



The path to prosperity
Why the future of work is human





The *Building the Lucky Country* series has been developed to prompt debate and conversations across business, industry associations, government and the media on issues facing the Australian economy.

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Executive summary

Australia must get to work. We have an opportunity to make better choices about our work, our workers and our workplaces to pave the path to prosperity for all Australians.

Australia has retained 27 years and counting of continuous economic growth, even through a period of global economic volatility. As a result, we benefit from high living standards (the third highest in the world according to the Human Development Index).¹

But looking forward, **our future economic standing is not guaranteed**. Improvements in future living standards rely on continued gains in productivity, and that means fostering creativity and innovation in the workplace.

A big part of our productivity story will be about people. Yet there is a lot of **anxiety about the future of work**. Indeed, some question whether there is a future of work.

But we shouldn't be scared. Technology is not a substitute for people. Instead, it has the potential to make workforces more productive. Ultimately, it's about augmentation, rather than automation or replacement. While jobs are changing in nature because of automation, they will not disappear altogether.

How we structure the future of work will say a lot about us as a society, and the decisions we make now will be a key driver of our economic success. The opportunity is large: If we make better choices about our work, our workers, and our workplaces, it could amount to a **\$36 billion** annual boost to economic welfare.

Key myths busted:

- **Robots won't take your job.** Technological change is accelerating and yet, unemployment rates in the United States (US) are the lowest in half a century, in Europe they are at a decade low, and here in Australia they're close to their lowest since 2012.

- Where new technologies do take effect, they generally create as many jobs as they kill. It's just that the ones that they kill are easily spotted, while the ones they create are hiding in plain sight.
- After all, for every problem there is a job – and we're not running out of problems.
- **You probably won't spend your life changing jobs.** Australians are staying in their jobs longer than ever.
 - In fact, 45 percent of workers have been with their current employer for more than five years.
 - The gig economy isn't taking over: casual jobs are a smaller share of all jobs than two decades ago, and that share hasn't budged in over a decade.
 - The rate of self-employment has been falling for almost half a century. It's at a record low.
- **You'll be anywhere but the office.** We won't all be programming new artificial intelligence (AI) routines on the work laptop while sitting on the beach.
 - More of us are working flexibly; an afternoon at home for school pick-ups, for example. But only one in every 25 workers worked remotely on Census day, even though almost one in five Australian employers now offers the ability for staff to work from home.
 - That's because physical proximity to other creative people is becoming more important, not less. Working together helps us collaborate and socialise, as well as giving us infrastructure and support. So the office is not going away any time soon.

In short, we are not facing a dystopian future of rising unemployment, aimless career paths and empty offices. Quite the opposite – we can use technology to our advantage to create more meaningful work.

In doing so, our message in this report is simple: **the future of work will be human.**

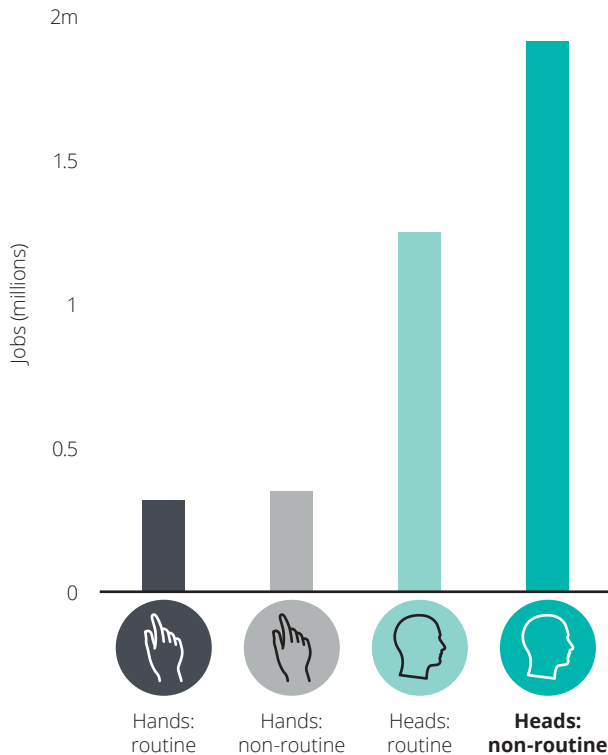
The shift: From hands to heads to hearts²

The nature of work is changing. Today’s jobs are increasingly likely to require you to use your head rather than your hands, a trend that has been playing out for some time.

There is another factor at play. Regardless if jobs rely on brains or brawn, it’s the less routine jobs that are harder to automate, and that is where employment has been growing.

That’s why non-routine jobs have been the particular winners in job creation over the past two decades.

Chart 1: Job increases over the past two decades



Source: Deloitte Access Economics, Australian Bureau of Statistics, O*NET

These trends reveal something else: they tell us that the future of work is female. Women currently dominate the fastest growing jobs – the non-routine jobs of the head. While men dominate the jobs most susceptible to automation – manual occupations involving repetitive tasks.

The existing female workforce is in the right place at the right time to benefit from these changes. To meet the needs of the future, however, all employees will need to build skills and capabilities that have traditionally been more the domain of women.

And while today’s jobs require us to use our heads, rather than our hands, this binary classification is hiding something important – the work of the heart. These are the skills that are embedded in both the work of the hands and the work of the head.

What do we mean by work of the heart? It is the interpersonal and creative roles that will be hardest of all to mechanise. And that trend has decades to run:

- 86 percent of the jobs created between now and in 2030 will be knowledge worker jobs.
- By 2030, one quarter of Australia’s workforce will be professionals. Most of these will be in business services, health, education or engineering.
- Two-thirds of jobs will be soft-skill intensive by 2030.

These trends in job markets aren’t alarming, they’re liberating. The boring, repetitive work will be done by robots, leaving the more challenging and interesting work for humans.

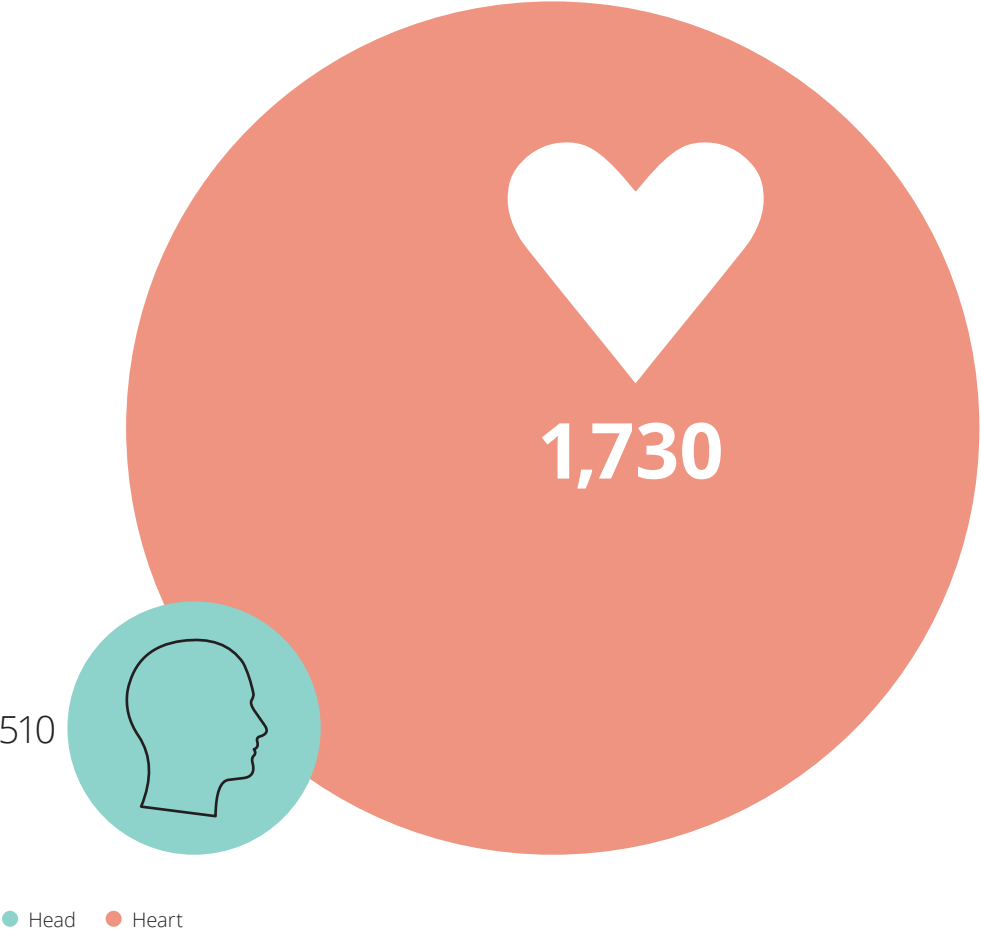
Skills: the job currency of the future

As the jobs we are doing will change, so too will the skills that we need to succeed in them.

Employers are already demanding different skills so that workers can do the work of the head and heart. Some of these are well-known; for example, the growing demand for people with coding and programming skills. But the skills at the top of the ladder are human skills; like customer service, sales and resolving conflicts.

These new trends are happening so fast they're catching workers, businesses and governments by surprise. At the start of this decade, the typical worker lacked 1.2 of the critical skills needed by employers seeking to fill a given position. **Today, the average worker is missing around 2 of the 18 critical skills that are advertised for a job.** And the gap is still growing, with far-and-away the bulk of those 'missing skills', those of the heart.

Figure 1: The skills gap: Australia needs to have a heart (average shortage by skill, 000s) - 2019



Source: Deloitte Access Economics

Note: The average shortage by skills = the total shortage of skills in the category (head or heart) ÷ by the number of skills in the category. Skills of the 'hands' are not included in this Figure because they are on average over-supplied.

For example:

- 96 percent of jobs in Australia require time management and organisational skills, while 97 percent also need customer service skills and 70 percent require verbal communication skills.
- Australian employers want 3 million more people with digital literacy skills than are available. Yet that short supply is dwarfed by the severe shortage in customer service skills: employers need an extra 5.3 million workers with such skills.

The underlying equation is pretty simple: change is accelerating, and Australia and Australians will be more prosperous and more fulfilled if we can get ahead of the game.

Getting ahead of the game means refreshing everybody's skills – not just those of today's students.

That's why the future of work will require much more – and **much better** – **on-the-job learning** than Australia has today. On-the-job learning is cheaper, more relevant and more focused than classroom learning.

The returns from on-the-job learning have been increasing for a while now, because skill requirements are changing faster and becoming more job-specific, at the same time as workers staying longer in their jobs – the longest they've stayed in decades.

With the future of work more human than ever, organisations have a responsibility to build community trust. Ethical behaviour and diversity and inclusion must be embedded in business decision-making and workplace culture.

The payoff

If we set up the right workplaces – with people at the centre – as a nation, we can be smarter, happier and more engaged than we are today:

- Our workers can have the skills they need (effectively making them better suited to – **smarter** – for the jobs of the future).
- Better matching between what businesses need and what workers have can make our workplaces **happier** and more efficient.
- And more flexible workplaces can encourage more people to work – to be more **engaged** than they are today.

If we get this right, that combination could lift national income by **\$36 billion** per year from 2030.

Australia, let's take the guesswork out of the future of work.



The myths: Busted

Fears that technology advancements will lead to mass unemployment have persisted for decades – even centuries. In the 16th century, Queen Elizabeth rejected a patent for a knitting machine for fear that it would “tend to [knitters’] ruin by depriving them of employment”.³

Of course, things haven’t worked out that way. Technology has replaced some tasks and jobs, but has created far more.

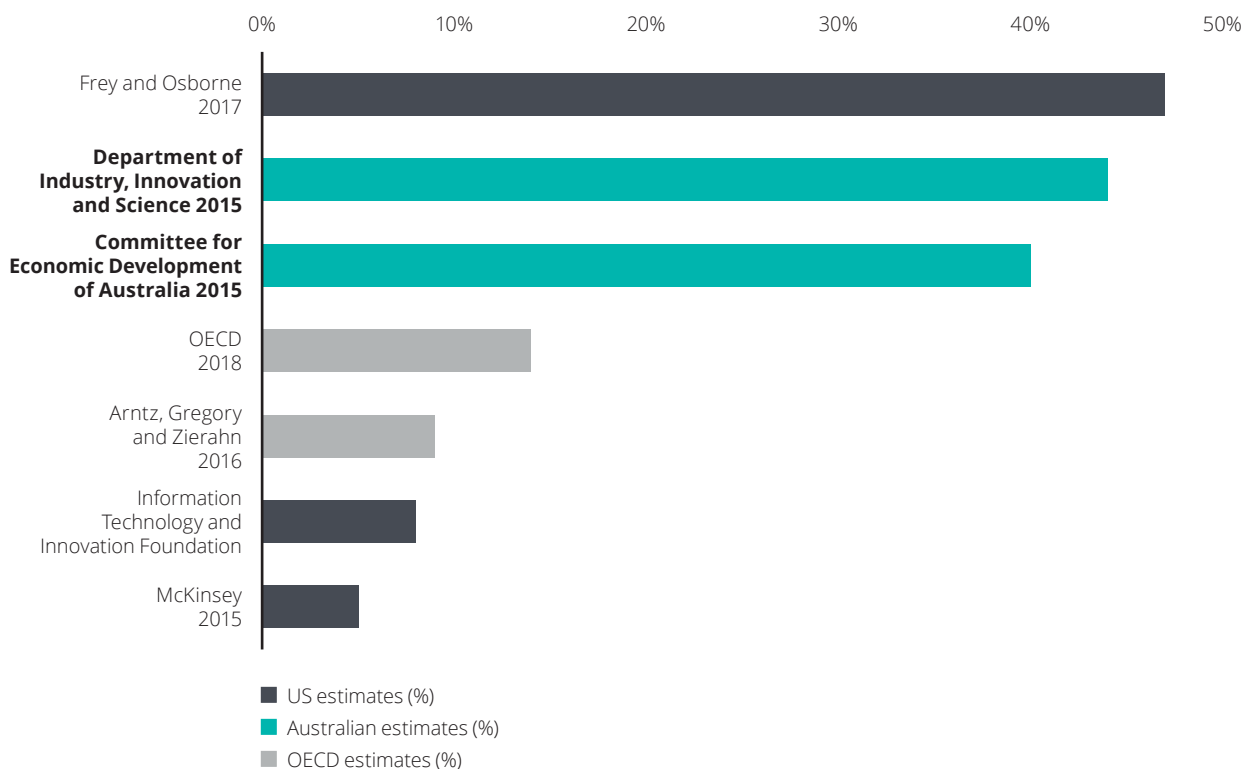
To date, there is no significant evidence that digital change has led to accelerated destruction of jobs in Australia. Today, there are over five million more Australians employed than there were in 1988; up from 7.2 million to 12.8 million.⁴ And the 2019 unemployment rate of around 5 percent compares favourably with the average we have seen over the past 30 years (6.6 percent).⁵

Yet these concerns are once more dominating the national conversation. So it’s only natural to ask questions about whether this change will be different. Should we be concerned? Here we break down the most common myths about the future of work.

