Australian Government

National Skills Commission

The state of Australia's skills 2021: now and into the future

Report overview

Contents

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Preface

The state of Australia's skills 2021: now and into the future examines Australia's current, emerging and future workforce skills needs.

This document provides an overview of the report.

The state of Australia's skills finds Australia has managed well the structural changes that have occurred in the labour market over the past few decades. The report also offers a series of markers to help influence and inform the development of Australia's education and skills system over the years ahead.

It examines the distribution of skills across the economy, as well as skills that are currently emerging.

It's important that the economy's broad supply and demand of skills is well matched. Ultimately, better matching of supply and demand for skills will make it easier for Australians to get jobs and for businesses to secure the right workforce.

The report finds that aside from the shock of COVID-19, Australia's workforce and skill needs have been impacted by a range of big forces over recent decades. These include:

- a shift to higher skilled jobs and hence the importance of further education and training
- an ongoing shift towards services
- the resilience of non-routine and cognitive jobs in the face of automation
- the opportunities and new jobs being created by technology.

It is important to acknowledge that many of the forces likely to shape the future have also shaped our recent past.

The NSC's analysis finds that some of the most important and rapidly growing skills needs over coming years can be summarised as the 'Four Cs': care, computing, cognitive and communication skills.

- *care*, the group of skills responding to demographic and health challenges
- *computing*, a group of specialised technical skills needed to respond to the digital world
- *cognitive abilities*, the group of advanced reasoning and higher order skills computers cannot easily replace
- *communication*, the group of skills needed to collaborate and engage within and across workplaces.

According to Alpha Beta, the tasks within Australian jobs are estimated to be changing by an average of 18% every decade, and Australians are predicted to spend 33% more time on education and training across their lifetime by 2040 – an additional 8,000 hours, or three hours per week until retirement.

By shaping Australia's future workforce to meet these changes we can help to deliver a strong, productive economy.

Chapter 1: Introduction

A fundamental innovation in the NSC's work is the focus on skills, alongside the more traditional analysis of the changing mix of occupations. The NSC has applied this skills focus both to analysing the present state of the labour market and examining what lies ahead.

The NSC's Australian Skills Classification (ASC) is a new analytical tool that maps the skills profiles for around 600 occupations, detailing:

- **core competencies**, which are common to all jobs and otherwise known as 'employability skills' or 'foundational skills'. The ASC provides a consistent language and way to compare the level of competency across occupations using a 10-point scale
- **technology tools**, such as software or hardware required in a job
- **specialist tasks**, which are the work activities a person undertakes specific to a job. Specialist tasks change more frequently than core competencies and are useful for differentiating occupations.

Groups of specialist tasks can be clustered together to form 279 skills clusters, which in turn group into 29 skills cluster families. Skills that are like one another are clustered together – so if you can do one task in a skills cluster, you are likely to be able to do the others. This enables a more systematic way of thinking about transferable skills, and allows us to judge how well someone's skills, based on their past employment, might match current vacancies.

The BETA version of the Australian Skills Classification is on the National Skills Commission website: nationalskillscommission.gov.au

The NSC has also developed other new tools and techniques to help analyse the labour market. These include:

- A **Skills Priority List** that outlines occupations in shortage and their expected future demand. Released in June 2021, the list assesses nearly 800 occupations, drawing on NSC data, surveys of employers and stakeholder engagement.
- **Nowcast of Employment by Region and Occupation** (NERO), is an experimental monthly data set that provides timely information on employment in 355 occupations across 88 regions in Australia. Until now, this type of data was only available every 5 years.
- The **Vocational Education and Training National Data Asset** is being developed by the NSC and the Australian Bureau of Statistics (ABS) to provide robust evidence on the employment outcomes from vocational education and training.
- **Skills Tracker** developed by the NSC in partnership with the ABS, looks at the skills of employed and unemployed people.
- **Emerging and trending skills** information draws on real-time job advertisements using data from Burning Glass Technologies.

Chapter 2: The Australian labour market to 2020

The shape of the Australian labour market has changed significantly over the past 40 years, with strong growth in higher skill level jobs, non-routine jobs and services. Alongside the changes in the types of jobs and the skills they require, there have been a number of enduring structural changes.

Strong growth in STEM skills

STEM skills (science, technology, engineering and maths) have helped to facilitate the emergence of more complex, innovative work in many industries. Over the 20 year period to February 2020, before the impact of COVID-19, employment in STEM occupations grew by 85%, or more than twice the rate of non-STEM occupations (40.2%).

Some of these changes have been driven by automation, while greater use of technology has changed many jobs and encouraged growth in higher skilled jobs.

Key trends in participation

Female and mature age employment and participation have grown strongly and, in response to higher skills needs, young people are spending longer in education.

For instance, the female participation rate rose 16.8 percentage points between 1980 and 2020, from 44.4% in February 1980 to 61.2% in February 2020.

The large rise in female labour force participation over the four decades to February 2020 has occurred in conjunction with a clear downward trend in the male labour force participation rate, from 78.2% in February 1980 to 70.7% in February 2020.

This downward trend can be attributed to factors such as an increase in the number of reported cases of ill health or injury, increased participation in education, structural change away from manufacturing and lower skilled entry-level jobs and, to some extent, the increasing role of males in unpaid domestic work or caring duties.

The participation rate for people aged 55 and over has also risen considerably over this period, from 24.8% in February 1980 to 36.7% in February 2020. Although the majority of this increase has been for people aged 55 to 64, the participation rate for 65s and over has also risen, from 6.3% in February 1980, to 14.4% in February 2020, which has coincided with an increase in the average retirement age.

Trends in the youth labour market, meanwhile, show that young people tend to be disproportionately negatively affected by fluctuations in the business cycle. The youth unemployment rate has been consistently above the overall employment rate for the past 40 years and stood at 12.2% in February 2020, more than double the rate for all people (5.1%).

Encouragingly, there has been a considerable rise in the proportion of young people in full-time education, from 31.9% in February 1988 to 53.1% in February 2020. This is significant because of the strong positive link between higher education attainment levels and future employment prospects.

Youth participation in full-time education and youth full-time employment, February 1988 to February 2020

Source: ABS, *Labour force, Australia*. Full-time employment data are in seasonally adjusted terms, while the youth participation in full-time education data are 12-month averages of original estimates.

