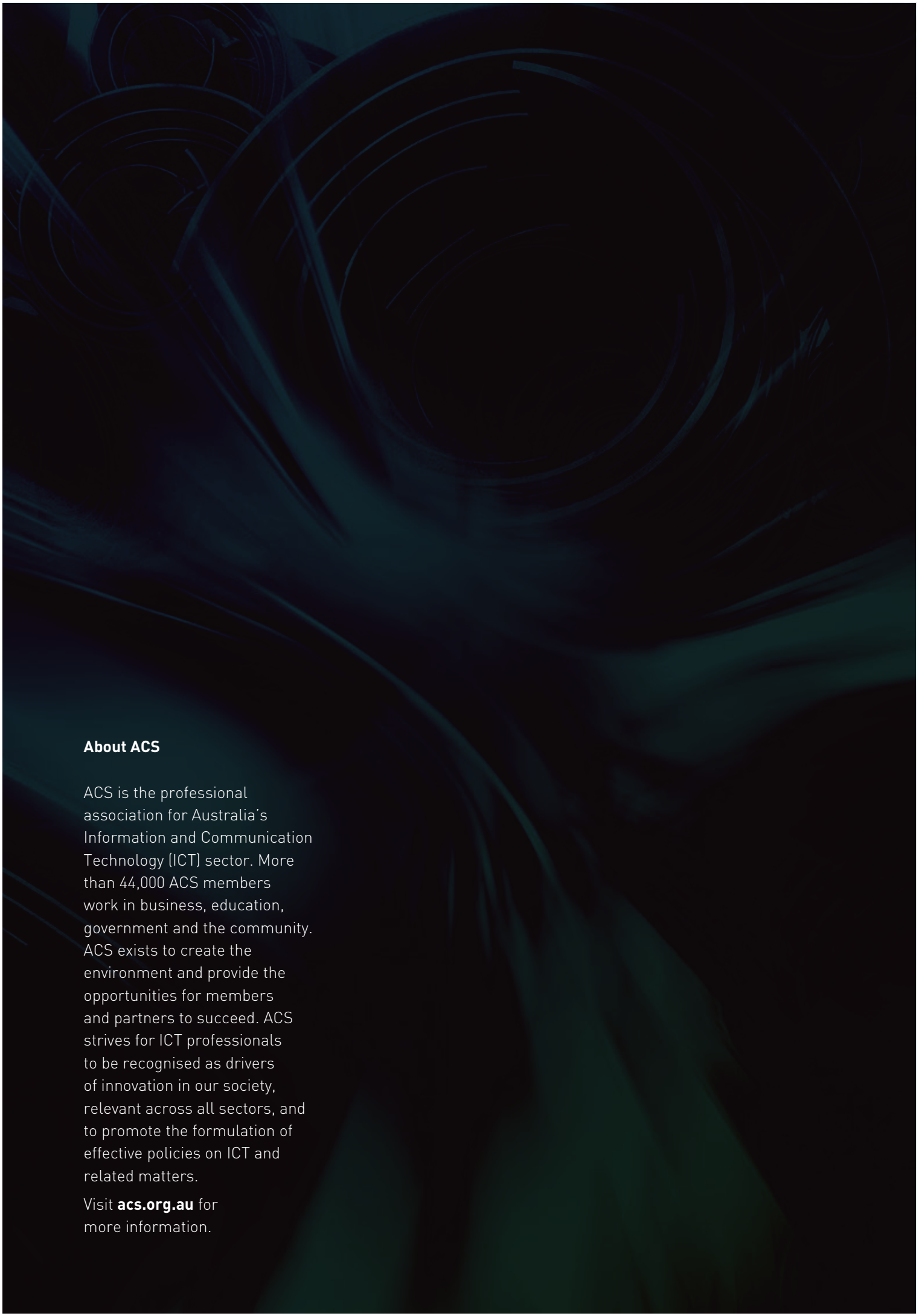
March 2020

Technology Impacts on the Australian Workforce

Prepared by Faethm



About ACS

ACS is the professional association for Australia's Information and Communication Technology (ICT) sector. More than 44,000 ACS members work in business, education, government and the community. ACS exists to create the environment and provide the opportunities for members and partners to succeed. ACS strives for ICT professionals to be recognised as drivers of innovation in our society, relevant across all sectors, and to promote the formulation of effective policies on ICT and related matters.

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Foreword

Andrew Johnson
Chief Executive Officer,
ACS

Australian workers are feeling the effects of emerging technologies across industries. As jobs are augmented by technology, tasks performed across the labour market are evolving at an unprecedented rate, driving demand for new skillsets.

Anecdotally, there seems to be much upside for our nation.

That said, there are clear barriers that need to be addressed.

Australia was ranked 93rd in the Harvard study on the sophistication of global economies. The Harvard researchers use the diversity and sophistication of a country's know-how to explain differences in country incomes.

In work undertaken with Deloitte Access Economics, there is a forecast shortfall of 100,000 tech workers in Australia over the next five years just to keep pace with current demand. Those available skills would need to be doubled to 200,000 to be on par world-leading digital economies such as the United Kingdom.

This is compounded by Australia's under-investment in Artificial Intelligence relative to other nations.

Australia's Artificial Intelligence Roadmap developed by CSIRO's Data61 for the Australian Government, highlighted that 14 of the world's most advanced economies have announced over AU$86 billion in focused AI programs and activities in recent years. This includes China (>AU$25b), the United States (>AU$15b), Germany (>AU$4.7b), South Korea (>$3.9b), France (>$2.3b), the United Kingdom (>$1.6b), Japan (>$1.6b) and Canada (>$1b). Australia's relatively modest investment stands at $60m.

This ACS commissioned research was undertaken by Harbour City Labs resident Faethm, a Software as a Service Artificial Intelligence platform delivering data, analytics and insights on the impact of emerging technologies. The research methodology looks at the technology adoption and s-curves across 17 technology categories.

In addition to occupations and skills requirement forecasts, we also wanted to explore the degree to which imbalances might exist between the adaptability and future-readiness of workers across industries.

The outcomes tabled in our ***Technology Impacts on the Australian Workforce*** report provide deep insights for businesses to inform future workforce development plans, as well as for policy makers to maximise the participation rate of all citizens in the opportunities afforded by the Fourth Industrial Revolution.

Contents

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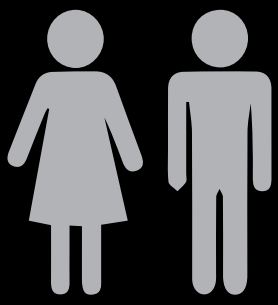
Key Findings

The next 15 years will present significant opportunities and challenges for the Australian workforce

The technological advancement brought on by the Fourth Industrial Revolution will bring unprecedented change to work as we know it. Whilst some roles and industries will be augmented by technology, others will be more susceptible to automation.

By 2034 we predict:

- **Automation will displace 2.7 million Australian workers**
  21% of the workforce
- **Technology will augment 4.5 million Australian workers**
  leading to a 15% capacity uplift to Australian businesses



2034
~7.2
MILLION
IMPACTED

Education and re-skilling the workforce is crucial to prevent long-term structural unemployment and rising inequality.

Whilst all states in Australia will be impacted by technology, key roles and industries differ in the extent of impact

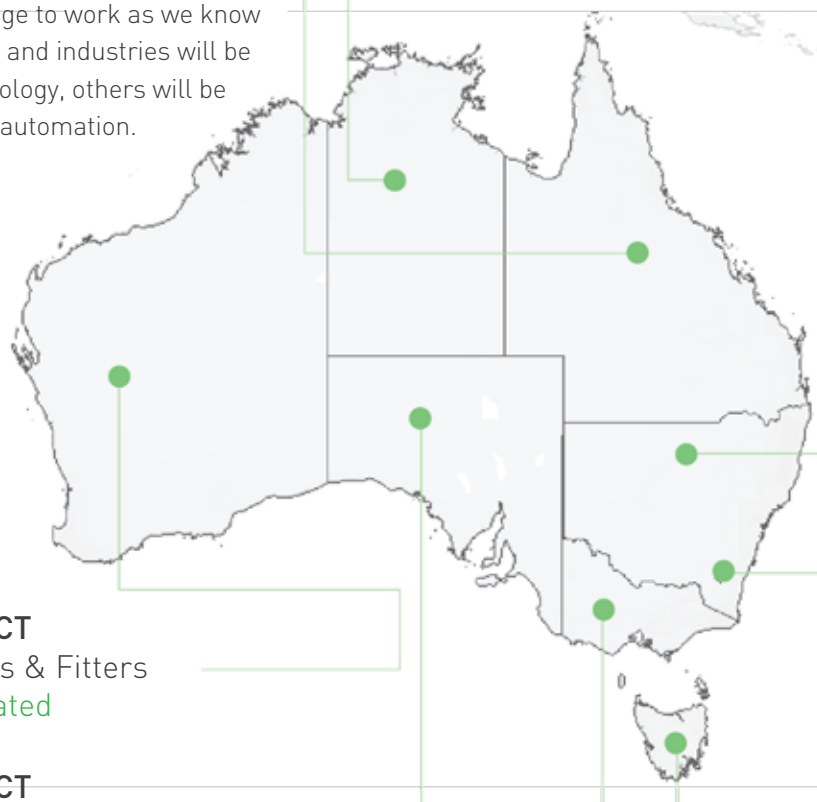
The technological advancement brought on by the 4th industrial revolution will bring unprecedented change to work as we know it. Whilst some roles and industries will be augmented by technology, others will be more susceptible to automation.

KEY ROLE IMPACT
Truck Drivers 18.7K FTE Automated

LARGEST INDUSTRY IMPACT
Public Administration and Safety
3.2K Automated 8.0K Augmented

FINANCIAL SERVICES ROLE IMPACT
Bank Workers 11.6K Automated

KEY ROLE IMPACT
Accountants 1.4K FTE Automated



KEY ROLE IMPACT
Metal Fabricators & Fitters
7.4K FTE Automated

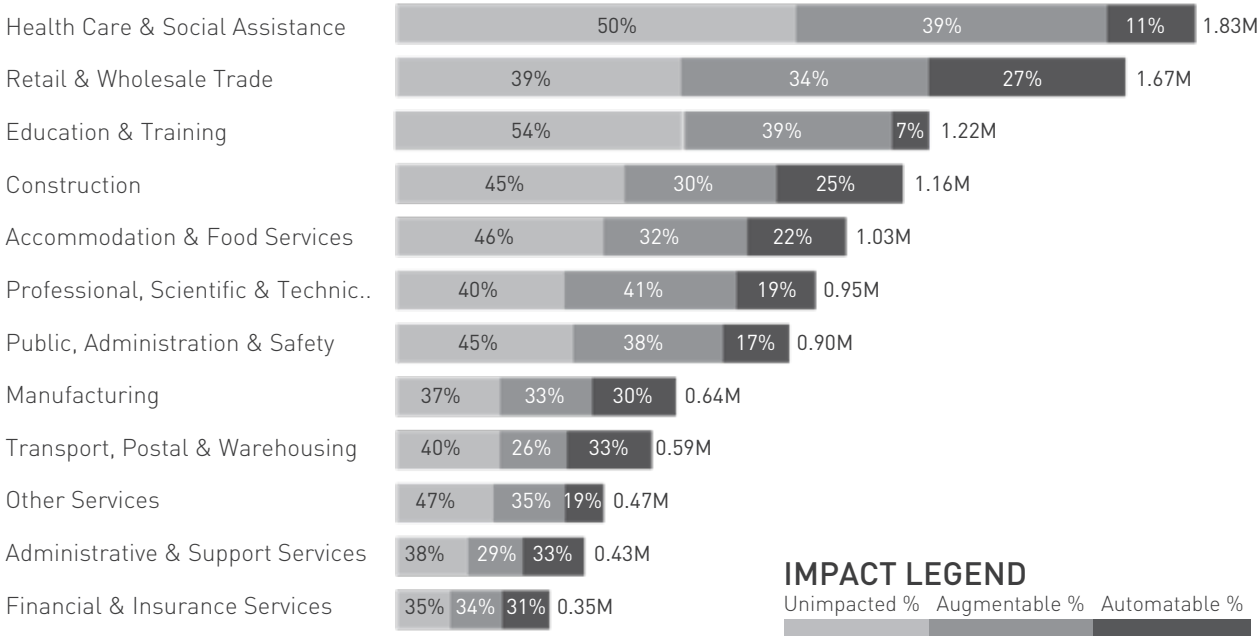
KEY ROLE IMPACT
Sales Assistants (General)
11.2K Automated

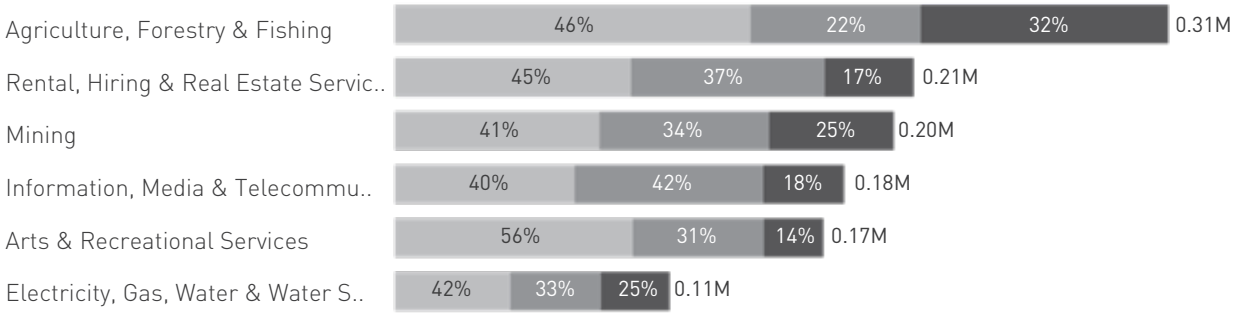
KEY ROLE IMPACT
Nurses 41.8K FTE Augmented

LARGEST INDUSTRY IMPACT
Retail Trade 8.5K Automated 10.4K Augmented

There are 2.7 million people at risk of automation across Australia over the next 15 years

The impact of technology over the next 15 years differs based on the industry.





KEY FINDINGS:

2.7 million people are at risk of automation over the next 15 years, 56% of which are male. Admin and Support Services has the highest automation rate while Information, Media and Telecommunications is the most augmentable.

PEOPLE IMPACT

2.7M TOTAL AUTOMATABLE

1.2M 1.5M

TECH IMPACT

35% AUGMENTABLE

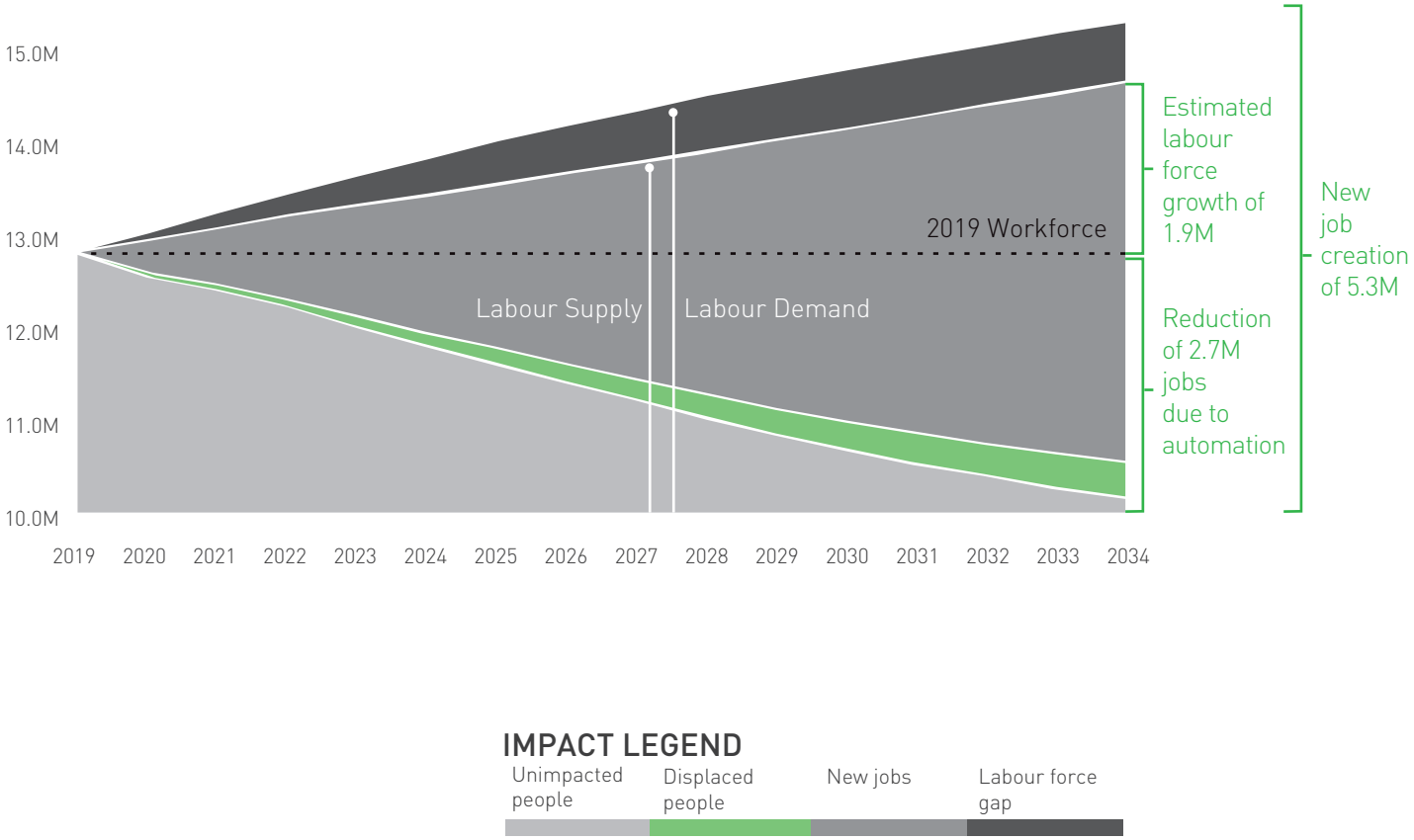
21% AUTOMATABLE

15% CAPACITY GAIN

By 2034, a labour force gap of 700K could exist while 400K people could face structural unemployment as they are unable to adapt to changing job requirements

The Australian labour force is changing and the demand for labour will outstrip projected workforce growth: an additional 700K people may be required by 2034 to maintain a constant GDP growth rate of 3.2% over the next 15 years. This demand, in addition to the required re-allocation of the automated workforce into safer/future roles, will require an agile workforce to take advantage of new job creation driving growth and reducing the impact of unemployment. Based on our prediction of preparedness and agility, we estimate that under the current circumstances, Australia will be able to capture 85% of the potential new jobs created by technological advancements. This could result in structural unemployment of nearly 400K people.

CAPTURING THE BENEFITS OF AUTOMATION

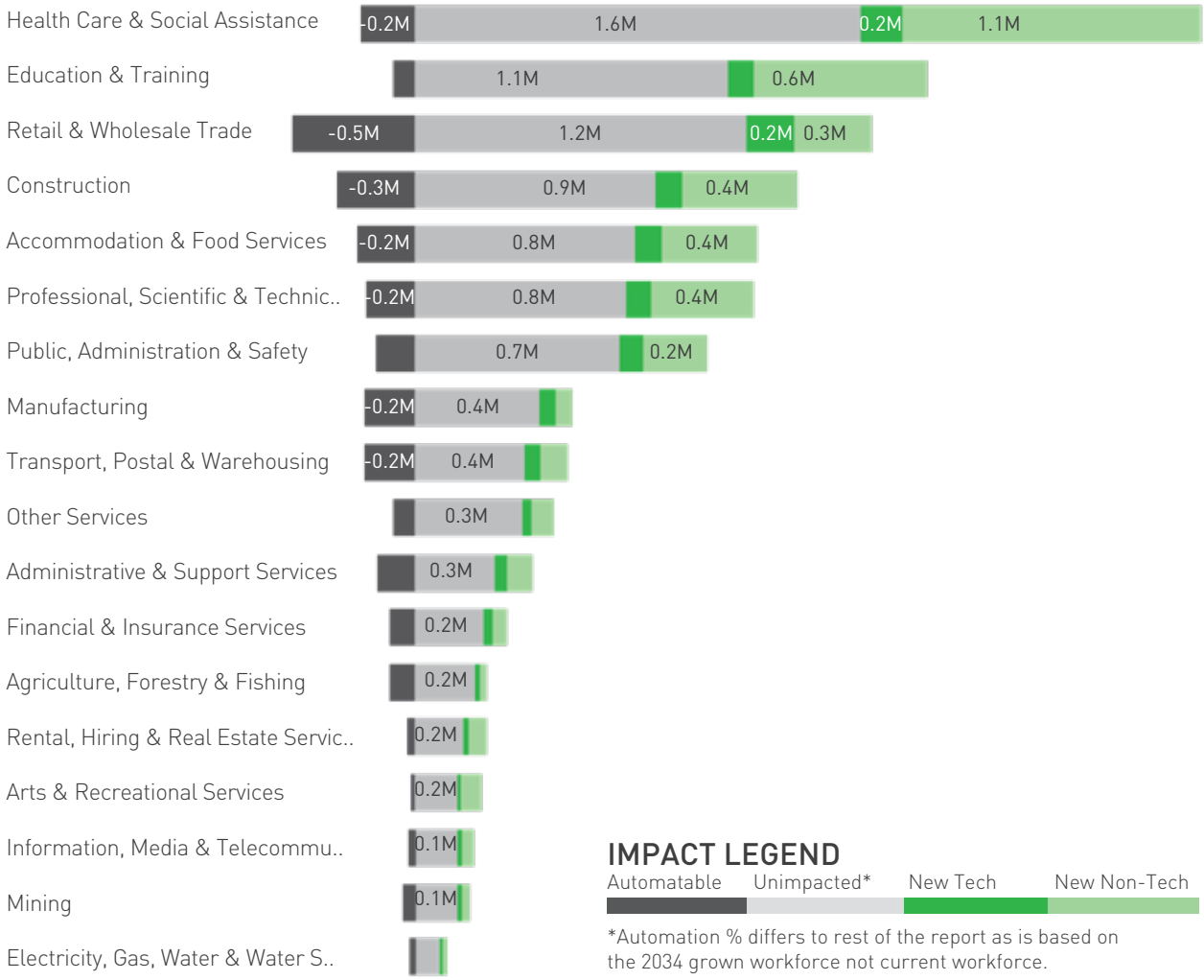


IMPACT LEGEND

Unimpacted people | Displaced people | New jobs | Labour force gap

Technology adoption and implementation could lead to an additional 1.2 million new tech jobs by 2034

The impact of technology on growth and new job creation over the next 15 years differs based on the industry.