Robots will take my job

Every week, a dramatic new prediction of job losses as a result of automation seems to make headlines. Estimates of job losses vary widely across research methods and countries, as pictured in Chart 2; from the oft-cited Frey and Osborne finding that 47 percent of jobs in the US will be lost to automation, to more conservative estimates from the Organisation for Economic Co-operation and Development (OECD) and McKinsey. Fears about job security have become more pervasive.

Chart 2: Estimates by various studies of proportion of jobs that will be automated⁶



Source: See endnotes

Advances in artificial intelligence, robotics and driverless cars, amongst other technologies, will certainly affect the work we do. New technologies will have the capacity to automate some tasks. But, in most instances, this will mean that people are assigned new tasks – rather than entire industries disappearing. Here’s an example:

Despite the availability and affordability of construction equipment and heavy machinery (like jackhammers and excavators) and a range of digital assistants around project planning and scheduling, the construction industry is still one of the largest employers in Australia.

As such, the most widely cited (and the most negative) studies which assume that whole occupations – rather than individual tasks – will be automated are unlikely to eventuate, or will be limited to a smaller set of occupations.

This is not to say that there will be no job losses. Some roles will be consolidated, or no longer require full-time workers. As the demand for skills changes, some people will risk redundancy if they do not re-train, re-skill or re-deploy. But focusing the story on job losses is one-sided. As some jobs are destroyed, others will be created. And in net terms, the latter will outweigh the former. For every problem there’s a job, and we’re not running out of problems.

Some of the jobs created will be a function of technology. Social media marketing managers, data scientists, and genetic consultants would have been unthinkable even a decade ago. Today, these occupations are growing quickly. Others are a function of our changing demography and preferences. For example, our ageing population has contributed to employment in health care and social assistance growing 22 percent over the last five years – and we expect that the sector will continue to grow.

I'll spend my life changing jobs

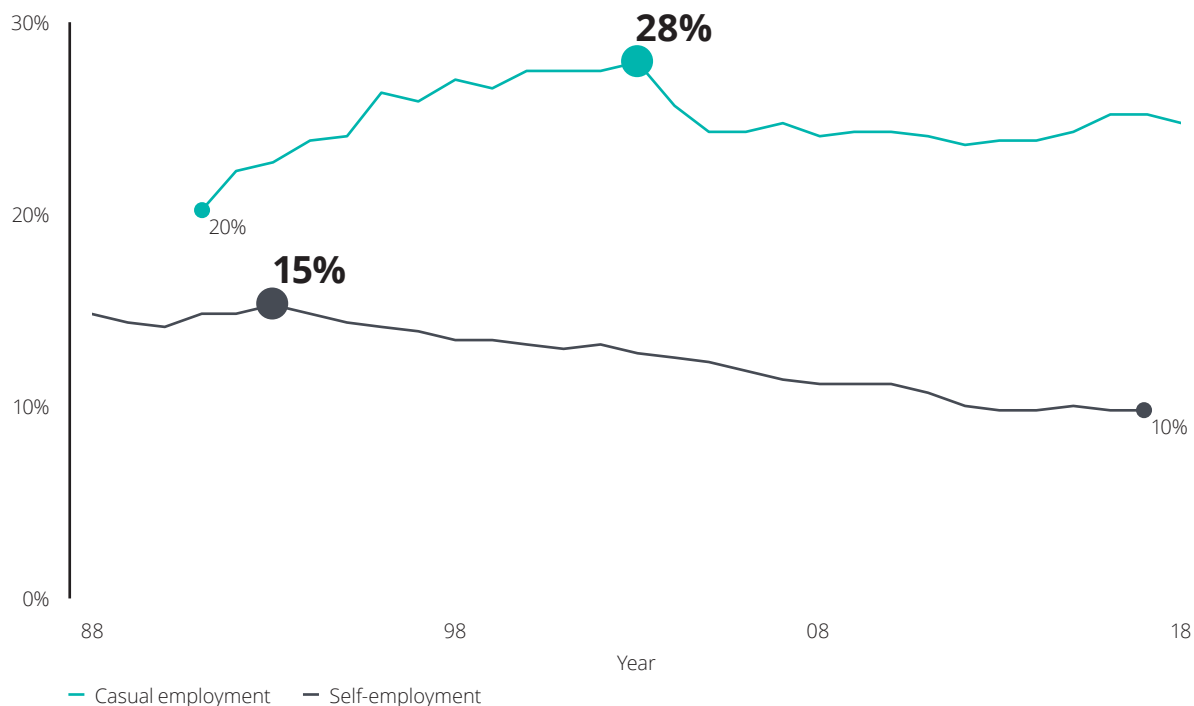
Tenure statistics tell a story of stability. Nearly half of the workforce – 45 percent of employed people – have been with their current employer for more than five years. If anything, the trend towards tenure is increasing; the comparable figure in 1988 was 40 percent.⁷

Chart 3: Length of employment with current employer over three decades



Source: Australian Bureau of Statistics (ABS) 6226.0

Chart 4: Casual employment and self-employment as a proportion of total Australian employment



Source: OECD (2018)

It is true that an increasing proportion of people work part-time. It is also true that Australia has a higher proportion of its workforce working part-time than most developed countries.

However, most people work part-time out of choice, rather than obligation. Nearly three quarters of part-time workers in Australia would not prefer to work more hours.⁸ That still amounts to a fair degree of underemployment. But it also amounts to a lot of workers choosing the flexibility of a less than full-time load to suit their circumstances.

Likewise, concerns about mass-casualisation and contracting arrangements are, at least for now, mostly hype and hypothesis. The rate of self-employment has actually declined steadily since the mid 1970s – and in fact is currently at a record low. Similarly, while 24 percent of Australians are employed on a casual basis, this share has actually fallen over the last two years, and broadly has been consistent over the last two decades.⁹

Of course, this is not to undermine the significant and growing role of the sharing economy. An estimated 22 percent of Australians are now generating income from platforms like Airbnb, Airtasker and Uber.¹⁰ But, for most, the sharing economy appears to be a side hustle, rather than a primary source of income.

So loyalty to an employer is alive and well, and not just an old-fashioned concept. There is greater opportunity for flexibility in today’s labour market, but most people are still spending extended periods working full-time (or part-time) for the same employer.

I'll work anywhere but the office

Broadband in homes is the norm. Mobile offers increasing speeds and coverage. And digital infrastructure continues to improve, including to regional and remote areas. With more ability to connect than ever before, you'd think that towering office buildings and long commutes would be a thing of the past.

Yet dreams of decentralisation have not come to pass. In fact, we are more focused on the Central Business District (CBD) than ever before. In 2016, more than two-thirds of Australians lived in a capital city. The majority of those Australians lived in Sydney and Melbourne – cities which are very large by developed country standards.¹¹

Although some people are working remotely, it is a relatively small proportion. Around 430,000 Australians worked from home on Census day 2016; 4 percent of Australia's workforce.¹² And this figure has been relatively stable over the last decade.

It's not because of a lack of employer flexibility. Almost one in five Australian employers now offer the ability for staff to work from home.¹³ And around 23 percent of employees work from home at least sometimes.¹⁴ This occasional work from home is one of the key reasons that while the number of people working in CBDs has gone up, the office floor space per employee has gone down.

Ultimately, congregating together still holds a lot of appeal, for both the employer and the employee. It helps us collaborate and socialise, as well as giving us infrastructure and support. More of us are working flexibly; an afternoon at home to facilitate school pick-ups, for example. But the office is not going away any time soon.



The shift: From hands to head to...

Technology is affecting the way people work and also the jobs that exist. While technology has replaced some jobs, innovations in robotics, artificial intelligence and other technologies have also created entirely new fields and occupations.

Technology can change how we perform a task, or even change the tasks we need by complementing and automating work. Technology can also affect jobs by changing what consumers want and how they want it.

A major trend in recent times has been a shift away from manual-intensive, ‘muscle power’ work, towards care-based jobs.¹⁵

Self-driving cars, 3D printers and robotics are causing large-scale change in a wide range of jobs by taking over or speeding up what were previously manual-intensive tasks. The widespread adoption of machines to do a lot of the heavy lifting has changed muscle power jobs from the inside out, making individual workers far more productive.

At the same time, forces operating from the outside in have lifted demand for care-based services such as education and health. These forces have left consumers with more time and money to invest in education, health and wellbeing, and a variety of other services. Australia’s ageing population is also increasing demand for care-based jobs.

New jobs in research and development are created as demand for new technologies increases. Consumers are able to divert more time and money into discretionary purchases, and they want newer and better technologies. People want faster ways of communicating, and new ways of experiencing entertainment. Demand for new technologies also comes from businesses trying to increase efficiency and create new products.

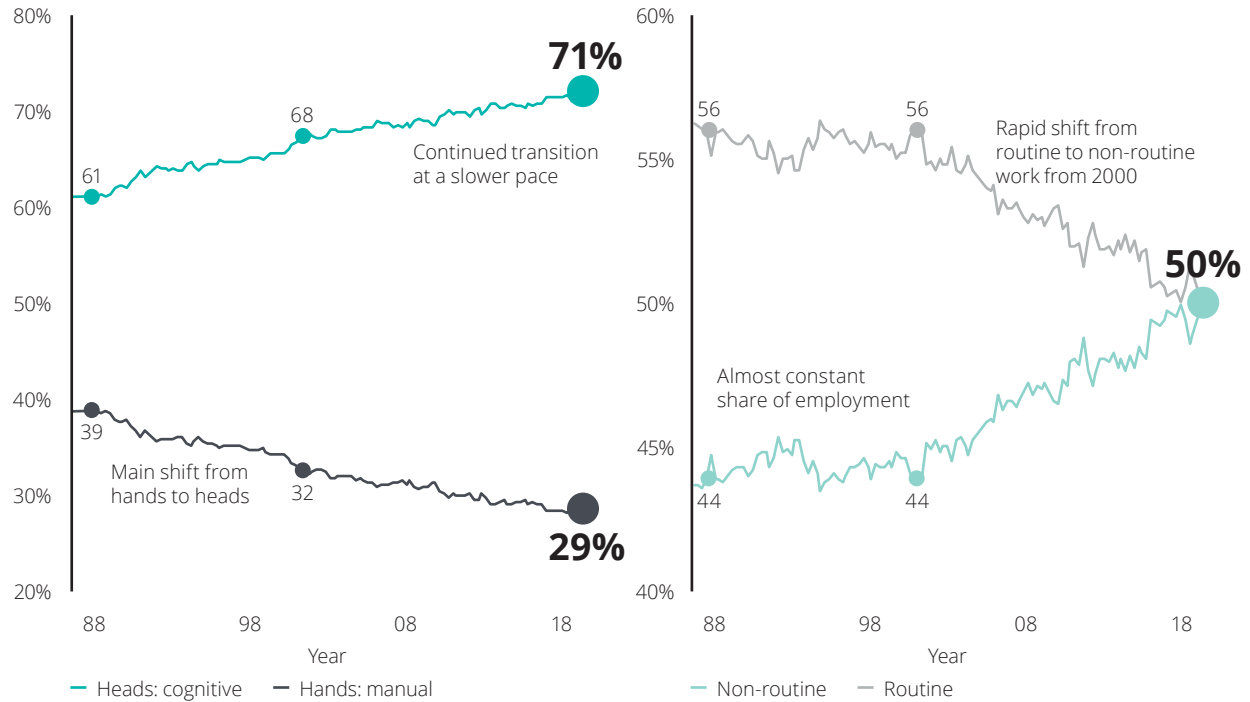
We need to understand how these forces shape the many different jobs being done in Australia to prepare for, and take advantage of, future transitions.

Routine robots and thoughtful humans

Over the past few decades, coinciding with a major shift away from manual labour and towards caring work, there has also been a move towards more thought-based, cognitive work: a shift from hands to heads. Physical machines were adopted across countless production lines, while computer technologies enabled fields like finance, science and information technology to rapidly evolve and expand.

The ‘hands to heads’ shift particularly took place through the 1980s and 1990s as shown in Chart 5. Over that time, employment in cognitive occupations (heads) grew at almost four times the pace of manual work (hands) in Australia. But now as technology develops further and moves beyond the realm of physical machines, a different shift is taking place. Employment in Australia is moving away from routine work into non-routine work.