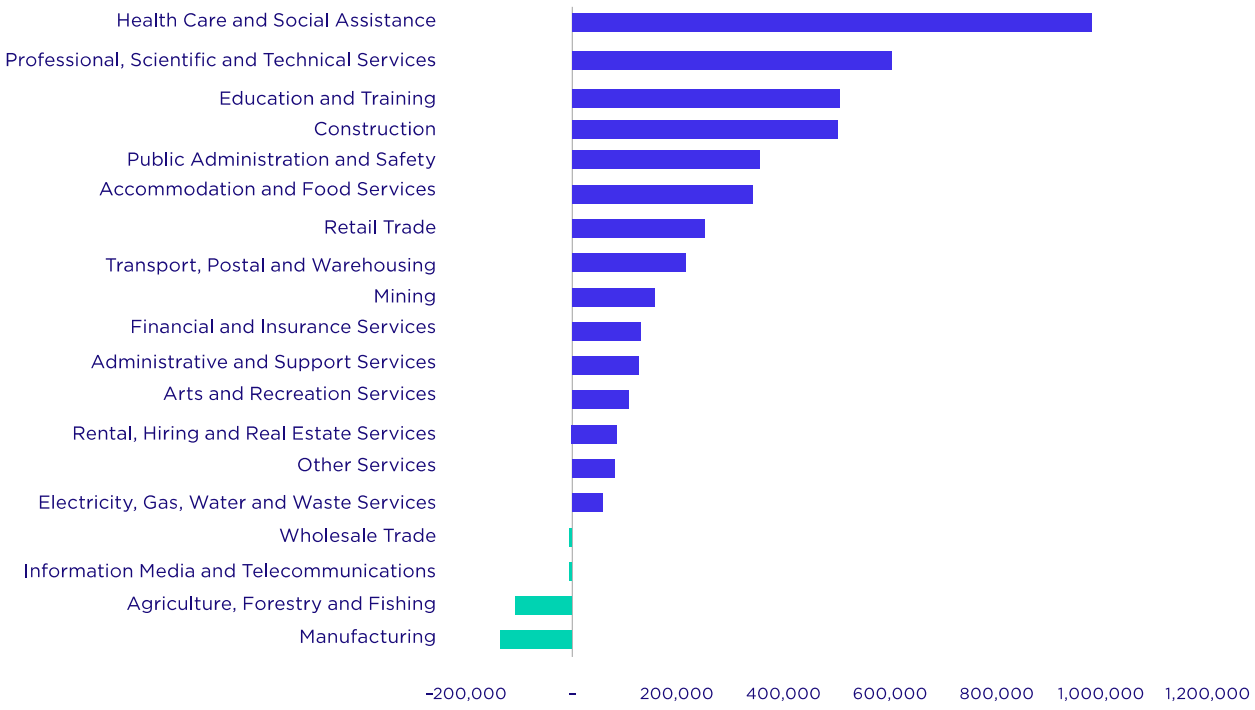
A shift to services

An analysis of industry employment trends over the past 20 years shows that the shift in jobs away from manufacturing to service-based industries has become more pronounced. For instance, the health care and social assistance industry recorded the strongest employment growth of any industry over the 20 years to February 2020, with employment rising by 977,400 (119.4%).

Other labour-intensive service-based industries to record large growth in employment over the 20 years to February 2020 included:

- professional, scientific and technical services – up 601,500 or 106.2%
- education and training – up 506,700 or 81.9%
- construction – up 499,000 or 72.9%
- public administration and safety – up 353,700 or 75.1%.

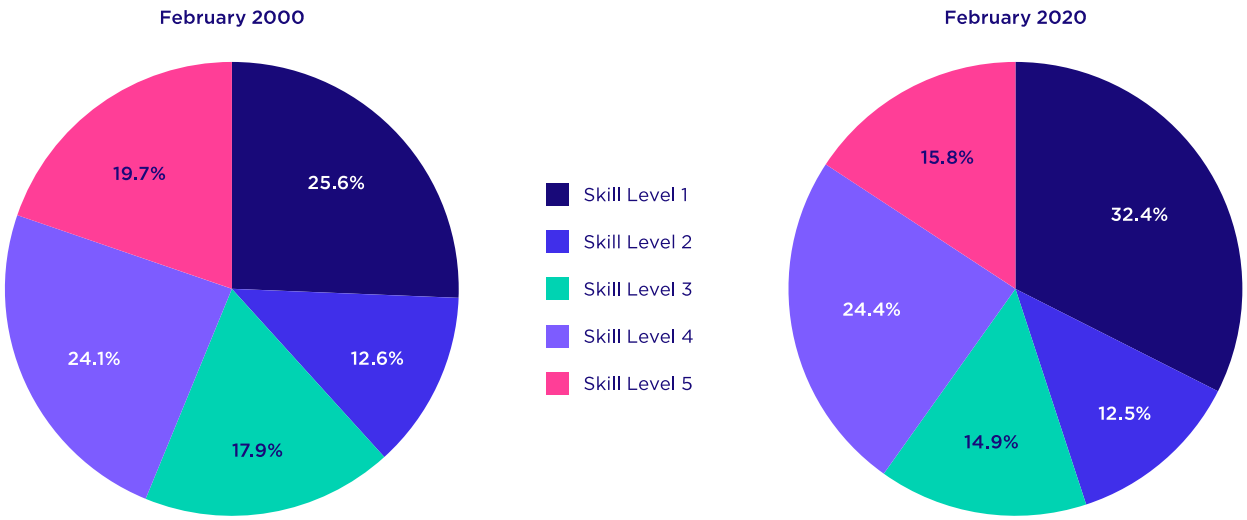
20-year change in employment by industry, February 2000 to February 2020



Source: ABS, *Labour force, Australia, detailed,* seasonally adjusted

In the same period, the strongest employment growth has been in higher skilled occupations. The diagram below shows most growth was in skill level 1 occupations (usually requiring a bachelor's degree or higher) and skill level 4 occupations (certificate II or III). By contrast, skill level 3 (certificate III or IV) and skill level 5 (certificate I or secondary school) occupations had the lowest share of jobs growth over the period.

Composition of employment by Skill Level Group, February 2000 to February 2020



Sources: ABS, *Labour force, Australia, detailed,* seasonally adjusted by NSC

Chapter 3: The impact of the COVID 19 pandemic on the labour market

Please note – this data has been drawn from the most recent Labour Market Update (23 November 2021)

While the Australian labour market has weathered the impact of the global pandemic reasonably well, the outbreak of the Delta variant across a number of jurisdictions and the associated lockdowns had a significant, negative impact on the labour market.

However, the recent easing of restrictions in New South Wales, Victoria and the Australian Capital Territory, together with the current, rapid uptake of COVID-19 vaccines, augurs well for a pick-up in labour market activity over coming months. Indeed, the NSC's survey of internet job vacancies has recovered strongly over recent months to be at its highest level in 13 years.

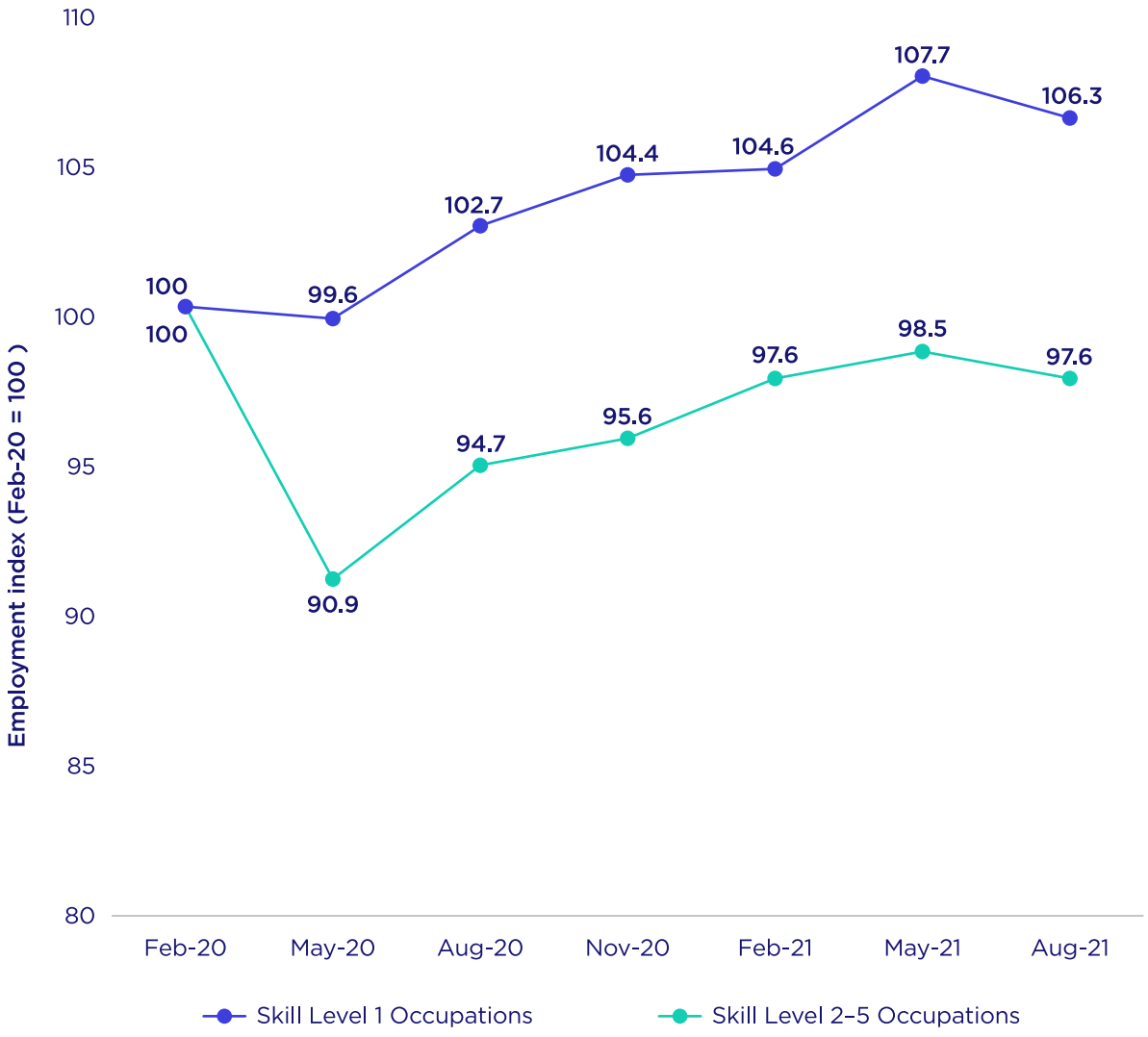
Internet Vacancy Index, January 2006 to October 2021

