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Safer, healthier, wealthier:
The economic value of reducing work-related injuries and illnesses

Safe Work Australia

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Deloitte
Access Economics

Foreword

Work-related injuries and illnesses can occur in any industry, occupation and state or territory, and the impacts are felt by us all.

When someone is injured or develops an illness due to their work, it poses a significant burden on them, their employer and the community more broadly through additional healthcare costs, reduced work participation and loss of productivity.

While progress has been made to reduce the number and severity of work-related injuries and illnesses, Australians still get injured and sick at work. Safe Work Australia data shows that over 120,000 workers are compensated for a serious work-related injury or illness each year.

Safe Work Australia's vision of healthier and safer workplaces inspires us to do more to reduce the frequency and impact of these injuries and illnesses.

To drive change in the way we think about work health and safety, we engaged Deloitte Access Economics to explore the cost of work-related injury and illness in Australia and estimate how much value could be created within the Australian economy by removing work-related injuries and illnesses.

This report provides an innovative way of quantifying the direct effects that work health and safety have on our economy.

Using a ground-breaking modelling approach, the first of its kind, *Safer, healthier, wealthier: The economic value of reducing work-related injuries and illnesses* shows that Australia's economy would be $28.6 billion larger each year and 185,500 more jobs would be created in the absence of work-related injuries and illnesses. In addition, Australian wages would increase by an average of 1.3% each year.

The significance of these impacts cannot be overstated.

To put it in perspective, the potential economic gain is nearly equivalent to the annual economic contribution of the agriculture industry in Australia.

The findings clearly demonstrate that work health and safety is critical to our prosperity, driving economic and productivity improvements. Workplaces that are safe and free of injury and illness provide benefits for all Australians, including more jobs and better pay.

I consider this research provides a strong platform for Safe Work Australia and other policy makers to change the conversation from 'how' to do health and safety, to 'why' we do health and safety.

I wish to thank Deloitte Access Economics, Safe Work Australia Members and the staff in my Agency who have contributed to this important work. I encourage everyone to consider how keeping people safe and healthy at work will benefit you and your community.

Michelle Baxter PSM
CEO, Safe Work Australia

safe work australia

Safer, healthier, wealthier:
The economic value of reducing work-related injuries and illnesses

Between 2008 and 2018, there were:

623,663
work-related injuries or illnesses on average each year

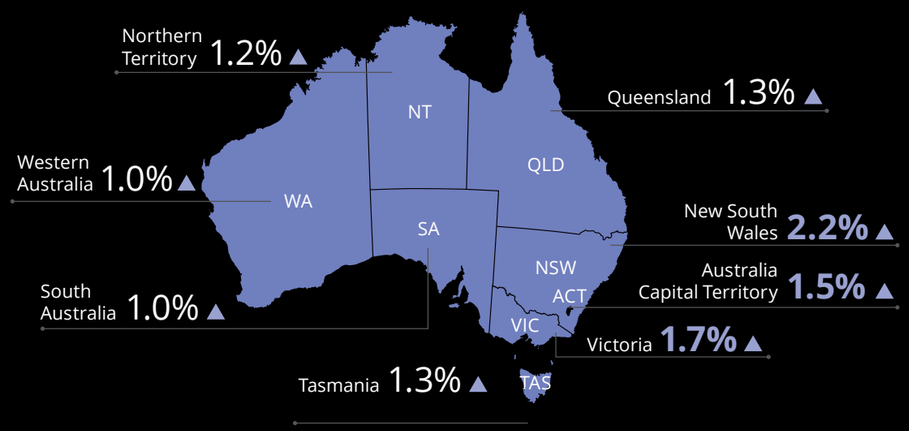
If these incidents didn't occur, then Australia would have avoided:

- A productivity loss of **2.2 million FTEs**
- Health expenditure costs of **$37.6 billion**
- Other employer overheads of **$49.5 billion**

By avoiding productivity losses and costs from work-related injuries or illnesses, Australia's economy would have been:

$28.6 bn larger each year = **1.6%** ▲ higher GDP each year

Annual economic impact (%) from reducing work-related injuries or illnesses by state or territory, 2008-18



Fewer work-related injuries or illnesses would accelerate our transition to a knowledge based economy.

185,500
additional FTE jobs would have been created across the Australian economy on average each year

130,400 (70%)
FTEs of these roles are concentrated across skilled roles.

Officials and managers
52,200

Clerks
45,300

Technicians
32,900

1.3%
rise in wages on average each year

Workers across all occupations and skill levels benefit

This report used the computable general equilibrium (CGE) model to estimate the economic impact of work-related injuries and illnesses in Australia between 2008 to 2018

GDP = Gross Domestic Product, FTE = full time equivalent

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Executive summary

Purpose of this report

Work is central to economic life, but it is not a risk-free activity. In 2017-18, 563,600 people, or 4.2 per cent of working people in Australia suffered a work-related injury or illness.[I] Of these incidents, 60 per cent resulted in the worker taking some time off work.[II] Work-related injuries and illnesses occur in every industry, occupation, and sector. While the risks differ by industry and occupation, the prospect of becoming injured or unwell because of work has the potential to impact the people in every job in Australia.

Work-related injuries and illnesses pose a significant burden on those affected, their employers and, more broadly, the Australian community. Such impacts manifest in the form of additional health expenditure, reduced participation in the labour market and other financial costs.

Safe Work Australia (SWA) is an Australian government statutory agency tasked with developing national policy to improve work health and safety and workers' compensation arrangements across Australia. Investigating and estimating the costs associated with work-related injuries and illnesses is an important component of the Agency's research program and supports the commitment outlined in its corporate and operational plans to collect, analyse and disseminate high quality evidence.

SWA engaged Deloitte Access Economics (DAE) to use a computable general equilibrium (CGE) model, following the World Health Organization (WHO) guidelines, to help answer the question: 'what is the economic impact of removing all work-related injury and illness for a period of time?'.

This study reports on that economic modelling and is designed to simulate how the Australian economy would look if there had been no work-related injury or illness between 2008 and 2018. This presents a novel and ground-breaking approach to quantifying the economic consequences associated with work-related injuries and illnesses.

Key findings

The economic impact of work-related injuries is nearly equivalent to that of the Agriculture industry

In the absence of any new work-related injuries or illnesses over 2008 to 2018, on average Australia's economy would have been $28.6 billion larger each year. In relative terms, this equates to a Gross Domestic Product (GDP) being around 1.6 per cent higher each year on average. At this level, the relative impact of work-related injuries and illnesses in Australia is nearly equivalent to the direct annual contribution to the economy from the Agriculture industry (1.9 per cent of Australian GDP in 2022[III]) and comparable to the estimated economic growth forgone during NSW's COVID-19 lockdown in 2021.

Jobs across all industries increase due to additional economic growth, concentrated across skilled roles

Our analysis shows that everyone benefits if we reduce work-related injuries and illnesses, not just workers who may have been directly impacted. The results suggest that if all work-related injuries and illnesses were removed, the overall level of employment in Australia is estimated to increase by 185,500 FTE jobs each year on average over 2008 to 2018. More than two-thirds of these jobs (130,400 FTEs) are accounted for by the skilled workforce, requiring education or training beyond school.

In other words, Australia missed out on 185,500 additional jobs including 130,400 skilled jobs each year due to work-related injuries and illnesses.

All industries, albeit to differing extents, would have benefited from this employment growth, with the Construction industry leading the gains, recording over 32,000 new FTE jobs on average every year.

Across each occupation group, wages are projected to rise

Wages are estimated to rise by 1.3 per cent each year on average. Gains in productivity – driven by the removal of work-related injuries and illnesses – would lead to workers across all occupations and skill levels benefiting from higher wages.

Sectors which experience the highest number of work-related injuries gain the most from their removal

The analysis finds that if all work-related injuries and illnesses were removed, economic activity would have been stimulated across nearly all sectors. Industries which possess the greatest number of work-related injuries and illnesses, such as Construction and Heavy manufacturing, would have been the most positively affected relative to others (12.6 per cent and 8.5 per cent higher). The expansion of these industries would then drive secondary effects, which would have been concentrated in the services sector and industries such as Business Services where injuries and illnesses are not particularly prevalent (7.5 per cent higher).