Chart 5: Share of Australian employment by type of work



Source: Deloitte Access Economics

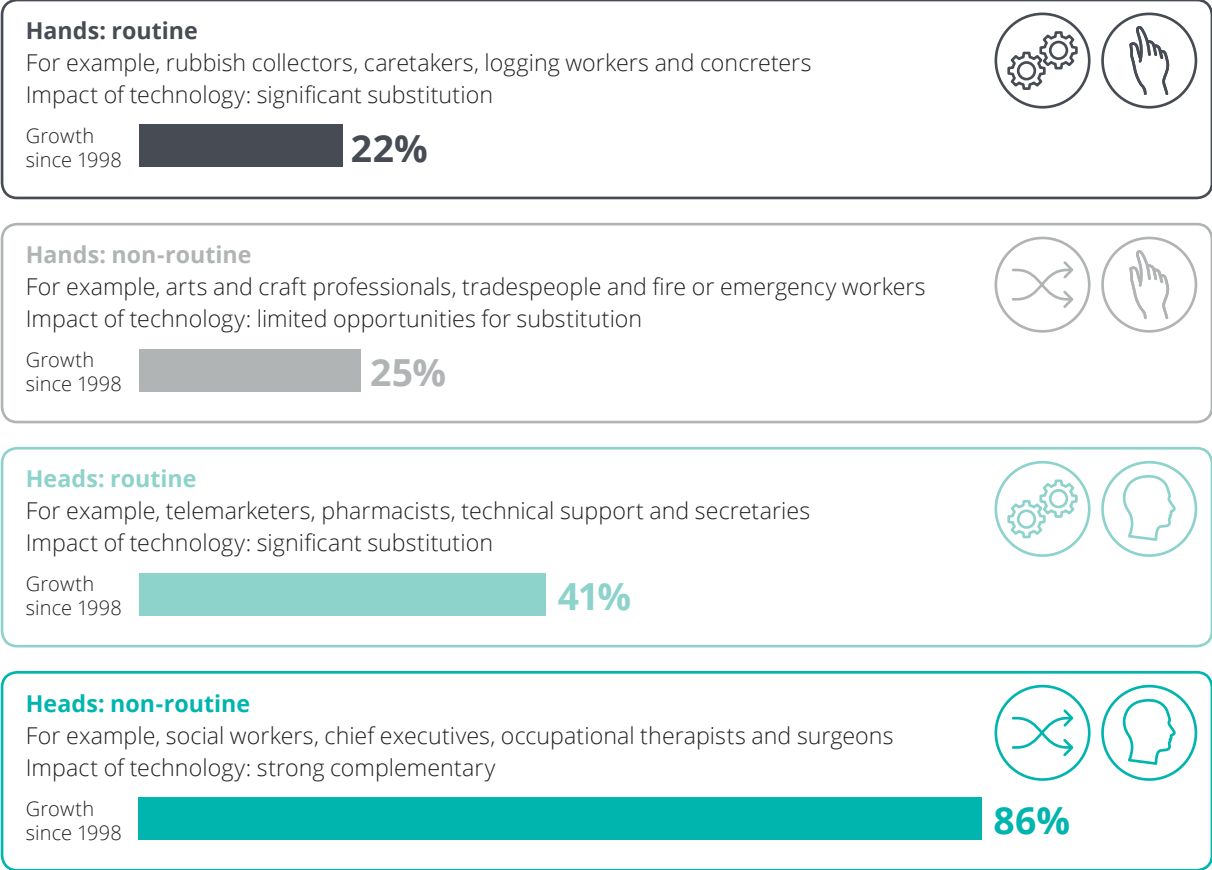
The degree to which a job is routine or non-routine is increasingly important in determining its relationship with technology.

Machines used to assemble cars replaced many production line workers, while computers have removed the need for people to manually calculate equations.

However, non-routine jobs are difficult (or impossible) to automate because the actions or processes involved are not repetitive enough to be codified. Non-routine jobs are, therefore, often complemented rather than replaced by technology. Think of a firefighter. Innovations in mobile technology, personal protective equipment and drones have made firefighting easier and more effective. But the unpredictable nature of the job makes codifying it impossible, and the role of a firefighter remains essential.

Non-routine jobs that require you to use your head have been the largest single source of employment growth over the past twenty years. At the other end of the spectrum, routine hands-based jobs, the most susceptible to automation, have grown at the slowest pace.

Figure 2: Impact of technology on employment by occupation type



Source: Deloitte Access Economics

Case study: Australian Department of Defence
 The Australian Government has undertaken a transformational program to augment their human workforce with AI Assistants, to improve military readiness and operational effectiveness in a fiscally constrained environment. The initial transformation focused on the Australian Navy, where an AI Assistant Centre of Excellence was established to simultaneously redesign work, and the workforce, with AI Assistants releasing capacity for human workers to be retrained and redeployed to critical tasks and functions. The introduction of AI Assistants has minimised human errors, eliminated low value-adding human work and accelerated the speed of work, while creating a superior employment experience for the broader workforce.

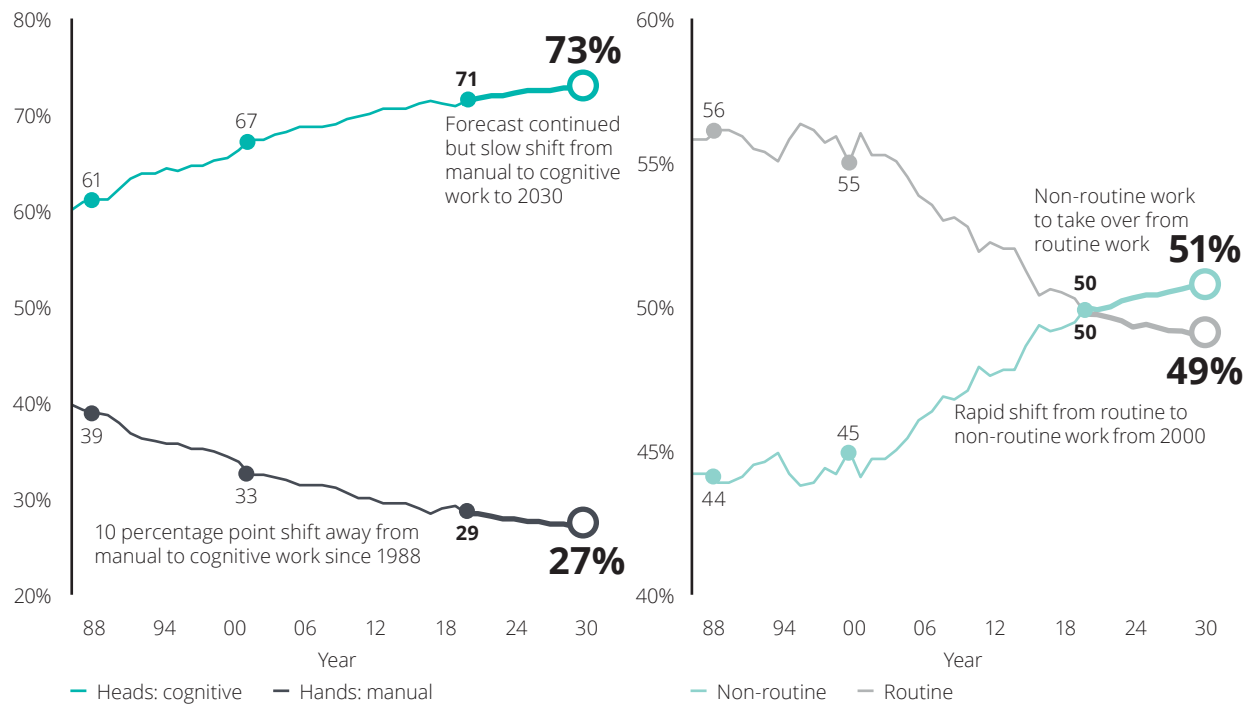
As an example, consider the growth in medical practitioners – who do non-routine work of the head. Technology has complemented the work that doctors do, allowing for better care for patients.

As a result of improvements in diagnostic tools, robotics and even 3D printing, doctors can now diagnose and treat patients faster, more accurately and less invasively. Yet the demand for doctors has only grown as a result of increased prosperity, rising living standards and an ageing population.

On the other hand, routine work of the hands has grown at slower than half the speed of total Australian employment. For example, technology and globalisation have seen a steep decline in the number of people working as sewing machinists or operating textile production machines. However, this is not to say that all jobs in this category are declining – for example, the number of fast food cooks and gardeners has actually grown significantly. This is because, in some cases, the rate of automation cannot keep up with demand.

The transition of Australia’s workforce from hands to heads, and from routine to non-routine jobs, will continue for years to come, as demonstrated in Chart 6. While cognitive occupations already account for the largest share of the Australian workforce, non-routine jobs will represent a larger share of employment than routine jobs for the first time ever in the coming years. The slowest employment growth will be in routine hands-based occupations, growing just 8 percent from current levels by 2030 and decreasing as a share of the overall workforce.

Chart 6: Forecast share of Australian employment by type of work



Source: Deloitte Access Economics

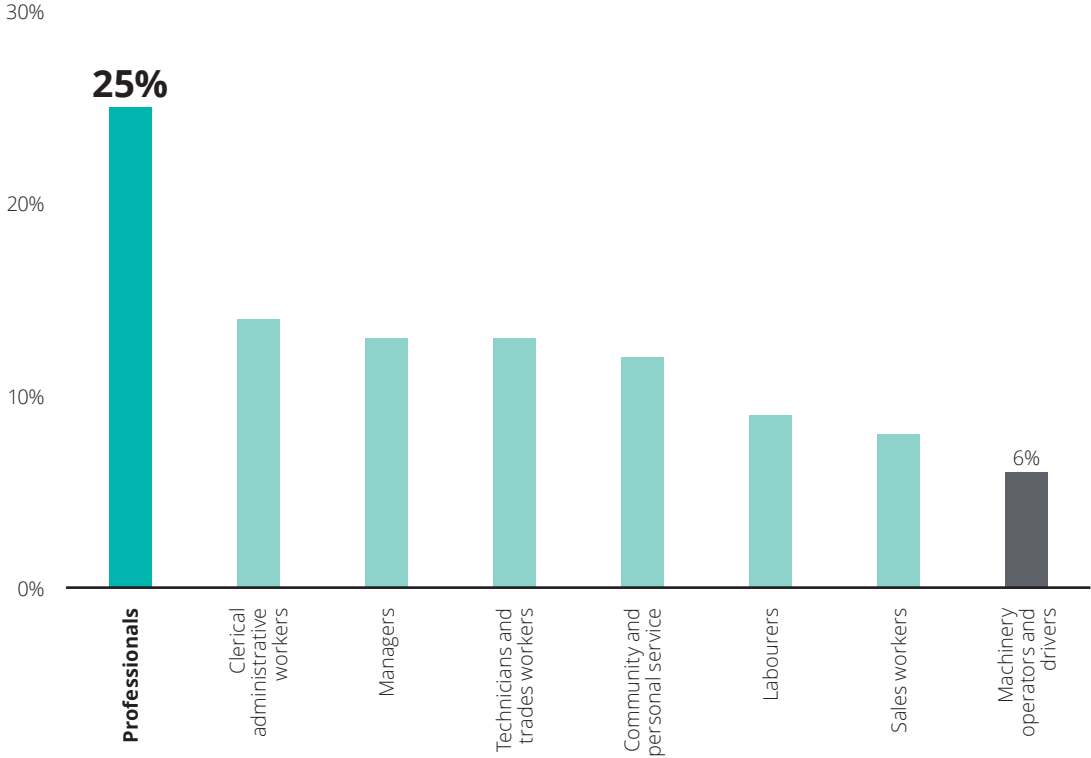
What does this mean for the actual work that Australians will be doing?

By 2030, one quarter of Australia’s workforce will be professionals, driven by a continued shift towards non-routine, cognitive-based jobs. Most of these will be in business, health, education or engineering.

Chart 7 demonstrates that this is a much larger share than any other major occupation group, and is larger than the combined shares of labourers, sales workers and machinery operators and drivers.

Both within and outside the professional cohort, people who spend a large part of their role interacting with others will dominate the employment landscape. It is expected that by 2030, there will be more than 400,000 people employed in each of the following occupations: teaching, midwifery and nursing, personal care, administration and sales.

Chart 7: Share of total workforce in 2030



Source: Deloitte Access Economics

Figure 3: Five fastest growing occupations from 2018 to 2030



Source: ABS, Deloitte Access Economics

Australia’s affluence will also drive a massive (46 percent) increase in sports and fitness workers by 2030. A continued shift from hands to heads will put contract, program and project administrators in the top five fastest growing occupations along with leadership roles (CEOs and general managers), information and organisation professionals and health and welfare support workers.

As the landscape of the work we do continues to evolve, leading firms will use technology to drive efficiency by reducing the time required for routine work. By providing the right training and opportunities, workers may be able to transition from roles that are susceptible to automation, into growing roles that are complemented by technology.

Case study: Car manufacturing

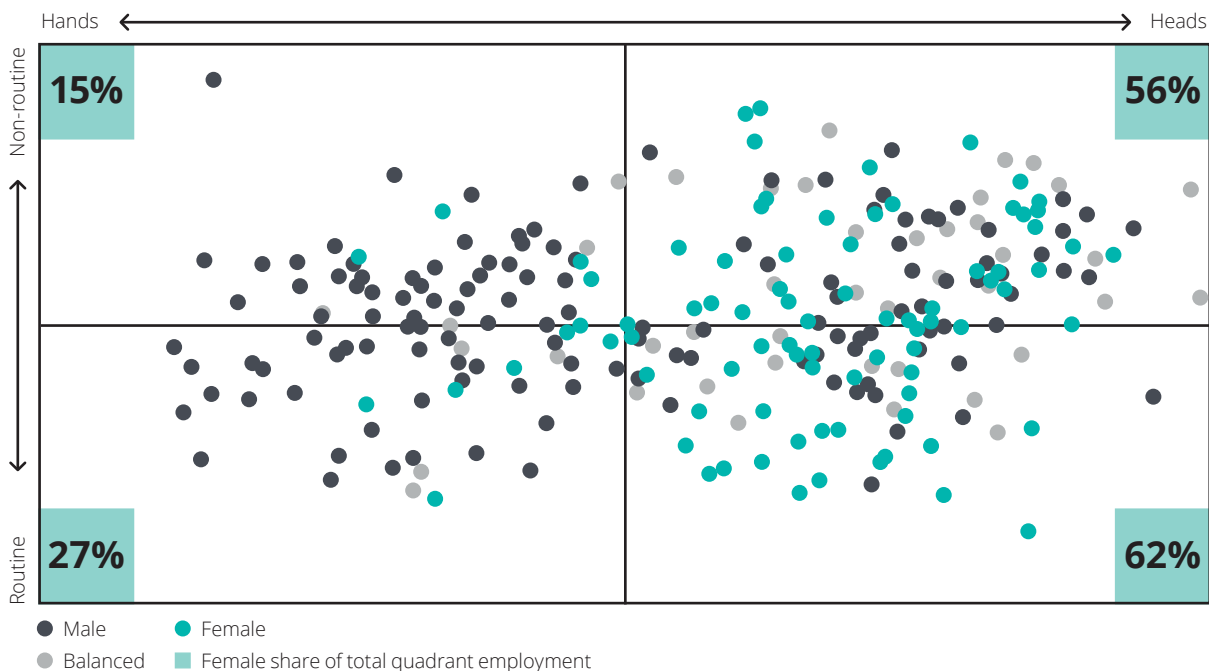
In 2017, the last of Australia’s car manufacturing plants shut down. The decline of this industry was predicted to cause mass job losses in Australia’s manufacturing sector. However, manufacturing employment has actually been rising, with more people now employed in the sector than before the shutdown of the automotive industry.

Many automotive workers have successfully transitioned into roles with small, high-tech firms like drone manufacturers. So how did the end of car manufacturing defy all the odds and not cause the predicted devastating fallout?

Research found that car manufacturing workers possess many skills and qualifications that apply to other industries such as food manufacturing, health care, warehousing and logistics.¹⁶ However, it also found that transferability of skills was poorly understood by workers. Employees tended to perceive their skills as being highly occupational-specific, even though that is generally not the case. This meant that transferable skills were being understated in job applications and interviews even though they were highly valuable.