Source: National Skills Commission, Internet Vacancy Index

A NSC survey of employers shows that 2020 was the first time employers in regional areas had more difficulty recruiting staff than employers in capital cities, with this trend continuing in 2021. From January to October 2021, over half (55%) of recruiting employers in regional areas reported difficulty filling their vacancies compared with 47% of employers in capital cities.

One notable employment trend seen since the pandemic is that jobs requiring a bachelor's degree or higher (skill level 1) have seen strong growth in employment in contrast to other skill levels.

Employment by skill level



Sources: ABS, *Labour force, Australia, detailed,* seasonally adjusted by NSC

Note: The Employment Index base is February 2020.

Chapter 4: Skills of workers in today's labour market

Rather than just looking at jobs in the labour market, the NSC also examines the skills of workers currently in today's labour market using the Australian Skills Classification (ASC). This can help form views about the intensity of skill use across the economy as well as how widely distributed a skill is.

For example, across the economy most employed people (80%) require skills in the **business operations and financial** skill cluster family to perform their job. Other skill cluster families needed for most jobs include the **communications and collaboration** skill cluster family, with 74% of people requiring this skill, followed by **human resources**, with 66% of people requiring this skill.

Looking at skills through the lens of time spent on a particular skill provides a different story of skills importance. For example, 80% of people need business operations and financial skills in their job but only 16% of time in the economy is spent on them. By contrast, 21% of people need health and care cluster family skills and 9% of time in the economy is spent on them. Care workers also spend a larger portion of their day on skills within the health and care cluster family. This reflects the importance of caring skills, the group of skills responding to demographic and health challenges, now and into the future.

Differences in skills held in the economy

The gender differences in skills held in the economy are also striking, with women twice as likely as men to use skills from the health and care family and from the fashion, grooming and cosmetics family. Men are three times as likely as women to use skills from the construction family and are twice as likely to use skills from the vehicle operations family and from families associated with manufacturing work, such as work activities preparation.

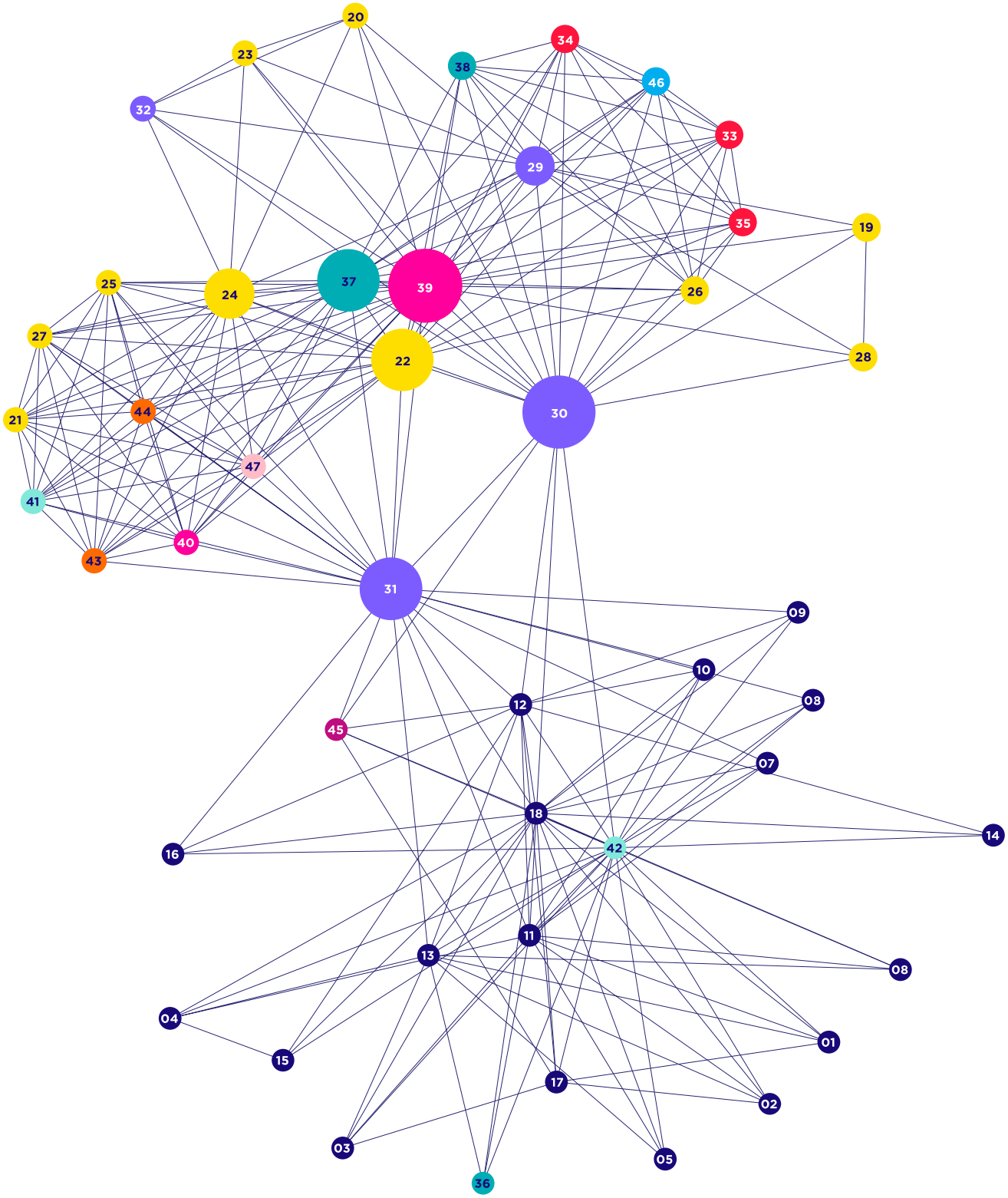
For the first time, the NSC analysis looks at the differences in skills held in the economy between those who are employed and those who are not employed. Those who are unemployed are more likely to have skills in cleaning and maintenance, material transport, vehicle operation and food services. Employed people are more likely to have skills in data, analytics and databases, teaching and education, human resources and communication and collaboration. These insights provide some indication of where the focus of up-skilling should be for those looking to re-enter the labour market.

Mapping an economy-wide skills profile

An economy-wide skills profile can be compiled by combining the ASC skills clusters with the occupation profile of all Australians. The diagram on the next page identifies the skills clusters held by at least 20% of the labour force and how they are related. The size of each bubble represents the number of Australians with that skill; the connecting lines represent skills which are held by the same people. The colours of the bubbles indicate the skills cluster family to which they belong.

The importance of care skills in the economy is shown by the large group of skills clusters at the bottom of the figure. These skills are connected to the rest of the economy by human resources skills, which are widely applicable skills required across a range of sectors. Providing customer service and the ability to communicate and collaborate are also broadly applicable skills. Together these two groups of skills – care and communication – comprise two of the 'Four Cs', which the NSC considers essential to the future.