Conclusions

When a worker experiences a work-related injury or illness, it is not only the individual and their community that suffers, it is the wider Australian workforce that loses the opportunity to access more and better jobs with higher wages.

This analysis finds that by removing work-related injuries and illnesses, Australian wages increase, with productivity gains driving a broad uplift in income to labour across all occupation types. This is particularly revealing given we often lean on the industrial relations framework to tackle issues relating to wages and productivity growth. This suggests that work, health and safety (WHS) has a substantial role to play in contributing to Australia's economic prosperity.

1 Introduction

This chapter introduces the impact of work-related injuries and illness in Australia, including our approach to modelling the immense burden on the Australian economy.

1.1 Background

Work is central to economic life. It not only underpins the economic output of a nation, but it also enables people to support themselves, their families, and their communities. In Australia, just under two out of three people are of working age and over 80 per cent of these people are currently employed.[IV]

Work is not a risk-free activity. Tragically, on average, over 180 workers are killed each year at work in Australia.[V] Further, in 2017-18, 563,600 people, or 4.2 per cent of working people in Australia suffered a work-related injury or illness.[VI] Of these incidents, 60 per cent resulted in the worker taking some time off work.[VII] Work-related injuries and illnesses occur in every industry, occupation, and sector. While the risks differ by industry and occupation, the prospect of becoming injured or unwell because of work has the potential to impact the people in every job in Australia.

As the national policy body for Work, Health and Safety (WHS) and Workers' Compensation, Safe Work Australia (SWA) is committed to driving policy that reduces the number of work-related fatalities, injuries and illnesses.

Work-related fatalities, injuries and illnesses impose a devastating personal and social impact on workers and their families. They also exact a significant burden on workers' colleagues, their employers, and, more broadly, the communities of which they are a part. In addition to the important social costs, the impact of work-related injury and illness manifests in the form of additional health expenditure, reduced participation in the labour market and other financial costs.

While there have been significant strides towards reducing both the frequency and severity of work-related injuries and illnesses, there still exists many opportunities for improvement. This study estimates the costs of work-related injury and illness to our economy. The study then estimates the potential value to be gained from entirely removing work-related injury and illness from our economy.

1.2 Purpose and scope of the report

SWA has engaged Deloitte Access Economics to investigate the potential economic impact of work-related injury and illness in Australia between 2008 to 2018. The findings provide insight into the relationships between work-related injuries and illnesses and economic activities in Australia, allowing for more targeted policy interventions grounded in robust analysis.

The summary report can be used with or without reference to the material in the corresponding technical report. This report focuses on the most important messages of this study. More detailed explanation of our methodology, data inputs, as well as additional model outputs can be found in the technical report.

In this summary report, Chapter 2 and 3 detail the findings of the analysis ahead of a discussion of conclusions in Chapter 4.

1.3 Methodology overview

The approach used in this analysis is an innovative extension upon other economic studies completed by SWA. Where previous analysis has measured the economic impact of work-related illness and injury through a cost of illness lens, the results of those estimates cannot be readily interpreted in meaningful ways.[VIII] This report is an innovative extension upon that previous work, combining two methods: cost of illness and CGE modelling. CGE models are uniquely positioned to quantify how the economy, as a whole, could react over time to potential changes in policy, technology or other factors. The results are described in terms of both GDP and employment, measures which can be used to understand the size and scope of the impact of work-related injury and illness.

The impact analysis presented here estimates the potential value to be gained from entirely removing work-place injuries and illnesses from our economy. More precisely, this analysis compares the performance of the Australian economy that was observed (baseline scenario) over a ten-year period from 2008-18 ('the reference period') to the hypothetical scenario that no work-related injuries and illnesses happened over the same reference period. Consequently, this horizon omits the effects of COVID-19 (Box 1) on Australians and their working life from 2020.

We believe this approach is the first of its kind to adopt the World Health Organisation's (WHO) guidelines to identifying the economic consequences of disease and injury.[IX]

Impact of COVID-19 on work-related injuries and illnesses

COVID-19 has served as a catalyst for change in the way Australians live and work. The reference period for this analysis concludes at 2018 and, by design, omits this unprecedented impact of COVID-19 on work. This is in part because the preceding period can be categorised as relatively stable, and the evolution of the future workplace post-COVID-19 remains relatively uncertain.

It is recognised that COVID-19 itself can be a work-related illness (where it can be demonstrated that it was transmitted in the workplace), or indeed that COVID-19 could be the cause of a work-related injury (for example, mental stress or anxiety caused by work due to the uncertainty of COVID-19). These additional impacts are not included within the scope of this analysis.

For some industries, such as Construction, Agriculture and Health services, COVID-19 did not require a shift in place of work and is not assessed as having materially changed the risk environment for work-related injuries and illnesses.[X] But for many other industries, COVID-19 resulted in an array of changes including accelerated adoption of hybrid working environments – where only part of the work week is spent at a place of work.[XI]

A repeat of cost of injury modelling once more data is available for the period covering the COVID-19 pandemic may demonstrate these effects in the future.

1.4 Assumptions and limitations

As this is the first report to translate the impact of work-related injury and illness into a CGE modelling framework in Australia, there are limitations that arise and options for the analysis to be extended in the future.

Several impacts or effects of work-related injury or illness have not been captured in the present analysis:

- This study chose a timeframe of 2008-18 to reflect the economic impact of work-related injuries and illnesses pre-COVID. It must be noted that the study findings may be impacted by work environment changes that have been realised in a post-pandemic economy such as the adoption of hybrid working models.
- The incidence approach used in the modelling does not capture the impact of work-related injury or illness that occurred prior to 2008. For example, a work-related death occurring in 2007 would still be impacting the economy during the reference period but was not included within this analysis.
- Workers who incur a work-related injury or illness may return to the workforce following a period of absence, but the average time that this worker remains in the workforce may be reduced as a result of work-related injury or illness. For example, an individual may now be more likely to retire at age 60 (or earlier) as opposed to age 65. While this could be modelled as a labour supply impact within the CGE framework, there was insufficient data to determine the magnitude of this impact.
- Following a work-related injury or illness, some workers cannot return to their original job and must re-train for a new occupation. Data was not available to inform the proportion of workers who required re-training, and thus no estimate was made to quantify this impact.
- Unhealthy work environments may also lead to increased prevalence of conditions such as diabetes or cardiovascular disease. Where these have not been recorded as a work-related injury or illness, the impact of these conditions has not been captured within the present analysis.
- Work-related diseases are under-reported in the available Safe Work Australia National dataset for compensation-based statistics (SWA NDS) and ABS datasets due to difficulty establishing a causal work connection and the latent nature of many of these diseases. This may also mean the fatalities due to work-related disease are also under-reported.
- This analysis only comments on the benefits of removing work-related injury and illness. The analysis does not account for the costs of regulation that would need to be incurred in order to reduce the number of work-related injuries and illness.

Where new data becomes available to estimate any of the above impacts or to include any additional shocks not discussed in the present report, it is acknowledged that the modelled results would change.

2

Distributional impact of work-related injuries and illnesses

There were 6.9 million work-related injuries and illnesses that occurred between 2008 to 2018, an average of 623,663 cases each year. This caused a 2.2 million FTE productivity loss between 2008 to 2018, and on top of this $37.6 billion in costs were incurred by the health system.

2.1 Summarised costs of work-related injury and illness

In total, between 2008-18, 2.2 million FTEs were lost due to productivity losses from work-related injuries and illnesses, and on top of this $37.6 billion in costs were incurred by the health system. Table 2.1 provides a summary of each cost component.

