

National Industry Insights Report

2018/19 National Overview

This document is a print friendly version of the National Overview section of the National Industry Insights Report website.

The National Overview can be viewed online at <<https://nationalindustryinsights.aisc.net.au/national>>.

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The National Skills Overview provides analysis of industry skills needs and the factors and trends affecting the demand for skills at a national and cross-industry level.

The overview draws on Industry Reference Committee (IRC) 2018 Skills Forecasts and Proposed Schedules of Work and supports the design and development of training packages that meet the current and future skills needs of industry.

It links the cross-industry analysis on skills needs with the activities and initiatives of the Australian Industry and Skills Committee and its network of Industry Reference Committees.

The National Skills Overview consists of four key sections which are listed below.

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Insights and highlights

Overview

This section provides a summary of five skills prioritised highly across IRC Skills Forecasts and the factors and trends which affect the demand for these skills.

These skills were identified from eleven skill areas by Industry Reference Committees (IRCs) in their 2018 Skills Forecasts. The skills set out in the [Future skills and training: A practical resource to help identify future skills and training](#) (*update forthcoming*) report have been used as a framework for organising these skill areas.

It is evident from the analysis that there is a huge industry demand for cross-sector skills such as adaptability, analytical, digital, and collaboration skills. Given the challenges that industry face due to factors such as structural change, economic cycles, changing markets, and emerging technology, these transferable cross-sector skills are critical for ensuring Australia's workforce can adapt to the ever-changing environment.

In addition, industry and occupational-specific skills remain a priority for all industries, with many IRC Skills Forecasts identifying key technical skills in demand. Indeed, these specific skills for specific jobs remain an integral part of Australia's vocational education and training system.

For more detailed analysis on each of the eleven priority skill areas and industry demand please visit the [Priority skills](#) page. For more information on the factors driving demand for skills, please visit the [Factors and trends](#) page, and to find out about cross-sector projects and training package development work underway, please visit the [Key initiatives](#) page.

The top five priority skills are summarised on the following pages.



Adaptability skills

As digital technologies and job requirements evolve, workers must enhance their ability to adapt to new situations and acquire new skills. As the world of work becomes more flexible, individuals are expected to take more responsibility for their own skills development.

RANKED 1ST
highest priority generic skill
across all industries



PRIORITY SKILLS

Skills identified by IRCs

- Adaptability, agility and flexibility in changing conditions
- Active learning and engagement with training
- Embracing new ways of working
- Entrepreneurial skills
- Innovative thinking.

FACTORS AND TRENDS

Driving demand for skills

- Artificial Intelligence and machine learning
- Augmented Reality and Virtual Reality
- Automation and robotics
- Demand for care-related services and products
- Digitisation and the 'internet of things'
- Emerging markets
- Emerging technologies
- High speed competition
- Impact of climate change
- Improved energy efficiency
- International and domestic sustainability action
- Political appetite for reform
- Start-up thinking
- Technologically advanced materials and products.



Analytical skills

Data is becoming increasingly available, with 'big data' derived from online activity, sensors, the 'internet of things', new analytical tools, and artificial intelligence. With this, comes an expectation that workers in almost all industries, and across most roles, will be able to use available data to derive value, and improve products and services.

This may require the ability to analyse and present raw data or to interpret data analysis and apply findings. It may perhaps also involve other skills, such as data management, information literacy, problem-solving, critical thinking and creative thinking.

RANKED 2ND
highest priority generic skill
across all industries



PRIORITY SKILLS

Skills identified by IRCs

- Creativity
- Critical thinking
- General analytical skills
- Observation and monitoring
- Problem solving.

FACTORS AND TRENDS

Driving demand for skills

- Artificial intelligence and machine learning
- Augmented Reality and Virtual Reality
- Big data and data analytics
- Cross-disciplinary science
- Digitisation and the 'internet of things'
- Start-up thinking.



Digital skills

In a world of rapid technological expansion affecting all industries, it is vital to have a workforce that's agile, with the skills to drive and adapt to new technologies. Digital skills include coding and programming, development and use of robotic and automation technologies, leveraging ICT skills in business, and exploring the world of cloud computing and the 'internet of things'.

RANKED 3RD
highest priority generic skill
across all industries



PRIORITY SKILLS

Skills identified by IRCs

- Application design and development
- Automation and robotics
- Coding/programming skills
- Digital literacy
- Electronics
- General digital skills
- ICT skills
- Using industry specific software or technologies.

FACTORS AND TRENDS

Driving demand for skills

- Access to quality internet
- Artificial Intelligence and machine learning
- Automation and robotics
- Augmented Reality and Virtual Reality
- Big data
- Changing workplace dynamics
- Cross-disciplinary science
- Digitisation
- Emerging markets
- Emerging technology
- High speed competition
- Mobility and connectivity
- Network working and producing
- Workforce vulnerability.



Collaboration skills

Those able to collaborate and share information are best able to adapt to changing markets and technologies, interact in diverse workplaces, and effectively respond to customer needs. Skills that enhance collaboration include communication and teamwork skills, relationship management, and social and cultural awareness.

RANKED 4TH
highest priority generic skill
across all industries



PRIORITY SKILLS

Skills identified by IRCs

- Active listening
- Communication skills
- Community engagement
- Conflict management
- Cultural and global awareness
- Customer service
- Diversity and inclusion
- Emotional intelligence
- Relationship building
- Social perceptiveness
- Speaking
- Social and interpersonal skills
- Teamwork.

FACTORS AND TRENDS

Driving demand for skills

- Access to quality internet
- Behavioural economics and psychology
- Changing work and career values
- Changing workplace dynamics
- Cross-disciplinary science
- Demographic change
- Emerging markets
- Empowered customers
- Global mobility
- Knowledge-based economy
- Mobility and connectivity
- Network working and producing.



Industry and occupation skills

Industry and occupation skills refer to specific skills that various IRCs have identified as being a priority for their industry. These skills vary from industry to industry and they are unpacked further on the [Priority skills](#) page.



Industry and occupation-specific skills
are important in most industries

PRIORITY SKILLS

Skills identified by IRCs

- Cross-industry skills and trades
- Industry or occupation-specific skills
- Industry or occupation-specific knowledge, including technical, product and market-related knowledge
- Understanding and use of equipment or technology.

FACTORS AND TRENDS

Driving demand for skills

- Ageing population
- Artificial Intelligence and machine learning
- Changing work and career values
- Changing workplace dynamics
- Digitisation
- Emerging markets
- Emerging technologies
- Global mobility
- International and domestic sustainability action
- Network working and producing
- Skills mismatch
- Workforce vulnerability.

Factors and trends

Overview

This section examines some of the high-level factors and trends which influence and drive the demand for skills.

This includes economic conditions and trends in the labour market, as well as other factors such as changes in society and culture, business and market, advancements in technology, implications arising from climate change and increasing emphasis on sustainable environmental practices, and policy, institutional, and regulatory requirements.

Drawing on information from the Industry Reference Committee (IRC) Skills Forecasts, this section identifies which factors are having a greater impact on different industries.

The report [Future skills and training: A practical resource to help identify future skills and training](#) (update forthcoming) provides more detail on some of the factors listed above and is available on the Australian Industry and Skills Committee (AISC) website.

Factors identified as having the greatest impact on industry are:

-  **ECONOMIC CONDITIONS**
-  **TRENDS IN THE LABOUR MARKET**
-  **SOCIETY AND CULTURE**
-  **BUSINESS AND ECONOMICS**
-  **TECHNOLOGY**
-  **RESOURCES AND ENVIRONMENT**
-  **POLICY AND REGULATORY**

Economic conditions

Australia continues to experience growth and low unemployment. In 2018, the top three industries contributing to this growth were:

- Financial and insurance services
- Construction
- Mining.

Gross Value Added (GVA)

All industries

↑ **2.8%** 2017-2018 percent change

2000

2018

GVA - Top 3 contributing industries:

Manufacturing  12.6%

Financial and insurance services  8.5%

Construction  6.9%

GVA - Top 3 contributing industries:

Financial and insurance services  9.5%

Mining  8.8%

Construction  8.1%

May 2018

Unemployment

- 5.3% overall
- 11.0% for 15-24 year olds

Underemployment

- 8.3% overall
- 17.5% for 15-24 year olds

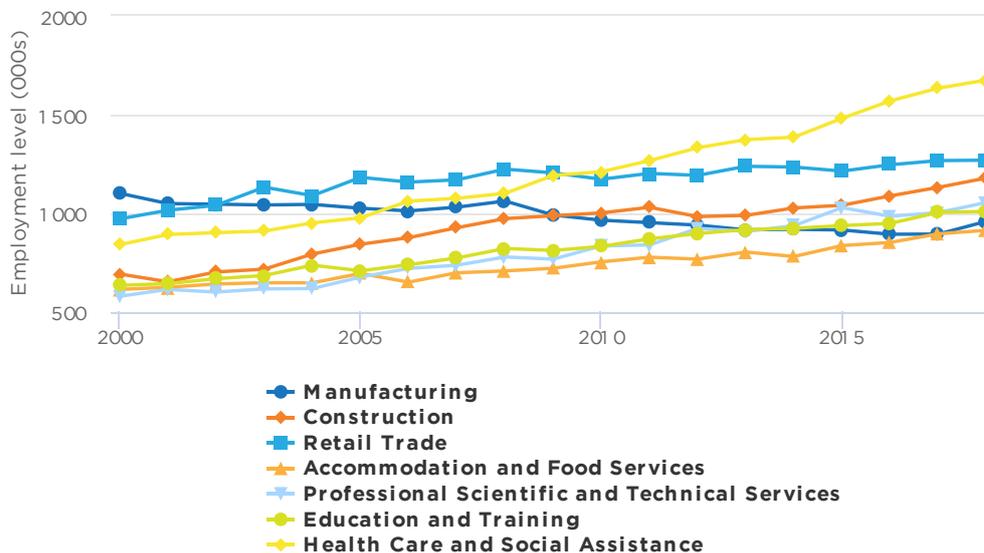


Trends in the labour market

Industry employment level

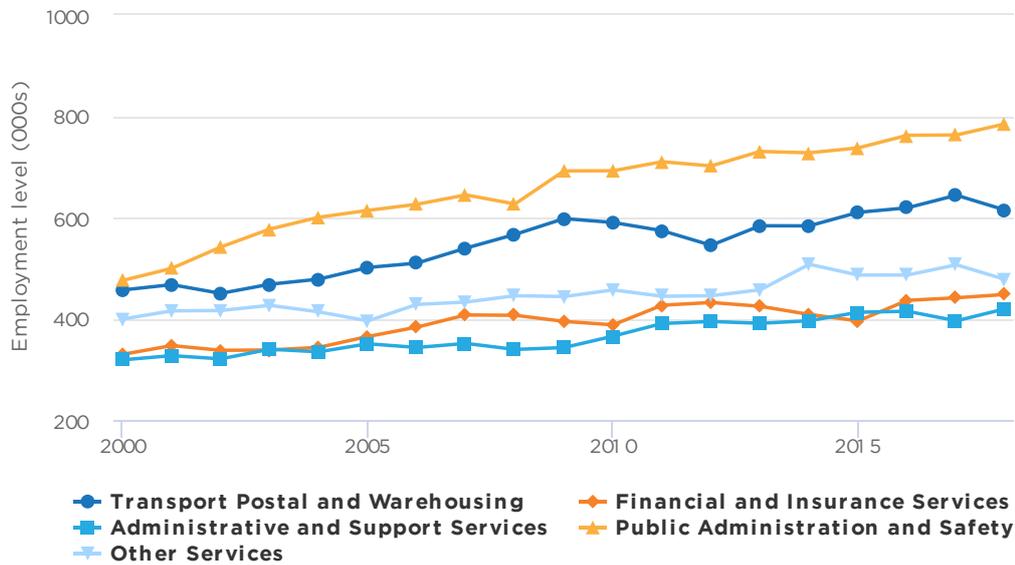
High employing industries

2000 to 2018 employment level



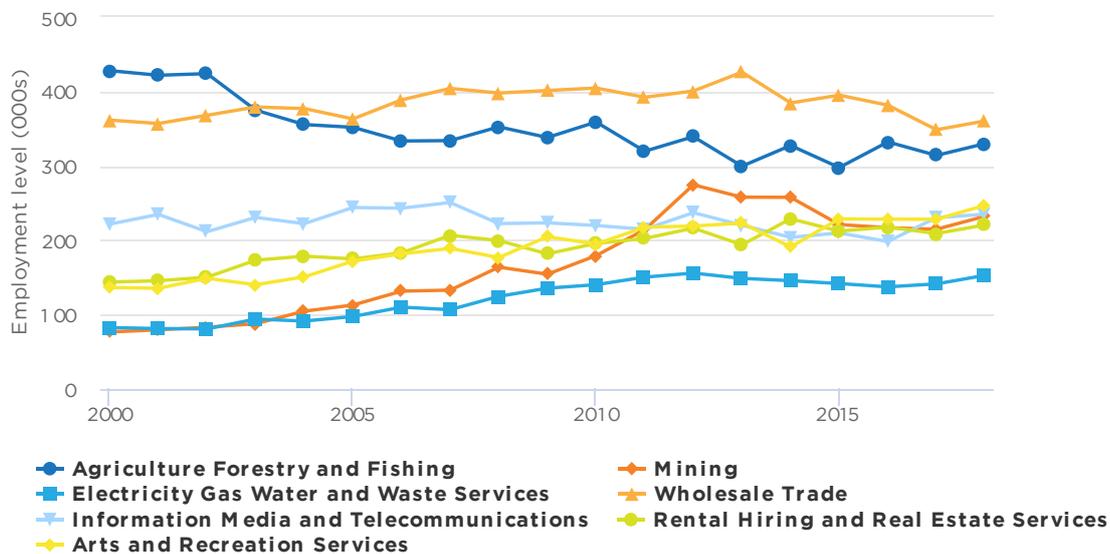
Medium employing industries

2000 to 2018 employment level



Low employing industries

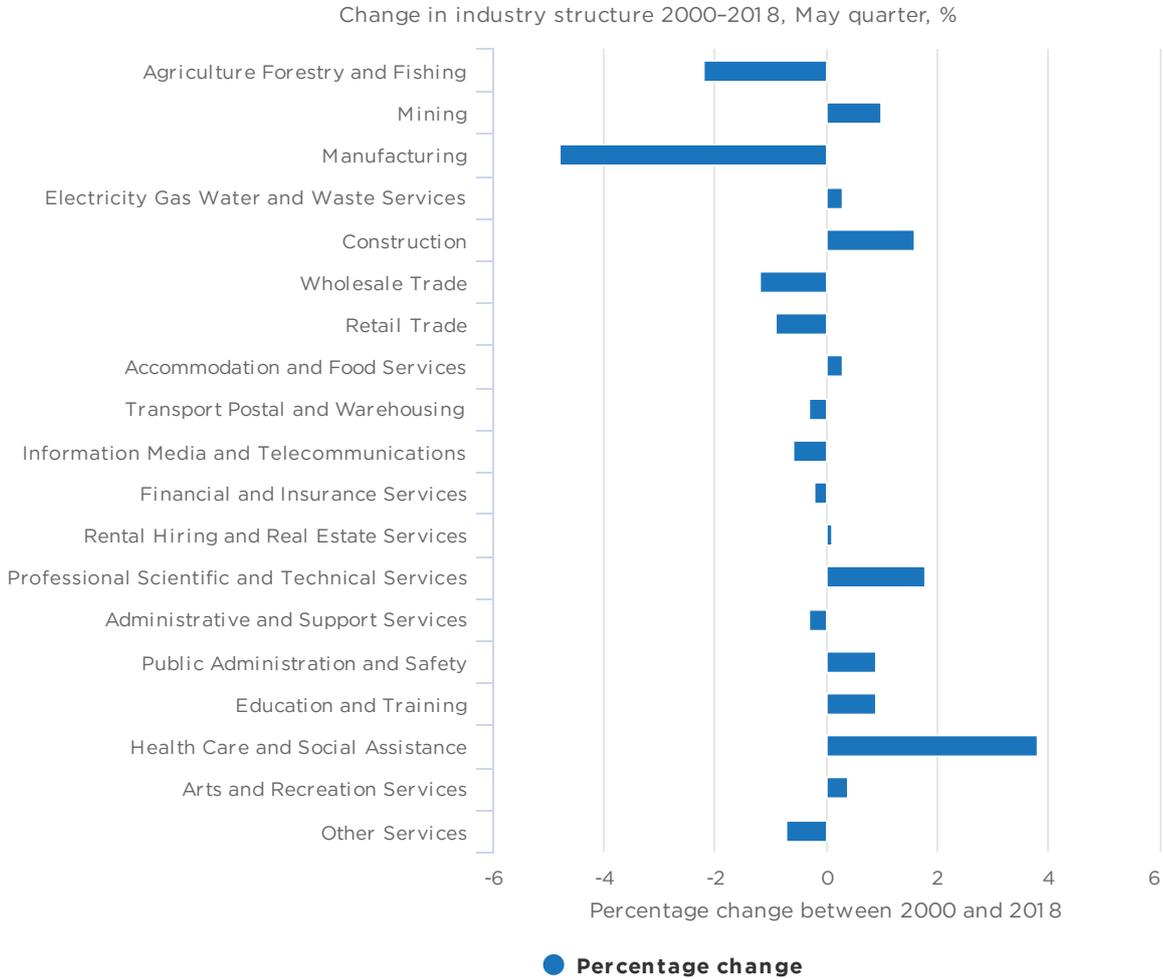
2000 to 2018 employment level



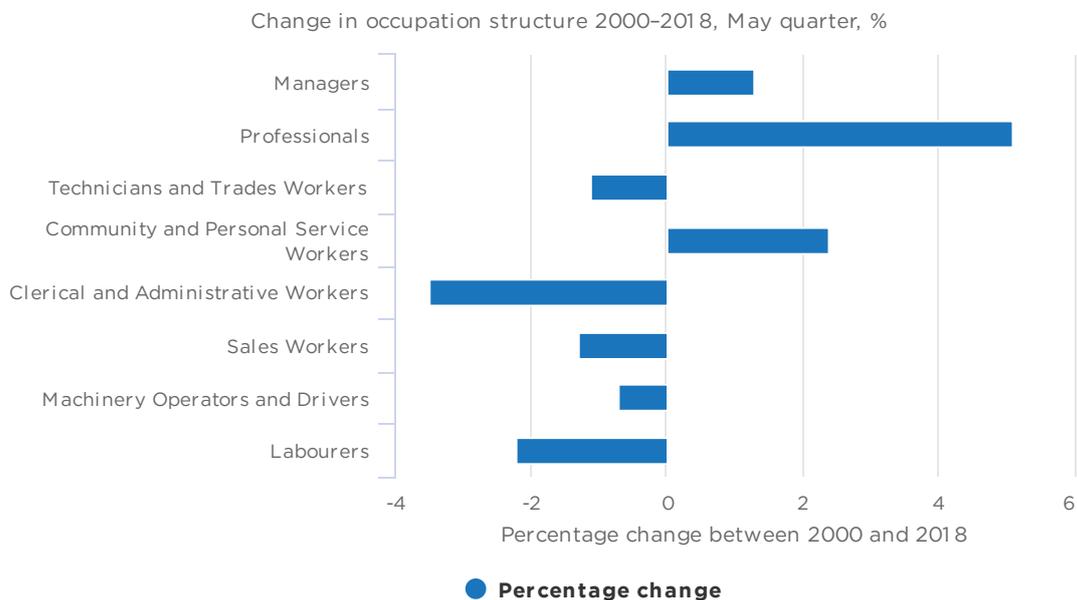
Employment grew in absolute numbers for the majority of industries between 2000 and 2018. The main exceptions being the Agriculture, Forestry and Fishing, and Manufacturing industries, which saw a decline in their workforce over this period.

Industry and occupation structural change

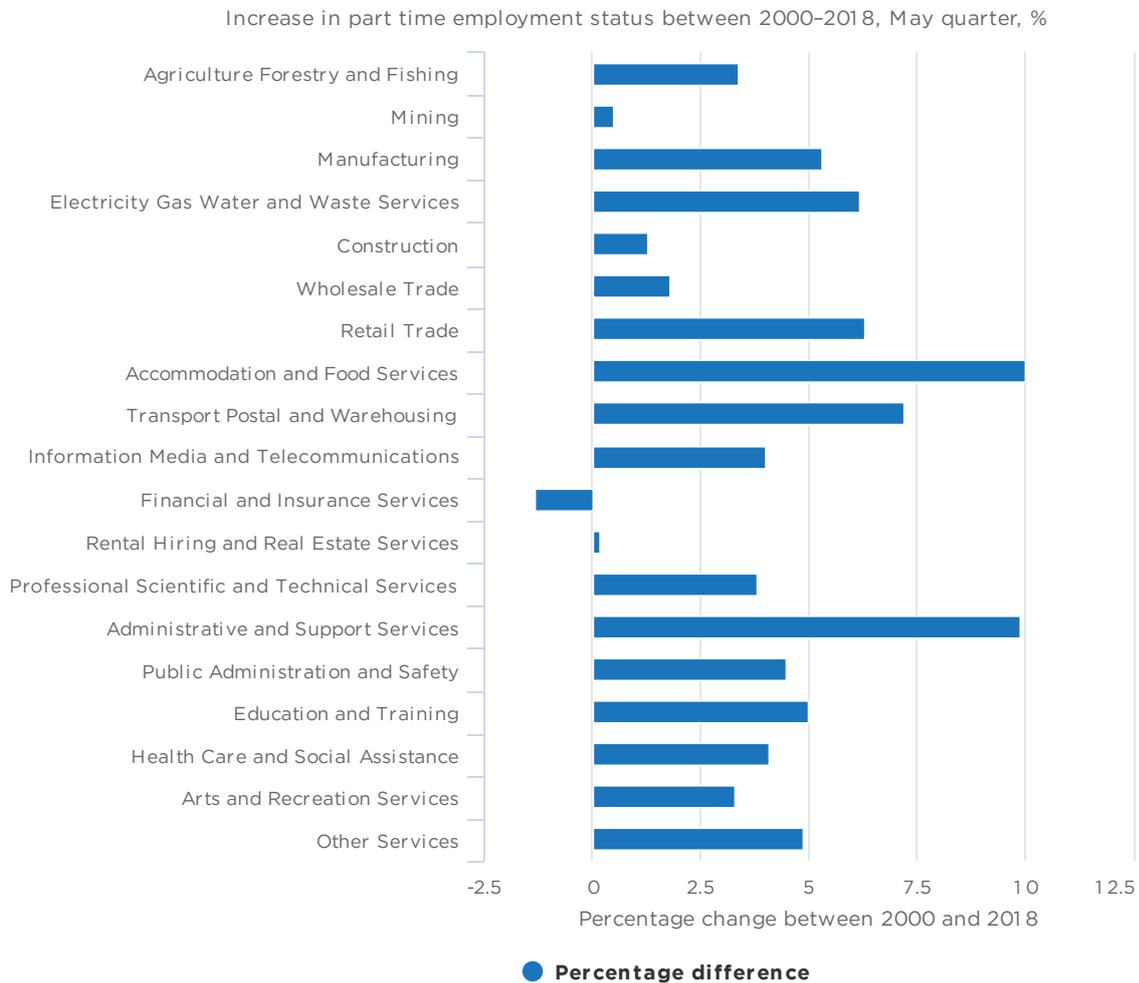
Industry change



Occupation change



Employment status



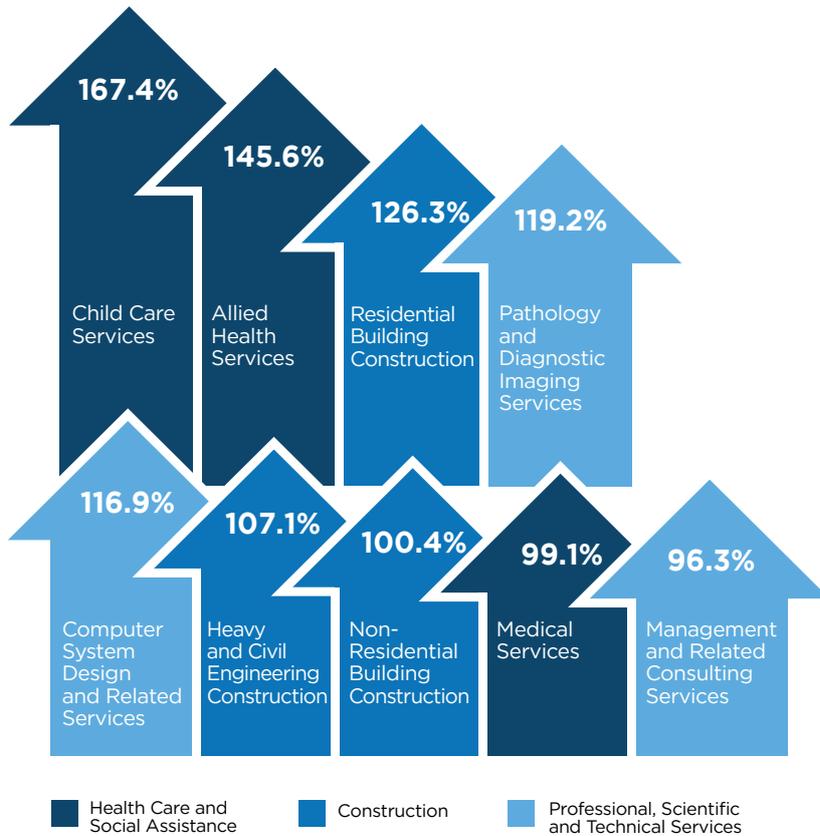
There is an evident shift in industry structure. The industries with the largest decline between 2000 and 2018 (in terms of share of total employment) are:

- Manufacturing (4.8 percentage points)
- Agriculture, Forestry and Fishing (2.2 percentage points).

The industries with the largest increases have been:

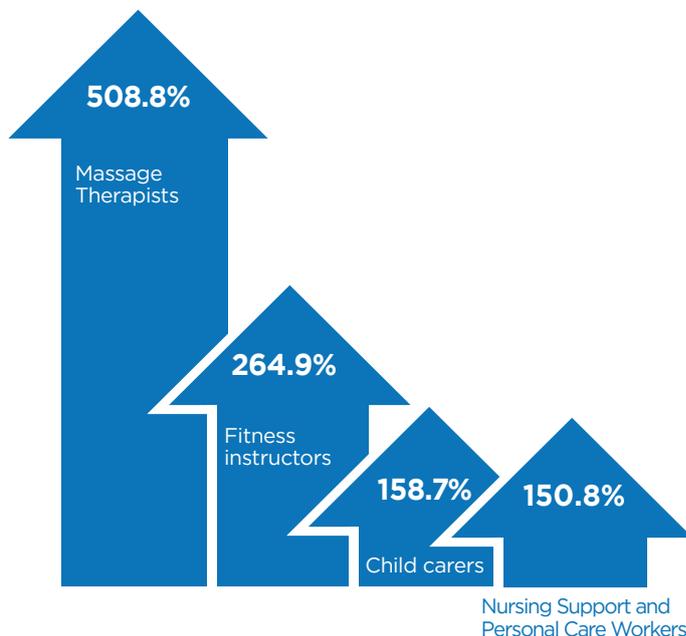
- Health Care and Social Assistance (3.8 percentage points)
- Professional, Scientific and Technical Services (1.8 percentage points)
- Construction (1.6 percentage points).

Within these three industries, and noting that over this time the number of people employed across industries has grown by 42%, some of the industry sectors with the largest growth are:

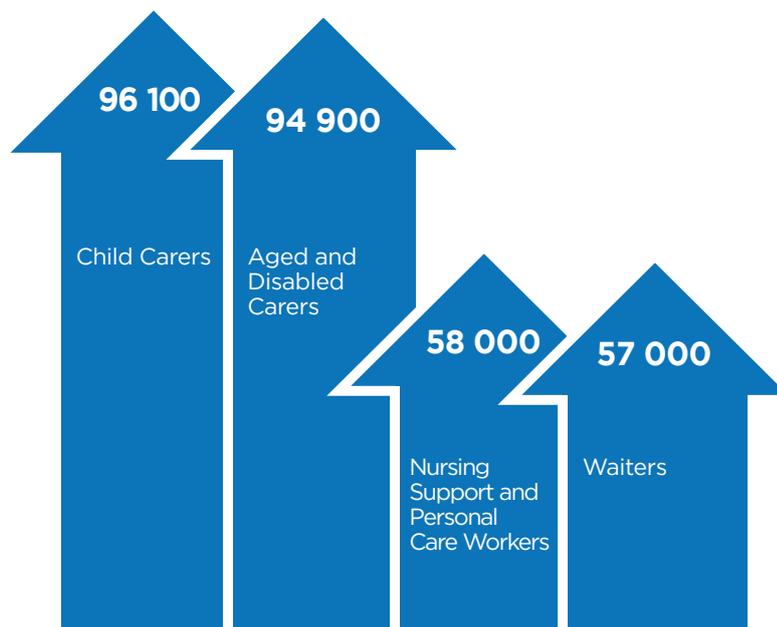


The occupational structure of the labour market has changed over the same period as well, with higher-level skills increasingly more in demand. The occupation grouping with the largest growth is Professionals (increasing their share by 5.1 percentage points). The second largest increase is Community and Personal Service Workers (increasing its share by 2.4 percentage points).

Within the Community and Personal Service Workers category, for occupations where there were at least 20,000 people employed in 2018, the largest percentage increases between 2000 and 2018 are:



In terms of numbers employed however, the largest increases were:



In most industries part-time employment is also growing. The industries with the largest increases in part-time employment (as a proportion of total employment between 2000 and 2018) were Accommodation and Food Services (10.0 percentage point increase), and Administrative and Support Services (9.9 percentage point increase).