*Automation % differs to rest of the report as is based on the 2034 grown workforce not current workforce.

KEY FINDINGS:

Over the next 15 years, an additional 5.3M new jobs could be added to the Australian economy, 22% of these being tech jobs required to support technology adoption and implementation. Health Case and Social Assistance is the industry with the highest job growth rate while Finance and Insurance Services has the highest proportion of new technology jobs.

PEOPLE IMPACT

1.2M TECH JOBS

4.1M NON-TECH JOBS

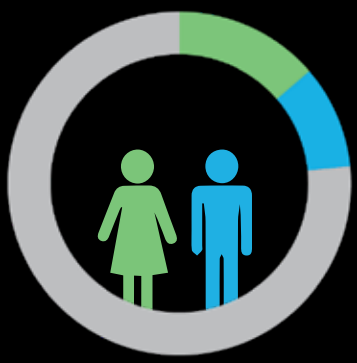
5.3M NEW JOBS

INDUSTRY GROWTH

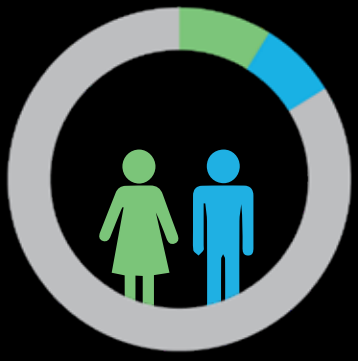
15% NEW TECH JOBS

22% NEW NON-TECH JOBS

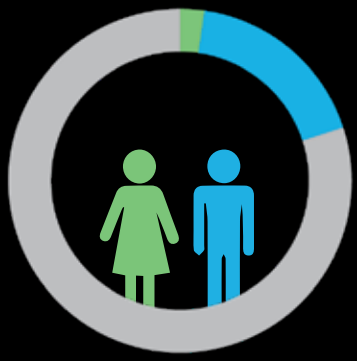
The impact of automation on men and women is not equal



35% | 63k | 26% | 45K
Financial Services and Insurance



23% | 100k | 16% | 84K
Processional, Scientific and Technical Services



28% | 33k | 25% | 257K
Construction

The gender composition of roles within an industry is key to understanding the differing impact of technology by gender.

For example, in the Financial Services and Insurance industry, the over-representation of women in positions such as customer service representatives, administrative or clerk position drives the higher level of automation among females. By comparison, males are more likely to be found in senior management or technical roles. These positions experience higher levels of augmentation rather than automation.

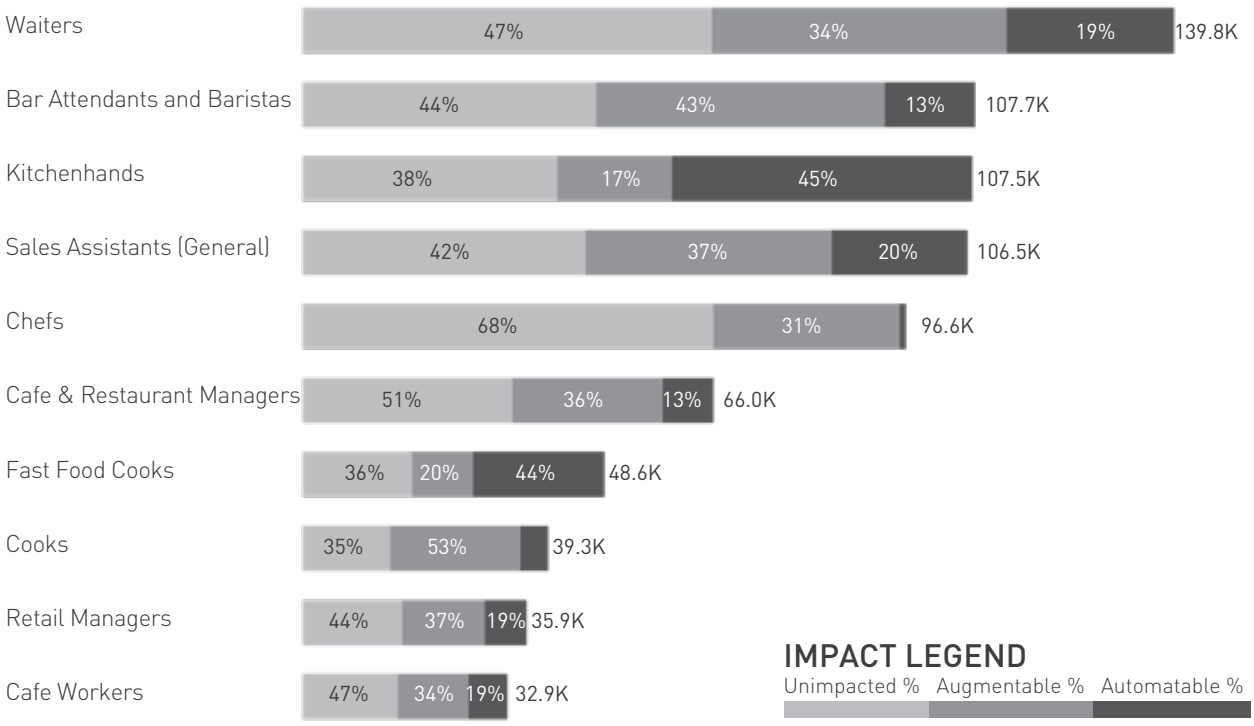
02

Industry Analysis

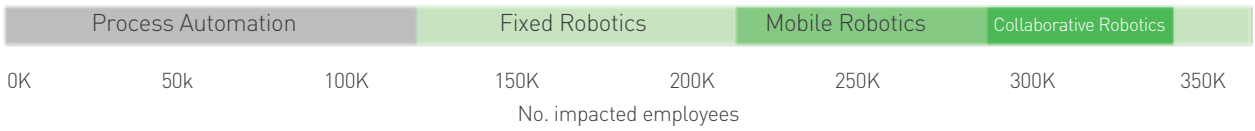
Accommodation and Food Services - long term (15 years)

The impact of automation and augmentation differs based on underlying skills and activities for each role.

TECHNOLOGY IMPACT ON 10 MOST COMMON ROLES AT YEAR 15



TECHNOLOGY IMPACT ON 10 MOST COMMON ROLES AT YEAR 15



KEY FINDINGS:

222K people are at risk of automation over the next 15 years, 57% of which are female. Roles in the Accommodation and Food Services industry are more subject to augmentation rather than automation.

PEOPLE IMPACT

126K 97K

222K TOTAL AUTOMATABLE

TECH IMPACT

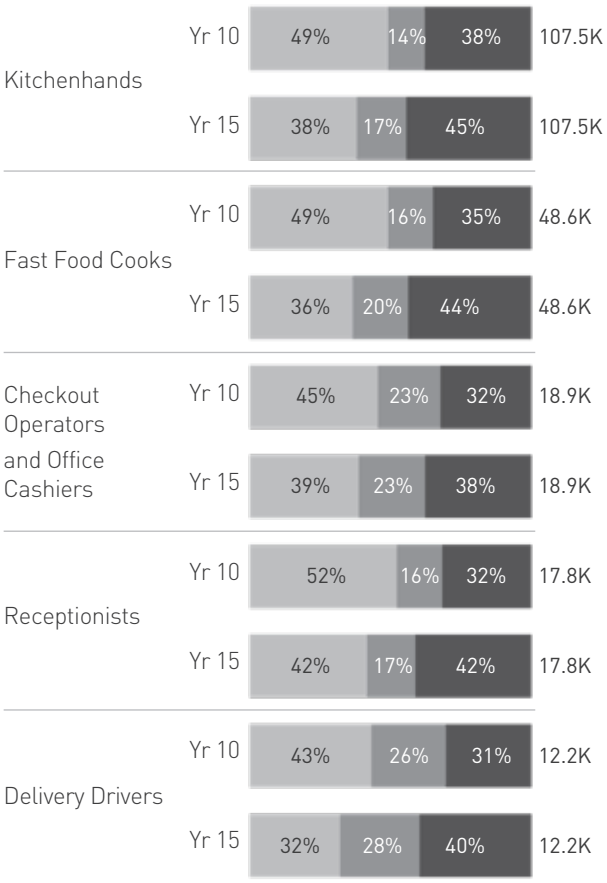
32% AUGMENTABLE

22% AUTOMATABLE

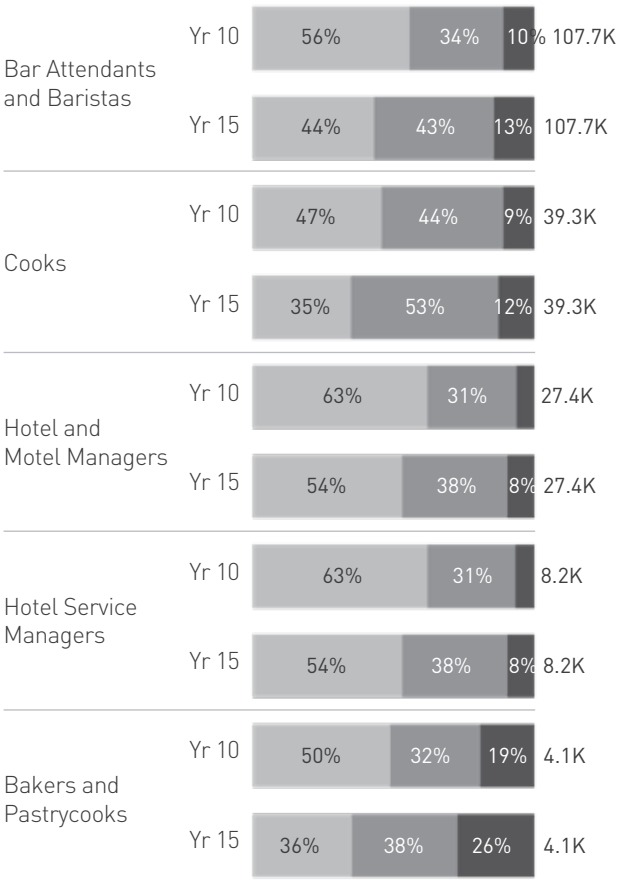
13% CAPACITY GAIN

Some roles can be more easily automated while other roles are more susceptible to augmentation.

JOBS MOST EXPOSED TO AUTOMATION



JOBS MOST EXPOSED TO AUGMENTATION



IMPACT LEGEND

Unimpacted % Augmentable % Automatable %

KEY FINDINGS:

Fast food cooks are the most automatable role with an estimated 21K people at risk.
Cooks are the most augmentable role with the potential to augment 21K people.

JOB FAMILY ANALYSIS

Of the top 25 roles in this industry, they also have a presence in other industries.

- The top 3 industries for these roles are:
  - Retail and Wholesale Trade: 37%
  - Health Care and Social Assistance: 7.8%
  - Administrative and Support Services: 4.4%

Re-skilling and transition potential exists from high risk Accommodation and Food Service jobs to low risk jobs

The following re-skilling pathways are available to transition at risk workers to less automatable target careers. Many at risk professionals have transferrable skills, and need to only focus on skill and knowledge gaps to transition to new, lower risk, occupations.

EXAMPLE PATHWAYS

Current job (Risk at year 15) → Future job (more secure)

Kitchenhand

45% AUTOMATABALE
48.4K people at risk
107.5K people in job

- **Visual Merchandiser** (84.0 pivot score)
- **Dietetic Technician** (81.2 pivot score)
- **School Teacher** (76.9 pivot score)

Receptionist

42% AUTOMATABALE
7.4K people at risk
17.8K people in job

- **Speech Pathology Assistant** (89.1 pivot score)
- **Physical Therapist Aide** (83.6 pivot score)
- **Copy Writer** (74.8 pivot score)

Delivery Driver

40% AUTOMATABALE
4.9K people at risk
12.2K people in job

- **Carers and Aides** (79.7 pivot score)
- **Camera Operators, Television and Motion Picture** (66.8 pivot score)
- **Solar Photovoltaic Installer** (65.0 pivot score)

DETAILED TRANSITION PATHWAY

JOB

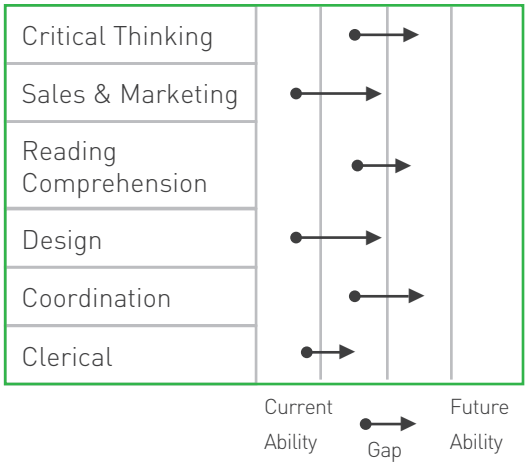
Kitchenhands

Automatable 45%
Augmentable 17%

JOB CORRIDOR

- Visual Merchandiser
- Personal Care Consultants
- Home Health Aide
- Dietetic Technician
- School Teacher

KEY SKILL AND KNOWLEDGE GAPS | **ABILITY GAPS**



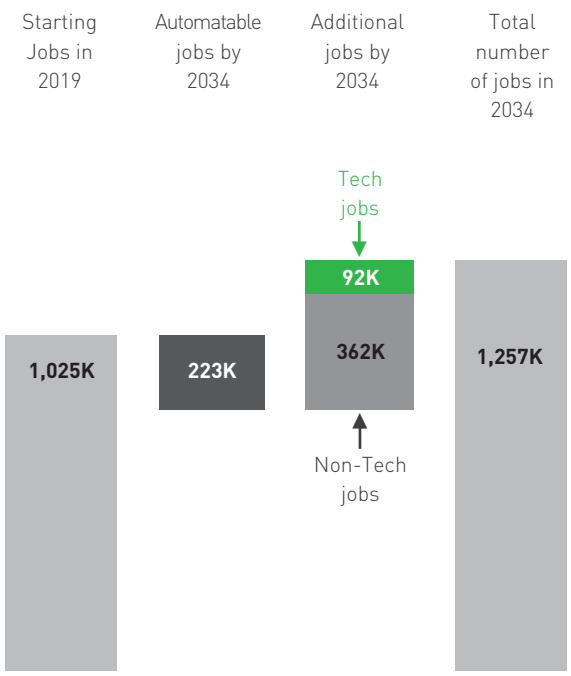
Implementation of emerging technology could lead to the generation of 92K new technology jobs over the next 15 years

Over the next 15 years, an additional 454K jobs could be added to the Accommodation and Food Services Industry. This comprises of:

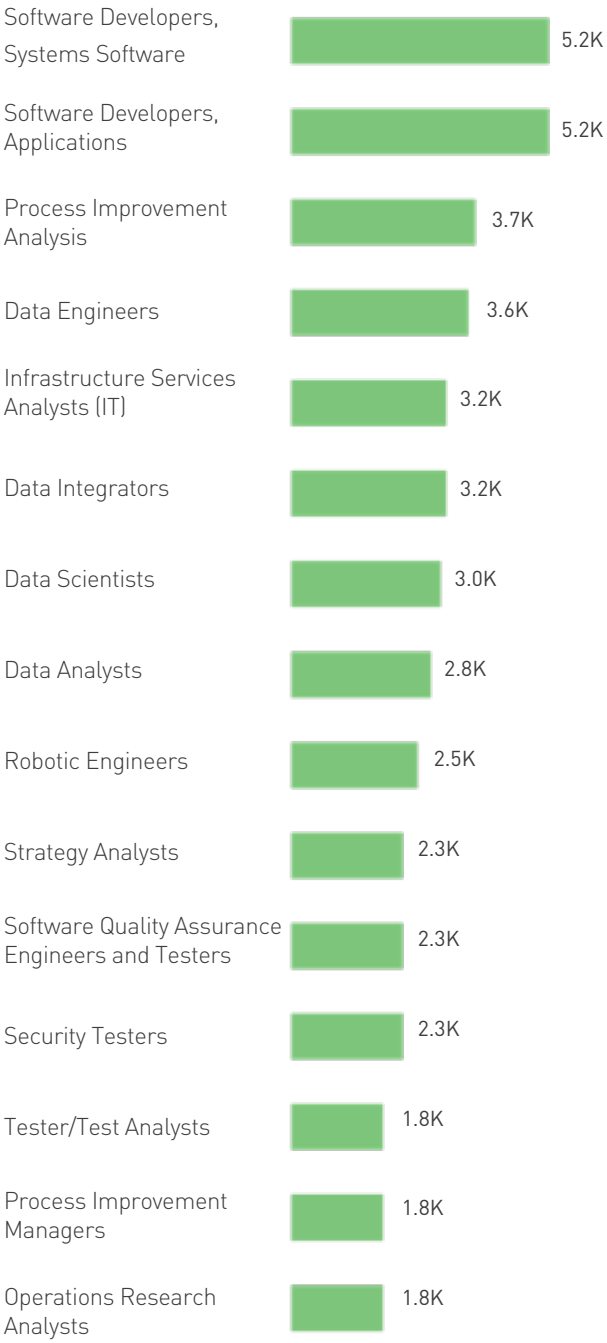
- 20% or 92K technical jobs
- 80% or 362K non-technical jobs

However during this period, 223K roles within the industry could be automated by technology, leading to a net increase of 23% or 232K roles for the industry.

MODELLED JOB GROWTH



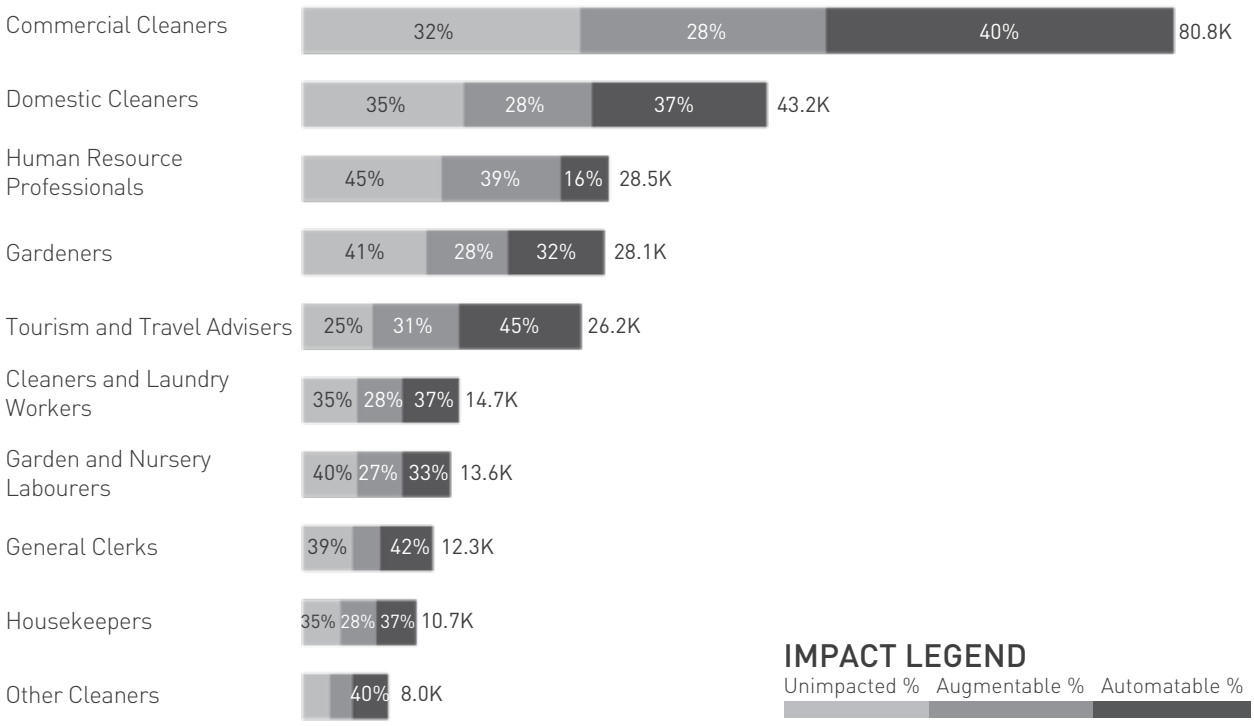
ADDITIONAL TECH JOBS REQUIRED (top 15)



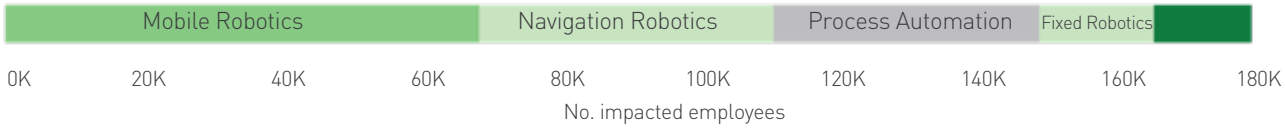
Administrative and Support Services - long term (15 years)

The impact of automation and augmentation differs based on underlying skills and activities for each role.