Current skills in Australia



Skills Family

- Health and care
- Business operations and financial
- Human resources
- Records, documentation, reports and research
- Communication and collaboration
- Customer service
- Safety and hazard management
- Sales and marketing
- Science and mathematics
- Data, analytics, and databases
- Cleaning and maintenance

Skills Cluster

- **01** Administer medications or immunisations
- **02** Administration of medical facility records and activities
- **03** Assist and support clients
- **04** Assist health care practitioners for medical procedures
- **05** Care for patients and clients
- **06** Collect, document and communicate medical information
- **07** Diagnose medical conditions and prescribe treatments
- **08** Direct medical or health care programs
- **09** Make, fit or support clients in the use of assistive devices
- **10** Manage health care operations
- **11** Monitor and evaluate patient treatment
- **12** Operate and maintain medical equipment
- **13** Perform medical tests and physical examinations of patients
- **14** Provide community health programs
- **15** Provide health care advice
- **16** Provide health care or administer medical treatment
- **17** Refer for health services or medical tests
- **18** Undertake community development activities
- **19** Conduct financial transactions or processes
- **20** Establish organisational policies or programs
- **21** Estimate costs of goods or services
- **22** Maintain inventory and stock
- **23** Manage services, staff or activities
- **24** Manage, monitor and undertake financial activities
- **25** Negotiate purchases or contracts
- **26** Perform administrative or clerical tasks
- **27** Procure materials, supplies, or stock
- **28** Verify and maintain financial records
- **29** Schedule staff or assign work
- **30** Train staff
- **31** Undertake or provide professional skill and knowledge development
- **32** Undertake recruitment activities
- **33** Distribute, write, edit or compile documents
- **34** Maintain records, documents or other files
- **35** Prepare or manage compliance documentation
- **36** Collaborate with health care professionals
- **37** Communicate and collaborate
- **38** Communicate with colleagues
- **39** Provide customer service and communicate information
- **40** Respond to customer queries
- **41** Inspect work environment to ensure safety and compliance
- **42** Undertake health, safety or hazard management and education activities
- **43** Conduct sales and marketing activities
- **44** Maintain sales and business transaction records
- **45** Undertake biological research
- **46** Verify accuracy of data or documents
- **47** Clean work areas or dispose of waste

Sources: Skills Tracker, NSC analysis

Note: This figure is a network analysis of skills clusters in the current labour market. The bubbles represent skills clusters from the ASC and their colours represent the skills cluster families. The figure includes skills which are held by at least 20 per cent of the labour force (people aged 22 and over who are employed or unemployed). Larger bubbles indicate skills that are held by more people. The connecting lines depict the relationship between skills clusters based on the occupations of people.

Chapter 5: Labour market matching – a skills perspective

There appears to have been a slight deterioration in the ability of the labour market to match demand for labour since the COVID-19 pandemic. This is not surprising given changes to consumer spending patterns, disruption to business models and supply chains, and closed borders.

One analytical tool used by labour market economists to analyse trends and developments in labour market matching is the Beveridge Curve. The Beveridge Curve compares the unemployment rate (the number of people unemployed divided by the total labour force) to the vacancy rate (the number of job vacancies divided by the total labour force) and shows how this changes over time. A Beveridge Curve for Australia suggests that the observations over mid-2020 are consistent with a recessionary environment with a relatively high unemployment rate and few vacancies. At the time of writing, observations suggested a solid recovery in the labour market with a lower rate of unemployment and an increase in job vacancies. The position of the most recent observations relative to the origin suggests a more mixed ability of the labour market to match demand and supply.

Beveridge Curve for Australia, 2006 to 2021, using NSC Internet Vacancy Index

Sources: ABS *Labour force, Australia,* seasonally adjusted and NSC Internet Vacancy Index, seasonally adjusted

The NSC has recently done more detailed research into the difficulties faced by employers in recruiting staff. Early insights show that employers recruiting for medium and higher skilled vacancies in areas outside of capital cities not only have recruitment difficulty most frequently, but also experience a greater severity of difficulty.

Severity of recruitment difficulty, by region and skill level of vacancy, March and April 2021

Source: NSC, Recruitment Experiences and Outlook Survey, March to April 2021

Changes in employers' recruitment processes

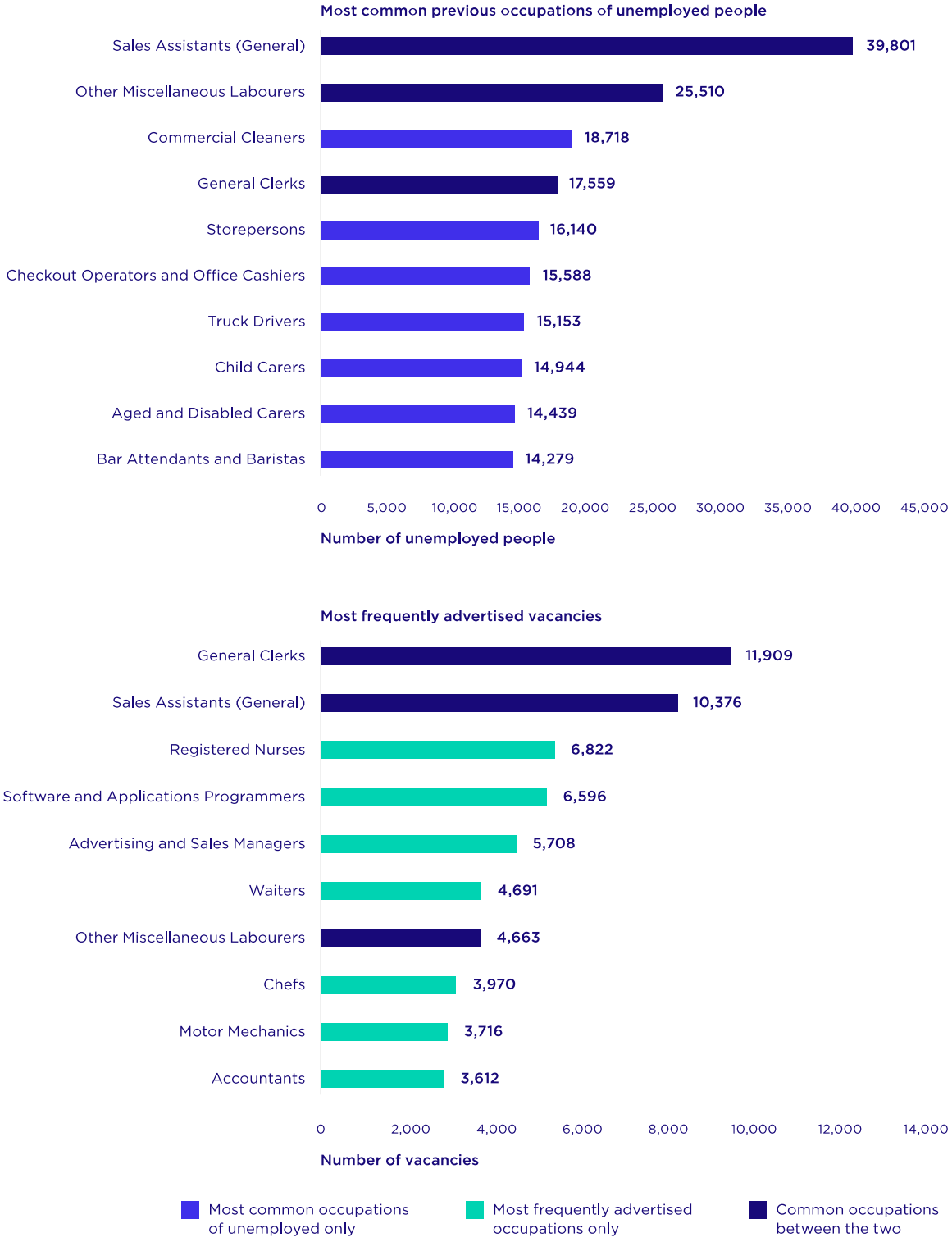
The NSC has collected data on how employers respond to recruitment difficulties. In March and April 2021, about one-in-eight employers changed their expectations or qualification requirements. This included hiring applicants with experience even if they were not as qualified as the employer wanted, or taking on people who demonstrated enthusiasm or a willingness to learn on the job. Around one-in-five employers changed the methods they used to recruit, such as using social media or word-of-mouth.