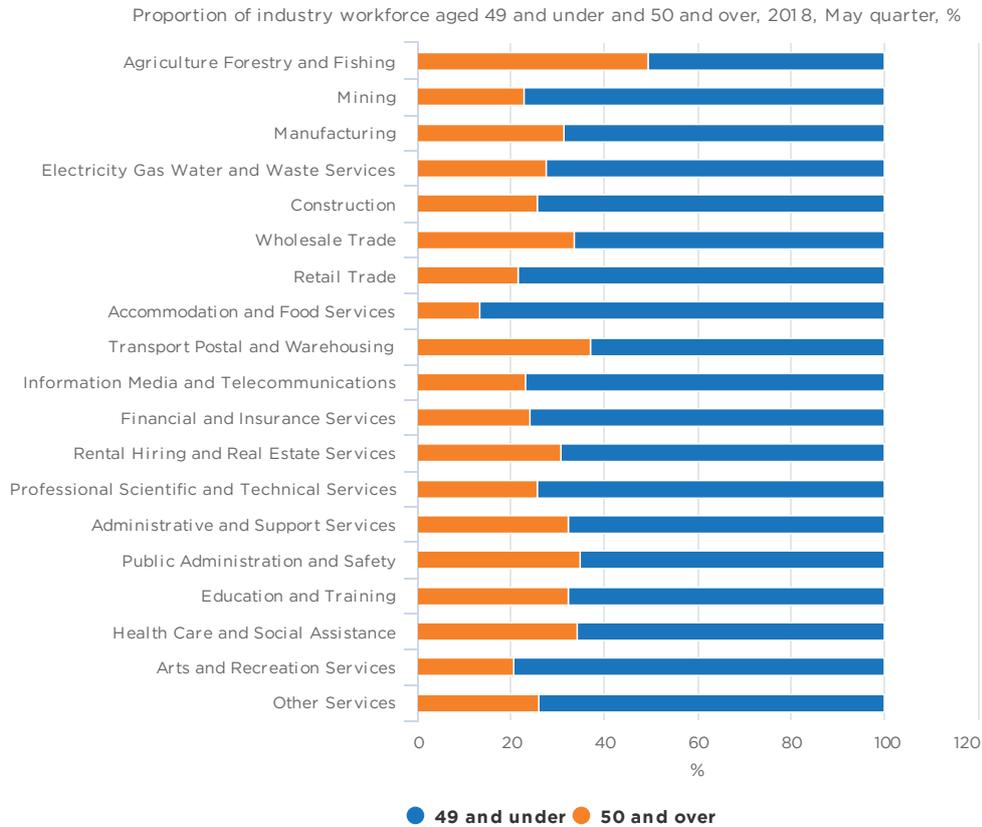
Demographic trends

Australia's ageing population and workforce is affecting industries differently. In 2018, there were nine industries with 30% or more of their workforce aged 50 and over. Nearly half of Agriculture, Forestry and Fishing workers were 50 years or older (49.5%), but only 13.4% of Accommodation and Food Services workers were of that age.

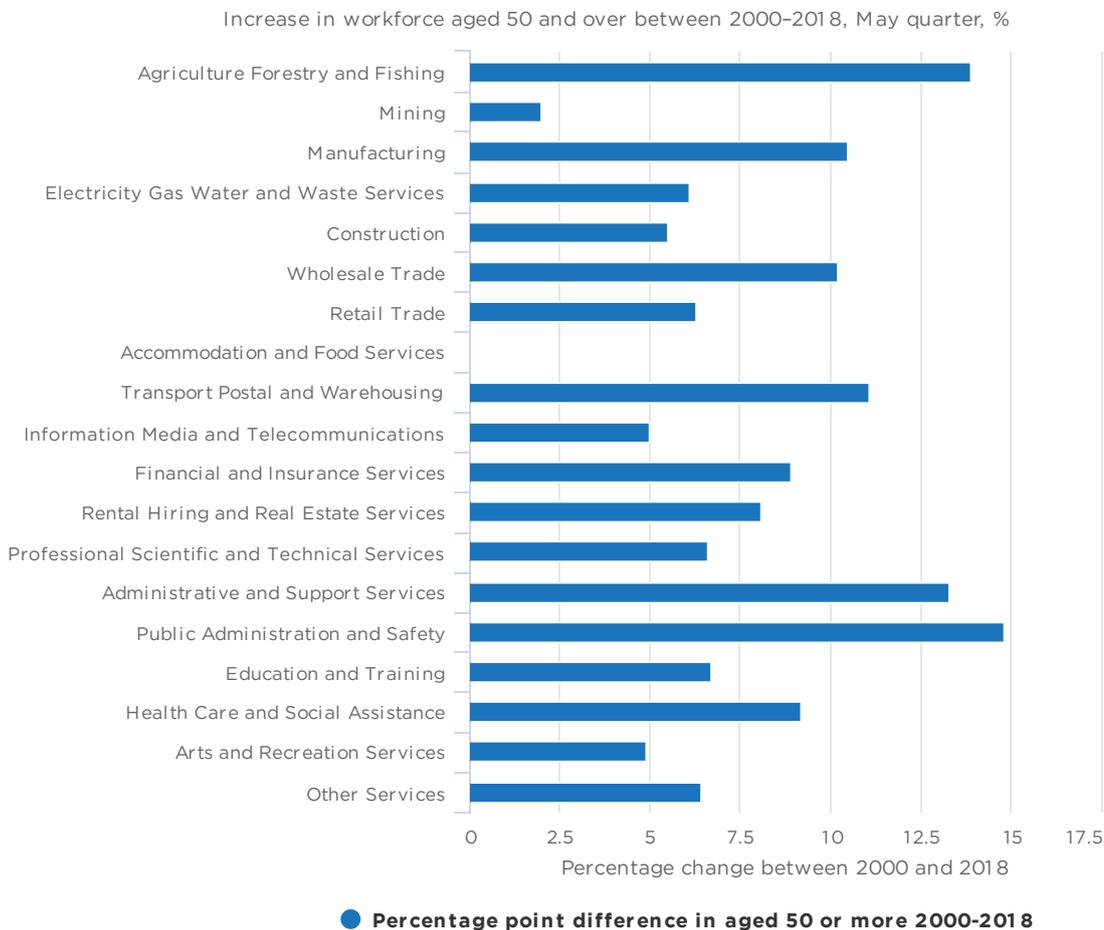
Since 2000, there has been an increase in the proportion of the workforce aged 50 years and over in all industries. The industries which have seen the largest increase in the proportion of the workforce aged 50 and over are:

- Public Administration and Safety (14.8 percentage points)
- Agriculture, Forestry and Fishing (13.9 percentage points)
- Administrative and Support Services (13.3 percentage points)
- Transport, Postal and Warehousing (11.1 percentage points)
- Manufacturing (10.5 percentage points)
- Wholesale Trade (10.2 percentage points).

Workforce age



Ageing workforce

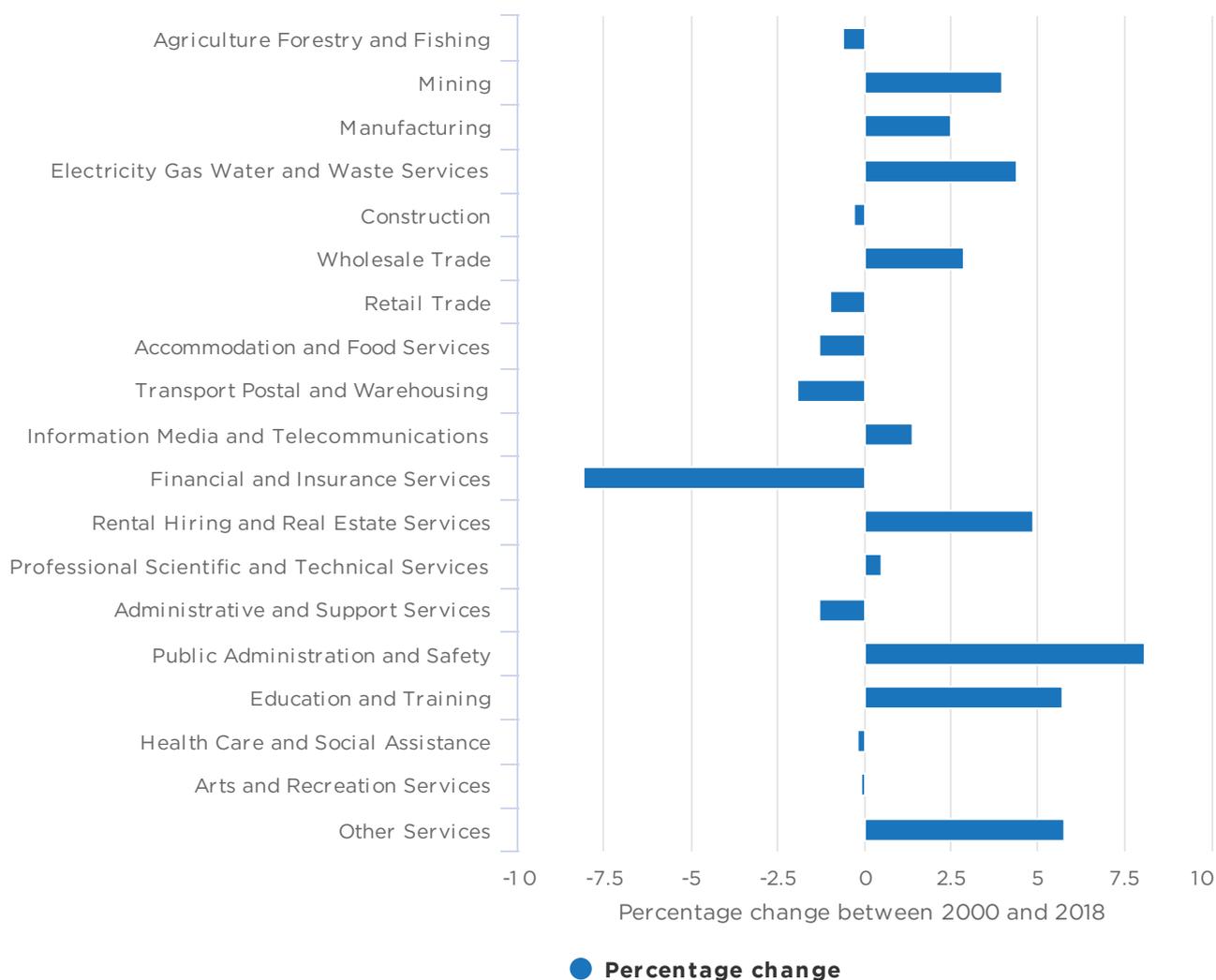


Shifts in gender participation has varied across industry and occupation groups. For most industries, there was little change in the proportion of the female workforce between 2000 to 2018. Industries which have seen the largest growth in the female workforce are Public Administration and Safety (8.1 percentage points) and Other Services (5.8 percentage points).

Among occupation groups, Professionals and Managers have seen the strongest increase in the female proportion of the workforce between 2000 and 2018, with 7.1 percentage point and 6.8 percentage point increase respectively.

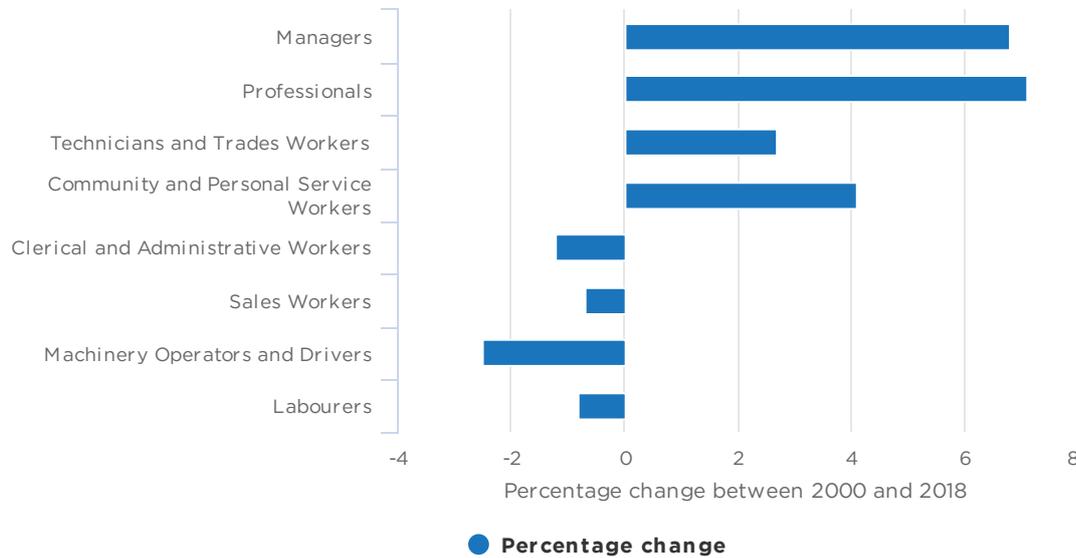
Female participation in industry

Changes in female workforce 2000-2018, May quarter, %



Female participation in occupations

Changes in female workforce 2000–2018, May quarter, %



Factors influencing the demand for skills

The Miles Morgan report [Future skills and training](#) (*update forthcoming*), identifies a number of factors and trends currently driving and influencing the demand for skills in Australia and internationally. The factors are grouped into five overarching clusters: society and culture, business and economics, technology, resources and environment, and policy and regulatory. Below is a brief overview of these factors, with more detailed information available in the [Future skills and training](#) (*update forthcoming*) report.



Society and culture

This group of factors relate to changes in *society and culture* which have implications on the labour market and skills.

Society and culture-related factors which affect the labour market include:

- demographic changes, such as population growth and an ageing population and their impact on the workforce and markets, including industry adaptation to the diversity of workforce aspirations and experience
- globalisation and its impact on mobility, migration and international markets
- changing work and career values with a greater emphasis on flexible working arrangements, work/life balance and increase in part time work
- attracting and retaining a workforce
- suitably skilled workforce and access to suitable training
- urbanisation and implications for regional, rural and remote areas
- increased participation by women and gender-related disparity
- increasing participation by equity groups
- workforce vulnerability due to automation and cost reduction strategies.

The majority of IRC Skills Forecasts identify at least one *society and culture* factor which has had an impact on their industry sectors. The following industries identify more than one *society and culture* factors:

- Animal Care and Management
- Community Services
- Manufacturing
- Personal Services
- Racing
- Transport and Logistics
- Utilities.

The most prominent *society and culture* factor is *demographic changes*, particularly Australia's ageing population, but also population growth. Many industries cite an ageing workforce as being a potential challenge. However, the ageing population is also creating new markets and new opportunities for some industries.

Other factors mentioned among IRC Skills Forecasts include:

- workforce skill requirements and challenges associated with accessing suitably skilled workers and suitable training
- globalisation and its impact on mobility, migration and international markets
- attracting and retaining a workforce, including changes to visa arrangements reducing access to overseas workers
- urbanisation and implications for regional, rural and remote areas
- suitably skilled workforce and access to suitable training.



Business and economics

These factors relate to trends in *business and markets* which influences how companies do business. Factors include:

- high-speed competition and workplace dynamics involving re-organisation of human resources to sustain competition
- start-up thinking (including entrepreneurialism, freelancing and contracting)
- emerging or changing markets
- skills mismatch, shortages or gaps
- network working and producing and supply chain management
- knowledge-based economy
- empowered customers, and changing work and career values
- a growing demand for care-related services and products.

Under half of the IRC Skills Forecasts discuss business and economics factors affecting their industry sectors. The following industries identify more than one business and economics factors which impact on their industry:

- Automotive
- Manufacturing
- Personal Services
- Sports and Recreation
- Tourism, Travel and Hospitality
- Utilities.

There were a variety of business and economics-related factors mentioned across the skills forecasts. Some of these factors were mentioned across several IRC skills forecasts while some were mentioned less often. These have for some industries involved changing business models and structural change. The factors mentioned include:

- emerging or changing markets
- empowered customers and changing customer preferences which drive new consumer-driven models and markets.
- high-speed competition and highly competitive markets
- workplace dynamics involving re-organisation of human resources to sustain competition.