TECHNOLOGY IMPACT ON 10 MOST COMMON ROLES AT YEAR 15



TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15



KEY FINDINGS:

141K people are at risk of automation over the next 15 years, 55% of which are female. Roles in the Administrative and Support Services industry are more subject to automation rather than augmentation.

PEOPLE IMPACT

78K 63K

141K

TOTAL AUTOMATABLE

TECH IMPACT

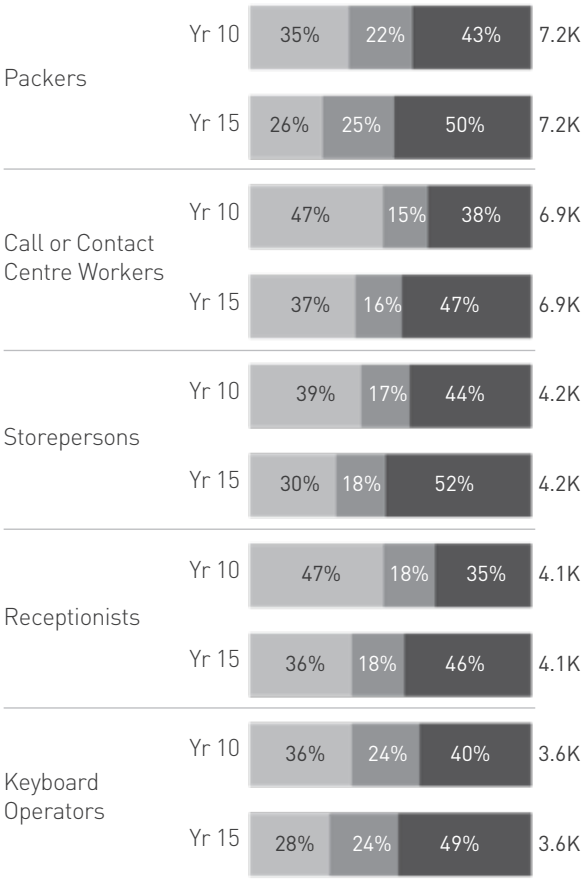
29%
AUGMENTABLE

33%
AUTOMATABLE

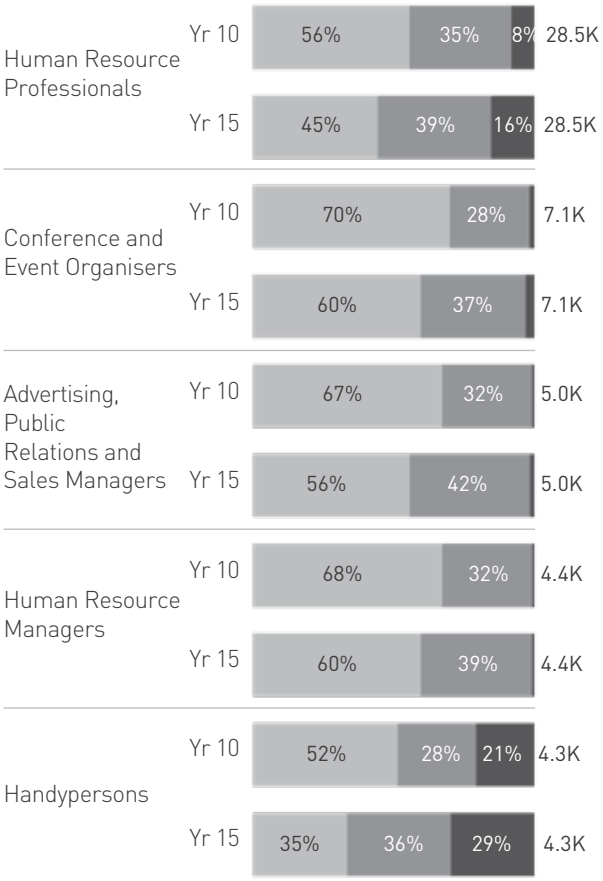
12%
CAPACITY GAIN

Some roles are more easily automated while other roles are more susceptible to augmentation.

JOBS MOST EXPOSED TO AUTOMATION



JOBS MOST EXPOSED TO AUGMENTATION



IMPACT LEGEND

Unimpacted % Augmentable % Automatable %

KEY FINDINGS:

Storepersons are the most automatable role with an estimated 2K people at risk.

Advertising, public relations and sales managers are the most augmentable role with the potential to augment 2K people.

JOB FAMILY ANALYSIS

Of the top 25 roles in this industry, they also have a presence in other industries.

- The top 3 industries for these roles are:
  - Healthcare and Social Assistance: 12.7%
  - Retail and Wholesale Trade: 9.7%
  - Public Administration and Safety: 4.4%

Re-skilling and transition potential exists from high risk Administrative and Support Services jobs to low risk jobs

The following re-skilling pathways are available to transition at risk workers to less automatable target careers. Many at risk professionals have transferrable skills, and need to only focus on skill and knowledge gaps to transition to new, lower risk, occupations.

EXAMPLE PATHWAYS

Current job (Risk at year 15) → Future job (more secure)

Tourism & Travel Adviser

45% AUTOMATABALE
11.7K people at risk
26.2K people in job

- **Advertising Sales Agent** (83.6 pivot score)
- **Content Manager** (76.7 pivot score)
- **Graphic & Web Designer** (73.1 pivot score)

Commercial Cleaner

40% AUTOMATABALE
32.2K people at risk
80.8K people in job

- **Personal Care Consultant** (92.2 pivot score)
- **Barber** (83.4 pivot score)
- **Visual Merchandiser** (74.4 pivot score)

Gardener

32% AUTOMATABALE
8.9K people at risk
28.1K people in job

- **Solar Photovoltaic Installer** (62.1 pivot score)
- **Visual Merchandiser** (59.4 pivot score)
- **Physical Medical Aide** (50.7 pivot score)

DETAILED TRANSITION PATHWAY

JOB

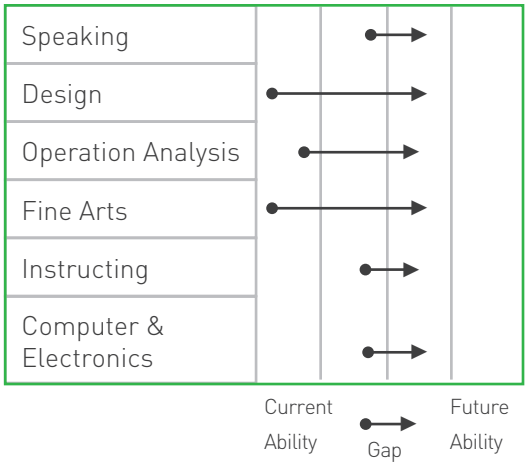
Tourism & Travel Adviser

Automatable 45%
Augmentable 31%

JOB CORRIDOR

- Graphic and Web Designer
- Advertising Sales Agent
- Social Media Specialist
- Content Manager
- Programmatic Trader

KEY SKILL AND KNOWLEDGE GAPS | **ABILITY GAPS**



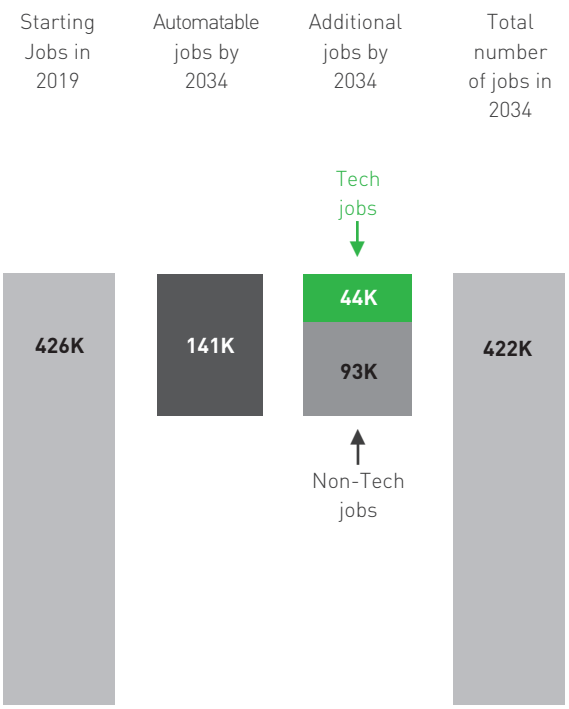
Implementation of emerging technology could lead to the generation of 44K new technology jobs over the next 15 years

Over the next 15 years an additional 137K jobs could be added to the Administrative and Support Services Industry. This comprises of:

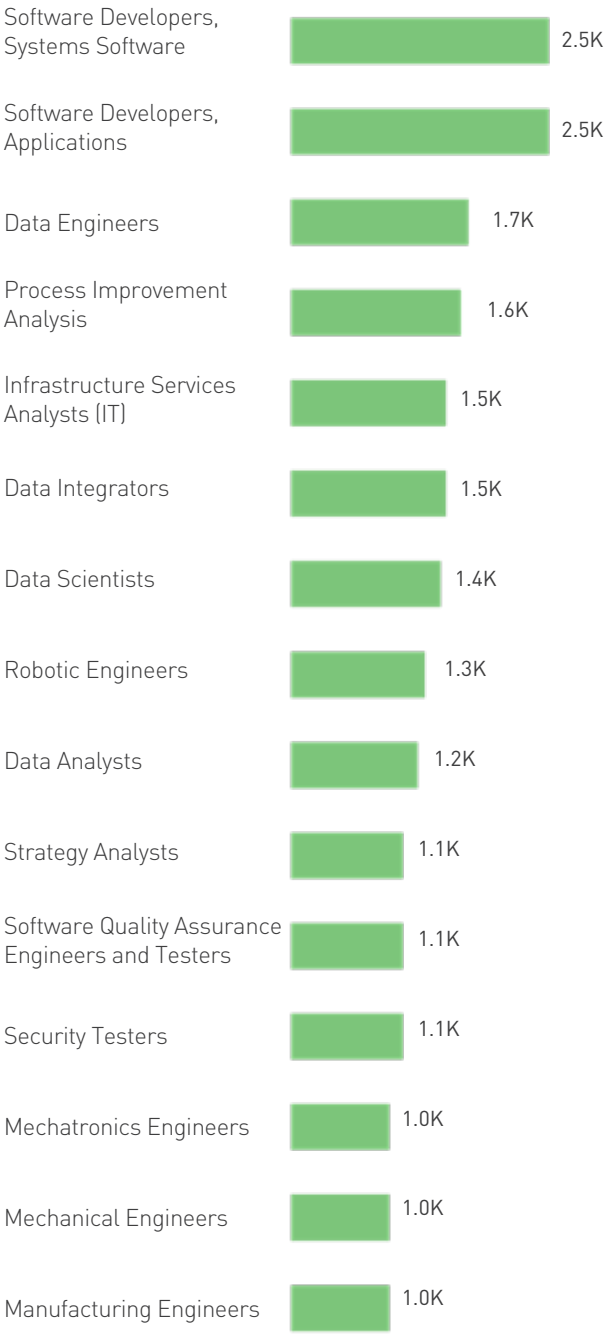
- 32% or 44K technical jobs
- 68% or 93K non-technical jobs

However during this period, 141K roles within the industry could be automated by technology, leading to a net decrease of 1% or 4K roles for the industry.

MODELLED JOB GROWTH



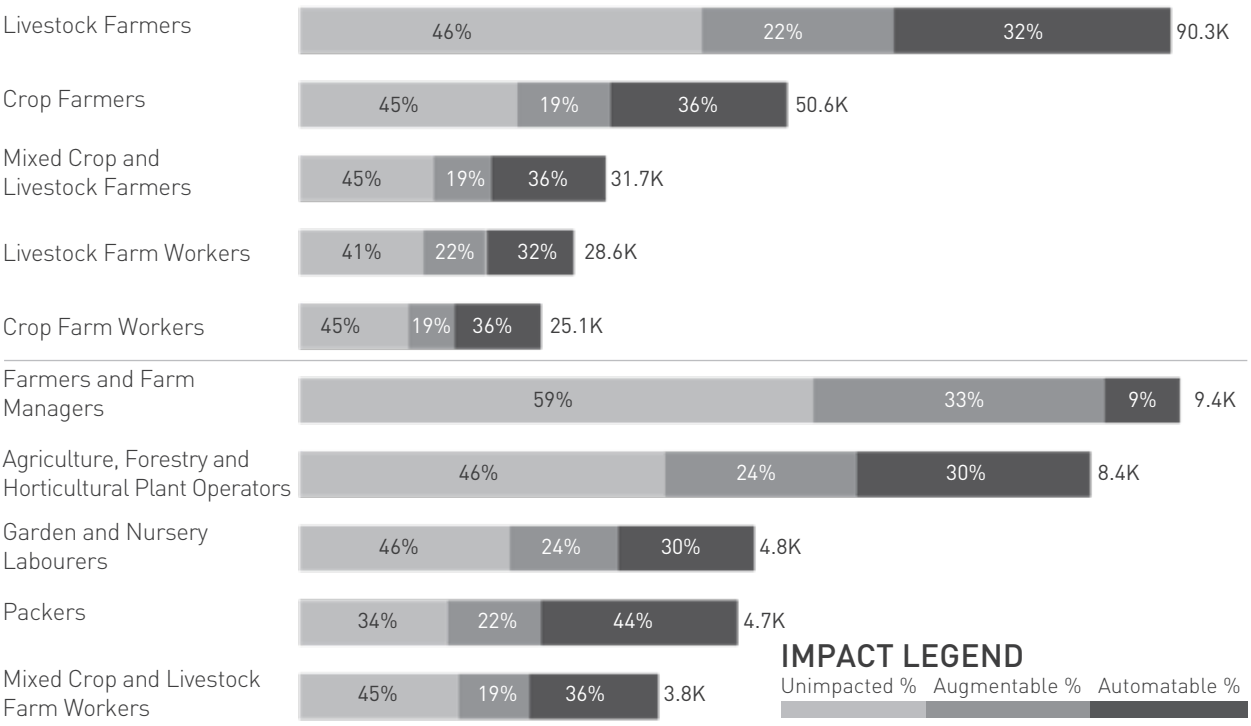
ADDITIONAL TECH JOBS REQUIRED (top 15)



Agriculture, Forestry and Fishing - long term (15 years)

The impact of automation and augmentation differs based on underlying skills and activities for each role.

TECHNOLOGY IMPACT ON 10 MOST COMMON ROLES AT YEAR 15



TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15

KEY FINDINGS:

99K people are at risk of automation over the next 15 years, 71% of which are male. Roles in the Agriculture, Forestry and Fishing industry are more subject to automation rather than augmentation.

PEOPLE IMPACT

28K 71K

99K TOTAL AUTOMATABLE

TECH IMPACT

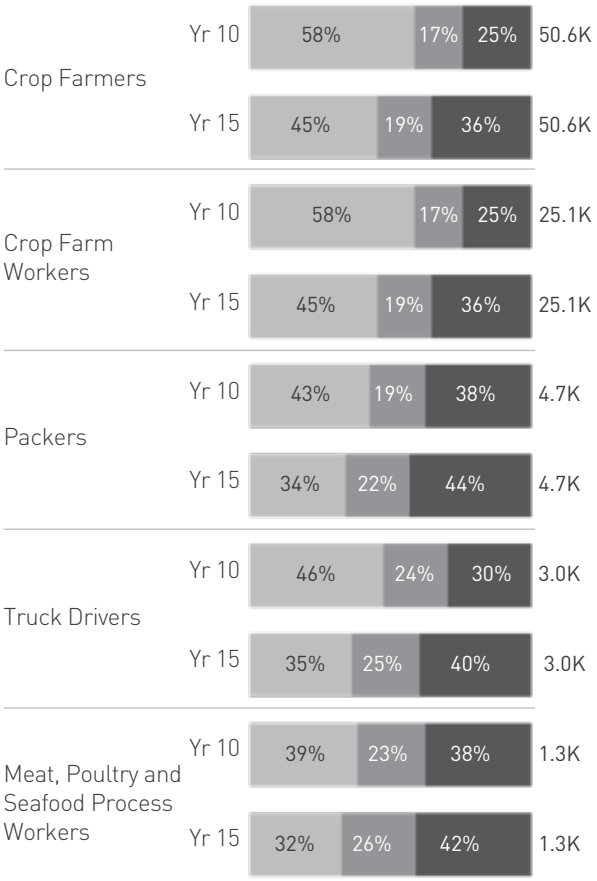
22% AUGMENTABLE

32% AUTOMATABLE

8% CAPACITY GAIN

Some roles are more easily automated while other roles are more susceptible to augmentation.

JOBS MOST EXPOSED TO AUTOMATION



JOBS MOST EXPOSED TO AUGMENTATION

IMPACT LEGEND

Unimpacted % Augmentable % Automatable %

KEY FINDINGS:

Packers are the most automatable role with an estimated 2K people at risk.

Agriculture and forestry scientists are the most augmentable role with the potential to augment 800 people.

JOB FAMILY ANALYSIS

Of the top 25 roles in this industry, they also have a presence in other industries.

- The top 3 industries for these roles are:
  - Transport, Postal and Warehousing: 10.8%
  - Construction: 8.5%
  - Manufacturing: 7.6%

Re-skilling and transition potential exists from high risk Agriculture, Forestry and Fishing jobs to low risk jobs

The following re-skilling pathways are available to transition at risk workers to less automatable target careers. Many at risk professionals have transferrable skills, and need to only focus on skill and knowledge gaps to transition to new, lower risk, occupations.

