates of the lifetime cost of not completing year 12 were based on detailed research undertaken by Lamb and Huo (2015),[44] who estimated the lifetime cost of not completing year 12 to be $1.08 million per individual – when only cost components relevant to this report are included and converted to 2025 dollars. This translates to a total estimated cost of $5.3 billion per year in costs to the individual, government, and society. This lifetime cost estimate includes lost earnings for the individual as well as the increased burden on the tax and welfare system for the government. Lifetime costs of crime and health effects were also estimated by Lamb and Huo but excluded from the total in this analysis to avoid overlap with other cost items in our analysis. In line with the approach used in other studies of the returns to education in Australia (Leigh 2024),[45] a 10% ability bias adjustment factor was also applied to the per person cost to make the estimate more conservative and robust.

Children and young people affected by disasters are more likely to experience educational disruption, including interrupted school attendance, damage to educational infrastructure, and early school withdrawal driven by financial pressures within the household. These disruptions contribute to lower rates of Year 12 completion and, consequently, reduced earning potential over the life course compared with their peers who have not experienced disasters. Given these risks, it is essential to strengthen both disaster preparedness and post-disaster support for schools, students, and their families. Government-led preparedness measures, such as integrating disaster risk management into school planning, investing in resilient infrastructure, and establishing protocols for rapid response, can help minimise learning disruption. In addition, schools need support to implement trauma-informed teaching, maintain continuity of education through remote or temporary learning arrangements, and provide targeted academic and wellbeing support for students in disaster-affected areas. Together, these efforts can help ensure that CYP have equitable opportunities to complete their schooling despite the challenges posed by disasters.

3.2.2.3 | Child abuse

The analysis shows that:

- The lifetime cost of child abuse associated with disasters is estimated at $192 million across all children who experience disasters in a typical year, based on a population-attributable fraction of 0.0124.

The lifetime cost of CYP who have experienced a disaster that is associated with child abuse is estimated to be $192 million in a typical year. We have used the population-attributable fraction (PAF) approach, with a PAF of 0.0124 derived from Curtis et al.[46] As detailed in chapter 2 of this report, this was applied to the national cost of child abuse in Australia reported by McCarthy et al,[47] with necessary adjustments to reflect current values. While these sources provide the most relevant data available, it should be acknowledged that Curtis et al.'s findings are dated, and there remains a lack of robust, up-to-date evidence on the impact of disasters on child abuse risk in Australia or other developed countries that was readily available.

The long-term consequences of child abuse are significant, spanning mental and physical health challenges, poorer educational outcomes, and increased interaction with the justice system, all of which carry substantial costs for individuals and society. Given the increased risks during periods of household disruption, such as social isolation, changes in caregiving arrangements, economic hardship, and inadequate living conditions, ongoing monitoring and social support for vulnerable families and children is essential.

3.2.2.4 | Deaths

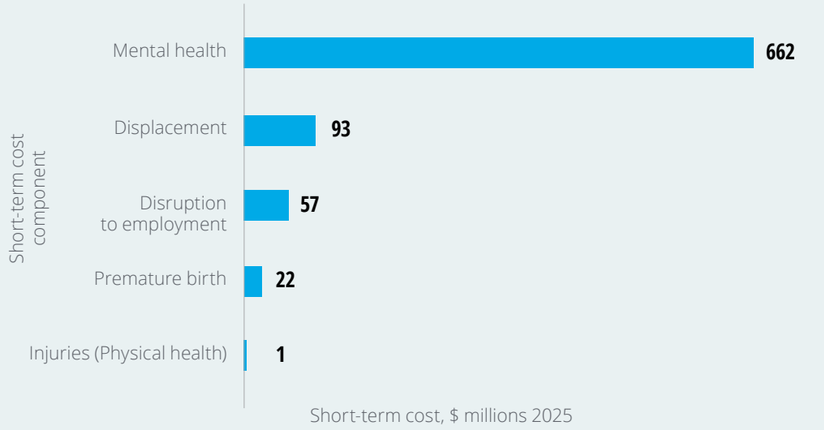
The analysis shows that:

- On average, 1.3 deaths in the 0–14 age group and 3.1 deaths in the 15–24 age group are associated with disasters each year - based on a 5 year average between 2016 and 2021.
- This equates to an estimated Value of Statistical Life Year (VSLY) loss of approximately $6.9 million in a typical year.

Although disaster-related deaths among CYP are relatively rare in Australia, the associated economic cost is substantial. Based on mortality data from the Australian Institute of Health and Welfare (AIHW),[48] it is estimated that in a typical year, an average of 1.3 deaths occur in the 0–14 age group, with an associated value of statistical life years (VSLY) loss of $7.3 million. For the 15–24 age group, an average of 3.1 deaths is estimated annually, with a VSLY loss of $6.9 million.[49] The VSLY is an established economic measure reflecting society's willingness to pay to reduce mortality risks and is used to estimate the value of life years lost due to early death. For this analysis, we assumed a loss of 76.1 years for the 0–14 age group and 63.8 years for the 15–24 age group, based on an Australian life expectancy of 83.2 years at birth.