Table 2.1: Cost of work-related injury and illness

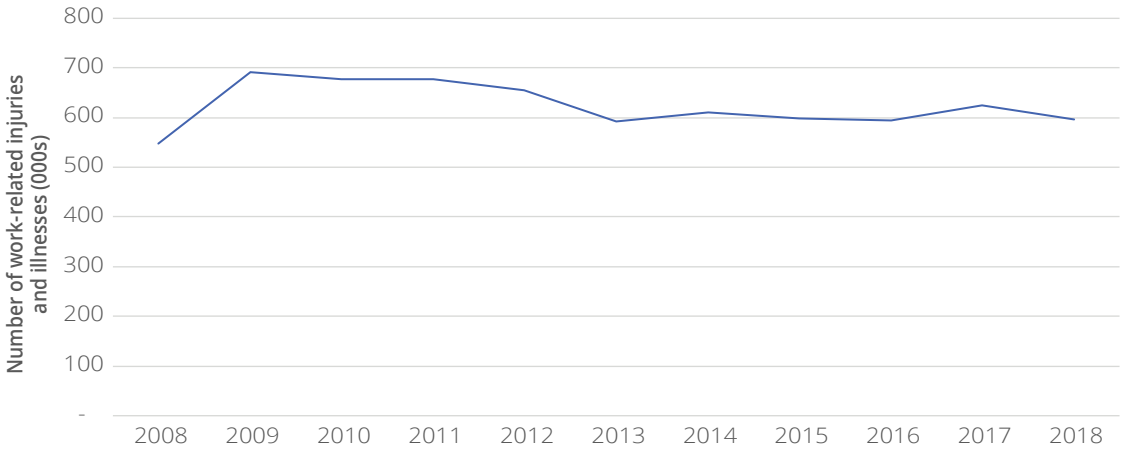
Component	Description	Total impact
Absenteeism	Short term productivity losses from time off work	835,770 FTEs
Presenteeism	Reduced productivity upon returning to work	331,000 FTEs
Reduced employment	Permanent withdrawal from labour force following work-related injury or illness	605,789 FTEs*
Premature mortality	Loss of labour due to work-related injury or illness resulting in death	63,568 FTEs*
Informal care	Productivity losses from informal carers taking additional time off of work to care for a person with work-related injury or illness	408,061 FTEs*
Health system costs	Costs incurred by the health system following work-related injury or illness	$37.6 billion
Efficiency costs	Costs incurred by the employer following work-related injury or illness	$49.5 billion

Source: Deloitte Access Economics 2022. * Total impact is measured from 2008-2065.

2.2 Incidence of work-related injuries and illnesses in Australia

There were 6.9 million work-related injuries and illnesses that occurred between 2008-18, an average of 623,663 injuries and illnesses per year (Chart 2.1). Approximately 43 per cent of injuries and illnesses were attached to compensation claims with data available from the SWA NDS. [XII] The remaining 57 per cent of injuries were estimated using the ABS work-related injuries dataset.[XIII]

Chart 2.1: Incidence of work-related injuries or illnesses, 2008-18, Australia

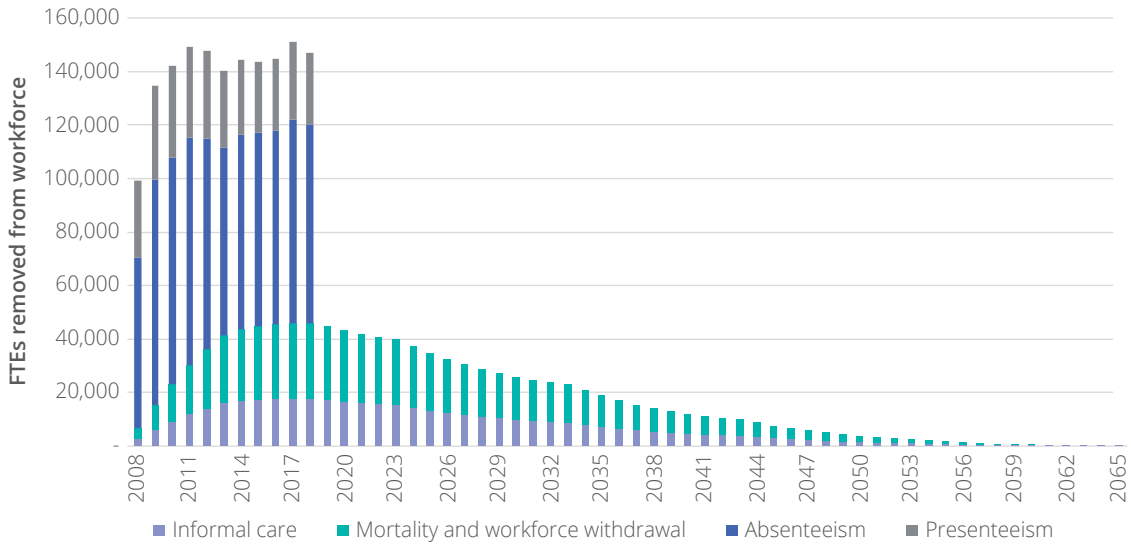


Source: Deloitte Access Economics (2022), ABS work-related injuries (2009-10, 2013-14, 2017-18), SWA NDS (2022).

2.3 Productivity losses

Work-related injuries and illnesses disrupt Australia's available labour supply as well as the average productivity of the labour force. Chart 2.2 displays the average impact by component. The average impact across 2008-18 was 140,400 FTEs. An additional 699,640 FTEs were estimated to be lost from 2019-2065 due to the ongoing impact of premature mortality and permanent withdrawal from the workforce. The short-term productivity impacts of work-related injury and illness are largely absenteeism and presenteeism.

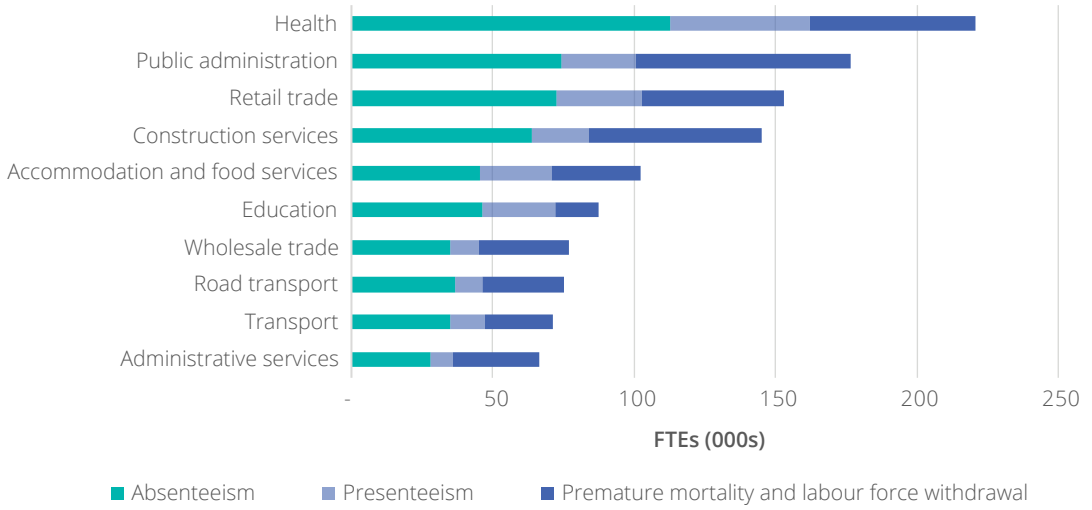
Chart 2.2: Productivity loss due to work-related injury or illness, by component, 2008-65, Australia



Source: Deloitte Access Economics (2022), ABS work-related injuries (2009-10, 2013-14, 2017-18), SWA NDS (2022).

Chart 2.3 highlights the distribution of productivity losses by industry. The Health industry was the hardest hit, estimated to lose 220,700 FTEs over the reference period. This was followed by Public Administration (176,400 FTEs) and Construction Services (152,900 FTEs). Distributions of the three productivity loss components (premature mortality and labour force withdrawal, absenteeism, and presenteeism) also varied across industries. Chart 2.3 shows that some industries (e.g., Public Administration) felt a greater burden from premature mortality and labour force withdrawal, suggesting that the average work-related injury or illness in these industries is more severe.