By increasing awareness of skills transferability among both workers and potential employers, as well as supporting training opportunities, many workers have been able to transition into new jobs.

Chart 8: Occupation matrix, split by gender dominance – 2018



Note: Female and male dominated occupations are those where 60 percent or more of employees are female or male respectively. Balanced occupations are those where each gender accounts for at least 40 percent of employees.

Source: Deloitte Access Economics

As well as assessing the implications of technology on jobs from an occupation perspective, we can also assess its impacts from a gender perspective. Chart 8 shows that occupations dominated by females (those where 60 percent or more of employees are female) are almost all cognitive-based occupations (work of the head). Unsurprisingly, most manual occupations (work of the hands) are male dominated.

Women are more represented than men (56 percent) in the non-routine work of the head, which is expected to grow at the fastest rate over the coming years.

Men currently dominate the jobs most susceptible to automation – manual occupations involving repetitive tasks.

Occupations with a reasonable gender balance (where each gender accounts for at least 40 percent, and no more than 60 percent of employees) are almost exclusively cognitive (work of the head). This is a positive sign for gender balanced occupations given that cognitive occupations are expected to experience strong growth.

The shift... to heart

We tend to analyse jobs in silos – hands or heads, routine or non-routine. But jobs are not siloed. Every job requires a combination of skills. As such, our binary categories are hiding a bigger picture.

Embedded in both the work of the hands and the work of the head is a hidden element – the work of the heart. These are the human skills that are necessary in almost every role – the interpersonal and creative skills that are hardest to mechanise. Tradespeople may work with their hands, but they need customer service skills. Programmers are focused on using their heads, yet many require the ability to teach and mentor others.

As such, jobs will increasingly need us to conduct ‘work of the heart’. Robots are learning to understand and mimic human tone, but are less able to exercise emotional judgement or champion professional ethics. Deloitte Access Economics predicts that soft-skill intensive occupations will account for two-thirds of all jobs by 2030.¹⁷ Work of the future will see technology augmenting human capability and will allow individuals to focus on higher value-added tasks.¹⁸

Deep dive: A closer look at experience

Are you experienced?

When advertising a job, one of the things that employers routinely ask for is experience.

This can mean different things. It might be experience with a particular skill, in a particular industry, working experience in general, or experience in a role.

Australian workers have a strong stock of experience. Analysing data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey combined with our own labour force analysis, we are able to examine the total supply of experience – both in the labour force in general, and in a particular occupation.

In total, people who are currently employed represent a total of 245 million hours-worth of experience. In fact, the median worker has been working (at a range of jobs) for more than 17 years.¹⁹

However, individuals will have a range of experience over their career; from early entries into the workforce such as babysitting and retail, through to apprenticeships, professional roles, and management. As a result, the amount of experience workers have in an occupation (that is, doing a similar role, even with different employers) is much lower. The average working Australian has around five years of experience in their occupation.

But how much experience do you actually need?

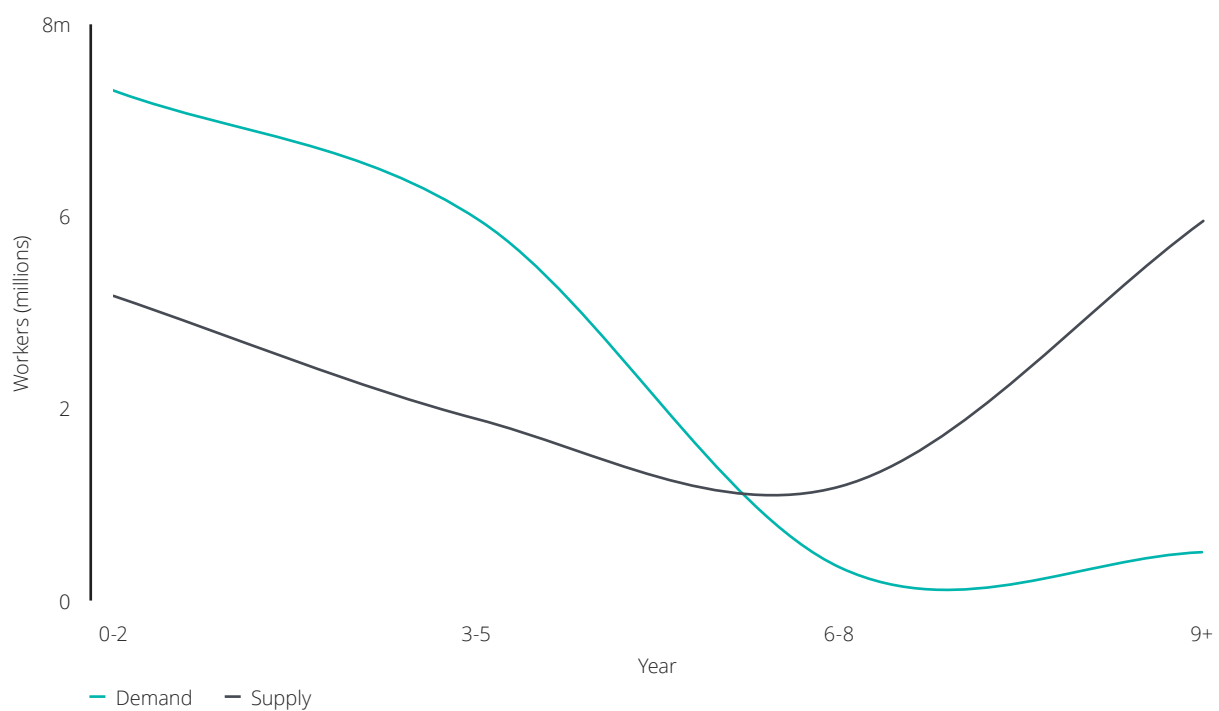
In Australian-first research, we have examined the total demand for experience across the Australian economy. We look at how much experience is required, using job advertisement data from Burning Glass Technologies as a proxy, and then compare it to how much experience people have in their current role. This allows us to consider how demand and supply for experience match up across the economy.

Case study: Burning Glass

Burning Glass Technologies delivers job market analytics that allows employers, workers, and educators to make labour market data-driven decisions. The company's artificial intelligence technology analyses hundreds of millions of job postings and real-life career transitions globally to provide insight into labour market patterns.

For this project, Deloitte Access Economics analysed data available on the Burning Glass Labour Insight™ jobs platform. The Burning Glass database includes more than 9 million unique job advertisements (23 million in total) across 1,800 occupations in Australia and New Zealand between 2012-2018, drawn from more than 10,000 online sources across all states and territories. Burning Glass collects these advertisements, removes duplication, and interprets them based on natural language processing and a sophisticated proprietary taxonomy of jobs and skills. This allows a standardised view of the skills, experience, occupation and industry for each job posting.

Chart 9: Demand for, and supply of, experience in a given role



Source: Deloitte Access Economics analysis based on data from Burning Glass and HILDA

The data shows that employers are most eager for those who are still relatively new in their roles. In fact, employers' demand for early career employees significantly outstrips how many people are actually in their early careers. For example, employers would like to have around 5.3 million workers with 3-5 years' experience in a given role – more than double the amount of workers in this category who are actually available.

Clearly, employers like to hire people who have had at least some exposure to the workforce.

But not too much experience, it seems. There are many more workers with more than nine years' experience in a role than is actually preferred by employers. In total, we estimate that there are over five million workers who have more than nine years' experience in Australia (or 39 percent of the workforce). However, only 5 percent of job advertisements were looking for people with this level of experience in the role.

If we assume that demand in job advertisements reflects demand in all jobs (even those which are not being advertised), this could imply that there are around 4.5 million more experienced workers than are demanded – a potential oversupply representing around one third of the Australian labour force.

This is not to say that experienced workers experience significant unemployment. These workers, for the most part, already have jobs. But it does mean that, if they apply for a new role for their experience level, they will face stiff competition, and may well be seen as being overqualified.

Some caution is required in interpreting this data. More senior roles are less likely to be advertised, instead coming through promotions or word-of-mouth, so we may be under-estimating demand. In addition, it is quite possible that more experienced workers will be able to apply for – and take up – roles that advertise for less experience.

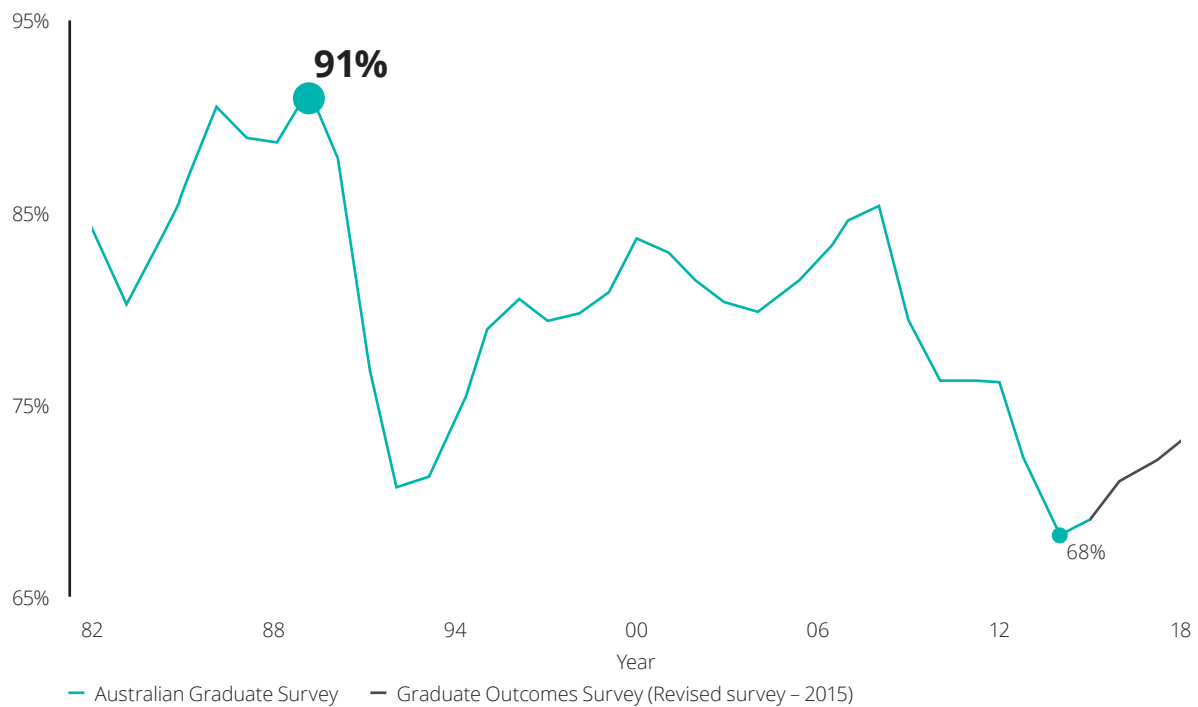
However, ultimately there are more than eight times the people with more than nine years' experience than roles that are advertised in this category. This represents an undeniable mismatch.

Why do employers have less appetite for experience? Perhaps there is a sense that more experienced workers are also 'set in their ways', and perhaps not adaptable enough to new ways of working. Or maybe it is an unconscious (and unreasonable) bias.

While having too much experience is not necessarily good for job prospects, neither is having none in today's labour market.

We routinely hear about difficulties that young people face in finding a first job – particularly one which is relevant to their qualifications. This is backed up by the numbers. The unemployment rate for youth is double the rate of the overall population. It's a similar story for graduates, with new graduates from university finding it tougher in the last few years to land professional roles after graduating than at any time since the early 1990s, as pictured in Chart 10.

Chart 10: Graduate employment outcomes – undergraduate full-time employment



Source: Graduate Outcomes Survey (2016-2018) and Australian Graduate Survey (1982-2015)
 Note: This chart shows the proportion of undergraduates in full-time employment within four months of completing their degree.

Even for those who have a job, there are no guarantees that it will be the right one. Nearly one in five employed young people (17.3 percent) would prefer to work more hours, compared to 8.3 percent of the broader workforce.²⁰ Further, 27 percent of employed graduates say they are not using their skills/education, largely because they are not employed in their area of expertise.²¹

Broadly, the labour market is performing well for those with just the right amount of work experience – but less well for those with too little or too much. This underutilisation is a wasted opportunity for Australia, and one we need to remedy if we are to stay on the path to prosperity.

Diversity of experience

Never before has the value of diversity been so front of mind in the public consciousness.

Before exploring diversity in the workplace, it is important to understand the relationship between diversity and inclusivity. Diversity will not drive any real change without inclusivity. Hiring people from diverse backgrounds simply to hit a target achieves nothing.

The value of workplace diversity lies in people bringing diversity in experience and thought to a workplace or to a project. But diverse thoughts and ideas will never get heard, let alone used to benefit business, if people are not included and their opinions are not valued.

When we refer to diversity here, we are really talking about inclusive diversity as inclusivity is the only way that anyone truly benefits from diversity.

A diverse workforce is proven to stimulate greater creativity and exploration, which in turn drives innovation and productivity. This provides value not just at the business level, but to the entire economy.

Increasing gender diversity in Australian businesses could add **\$10.8 billion** to Australia's economy.²² And that research only covers gender diversity. There are many more facets of diversity that need to be considered and provide even more value to Australia's economy.

But what does an inclusive workplace actually look like?

Inclusive workplaces are accessible to people of diverse backgrounds, they are safe and comfortable environments for everyone, and they are workplaces that truly value the diverse thoughts and experiences of their employees.

Educating staff about different religious and cultural practices, issues facing people of various ages, gender and sexual orientation, physical and mental disability, or even the challenges facing new parents, is an important first step towards social inclusivity.

Providing a visible support system and safety net for employees can have a positive impact, even for those who do not need to utilise it. This can come in the form of phone numbers to call when in need, engagement of employee assistance programs, and mental health training.

Inclusivity extends to the physical environment. Physically inclusive workplaces provide an environment that is flexible and can cater to the needs of all employees. This includes office or worksite accessibility, as well as options for people to work from home, or work non-standard hours.



Skills: The job currency of the future

As long as there are problems, there will be jobs – and we’re not running out of problems. But what will these jobs be? What do employers want, and how can individuals satisfy these needs?

Often, forward looking views of the labour market focus on the change in industry structure and occupational structure over time. These trends are crucial to understanding what types of tasks will be done, and which industries will be employing them.

But occupations and industries can evolve quickly, and people can move between them. According to LinkedIn, many of the fastest growing jobs – like machine learning engineers or big data developers – didn’t even exist five years ago.²³

The shift from work of the hands (manual labour) to work of the head (cognitive tasks) will continue. But the next stage will be a move towards work of the heart. Humans are still better at being human. Interacting with others, being creative, understanding and reacting to emotions. These are all inherently human skills and focusing on these will bring the greatest benefits in the long run.