3.2.3 | Short-term costs

Chart 3.2: Estimated annual average short-term costs of disasters for CYP in current and previous years



Source: Deloitte Access Economics, 2025

3.2.3.2 | Mental health

The analysis shows that:

- The estimated short-term disaster associated cost of mental health conditions in CYP is approximately $662 million in a typical year in Australia.

The estimated cost of mental health conditions in CYP following disasters is approximately $662 million per year in Australia. This estimate assumes that 19% of CYP are likely to develop a mental health condition following a disaster - with symptoms persisting for two years - and aligns with findings from international systematic reviews and meta-analysis.[50] Consistent with the Deloitte-UNICEF Australia report, we further assume that 34.9% of affected CYP will seek professional support, thereby incurring health system costs.[51] The proportion of the out-of-pocket costs to related total costs is estimated to be 16%, based on the AIHW data, and the remaining costs are assumed to be covered by Medicare. The high prevalence and associated costs underscore the critical importance of timely and adequate mental health support for CYP and their families in the aftermath of disasters.

It is important to note that this estimate is likely to be conservative for two key reasons. First, we have only included short-term costs, due to both limitations in parameter availability and the need to avoid double-counting with other domains. However, mental health conditions developed in childhood often persist into adulthood, implying that the true lifetime costs are likely to be significantly higher. For example, Copeland et al. reported that young people who experience depressive disorders are more likely to develop anxiety and substance use disorders in adulthood, and are also at increased risk of poorer health, criminal involvement, and impaired social functioning.[52]

Second, although a two-year impact duration was used, some studies suggest that mental health consequences can last six to seven years or longer.[53,54] However, those studies did not provide quantitative data or monetisable outcomes that could be directly applied to the model.

Another key challenge in this analysis is the monetisation of the lifetime costs associated with mental health issues. Unlike physical health conditions, which are typically well defined with standardised treatment pathways, mental health conditions vary widely in terms of onset age, duration, and response to treatment. Furthermore, the effectiveness of mental health interventions differs across social and healthcare system contexts, making it difficult to establish consistent and reliable cost estimates using international literature. Due to the lack of detailed longitudinal data capturing both the duration and severity of disaster-related mental health impacts in CYP, and reliable cost data of long-term mental health issues, we have not modelled this extended timeframe, highlighting a key area for future research and service planning.

3.2.3.3 | Preterm births

The analysis shows that:

- On average, disasters cause 130 additional preterm births per year in Australia.
- Preterm births caused by disasters result an average annual cost estimate of $22 million per year for the government.

Preterm births are costed in the model based on an Australian cost estimate for government of providing neonatal care and special education provisions for children who are born preterm from (Newnham et al., 2022).[55] Costs per preterm birth were taken as a weighted average of costs between moderately and extremely preterm births, these preterm births were estimated at $89,709 and $236,036 respectively. The disaster related risk and time frames for preterm births were based on the findings from Sun et al,[56] where the increased preterm births were in the range of 20-33 weeks.

3.2.3.4 | Physical injuries

The analysis shows that:

- In a typical year, an estimated 6,518 injuries among children and young people are attributable to disasters.
- These injuries result in an estimated average annual cost of $1 million.

Due to data limitations, the physical health cost estimates in this analysis are restricted to injury-related impacts. Based on analysis of LSAC data, it is estimated that an average of 6,518 injuries per year among children and young people are associated with disasters. Cost estimates are drawn from the Independent Health and Aged Care Pricing Authority (IHACPA) for general practitioner (GP) visits and the AIHW for injury-related hospitalisations. Using these sources, the average cost per injury is calculated at $124.32, resulting in a total estimated average annual injury-related cost of approximately $1 million. According to AIHW data, the average out-of-pocket cost per GP visit in 2022 was $46. After adjusting for inflation, it is estimated that approximately 59% of these healthcare costs are covered by Medicare, with the remaining costs borne by individuals and broader society.

The LSAC dataset captures only a limited subset of physical health effects, with the analysis focused solely on injuries. In practice, CYP may experience a broader range of physical health consequences following disasters. For instance, exposure to bushfire smoke can result in respiratory issues, while flood-related environmental hazards, such as dust and mould, can exacerbate or trigger chronic conditions, such as asthma. These health impacts may be long-term and persist well beyond the initial disaster period, potentially affecting the individual's health and wellbeing throughout their life.

Despite the recognised risks, there is currently insufficient data available to robustly quantify and monetise these broader health effects. As a result, the injury-related cost estimates in this report likely understate the true economic burden of physical health impacts following disasters.

3.2.3.5 | Displacements

The analysis shows that:

- It was estimated that in a typical year, 6,130 children are unable to return to their homes after a disaster and will need to live in temporary housing, and this costs approximately $57 million per year in rental assistance/emergency payments.