Individuals' perspectives on labour market matching

There is often a mismatch between the skills of people seeking work and the available jobs, so opportunities to transition into other types of jobs can be limited.

The chart below compares the most common previous jobs of unemployed people with the most frequently advertised jobs. Occupations in high demand are more likely to be specialised and require formal qualifications, such as registered nurses and software programmers. In jobs such as sales assistant and general clerk - which match the experience of large numbers of jobseekers - the number of unemployed workers outstrips the number of vacancies.

Comparison of most recent occupations of unemployed people and online job listings, March 2021



Sources: Skills Tracker, NSC Internet Vacancy Index, March 2021, seasonally adjusted, NSC analysis

The Australian Skills Classification (ASC) expands the possibilities for job seekers by identifying skills which are transferable across occupations. For example, although the number of unemployed sales assistants appears to greatly outstrip the number of job openings in most states, many of the skills they are likely to have acquired in their last role could be applied to occupations such as beauty therapist, model and sales demonstrator or motor vehicle salesperson.

The VET national data asset will provide new insights

To date, the ability to monitor the outcomes of VET courses in the labour market has been limited by the data available. There are more than 1,200 nationally recognised qualifications and 600 accredited courses, delivered by more than 4,000 registered training organisations (RTOs). Each state and territory has responsibility for its own system of subsidised delivery and the primary data source for student outcomes until now has been surveys.

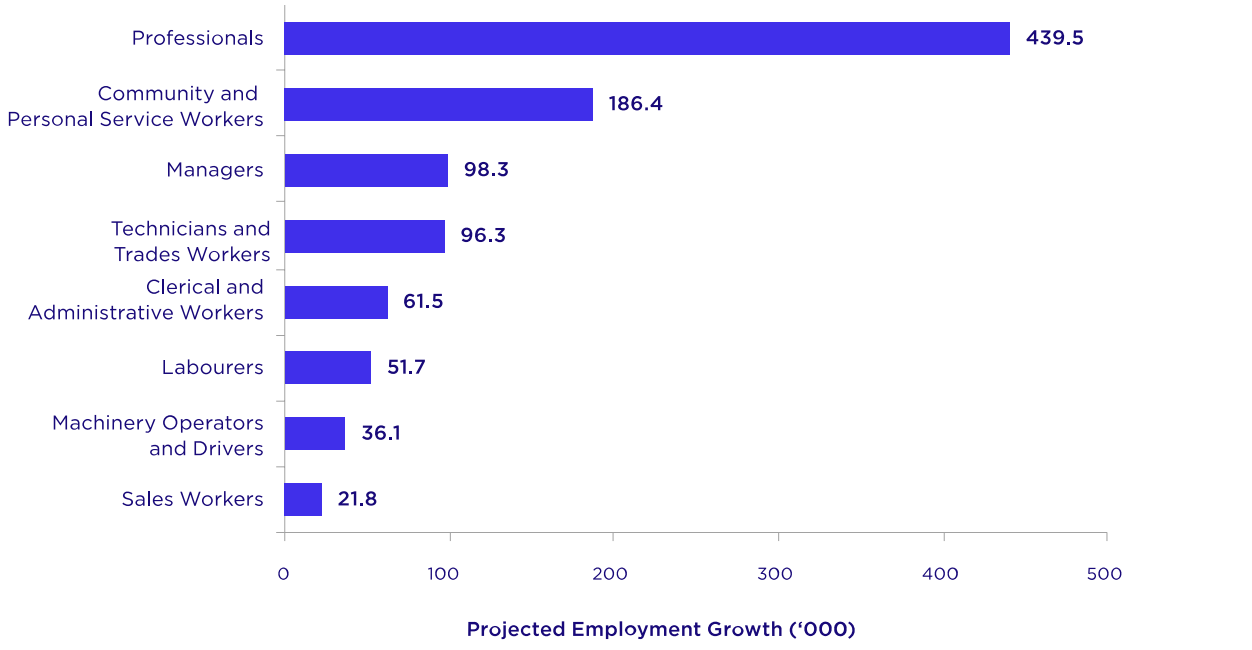
The NSC, in partnership with the Australian Bureau of Statistics, is creating the VET National Data Asset (VNDA). The VNDA will link Total VET Activity data – showing who has participated in accredited training, whether they completed the course and their background characteristics – to the Multi-Agency Data Integration Project (MADIP). There are a number of outcomes of interest from this research, including: employment income, employment status, income tax payable, social security payments, and business income. The research is testing whether training in a course is a turning point in the private and public circumstances of VET students.

Chapter 6: Labour market skills needs

The NSC's five-year industry employment outlook projects the long-term structural shift in employment towards services industries will continue. Four services industries – health care and social assistance, accommodation and food services, professional, scientific and technical services, and education and training – are expected to generate over three-fifths of the total projected employment growth. However, future employment growth is not just confined to these areas, with further increases projected across a range of industries.

As the following chart shows, projected employment growth by major occupational group is expected to be strongest for professionals and then community and personal services workers, consistent with the labour intensive nature of growing services industries.

Projected employment growth to November 2025, by major occupational group



Source: NSC, 2020 Employment Projections, five years to November 2025

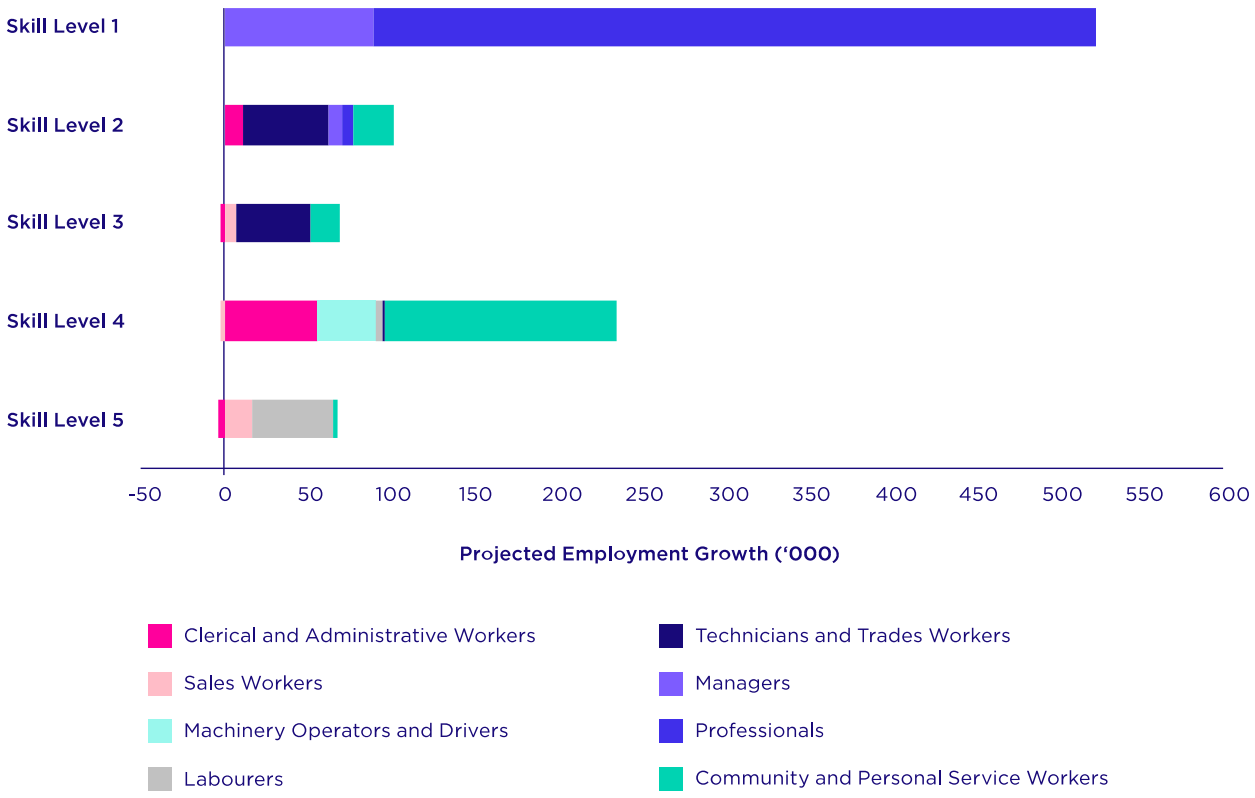
The importance of post-school qualifications

The increasing importance of tertiary education and skills development beyond secondary school is highlighted by the five-year projections that show more than nine-in-ten new jobs are projected to require post-school qualifications.