EXAMPLE PATHWAYS

Current job (Risk at year 15) → Future job (more secure)

Crop Farmer

36% AUTOMATABALE
91K people at risk
25.1K people in job

- **Personal Carers & Assistant** (57.2 pivot score)
- **Barber** (43.4 pivot score)
- **Florist** (37.8 pivot score)

Shearer

32% AUTOMATABALE
1.1K people at risk
3.5K people in job

- **Cook** (83.0 pivot score)
- **Home Health Aide** (75.4 pivot score)
- **Furniture Finisher** (69.0 pivot score)

Agriculture & Horticulture Plant Operators

30% AUTOMATABALE
2.5K people at risk
8.4K people in job

- **Aged and Disabled Carer** (80.3 pivot score)
- **Visual Merchandiser** (70.6 pivot score)
- **Florist** (69.5 pivot score)

DETAILED TRANSITION PATHWAY

JOB

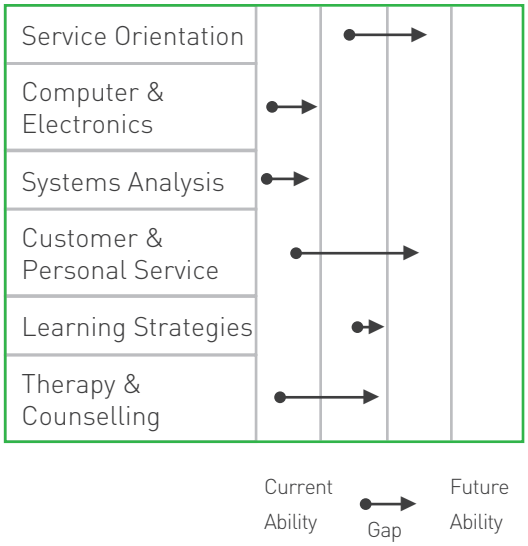
Crop Farmer

Automatable 36%
Augmentable 19%

JOB CORRIDOR

- Personal Carer and Assistant
- Cook
- Child Carer
- Florist
- Visual Merchandiser

KEY SKILL AND KNOWLEDGE GAPS | **ABILITY GAPS**



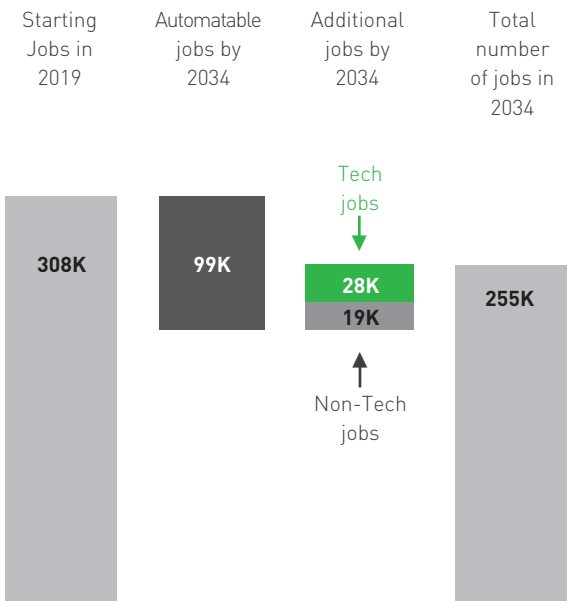
Implementation of emerging technology could lead to the generation of 28K new technology jobs over the next 15 years

Over the next 15 years an additional 47K jobs could be added to the Agriculture, Forestry and Fishing Industry. This comprises of:

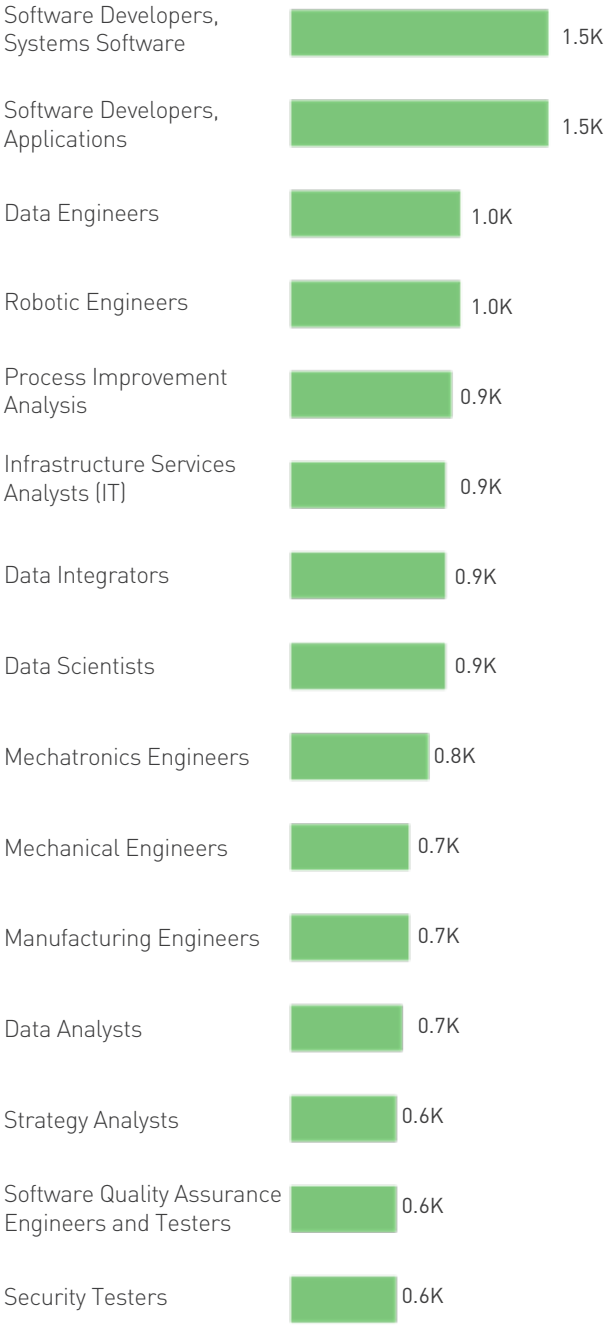
- 60% or 28K technical jobs
- 40% or 19K non-technical jobs

However during this period, 99K roles within the industry could be automated by technology, leading to a net decrease of 17% or 53K roles for the industry.

MODELLED JOB GROWTH



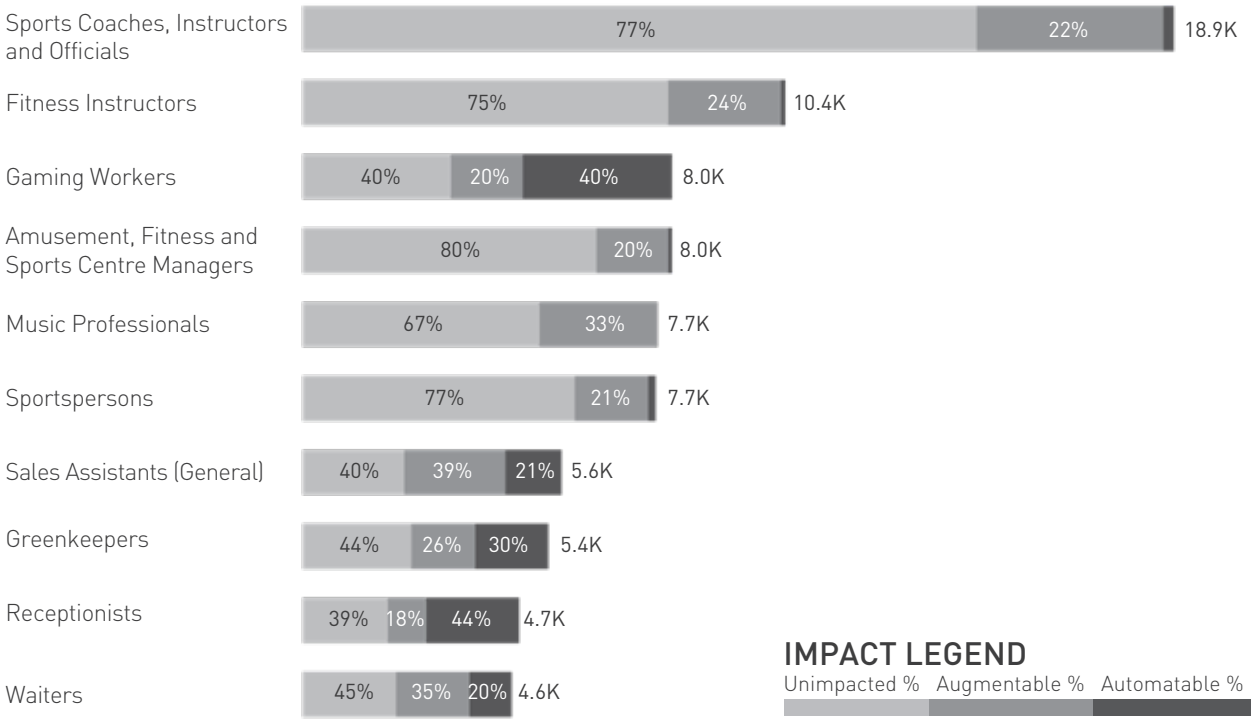
ADDITIONAL TECH JOBS REQUIRED (top 15)



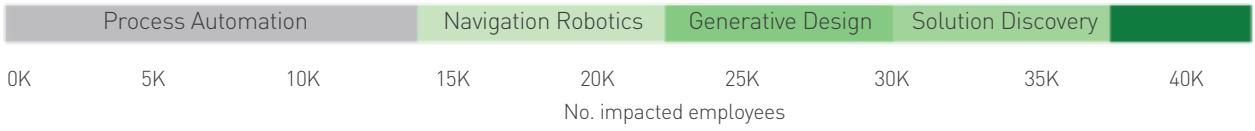
Arts and Recreational Services - long term (15 years)

The impact of automation and augmentation differs based on underlying skills and activities for each role.

TECHNOLOGY IMPACT ON 10 MOST COMMON ROLES AT YEAR 15



TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15



KEY FINDINGS:

24K people are at risk of automation over the next 15 years, 50% of which are female. Roles in the Arts and Recreational Services industry are more subject to augmentation rather than automation.

PEOPLE IMPACT

24K TOTAL AUTOMATABLE

12K 12K

TECH IMPACT

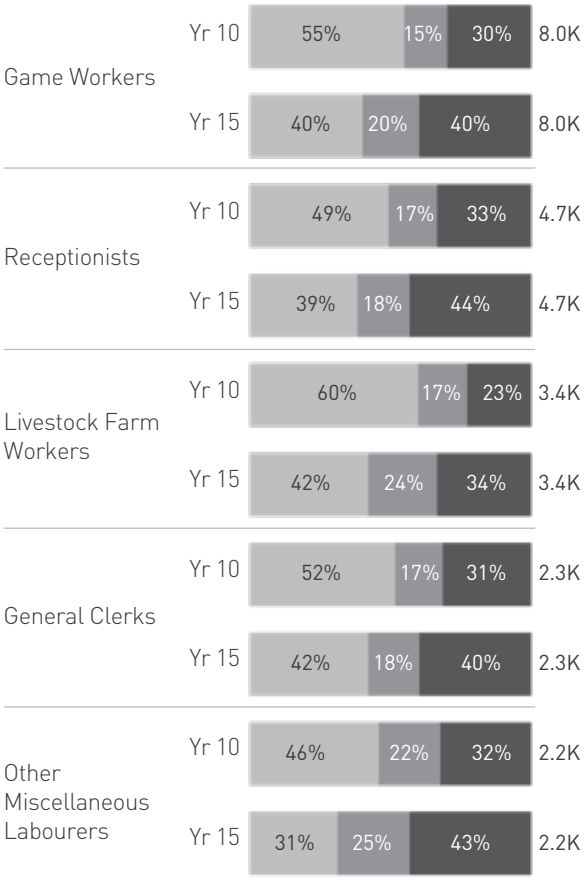
31% AUGMENTABLE

14% AUTOMATABLE

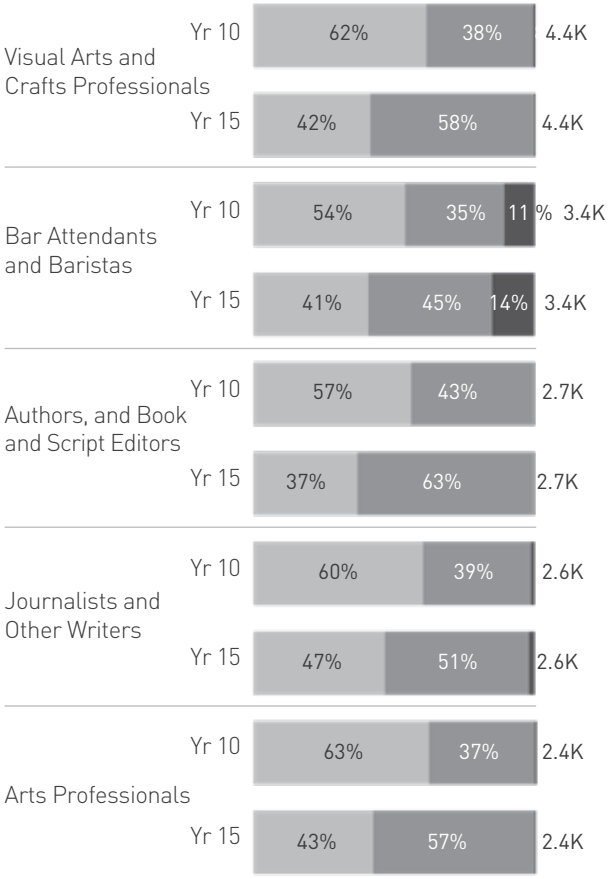
13% CAPACITY GAIN

Some roles are more easily automated while other roles are more susceptible to augmentation.

JOBS MOST EXPOSED TO AUTOMATION



JOBS MOST EXPOSED TO AUGMENTATION



IMPACT LEGEND

Unimpacted % Augmentable % Automatable %

KEY FINDINGS:

Receptionists are the most automatable role with an estimated 2K people at risk.

Authors, and book and script editors are the most augmentable role with the potential to augment 2K people.

JOB FAMILY ANALYSIS

Of the top 25 roles in this industry, they also have a presence in other industries.

- The top 3 industries for these roles are:
  - Retail and Wholesale Trade: 28.9%
  - Accommodation and Food Services: 17.9%
  - Health Care and Social Assistance: 13.7%

Re-skilling and transition potential exists from high risk Arts & Recreational jobs to low risk jobs

The following re-skilling pathways are available to transition at risk workers to less automatable target careers. Many at risk professionals have transferrable skills, and need to only focus on skill and knowledge gaps to transition to new, lower risk, occupations.

EXAMPLE PATHWAYS

Current job (Risk at year 15) → Future job (more secure)

Betting Clerk

42% AUTOMATABALE
0.8K people at risk
1.8K people in job

- **Bar Attendant & Barista** (89.4 pivot score)
- **Public Address System** (75.5 pivot score)
- **Sales Representative** (71.3 pivot score)

Gaming Worker

40% AUTOMATABALE
3.2K people at risk
8.0K people in job

- **Home Health Aide** (92.6 pivot score)
- **Visual Merchandiser** (77.5 pivot score)
- **Gaming Supervisor** (62.7 pivot score)

Vending Machine Attendant

31% AUTOMATABALE
0.2K people at risk
0.7K people in job

- **Camera Operators** (71.3 pivot score)
- **Medical Technician** (60.9 pivot score)
- **Sound Engineering Technician** (52.1 pivot score)

DETAILED TRANSITION PATHWAY

JOB

Betting Clerk

Automatable 42%
Augmentable 21%

JOB CORRIDOR

- Sales Representative
- Barber
- Visual Merchandiser
- Bar Attendant and Barista
- Public Address System and Other Announcer

KEY SKILL AND KNOWLEDGE GAPS	ABILITY GAPS
Persuasion	
Customer Personal Service	
Service Orientation	
Sales & Marketing	
Negotiation	
Clerical	

Current Ability → Gap → Future Ability

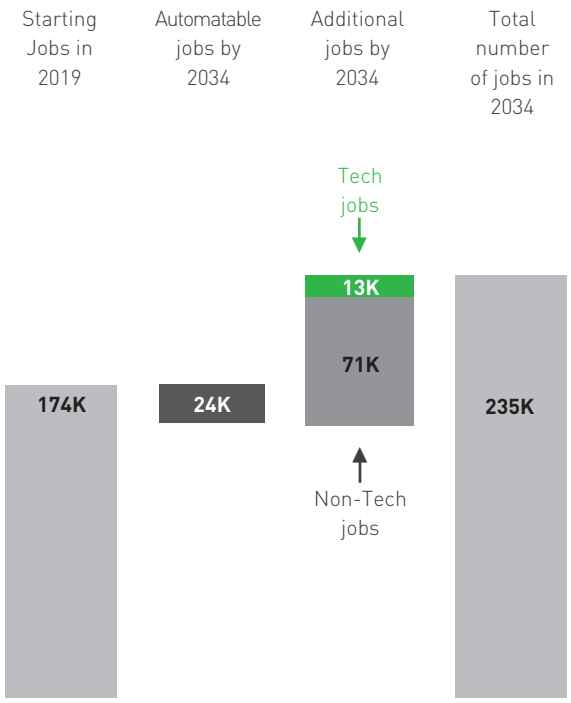
Implementation of emerging technology could lead to the generation of 13K new technology jobs over the next 15 years

Over the next 15 years an additional 84K jobs could be added to the Arts and Recreational Industry. This comprises of:

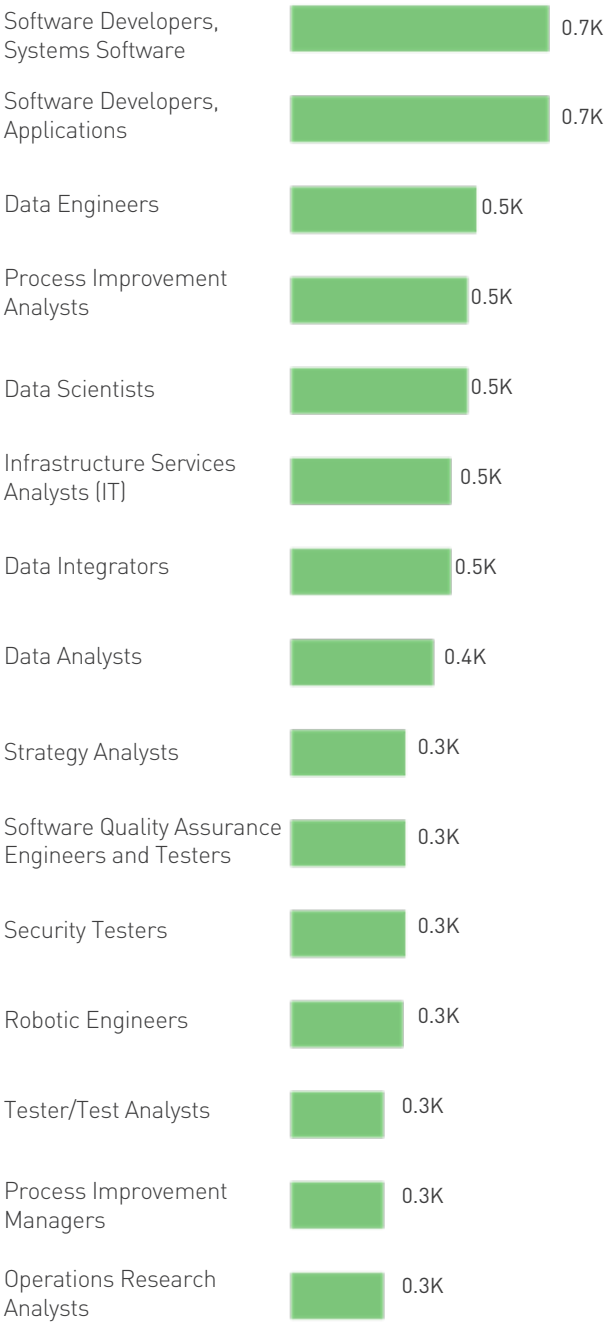
- 15% or 13K technical jobs
- 85% or 71K non-technical jobs

However during this period, 24K roles within the industry could be automated by technology, leading to a net increase of 34% or 61K roles for the industry.

MODELLED JOB GROWTH



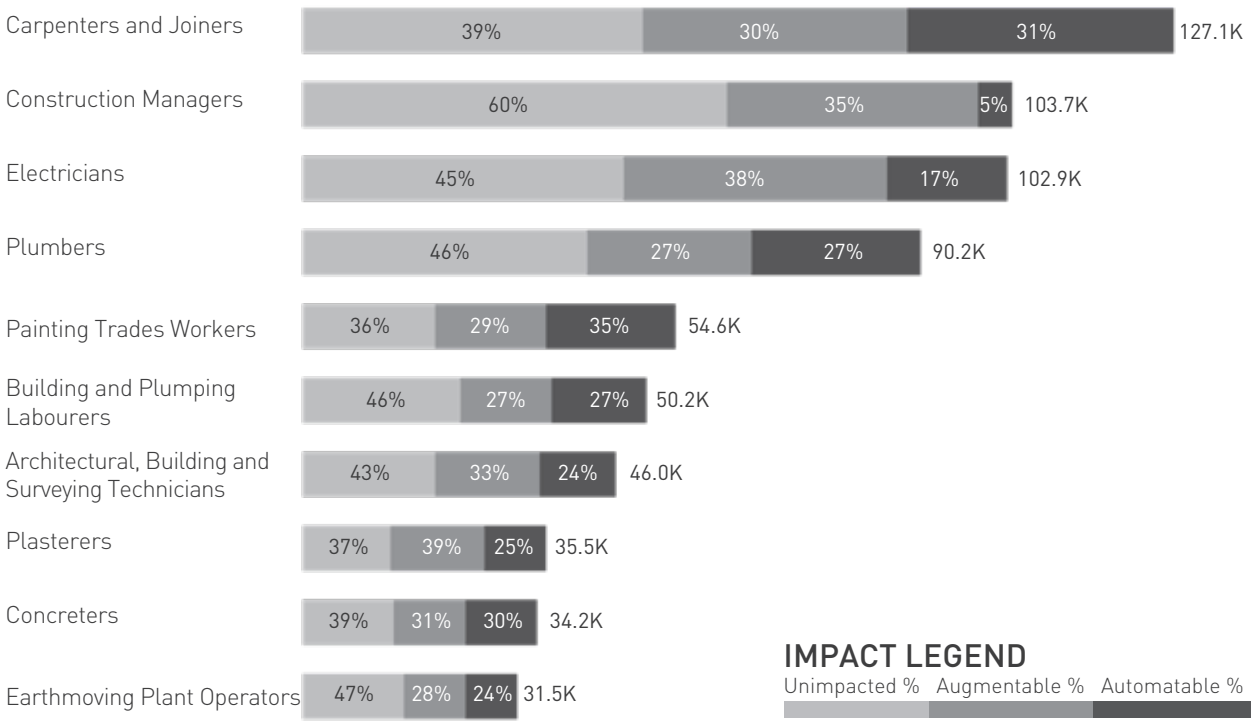
ADDITIONAL TECH JOBS REQUIRED (top 15)



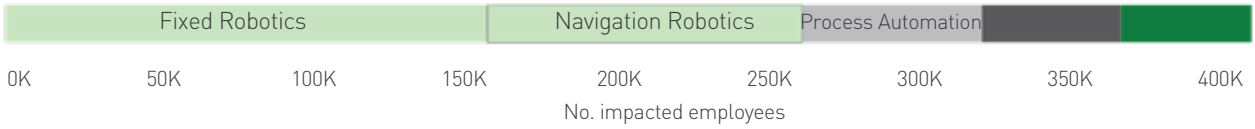
Construction - long term (15 years)

The impact of automation and augmentation differs based on underlying skills and activities for each role.