The cost of government-funded temporary housing and emergency accommodation for children and young people displaced by disasters is estimated at approximately $57 million per year. This estimate is based on displacement figures from the Internal Displacement Monitoring Centre (IDMC),[57] which suggest that an average of 6,130 CYP are unable to return to their homes in a typical year due to disaster-related events. Using cost estimates from the IDMC report into Australian Bushfires: *From Temporary Evacuation to Longer-Term Displacement (2019–2020),*[58] and adjusting for inflation, the average cost of temporary housing per displaced child or young person was estimated at $9,782 in a typical year.

While displacement can have broader and longer-term impacts, such as disruption to living conditions, loss of social networks, reduced access to education and social services, and adverse effects on mental and physical health, these effects are addressed elsewhere in our modelling. To avoid double counting, this report conservatively includes only the direct government costs associated with temporary housing provision.

CASE STUDY

2023 floods – Displacement and disruption for children in Fitzroy Crossing[59]

In January 2023, the worst flood in a century hit Fitzroy Crossing, displacing more than 1,500 people, including many children, and destroying the only bridge across the Fitzroy River. For Aboriginal families, the event compounded a long history of displacement and trauma. Families were forced into temporary or overcrowded accommodation, with one community member describing *"19 people now living in a three-bedroom house".*

Children experienced disrupted routines, emotional distress, and developmental setbacks. Separation anxiety, sleep disturbances and regression in independence were common – *"We were trying to get her to sleep in her own room before the floods… now she always wants to sleep in my room"*. Educators reported increased disruptive behaviour and disengagement from learning, linked to overcrowding and instability.

The loss of pets, damage to Country, and separation from kin further impacted social and emotional wellbeing. One Aboriginal community member reflected – *"The floods were a traumatic experience for some of our children and families… You don't have toys anymore and you have lost your things and have to live with different people now".*

These experiences highlight that displacement from disasters can have deep, unquantified impacts on children's wellbeing, education, and development, especially in remote Aboriginal communities where safe housing and access to services are already limited.

3.2.3.6 | Disruption to employment

The analysis shows that:

- On average, approximately 30% of CYP may be absent from work following a disaster.
- The total income loss associated with this disruption estimated at $93 million in a typical year.

The cost of employment disruption among young people following a disaster is estimated to be approximately $93 million in a typical year. Research from the Office of the Advocate for Children and Young People indicates that 45–50% of CYP may miss school or work in the aftermath of a disaster.[60] Given that 63.3% of CYP aged 15–24 are engaged in paid employment, it is estimated that, on average, 30% of this cohort may be absent from work following a disaster event. Due to limited data availability on the duration of such disruptions, a conservative assumption of seven days of work missed per affected individual is used in this model. Based on Australian Bureau of Statistics (ABS) data, a daily earnings rate of $118.74 is applied to estimate the resulting short-term income loss.

Previous research from Hickson and Marshan (2022)[61] has suggested that, surprisingly, overall medium-term employment rates may not decline significantly after a disaster in part due to increased demand for labour in recovery and reconstruction activities. However, gender-specific impacts have been observed in the same study, with some studies reporting a decline in female employment and a simultaneous increase in male employment following disaster events.

3.2.4 | Cost incidence

The analysis in this report estimates that the total average annual economic cost of disasters for CYP is approximately $6.3 billion. The largest component is the lifetime income loss associated with reduced educational attainment, estimated at $5.3 billion, followed by the cost of child abuse at $192 million, and deaths at $32 million. Among outcomes for lifetime costs, mental health impacts account for the most significant short-term cost at $662 million, followed by costs related to employment disruption, displacement, preterm births and injuries.

The burden of these costs is distributed differently across society. The largest cost – lifetime loss due to lower Year 12 completion rates – is split 38% to 62% between government and individuals, reflecting that the tax, welfare and marginal tax burden components of the cost are borne by the government while the larger lifetime income component is borne by the individual. Many of the other costs, such as those associated with child abuse, mental health, and displacement, also fall in part on public systems, including the healthcare, social support, and justice systems. Due to data limitations, the cost of employment disruptions and deaths were estimated only for individuals while the cost of displacements and preterm births were estimated only for the government.

Table 3.3: Cost incidence of total costs on CYP (based on an average year), $ millions, 2025

Domain	Cost	Cost incidence		Total
		Government	Societal	
	Lifetime costs			
Education and employment outcomes	Reduced year 12 completion rates	2,005	3,262	5,268
Social and disruptive outcomes	Child abuse	173	19	192
Physical health outcomes	Deaths	0	32	32
	Total lifetime costs	**2,178**	**3,313**	**5,491**
	Short-term costs			
Mental health outcomes	Mental health	556	106	662
Social and disruptive outcomes	Disruption to employment (loss of income)	0	93	93
Social and disruptive outcomes	Displacements	57	0	57
Physical health outcomes	Preterm births	22	0	22
Physical health outcomes	Injuries	0	0	1
	Total short-term costs	**636**	**200**	**835**
	Total CYP costs	**2,814**	**3,513**	**6,327**

Source: Deloitte Access Economics, 2025.