Employment in STEM occupations (using science, technology, engineering and maths skills) is projected to grow by 12.9%, well above the average of all occupations (of 7.8%) and more than twice as fast as non-STEM occupations (6.2%).

From a qualification perspective, occupations in high demand are more likely to be specialised and require higher level skills and formal qualifications. These include occupations such as registered nurses, software and application programmers and advertising and sales managers.

Projected employment growth to November 2025 for skill levels, by occupation



Source: NSC, 2020 Employment Projections, five years to November 2025

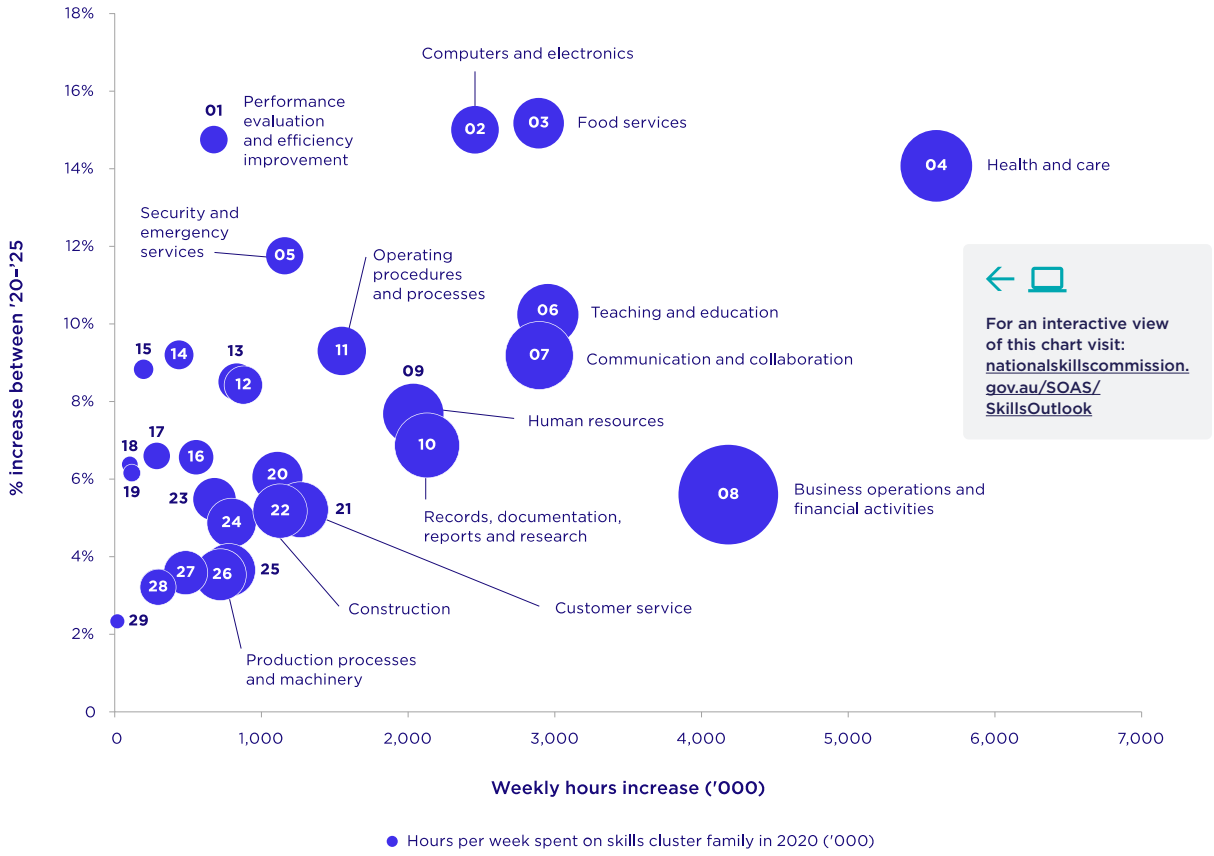
Five-year skills outlook

The new five-year skills outlook identifies skills in the labour market that will be even more critical in future.

The diagram below shows the projected growth in demand in both percentage terms and the number of additional hours per week expected to be spent on each skills cluster family across the workforce. The size of the bubbles represents the number of hours Australians currently spend on each skills cluster family in a week. The large bubble on the far right of the figure is the **health and care** skills cluster family. This family is expected the see the largest increase in hours worked, although the **food services** skills cluster family is projected to experience the fastest growth (15.2%) over the five years to 2025 of all the 29 skills cluster families, reflecting in part a bounce back from the impact of the COVID-19 pandemic.

Computer and electronics (15.0%) and **performance evaluation and efficiency improvement** (14.7%) are the next fastest growing skills cluster families. Skills in these families are associated with many professional occupations. The **communication and collaboration** skills cluster family is already a significant focus in today's workforce and is projected to grow by 10.2%.

Demand for skills by skills cluster family, projected growth



01 Performance evaluation and efficiency improvement
02 Computers and electronics
03 Food services
04 Health and care
05 Security and emergency services
06 Teaching and education
07 Communication and collaboration
08 Business operations and financial activities
09 Human resources
10 Records, documentation, reports and research
11 Operating procedures and processes
12 Safety and hazard management
13 Data, analytics, and databases
14 Environmental management
15 Recreation and sporting events
16 Vehicle operation
17 Science and mathematics
18 Art and entertainment
19 Fashion, grooming, and cosmetics
20 Cleaning and maintenance
21 Customer service
22 Construction
23 Work activities preparation
24 Quality control and inspections
25 Sales and marketing
26 Production processes and machinery
27 Material transportation
28 Agriculture and animals
29 Archiving, recording, and translating

Sources: NSC, *Employment projections, five years to November 2025,* ASC

Skills Priority List identifies occupations in shortage

The NSC's Skills Priority List was released in late June 2021 and outlines the 153 occupations currently in shortage nationally. These are ranked as either having strong, moderate or soft future demand. There are 646 occupations for which national shortages were not identified.

There are pockets of shortages across most occupation groups. Generally, shortages are greatest among technicians and trades workers occupations, which includes electricians, carpenters, chefs, fitters and motor mechanics.

The SPL forms the backbone of the NSC's labour market advice, including on skilled migration, training and employer incentives. It is published on the NSC's website: nationalskillscommission.gov.au