TECHNOLOGY IMPACT ON 10 MOST COMMON ROLES AT YEAR 15



TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15



KEY FINDINGS:

290K people are at risk of automation over the next 15 years, 87% of which are male.

Roles in the Construction industry are more subject to augmentation rather than automation.

PEOPLE IMPACT

290K TOTAL AUTOMATABLE

33K 257K

TECH IMPACT

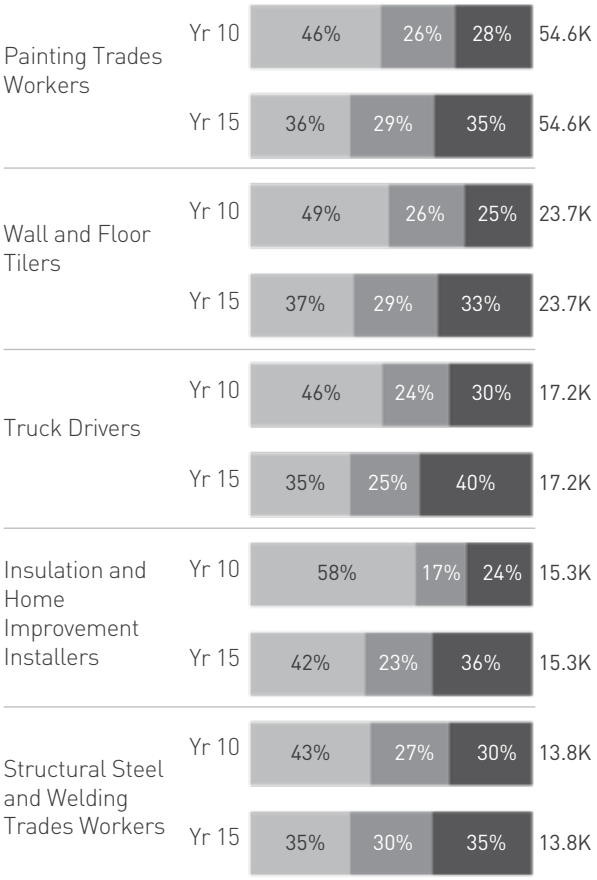
30% AUGMENTABLE

25% AUTOMATABLE

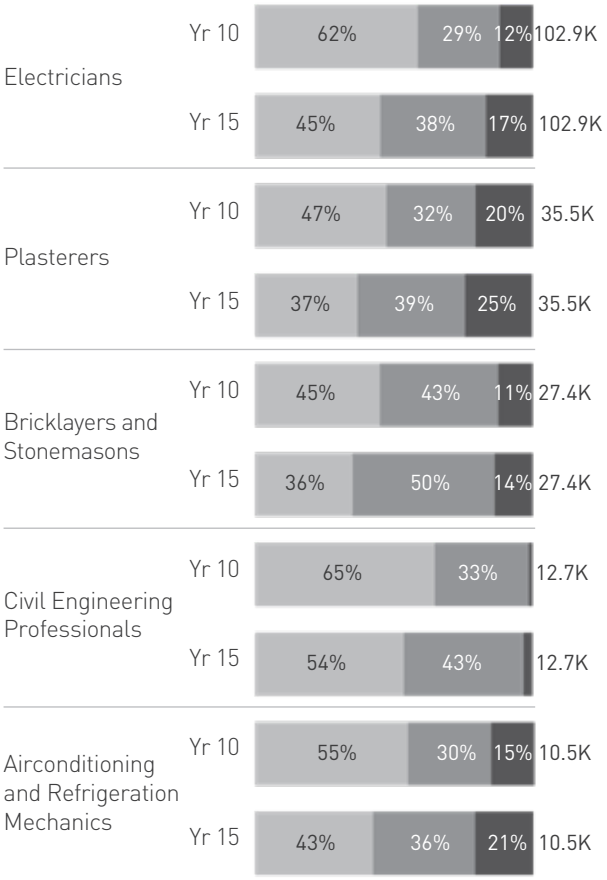
13% CAPACITY GAIN

Some roles are more easily automated while other roles are more susceptible to augmentation.

JOBS MOST EXPOSED TO AUTOMATION



JOBS MOST EXPOSED TO AUGMENTATION



IMPACT LEGEND

Unimpacted % Augmentable % Automatable %

KEY FINDINGS:

Truck drivers are the most automatable role with an estimated 7K people at risk.

Bricklayers and stonemasons are the most augmentable role with the potential to augment 14K people.

JOB FAMILY ANALYSIS

Of the top 25 roles in this industry, they also have a presence in other industries.

- The top 3 industries for these roles are:
  - Public Administration and Safety: 7.3%
  - Transport, Postal and Warehousing: 6.9%
  - Professional, Scientific and Technical Services: 6.3%

Re-skilling and transition potential exists from high risk Construction jobs to low risk jobs

The following re-skilling pathways are available to transition at risk workers to less automatable target careers. Many at risk professionals have transferrable skills, and need to only focus on skill and knowledge gaps to transition to new, lower risk, occupations.

EXAMPLE PATHWAYS

Current job (Risk at year 15) → Future job (more secure)

Painting Trades Worker

35% AUTOMATABALE
19.1K people at risk
54.6K people in job

- **Visual Merchandiser** (71.1 pivot score)
- **Visual Arts & Crafts Professional** (64.9 pivot score)
- **Solar Photovoltaic Installer** (45.7 pivot score)

Insulation & Home Improvement Installer

36% AUTOMATABALE
5.5K people at risk
15.3K people in job

- **Bricklayer & Stonemason** (84.5 pivot score)
- **Terrazzo Worker & Finisher** (62.4 pivot score)
- **Upholsterer** (60.5 pivot score)

Structural Steel & Welding Trades Worker

35% AUTOMATABALE
4.9K people at risk
13.8K people in job

- **Solar Photovoltaic Installer** (96.9 pivot score)
- **Visual Arts & Crafts Professional** (62.2 pivot score)
- **Maintenance Superintendent** (60.9 pivot score)

DETAILED TRANSITION PATHWAY

JOB

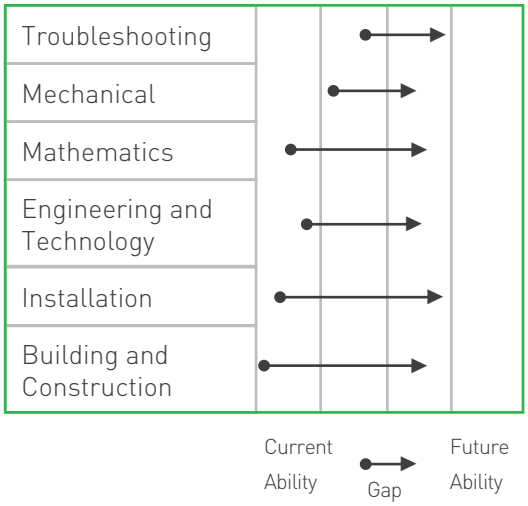
Painting Trades Worker

Automatable 35%
Augmentable 29%

JOB CORRIDOR

- Visual Arts and Craft Professional
- Visual Merchandiser
- Camera Operator
- Solar Photovoltaic Installer
- Carer and Aide

KEY SKILL AND KNOWLEDGE GAPS | **ABILITY GAPS**



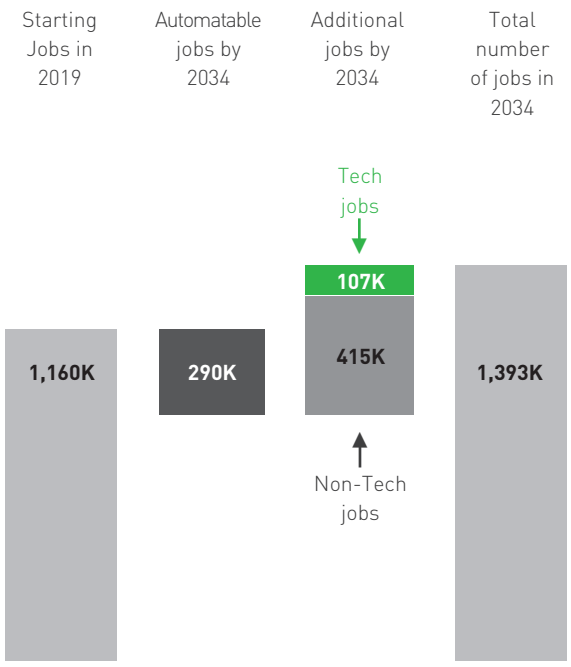
Implementation of emerging technology could lead to the generation of 107K new technology jobs over the next 15 years

Over the next 15 years an additional 522K jobs could be added to the Construction Industry. This comprises of:

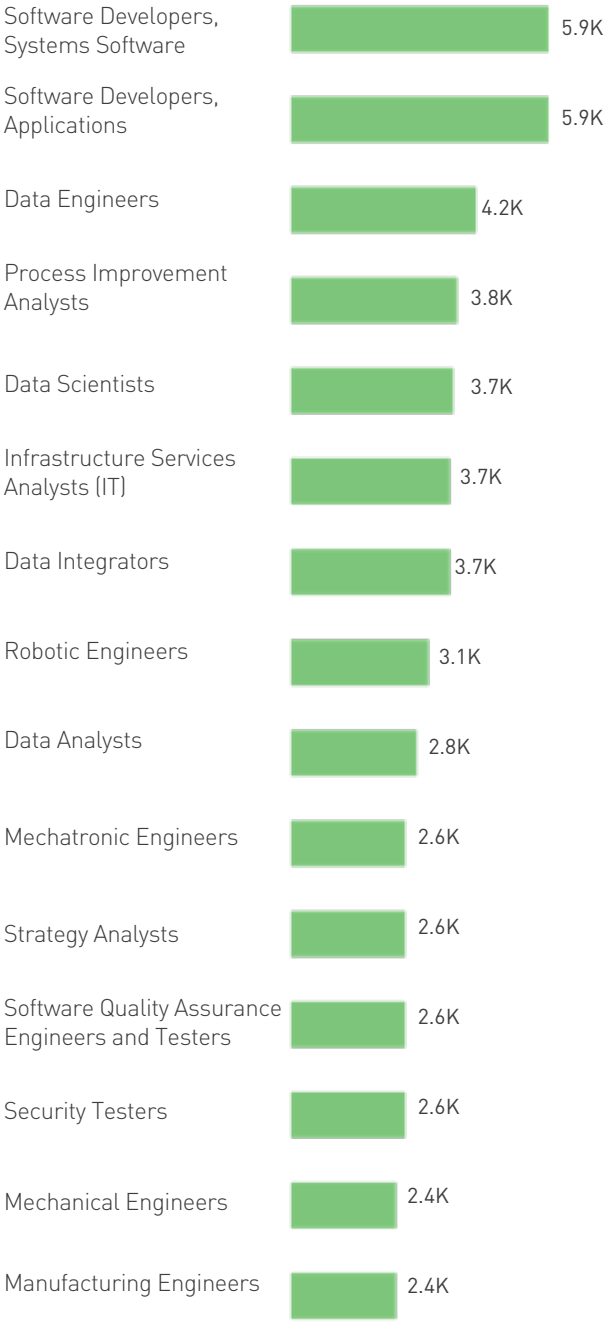
- 21% or 107K technical jobs
- 79% or 415K non-technical jobs

However during this period, 290K roles within the industry could be automated by technology, leading to a net increase of 20% or 233K roles for the industry.

MODELLED JOB GROWTH



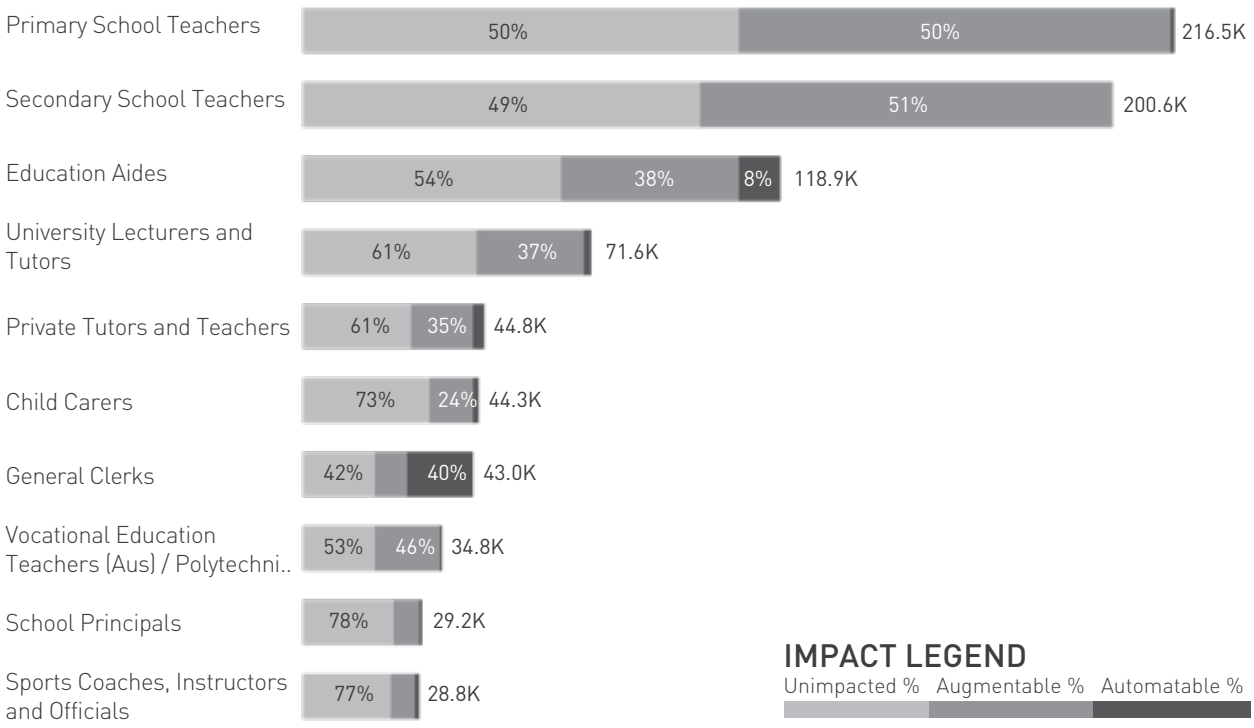
ADDITIONAL TECH JOBS REQUIRED (top 15)



Education and Training - long term (15 years)

The impact of automation and augmentation differs based on underlying skills and activities for each role.

TECHNOLOGY IMPACT ON 10 MOST COMMON ROLES AT YEAR 15



TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15

KEY FINDINGS:

83K people are at risk of automation over the next 15 years, 78% of which are female.

Roles in the Education and Training industry are more subject to augmentation rather than automation.

PEOPLE IMPACT

65K 18K

83K TOTAL AUTOMATABLE

TECH IMPACT

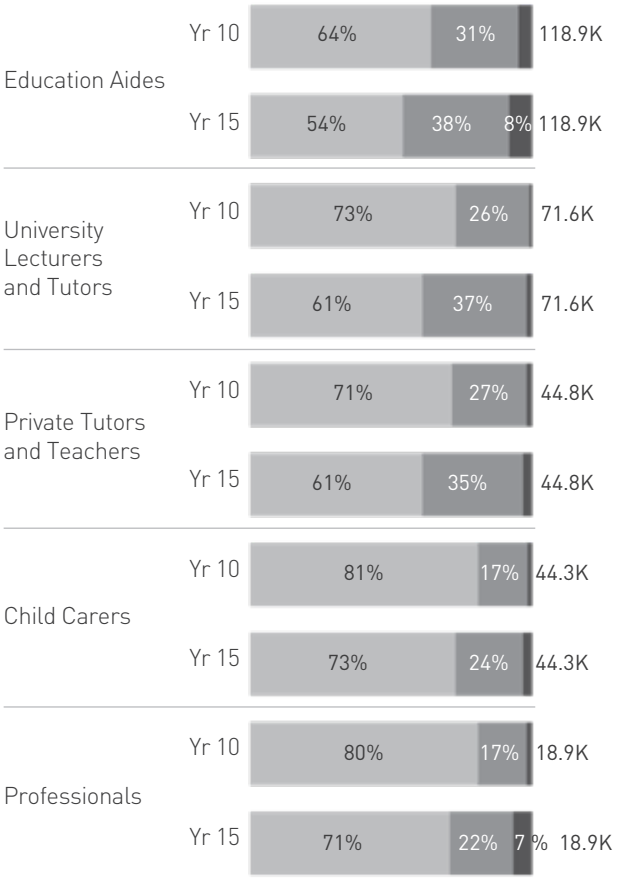
39% AUGMENTABLE

7% AUTOMATABLE

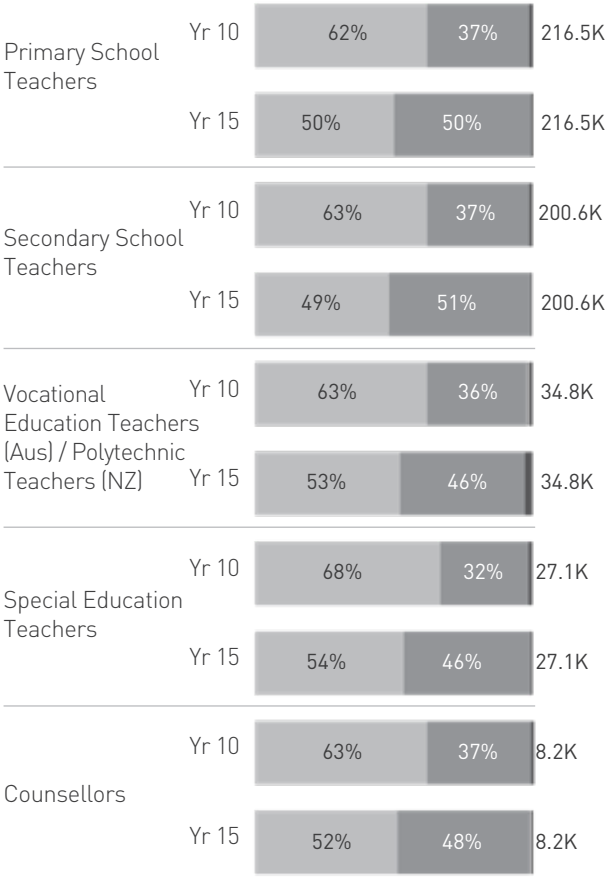
17% CAPACITY GAIN

Some roles are more easily automated while other roles are more susceptible to augmentation.

JOBS MOST EXPOSED TO AUTOMATION



JOBS MOST EXPOSED TO AUGMENTATION



IMPACT LEGEND

Unimpacted % Augmentable % Automatable %

KEY FINDINGS:

Education Aides are the most automatable role with an estimated 10K people at risk. Secondary school teachers are the most augmentable role with the potential to augment 102K people.

JOB FAMILY ANALYSIS

Of the top 25 roles in this industry, they also have a presence in other industries.

- The top 3 industries for these roles are:
  - Healthcare and Social Assistance: 16.3%
  - Public Administration and Safety : 6.9%
  - Administrative and Support Services: 5.0%

Re-skilling and transition potential exists from high risk Education and Training jobs to low risk jobs

The following re-skilling pathways are available to transition at risk workers to less automatable target careers. Many at risk professionals have transferrable skills, and need to only focus on skill and knowledge gaps to transition to new, lower risk, occupations.