As detailed in earlier sections, data constraints limited our ability to estimate lifetime impacts for many outcomes. For example, while mental health impacts may persist well beyond the immediate aftermath of a disaster, the modelling only includes a two-year cost estimate due to insufficient data on the long-term prevalence and severity. Similarly, while there is strong evidence that parental financial hardship following disasters can affect children's short and long-term wellbeing, we were unable to isolate this effect from other monetised domains, and therefore excluded it to avoid the risk of double counting costs. In the domain of physical health, we were only able to monetise injury-related costs, despite evidence suggesting that environmental exposures, such as bushfire smoke and poor housing conditions, can have lasting health effects on children. Due to the lack of robust and quantifiable data, these broader health impacts were not included in our model.

While research into the effects of disasters has expanded in recent years, particularly in response to the increasing frequency and intensity of climate-related events, significant gaps remain in understanding the full impact on children and young people. Although they may not face direct losses, such as property damage, the indirect and long-term consequences can profoundly affect their development, education, and health outcomes. Recognising and accounting for these impacts is essential for informing evidence-based policy responses and targeted support initiatives.

3.3 | Projected economic and social costs

3.3.1 Average annual cost increases

Under the mid-level emissions scenario, the average annual costs of disasters to CYP are projected to rise by 65% from $6.3 billion in 2025 to $10.4 billion in 2060. Comparing the 2060 outcomes by scenario, the mid-level emissions scenario is projected to lead to an average annual cost of approximately $1.9 billion (25%) higher than the low emissions scenario ($8.3 billion). Under the high emissions scenario, costs could be $12.1 billion annually which is 45% higher than the low scenario and 91% higher than estimated current annual average costs in 2025 (Table 3.4). Therefore, mitigation to achieve the low emissions scenario and avoid the high-emissions pathway could help reduce the cost impact by up to $3.8 billion annually by 2060.

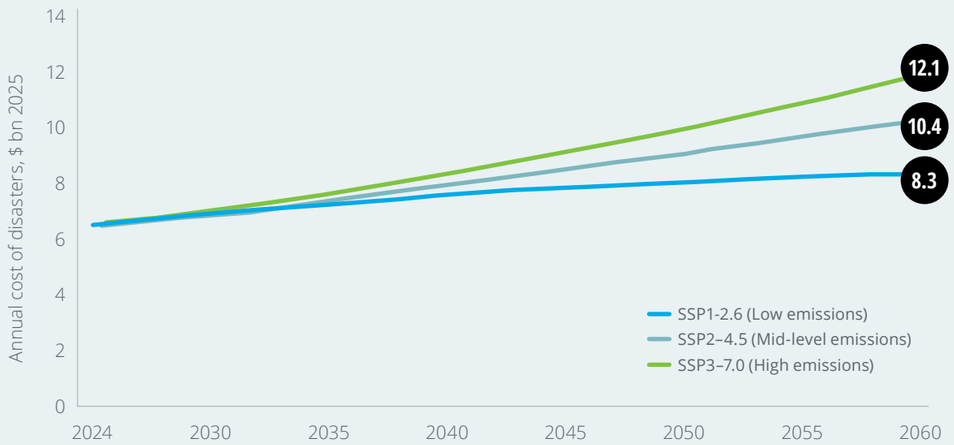
Table 3.4: Average annual costs of disasters for CYP in 2060, $ billions 2025

	High emissions (SSP3-7.0)	Mid-level emissions (SSP2-45)	Low emissions (SSP1-2.6)
Average surface temperature rise above 1850-1950 levels by 2060	+2.4 degrees	+2.2. degrees	+1.8 degrees
Average annual CYP costs in 2060	$12.1	$10.4	$8.3
Increase in annual costs between 2025 and 2060 (%)	91%	65%	32%
Variation from low scenario ($)	$3.8	$2.1	-
Variation from low scenario (%)	45%	25%	-

Source: Deloitte Access Economics, 2025.

The time projected time path of average annual costs to CYP for the low mid and high-level emissions scenarios is shown in Chart 3.3.

Chart 3.3: Estimated time path of total costs to children and young people by emissions scenario, $ billions 2025



Source: Deloitte Access Economics, 2025.

3.3.2 Cumulative present value costs

In addition to the projected average annual costs, it is also important to consider the cumulative present value (PV) of disaster impacts on children and young people. This measure reflects the total economic burden expected to accrue over time, accounting for the fact that future costs are typically valued less than immediate costs. The PV estimate is calculated by summing the projected average annual costs incurred each year from 2025 to 2060 and applying a discount rate to reflect the time value of money.

Presenting the cost in cumulative terms highlights the long-term socio-economic consequences of current policy settings. It provides a clearer sense of the scale of impact across generations – reinforcing the case for more ambitious and sustained investment in disaster preparedness, response and recovery efforts that prioritise the needs of children and young people.