Chart 2.3: Productivity loss by industry and component, 2008-18, Australia



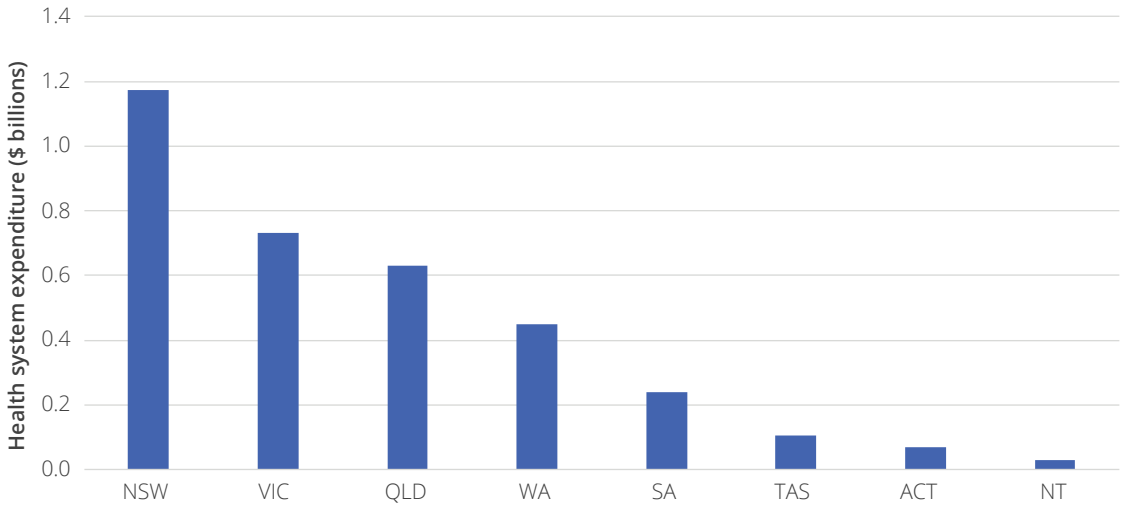
Source: Deloitte Access Economics (2022), ABS work-related injuries (2009-10, 2013-14, 2017-18), SWA NDS (2022).

2.4 Health system costs

The average work-related injury and illness was expected to cost the health system $5,482. It was estimated that the average annual expenditure on work-related injuries and illnesses was $3.4 billion over the reference period. Of the most common injury types, residual soft tissue disorders were estimated to cost $8,567 per injury, followed by $5,884 for trauma to joints and ligaments, and $2,030 for fractures.

Relative to population, health system costs were highest in Tasmania ($198 per capita), Western Australia ($173 per capita) and the ACT ($163 per capita).

Chart 2.4: Average annual health system expenditure, by jurisdiction

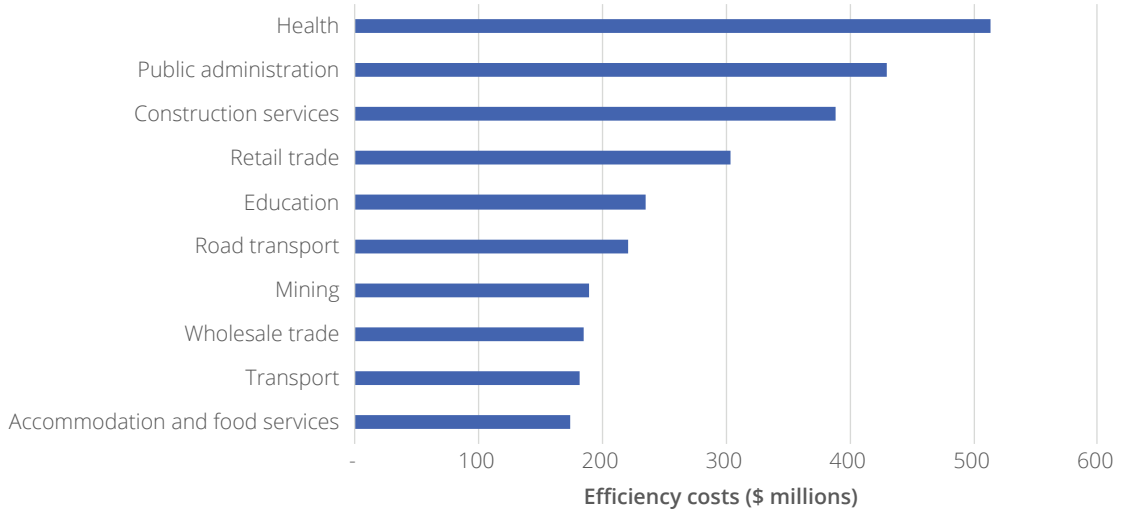


Source: Deloitte Access Economics (2022), ABS work-related injuries (2009-10, 2013-14, 2017-18), SWA NDS (2022).

2.5 Employer overheads

Employer overheads from workers' compensation claims and the costs incurred from hiring and training new staff were estimated to cost $49.5 billion over the reference period, or an average of $4.5 billion per year. Average annual employer overheads were highest for the Health industry ($513.8 million), followed by Public Administration ($430.2 million) and Construction services ($388.3 million) (Chart 2.5).

Chart 2.5: Average annual employer overheads, by industry



Source: Deloitte Access Economics (2022), ABS work-related injuries (2009-10, 2013-14, 2017-18), SWA NDS (2022).

3

Impact on the Australian economy

In the absence of work-related injuries and illnesses, Australia's economy would have been $28.6 billion larger each year ($29.1 billion including long-term impacts). In addition, there would have been 185,500 additional jobs every year and more than two-thirds of these jobs are for the skilled workforce.

3.1 Summarised economic impact of work-related injury and illness

If all work-related injuries and illnesses which occurred between 2008-2018 had not happened, the economy would have been $28.6 billion larger each year. There would have been an additional 185,500 FTE jobs in each year and more than two-thirds of these additional jobs would have been skilled roles.

These impacts are not spread evenly across jurisdictions, industries, or occupations. Table 3.1 provides a summary of high-level findings.

Table 3.1: Impact of work-related injury and illness

Component	Description	Total impact
GDP	**Average additional annual impact to GDP ($)**	**$28.6 billion**
	New South Wales (% of total)	40%
	Victoria (% of total)	25%
	Queensland (% of total)	16%
	Western Australia (% of total)	9%
	South Australia (% of total)	5%
	Australian Capital Territory (% of total)	3%
	Tasmania (% of total)	2%
	Northern Territory (% of total)	1%
Jobs	**Average additional FTE jobs created each year**	**185,500 FTEs**
	Officials and managers	52,200 FTEs
	Clerks	45,300 FTEs
	Agricultural and lower skilled workers	38,400 FTEs
	Technicians	32,900 FTEs
	Service and store workers	16,600 FTEs

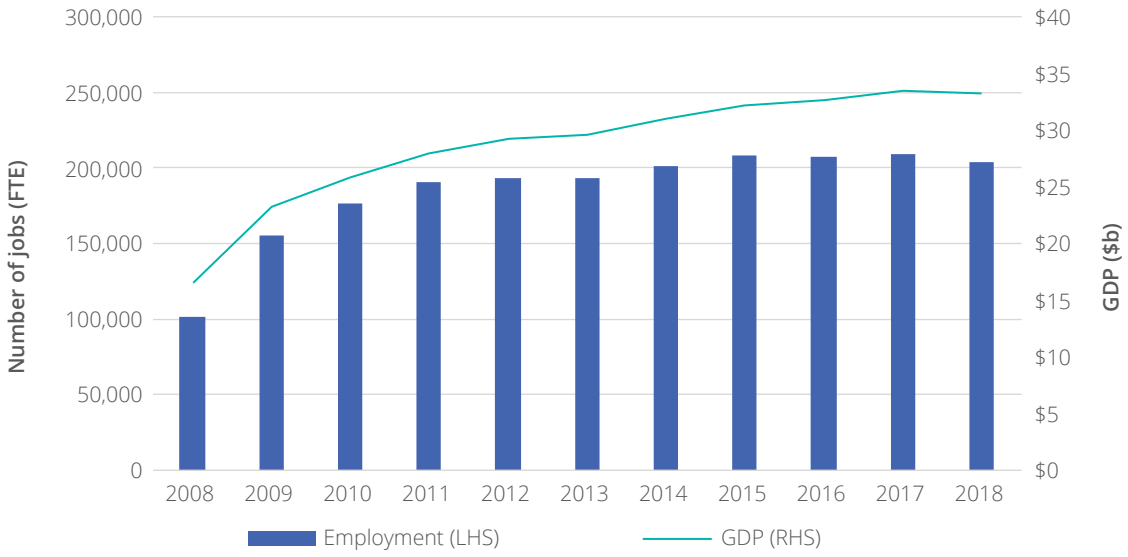
Source: Deloitte Access Economics 2022.
Note: Percentages do not sum to 100% due to rounding