Ultimately, skills, rather than occupations or qualifications, form the job currency of the future. As technology, preferences and demography evolve, the right set of core skills – both technical and otherwise – will mean that workers can add value to a range of tasks, occupations and industries.

Here we turn our focus on these critical skills, integral to what we deliver at work. And we categorise skills by three types – skills requiring our hands, skills requiring our heads and skills requiring our hearts. Every job will require some combination of these skills. In fact, the average job needs around 18 skills. So what skills do organisations need their people to have? Do they already have them or is there a gap? How is this likely to evolve over time?

Critical skills and niche gaps

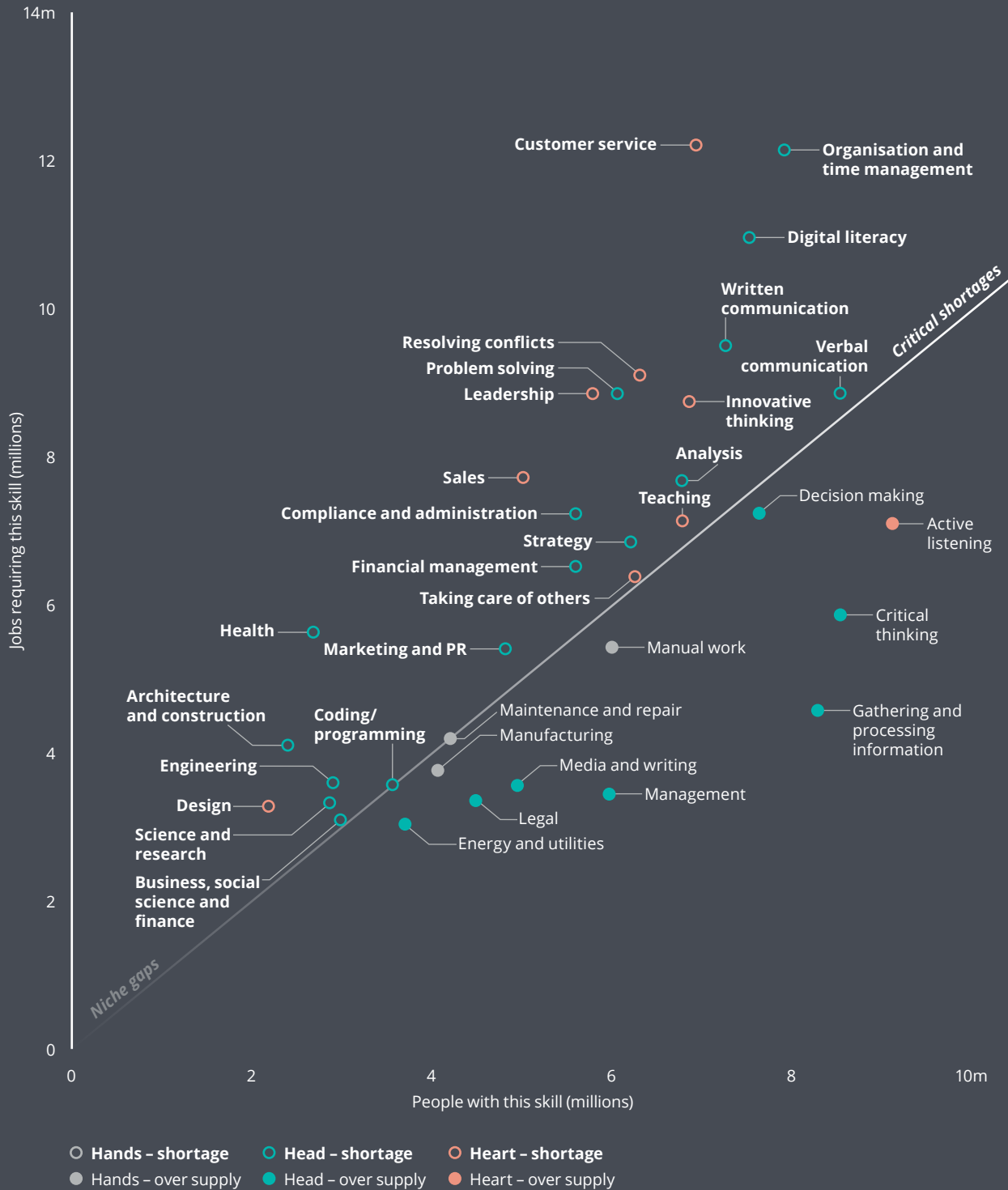
In an Australian first, this report quantifies the demand for, and supply of, skills across the Australian workforce. We capture a full range of skills – from those required for work of the hands, such as manual skills, to those required for work of the head, such as legal skills and problem solving, to those required for work of the heart, like customer service and leadership.

First, we examine the demand for skills. We measure this using job advertisement data from Burning Glass, from the period 2012-2018. This data captures over nine million unique job postings from a range of websites. We then look at the frequency with which each skill is demanded in each job, and multiply through by the total number of people in each occupation, to estimate the total number of skills demanded.

To assess the extent to which Australians have each skill, we look at the importance of skills to each occupation, as measured by O*NET. O*NET measures the importance of each skill to each occupation, based on experience in the US. Concoring this to Australian data then gives us a sense of the extent to which Australians in each occupation possess each skill. Again, we multiply through by the total number of people in each occupation and add these together to estimate the total number of skills supplied.

More details on our methodology are available in Appendix A.

Chart 11: Niche gaps, critical shortages: the skills that employers want and the people who have them – 2019



Source: Deloitte Access Economics

Note: Skills above the line are in short supply with a greater distance from the line indicating a greater shortage. And vice versa with respect to below the line.

If we put those measures together (supply and demand for skills) it suggests the Australian economy is already facing skills shortages across a range of key areas. Chart 11 maps each of the skills we examined across both supply and demand. Skills that are above the line are in short supply in 2019, with a greater distance from the line indicating a greater shortage.

In the area above the line on the bottom left, we identify skills that are ‘niche gaps’ – in short supply, but required in fewer jobs. Skills above the line in the top corner are in ‘critical shortage’ – skills in short supply, but required for a significant proportion of jobs.

In total, the shortages are significant – in 2019 alone, there will be over 23 million skill shortages across the economy. This is not people shortages but skill shortages. The equivalent of saying that every employee in Australia is, on average, missing 2 of the critical skills that they need to meet their employers’ expectations.

So what, exactly, are the skills that businesses want and employees need?

Chart 12 shows that there is a skills hierarchy – but it may not be you think. Ordinarily, we hear about technical skills shortages, or shortages in ‘work of the head’. Think science, technology, engineering and math (STEM), or mining engineers. The data reflects that there are some shortages in these skills – confirming some common perceptions.

However, by far the most in-demand skills relate to core functions within the workplace – critical skills which feature in all types of work. For example, 96 percent of Australian jobs require time management and organisational skills, 97 percent of Australian jobs require customer service skills, and 70 percent require verbal communication skills. Compare that to pure technical skills – the most demanded ‘work of the head’ skill is digital literacy – which is required by 87 percent of jobs. And manual labour skills – work of the hands – are required in 43 percent of jobs.

The greater focus on ‘work of the heart’ in the labour market is about inherently human skills. This is where humans excel and where digital technology has been less successful in automating or augmenting human effort.

But despite this demand suggesting that we should be most focused on the skills required for work of the heart, followed by head and then hands, in fact we have the most acute shortages in the areas of most demand. Chart 12 examines the gap between the supply and demand of each skill in 2019.

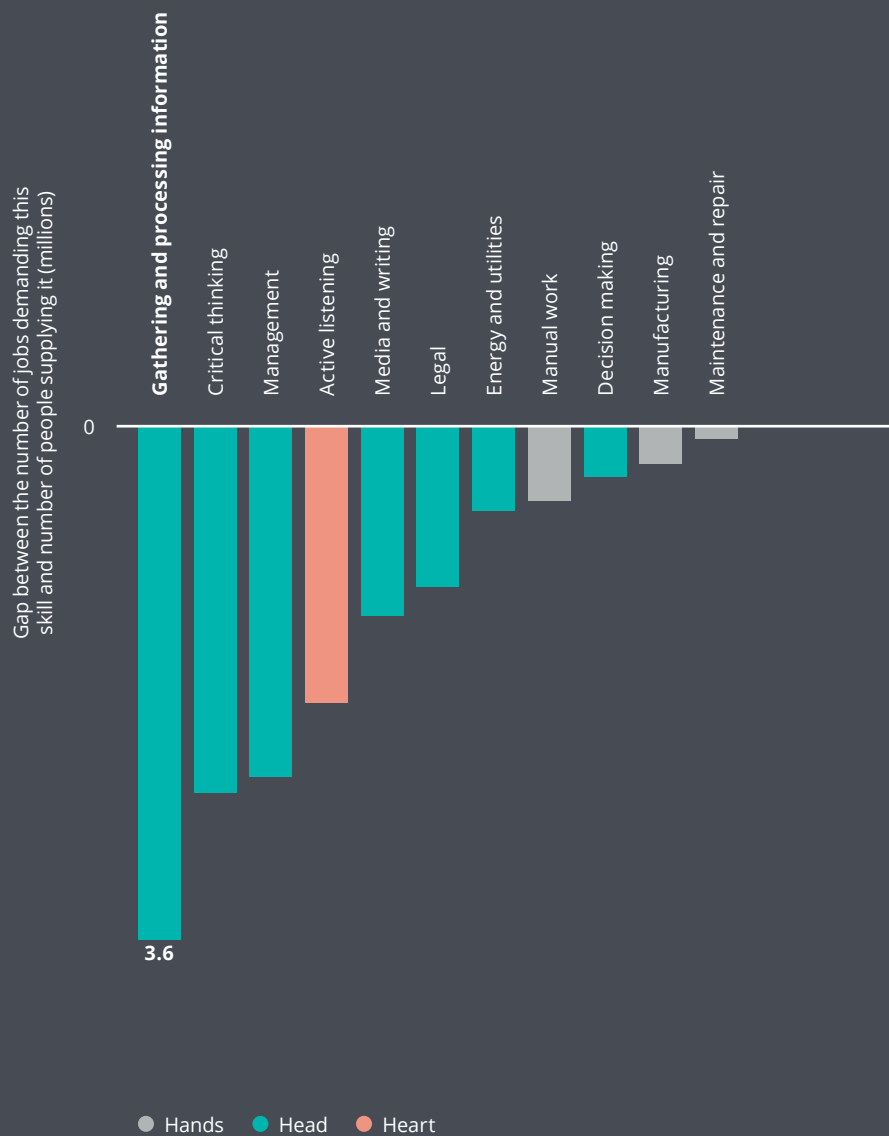
Chart 12: Magnitude of skills shortages or over-supply by skill - 2019

Over supply

Of the three skills we look at required for work of the hands, none (0 percent) are in short supply.

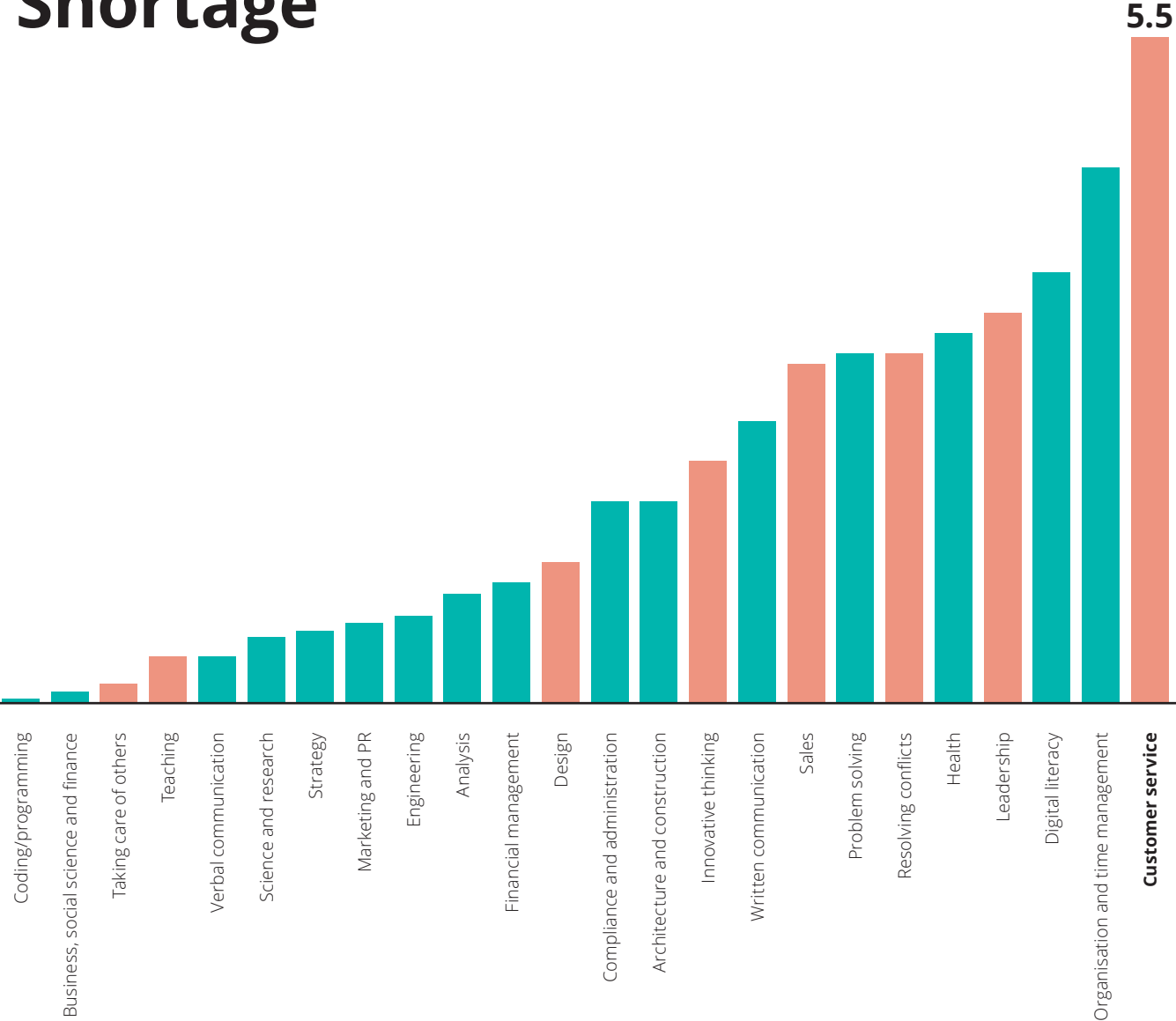
Of the 23 skills we examine under work of the head, 16 (70 percent) are in short supply.