Applying the Australian Government preferred 7% discount rate for valuing public investments, the cumulative PV of costs of disasters to CYP from 2025 to 2060 is projected to be $105.7 billion under a mid-level emissions scenario. This is 5% higher than the cumulative PV of costs are projected to be under a low emissions scenario. Under a high emissions scenario, the cumulative PV of costs from over the same period are projected to 9% higher than the low emissions scenario (Table 3.5).

Applying a discount rate intentionally values costs and benefits that are incurred further in the future less compared to costs and benefits are incurred closer to the present day. This is standard practice for most investment analysis where the time value of money means that a dollar today is worth more than a dollar in the future due to the interest earning potential of money over time. However, when weighing up costs that are incurred by current and future generations, an intergenerationally equitable analytical approach can be used. This approach values costs to future generations equally with costs to current generations by applying a zero-discount rate.

Applying the intergenerationally equitable zero discount rate (undiscounted), the costs from 2025 to 2060 are projected to be $300.5 billion. This is 10% higher than the cumulative PV of costs are projected to be under a low emissions scenario. Under a high emissions scenario, the cumulative PV of costs over the same period are projected to 18% higher than the low emissions scenario (Table 3.5).

Table 3.4: Cumulative PV costs of disasters for CYP from 2025 to 2060, $ billions 2025

	High emissions	Mid-level emissions	Low emissions
Cumulative PV costs from 2025 to 2060, 7% discount rate	**$109.6**	**$105.7**	**$100.3**
PV variation from low scenario ($)	$9.3	$5.4	-
PV variation from low scenario (%)	9%	5%	-
Total costs from 2025 to 2060, undiscounted	**$321.0**	**$300.5**	**$273.2**
Total variation from low scenario ($)	$47.9	$27.3	-
Total variation from low scenario (%)	18%	10%	-

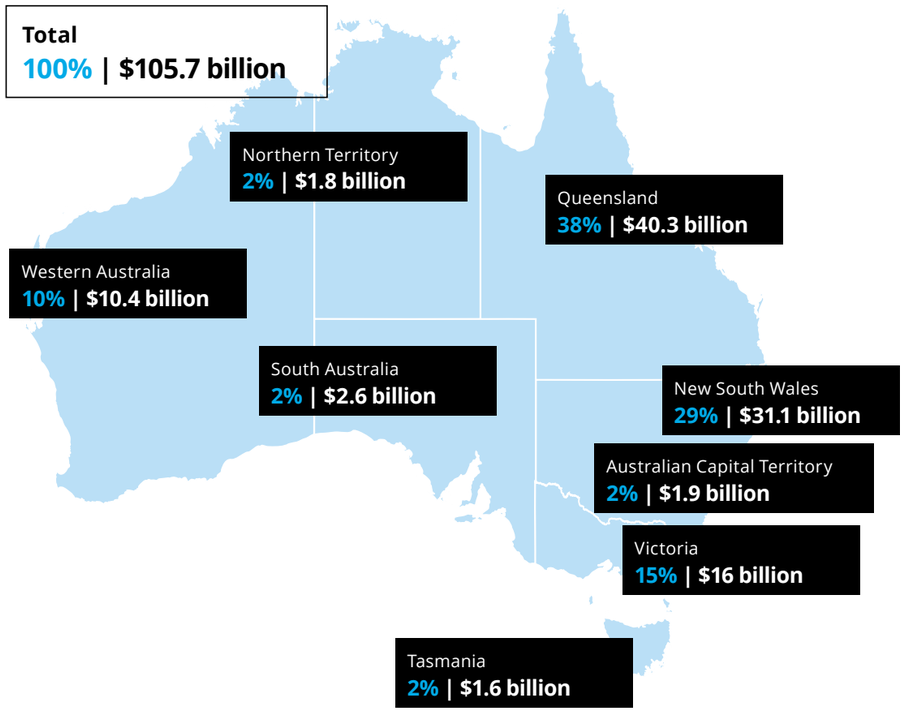
Source: Deloitte Access Economics, 2025.

3.4 | State breakdown of future costs

An approximate state breakdown of costs was made using publicly available spatial distributions that were estimated by Deloitte in the ABR report 2021 (Figure 3.1). Due to higher populations and prevalence of disasters the states of QLD and NSW take have the largest shares of the costs ($40.3 billion and $31.1 billion respectively), with Victoria incurring the third highest cost at $16 billion.

The breakdown is only approximate because while the ratios used from the previous ABR analysis are based on drivers which are mostly applicable to the current work (population and disaster prevalence), they also take into consideration factors that are less directly relevant to CYP, such as values of housing stock.

Figure 3.1 State breakdown of total 2025 to 2060 costs under a mid-level emission scenario in 2060 by state



Note: The total cost from this report was allocated by state using proportions from previous analysis undertaken for the update to the economic costs of natural disasters in Australia Australian Business Roundtable for Disaster Resilience & Safer Communities 2021.
Source: Deloitte Access Economics, 2025.