Technology

This group of factors cover the ever-evolving nature of *technology* and the implications it has for the workforce and skills needs. Factors include:

- emerging technologies
- digitisation and the Internet of Things, mobility and connectivity
- big data and data analytics
- artificial Intelligence (AI) and machine learning
- automation and robotics (including drones)
- more technologically advanced materials and products
- augmented Reality and virtual reality
- optimising brain and cross-disciplinary science.

Most of the IRC Skills Forecasts identify *technology* factors as an issue affecting their industry sectors. Indeed, *technology*-related trends were raised more often than any of the other trends in the IRC Skills Forecasts. The following industries identify more than one technology factor which impacts on their industry:

- Agriculture, Horticulture and Conservation and Land Management
- Animal Care and Management
- Automotive
- Business Services
- Community Services
- Corrections and Public Safety
- Culture and Related Industries
- Electrotechnology
- Financial Services
- Forest and Wood Products
- Health Services
- Information and Communications Technology
- Manufacturing
- Mining, Drilling and Civil Infrastructure
- Printing and Graphic Arts
- Property Services
- Tourism, Travel and Hospitality
- Transport and Logistics
- Utilities
- Wholesale and Retail.

The most prominent technology factor is emerging technologies (and technological advancements). Some industries cite emerging technologies as being a potential challenge for the workforce as it has implications for the way work is conducted and therefore the skills mix required. However, emerging technologies are also seen as leading to new opportunities.

Other *technology* factors which are mentioned in some of the IRC Skills Forecasts include:

- automation and robotics (including drones)
- big data and data analysis
- digitisation, Industry 4.0 and the 'internet of things'
- more technologically advanced materials and products (specific to each industry)
- artificial intelligence and machine learning
- virtual reality and augmented reality.



Resources and environment

These factors cover issues such as climate change, international action on sustainability, as well as access to reliable internet, and the implication for business, the workforce and education and training. Factors include:

- international and domestic sustainability action, driving the demand for more sustainable products and services
- climatic weather shifts and the impact of climate change
- improving energy efficiency
- access to quality internet
- financial viability.

Less than half of the IRC Skills Forecasts discuss *resources and environment* factors as an issue affecting their industry sectors. The following industries mention more than one *resources and environment* factor:

- Electrotechnology
- Construction, Plumbing and Services
- Manufacturing
- Mining, Drilling and Civil Infrastructure
- Property Services
- Utilities
- Transport and Logistics.

The most prominent *resources and environment* factor is international and *domestic sustainability* action, which is driving the demand for more sustainable products and services. Some industries cite *sustainability action* as being a potential challenge for the industry due to changing customer expectations and changes in approaches to business operations and challenges in meeting skill requirements. However, most industries identify *sustainability action* as leading to new opportunities and markets.

Related to this, the effects of *climate change* and greenhouse gases were also discussed in quite a few of the IRC Skills Forecasts. This also leads to both challenges and opportunities in the need to adapt to changing expectations by both customers and governments. In a similar vein, the other *resources and environment* factor discussed in some skills forecasts was improving energy efficiency and renewable energy. This factor was more applicable to some industries than others due to the nature of those industries (for example, Utilities industries).



Policy and regulatory

This group of factors covers the *policy settings and regulatory factors* which influence the demand for skills, including understanding and adhering to the regulatory environment, the policy environment and its implications for businesses and the workforce, and reform in the education and training sector. Factors include:

- innovation ahead of regulation
- policy environment
- appetite for reform
- high and complex regulatory environment
- safety requirements.

The majority of IRC Skills Forecasts rank *policy and regulatory* factors as an issue affecting their industry sectors. The following industries mention at least one of these factors:

- Agriculture, Horticulture and Conservation and Land Management
- Animal Care and Management
- Aquaculture and Wild Catch
- Automotive
- Community Services
- Construction, Plumbing and Services
- Education
- Financial Services
- Forest and Wood Products
- Government
- Health Services
- Manufacturing
- Mining, Drilling and Civil Infrastructure
- Personal Services
- Property Services
- Public Safety
- Racing
- Transport and Logistics
- Utilities.

The most prominent *policy and regulatory* factor mentioned across the IRC Skills Forecasts is a high and *complex regulatory environment*. For most industries a *high and complex regulatory environment* is part of the operational environment, either specific to the industry or applied more broadly, and can include:

- licensed occupations
- industry standards
- legislation to manage and protect resources
- workplace health and safety legislation
- legislation to protect consumers (noting that these can vary by state or territory).

Many industry sectors report the need for business and compliance skills to enable the workforce to negotiate the regulatory environment. Regulation has also led to new technologies in some areas that require new skills. This can also have implications for training package development.

In contrast, at least two of the skills forecasts mentioned that there was a lack of legislation and regulation around new technologies that have been introduced in the industry. An example of this was unmanned and autonomous aircraft.

The other *policy and regulatory* factor which is of importance to some industry sectors is appetite for reform, where industry would like to see reform in their industry or have recently been impacted by reform. This is particularly so in the Community Services and Health industries, with initiatives and reforms such as the National Disability Insurance Scheme, My Aged Care, and Jobs for Families Child Care Package.



Method and sources

Methodology

The factors and trends framework has largely been based on the factors outlined in the Miles Morgan report [Future skills and training: A practical resource to help identify future skills and training](#) (*update forthcoming*), which will be made available on the AISC website in 2019. The report outlines a number of factors which are influencing the demand for skills in the following broad categories: society and culture, business and economics, technology, resources and the environment, policy and regulatory.

A systematic review of the Skills Forecasts from 2018 has been undertaken to identify which factors are most prevalent for the IRCs.

Employment data has also been provided to show how labour market trends have also been shaping the workforce between 2000 and 2018.

Sources

Australian Bureau of Statistics 2018, Gross Value Added (GVA) by Industry, 5204.0 – Table 5, viewed November 2018 <<http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/5204.02017-18?OpenDocument>>

- Top three contributing industries, 2000 and 2018

Australian Bureau of Statistics 2018, Underutilised persons by Age and Sex - Trend, Seasonally adjusted and Original, 6202.0 – Table 22, viewed November 2018 <<http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6202.0October%202018?OpenDocument>>

- Unemployment May 2018 (all and 15-24 year olds)
- Underemployment May 2018 (all and 15-24 year olds)

Australian Bureau of Statistics 2017, Employed persons by Industry group of main job (ANZSIC), sex, state and territory, November 1984 onwards, 6291.0.55.003 - EQ06, viewed November 2018, <<http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6291.0.55.003Aug%202018?OpenDocument>>

- Employed total by ANZSIC 1 digit Industry, 2000 to 2018, May Quarter
- Employed total, percentage change by ANZSIC 1 digit Industry, between 2000 and 2018, May Quarter
- Employed total, percentage change by ANZSIC 3 digit Industry group, between 2000 and 2018, May Quarter, for selected industry sectors
- Employment status, percentage change by ANZSIC 1 digit industry, between 2000 and 2018, May Quarter
- Employed total, proportion of females in workforce, percentage change by ANZSIC 1 digit Industry, between 2000 and 2018, May Quarter

Australian Bureau of Statistics 2018, Employed persons by occupation group of main job (ANZSCO), sex, state and territory, November 1984 onwards, 6291.0.55.003 - EQ08, viewed November 2018 <<http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6291.0.55.003Aug%202018?OpenDocument>>

- ANZSCO 1 digit occupation, percentage change between 2000 and 2018, May Quarter
- ANZSCO 4 digit occupation unit group, percentage change between 2000 and 2018, May Quarter
- Employed total, proportion of females in workforce, percentage change by ANZSCO 1 digit Industry, between 2000 and 2018, May Quarter

Australian Bureau of Statistics 2018, Employed persons by Age and Industry division of main job (ANZSIC), November 1984 onwards, 6291.0.55.003 – EQ12, viewed November 2018 <<http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6291.0.55.003Aug%202018?OpenDocument>>

- Employed total, proportion of workforce aged 49 and under and 50 and over by ANZSIC 1 digit level, 2018 May Quarter
- Employed total, proportion of the workforce aged 50 and over by ANZIC 1 digit level, percentage change difference between 2000 and 2018, May Quarter



Priority skills

Overview

This section provides a summary of key skills identified by Industry Reference Committees (IRCs) in their 2018 Skills Forecasts.

IRCs have pinpointed a variety of skills as priorities for their industry. Drawing on the skills framework set out in the report [Future skills and training: A practical resource to help identify future skills and training](#) (update forthcoming), these have been grouped within eleven high-level skill areas for the purposes of this analysis.

For more information on the factors driving demand for skills, please visit the [Factors and trends](#) page. For information on the cross-sector projects and training package development work underway, please visit the [Key initiatives](#) page.

Each page below contains a summary of the skill need, industry demand for that skill, and case studies of industry clusters and sectors with a specific need for these skills:

- [Industry and occupation specific skills](#)
- [Adaptability and learning skills](#)
- [Analytical skills](#)
- [Digital skills](#)
- [Collaboration skills](#)
- [Foundation skills](#)
- [Leadership and management skills](#)
- [Customer service and marketing skills](#)
- [STEM skills](#)
- [Business and compliance skills](#)
- [Sustainability and natural resource management skills](#)

An explanation of the methodology applied when drawing together this priority skills framework, and the skills ranking approach used, are detailed at the end of this section.

Industry and occupation skills

Overview

Industry and occupation skills refer to specific skills that different IRCs have identified as being a priority for their industry.

While all industries and occupations require skills specific to the industry or occupation, many IRC Skills Forecasts identified specific technical skills which are a high priority. These skills vary from industry to industry – some are specific to the context of a particular industry or occupation, others apply to multiple industries and occupations. The following groups of industry occupation skills and knowledge will be discussed further below:

- industry and occupation-specific skills
- cross-industry skills and trades
- industry specific knowledge
- understanding and use of equipment or technology.



Industry skills needs

Industry and occupation-specific skills

This refers to the specific skills IRCs identified as being unique to their industry and occupations. Many IRCs identified industry or occupation-specific priority skills, including (but not limited to) skills like:



- Air Conditioning/Refrigeration in the Electrotechnology industry
- Artisanal cheesemaking, Brewing and distilling, and Food and beverage fermentation in the Food, Beverage and Pharmaceutical Product Manufacturing industry
- Bricklaying, Carpentry and Joinery, Solid plastering, Plumbing and Wall and floor tiling in the Construction, Plumbing and Services industry
- Clothing and textile production skills in the Textiles, Clothing and Footwear Supply industry
- Driving and Piloting across the Transport industry
- Energy use, management and procurement in the Sustainability industry
- Firefighting and Search and Rescue in the Public Safety industry
- Maintenance and servicing of ageing aircraft in the Aerospace industry
- Medicine, Dentistry, and Psychology in the Health industry
- Pet grooming and styling skills in the Animal Care and Management industry
- Race horse breeding, and Greyhound Training in the Racing industry
- Recycling and de-inking recovered paper in the Pulp and Paper Manufacturing industry
- Teaching skills and the ability to identify individual learner needs in the Education industry
- Water treatment and processing in the Water industry.

Please visit [industry sector pages](#) for more information on the specific skills for each industry and Industry Reference Committee.

Cross-industry skills and trades

This refers to specific technical skills that are important across different industries. Several IRCs identified cross-industry priority skills and trades. This includes skills like:

- Electrical and electronics skills
- Hygiene and infection control
- Incident management and emergency response skills
- Plumbing skills
- Public safety and security
- Testing and diagnostics
- Welding skills.



Industry-specific knowledge

This refers to the specific knowledge that IRCs identified as a priority for their industry. It includes knowledge of materials and products as well as knowledge of the industry sector. Some of the IRCs and industry sectors that identified industry knowledge as being a priority include:

- Agriculture and Production Horticulture
- Ambulance and Paramedics
- Amenity Horticulture, Landscaping, and Conservation and Land Management
- ESI Generation and ESI Transmission, Distribution and Rail
- Food, Beverage and Pharmaceutical Product Manufacturing
- Furnishing
- Printing and Graphic Arts
- Property Services
- Pulp and Paper Manufacturing
- Timber and Wood Processing.



Understanding and use of equipment or technology

This refers to examples where IRCs identify skills required in using specific equipment or technology, such as:

- Scada programming in the Water industry
- Irrigation technology in the Agriculture and Production Horticulture industry.



Whether skills are referred to specifically or more generally, it is clear there is a need for technical and occupation-specific skills across all industries.



Case studies

Agriculture and Amenity Horticulture, and Conservation industries

Included in this case study are two distinct industry clusters, both of which identified specific industry and occupation-related skills as priorities for their workforce.

Amenity Horticulture and Conservation, which comprises two sectors:

- Amenity Horticulture and Landscaping
- Conservation and Land Management



Agriculture, which is made up of three sectors:

- Agribusiness
- Agricultural Operations and Services
- Production Horticulture.



The industry and occupation-related skills identified by these industries were:

Amenity Horticulture and Conservation:

- Knowledge of carbon farming
- Protected horticulture skills
- Production nurseries skills in integrated pest management, growing media and environmental control
- Permaculture skills and knowledge
- Rooftop gardening and green walls
- Sports turf management.

Agriculture:

- Biosecurity skills
- Compliance and regulation of medicinal crops
- Irrigation technology, design and processes
- Protected horticulture skills
- Viticulture leadership management.

The following quotes have been sourced from the Agriculture, Horticulture and Conservation, and Land Management IRC's 2018 Skills Forecast. These highlight the need for industry and occupation-specific skills (please note that the themes from these quotes are interspersed throughout many of the 2018 IRC Skill Forecasts).

Employers in most workplaces will seek employees with high-level skills, both industry-specific and non-industry specific, to support more demanding job functions. The utilisation of more specialist skills is driven by growing technological developments, and by adoption of new technologies for use in agricultural production systems. Businesses are responding to these opportunities with growing investment in new technology; through strategies for better connectivity with, and service to, domestic and international markets; and through ongoing biosecurity strategies – for example, programs to control invasive species, amongst other innovations. In this context, the workforce needs job-specific skills to support higher efficiency targets, innovations and increasing automation and digitalisation.

Industry and trainers have commented on the structure of the qualifications, indicating that the use of generic units of competency do not provide the necessary skill sets for pest management, soil management and efficient irrigation systems.

Animal Care and Management industry and Racing industries

This case study includes two distinct industry clusters, both of which identified specific industry and occupation-related skills as priorities for their workforce:

- Animal Care and Management
- Racing.

The industry and occupation-related skills identified by these industries were:

Animal Care and Management:

- Animal technology skills
- Animal welfare skills
- Captive animal conditioning skills
- Equine dental research skills
- Management of animal use in human-therapeutic interactions
- Pet grooming and styling skills



Racing:

- Greyhound training skills
- Incident management skills (ensuring safety of workers when managing an injured animal)
- Non-veterinarian alternative therapy treatment skills for Greyhounds
- Race horse breeding skills
- Retraining and re-educating ex-racing animals for retirement.



The following quotes have been sourced from the Animal Care and Management IRC's 2018 Skills Forecast. These highlight the need for industry and occupation specific skills:

The workforce needs to improve job-specific skills to support higher efficiency standards, innovations and customer services.

A significant number of the workforce occupies roles specific to the industry, including veterinary nurses and veterinarians, animal attendants and trainers, farriers, equine dental service providers, pet groomers and livestock farmers and farm workers.