Of the nine skills we classify as work of the heart, eight (89 percent) are in short supply.



Source: Deloitte Access Economics

Shortage



Clearly, there are still significant gaps we don't spend enough time thinking about or actively working towards addressing.

Think about how often we hear about the shortage of coding and programming skills. It is true that there is a significant shortage of these skills. But this shortage is dwarfed by the shortage in digital literacy skills more generally; demand for digital literacy skills already exceeds supply by around 3 million.

Even digital literacy, however, is both less in demand and less in short supply than customer service skills. In fact, customer service is the most demanded skill in the Australian economy – going beyond retail and hospitality to interacting with and building relationships with clients and stakeholders in a range of industries. And the shortage in these skills is severe, already representing around 5.3 million more workers required with these skills than are supplied.

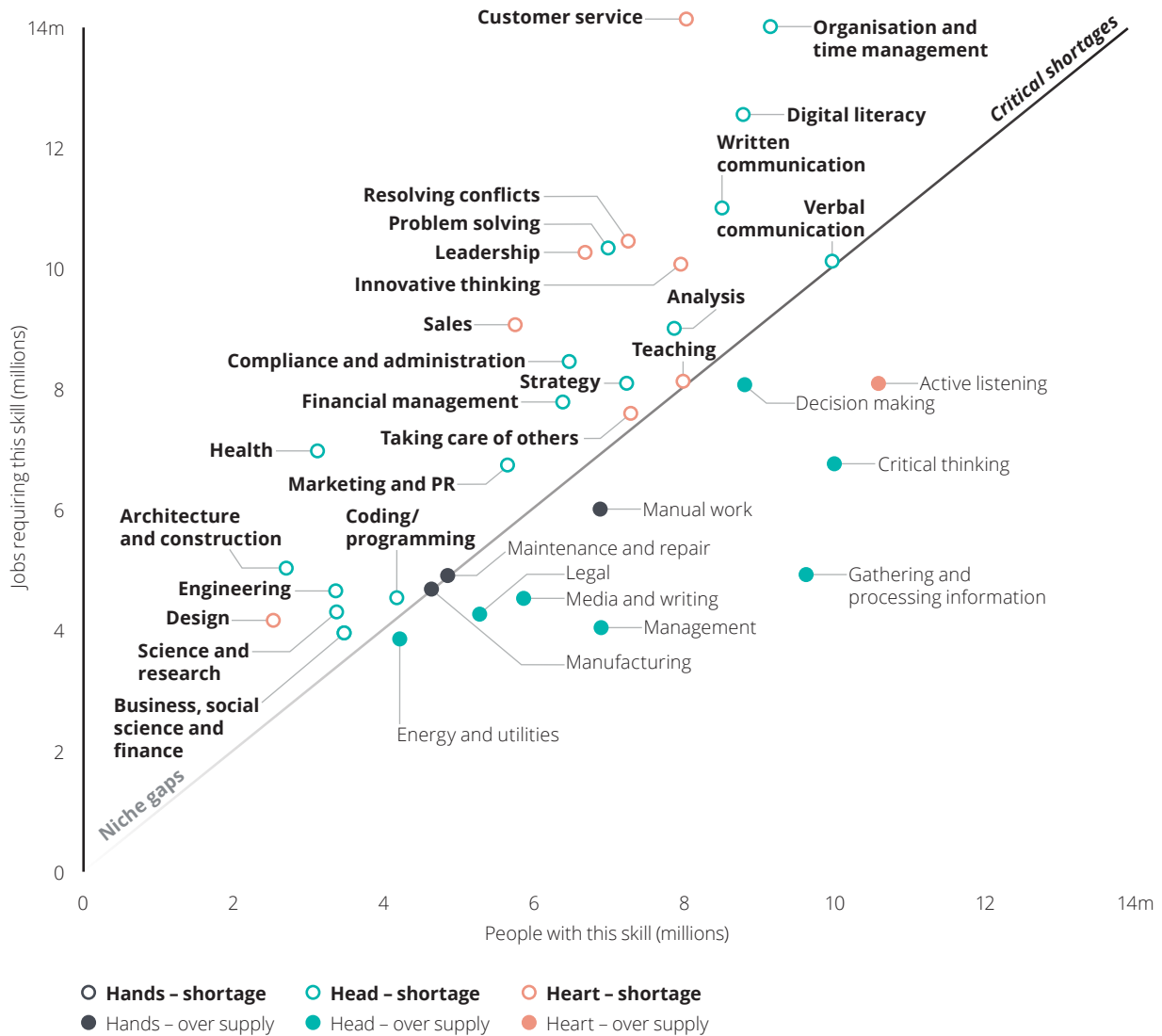
Another example – we have an excess of management skills than are required. But our lack in leadership skills more than offsets this, at a little over 3.1 million. We don't need box-ticking, schedules and coordination – we need inspiration, coaching and vision. This is supported by previous work that shows how having better leaders has huge benefits for our economy. For example, the Westpac Businesses of Tomorrow report found that improving business leadership would mean better chances of above average revenue growth for businesses, and a potential \$70 billion improvement in our national income if delivered.²⁴

Case study: Westpac

Westpac has developed a 'Skills for Life' program as a basis for future workforce planning. Following a future workforce modelling exercise, which identified the roles that will be most augmented or displaced by cognitive technologies, Westpac was able to understand the roles that will be impacted, thus identifying the skills their future workforce will need in order to work with cognitive technologies. These include creative problem solving, strong communication skills and personal resilience. This future workforce modelling resulted in a workforce upskilling program that aims to prepare the workforce to thrive in an environment of rapid change and heightened uncertainty.

By 2030, if we continue on our current path, we estimate that there will be a total of 29 million skill shortages, almost 25 percent higher than the shortages we are already experiencing.

Chart 13: Niche gaps, critical shortages: an evolving story – 2030



Source: Deloitte Access Economics

Where, when and who

Already, many businesses are feeling the crunch of skill shortages. A decade ago, the average worker was missing 1.2 of the skills needed for their job; today that has risen to 2. The half-life of technical skills is also decreasing; without refreshers and updates, there is a risk that people lose the skills that they already have.

If we fail to act to help develop the necessary skills, not just for new workers but for those who are already working, these issues will only be exacerbated, as demonstrated in Chart 14.

We forecast the supply and demand of skills to 2030 to understand how skills shortages will evolve if nothing is done, as pictured in Chart 13.

On the demand side, we extrapolate the trend in skills demanded in each industry from 2012-2018 to see demand for 2030. On the supply side, we keep the current composition of skills in an occupation constant, but allow the number of people in the occupation to change in accordance with our in-house employment forecasts. For more details see Appendix A.

If we fail to invest in upskilling, Chart 14 shows that skills shortages will be greatest in the industries where people are central to creating value.

Chart 14: The long and short of it: the magnitude and imminence of skills shortages by industry

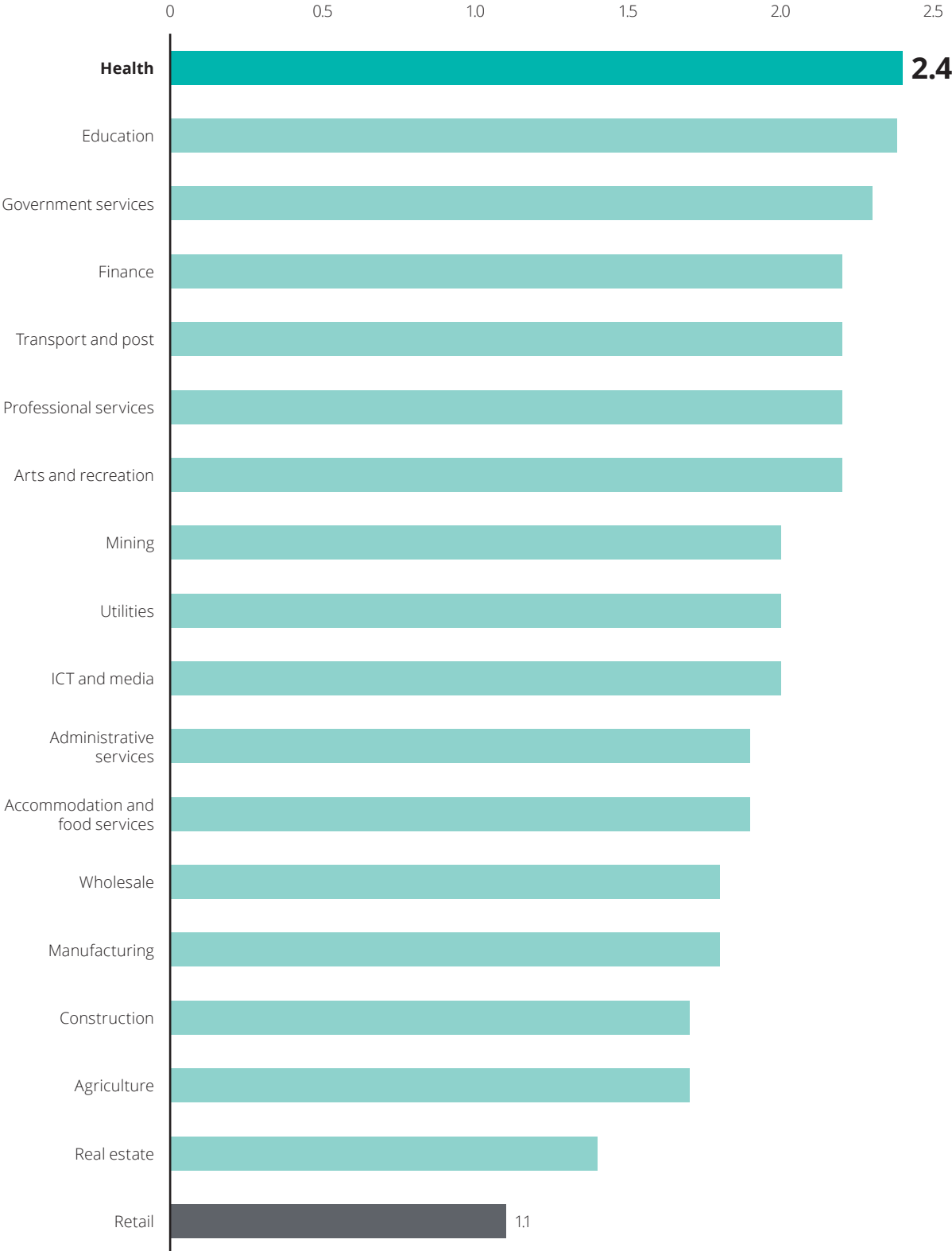


Source: Deloitte Access Economics
 Note: The spokes represent millions of skill shortages, while the year represents the year of peak shortage per worker.

Five industries – government services, construction, health, professional services, and education – all show more than 2 million skills shortages by 2030. This is not to say that other industries will not face shortages. Even those close to the centre, such as ICT and media and arts and recreation, are expecting to face skills shortages in the coming years.

On a per worker basis, Chart 15 shows that skills shortages are expected to be seen across all industries.

Chart 15: Average skills shortage per worker by industry – 2030



Source: Deloitte Access Economics

So where should businesses, education providers and governments be investing to address these shortages?

Figure 4 shows that the answer will vary by industry. Skills like customer service and time management consistently top the list, and all industries will experience shortages in these key skills.

While skill needs do vary by industry, there are some remarkable similarities. By 2030, we expect that customer service and time management will be the most demanded skills in almost every industry. Other skills that show up in the top three include digital literacy, sales and innovative thinking.

Figure 4: The top three skills demanded by industry in 2030, and extent of shortages in this skill

	1.	2.	3.
Accommodation and food services	Customer service	Organisation and time management	Digital literacy
Administrative services	Customer service	Organisation and time management	Digital literacy
Agriculture	Customer service	Organisation and time management	Digital literacy
Arts and recreation	Organisation and time management	Customer service	Digital literacy
Construction	Organisation and time management	Customer service	Digital literacy
Education	Customer service	Organisation and time management	Digital literacy
Utilities	Organisation and time management	Customer service	Digital literacy
Finance	Customer service	Organisation and time management	Digital literacy
Health	Organisation and time management	Customer service	Digital literacy
ICT and media	Customer service	Organisation and time management	Innovative thinking
Manufacturing	Customer service	Organisation and time management	Digital literacy
Mining	Organisation and time management	Customer service	Digital literacy
Professional services	Organisation and time management	Customer service	Digital literacy
Government services	Customer service	Organisation and time management	Digital literacy
Real estate	Customer service	Organisation and time management	Sales
Retail	Customer service	Sales	Organisation and time management
Transport and post	Digital literacy	Organisation and time management	Customer service
Wholesale	Organisation and time management	Customer service	Digital literacy

- 2 or more times more workers required with this skill than are supplied
- > 1.5 to 2 times more workers required with this skill than are supplied
- > 1.1 to 1.5 times more workers required with this skill than are supplied

Source: Deloitte Access Economics

Invest in skilling your people to avoid the crunch

Over the next decade Australia will face significant skills shortages. These shortages will vary by industry, by geography and by business size. But all businesses need to think about how to mitigate the effect of these shortages on operations. And investing in people may be the answer.

Every year, businesses in Australia spend \$7 billion on recruiting candidates with the right skills.²⁵ But the skills that are needed are changing constantly and recruiting to fill shortages is an expensive solution.

Instead of hiring people with skills, why not invest in upskilling the people you already have? That way, you are building the capabilities you need rather than buying them.

There is also less risk associated with building skills than hiring them. The cost of hiring the wrong person (whether that be because they lack the skills or aren't a good cultural fit) can be significant – the cost of replacing a bad hire six months into the job has been estimated at two and a half times the person's salary.²⁶

Right now, businesses and government spend \$4.6 billion in training their workforces per year, compared to the \$7 billion they spend on recruitment.²⁷

The best way to avoid skills shortages in the future will be to flip the numbers – start spending on training instead of recruitment. Because as skills shortages worsen, the cost of recruitment will only grow.



The path to prosperity: People power

How can business and government stay ahead of the game?

Moving from qualifications to job skills

Technology is helping to provide ways of learning that are faster and more flexible than ever before.

The internet has democratised learning by improving access to educational content for a growing number of learners. The Open Educational Resources movement has provided free access to a vast array of teaching and learning materials. Educational material can be structured formally through Massive Online Open Course (MOOC) providers such as edX, Udacity and Coursera; as well as informally via platforms such as YouTube and message boards.