04
Implications

This report presents a stark picture of how disasters impact CYP in Australia - affecting mental health, education, housing stability, and lifetime economic outcomes. It also highlights the substantial and rising financial burden, particularly in a warming climate, with projections under different emissions pathways and a state-level cost distribution.

Children are already highly exposed – and future costs will surge with increasing intensity and frequency of disasters.

Currently, an estimated 932,886 children and young people across Australia are exposed to a disaster each year. This exposure currently leads to an estimated $6.3 billion in average annual economic costs through increased mental health issues, education disruption, and homelessness risk, which is equivalent to $6,782 per disaster affected CYP each year.

Without urgent climate action, disaster-related costs to children will escalate sharply, reinforcing the need for child-centred climate policies.

Despite their vulnerability, children and young people are often overlooked in disaster resilience and climate adaptation frameworks. Integrating child-specific place-based approaches to planning - particularly coordinated at the state level - will be vital to protect this generation from worsening risks. Disaster-related harm to CYP will become more expensive over time without climate action, with costs under high emissions nearly doubling by 2060Under a high emissions scenario, the average annual cost is projected to rise by 91% – from $6.3 billion in 2025 to $12.1 billion by 2060 (in real 2025 dollars). By contrast, costs are estimated to rise to $8.3 billion under a low emissions scenario. These rising costs reflect the cumulative toll of more frequent and severe disasters without urgent climate mitigation and adaptation. Without an active and purposeful focus on CYP, Australia's future prosperity is at risk. Mitigation can help shift Australia's trajectory to the low emissions pathway, thereby reducing the cost impact by up to $3.8 billion annually.

The economic burden of disasters on CYP is substantial and driven by education loss, which over time, can erode the productivity of Australia's future workforce.

In a typical year, the lifetime cost to CYP is approximately $6.3 billion, with disrupted education alone accounting for about $5.3 billion through reduced Year 12 completion and consequent lifetime income loss. This highlights the critical importance of early and sustained interventions that support educational continuity, such as climate smart physical infrastructure, rapid school recovery, catch-up programs, and financial assistance for families to mitigate long-term socioeconomic disadvantage. Failure to account for the risk to school-aged children can lead to lower Year 12 completion and lead to a less productive workforce of the future.

Short-term impacts – especially on mental health, displacement, and employment – impose significant immediate costs and could create long-lasting harm to Australia's productivity.

Mental health treatment costs reach approximately $662 million within two years post-disaster, alongside $93 million in lost youth wages and $57 million annually for temporary housing of displaced children. These figures likely underestimate the true burden, as longer-term and multiplier effects are excluded. Early, ongoing support for mental health and housing stability is essential to prevent these disruptions from entrenching intergenerational disadvantage.

State-level differences in disaster risk necessitate targeted place-based disaster strategies tailored to the needs of children and young people.

Queensland, New South Wales, and Victoria, which account for most disaster costs due to higher populations and hazard exposure, must take the lead in developing and funding child-informed disaster preparedness, response, and recovery efforts. This place-based approach will better address the unique risks and vulnerabilities faced by CYP in these regions.

The gaps in data to inform disaster outcome and cost estimates suggest the full scope of disaster impacts on CYP is under-recognised, highlighting the need for more research and monitoring.

Existing data does not fully capture non-injury health effects, longer-term mental health trajectories, or the broader social and economic ripple effects, such as reduced tax revenue and social network losses. Investing in longitudinal studies and improved data collection will enable more comprehensive understanding and more effective, evidence-based policies to safeguard children's wellbeing in disaster contexts. In line with the first priority in the mid-term review of The Sendai Framework for Disaster Risk Reduction (2022), it is important that data gaps, particularly for CYP and other overlooked vulnerable cohorts in Australia, are resolved by better coordination between relevant agencies at the Commonwealth (NEMA) and State (Reconstruction Authorities) levels. Following the findings in this report, data on displacement, school completion, and mental and physical health should be prioritised with the Australia Bureau of Statistics leading the way with age-disaggregated data collection.

A more coordinated approach, such as a national children's disaster framework, would help ensure that the unique risks facing CYP are consistently considered and addressed across jurisdictions,

improving the effectiveness of prevention, preparedness, and recovery efforts over time. The scale and persistence of disaster-related harm to children and young people revealed in this report point to a systemic policy gap in how their needs are addressed. Despite the clear and growing economic burden - driven by disrupted education, mental health impacts, and housing instability - responses remain fragmented. Children-specific targeted disaster payments that help alleviate the burden on families can help reduce risks to the future generation.

The analysis in this report highlights the value of pursuing lower-emissions pathways to help limit future costs and reduce harm and encourages governments and planners to incorporate child-specific place-based considerations more consistently into disaster risk assessments, climate adaptation planning, and recovery frameworks.