EXAMPLE PATHWAYS

Current job (Risk at year 15) → Future job (more secure)

Gallery, Library & Museum Technician

31% AUTOMATABALE
1.2K people at risk
4K people in job

- **Film & Video Editor** (66.5 pivot score)
- **Cyber Security Analyst** (61.9 pivot score)
- **ICT Security Consultant** (59.0 pivot score)

Caretakers

28% AUTOMATABALE
1.1K people at risk
3.8K people in job

- **Wind Turbine Service Technician** (83.8 pivot score)
- **Maintenance Supervisor** (74.4 pivot score)
- **Electrician** (67.8 pivot score)

Science Technician

28% AUTOMATABALE
1.1K people at risk
3.8K people in job

- **Zoologist & Wildlife Biologist** (92.2 pivot score)
- **Water Resource Specialist** (85.1 pivot score)
- **Security Management Specialist** (78.1 pivot score)

DETAILED TRANSITION PATHWAY

JOB

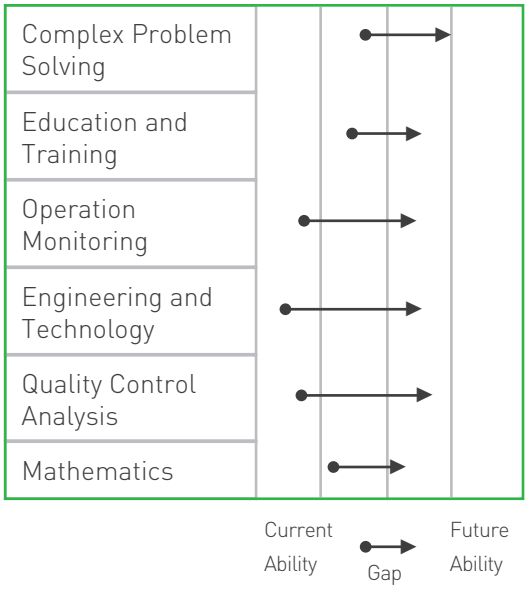
Gallery, Library & Museum Technician

Automatable 38%
Augmentable 27%

JOB CORRIDOR

- Cyber Security Analyst
- ICT Security Consultant
- Film and Video Editor
- Visual Merchandiser
- Copy Writer

KEY SKILL AND KNOWLEDGE GAPS | **ABILITY GAPS**



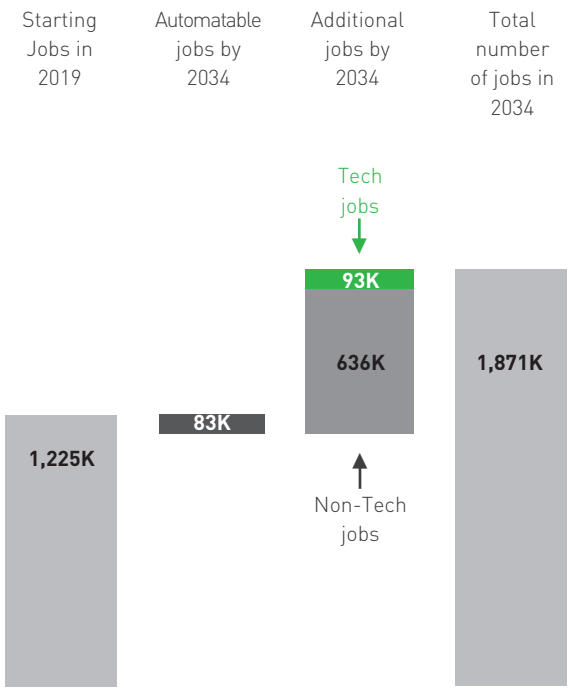
Implementation of emerging technology could lead to the generation of 93K new technology jobs over the next 15 years

Over the next 15 years an additional 729K jobs could be added to the Education and Training Industry. This comprises of:

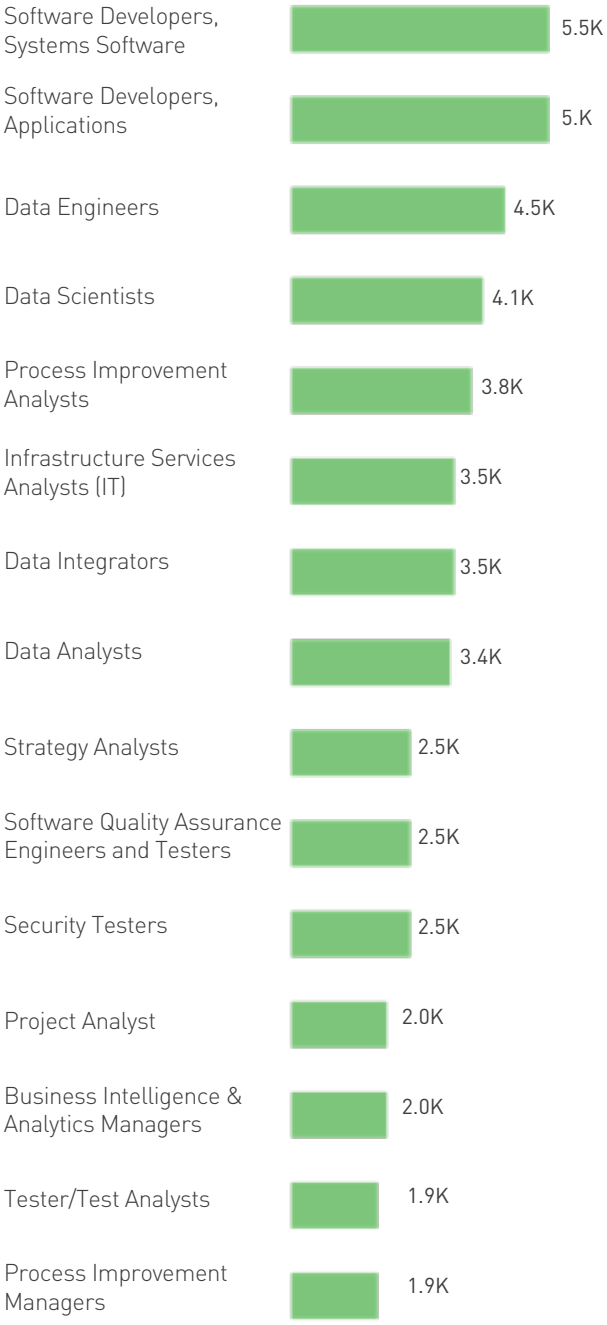
- 13% or 93K technical jobs
- 87% or 636K non-technical jobs

However during this period, 83K roles within the industry could be automated by technology, leading to a net increase of 53% or 646K roles for the industry.

MODELLED JOB GROWTH



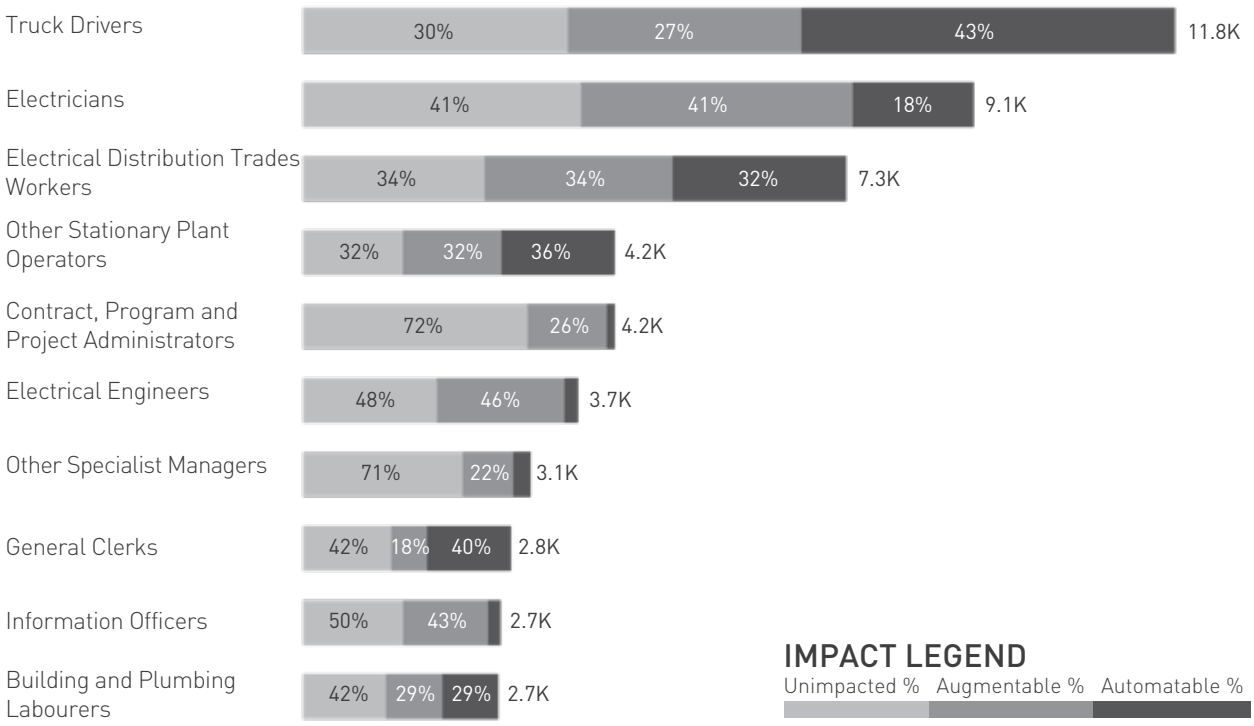
ADDITIONAL TECH JOBS REQUIRED (top 15)



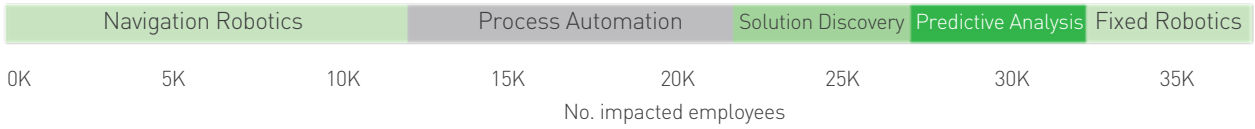
Electricity, Gas, Water and Waste Services - long term (15 years)

The impact of automation and augmentation differs based on underlying skills and activities for each role.

TECHNOLOGY IMPACT ON 10 MOST COMMON ROLES AT YEAR 15



TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15



KEY FINDINGS:

26K people are at risk of automation over the next 15 years, 81% of which are male.
Roles in the Electricity, Gas, Water and Waste Services industry are more subject to augmentation rather than automation.

PEOPLE IMPACT

26K TOTAL AUTOMATABLE

5K 21K

TECH IMPACT

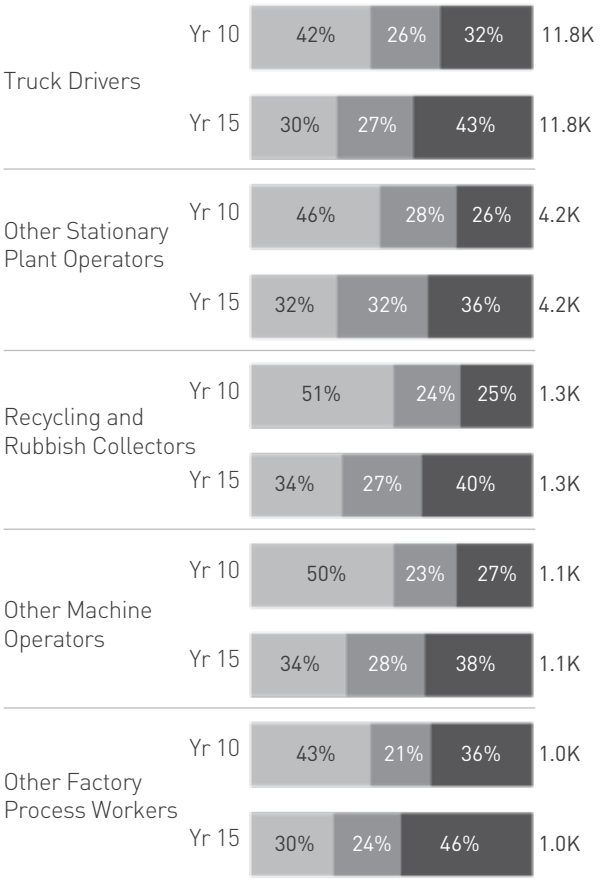
33% AUGMENTABLE

25% AUTOMATABLE

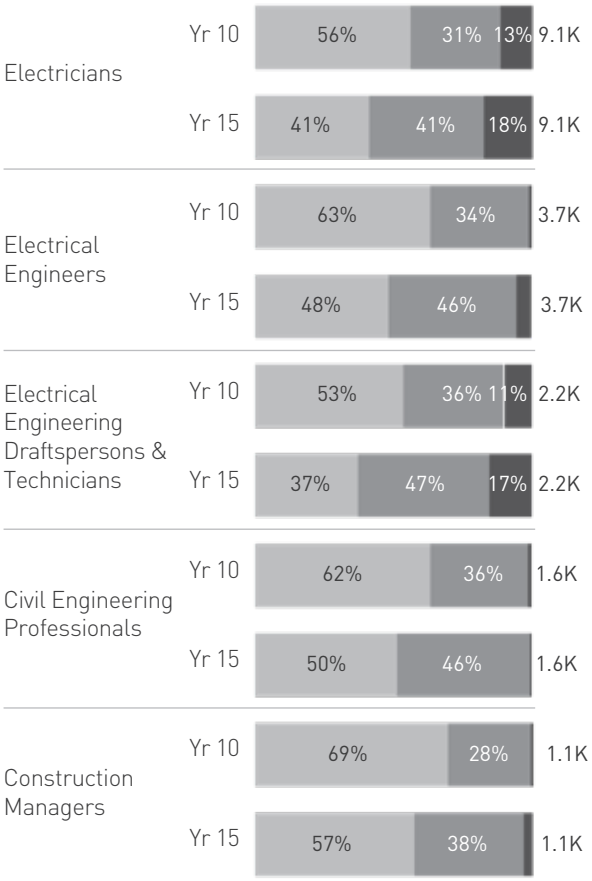
14% CAPACITY GAIN

Some roles are more easily automated while other roles are more susceptible to augmentation.

JOBS MOST EXPOSED TO AUTOMATION



JOBS MOST EXPOSED TO AUGMENTATION



IMPACT LEGEND

Unimpacted % Augmentable % Automatable %

KEY FINDINGS:

Other factory process workers are the most automatable role with an estimated 500 people at risk. Electrical Engineering Draftspersons and Technicians are the most augmentable role with the potential to augment 1K people.

JOB FAMILY ANALYSIS

Of the top 25 roles in this industry, they also have a presence in other industries.

- The top 3 industries for these roles are:
  - Construction: 23.1%
  - Professional, Scientific and Technical Services: 13.3%
  - Transport, Postal and Warehousing: 8.0%

Re-skilling and transition potential exists from high risk Electricity, Gas & Water Service jobs to low risk jobs

The following re-skilling pathways are available to transition at risk workers to less automatable target careers. Many at risk professionals have transferrable skills, and need to only focus on skill and knowledge gaps to transition to new, lower risk, occupations.

EXAMPLE PATHWAYS

Current job (Risk at year 15) → Future job (more secure)

Electrical Distribution Trades Worker

32% AUTOMATABALE
2.4K people at risk
7.3K people in job

- **Info. & Organisation Professional** (87.5 pivot score)
- **Solar Energy Systems Engineer** (85.3 pivot score)
- **ICT Security Consultant** (81.5 pivot score)

Other Stationary Plant Operators

36% AUTOMATABALE
1.5K people at risk
4.2K people in job

- **Anesthesiologist Assistant** (63.2 pivot score)
- **Museum Technician & Conservator** (55.8 pivot score)
- **Electrician** (51.5 pivot score)

Building & Plumbing Labourer

29% AUTOMATABALE
0.8K people at risk
2.7K people in job

- **Solar Photovoltaic Installer** (94.9 pivot score)
- **Maintenance Manager** (85.1 pivot score)
- **Wind Turbine Service Technician** (83.7 pivot score)

DETAILED TRANSITION PATHWAY

JOB

Electrical Distribution Trades Worker

Automatable 36%
Augmentable 32%

JOB CORRIDOR

- Information & Organisation Professional
- Solar Energy Systems Engineer
- Industrial, Mechanical and Production Engineer
- ICT Security Consultant
- ICT and Telecommunications Technicians

KEY SKILL AND KNOWLEDGE GAPS	ABILITY GAPS
Active Learning	
Computers and Electronics	
Complex Problem Solving	
English Language	
Systems Evaluation	
Personnel and Human Resources	

Current Ability → Gap → Future Ability

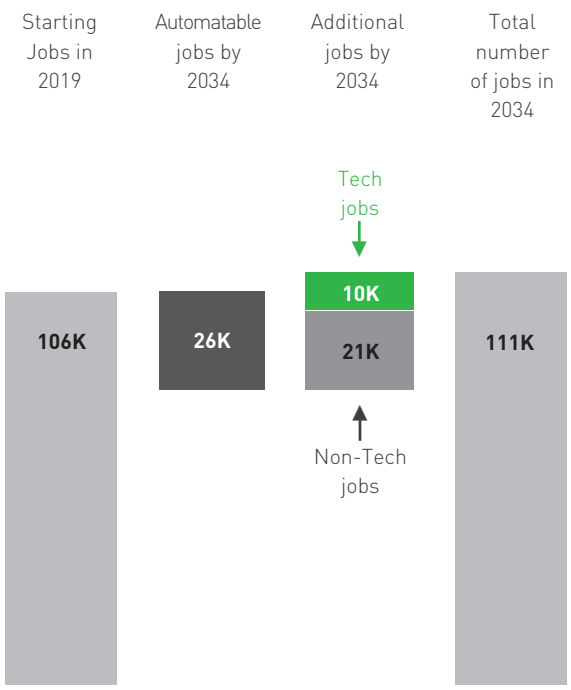
Implementation of emerging technology could lead to the generation of 10K new technology jobs over the next 15 years

Over the next 15 years an additional 31K jobs could be added to the Electricity, Gas, Water and Waste Services. This comprises of:

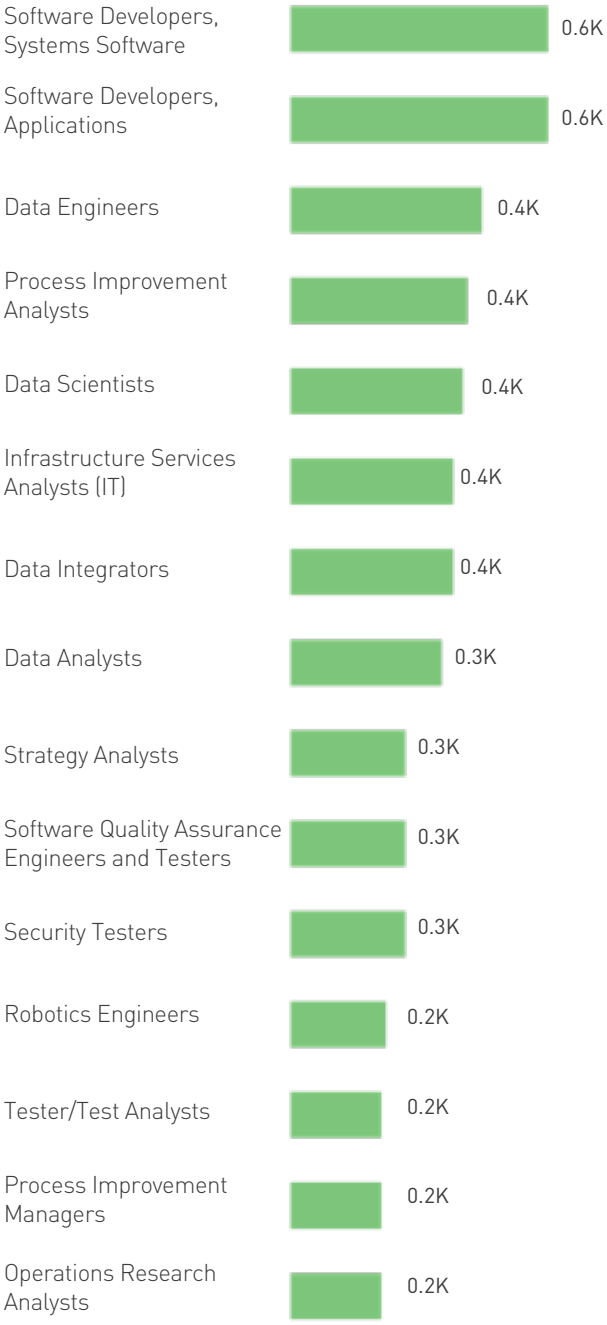
- 33% or 10K technical jobs
- 67% or 21K non-technical jobs

However during this period, 26K roles within the industry could be automated by technology, leading to a net increase of 5% or 5K roles for the industry.

MODELLED JOB GROWTH



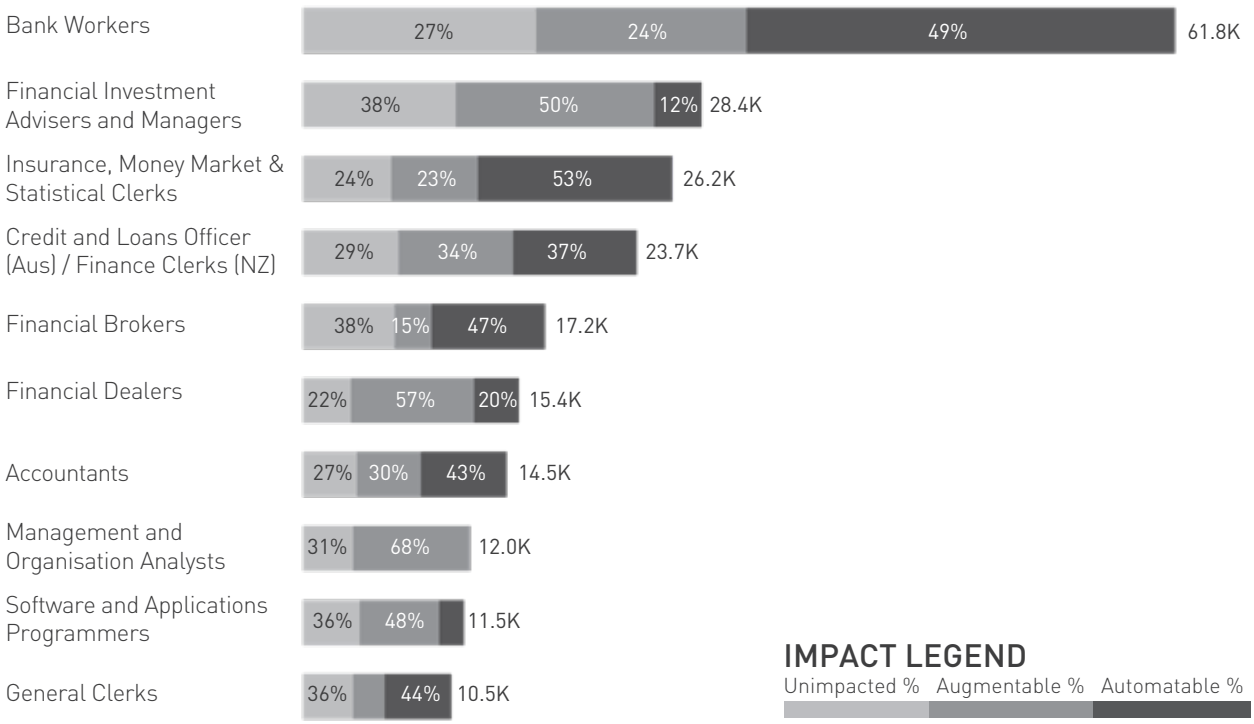
ADDITIONAL TECH JOBS REQUIRED (top 15)



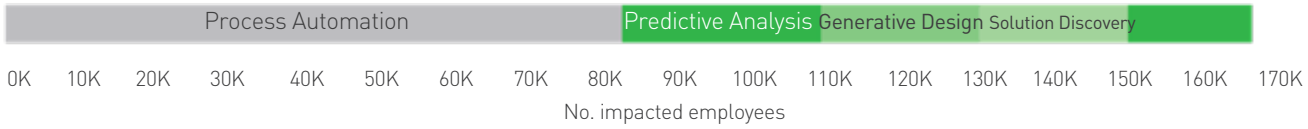
Financial and Insurance - long term (15 years)

The impact of automation and augmentation differs based on underlying skills and activities for each role.