These providers aren't about to replace universities, instead they are attracting a new group of learners to higher education. Coursera offers a Master of Business Administration (MBA) from the University of Illinois for US\$62,000 less than an out-of-state student would pay being on campus.²⁸ This program now enrolls around 18 times the number of students as the on-campus option. Online platforms are making it easier than ever for people to access new skills, helping to equip people with the job skills that the modern workplace requires.

There is also a role for an **apprenticeship** model of skill development in the modern workplace. Learning via an apprenticeship has some clear advantages:

1. Learning happens in the 'real world'. The ability to learn new skills and immediately apply them is often the fastest way to achieve competency.
2. It's time efficient for businesses, with mentors able to fit teaching around their other work commitments.
3. Apprentices receive one-to-one job instruction. An individualised learning environment gives apprentices clear goals to aspire towards and tailored feedback to help them succeed.
4. Learners are able pick up the accepted practices and values of the workplace.
5. Apprentices can simultaneously earn and learn.
6. Work-related skills developed on-the-job (such as soft-skills) are highly valued and transferable.
7. The trainer benefits as the process of teaching strengthens their own skills.

Workplaces of the future will do well to exploit the advantages of apprenticeships. This may involve greater use of cadetship programs or simply increased connections between higher education providers and businesses. An example of this includes Australian Industry Group's Higher Apprenticeships Project.²⁹ The pilot program allows students to rotate between their university studies and hands-on training at a leading technology company. The aim is to develop workers with the skills needed to thrive in the knowledge economy. Given the rapid pace of technological change, it is high time that organisations began experimenting with apprenticeship models as a way of delivering work-related skills.

Others are also thinking flexibly about how to help Australians meet the challenges of the future by better equipping them with the skills they'll need over the course of their careers. For example, the Business Council of Australia has proposed reforms that would link the funding of skills to the worker rather than to the individual education institution via a taxpayer subsidy and an income contingent loan that could be used to pay for courses at any approved Vocational Education and Training (VET) or higher education provider.³⁰

Despite the fact that on-the-job skills are highly valued by businesses, they are rarely formally recognised. One solution to this problem is the use of **micro-credentialing**. Micro-credentialing involves the independent certification of specific skills. This can be recognition of soft skills such as problem-solving and communication or technical skills such as data analytics and coding. For example, DeakinCo have developed a system where individuals or businesses submit evidence of capabilities and assessors with industry and academic experience award credentials.

Ian Harper, Dean of Melbourne Business School and Deloitte Access Economics Senior Adviser, recognises the role that traditional education providers can play in workplace learning. Harper has plans to overhaul the School's offerings with micro-credentials and industry-specific MBAs.³¹

The benefits of micro-credentialing are arguably largest for businesses. Organisations spend around \$7 billion a year on recruitment.³² And the costs for hiring someone with the wrong skills can be large. Micro-credentialing helps to address this problem by providing additional assurance that a person actually holds the relevant skills required in the workplace.

The rapid pace of technological change has changed the types of job skills demanded in the modern workplace. Fortunately technology has also made it cheaper and easier than ever to retrain. Micro-credentialing holds the key to unlocking the value of these job skills, while apprenticeship models are re-emerging as an effective way for businesses to quickly develop a future-ready workforce.

The learning firm

As the way we work and the types of jobs we perform continue to evolve, so do the skills required in the workplace. Technology and organisational change have reduced the lifespan of certain job skills, requiring the workforce to constantly learn and retrain.

This raises an important question: what's the best way to learn and refine job skills required in the modern workplace?

Part of the solution is tertiary and vocational education, but the cost of traditional education is high. There is also evidence of a lack of alignment between the skills that are learnt in the classroom and the skills that are demanded in the workplace.

Work-integrated learning offers a more targeted approach to education. It's cheaper, more relevant and more focused when compared to standalone classroom learning. In a survey of study-interested workers, 68 percent of respondents place more importance on skill-based training than formal qualifications.³³ Tertiary and vocational education providers could play an important role when it comes to workplace learning by offering industry-driven education.

Technology offers businesses a flexible, and often free, way of delivering required job skills. Alternative learning models such as apprenticeships can also be used to quickly expose workers to relevant and new experiences. And while on-the-job skills are highly valued by businesses, they are rarely formally recognised. This opens the discussion to potential new ways to certify the quality of learning beyond simply looking at grades, certificates and degrees.

Why do we need more on-the-job learning?

1. Formal training is expensive

Formal training is expensive for individuals, businesses and governments. Data from the OECD shows that the direct private costs of attaining a tertiary education in Australia are almost \$100,000 for men and \$75,000 for women.³⁴

The direct cost for students has been increasing over time. The average Australian student debt now stands at over \$20,000, compared with around \$15,000 just five years ago. More than one in 20 people with a higher education debt now owe more than \$50,000, while the number owing more than \$100,000 has quadrupled over the past five years.³⁵

But the largest cost for most individuals isn't direct payments such as tuition and living expenses, but the earnings they forego while studying.

Businesses also spend large amounts on formally training their employees. By looking at intermediate uses of education services by all industries, we estimate that Australian businesses, governmental and non-governmental organisations spent \$4.6 billion on training in 2015-16.³⁶ But a number of overseas studies suggest that the actual cost is likely higher.

Employees, employers and governments can all benefit from the fact that on-the-job training has a much lower cost compared to external education.

2. There is a lack of transfer between what is learnt in the classroom and what is needed in the workplace

Data from the latest Quality Indicators for Learning and Teaching Student Experience Survey found that almost two-fifths of students weren't satisfied with their development of work-related knowledge and skills. This is reflected in the employment prospects for recent graduates. The full-time employment rate among recent university graduates has been falling for a number of decades. According to the 2018 Graduate Outcomes Survey more than 30 percent of university graduates failed to secure full-time employment within four months of leaving university.

Of those who find employment, a significant share are working in roles unrelated to their studies. A study by Graduate Careers Australia found that approximately 28 percent of recent graduates employed full-time viewed their qualifications as neither a 'formal requirement' nor 'important' for their current job.³⁷ This ratio was near or above 50 percent across a number of fields, suggesting that certain degrees may add little value in the workplace.

Once you move beyond entry-level positions, formal qualifications tend to have a diminished impact on hiring decisions, with criteria such as past performance on similar/related tasks and cultural fit playing a more important role.

The skills learnt in the workplace are more likely to be directly relevant to an individual's current or future job. This is largely due to the fact that on the job training is highly focussed to individual needs, as well as the objectives of the organisation.

3. Work and occupational requirements are changing faster than ever

The pressure to continuously adapt to forces that are reshaping the business landscape is greater than ever.

This means that organisations and individuals increasingly need to prepare for the unknown. It's no longer possible to assume that a robust early education will be sufficient for a long working life. Lifelong learning is now a necessity for most workers, and essential for those in sectors exposed to change.³⁸

Workplace learning develops and sustains workers' competencies, allowing them to take control of their careers. It enables workers to keep up with the increasing pace of change, while also opening up opportunities for career advancement and meaningful work by facilitating movement across occupations.

And it's not just workers who will benefit. By focusing on workplace learning, businesses and governments also reap the benefits of having a workforce more able to respond to changing work requirements.

These three factors all point to the fact that on-the-job training is cheaper, more relevant, and more focused than traditional forms of education. The future workplace will be a combination of learning and work integrated into one, which is why it must also be designed to harness this integration like never before.

Designing great workplaces

A well-designed workplace can help to engage employees, reduce costs, and boost productivity.

Despite the rise of technologies like Skype and Slack that facilitate agile and remote working, the physical office remains as relevant as ever. The amount of office floor space added across Australian CBDs continues to grow, with particularly strong gains over the past decade.

Organisations tend to locate near one another because it reduces the costs of moving goods, people, and ideas.³⁹ Larger markets tend to create additional opportunities for businesses, a bigger pool of potential workers can reduce the time it takes to find appropriately skilled workers, and being near the competition is a great way to speed up the pace of innovation.

There are also a number of positives for workers. Being in an office with other people allows you to quickly develop relationships and the soft skills that are crucial for success in the workplace. Physically being near colleagues also makes collaborative tasks much easier.

It's clear that CBDs will remain vital to the workplace ecosystem, but a renewed focus on economic development in regional centres can assist in absorbing some of the growth pressures in CBDs.⁴⁰

Many individuals living in major cities face two contrasting options: inner city apartment living, or low-density housing on the urban fringe. Regional centres provide a third option, where people can more easily own their own home, while living closer to where they work and play. Promoting long-term regional growth will therefore be a key pillar of Australia's future economic prosperity.

When it comes to designing flexible workspaces, variety is key. Rather than a one-size fits all approach, organisations should provide different workspaces to support employees with different needs. Today's best offices also use real-time data drawn from sensors and connected devices. For example, IoT (Internet of Things) data can be used to understand staff preferences and values to influence design decisions.

The workplace of today can become an asset in attracting and retaining the best talent. Offices should be a destination and not a location, a workspace that people want to be in. This can translate to increased worker productivity as well. For example, a survey of 3,500 knowledge workers found that 78 percent of respondents drew a direct link between positive work experiences and higher productivity, a figure rising to 92 percent for millennials.⁴¹

The place in which we work and learn is just as important as how we do it.

A workplace is not just a place where people congregate – it is a dynamic ecosystem, which can help or hinder employees from utilising their skills to achieve business goals.



The payoff: A sizeable prize

The choices made by businesses now can collectively place Australia on a path to greater prosperity and shape our living standards in the future.

Australia's population is set to reach 30 million by 2030. People are the fundamental drivers of our economy and will be central to the future of work. What will change are the types of jobs we as humans do, and the skills we need to succeed in them. If we set up the right workplaces – with people at the centre – this will lead to:

- **More skilled people**, as a result of the changing composition of work, and because you have invested in their skills.
- **Happier people**, because you are making better designed, more inclusive workplaces that reduce stress.
- **More engaged people**, because greater workplace flexibility will encourage more people to join the labour force.

Using Deloitte Access Economics' computable general equilibrium model, we have estimated the impacts on Australia's living standards if Australian organisations invested significantly more in their people power – as outlined above.⁴²

To assess how a more **skilled workforce** will influence our national prosperity, we examine the uplift in wages (a proxy for productivity) as a result of our move from work of the hands to work of the head to work of the heart. Firstly, we look at average wages and employment for each industry and occupation in 2019. We then look at how employment and wages will change using our in-house forecasts. This allows us to examine the impact of the changing composition of the workforce on national income.

Secondly, to measure the impact of **happier and less stressed** workers on productivity, we analyse the impact of work-related stress on productive hours. We look at a range of literature to determine how many Australian workers are stressed as a result of work. We then examine the impact of workplace stress on productivity, which we measure through stress-related sick leave and inability to concentrate while at work due to stress. We then look at what the benefits would be if workplace stress could be completely eliminated in 50 percent of businesses.

Finally, we look at how **more flexible workplaces** would result in an increased number of workers. To measure this, we look at ABS statistics about how many people (whether they are currently working part-time or not in the labour force) would be willing to increase their hours if they were flexible. We then look at a scenario where the number of organisations offering flexible work increases, using data from the Workplace Gender Equality Agency as a baseline. This allows us to extrapolate the total increase in the number of hours that people would work as a result of increased flexibility.

Putting that all together, the size of the prize is large – it could amount to a **\$36 billion** annual boost to national income by 2030. That's enough to make a difference between Australia staying in the top echelon of world living standards by 2030, or slipping back.

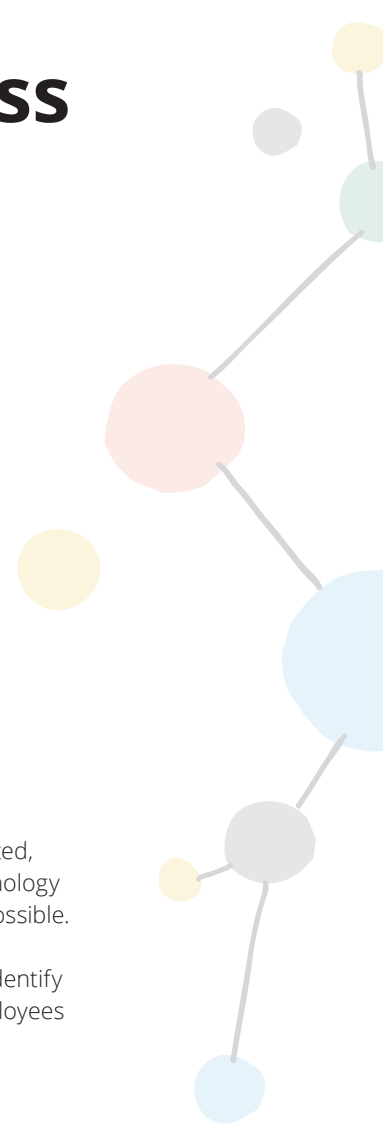
When we look at the payoffs from this opportunity, it is obvious that getting the best out of our future workers, work, and workplaces is the key business imperative for Australia's future.



The path: What can business and government do today to get work to *work*

Work

Identify the human value	Separate jobs into tasks and identify which can be automated, outsourced to AI and which are uniquely human. Use technology to improve efficiency and increase the bounds of what is possible.
Involve people	The people who do the work are often the best placed to identify the skills they require to succeed. Find ways to involve employees in the design and implementation of learning programs.
Inspire new ways of working	Set up roles so that staff can flexibly move to areas where their unique skills are most in demand. Support staff to grow and develop their roles through retraining and reskilling.
Talk about technology honestly	Engage in an honest dialogue about the impacts of technology in order to support staff and generate new ideas for managing change.
Offer varied learning	Provide well-designed learning programs that account for different learning styles and offer opportunities for everyone to succeed.
Recognise and reward	Foster a culture of genuine recognition by acknowledging the efforts of employees on a continuous basis.
Use mentoring and apprenticeships	Micro-credentialing holds the key to unlocking the value of emerging job skills, while apprenticeship models are re-emerging as an effective way for business to develop a future-ready workforce.



Worker

Forecast future skills needs

Understand the skills, knowledge, abilities and personal characteristics of your employees.

Retrain, reskill, and re-deploy

People are your competitive advantage. Consider alternatives to redundancy. Retraining, reskilling or simply re-deploying are all real options to support existing workers reach for new opportunities.

Redefine basic competencies

Upgrade digital skills for all employees, in the same way that maths and literacy are basic skills.

Manage the robots

Introduce digital governance roles into all teams to evaluate the ethics of AI and machine learning, alongside existing frameworks.