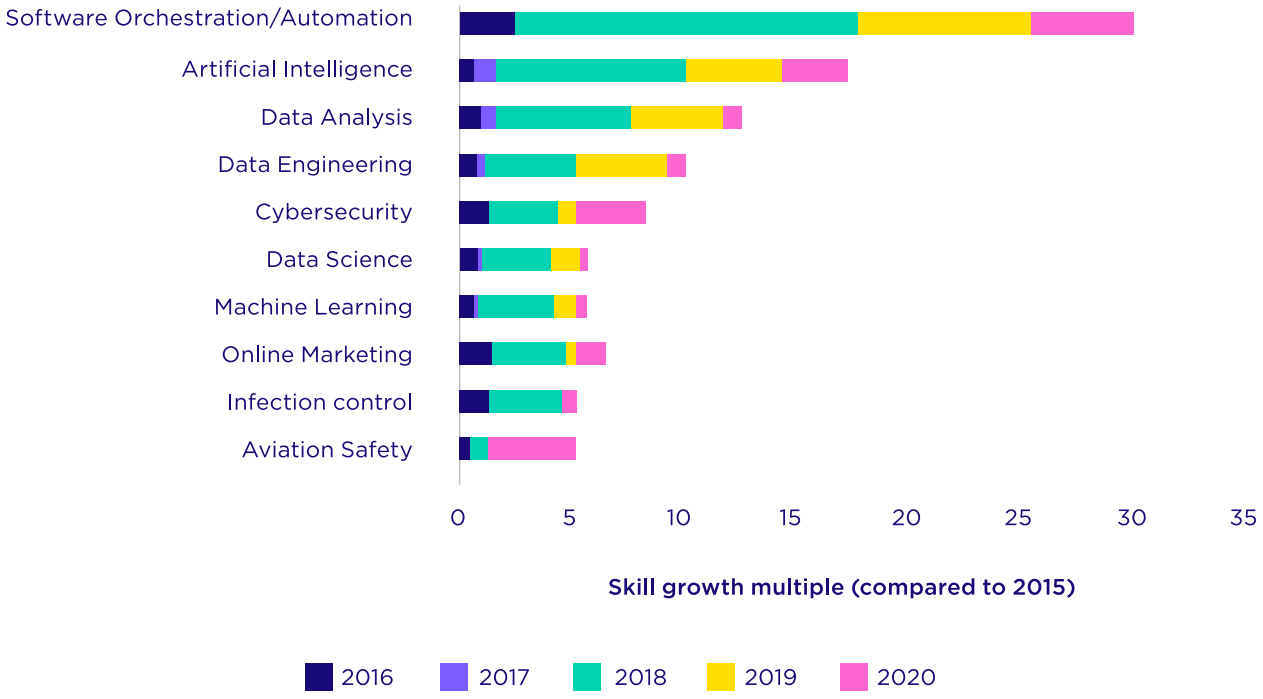
Chapter 7: Emerging skills

Automation, globalisation and changes in technology are often thought to lead to the loss of jobs. But the biggest effects of these factors are on changes in the way we do our jobs. Known as 'task change', this involves changes in the amount of time spent on existing tasks and the addition of new tasks.

The concept of task change is approached here through an examination of trending and emerging skills. Emerging skills are those skills showing up in jobs for the first time in the last five years. Trending skills are known, but have grown in importance over the last five years.

The fastest growing emerging skills are data and digital skills, such as those in software orchestration/ automation, artificial intelligence and data analysis. Since 2015, demand for software orchestration/ automation in job advertisements has grown almost 30 times.

Cumulative growth multiple of the share of all skills, past five years compared with 2015



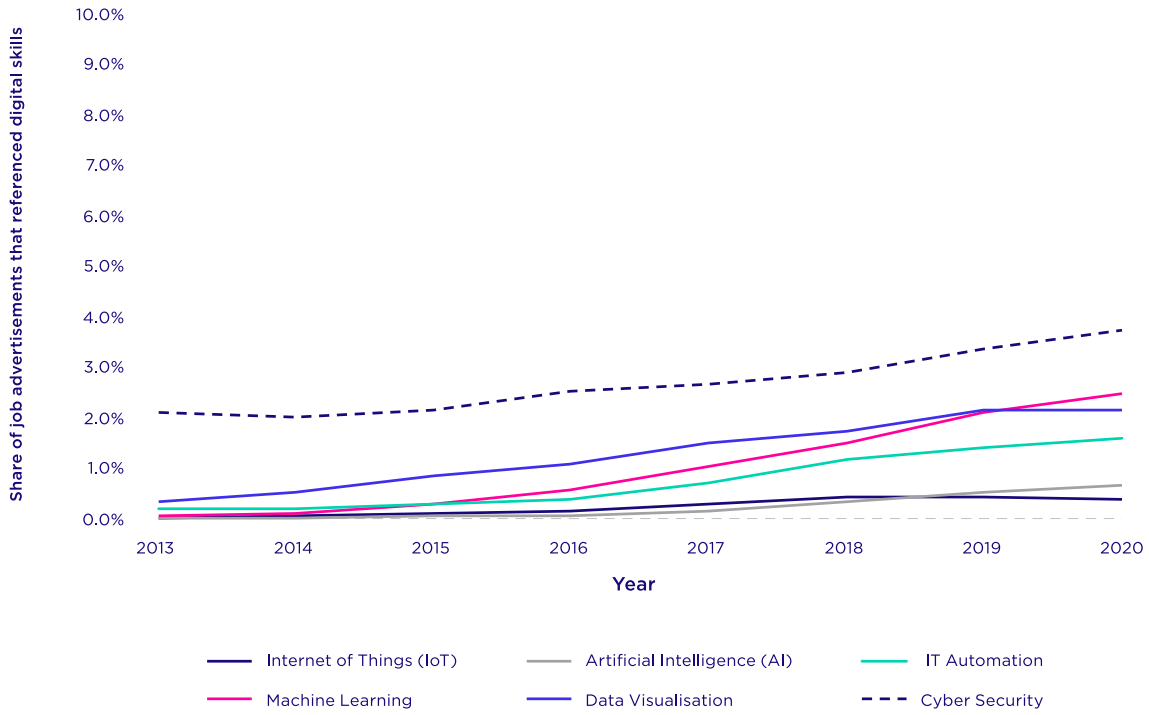
Sources: Burning Glass Technologies data, 2015-20, NSC analysis

The digital skills market in Australia, Canada, New Zealand, Singapore and the United States

An analysis of the international digital skills market provides an indication of how Australia is faring against other comparable countries. By examining skills that are emerging or growing rapidly we can also better understand potential developments in the Australian labour market.

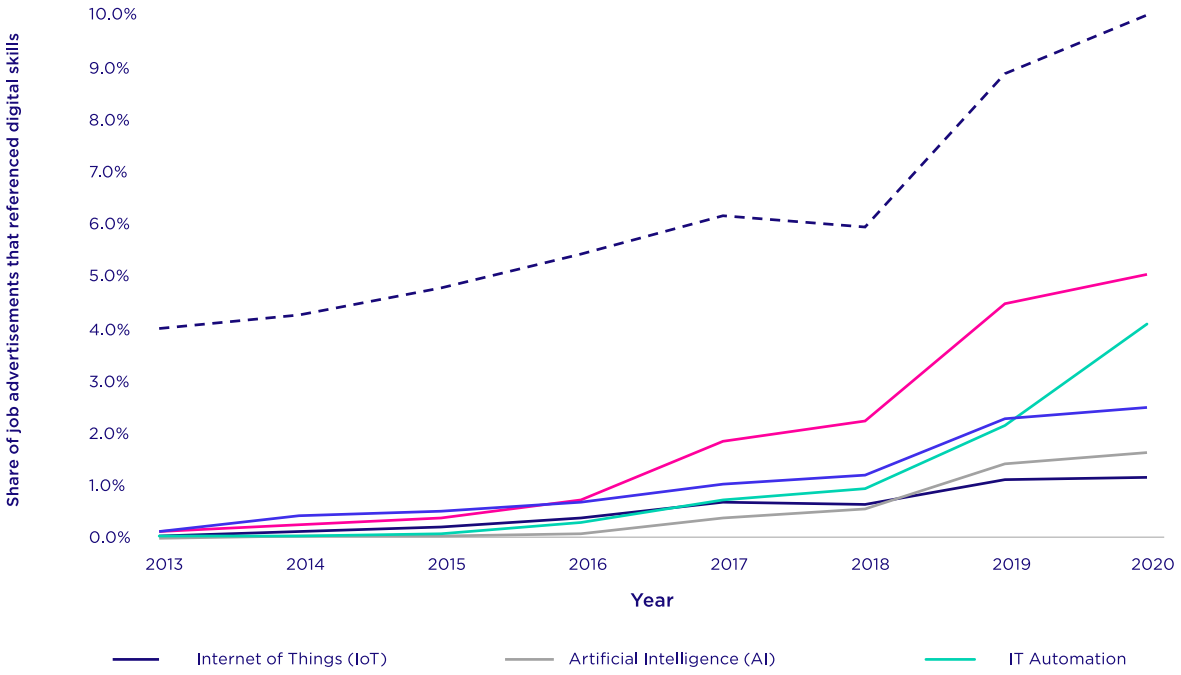
For example, as part of our analysis, we identified a group of cutting-edge skills which have grown by 150% between 2013 and 2020. We found a similar pattern of demand across Australia and the US but the demand for cutting-edge skills in Singapore outstrips those of both countries, particularly for cyber security. The charts below compare the demand for cutting edge skills in Australia and Singapore.