3.2 The economic impact of work-related injuries and illnesses in Australia is significant

3.2.1 The economic impact of work-related injuries is nearly equivalent to that of the Agriculture industry

In the absence of any new work-related injuries or illnesses over 2008 to 2018, on average Australia's economy would have been $28.6 billion larger each year (Chart 3.1). Including future impacts from long term injuries and work-related deaths, this number could be expected to increase to over $29.1 billion. In relative terms, this equates to a Gross Domestic Product (GDP) being around 1.6 per cent higher on average each year. At this level, the impact of work-related injuries and illnesses in Australia would have been nearly equivalent to the direct annual contribution to the economy from the Agriculture industry (1.9 per cent of Australian GDP in 2022[XIV]) and comparable to the estimated economic growth forgone during NSW's COVID-19 lockdown in 2021.[1] [XV]

Chart 3.1: Annual increase in GDP ($ billions) and impact to employment (FTEs) 2008-18, Australia (2022)



Source: DAE-RGEM

All totalled, the cumulative impact to GDP of removing Australia's work-related injuries and illnesses between 2008 and 2018 is estimated to have totalled $315 billion. Inclusive of all future costs, such as ongoing medical costs from long term injuries or work-related deaths, this figure reaches $334 billion.

[1] NSW Treasury estimated the weekly cost of the NSW lockdown to be valued at $1.3 billion each week.

During this period, the impact of removing work-related injury and illness would have grown year on year, with the estimated GDP increase in 2018 ($33.3 billion) more than twice that estimated for 2008. This growth mainly reflects the removal of impediments to investment growth and capital accumulation when injuries and illnesses in the Construction industry (which comprise a large share of overall injuries and illnesses) are removed.

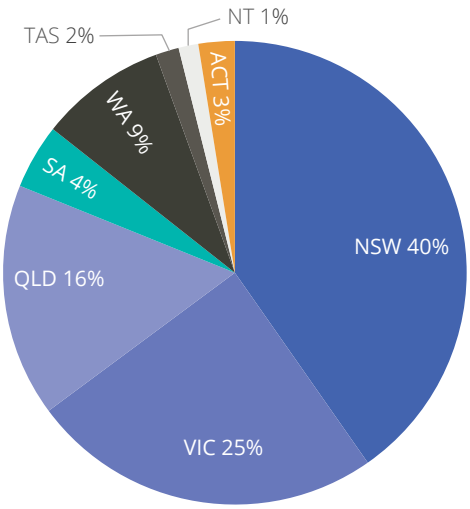
Alongside the increase in economic activity, the removal of work-related injuries and illnesses in Australia is also expected to have a positive impact on employment. Across Australia, on average, 185,500 additional jobs could have been created if no work-related injuries and illnesses had occurred during the reference period (Chart 3.1), with additional jobs created in 2018 (over 204,000) more than double that in 2008.

Employment is modelled to increase over time, despite the yearly number of work-related injuries or illnesses remaining relatively constant over the same period. The driving force behind this is the accumulation of absent workers from injuries in previous years. For example, an individual injured in 2008 who is unable to remain in the workforce will affect the labour supply over the next several years. This explains why the increase in employment is lowest in 2008, which represents the first year of the reference period, as there is no additional accumulation of employment from injuries removed in previous years, reflecting the underlying incidence approach in the cost-of-illness framework. The increase in employment from 2015-18 appears to level out, indicating that the effect of the accumulation of absent workers from previous years has peaked.

3.2.2 The impact by each state and territory reflects the size of the region's economy

Impacts to Australian GDP differ across jurisdictions but is largely reflective of the relative size of the individual states and territories. New South Wales, Australia's largest state by population, accounts for 40 per cent of the total impact to Australian GDP, followed by Victoria (25 per cent) and Queensland (16 per cent; Chart 3.2).

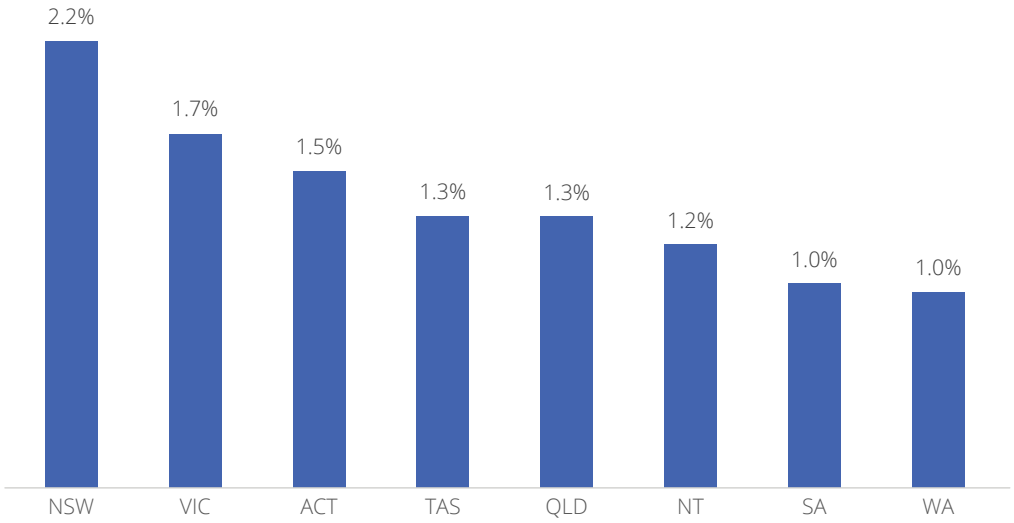
Chart 3.2: Annual impact (%) to GDP, by jurisdiction, 2008-18



Source: DAE-RGEM

New South Wales is projected to experience the greatest impact to their individual gross regional product (GRP; the market value of all final goods and services produced in a region), growing by 2.2 per cent on average relative to the baseline (Chart 3.3). This is followed by Victoria and the Australian Capital Territory, experiencing a 1.7 per cent and 1.5 per cent impact to GRP respectively. Western Australia observes the lowest impact to GRP, recording a 1.0 per cent average impact relative to the baseline. This result is primarily a function of the relative size of state and territory economies, and the number of work-related injuries occurring within each state – which is broadly correlated to the size of each state's workforce.

Chart 3.3: Annual impact (%) to GRP (relative to the baseline), by jurisdiction, 2008-18



Source: DAE-RGEM

Industry impacts also vary across regions. For example, the impacts to GRP in New South Wales, Victoria, South Australia, and the Northern Territory are predominantly observed across the Construction and Business Services industries. Queensland and Western Australia also observe GRP growth across similar industries but experience a much larger decline in Mining, leading to a lower overall impact. Meanwhile, the Australian Capital Territory holds the vast majority of its impact to GRP in Public Administration and Safety, with negligible impacts across other industries. This result is in line with expectations, given the public service is the territory's largest employer.