A national disaster framework for children and young people would enable all levels of Government to provide greater emphasis on areas that children need most, whilst also enabling child-sensitive mitigation and adaptation policies and reducing costs over time.

Appendix A
Estimating cost components

A.1 | Mental health historical outcome and cost calculations

Mental health costs were estimated using a similar methodology to that employed in our previous report, with updated parameters incorporated into the analysis. Specifically, we used estimates from the Mission Australia report, which suggest that 19% of CYP experience mental health issues following a disaster. This figure aligns with findings from earlier research, including a systematic review and meta-analysis conducted by Newnham et al . Newnham et al.[62] also demonstrated the duration of disaster-related mental health impacts on CYP could be observable for at least 24 months. Accordingly, we assumed a two-year time horizon in our model for the mental health impacts associated with disasters. Consistent with our previous approach, we estimated that 34.9% of CYP experiencing mental health issues would seek professional help,[63] and applied a health system cost of $10,694 per person per year, adjusted to 2025 dollars.

Figure A.1: Mental health outcome and cost calculation

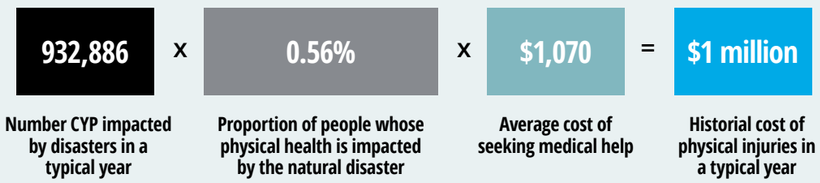
Source: Deloitte Access Economics, 2025

A.2 | Physical health historical outcome and cost calculations

A.2.1 Physical injuries

The estimation of physical injury costs followed a methodology similar to that used for mental health. Based on our analysis of LSAC data, it was estimated that 0.56% of children and young people experienced physical health impacts following a disaster. To estimate the associated medical costs, we drew on data from IHACPA, focusing on costs related to injury-induced hospitalisations and GP consultations. A weighted average of these costs was calculated, using the relative proportions of hospital admissions and GP visits from the same dataset to reflect their prevalence in the affected population.

Figure A.2 Physical injuries outcome and cost calculation



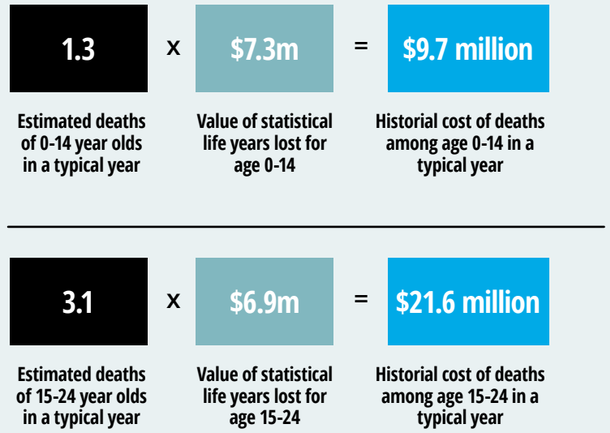
Source: Deloitte Access Economics, 2025

A.2.2 Deaths

To estimate the annual cost of disaster-related deaths for CYP, data from the AIHW National Mortality Database was used.[64] This dataset includes a time series of deaths attributed to extreme weather events across all age groups. To isolate deaths among CYP, the age distribution of extreme weather-related deaths was drawn from the most recent years available (2018–19 to 2020–21), during which AIHW reported age-specific data. The proportion of deaths accounted for by CYP during this period was applied to the total number of extreme weather-related deaths in each year of the time series to estimate CYP deaths. A five-year average (2016–17 to 2020–21) was then calculated to derive an estimate of the typical annual number of disaster-related CYP deaths.

To calculate the economic cost of these deaths, the Value of a Statistical Life Year (VSLY) was applied. The VSLY was multiplied by the remaining years of life expectancy, estimated separately for two age groups: 0–14 and 15–24. These calculations reflect the different expected lifespans remaining for younger and older cohorts within the CYP population (based on an Australian life expectancy of 83.2 years at birth) ensuring a more accurate estimate of the lifetime economic loss associated with each death.

Figure A.3: Deaths outcome and cost calculations



Source: Deloitte Access Economics, 2025

A.2.3 Preterm births

The total cost of disaster-caused preterm births is a compilation of data derived from both the increased number of preterm births caused by disruption factors of disasters, or 0.36% additional preterm births (Sun et al., 2020).[65] Using the number of births, or number of 0-year-olds affected by disasters, there is found to be 132 additional preterm births each year due to disasters.

These 132 additional births are then multiplied by the average between moderately ($89,709) and extremely preterm ($236,036) costs, $169,610, found by Newnham et al.[66] This results in a total cost of preterm births to the government in a typical year to be $22,461,957.