Demand for cutting edge skills in Australia



Sources: Burning Glass Technologies data, 2013 to 2020, NSC analysis

Demand for cutting edge skills in Singapore



Sources: Burning Glass Technologies International data, 2013 to 2020, NSC analysis

Emerging and trending skills in the wider labour market

Trending and emerging skills are affecting the way work is undertaken across many occupations in the labour market. The NSC has analysed the top employing occupations in each sector of the Australian labour market, and the top trending skills for those jobs – including how they map to existing skills in the ASC. For example, the top emerging skills for technicians and trade workers are electrical control systems, enterprise resource planning and schematic diagram design. For community and personal service workers, the top emerging skills are cardiopulmonary resuscitation, meal preparation and medical administration.

Chapter 8: Skills and jobs of the future

How the world of work will evolve has fascinated people for many decades – more so in recent years due to globalisation and the exponential growth of technologies.

The reality is that automation and other technological innovations are not destroying human work. Neither are they always creating new jobs and tasks.

When technology complements the work of humans, it can lift productivity, lower costs and increase demand for new products and services. New business models can increase multi-factor productivity, but realising these gains requires innovation, workforce planning and the right supply of skills.

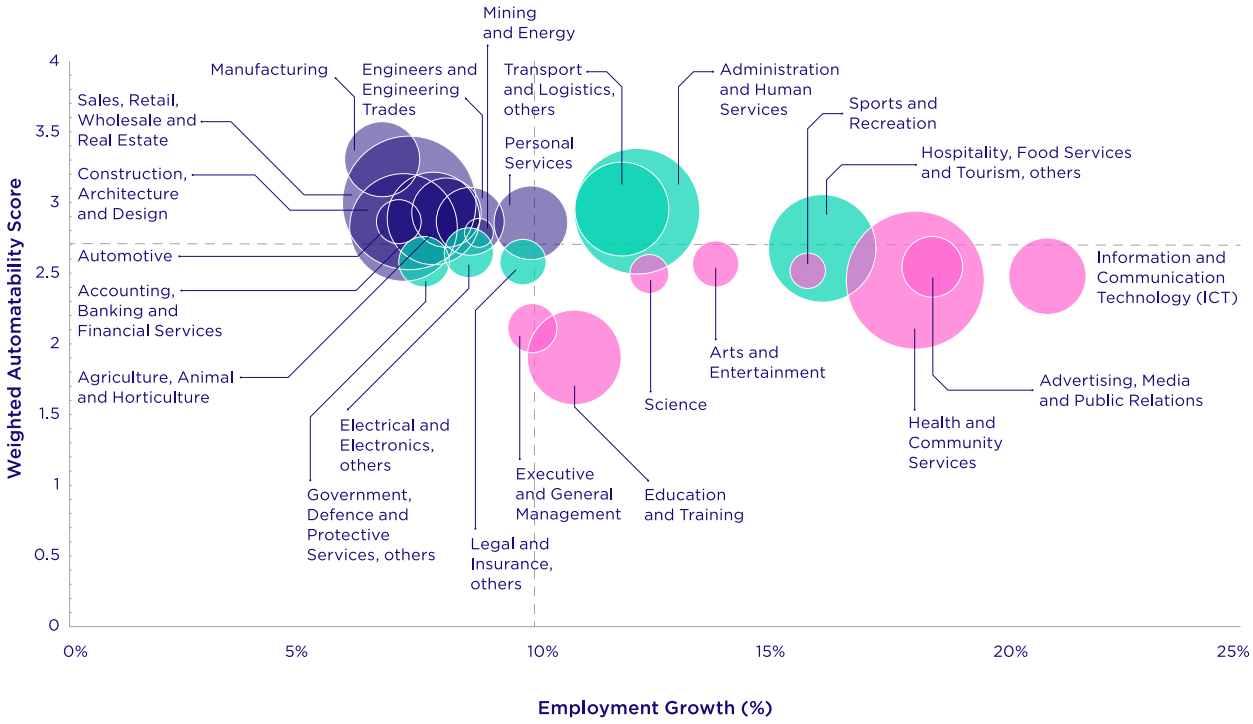
Automatability of specialist tasks within the Australian Skills Classification

The NSC has conducted skills-based automation modelling. This differs from previous analysis which has either focused on occupations or tasks within a job using the United States Department of Labor's O*NET. The specialist tasks in the Australian Skills Classification (ASC) have been adapted to the Australian context from O*NET and therefore provide a strong base for conducting a more granular, skills-based view on how technology is reshaping jobs in the labour market.

The most automatable specialist tasks are manual and routine such as sorting and distributing mail and operating material handling machinery while the least automatable tasks are highly cognitive such as creating or performing music and undertaking environmental research. The analysis provides a weighted automation score of each specialist task within the 29 skills cluster families in the ASC. Material transportation is the most likely to be automated (3.30), compared with teaching and education (1.77) which is the least likely to be automated.

Scenario modelling is a technique used to understand what might happen in the future. The NSC has combined work on modelling projected growth of occupations under an Accelerated Digitalisation scenario with the weighted automation scores identified above. The result identified some occupations that, should digitisation accelerate, are at a potentially greater risk of automation and lower projected growth. These include occupations across sales, retail, wholesale and real estate. In the diagram below the pink bubbles represent occupation groups that will do well under the Accelerated Digitalisation scenario and have a weighted automatability score below the median, including ICT, health and community services and advertising, media and public relations. In addition, the executive and general management occupation group is expected to do well given the need for skills in planning, governance, strategic oversight to manage the implementation of new technologies. Together these occupations require a high intensity of skills identified as part of the four skills expected to be important in the future: care, computing, cognitive abilities and communication.

Automatability compared with growth of occupations in Accelerated Digitisation scenario 2020–2028



Source: NSC analysis, 2021

The Four Cs

Among the key skills that will be needed for jobs of the future are care, computing, cognitive and communication skills.

The combination of an ageing population and the lower ability to automate tasks and jobs in the cluster family of health and care suggests that 'care' is likely to be a key skill of the future.

As noted previously, automation and computing have varying effects within occupations and industries. They can replace labour in some jobs but also create new tasks and jobs including programming, software and application development; and more specialist tasks within existing occupations. The NSC views computing as a key skill of the future, reflecting the job creation aspect of this mega trend.

One of the impacts of the pandemic on the labour market appears to have been an acceleration of long-term trends. One such trend is the shift in demand for labour away from routine tasks (repetitive physical labour that can be replicated by machines) towards non-routine (non-repetitive or non-codifiable) work. The greater difficulty in automating non-routine, cognitive jobs and tasks (at high and lower skill levels) also suggests that cognitive jobs will remain in high demand into the future.

The analysis in the report also highlights the importance of core competencies or 'employability skills'. The analysis finds that high proficiency in core competencies correlates with a decrease in the likelihood of automation. Within that group of core competencies, oral communication and writing require high proficiency and are the least likely to be automated. This finding sits behind the NSC's view that communication is a core skill of the future.

Concluding comments

The NSC's broad remit is to provide clarity on current labour force dynamics and to identify skills needs.

A key focus of this report is on the big forces at play: a shift to higher skilled jobs and an ongoing shift towards services; the resilience of non-routine, cognitive jobs and employability skills in the face of automation; the opportunities being created by technology; and an acknowledgment that many of those forces likely to shape the future have also shaped our recent past.

Encouragingly, the Australian labour market has, on the whole, managed the impacts of these big forces well over the past few decades and entered 2020 with a relatively low unemployment rate and a more highly skilled population than was the case decades earlier.

While COVID-19 has certainly been a challenge, the recovery in 2020 from the initial impact is a marker for the likely recovery from more recent lockdowns.

Although past performance is no guarantee of future success, the Australian labour market has been able to manage big changes and reshape itself over the past few decades. This provides some grounds for optimism about our ability to do so into the future, as we respond to emerging and future workforce skills needs.

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