A few additional quotes from the Racing IRC's 2018 Skills Forecast highlight in more detail one of their priority skills, which is certainly very specific to the industry, Retraining and re-educating ex-racing animals, (horses and greyhounds) to be retired and live safely outside of the racing industry:

This is an emerging specialist area/occupation in the horse industry.

The Australian community has high expectations for animal welfare on the retirement of horses. Horses may be retired from racing due to poor performance, illness, injury and behavioural problems...These injured horses are unlikely to be used for further riding or breeding but are expected to be of use in other working environments or for personal/recreational uses.

Racing horses are trained to be highly reactive and the triggers for speed (the leaning forward of the jockey) have led to a death of a student who was assigned to ride a thoroughbred that had not gone through re-education... (The) young student was killed while undertaking training on a retired racehorse that had undergone no retraining. The student's attempt at saving herself (leaning forward towards the horse's neck to hold on) triggered the horse to run faster as this is the position a jockey enters to signal for the horse to gallop at its highest possible speed.

Development of these (occupation specific) skills will ensure that ex-racing horses can be used by the public with increased safety.

This is certainly not a skill set which is broadly required in Australia, however based on the Racing IRC's Skills Forecast, it is of vital importance for this specific industry.

Adaptability and learning skills

Overview

As digital technologies and job requirements evolve, workers must enhance their ability to adapt to new situations and acquire new skills. As the world of work becomes more flexible, individuals are expected to take more responsibility for their own skills development.

Some of the ways in which industry need workers to be adaptable include:

- showing awareness of changes in the industry
- showing resilience and embracing change
- being adaptable in a changing industry, changing environments and changing markets
- adapting to new technologies and new ways of doing business
- showing a proficiency and willingness to learn
- being engaged in career development and planning
- maintaining skill relevancy, upskilling and multi-skilling
- responding to situations with flexibility and innovation
- showing innovation and creativity
- being entrepreneurial.



Industry skills needs

Generic skills

In their 2018 Skills Forecasts, IRC's ranked a series of 12 generic skill categories, in priority order.

1 Learning agility / Information literacy / Intellectual autonomy and self-management
2 Design mindset / Thinking critically / Systems thinking / Problem solving
3 Technology use and application skills
4 Communication / Virtual collaboration / Social intelligence
5 Language, Literacy and Numeracy (LLN) skills
6 Managerial / Leadership skills
7 Customer service / Marketing skills
8 Science, Technology, Engineering, Mathematics (STEM) skills
9 Data analysis skills
10 Financial skills
11 Environmental sustainability skills
12 Entrepreneurial skills

Learning agility / Information literacy / Intellectual autonomy and self-management (which aligns directly with Adaptability) was, on average, the highest ranked generic skill (out of 12) across all Skills Forecasts.



Priority skills

In terms of specific references to these skills in the Forecasts, adaptability related skills were also identified to a moderate degree by industries that reported on priority skills in their 2018 Skills Forecasts.



The two-main adaptability related skills, which were identified most frequently within priority skills lists in Skills Forecasts were:

Adaptability, agility and flexibility in changing conditions (including the ability to plan for and embrace changing skills needs, which may arise from new technologies and ways of working), identified by the following industries:

- Education
- Financial Services
- Information and Communications Technology
- Manufactured Mineral Products
- Mining, drilling and civil infrastructure
- Printing and Graphic Arts
- Racing
- Recreational Vehicles and Process Manufacturing
- Sustainability industry



Active learning and engagement with training, identified by the following industries:

- Education
- Manufactured Mineral Products
- Plastics, Rubber and Cablemaking
- Tourism Travel and Hospitality
- Wholesale Retail and Personal Services.





Case studies

Ambulance and Paramedics

The Ambulance and Paramedics industry is broad and encompasses a wide range of roles across the community which deliver fundamental pre-hospital and out-of-hospital health care services.

The industry supports many of Australia's first responders, who operate in high-risk, unpredictable work environments involving providing care to people who are in distress, afraid, ill or incarcerated. They face unforeseeable scenarios on a daily basis, and as such, must be adaptable in order to respond effectively to these challenges.



Technological advancements within the industry have provided an opportunity for Ambulance and Paramedic staff to prepare for challenging or unpredictable scenarios – through the use of virtual reality and high fidelity training equipment:

- Virtual Reality (VR) training - Virtual Reality goggles are being used as part of training to enhance situational awareness of ambulance officers, paramedics and other emergency support staff, and provide more virtual experience of difficult scenarios.
- High Fidelity training - high-fidelity patient simulation (HPS) refers to the use of computerised mannequins that simulate real-life scenarios. Long used in medical schools and the military, HPS is quickly becoming essential in the training of ambulance officers and paramedics.

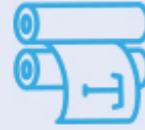


However, with this new technology comes the need to ensure that the technologies are used to their full capacity and that those working in the Ambulance and Paramedics industry are able to evolve and adapt to the digitalisation of some job roles/functions. This is reinforced in the Ambulance and Paramedics IRC's 2018 Skills Forecast, which notes that:

Technological disruption, as it has done in the past, will replace some industries, companies and workers, especially those that lack the flexibility to adapt.

Printing and Graphic Arts

The ability to respond well to change and embrace new roles and technologies is a skill which is prioritised by the Printing and Graphic Arts industry.



Adaptability skills are needed in the Printing and Graphic Arts workforce to enable workers to combat a static and tradition-driven workforce. Traditional print and design workers need to be able to operate in a multi-channel environment, including having awareness of evolving industry trends and new technologies which are impacting the sector:



The continual and rapid evolution of printing processes and software means that workers in the industry are likely to need to adapt to ongoing technological change.

Changing technology and preferences is requiring workers in the printing and graphic arts sector to 'top-up' their skills to keep up to date with change.

ICP (Printing and Graphic Arts) graduates will need adaptability and flexibility so that they can move seamlessly between sub-sectors or organisations that may not have their core business in the sector, but still require printing and graphic arts skills. This agility will also include the ability to be autonomous and self-directing in a changing sector.

Agility, together with problem solving skills, will make workers more open and able to understand new technologies, and their associated applications and benefits to their specific field. This will enable the sector to harness the possibilities of technological change. (Printing and Graphic Arts IRC).

Analytical skills

Overview

Data is becoming increasingly available, with ‘big data’ being derived from online activity, sensors, the ‘internet of things’, new analytical tools, and artificial intelligence.

Workers in almost all industries, and across most roles, will be expected to use available data to derive value, and improve products and services. This may require the ability to analyse and present raw data or to interpret data analysis and apply findings.

While data analytical skills are increasingly important, other skills such as data management, information literacy, problem solving, critical thinking and creative thinking skills are also required by industries.

The cross-sector project, [Big Data](#), reviews current and emerging developments in big data skills, particularly in relation to data management, data analytics and data-driven decision-making, and identifies the related skills needs shared by multiple industry sectors. showing awareness of changes in the industry



Industry skills needs

Generic skills

In their 2018 Skills Forecasts, IRC's ranked a series of 12 generic skill categories, in priority order.

- 1 Learning agility / Information literacy / Intellectual autonomy and self-management
- 2 Design mindset / Thinking critically / Systems thinking / Problem solving
- 3 Technology use and application skills
- 4 Communication / Virtual collaboration / Social intelligence
- 5 Language, Literacy and Numeracy (LLN) skills
- 6 Managerial / Leadership skills
- 7 Customer service / Marketing skills
- 8 Science, Technology, Engineering, Mathematics (STEM) skills
- 9 Data analysis skills
- 10 Financial skills
- 11 Environmental sustainability skills
- 12 Entrepreneurial skills

The generic skills category focused around Design mindset / Thinking critically / Systems thinking / Problem solving aligns with Analytical skills, and received an average ranking of 2nd (out of 12) across all Skills Forecasts.

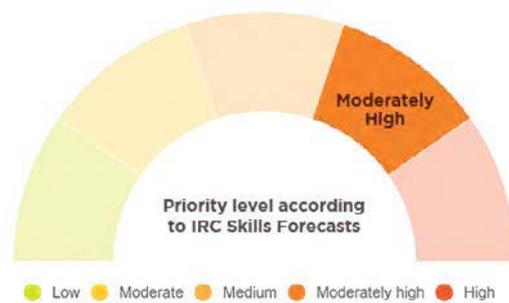


Data analysis skills, another generic skills category associated with Analytical skills, received an average ranking of 9th (out of 12) across all IRC Skills Forecasts.



Priority skills

Analytical skills were also identified to a moderately high degree by industries that reported on priority skills in their 2018 Skills Forecasts.



The two analytical skills identified most frequently were:

Critical thinking, identified by the following industry sectors:

- Client Services
- Community Sector and Development
- Ambulance and Paramedics
- Dental
- Retail and Wholesale
- Personal Services
- Printing and Graphic Arts
- Tourism, Travel and Hospitality
- Business Services
- Financial Services



Problem solving, identified by the following industry sectors:

- Metal, Engineering and Boating
- Education
- Children's Education and Care
- Community Sector and Development
- Retail and Wholesale
- Business Services.



In addition to the two specific skills listed above, general analytical skills were also identified by the following industry sectors:

- Civil Infrastructure
- Financial Services.



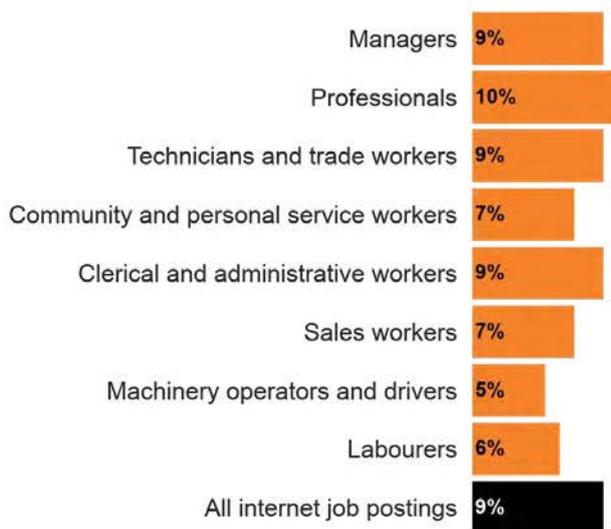


Internet job postings

Problem solving skills are also highly sought after by employers, and were one of the top 10 most frequently requested employability skills in internet job postings across different industries and occupations from 2014 to 2017.

The chart below compares the percentage of internet job postings in each occupation (ANZSCO Major Group) that requested problem solving skills. The percentage of all internet job postings that requested this skill is also included for comparison.

Internet job postings that requested problem solving skills, by occupation (2014-17)



Source: Data supplied by [Burning Glass Technologies](#) (2018).



Case studies

Mining, Drilling and Civil Infrastructure

The Mining, Drilling and Civil Infrastructure industry consists of the five sectors listed below. Each identified analytical skills as a top priority for their workforce to better predict the future demand of particular resources and optimise current production.

- Coal mining
- Drilling
- Metalliferous mining
- Extractive industries
- Civil infrastructure



The need for analytical skills is highlighted by the following quote from the Mining, Drilling and Civil Infrastructure IRC's 2018 Skills Forecast:

Since the mining boom's end, there has been a shift in focus away from expansion and opening new mines, toward efficiency gains and production... this trend emphasises the need for optimisation of operations, which requires analytical software integration and the skills to monitor and interpret the data effectively.

Financial Services

The Financial Services industry in Australia is large and includes the following sectors:

- Banking
- Financial markets
- Financial planning and advice
- Insurance
- Superannuation
- Accounting and bookkeeping
- Mercantile agents
- Trust administration.



All sectors identified the need for analytical skills in their workforce, to better understand the requirements of their clients or improve internal operations in the business. This is highlighted by the following quotes, sourced from the Financial Services IRC's 2018 Skills Forecast:

Increased demand for customer centric roles, including the use of data analytics to customise financial products to better deliver to customers, remote customer assistance with technologies, and managerial roles.

Analytical skills and the ability to understand, clean and utilise big data to give companies a competitive edge and produce better, customised consumer products.

Digital skills

Overview

The current explosion in new technologies is reinventing much of the way businesses are run. This has significant implications for the workforce, which needs to evolve and be agile to keep up with this technological expansion.

Digital skills, which are becoming increasingly important and a priority for many industries, can include:

- coding and programming
- developing and using robotic and automation technologies
- leveraging information and communication technologies (ICT) skills in business
- exploring the world of cloud computing and the 'internet of things'.

The Australian Industry and Skills Committee (AISC) is in the process of establishing an Industry 4.0 Industry Reference Committee, to help ensure vocational education and training gives students the future-focussed skills they will need, as workplaces become radically transformed by increased automation and digitalisation.

There are currently five AISC [cross-sector projects](#) relating to the impact of technological advances on the workforce. They aim to address common skills needs, minimise duplication and consolidate existing training units. Projects consider:

- developing [Digital skills](#) across industries
- the workforce skilling implications in relation to the use of [Automation](#), namely robotics, drones and remote operation systems
- the implications of the major change underway across and within [Supply chains](#) due to the impact of automation, robotics, big data and other new technologies
- current and emerging developments in [Cyber security](#) skills, particularly in relation to data confidentiality, protection and privacy, and identifying related skills needs shared by multiple industry sectors
- providing an evidence-based case and industry support for developing vocational training in [Big data](#) and big data analytics skills that can be transferable across multiple industries.





Industry skills needs

Generic skills

In their 2018 Skills Forecasts, IRC's ranked a series of 12 generic skill categories, in priority order.

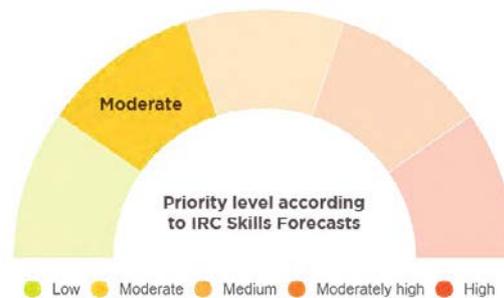
1 Learning agility / Information literacy / Intellectual autonomy and self-management
2 Design mindset / Thinking critically / Systems thinking / Problem solving
3 Technology use and application skills
4 Communication / Virtual collaboration / Social intelligence
5 Language, Literacy and Numeracy (LLN) skills
6 Managerial / Leadership skills
7 Customer service / Marketing skills
8 Science, Technology, Engineering, Mathematics (STEM) skills
9 Data analysis skills
10 Financial skills
11 Environmental sustainability skills
12 Entrepreneurial skills

Technology use and application skills (which aligns with Digital skills) received an average ranking of 3rd (out of 12) across all skills forecasts.



Priority skills

Digital skills were also identified to a moderate degree by industries that reported on priority skills in their 2018 Skills Forecasts.



The digital skills identified by the industry skills forecasts could be split broadly into two main categories:

Digital skills relating to industry specific software or technology, identified by the following industries:

- Sustainability
- Furnishing
- Civil Infrastructure
- Maritime
- Education
- Children’s Education and Care
- Financial Services



General digital skills and literacy, identified by the following industries:

- Electricity Supply Generation
- Water
- Transport and Logistics.
- Direct Client Care and Support
- Public Sector
- Business Services
- Information and Communications Technology
- Property Services.