Figure A.4: Preterm birth outcome and cost calculations

Source: Deloitte Access Economics, 2025

A.3 | Social and disruptive historical outcome and cost calculations

A.3.1 Child abuse

The estimated cost of disaster-related child abuse was derived using the total societal cost figures from McCarthy et al.,[67] adjusted by a population-attributable fraction (PAF) of 0.0124 based on Curtis et al.[68] This PAF represents the estimated share of child abuse cases attributable to disasters. To avoid potential double counting with other cost categories in this report, only selected long-term cost components were included: long-term health system costs, special education costs, total criminal justice system costs, child protection system costs, and associated deadweight losses. Short-term health costs, housing and homelessness services, productivity losses, and deaths were excluded. The loss of quality of life was also excluded to maintain consistency with the treatment of other domains in this analysis.

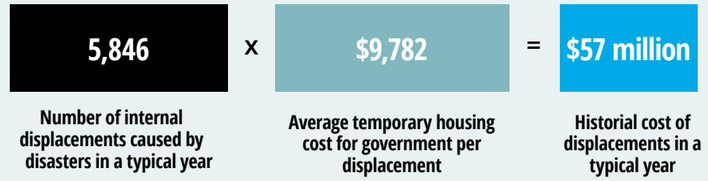
Figure A.5: Child abuse outcome and cost calculation

Source: Deloitte Access Economics, 2025

A.3.2 Displacements

Data on disaster-related displacements in Australia from 2008 to 2023 was sourced from the Internal Displacement Monitoring Centre.[69] A five-year average was calculated from the most recent years in the dataset, resulting in an average of 5,846 displacements per year. This figure was multiplied by the estimated government cost of temporary housing per displacement ($9,782 in 2025 dollars) based on figures reported in the Centre's analysis of the 2019–20 Australian bushfires. This yielded an estimated annual cost of $57 million for disaster-related displacements.

Figure A.6 Displacements outcome and cost calculation



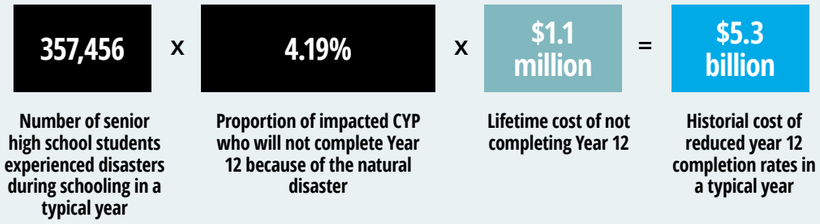
Source: Deloitte Access Economics, 2025

A.4 | Education and employment historical outcome and cost calculations

A.4.1 Reduced year 12 completion rate

This report estimates the lifetime cost of reduced Year 12 completion by calculating the number of children who do not complete Year 12 due to disaster exposure and applying lifetime cost estimates to this affected population. It is assumed that children remain in school until Year 11, and are only at risk of dropping out in Years 11 and 12. Therefore, the population at risk each year consists of students in Years 11 and 12. The number of students who drop out is estimated as the product of three factors: the base population at risk (Year 11 and 12 students), the percentage of students who experienced a disaster during schooling (calculated from LSAC data for those aged 17 and 18), and the additional dropout rate due to disaster exposure, estimated at 4.2% based on regression analysis. The lifetime cost of leaving school early is based on estimates from Lamb and Huo (2017)[70] but removing costs of crime and health to avoid double counting, with a 10% ability bias adjustment applied following Leigh (2024).[71] These costs are then discounted over a 40-year working life and applied to the estimated number of children and young people affected by disasters each year.

Figure A.7 Reduced year 12 completion rate outcome and cost calculation



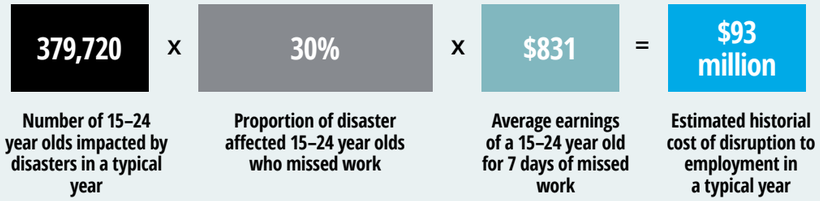
Source: Deloitte Access Economics, 2025

A.4.2 Disruption to employment

The estimated cost of disaster-related employment disruption for CYP was based on survey data from the Office of the Advocate for Children and Young People, which reported the proportion of young people who missed work or school following a disaster.[72] This figure was combined with ABS data on the employment rate of Australians aged 15 to 24,[73] resulting in an estimated 30% of this age group missing work due to a disaster.

In the absence of data on the average number of workdays missed, a conservative assumption of seven missed days was applied. This proportion was then multiplied by the average daily earnings of 15–24 year olds, sourced from ABS Characteristics of Employment data.[74] The resulting minimum historical cost of disaster-related employment disruption was estimated at $93 million per year.

Figure A.8 Disruption to employment outcome and cost calculation



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