Table 3.2: Annual impact to GRP ($m), by industries and Jurisdictions, 2008-18

	NSW	ACT	NT	QLD	SA	TAS	VIC	WA
Mining	-92	-1	-19	-124	-25	-8	-43	-104
Primary metal and metal product manufacturing	-3	0	-4	-9	-11	-10	-7	-2
Basic chemical and chemical product manufacturing	-14	1	-2	4	0	0	-11	9
Agriculture	50	0	1	68	9	12	5	64
Heavy manufacturing	883	21	11	387	92	27	485	212
Food manufacturing	188	10	3	85	21	9	94	38
Transport	475	21	9	184	53	15	278	105
Business services	2149	111	59	867	227	76	1316	538
Utilities	159	9	2	90	20	5	101	35
Recreation services	573	32	29	271	65	26	314	123
Education and training	441	43	19	187	61	36	271	123
Trade	1189	54	25	461	146	44	737	241
Public administration and safety	556	162	40	188	73	27	273	81
Construction	2991	113	113	1234	294	77	1972	611
Health care and social assistance	768	83	27	337	157	81	492	186
Information media and telecommunications	518	29	9	173	49	26	312	111

Annual impact to GRP ($m), by industries and Jurisdictions, 2008-18

3.3 The economic impact is not uniform across occupations

3.3.1 Most of the jobs created are for Australia's skilled workforce

Of the additional 185,500 FTE jobs created across the Australian economy on average between 2008 and 2018, the bulk of these roles would have been concentrated across skilled roles. Roles that require a tertiary or high-level trade qualification – Officials and Managers, Technicians and Clerks – are estimated to have increased by 130,400 FTE jobs overall (Chart 3.4). This figure can be broken down into 52,200 Officials and Managers, 45,300 Clerks and 32,900 Technicians.

Officials and Managers as well as Clerks – the occupations which would have experienced the greatest rise in overall employment from the removal of work-related injuries and illnesses – recorded a relatively significant portion of work-related injuries and illnesses, however they do not represent the occupations which experience the greatest number of work-related injuries and illnesses.

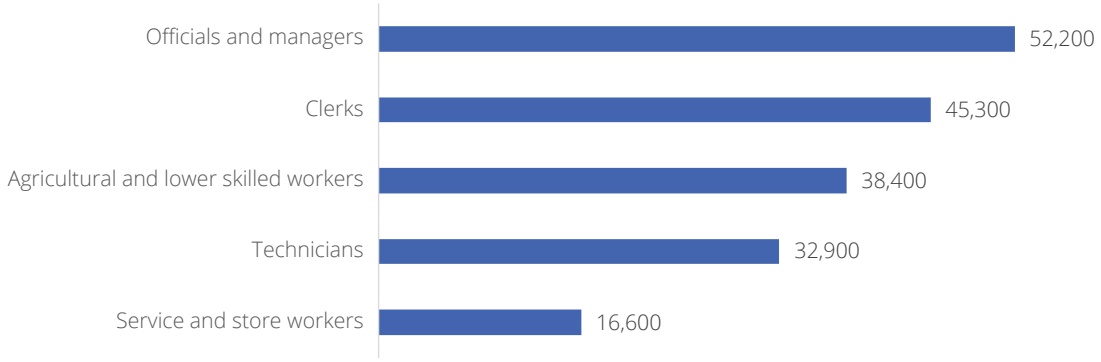
These results reflect broader and deeper impacts to the economy in terms of employment. As workers who left the workforce due to work-related injuries and illnesses would stay in the workforce in the hypothetical scenario, they would have created more demand within the economy for goods and services – such as housing, food and health services – with the wages they earn. This additional demand has flow-on effects to other parts of the economy as more resources (including capital and labour) are required to meet this demand, leading to the creation of more jobs. The composition of jobs created mirror the future shape of the Australian labour market – which is more focused on higher skill level jobs.

This finding suggests Australia's transition towards a knowledge-based economy could be accelerated by reducing work-related injuries and illnesses. It also highlights that when an individual experiences an injury or illness, the impact is not limited to the person directly affected, it also holds economic implications for all industries and occupations.

Increases in employment are also observed across other occupations – Agricultural and lower skilled workers, Technicians and Service and store workers – but the magnitudes are not as great as those observed for the higher skilled occupations.

Without work-related injuries and illnesses, there would have been 185,500 FTE additional jobs, and the bulk of these roles would have been concentrated across skilled roles.

Chart 3.4: Impacts to employment (relative to the baseline) on average, by occupation, 2008-2018, Australia



Source: DAE-RGEM

Note: Refer to the technical report for an occupation group breakdown by skill level.

3.3.2 Across each occupation group, wages are projected to rise

Standard economic theory dictates that as the number of workers who can supply labour to a sector rises, so does the competition to secure employment, leading to falling relative wages in that sector. This effect might also be expected in the absence of work-related injuries and illnesses given the large number of additional workers (i.e. those who previously experienced a work-related injury or illness) in the labour force each year are concentrated across a few select occupational groups.

However, alongside an increase in the pool of workers, avoiding work-related injuries and illnesses also leads to enhancements in labour productivity, which lead to the realisation of efficiencies across the entire economy. These labour productivity improvements are driven by workers operating at improved capacity via avoided presenteeism costs, and improvements to labour productivity across the broader population through freed up healthcare resources. The gain in productivity outweighs the increase in labour supply, and our analysis shows workers across all occupations and skill levels would have benefited as wages are estimated to rise by 1.3 per cent each year on average.

Workers across all occupations and skill levels would have benefited as wages are estimated to rise by 1.3 per cent each year on average.

3.4 This economic impact is also not uniform across industries

3.4.1 Sectors which experience the highest number of work-related injuries gain the most from their removal

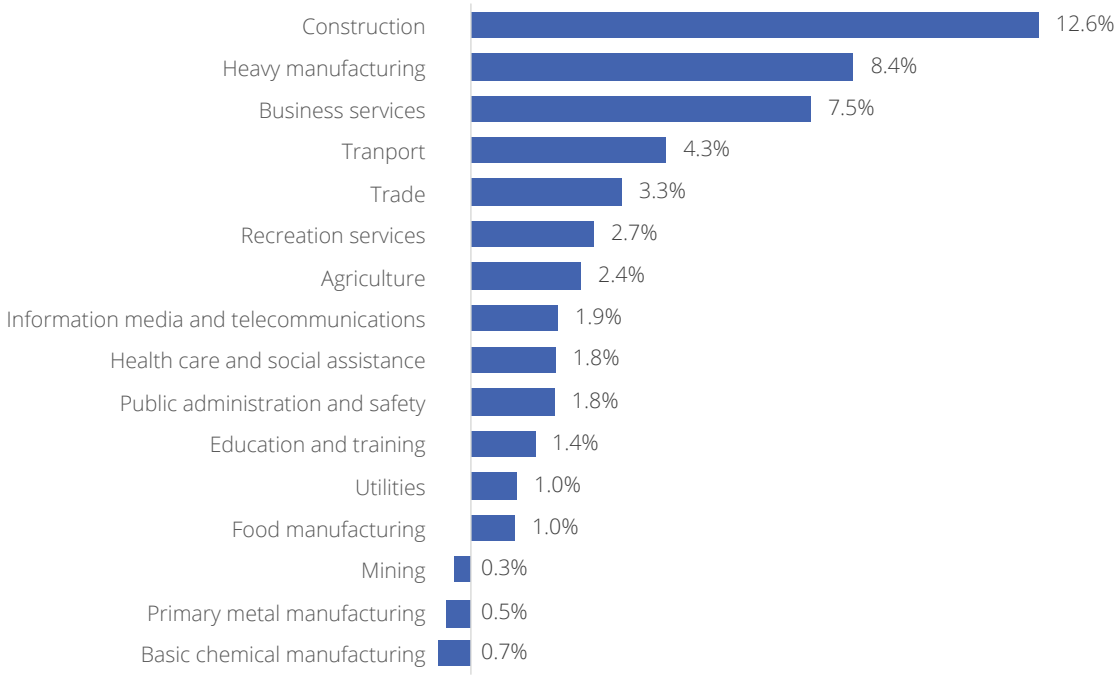
The avoided impacts of work-related injuries and illnesses would have directly stimulated economic activity across all sectors in the economy.

Sectors that have the greatest number of work-related injuries and illnesses, such as Construction and Heavy manufacturing, would have been the most positively affected relative to others (Chart 3.5). These sectors are relatively labour-intensive and benefit heavily from the inflow of labour as workers who would have suffered a work-related injury or illness remain in the workforce under the hypothetical scenario. On average, between 2008 to 2018, outputs in these industries are expected to be 12.6 per cent and 8.5 per cent higher than the baseline each year. This increase in output would have led to an additional $7.4 billion and $2.1 billion impact to GDP on average. These industries are also positively impacted from large capital inflows as the Australian economy grows (relative to the global economy) and becomes a stronger investment opportunity.