Develop teaching leaders

Encourage and reward staff for teaching and developing worker capability.

Recruit and develop social and creative skills

Recognise and reward social skills such as empathy, judgement, and collaboration when recruiting and developing workers.

Consider those with very little experience, or none at all

Those without prior experience in a role can nevertheless have well developed technical and human skills, and they can be brought up to speed quickly with other capabilities.

Workplace

Be a destination not a location	Design workspaces that people want to be in and will promote to peers with pride.
Use data for workplace optimisation	Use qualitative and quantitative data on how workspaces are used for optimal workplace design and real-time decision-making.
Test workplace designs with prototypes	Create prototype spaces that allow you to converge the service experience, tech and spatial design to ensure they are in harmony before you scale.
Create hyper-transformative environments	Hardwire flexibility into work environments so they are as agile as we'd like our team members to be.
Entrench wellbeing in workplace design	Prioritise wellbeing needs in workplace design by balancing personal, private, and communal break space.
Empower employees to speak up	Educate employees about entitlements and build workers' capacity to recognise and raise issues. Create avenues for feedback, dialogue, and complaints.
Remove bias at every turn	Awareness of our unconscious biases is not enough to remove them. Remove bias across all phases of workers' employment journey including recruitment, employment, and promotion.

Deep dive: Beyond workplace compliance

Our communities have a hunger for ethical business behaviour, and firms have a responsibility to build trust in the business environment. This section looks at how businesses can achieve and embrace ethical behaviour through responsible workplace practices.

Workplace practices are a complex realm for businesses to navigate. Ensuring staff are paid correctly, engaging in fair hiring and promotion practices, making sure staff are safe and comfortable at work, providing accessible avenues for expressing complaints, and appropriately addressing issues are all key to a successful workplace.

When it comes to workplace practices, wage underpayments and scandals get a lot of attention, and rightly so. Breaches of workplace obligations, putting staff in dangerous or inappropriate situations, or ignoring and covering up employee complaints are practices that occur in Australian businesses. Even large, established businesses well-resourced to invest in workplace practice expertise have reported mistakes resulting in long standing underpayments for parts of their workforce.

Australia’s Fair Work Ombudsman reports on non-compliance that has been uncovered and addressed (summarised in Figure 5), but there is likely more that remains undiscovered and unknown.

Figure 5: Summary of Fair Work Ombudsman findings and activities – 2017-18

Share of audited businesses found non-compliant with workplace obligations



Share of workplace contraventions relating to underpayments of hourly rates



Total monies recovered for workers
\$29.7m



Litigations initiated
35



Anonymous reports received
15,138



Court-ordered penalties
\$7.3m

Source: Fair Work Ombudsman

The negative implications of workplace non-compliance are clear – large financial costs, legal consequences, and damage to reputation. These implications mean managing workplace practices are often feared and considered a form of compliance rather than an opportunity.

What we don't hear about on the news is when workplace practices go right. Workplace practices done well can provide benefits far beyond cost avoidance. Employees that feel comfortable and happy are more productive and less likely to leave, and firms with positive reputations receive greater loyalty from customers and investors.

But taking the high road isn't always easy.

Compliance is just the start

Compliance is only part of the answer. Leading businesses make deliberate decisions about the kind of workplace they want to be, rather than just following the rules.

Embedding proactive behaviours means not only taking actions to prevent issues from occurring, but actively trying to uncover issues that may already exist. For example, systematically testing that staff are actually being paid the correct penalty rates and awards for every hour they work, or ensuring leave policies are up to date with the latest requirements.

Business that are deliberate about workplace relations and treat their staff appropriately and fairly become known as great places to work. This has been demonstrated by large companies like Salesforce and Atlassian. Both have been very explicit about their inclusive and transparent workplace cultures and were voted the top 1 and 2 best places to work in Australia while also achieving leading business results.⁴³

Empowering and educating employees

Junior employees and managers are more likely than executives to notice when someone isn't being paid correctly, or see inappropriate behaviour as it happening. The top-levels of a business can set an agenda of uncovering and addressing these kinds of issues, but it won't actually happen without the engagement and cooperation of all staff.

Investing in the capacity of managers to understand and handle workplace relations and appropriate interpersonal behaviours will help foster a positive and respectful workplace culture. Free online training courses are an easy and cost-effective way to educate employees and managers.

Educating employees about their entitlements and empowering them to recognise and raise issues is also critical to ensure business is meeting its requirements. This also includes providing a safe, accessible avenue for issuing complaints. One option is to engage a third-party call centre or online platform for employees issuing complaints and seeking assistance.

Embrace technology to cut through complexity

Workplace compliance systems are complex, making it genuinely difficult to make sure things are being done correctly.

Computer systems can be used to record time worked, automatically calculate correct pay including overtime and public holiday requirements and keep track of various types of leave obligations. Ensuring the systems are kept up to date and reflect current obligations will give firms confidence they are paying workers correctly.

Appendix A:

Skills supply and demand forecasting

Deloitte Access Economics' modelling of Australia's demand and supply of skills uses a variety of data sources, modelling techniques and assumptions to produce a detailed view of the past, current and future states of Australia's skills.

Below are details of the data sources used in the modelling, in the methodology used to calculate the supply and demand levels, and in the processes for forecasting these to 2030.

A.1. Supply of skills

Calculating the supply of Australia's skills uses the O*NET OnLine database. This database provides detailed information on US occupations, including skills and knowledge required to perform the work, the training level of workers currently in the occupation and work activities undertaken in the occupation.

We create a composite list of 36 skills (a combination of select O*NET skills, abilities, work activities and knowledge) that describe the range of competencies that employers might seek in varying combinations.

The database assigns each skill an importance level. It is defined as "the degree of importance a particular descriptor is to the occupation. The possible ratings range from 'Not Important' (1) to 'Extremely Important' (5)."

To determine the share of the workforce that is supplying each particular skill, we first match each US occupation to a 4-digit ANZSCO. We use the concordance developed by the Australian Government Department of Jobs and Small Business for their Job Outlook initiative.

After matching each occupation, we impute the share of each occupation that holds each skill. To do so, we assume that the importance is directly related to the proportion of employees in the occupation holding that skill. For instance, if a skill has an importance of 80 percent, we assume 80 percent of the people in that occupation hold the skill.

We create annual estimates of the share of an occupation holding each skill, using the previous waves of the O*NET database.

These shares are then multiplied by Deloitte Access Economics' 4-digit Australian and New Zealand Standard Classification of Occupations (ANZSCO) forecasts to give a view of how changing workforce compositions will affect the skills provided. We assume that the share of each skill supplied in each occupation is constant in future periods (equal to the 2018 value) to reflect the scenario where skills remain as they currently are.

A.2. Demand for skills

The demand for skills is informed by data provided by Burning Glass. The Burning Glass database compiles real-time data on job advertisements in the Australian market, and uses natural language processing to classify the components of each advertisement (such as occupation, location, experience and skills required).

Using the Burning Glass data, we look at the demand for skills in each 4-digit ANZSCO occupation as measured by the skill requirements listed in advertisements for roles in that occupation. We collate this data for every year between 2012 and 2018, focusing on skills that match those examined in the supply side analysis.

We assume that skills demanded in advertisements are reflective of skills demanded in an occupation overall. For example, if 20 percent of accounting job advertisements say that strategy skills are required, we assume that 20 percent of accounting jobs overall require strategy skills.

Using the historical data as a basis, we forecast the share of each 4-digit occupation demanding each skill using AutoRegressive Integrated Moving Average (ARIMA) models.

The skill requirements listed in job advertisements are often not complete. This is because advertisers do not assess the need for each individual skill in a job; instead, job advertisements normally only include a select number of particular skills. Employers may require skills that are not explicitly listed on the advertisement.

This is in contrast to O*NET supply data, where each skill (regardless of its necessity for an occupation) is given an importance ranking in each occupation, allowing for more comprehensive and exhaustive data.

To address this, we first perform a cubic transformation of the data to standardise the distribution and align it more closely to the supply distribution of all skills. Combined with the AutoRegressive Integrated moving average models, and our employment forecasts, this provides a base level demand for each skill in each occupation, as well as the total amount of skills required in each occupation.

Secondly, we weight skills to take into account skills that may be required in an occupation but are not explicitly listed in advertisements. This weighting is derived – in part – from our supply modelling. We assume that while there may be a mismatch in the individual skills being supplied and demanded in an occupation, the total amount of **skills** within an occupation is equal in history.

The total skill demanded within an occupation and the distribution of each skill supplied within an occupation allows us to **a)** scale up the total skill level within an occupation and **b)** do so by the proportional distribution of the skills missing.

Mathematically:

$$SD_{f_{i,x}} = SD_{i_{i,x}} + \frac{SS_{f_{i,x}}}{\sum_{x=1}^n SS_{f_{i,x}}} * \left(\frac{\sum_{x=1}^n SS_{f_{i,x}} - \sum_{x=1}^n SD_{i_{i,x}}}{a} \right)$$

Where;

SD_{f_{i,x}} is the final amount of skill **i** demanded for occupation **x**;

SD_{i_{i,x}} is the interim amount of skill **i** demanded for occupation **x** based on job ads; and,

SS_{f_{i,x}} is the final amount of skill **i** supplied for occupation **x**.

Likewise, when examining skills by industry we estimate the demand for skills in each industry, and the supply using the occupational composition of the profession. We use the same standardisation methodology on demand for consistency.

Appendix B:

What's at stake?

This report considers the benefits that would accrue to the economy from taking positive choices towards the future of work.

Specifically, the modelling quantifies the benefits of three scenarios occurring simultaneously:

- Increasing labour force participation through more flexible work offerings ('more people').
- Shifting towards a more skilled workforce ('more skilled people').
- Decreasing workplace stress ('happier people').

We model the impact of all three scenarios jointly using the Deloitte Access Economics Regional General Equilibrium Model (DAE-RGEM). DAE-RGEM is a large scale, dynamic, multi-region, multi-commodity computable general equilibrium model of the world economy with bottom up modelling of Australian regions. The model allows policy analysis in a single, robust, integrated economic framework. For more details on DAE-RGEM, please see www2.deloitte.com/au/en/pages/economics/solutions/cge-modelling.html.

B.1. More people

Some individuals choose not to work, or alternatively choose to work less hours, due to a lack of workplace flexibility. For example, this might be parents who would like to be able to leave work earlier in order to pick up children, or people living in regional areas for whom commutes might be prohibitive.

In this scenario, we examine the impacts of increasing the availability of flexible working arrangements on workforce participation.

Firstly, we examine the current extent of flexible work offerings using data from the Workplace Gender Equality Agency (WGEA). This data quantifies the proportion of Australian organisations with over 100 employees offering nine types of formal flexible working arrangements, including paid parental leave, carer's leave, telecommuting and job sharing.

Each industry is then given a score out of 100, where 100 reflects that all firms in the industry offer all nine flexible working arrangements. We calculate the historic growth rate of flexibility by industry between 2014 and 2018.

In our scenario, we see industries continue to grow their flexible work offerings at the historic growth rate, rather than remaining at their current level of flexibility.

If fully flexible options were available to all workers in the economy, then labour supply would increase:

1. Some current part-time workers would increase the number of hours they are willing to work. There are approximately 65,000 part-time workers who say they would work a total of 760,000 additional hours each year if more flexible work were available.⁴⁴
2. Additional people joining the labour force. There are approximately 890,000 people who are not currently in the workforce who say they would work if there were more flexible options available.⁴⁵ Because these workers are less likely to work full-time, we assume that they would work 70 percent of the average hours of a part-time worker. This results in an additional 12,668,000 work hours per year.

Of course, with not all firms offering full flexibility, not all of this additional labour supply potential can be realised. To accommodate this, we combine these numbers with our estimates for the uplift in workplace flexibility by 2030. We estimate that in total the number of hours supplied in the labour force could increase by (0.78 percent) as a result of an increase in flexible working arrangements.

B.2. More skilled people

To analyse the impact of more skilled workers, we quantified the expected change in productivity (proxied by wages) which result from the changing composition of employment, as work shifts from hands to heads to heart.

Average wages and number of employees for each occupation (using the 4-digit ANZSCO classification) in 2018 form our baseline measure of productivity.⁴⁶ Over time, we suppose that demand and supply of skills change in favour of industries and occupations where labour is more productive, based on the employment trends discussed in this report. This productivity benefit is quantified by analysing the change in average wages as a result of compositional changes in employment.

To do this, Deloitte Access Economics forecasts the number of people in each occupation by industry between 2019 and 2030. The individual numbers for each industry are determined through an ARIMA (autoregressive integrated moving average) model with lag lengths and differencing determined through standard information criteria and statistical tests.

Using the baseline wages for each occupation at a 4-digit level we construct 2030 average wages based on the forecast industry and occupational composition. These averages are compared with business as usual employment growth to 2030 and enter the model as a positive or negative productivity shock as implied by the aggregate increase or decrease in average wages per the forecast compositional change.

B.3. Happier people

To determine the potential impact of improved workplace policies on the economy, the report looks at the impact of workplace stress on productivity, by looking specifically at the relationship between workplace stress and absences from work ('absenteeism') and unproductive or less productive time at work as a result of stress ('presenteeism').

Estimates for the number of hours lost to stress vary considerably between studies. We derive the impact of stress on absenteeism and presenteeism as follows:

- Absenteeism – we determine that a stressed worker has on average around 28 hours of stress-related work absence per year, based on research conducted by Medibank Private.⁴⁷ These numbers are corroborated by similar estimates found in academic literature as well as public and private sector research.⁴⁸
- Presenteeism – we determine that a stressed worker loses on average approximately 54 productive hours per year at work as a result of work related stress.⁴⁹

The second phase of deducing the economic cost of work-related stress was determining the percentage of the working population who experience work-related stress.⁵⁰ The final figure was taken from research commissioned by Convergence International that found 29 percent of Australian workers often or always experience a high degree of workplace stress.⁵¹

Thus, if the proportion of individuals experiencing stress were to be halved as a result of employers taking positive action to support better workplaces, there would be a 0.8 percent increase in the total number of productive hours in the economy.

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**Thanks for the work of the
hands, head and heart by:**

Ben Gorick
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Chaanah Crichton
Christine Ma
Craig Michaels
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Darcy Vance
Emily Emmerson
Emma Grey
Harry Murphy Cruise
Hom Pant
John Lee
Mark Cerne
Neil Glaser
Sheraan Underwood
Simon Rushton
Stephen Burgess
Sue Paul
Xanthe Smith

Special thanks to the Deloitte
Insights editorial team.





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