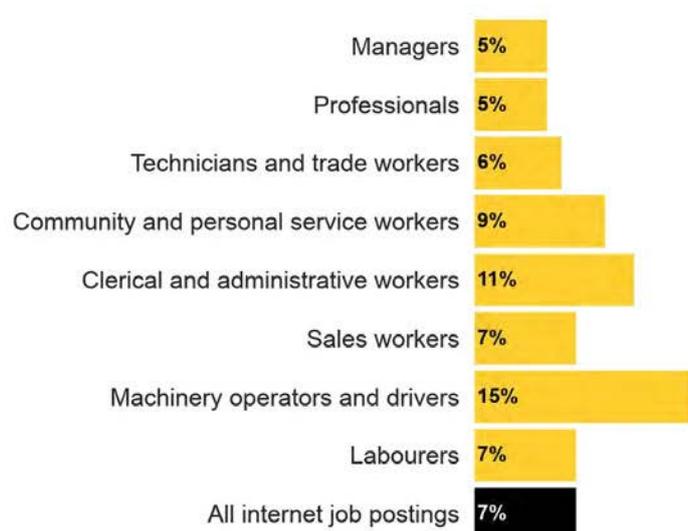


Internet job postings

Digital skills are also highly sought after by employers when recruiting new workers. In particular, computer skills have been one of the top 10 most frequently requested skills in internet job postings across different industries and occupations from 2014 to 2017.

The following chart compares the percentage of internet job postings in each occupation (ANZSCO Major Group) that requested computer skills. It shows that computer skills were requested most frequently for the occupation of Machinery operators and drivers. The percentage of all internet job postings that requested this skill is also included for comparison.

Internet job postings that requested computer skills, by occupation (2014-17)



Source: Data supplied by [Burning Glass Technologies](#) (2018).



Case studies

Transport and Logistics

The Transport and Logistics sector in Australia employs nearly half a million people across its major subsectors:

- Road transport
- Logistics
- Warehousing and stevedoring



The Transport and Logistics IRC's 2018 Skills Forecast highlights, that the industry is rapidly being affected by new technologies and innovations, requiring the workforce to be equipped with the necessary digital skills.

The following quotes below from the Transport and Logistics IRC Skills Forecast demonstrate why digital skills have been highlighted as a priority in this industry sector.

The advent of Industry 4.0 (the next industrial revolution incorporating complex computerised systems, data and software to create 'smart' processes and products) will rapidly change the skill needs of the Transport and Logistics workforce. Jobs that were highly manual less than a generation ago, including bus and truck driving, are being reshaped with new technologies and equipment.

The ever-increasing volume of data being captured by sensors and subject[ed] to analysis, is further transforming the skill needs of the Transport and Logistics industry, greatly increasing the demand for the workforce to be able to interpret and analyse this data in a meaningful, digitally literate manner.

Direct Client Care and Support

Direct Client Care and Support workers care for and support people in vulnerable situations, and this industry sector includes a variety of industry sub-sectors such as:

- Aged and home care
- Disability
- Mental health
- Alcohol and other drugs
- Leisure and health
- Allied health assistance
- Health services assistance
- Health support services.



The Direct Client Care and Support IRC's 2018 Skills Forecast identifies 'digital literacy' and 'competency in using different technology platforms' as essential skills for the future industry workforce. This is highlighted in the following quotes taken from the forecast:

Digital health technology is becoming more integrated in health service delivery, the workforce will need the required skills to adapt to the changes in technology to support service delivery.

For workers within the sectors under the purview of this IRC, digital literacy skills will be important in order to maintain knowledge and skills in an evolving digital age. For example, the analysis of patterns and trends from big data will require more advanced digital literacy skills to interpret and provide information that has a direct impact on the quality of client care (Direct Client Care and Support IRC).

Collaboration skills

Overview

Interpersonal skills are highly sought after in many industries. Those able to collaborate and share information are best able to adapt to changing markets and technologies, interact in diverse workplaces, and effectively respond to customer needs.

As organisations become increasingly dynamic and horizontally structured, collaboration skills are needed across all types of roles, to help businesses improve efficiency and achieve organisational goals.

Communication and collaboration tools will evolve, and Australian workers will need to be skilled in new media literacies, for example communication through social media.

Skills that enhance collaboration include communication and teamwork skills, active listening, relationship management, and social and cultural awareness.



Industry skills needs

Generic skills

In their 2018 Skills Forecasts, IRC's ranked a series of 12 generic skill categories, in priority order.

- 1 Learning agility / Information literacy / Intellectual autonomy and self-management
- 2 Design mindset / Thinking critically / Systems thinking / Problem solving
- 3 Technology use and application skills
- 4 Communication / Virtual collaboration / Social intelligence
- 5 Language, Literacy and Numeracy (LLN) skills
- 6 Managerial / Leadership skills
- 7 Customer service / Marketing skills
- 8 Science, Technology, Engineering, Mathematics (STEM) skills
- 9 Data analysis skills
- 10 Financial skills
- 11 Environmental sustainability skills
- 12 Entrepreneurial skills

Communication / Virtual collaboration / Social received an average ranking of 4th (out of 12) across all skills forecasts.



Priority skills

Collaboration skills were also identified to a high degree by industries that reported on priority skills in their 2018 Skills Forecasts



The collaboration skills identified most frequently were:

Active listening, identified by the following industry sectors:

- Ambulance and Paramedic
- Client Services
- Community Sector and Development
- Dental
- Fitness
- Hospitality
- Personal Services
- Retail and Wholesale
- Technicians Support Services
- Tourism and Travel



Social perceptiveness, identified by the following industry sectors:

- Client Services
- Community Sector and Development
- Fitness
- Retail and Wholesale
- Hospitality
- Personal Services
- Tourism and travel



Speaking, identified by the following industry sectors:

- Client Services
- Community Sector and Development
- Cookery
- Fitness
- Personal services
- Retail and Wholesale
- Tourism and travel



General collaboration and communication skills,

were also identified by the following industry sectors:

- Children's Education and Care
- Direct Client Care and Support
- Government
- Information and Communications Technology
- Metal, Engineering and Boating
- Property Services.



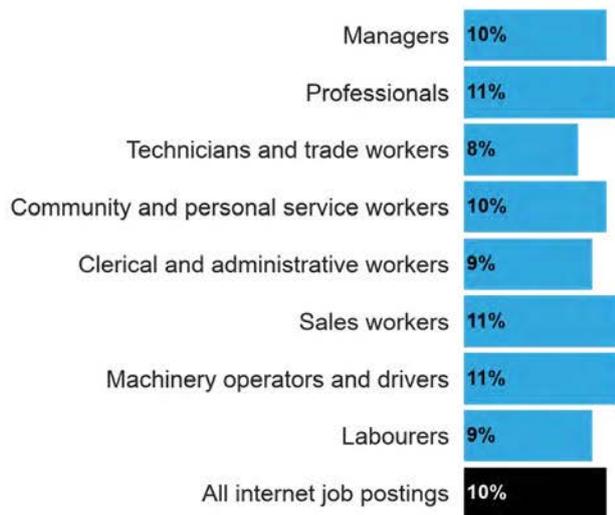


Internet job postings

Teamwork and collaboration skills are also highly sought after by employers, and were one of the top 10 most frequently requested employability skills in internet job postings, across different industries and occupations from 2014 to 2017.

The chart below compares the percentage of internet job postings in each occupation (ANZSCO Major Group) that requested teamwork and collaboration skills. The percentage of all internet job postings that requested this skill is also included for comparison.

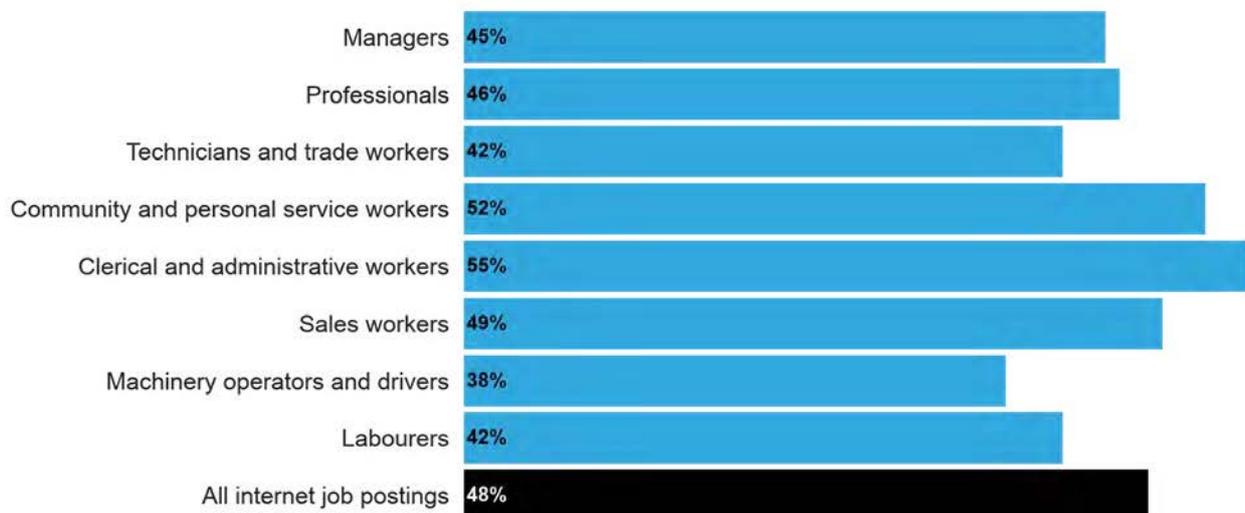
Internet job postings that requested teamwork and collaboration skills, by occupation (2014-17)



Source: Data supplied by [Burning Glass Technologies](#) (2018).

Furthermore, communication, an essential skill for effective collaboration, was the most frequently requested employability skill. See the below chart showing the percentage of internet job postings requesting communication skills between 2014 and 2017 for each ANZSCO Major Group.

Internet job postings that requested communication skills, by occupation (2014-17)



Source: Data supplied by [Burning Glass Technologies](#) (2018).



Case studies

Direct Client Care and Support

Direct Client Care and Support workers care for, and support, people who are in vulnerable situations such as those in aged or home care, or living with a disability, mental illness, dementia, a chronic condition, terminal illness or an alcohol or drug-related problem.



The Direct Client Care and Support subsectors are not mutually exclusive in the services they provide, and increasingly the collaboration of people across subsectors is a critical element in individual care and support plans.



A research study authored by the Australian Council of Educational Research (ACER) on behalf of the South Australian Department of State Development, looks at [what employers really want](#) in the early childhood and aged care sectors, found that in both sectors they were looking for people that can connect and work with others.

The following quotes from the Direct Client Care and Support IRC's 2018 Skills Forecast highlight the importance of collaboration skills for the sector workforce:

The collaboration and partnership across a range of services with the advent of NDIS [National Disability Insurance Scheme], and with new technologies that support the integration of services, means that direct client care and support workers will need to develop knowledge and understanding, of a diverse range of services and the linkages between them, to support holistic care solutions for clients.

A focus on recovery orientation in mental health support is underpinned by national and state activity.....collaborative planning and effective high-level communication skills are required to work effectively with a range of community stakeholders.

There is a need for improved collaboration between training providers, including universities, TAFEs and medical colleges, to ensure that training requirements for the health care workers of the future are met, including the ability to work in an interdisciplinary team.

Government

The Public Sector comprises federal and state/territory governments, statutory bodies and state-owned corporations. Public Sector employees play a key role in the development, review and implementation of government policies and provide an array of services for the community.



Many public service agencies work with federal, state and territory counterparts to deliver policy outcomes and services to the Australian people. Cross-agency forums and the sharing of information to achieve effective outcomes requires a high level of collaboration across the public-sector workforce.

The quotes below sourced from the Public Sector IRC's 2018 Skills Forecast, demonstrate the importance of collaboration skills for the Government sector workforce, including the ability to communicate and collaborate in a digital forum:

Interpersonal, collaborative and 'soft skills' including communication, teamwork, problem solving, emotional judgement, professional ethics and global citizenship are valued in respect to internal operations, as well as the public interface and dealings with external parties.

There are workforce strategies in place which address measures to recruit, support and collaborate with diverse groups of workers including women, Aboriginal and Torres Strait Islander peoples and people from culturally and linguistically diverse backgrounds.

Workers will need the ability to use digital technology routinely in parts of their jobs in order to access and use information and digital content; and communicate and collaborate through digital technologies.

Foundation skills

Overview

Strong foundational skills, namely literacy and numeracy skills, but also digital and financial literacy, are extremely important for most jobs in the knowledge economy. Foundation skills underpin the productivity of Australia's workforce and are instrumental in ensuring workers have the ability to upskill.

Training for foundation skills is undertaken through the Foundation Skills Training Package which is developed by the Education Industry Reference Committee.

Recent feedback from industry and providers indicate that the Foundation Skills Training Package is currently failing to provide foundation skills to learners, and the training package is currently being reviewed in an attempt to address this.



Industry skills needs

Generic skills

In their 2018 Skills Forecasts, IRC's ranked a series of 12 generic skill categories, in priority order.

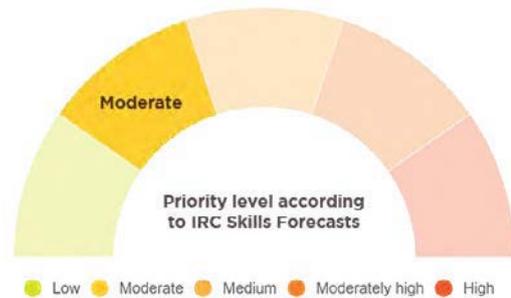
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9 Data analysis skills
10 Financial skills
11 Environmental sustainability skills
12 Entrepreneurial skills

Language, Literacy and Numeracy (LLN) (which aligns directly with Foundation skills) received an average ranking of 5th (out of 12) across all skills forecasts.



Priority skills

Foundation skills were also identified to a moderate degree by industries that reported on priority skills in their 2018 Skills Forecasts.



The three foundation skills identified most frequently were:

Reading comprehension, identified by the following industry sectors:

- Community Sector and Development
- Dental
- Technicians Support Services
- Retail and Wholesale



Writing, identified by the following industry sectors:

- Client Services
- Community Sector and Development
- Retail and Wholesale



English language, identified by the following industry sectors:

- Enrolled Nursing
- Tourism Travel and Hospitality.



In addition, general foundation skills were requested in the following industry sectors

- Metal, Engineering and Boating
- Automotive
- Children's Education and Care.

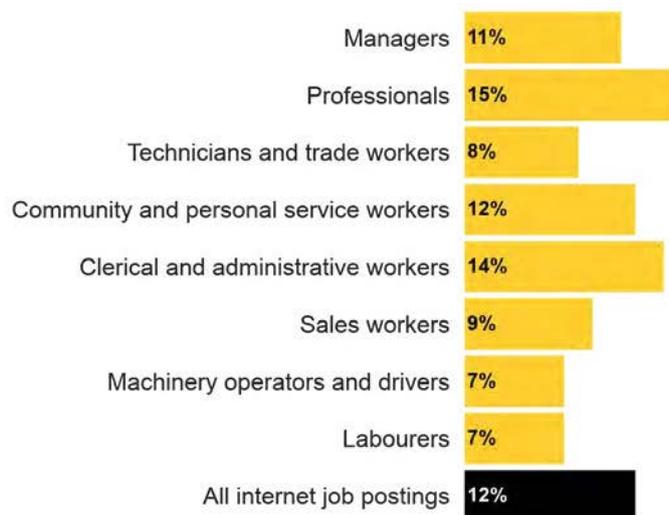


Internet job postings

Foundation skills are also highly sought after by employers when recruiting new workers. In particular, writing skills have been one of the top 10 most frequently requested skills in internet job postings across different industries and occupations from 2014 to 2017.