As industries are relieved of their work-related injury and illness burdens, their capacity to expand leads to a round of secondary effects. This includes for example greater demand for goods and services in other sectors due to a larger, more productive workforce. These effects would have been concentrated in the services sector (where much of household and business expenditure in Australia is directed) and industries such as Business services (7.5 per cent higher than in the baseline) where injuries and illnesses are not particularly prevalent.

Other industries which benefit from a growing economy include the Transport sector, which due to its nature – moving people or goods – is an intermediary to other sectors in the economy, and so expands as the economy does.

Chart 3.5: Impacts to output (relative to the baseline) on average, by industry, 2008-2018, Australia



Source: DAE-RGEM

Note: Some industries have been grouped together, for a more detailed industry breakdown please refer to the technical report.

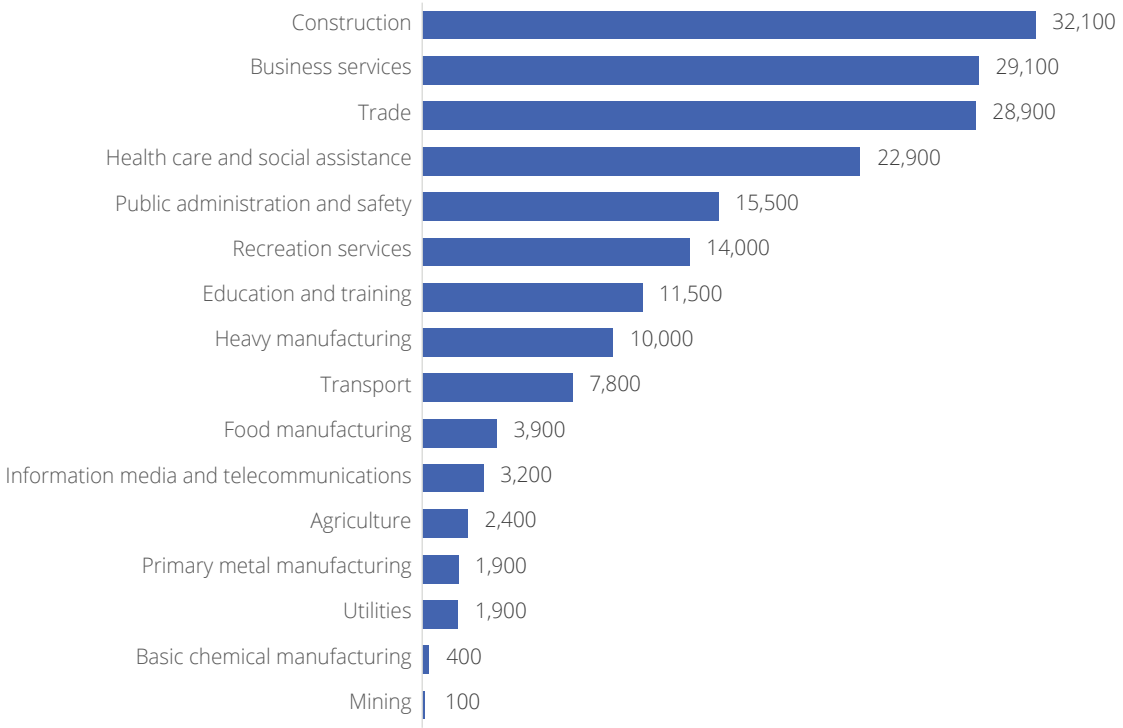
3.4.2 Jobs across all industries rise, led by a large gain in employment in Construction

When the effects of work-related injuries and illnesses are removed from the economy, all industries would have seen employment growth, albeit to differing extents. The Construction industry would have observed the largest rise in employment, recording over 32,000 new FTE jobs every year on average between 2008 and 2018 (Chart 3.6). This result is a function of the high share of skilled labour. This means that the labour within the sector tends to be more productive, leading to high sectoral outputs in addition to high employment. Business services would have experienced a similar trend, recording over 29,000 additional FTE jobs each year.

For other sectors, those that are expected to have the greatest rise in employment are not the same as those which experience the largest growth in economic outputs. For instance, Health Care and Social Assistance – the industry which records the greatest number of work-related injuries and illnesses (see technical report) – would have experienced a much greater increase in employment relative to its change in industry output.

Public Administration, Education and Training, Trade and Recreation Services would have also observed a similar trend. This can be attributed to the types of agents within the economy who consume these goods – mostly government and households, as opposed to industry use. Government and private expenditure tend to move with GDP, however sectors like Construction, which are more entwined in the supply chain, expand for other reasons, such as demand from other sectors which are also growing. As a result, they tend to grow faster than GDP, and hence faster than the government sectors and final consumption sectors.

Chart 3.6: Impact on employment (FTEs) on average, by industry, 2008-2018, Australia



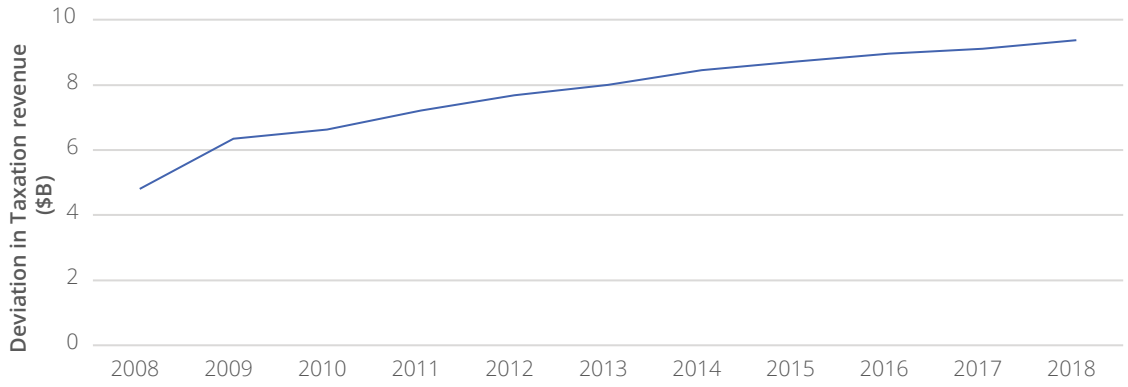
Source: DAE-RGEM

Note: Some industries have been grouped together, for a more detailed industry breakdown please refer to the technical report.

3.5 Tax revenue increases overtime, reflects higher labour income and company tax

Gross State Product and GDP impacts in a world without work-related injuries and illnesses would have resulted in additional taxation revenue at the state and federal level. The net effect on tax revenue reflects higher labour income and company tax, but also includes forgone tax revenue. On average, it is estimated that an additional $7.7 billion in federal, state, and local government taxes would have been generated annually between 2008 and 2018 if work-related injuries and illnesses were avoided. By 2018, an additional $9.4 billion worth of tax revenue would have been generated from avoiding work-related injuries and illnesses (Chart 3.7).

Chart 3.7: Impacts to Taxation revenue (relative to the baseline), 2008-2018, Australia



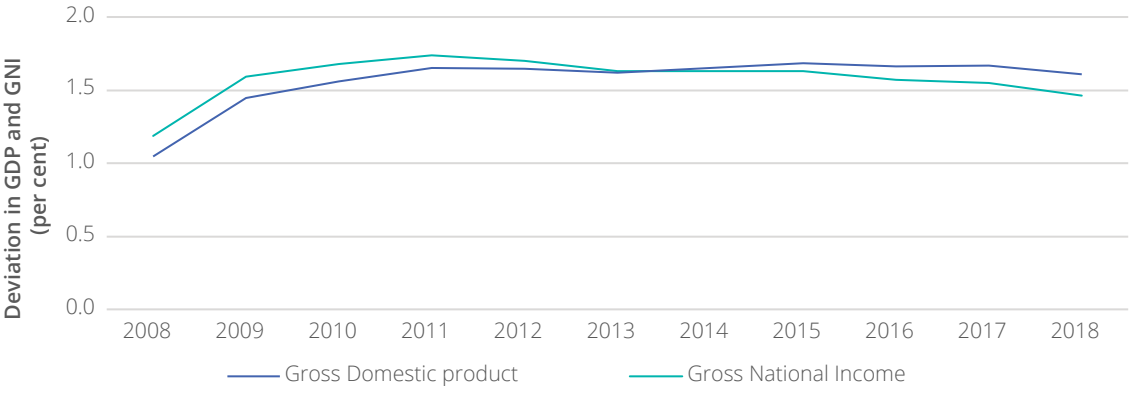
Source: DAE-RGEM

3.6 Gross National Income also increases over time, suggesting an improvement in overall welfare

Economists have a variety of ways of measuring economic welfare. Gross National Income (GNI) is the value of all items produced by residents of a country, plus income earned by residents from abroad. This is often preferred to GDP as an indicator of welfare because it tends to closely correlate with nonmonetary measures of the quality of life, such as life expectancy at birth, mortality rates of children, and enrolment rates in school.[xvi]

The modelling shows that between 2008 and 2018, avoiding work-related injuries and illnesses would have increased GNI in Australia by 1.6 per cent each year on average. This is marginally higher than the impact on GDP. Chart 3.8 shows the impact on GNI versus GDP over time.