TECHNOLOGY IMPACT ON 10 MOST COMMON ROLES AT YEAR 15



TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15



0K 10K 20K 30K 40K 50K 60K 70K 80K 90K 100K 110K 120K 130K 140K 150K 160K 170K

No. impacted employees

KEY FINDINGS:

108K people are at risk of automation over the next 15 years, 58% of which are female. Roles in the Financial and Insurance industry are more subject to augmentation rather than automation.

PEOPLE IMPACT

108K TOTAL AUTOMATABLE

63K 45K

TECH IMPACT

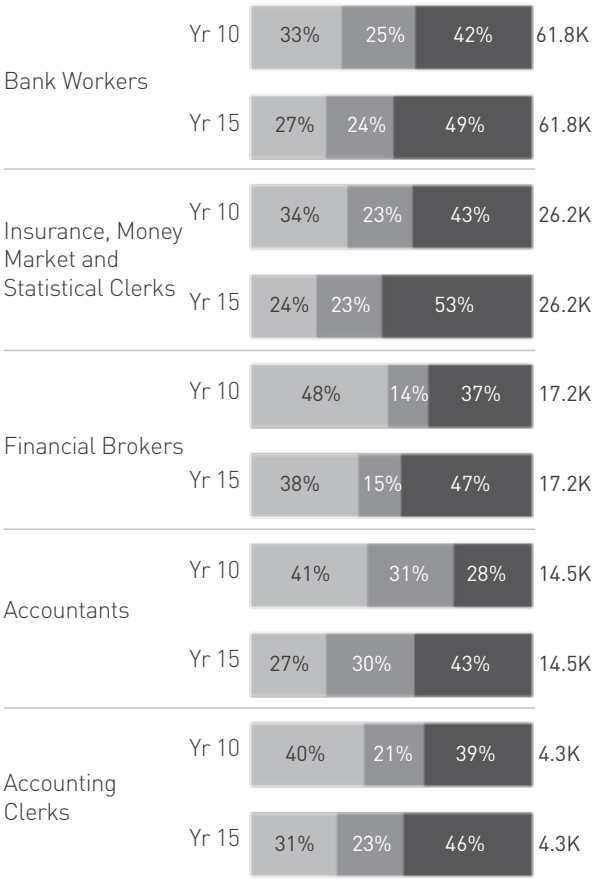
34% AUGMENTABLE

31% AUTOMATABLE

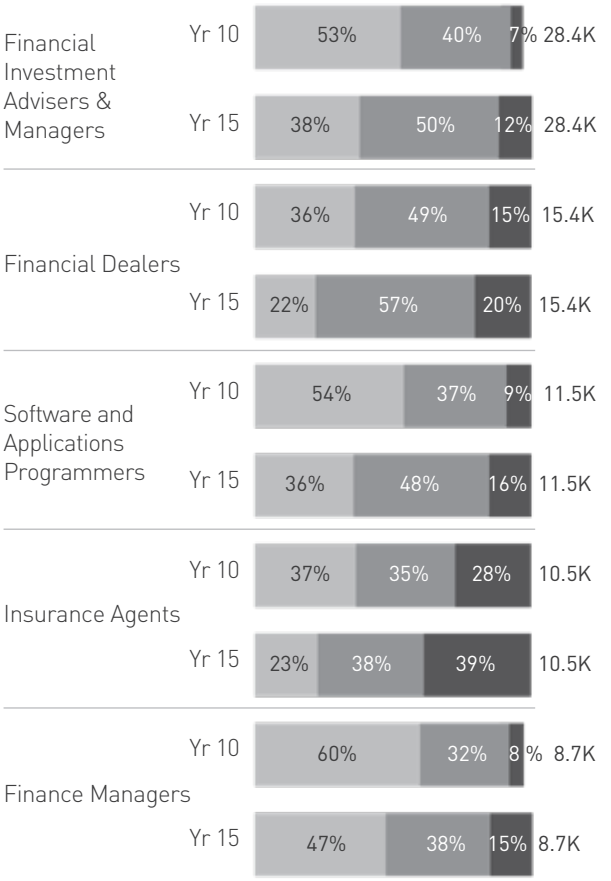
16% CAPACITY GAIN

Some roles are more easily automated while other roles are more susceptible to augmentation.

JOBS MOST EXPOSED TO AUTOMATION



JOBS MOST EXPOSED TO AUGMENTATION



IMPACT LEGEND

Unimpacted % Augmentable % Automatable %

KEY FINDINGS:

Insurance, money market and statistical clerks are the most automatable role with an estimated 14K people at risk. Financial Dealers are the most augmentable role with the potential to augment 9K people.

JOB FAMILY ANALYSIS

Of the top 25 roles in this industry, they also have a presence in other industries.

- The top 3 industries for these roles are:
  - Professional, Scientific and Technical Services: 21.5%
  - Public Administration and Safety: 12.9%
  - Retail and Wholesale Trade: 7.2%

Re-skilling and transition potential exists from high risk Financial and Insurance Service jobs to low risk jobs

The following re-skilling pathways are available to transition at risk workers to less automatable target careers. Many at risk professionals have transferrable skills, and need to only focus on skill and knowledge gaps to transition to new, lower risk, occupations.

EXAMPLE PATHWAYS

Current job (Risk at year 15) → Future job (more secure)

Insurance, Money Market & Statistical Clerks

53% AUTOMATABALE
13.9K people at risk
26.2K people in job

- **Cyber Security Analyst** (55.6 pivot score)
- **Infrastructure Services Analyst (IT)** (52.3 pivot score)
- **ICT Sales Professional** (46.3 pivot score)

Bank Workers

49% AUTOMATABALE
30.4K people at risk
61.8K people in job

- **Beauty Therapist** (90.0 pivot score)
- **Visual Merchandiser** (79.3 pivot score)
- **Cyber Security Analyst** (67.8 pivot score)

Financial Broker

47% AUTOMATABALE
8.1K people at risk
17.2K people in job

- **Info. & Organisation Professional** (70.3 pivot score)
- **Private Tutor and Teacher** (67.1 pivot score)
- **Financial Dealer** (66.7 pivot score)

DETAILED TRANSITION PATHWAY

JOB

Insurance Clerks

Automatable 53%
Augmentable 23%

JOB CORRIDOR

- Infrastructure Services Analyst (IT)
- Cyber Security Analyst
- ICT Sales Professional
- Change Analyst
- Speech-Language Pathology Assistant

KEY SKILL AND KNOWLEDGE GAPS	ABILITY GAPS
Computer and Electronics	
Critical Thinking	
Education and Training	
Judgement and Decision Making	
Public Safety and Security	
Management of Personnel Resources	

Current Ability → Gap → Future Ability

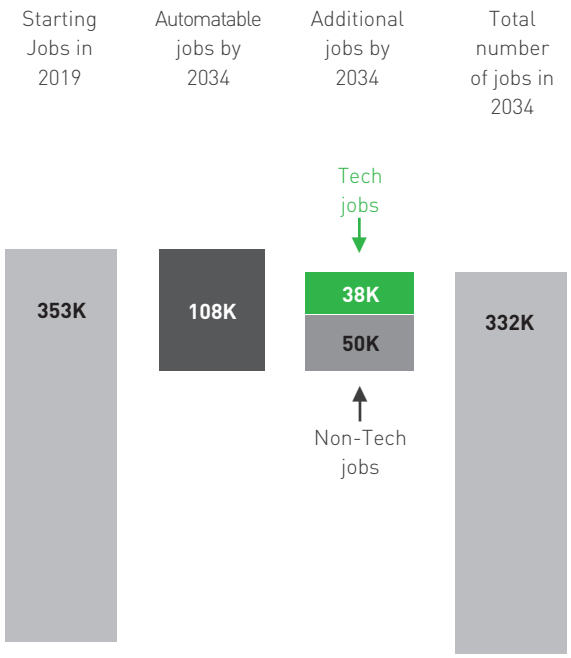
Implementation of emerging technology could lead to the generation of 38K new technology jobs over the next 15 years

Over the next 15 years an additional 88K jobs could be added to the Financial and Insurances Industry. This comprises of:

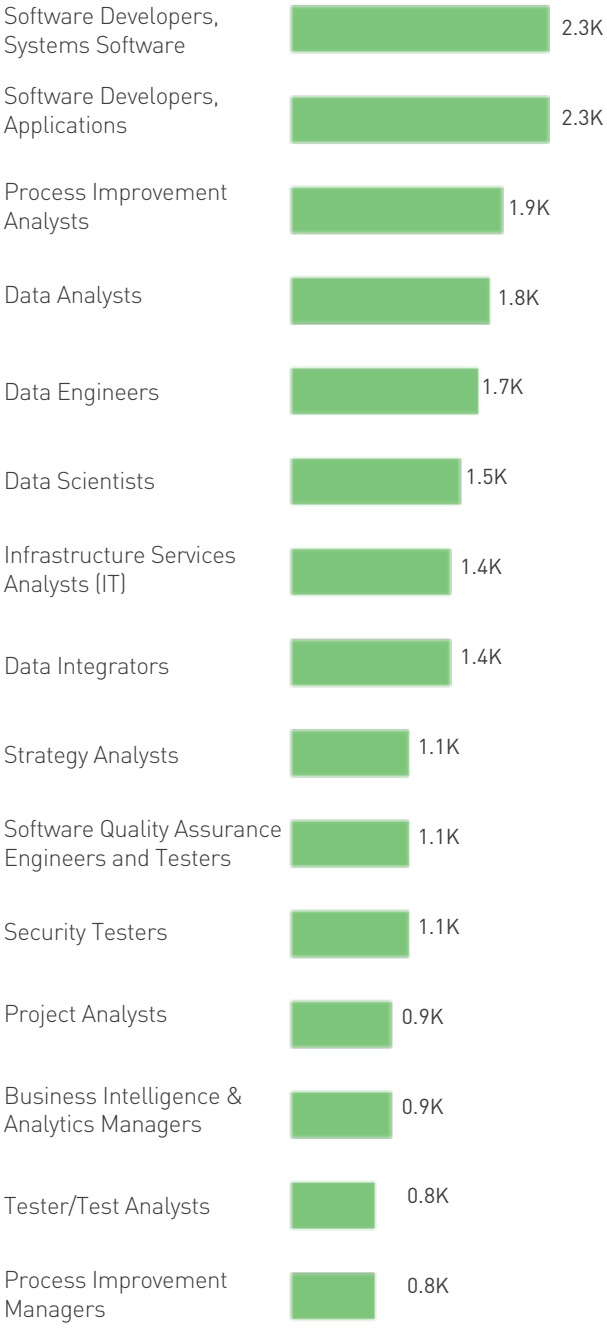
- 43% or 38K technical jobs
- 57% or 50K non-technical jobs

However during this period, 108K roles within the industry could be automated by technology, leading to a net decrease of 6% or 21K roles for the industry.

MODELLED JOB GROWTH



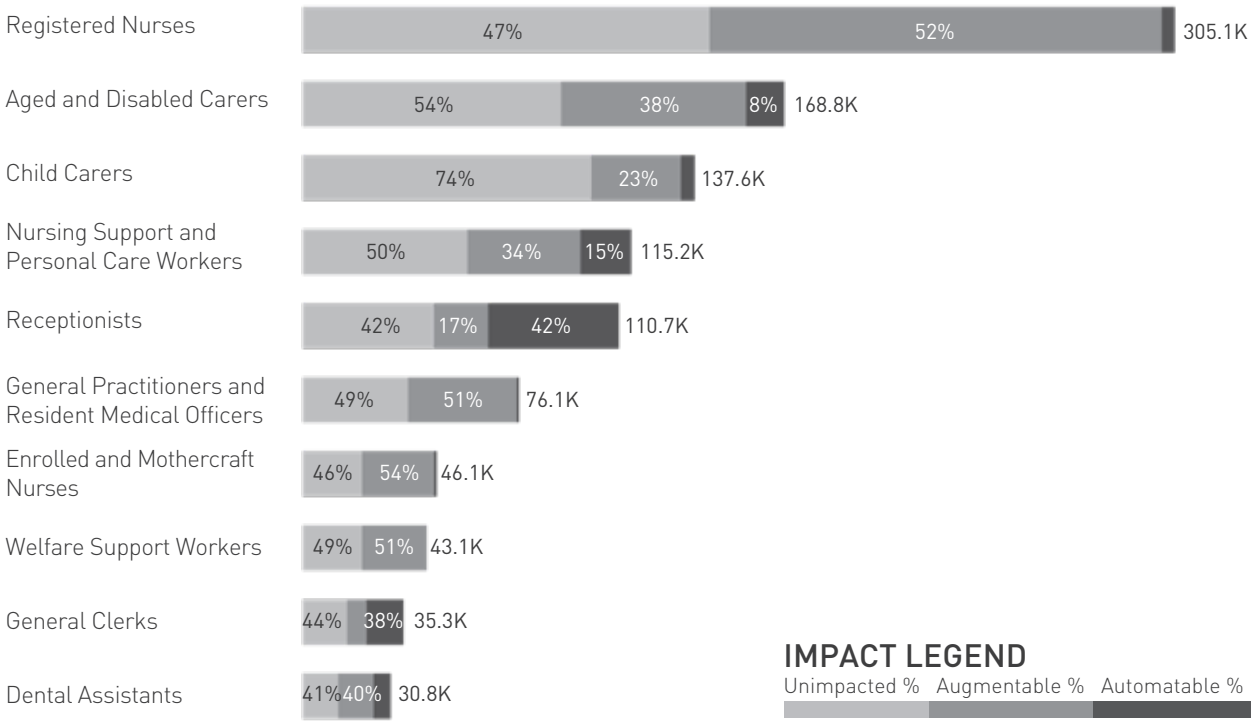
ADDITIONAL TECH JOBS REQUIRED (top 15)



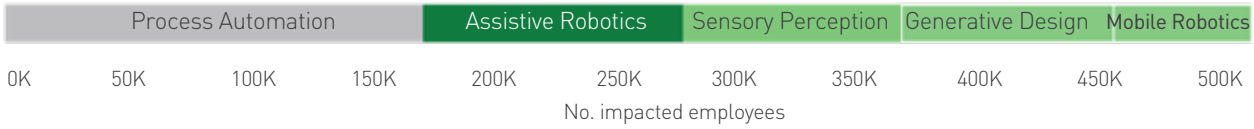
Health Care and Social Assistance - long term (15 years)

The impact of automation and augmentation differs based on underlying skills and activities for each role.

TECHNOLOGY IMPACT ON 10 MOST COMMON ROLES AT YEAR 15



TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15



KEY FINDINGS:

197K people are at risk of automation over the next 15 years, 84% of which are female. Roles in the Health Care and Social Assistance industry are more subject to augmentation rather than automation.

PEOPLE IMPACT

197K

166K 31K TOTAL AUTOMATABLE

TECH IMPACT

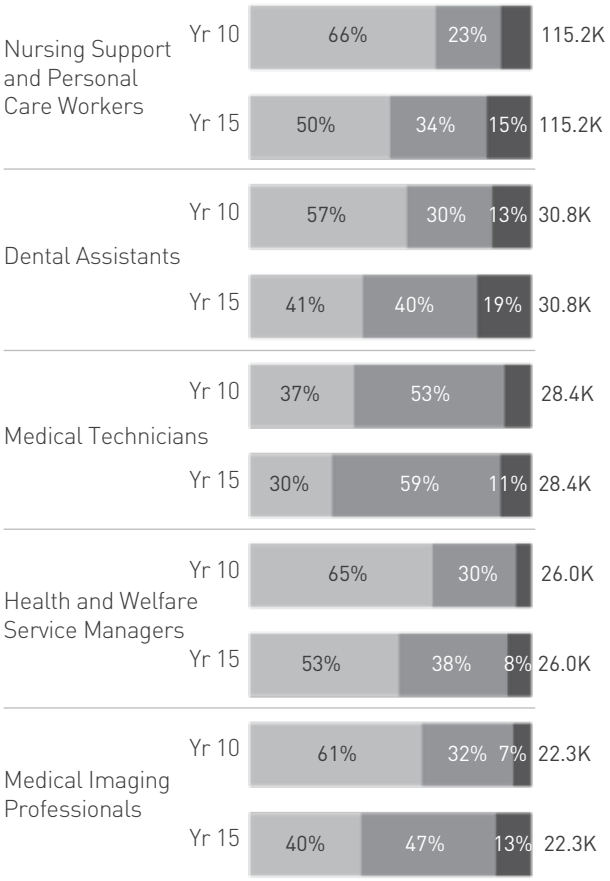
39% AUGMENTABLE

11% AUTOMATABLE

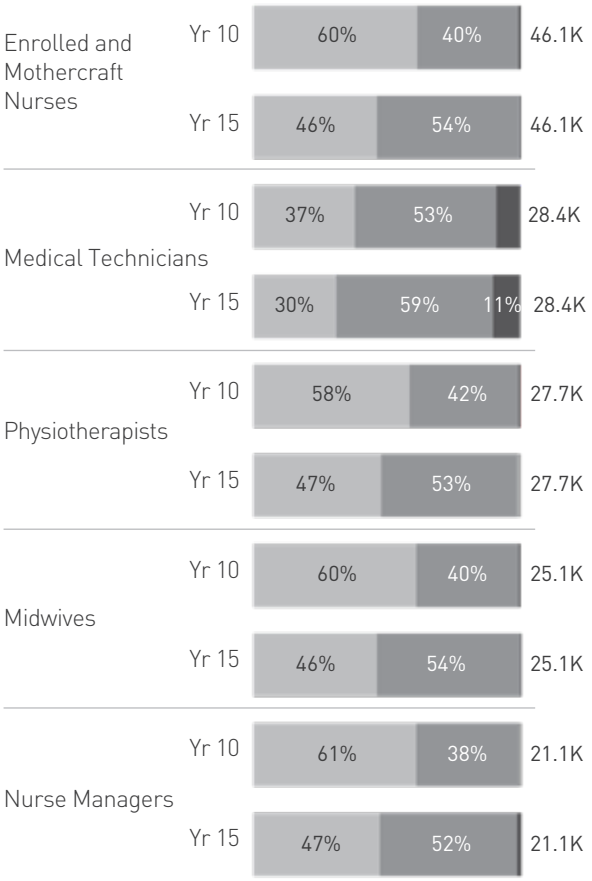
16% CAPACITY GAIN

Some roles are more easily automated while other roles are more susceptible to augmentation.

JOBS MOST EXPOSED TO AUTOMATION



JOBS MOST EXPOSED TO AUGMENTATION



IMPACT LEGEND

Unimpacted % Augmentable % Automatable %

KEY FINDINGS:

Dental assistants are the most automatable role with an estimated 6K people at risk.
Medical technicians are the most augmentable role with the potential to augment 17K people.

JOB FAMILY ANALYSIS

Of the top 25 roles in this industry, they also have a presence in other industries.

- The top 3 industries for these roles are:
  - Accommodation and Food Services: 6.6%
  - Public Administration and Safety: 6.1%
  - Education and Training: 5.8%

Re-skilling and transition potential exists from high risk Healthcare and Social Assistance jobs to low risk jobs

The following re-skilling pathways are available to transition at risk workers to less automatable target careers. Many at risk professionals have transferrable skills, and need to only focus on skill and knowledge gaps to transition to new, lower risk, occupations.