The chart below compares the percentage of internet job postings in each occupation (ANZSCO Major Group) that requested writing skills. The percentage of all internet job postings that requested this skill is also included for comparison.

Internet job postings that requested teamwork and collaboration skills, by occupation (2014-17)



Source: Data supplied by [Burning Glass Technologies](#) (2018).



Case studies

Automotive

According to the Skills Forecasts, the Automotive industry consists of 11 industry sectors (and five IRCs), which identify foundation skills as a priority for their workforce. Industry sectors include:

- Automotive Electrical
- Automotive Mechanical and Specialisation
- Automotive Mechanical Heavy
- Automotive Sales, Parts Administration and Management
- Automotive Vehicle Body Repair
- Automotive Vehicle Manufacturing
- Bicycles, Marine, Motorcycle and Outdoor Power Equipment.



The following quote is from the Automotive IRC Skills Forecast:

Foundation skills, such as language, literacy, writing, numeracy and employability were listed as necessary skills for nearly all sectors in the industry.

The Automotive IRC Skills Forecast also gives some examples of how foundation skills are necessary to operate effectively in the workplace:

- **Language and communication** - in order to be able to communicate effectively with increasingly informed consumers
- **Literacy** - to read manufacturers specifications and complete repairs according to OEM requirements
- **Writing** - to record procedures and provide evidence of following protocols
- **Numeracy** - to utilise diagnostic scanning tools, data interpretation and to understand safe working practices.

(Automotive IRC's 2018 Skills Forecast)

Leadership and management skills

Overview

Leadership and management skills encompass a range of skills associated with people management, self-management and change management.

Planning, problem-solving and decision-making are all skills which pertain to leadership and management. Other major aspects of managing and leading include supervision of others, the ability to delegate tasks, and to effectively manage yourself and your workload.



Industry skills needs

Generic skills

In their 2018 Skills Forecasts, IRC's ranked a series of 12 generic skill categories, in priority order.

1 Learning agility / Information literacy / Intellectual autonomy and self-management
2 Design mindset / Thinking critically / Systems thinking / Problem solving
3 Technology use and application skills
4 Communication / Virtual collaboration / Social intelligence
5 Language, Literacy and Numeracy (LLN) skills
6 Managerial / Leadership skills
7 Customer service / Marketing skills
8 Science, Technology, Engineering, Mathematics (STEM) skills
9 Data analysis skills
10 Financial skills
11 Environmental sustainability skills
12 Entrepreneurial skills

Managerial/Leadership skills (which aligns directly with Leadership and management) received an average ranking of 6th (out of 12) across all skills forecasts.



Priority skills

Leadership and management skills were also identified by around half of the industries that reported on priority skills in their 2018 Skills Forecasts.



The three main leadership and management-related skills, identified most frequently within priority skills lists in skills forecasts, were:

Management-related, mentoring-related or supervisory or training skills, identified by the following industries:

- Management and Conference & Event roles within the Tourism Travel and Hospitality industry
- Meat Processing
- Metal, Engineering and Boating
- Mining, Drilling and Civil Infrastructure - Civil Infrastructure
- Nursing Support and Personal Care Workers within the Enrolled Nursing industry
- Personal Services Workers within the Client Services industry
- Process Manufacturing - Chemical, Hydrocarbons and Refining industry
- Public Sector
- Pulp and Paper Manufacturing
- Sport and Recreation - Fitness



Coordination skills, identified by the following industries:

- Aboriginal and Torres Strait Islander Health Worker
- Ambulance and Paramedics
- Visual Merchandisers within Retail and Wholesale
- Various roles including Cookery/Food Preparation, Management, and Travel and Tourism roles, within the Tourism Travel and Hospitality industry.



Judgement and decision-making, identified by the following industries:

- Health & Welfare Service Managers, and Occupational & Environmental Health Professionals within the Community Sector and Development industry
- Visual Merchandisers working in the Retail and Wholesale industry..





Case studies

Tourism Travel and Hospitality

The Tourism, Travel and Hospitality industry is large and diverse, and encompasses a broad range of different occupations. According to the Tourism, Travel and Hospitality IRC's 2018 Skills Forecast, leadership and management-related skills are a priority for the following occupations in this industry:

- Cookery & Food Preparation roles, with specific occupations including:

- Chefs
- Cooks
- Bakers and Pastry Cooks
- Bar Attendants and Baristas



- Conference and Event roles, specifically:

- Conference and Event Organisers

- Management roles, specific occupations may include:

- Café or Restaurant Managers
- Hotel and Motel Managers
- Hotel Service Managers
- Other Accommodation and Hospitality Managers
- Caravan Park and Camping Ground Managers
- Licensed Club Managers.



- Travel and Tourism roles, occupations including:

- Tourism and Travel Advisors
- Gallery, Museum and Tour Guides
- Travel Attendants



- and various other hospitality-related occupations, such as:

- Waiters
- Gaming Workers
- Housekeepers.

In each of the above occupations either coordination skills and/or management-related skills were identified as a top skill area, according to the Australian Department of Jobs and Small Business.

In addition, the following quote, sourced from the Tourism, Travel and Hospitality IRC's 2018 Skills Forecast, highlights the importance of leadership and management skills to this industry:

Management and leadership skills, strategic planning, financial literacy and mentoring and coaching skills are among those identified as being critical to building and maintaining a sustainable tourism, travel and hospitality industry. (Tourism, Travel and Hospitality IRC's 2018 Skills Forecast)

Customer service and marketing skills

Overview

Approaches to customer service, marketing and communication are evolving, with social platforms increasing in prevalence.

As such, the workforce will need to become skilled in new media literacies to engage with customers and achieve sales and marketing targets.

There is a current cross-sector project underway looking at developing [Consumer Engagement through Social and Online Media](#) to improve social platform & marketing skills.



Industry skills needs

Generic skills

In their 2018 Skills Forecasts, IRC's ranked a series of 12 generic skill categories, in priority order.

- 1 Learning agility / Information literacy / Intellectual autonomy and self-management
- 2 Design mindset / Thinking critically / Systems thinking / Problem solving
- 3 Technology use and application skills
- 4 Communication / Virtual collaboration / Social intelligence
- 5 Language, Literacy and Numeracy (LLN) skills
- 6 Managerial / Leadership skills
- 7 Customer service / Marketing skills**
- 8 Science, Technology, Engineering, Mathematics (STEM) skills
- 9 Data analysis skills
- 10 Financial skills
- 11 Environmental sustainability skills
- 12 Entrepreneurial skills

Customer service / Marketing (which aligns directly with Customer Service & Marketing skills) received an average ranking of 7th (out of 12) across all skills



Priority skills

Customer Service & Marketing skills were also identified by around half of the industries that reported on priority skills in their 2018 Skills Forecasts.



The following industries identified Customer Service & Marketing skills as a priority in their IRC Skills Forecasts:

- Community Sector and Development
- Enrolled Nursing
- Forest and Wood Products
- Furnishing
- Public Safety
- Tourism, Travel and Hospitality
- Wholesale and Retail and Personal Services.

Most of these industries focused mainly on the need for:

- customer and personal service skills.
- service orientation.



However other related-skills identified in these forecasts included:

- communication and media
- community engagement
- marketing
- sales skills.





Case studies

Enrolled Nursing industry

Enrolled Nurses provide nursing support and assistance to Registered Nurses and Registered Midwives across a range of clinical specialties and in various settings, including:

- Community or residential health care facilities
- Correctional services
- Defence forces
- General practitioners' (GPs) practices (public and private)
- Hospitals
- Hospices
- Residential mental health care services
- Schools/Education providers.



According to the Enrolled Nursing IRC's 2018 Skills Forecast, given the people-focused nature of their work, customer and personal service skills are a priority for the following occupations in this industry:

- Enrolled and Mothercraft Nurses
- Midwives
- Nursing Support and Personal Care Workers.



The need for customer-focused skills is particularly important for the Enrolled Nursing industry, given recent reforms and changes in demand for health services.

The introduction of consumer-directed funding models (such as the Australian Government's National Disability Insurance Scheme) has sought to drive improvements in efficiency and quality for clients. Customers have been given control, as consumers of services, to select their desired provider of care and services, which has in-turn promoted competition between healthcare providers.

According to the Skills Forecast it is expected that:

Consumer-directed funding will have a vast impact across the health and community services sectors, influencing the way in which services are delivered, which, in turn, has an effect on workforce requirements.

One considerable difference in a consumer-driven model is that a whole new industry is being geared to respond to participants' needs with the work following the client. The need for a customer service culture will have a broad impact as those who are served become 'customers' of organisations as opposed to the traditional 'patients' in the relationship. This will require industry to build workforce capacity and the skills of both workers and organisations, because frontline workers (in particular) will need to provide support via a person-centred approach in an increasingly price-sensitive competitive marketplace and contribute to the process by being the face of the organisation they represent (Enrolled Nursing IRC).

STEM skills

Overview

Strong science, engineering, technology and mathematics (STEM) skills, are extremely important for the knowledge economy.

While often associated with the university sector, the report [Australia's STEM Workforce](#) released by the Office of the Chief Scientist on Australia's STEM workforce shows that the vocational education and training (VET) sector provides more than two thirds of Australia's STEM workforce.

However, different industries have different levels of STEM needs and more work needs to be done with the relevant training packages to specify realistic standards for STEM-related competency requirements.



Industry skills needs

Generic skills

In their 2018 Skills Forecasts, IRC's ranked a series of 12 generic skill categories, in priority order.

1 Learning agility / Information literacy / Intellectual autonomy and self-management
2 Design mindset / Thinking critically / Systems thinking / Problem solving
3 Technology use and application skills
4 Communication / Virtual collaboration / Social intelligence
5 Language, Literacy and Numeracy (LLN) skills
6 Managerial / Leadership skills
7 Customer service / Marketing skills
8 Science, Technology, Engineering, Mathematics (STEM) skills
9 Data analysis skills
10 Financial skills
11 Environmental sustainability skills
12 Entrepreneurial skills

Science, technology, engineering and mathematics skills received an average ranking of 8th (out of 12) across all



Priority skills

STEM skills were also identified, but only in a few instances, by industries that reported on specific priority skills in their 2018 Skills Forecasts.



While not highly ranked across all industries, STEM skills are a high priority for a handful of industries, including:

Health, specifically within the following industry sector:

- Technicians Support Services.

Manufacturing, specifically within the following industry sectors:

- Metal, Engineering and Boating
- Textiles, Clothing and Footwear
- Furnishing.

Interestingly, the value of STEM skills may, in fact, be under-reported in Skills Forecasts – this is supported by a statement in the Furnishing IRC’s 2018 Skills Forecast, which notes that employers believe “*LLN [language, literacy and numeracy] and STEM are fundamental skills applicants should possess before they apply for work*”. Which explains why STEM skills were not ranked as highly by the Furnishing industry, and perhaps by other industries also.



Case studies

Textiles, Clothing and Footwear

The Textiles, Clothing and Footwear industry is grouped into three broad areas:

- production of clothing, textiles, footwear, leather goods and technical textiles
- provision of services including dry cleaning operations, laundry operations and footwear repairs
- processing of natural (wool, cotton and leather) and synthetic materials such as polyvinyl chloride (PVC) and shade cloth.



This industry is evolving, partly due to new technologies and materials such as wearable textiles, which has led to further increases in the demand for a STEM-skilled workforce.

According to the Textiles, Clothing and Footwear IRC's 2018 Skills Forecast:

Research by the former Department of Employment found that more than two-thirds of Australian employers place at least as much emphasis, if not more, on employability skills as they do on technical skills. This was further reinforced during industry consultations, with calls for soft skills and STEM skills to feature more prominently in training for the industry's future skill needs.

Consequently, in their 2018 Skills Forecast the Textiles, Clothing and Footwear IRC identified *STEM skills* as one of the top four training priorities for the next three years.

The forecast goes on to explain that:

The Food, Fibre and Timber Industries Training Council conducted STEM skills research, and these came up as crucial skills required by the industry. This was further supported during industry consultations to inform this Skills Forecast.

STEM skills have been identified, during consultations, as being highly regarded by industry.

Yet,

Industry feedback indicates that learners attracted to the industry often lack sound STEM skills, which are required in the workplace across most occupations to allow graduates to be effective workplace contributors and successfully undertake further formal training. Industry consultations identified that some newer students do not seem to appreciate that they need sound STEM skills to successfully undertake higher-level qualifications.

Interestingly, despite the demand for *STEM skills* outlined above, the Textiles, Clothing and Footwear IRC ranked *STEM skills* as their 8th highest priority in their generic skills rankings. The rationale for this can be drawn from the quote below:

On reflecting on their rankings, the TCF IRC... asserted that industry assumed new workers already had the necessary STEM and LLN skills before commencing work (Textiles, Clothing and Footwear IRC's 2018 Skills Forecast).

Business and compliance skills

Overview

Business and compliance encompasses the broad range of skills industry require to run a successful business, to understand relevant regulatory requirements and to maintain compliance.

Though there are many business skills required to be a successful business leader, key skills may include sound financial and project management skills, the ability to plan, and effectively manage resources. Understanding the regulatory environment in which the industry is operating is also necessary, to ensure that the company adheres to industry standards and rules, follows internal compliance guidelines, and maintains dialogue with regulatory bodies for the industry.

The project [Supply chains](#) is examining the implications of major changes underway across, and within, supply chains due to the impact of automation, robotics, big data and other new technologies. The skills needed to support innovation and new technologies will be the key to the future success of industry throughout the supply chain.

This project is one of nine cross-sector projects being undertaken by the Australian Industry and Skills Committee, to address common skills needs, minimise duplication, and consolidate existing training units.



Industry skills needs

Generic skills

In their 2018 Skills Forecasts, IRC's ranked a series of 12 generic skill categories, in priority order.

1 Learning agility / Information literacy / Intellectual autonomy and self-management

2 Design mindset / Thinking critically / Systems thinking / Problem solving

3 Technology use and application skills

4 Communication / Virtual collaboration / Social intelligence

5 Language, Literacy and Numeracy (LLN) skills

6 Managerial / Leadership skills

7 Customer service / Marketing skills

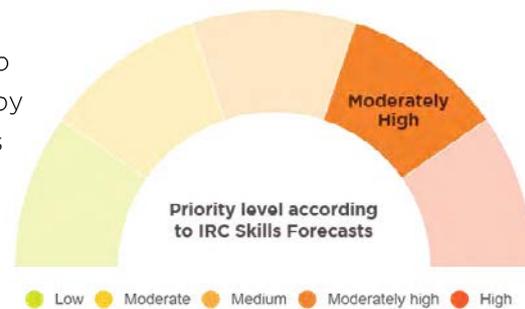
8 Science, Technology, Engineering, Mathematics (STEM) skills
9 Data analysis skills
10 Financial skills
11 Environmental sustainability skills
12 Entrepreneurial skills

Financial skills (which are a key component of business and compliance skills) received an average ranking of 10th (out of 12) across all skills forecasts



Priority skills

Business and compliance skills were also identified to a moderately high degree by industries that reported on priority skills in their 2018 Skills Forecasts.