Chart 3.8: Impacts to GDP and GNI (per cent deviation from baseline), 2008-2018, Australia



Source: DAE-RGEM

4

Discussion and conclusions

If there had been no work-related injury or illness between 2008 and 2018, the Australian economy would have been substantially better off. Australians would have had access to more and better jobs, and would have been rewarded with higher wages. WHS is critical to Australian productivity and prosperity.

4.1 Conclusions

This report demonstrates the significant and diverse impacts to the Australian economy of work-related injuries and illnesses. Using a CGE framework, we modelled the impact of removing work-related injuries and illnesses between 2008 and 2018, and found the Australian economy would have been $28.6 billion larger each year. Including future impacts from long term injuries and work-related deaths, this number could be expected to increase to over $29.1 billion. Further, there would have been an additional 185,500 FTE jobs each year. In effect, the removal of work-related injuries and illnesses would have a comparable impact to the current direct contribution of Australian Agriculture or the NSW 2021 COVID-19 lockdown.

The findings of this work have important implications for policy. In this report, we see that the impacts on GDP compound over time (as the capital stock is constrained). We further see that while selected industries (e.g. Construction) and occupations (e.g. Managers) account for the majority of estimated impacts, these groups are typically not necessarily the ones that have the greatest number of work-related injuries or illnesses. This result displays the broader and deeper economic impacts of employment in motion, as workers, who experienced a work-related injury or illness, remain in the workforce and earn wages that they spend on good and services, strengthening the rest of the economy in the process.

Critically too, the bulk of the new jobs created are highly skilled roles. This result suggests that Australia's continued transition towards a knowledge-based economy could be accelerated by reducing work-related injuries and illnesses.

Importantly too, this analysis finds that Australian wages are increased, with productivity gains driving a broad uplift in income to labour across all occupation types. This is particularly insightful given policy makers often look to industrial relations policy levers to tackle issues relating to wages and productivity growth. This analysis reveals that WHS also has a role to play in contributing to Australia's economic prosperity.

When a worker experiences a work-related injury or illness, it is not only those directly affected that suffer – including the individual, their families and community – it is also the wider Australian workforce that loses the opportunity to access more and better jobs with higher wages.

4.2 Future work to build and refine CGE modelling of work-related injuries and illnesses

The results from removing work-related injuries and illnesses in Australia are informed using a CGE framework. Using CGE models to estimate the economic consequences of disease and injury has been advocated for by the WHO.[XVII] Additional studies have demonstrated the application of CGE models to assess the macroeconomic impact of healthcare problems.[XVIII] CGE models are uniquely positioned to quantify how the entire economy may react over time to potential changes in policy, technology, or other external factors – such as the removal of work-related injuries and illnesses. CGE models also allow the presentation of key headline economic figures in terms used by Australia's strategic decision makers (such as economic value added or employment).

As the approach taken here to model the impact of work-related injuries and illnesses is novel in an Australian context, there is anticipated to be avenues in the future to build on and refine the work. The following section discusses selected issues where such developments will assist estimation and communication of Australia's work-related injuries and illness in a CGE framework.

4.2.1 Future work

Understanding the economic impacts of health and safety related issues in a CGE framework is an emerging area of study. This report lays an early foundation on which future work in this area can build and refine.

Future studies into the economic impacts of work-related injuries and illnesses would benefit from improved frequency and scope of data collections. This would not only strengthen the inputs and conclusions of similar analysis, but also enable alternate analysis, including for example a 'prevalence' approach analysis.

Strategic policy makers will also likely benefit from understanding the future potential impacts of work-related health injuries through a forward-looking analysis. In doing so, the analysis can also consider the economic consequences of a shift to hybrid working, as has been recently accelerated by COVID-19, as well as longer-term work-related issues including migration policy, skills shortages, and Australia's ageing workforce.

Lastly, it is important to note that economic impacts are only one lens through which to analyse the consequences of health and safety issues. While this report provides a robust and internally consistent assessment of the economic impacts of work-related injuries and illnesses, other non-market and social impacts (e.g. quality of life) are arguably equally as important to consider. To ensure Australia's regulatory framework remains strong and fit for purpose, policy and decision makers should continue to strengthen their understanding of the impacts in the context of the Australia's health and safety outcomes.

Endnotes

I Australian Bureau of Statistics, '*Work-related injuries*', (July 2017 – June 2018), (Catalogue No 6324.0, 30 October 2018)

II Ibid.

III Department of Agriculture, Water and the Environment, '*Snapshot of Australian Agriculture 2022*', (2022) <https://www.awe.gov.au/abares/products/insights/snapshot-of-australian-agriculture-2022>

IV Australian Bureau of Statistics, '*Labour Force, Australia*', (April 2022), (Catalogue No 6202, 16 June 2022)

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VI Australian Bureau of Statistics, '*Work-related injuries*', (July 2017 – June 2018), (Catalogue No 6324.0, 30 October 2018)

VII Ibid.

VIII Chisholm, D., Stanciole, A.E., Edejer, T.T.T. and Evans, D.B., 2010. Economic impact of disease and injury: counting what matters. *Bmj*, 340.

IX World Health Organisation, '*WHO guide to identifying the economic consequences of disease and injury*' (2009).

X Deloitte Access Economics, '*The decentralisation of work in the Illawarra*', (report commissioned by Business Illawarra, April 2021)

XI Deloitte Access Economics, '*Busting the productivity myth: Hybrid working in Australia*' (report commissioned by Telstra, 2021)

XII Safe Work Australia, '*National dataset for compensation-based statistics*' (2022)

XIII Australian Bureau of Statistics, '*Work-related injuries*', (July 2017- June 2018) (Catalogue No 6324, October 2018)

XIV Department of Agriculture, Water and the Environment, '*Snapshot of Australian Agriculture 2022*', (2022) <https://www.awe.gov.au/abares/products/insights/snapshot-of-australian-agriculture-2022>

XV Parliament of New South Wales, '*Greater Sydney Lockdowns*' (2021), <https://www.parliament.nsw.gov.au/lc/papers/pages/qanda-tracking-details.aspx?pk=88098>

XVI The World Bank, Data, '*Why use GNI per capita to classify economies into income groupings?*' <https://datahelpdesk.worldbank.org/knowledgebase/articles/378831-why-use-gni-per-capita-to-classify-economies-into>

XVII World Health Organisation, '*WHO guide to identifying the economic consequences of disease and injury*' (2009).

XVIII Smith, R.D., Yago, M., Millar, M. and Coast, J., 2005. Assessing the macroeconomic impact of a healthcare problem: the application of computable general equilibrium analysis to antimicrobial resistance. *Journal of health economics*, 24(6), pp.1055-1075.

Limitation of our work

General use restriction

This report is prepared solely for the use of Safe Work Australia. This report is not intended to and should not be used or relied upon by anyone else and we accept no duty of care to any other person or entity. The report has been prepared for the purpose set out in the working order dated 8 February 2022 – to estimate the economic impact of work-related injuries and illnesses in Australia over the decade 2008–09 to 2018–19 using computable general equilibrium (CGE) model. You should not refer to or use our name or the advice for any other purpose.

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