The four broad areas of business and compliance skills identified most frequently were:

Regulatory/Legislative/Compliance identified by the following industry sectors:

- Aerospace
- Aquaculture and Wild Catch
- Aviation
- Education
- Financial Services
- Maritime
- Process Manufacturing - Plastics, Rubber and Cablemaking
- Property Services
- Transport and Logistics



Health and Safety, identified by the following industry sectors:

- Aviation
- Electrotechnology
- ESI Generation
- ESI Transmission, Distribution and Rail
- Gas
- Maritime
- Process Manufacturing - Recreational Vehicles
- Rail
- Transport and Logistics



Risk Management, identified by the following industry sectors:

- ESI Transmission, Distribution and Rail
- Financial Services
- Information and Communications Technology
- Public Safety



General business skills (for example, financial, organisational, planning, operational), identified by the following industry sectors:

- Aviation
- Gas
- Maritime
- Process Manufacturing - Manufactured Mineral Products
- Process Manufacturing - Recreational Vehicles
- Rail
- Transport and Logistics
- Water.



Case studies

Transport industry cluster

The Transport industry plays a key role in enabling Australia's economic activity. Without the capacities and capabilities provided by the Transport industry, no passengers or freight would move. The industry comprises four sectors:

- Aviation
- Maritime
- Rail
- Transport and Logistics.



Work health and safety, and compliance skills (or a combination of both) were reported in the IRC Skills Forecasts for each of these sectors. These quotes highlight why business and compliance skills have been prioritised in the Transport industry cluster:

Any changes made to the regulatory environments within the Transport and Logistics industry directly affects the workforce. Companies will be required to upskill and retrain workers to meet these requirements, for example, new regulations in fatigue management and heavy vehicle operated competency. Consequently, the skills required by the workforce will need to keep pace with any future developments. (Transport and Logistics IRC)

Deck and Engineer officers must manage not only the crew and vessel but the compliance requirements of the various countries that vessels dock in. (Maritime IRC)

The Rail industry's focus on improving track safety, worker skills and safety critical communications is ongoing, with the Office of the National Rail Safety Regulator (ONRSR) highlighting this area as a key priority in their 2016 annual report..... Safety critical communications and systems will become a higher priority as the industry embraces technology. The Rail industry will need to provide a level of comfort to the public, who are likely to have reservations about the safety of new technologies and autonomous systems. (Rail IRC)

Ongoing Australian aviation safety regulatory changes, will also necessitate periodic review of Training Package materials to ensure they are fit for purpose and meet Australia's national and international aviation safety regulatory obligations. (Aviation IRC)

Sustainability and Natural Resource Management skills

Overview

Since committing to the Paris Agreement in 2015/2016, Australia has engaged in reducing carbon emissions and combatting climate change. In an effort to deal with the effects of climate change and improve sustainability, there is an increasing need for sustainability and natural resource management skills.

The 2009 Green Skills Agreement revised training packages to include 'green skills', and the current cross-sector project on [Environmental Sustainability Skills](#) continues the emphasis on sustainability skills by aiming to identify duplication and gaps in sustainability skills which span industries.



Industry skills needs

Generic skills

In their 2018 Skills Forecasts, IRC's ranked a series of 12 generic skill categories, in priority order.

1 Learning agility / Information literacy / Intellectual autonomy and self-management
2 Design mindset / Thinking critically / Systems thinking / Problem solving
3 Technology use and application skills
4 Communication / Virtual collaboration / Social intelligence
5 Language, Literacy and Numeracy (LLN) skills
6 Managerial / Leadership skills
7 Customer service / Marketing skills
8 Science, Technology, Engineering, Mathematics (STEM) skills
9 Data analysis skills
10 Financial skills
11 Environmental sustainability skills
12 Entrepreneurial skills

Environmental sustainability skills (which aligns directly with Sustainability and Natural Resource Management) received an average ranking of 11th (out of 12) across all skills forecasts.



Priority skills

Sustainability and Natural Resource Management-related skills were also identified, but only in a few instances, by industries that reported on specific priority skills in their 2018 Skills Forecasts.

While not highly ranked across all industries, environmental sustainability is prioritised by the following handful of industries:

- **Amenity Horticulture, Landscaping and Conservation and Land Management**, which prioritises conservation and land management
- **Chemical, Hydrocarbons and Refining**, which prioritises environmental regulation skills
- **Pulp and Paper Manufacturing**, which prioritises supply chain and environmental sustainability
- **Sustainability**, which prioritises sustainable operations (increasing sophistication of sustainability practices).



Case study: process manufacturing

The Process Manufacturing industry, is one component of the Manufacturing and Related Services industry cluster.

Process Manufacturing encompasses several subsectors, two of which identified specific Sustainability and Natural Resource Management-related skills as priorities for their workforce. These were:

- Chemical, Hydrocarbons and Refining
- Manufactured Mineral Products.

Both subsectors are heavily regulated, particularly in relation to state and local government environmental regulations. Consequently, they prioritised the importance of monitoring government policies (both at state/territory and Commonwealth-level) for changes to environmental regulations and reviewing industry qualifications to ensure that they align with these regulatory requirements.

Chemical, Hydrocarbons and Refining

Regulatory oversight pertaining to environmental factors in the Chemical, Hydrocarbons and Refining industry is highlighted in the following quote from the IRC's 2018 Skills Forecast:



The hydrocarbon sector is heavily controlled in relation to matters such as fuel quality, fuel pricing, and other forms of regulation such as domestic energy policy, alternative energy source subsidies, fuel and corporate taxation, industrial relations policy, and environmental issues.

Regulations in the refining sector vary according to the nature of the materials being refined or smelted. Lead is subject to the heaviest levels of regulation due to its health risks to the population. Establishing steelmaking or aluminium smelting operations by contrast requires businesses to meet specific environmental and zoning requirements regarding noise, air emissions and the use, handling and disposal of hazardous materials and waste. Businesses in this industry are also required to comply with State and Commonwealth Government occupational health and safety regulations and employee requirements.

The Chemical, Hydrocarbons and Refining IRC's 2018 Skills Forecast also provides further rationale as to why Sustainability and Natural Resource Management-related skills are a priority for their workforce:

The main societal factors impacting on the CHR [Chemical, Hydrocarbons and Refining] sector are driven by environmental concerns – as consumers and the public seek reassurance about the environmental impacts of various manufacturing processes in the sector. Some businesses are seeking to innovate and meet consumer demand by establishing greener production methods and improving recycling.

And

The demand for more environmentally sustainable products and practices, (including in response to regulation), is driving changes to business practices across the CHR industry. Environmental concerns are also having an impact. This is being felt particularly in subsectors such as pesticides. In response to these concerns, Australian products are being squeezed out by imports with better environmental credentials.

Some firms are changing the raw materials they use, and others are innovating through the development of new products in order to address these environmental concerns.

Industry sources highlighted the growing demand for liquid natural gas from China as it diversifies its economy away from coal. This shift has been a positive for Australian suppliers. The use of gas as a transition fuel in the move to a low carbon economy in Australia is debated within the industry – with some players foreseeing a role for gas as a key transition fuel and others predicting a move to renewables which will bypass the need for significant additional baseload gas.

Environmental concerns have also been raised in parts of the gas sector. Examples include drilling in the Great Australian Bight and the onshore gas moratoria which are in place in a number of states and territories. At this stage these concerns have not yet resulted in changes to training standards, but future changes are possible as governments and companies balance the industry's 'social licence' to operate with the challenge of meeting Australia's energy needs.

Manufactured Mineral Products

Environmental sustainability skills (which aligns directly with Sustainability and Natural Resource Management) received an average ranking of 11th (out of 12) across all skills forecasts.



The Manufactured Mineral Products industry is also subject to significant levels of regulation.

Products must conform with relevant Australian Standards – and manufacturing processes must comply with a range of Commonwealth, state and local government regulations designed to manage environmental risks. These include legislation and regulations managed by the Clean Energy Regulator, as well as those administered by the State Environmental Protection Authorities and local governments relating to the allowable emission of pollutants (e.g. air pollution).

Testing of products is an important step in the production process required to be adopted by a number of businesses in the MMP [Manufactured Mineral Products] sector. Samples are taken during production, and required tests are then carried out by testing laboratories that test a range of properties such as strength and grading. The National Association of Testing Authorities (NATA) is the national accreditation body that ensures organisations comply with relevant international and Australian standards (Manufactured Mineral Products IRC's 2018 Skills Forecast)

The Manufactured Mineral Products IRC's 2018 Skills Forecast also summarises some further reasons why Sustainability and Natural Resource Management skills have been prioritised by this industry:

The MMP sector is [subject to] increasing environmental awareness amongst consumers. The requirement for higher levels of energy efficiency in non-residential buildings and consumer demand for cheaper energy prices are driving demand for glass wool insulation products.

Organisations involved in concrete production are subject to increased regulatory oversight as technology allows for improved specification of precast concrete products. At the same time, an increased focus on the environmental impact of concrete manufacturing has required businesses to do more to reduce pollution.

Ongoing environmental improvements and monitoring are envisaged as consumers and governments demand higher standards.

Younger generations are also more concerned about environmental issues, leading business and society to give more value to sustainability and the environment (Manufactured Mineral Products IRC).



Priority skills



Methodology

The priority skills framework has largely been based on, and adapted from, the skills outlined in the skills chapter of the Miles Morgan report [Future skills and training: A practical resource to help identify future skills and training](#). (update forthcoming). The report outlines a series of skills that workers will need to be effective in Australia's future workplace.

Additional skills areas have been included where IRC Skills Forecasts have consistently identified certain skills needs, which aren't a focus in the Future skills and training report.

In total, eleven priority skills areas have been identified:

- Industry and occupation specific skills (technical skills)
- Adaptability and learning skills (i.e. innovation, flexibility, and multiskilling)
- Analytical skills (data analysis, critical and creative thinking, and problem solving)
- Digital skills (new technologies, robotics and automation, big data, and cyber security)
- Collaboration skills (interpersonal skills, communication, and teamwork)
- Foundation skills (language, literacy and numeracy, including digital literacy)
- Leadership and management skills (leadership of self and others)
- Customer service and marketing skills (social media, marketing and customer service)
- STEM skills (Science, technology, engineering and mathematics)
- Business and compliance skills (small business skills, and regulatory compliance)
- Sustainability and natural resource management skills (green skills).

Allocation of skills

Each priority skill area aligns closely with one of the generic skills ranked by IRCs in their Skills Forecasts, and reflects a range of relevant 'free-text' examples of more specific skills, requested by IRCs throughout their forecasts. For example, the generic skill 'Communication / virtual collaboration / social intelligence'; and IRC demand for 'active listening', 'communication skills', 'collaboration skills' and 'social perceptiveness' in the Skills Forecasts are captured within the 'Collaboration skills' area. Best judgement was used to allocate 'free-text' responses to the most appropriate skill area from the list above.

The priority skill area 'Industry and occupation specific skills' has been created to capture all the specific and technical skills IRCs have identified which are relevant to their industry or occupation.

Skills ranking

A systematic review of the skills forecasts from 2018 has been undertaken to identify which priority skills areas are ranked most highly by IRCs.

Generic skills have been consistently ranked by all IRCs in the Skills Forecasts. These have been used to determine the average ranking of priority skill areas across all Skills Forecasts.

In addition, other skills identified as a workforce priority in the Skills Forecasts have been counted and converted into a low/medium/high 'gauge level'. Gauge level classifications are based on the proportion

of all skills forecasts which identify and prioritise skills within a specific skill area. For example, a skills forecast may refer multiple times to different 'digital skills' in their skills outlook (for example coding skills, digital literacy and automation), but this is only counted once, against the 'Digital skills' area. The priority skills area appearing in the most IRC skills forecasts was allocated the highest level on the gauge scale, while the skills area prioritised the least in IRC skills forecasts ranked the lowest.

The case studies that are presented in each Priority skills page are intended to provide more information about IRC or industry demand for a specific skill (and more detail about why that skill is a priority for that particular industry).



Key initiatives

Overview

This section provides information on, and links to activities and initiatives of the Australian Industry and Skills Committee and its network of Industry Reference Committees (IRCs).

This includes [cross-sector projects](#) currently underway and other training package review and development initiatives. The cross-sector projects aim to address common skills needs, minimise duplication of units, consolidate existing units and remove units that are no longer being used. Projects include:

Automation

Examines the workforce skilling implications and identifies related skills needs shared by multiple industry sectors in relation to the use of robotics, drones and remote operation systems.

For more information and an update on progress, including the case for change visit the [Skills Impact website](#).

Big data

Reviews current and emerging developments in big data skills, particularly in relation to data management, data analytics and data-driven decision-making, and identifies related skills needs shared by multiple industry sectors.

For more information and an update on progress, including the public paper and case for change visit the PwC's [Skills for Australia website](#).

Digital skills

Looks across a number of Training Packages to identify qualifications, skill sets and units of competency impacted by digital analytic/diagnostic skills, additive manufacturing (3D printing) skills, and programming/coding skills.

For more information and an update on progress, including the case for change visit the [Innovation and Business Skills Australia website](#).

Cyber security

Reviews current and emerging developments in cyber security skills, particularly in relation to data confidentiality, protection and privacy, and identify related skills needs shared by multiple industry sectors.

For more information and an update on progress, including the case for change and public paper visit the PwC's [Skills for Australia website](#).

Supply chains

Examines the implications of the major change underway across and within supply chains due to the impact of automation, robotics, big data and other new technologies. The addition of disruptive

seek new practices to increase efficiency, meet consumer demands and become more competitive. The skills needed to support innovation and new technologies will be the key to the future success of industry throughout the supply chain.

For more information and an update on progress, including the case for change and consultation process visit the [Australian Industry Standards website](#).

Environmental sustainability

Reviews current and emerging developments in environmental sustainability skills, the skills required to support transition to a sustainable economy. The project examines workforce skilling implications and identify related skills needs shared by multiple industry sectors in relation to environmentally sustainable products, manufacturing and waste processes, and sustainable energy production.

For more information and an update on progress, including the case for change and Briefing Paper visit the [Skills Impact website](#).

Teamwork and communication

Looks to understand industry support for developing common teamwork and communication units to be used across multiple industry sectors.

For more information and an update on progress, including the public paper visit the [Skills for Australia website](#).

Inclusion of people with disability

Investigates how Australia's VET system can be improved to build the capability of educators and employers to better support people with disability.

For more information and an update on progress, including the Environmental Scan and summary of outcomes from national consultations visit the [Skills for Australia website](#).

Consumer engagement via online and social media

Aims to identify the common skills needs of industries in relation to consumer engagement through online and social media in order to inform the update and/or development of future Training Package products.

For more information and an update on progress, including the consultation paper visit the [SkillsIQ website](#).

Other projects

AISC Research projects

The AISC approved new research projects and supported funding to build evidence to assist the AISC to further improve the responsiveness and flexibility of the system and focus on the four key areas of:

- building the evidence base for industry to inform training package development
- driving improved quality and efficiency of the training package development process
- improving productivity and delivering on COAG Industry Skills Council (CISC) priorities and continuing professional development for Industry Reference Committees (IRCs).

For more information visit: <https://www.aisc.net.au/hub/aisc-communique-10-april-2018>.