EXAMPLE PATHWAYS

Current job (Risk at year 15) → Future job (more secure)

Keyboard Operator

45% AUTOMATABALE
4.1K people at risk
10.1K people in job

- **Cyber Security Analyst** (74.8 pivot score)
- **Info. & Organisation Professional** (74.1 pivot score)
- **ICT Security Consultant** (73.8 pivot score)

Medical Laboratory Scientist

31% AUTOMATABALE
4.3K people at risk
13.9K people in job

- **Diagnostic Medical Sonographer** (90.5 pivot score)
- **Theatre Nurses in Robotic Surgery** (80.7 pivot score)
- **Cyber Security Analyst** (72.9 pivot score)

Dental Assistant

19% AUTOMATABALE
6.0K people at risk
30.8K people in job

- **Surgical Technologist** (97.1 pivot score)
- **Health Therapy Professional** (85.5 pivot score)
- **Physiotherapist** (85.5 pivot score)

DETAILED TRANSITION PATHWAY

JOB

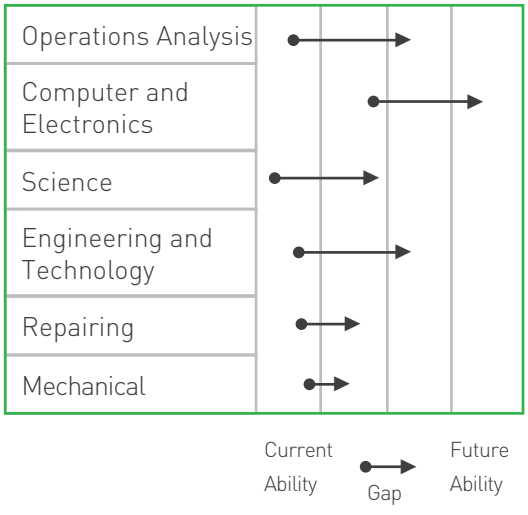
Keyboard Operator

Automatable 45%
Augmentable 34%

JOB CORRIDOR

- ICT Security Consultant
- Information and Organisation Professional
- Cyber Security Analyst
- First-Line Supervisor of Customer Service Reps.
- Infrastructure Services Analyst (IT)

KEY SKILL AND KNOWLEDGE GAPS | **ABILITY GAPS**



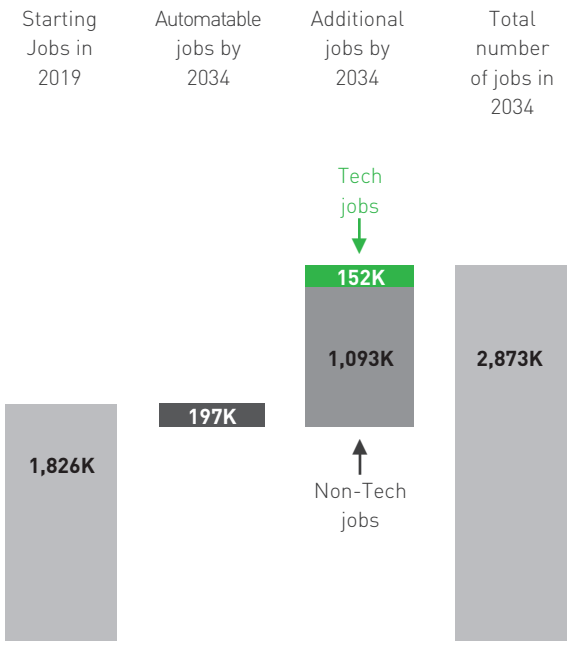
Implementation of emerging technology could lead to the generation of 152K new technology jobs over the next 15 years

Over the next 15 years an additional 1.2M jobs could be added to the Health Care and Social Assistance Industry. This comprises of:

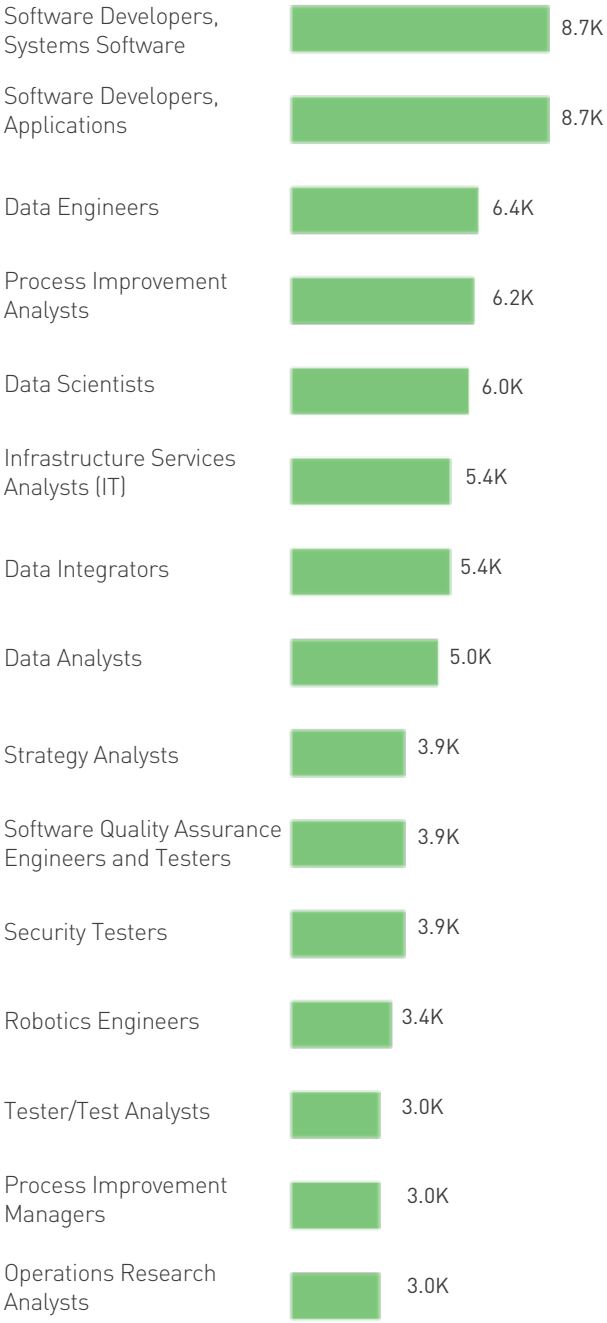
- 12% or 152K technical jobs
- 88% or 1,093K non-technical jobs

However during this period, 197K roles within the industry could be automated by technology, leading to a net increase of 57% or 1,048K roles for the industry.

MODELLED JOB GROWTH



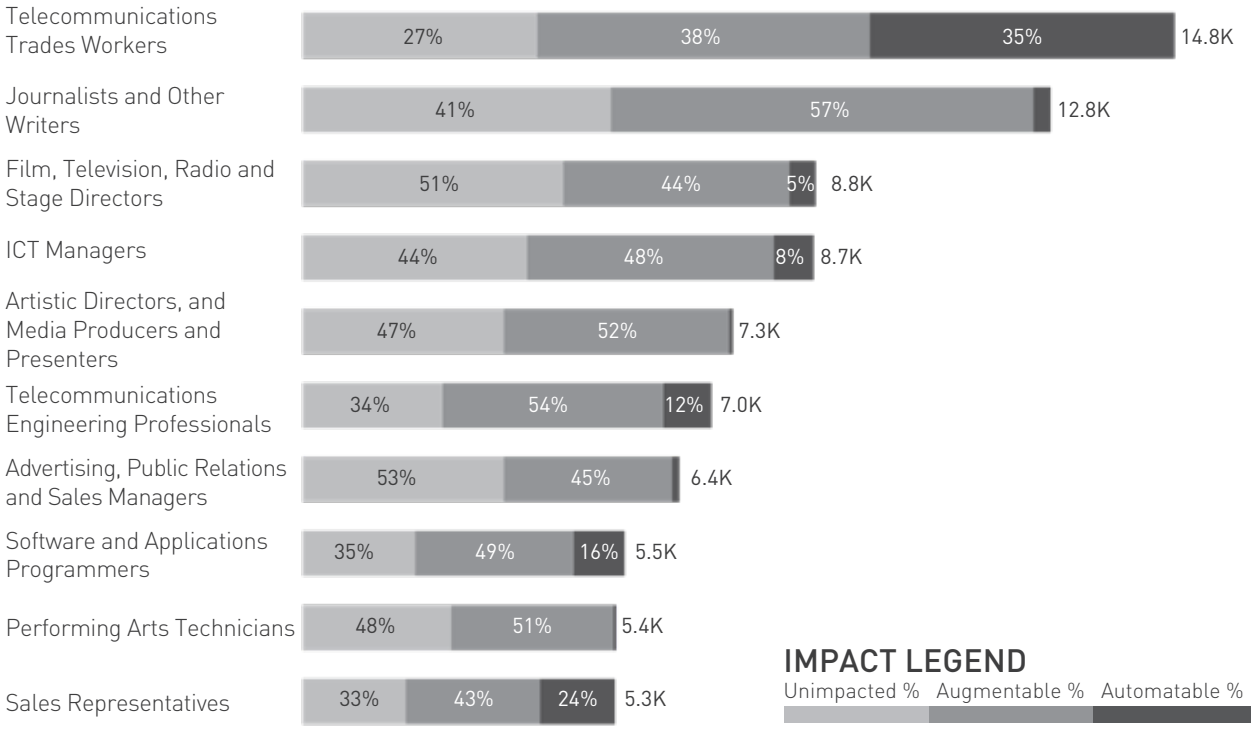
ADDITIONAL TECH JOBS REQUIRED (top 15)



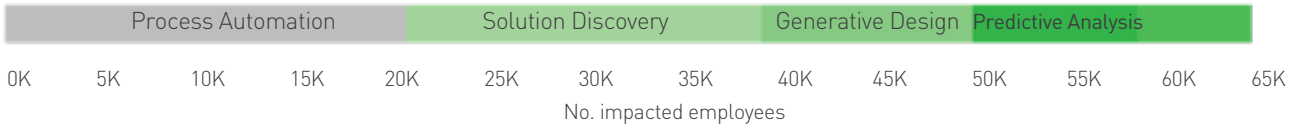
Information, Media and Telecommunications - long term (15 years)

The impact of automation and augmentation differs based on underlying skills and activities for each role.

TECHNOLOGY IMPACT ON 10 MOST COMMON ROLES AT YEAR 15



TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15



KEY FINDINGS:

32K people are at risk of automation over the next 15 years, 59% of which are male. Roles in the Information, Media and Telecommunications industry are more subject to augmentation rather than automation.

PEOPLE IMPACT

13K 19K

32K TOTAL AUTOMATABLE

TECH IMPACT

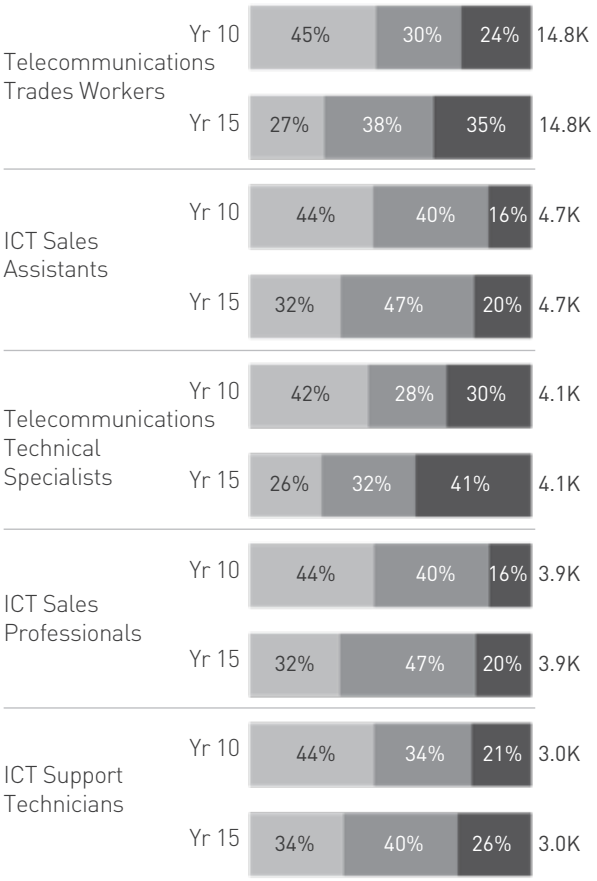
42% AUGMENTABLE

18% AUTOMATABLE

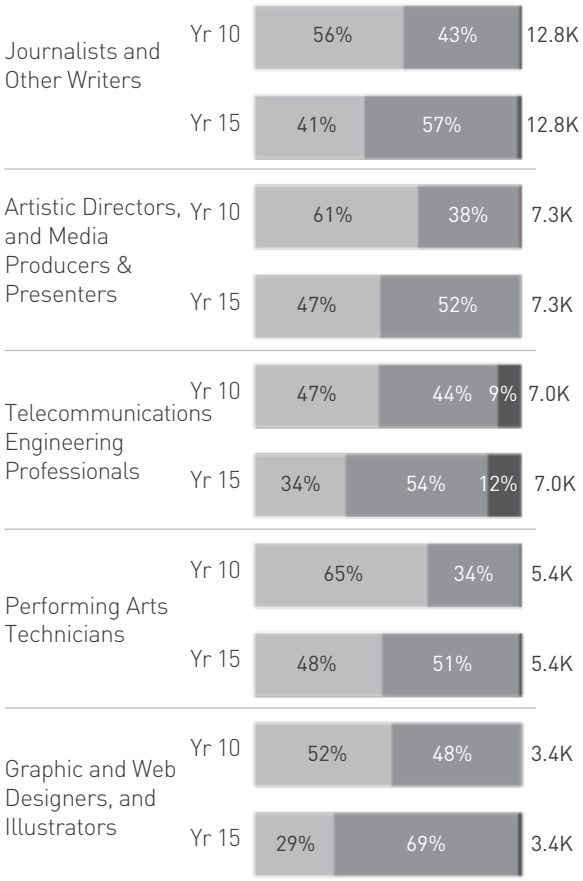
18% CAPACITY GAIN

Some roles are more easily automated while other roles are more susceptible to augmentation.

JOBS MOST EXPOSED TO AUTOMATION



JOBS MOST EXPOSED TO AUGMENTATION



IMPACT LEGEND

Unimpacted % Augmentable % Automatable %

KEY FINDINGS:

Telecommunications technical specialists are the most automatable role with an estimated 2K people at risk. Graphic and web designers, and illustrators are the most augmentable role with the potential to augment 2K people.

JOB FAMILY ANALYSIS

Of the top 25 roles in this industry, they also have a presence in other industries.

- The top 3 industries for these roles are:
  - Retail and Wholesale Trade: 35.3%
  - Professional, Scientific and Technical Services: 18.7%
  - Accommodation and Food Services: 4.4%

Re-skilling and transition potential exists from high risk Information, Media and Telecommunication jobs to low risk jobs

The following re-skilling pathways are available to transition at risk workers to less automatable target careers. Many at risk professionals have transferrable skills, and need to only focus on skill and knowledge gaps to transition to new, lower risk, occupations.

EXAMPLE PATHWAYS

Current job (Risk at year 15) → Future job (more secure)

Ticket Salesperson

50% AUTOMATABALE
2.5K people at risk
5.0K people in job

- **Occupational Therapy Aides** (86.3 pivot score)
- **Legal and Welfare Professional** (76.5 pivot score)
- **Broadcast News Analyst** (76.4 pivot score)

Telecommunications Technical Specialist

41% AUTOMATABALE
1.7K people at risk
4.1K people in job

- **Solar Photovoltaic Installer** (91.2 pivot score)
- **Wind Turbine Service Technician** (83.5 pivot score)
- **Camera Operator** (76.0 pivot score)

ICT Support Technician

26% AUTOMATABALE
0.8K people at risk
3.0K people in job

- **ICT Help Desk Manager** (97.6 pivot score)
- **ICT Technician** (97.4 pivot score)
- **Computer User Support Technician** (97.2 pivot score)

DETAILED TRANSITION PATHWAY

JOB

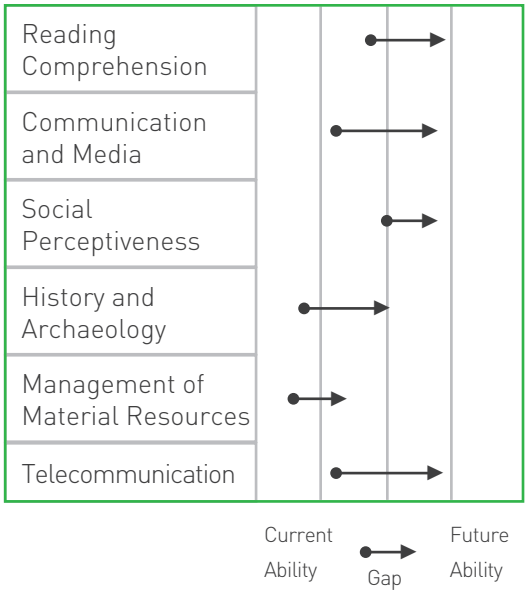
Ticket Salesperson

Automatable 50%
Augmentable 22%

JOB CORRIDOR

- Broadcast News Analyst
- Occupational Therapy Aide
- Outdoor Adventure Guide
- Legal, Social and Welfare Professional
- Conference and Event Organiser

KEY SKILL AND KNOWLEDGE GAPS | **ABILITY GAPS**



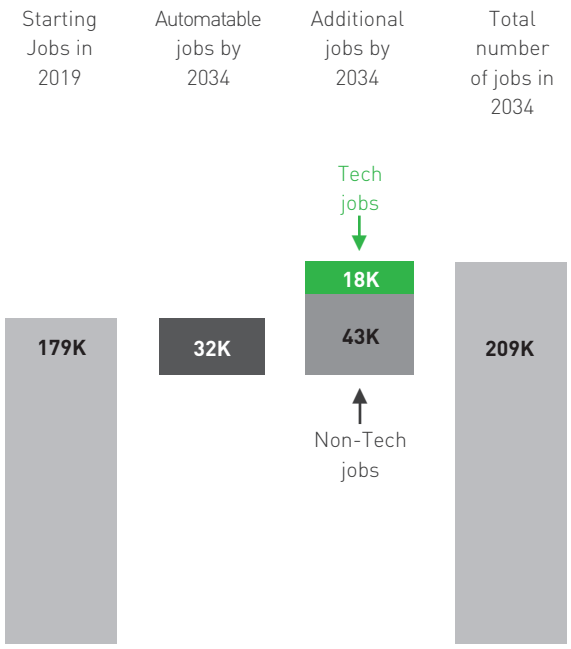
Implementation of emerging technology could lead to the generation of 18K new technology jobs over the next 15 years

Over the next 15 years an additional 61K jobs could be added to the Information, Media and Telecommunications Industry. This comprises of:

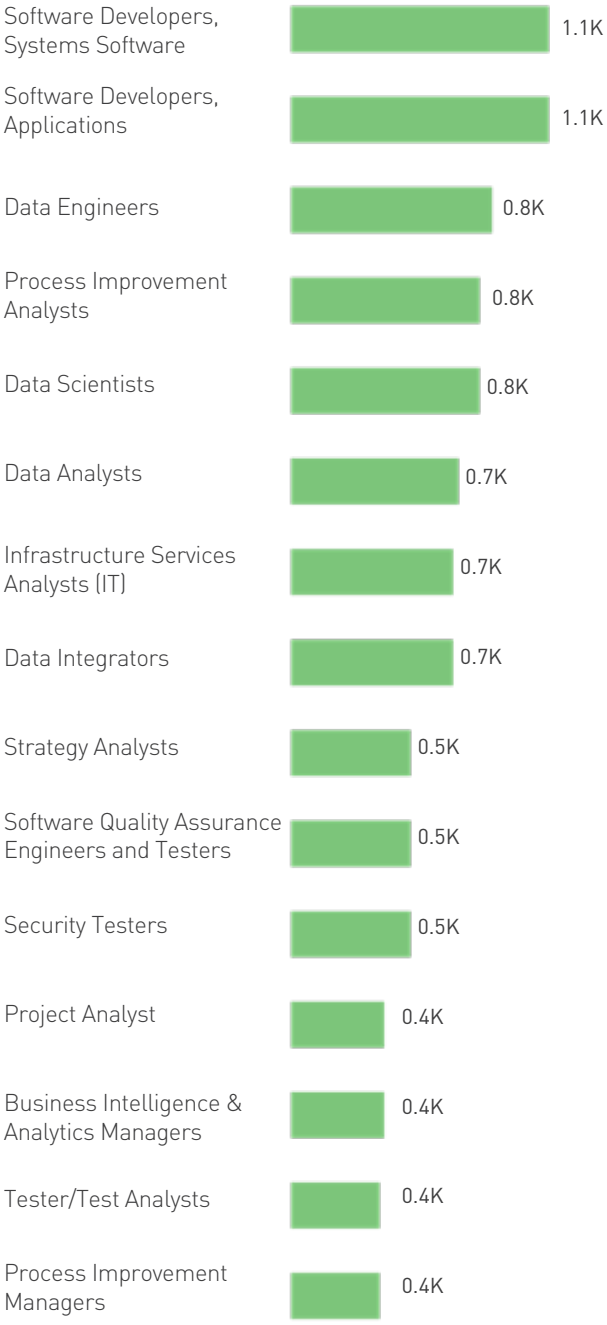
- 29% or 18K technical jobs
- 71% or 43K non-technical jobs

However during this period, 32K roles within the industry could be automated by technology, leading to a net increase of 16% or 30K roles for the industry.

MODELLED JOB GROWTH



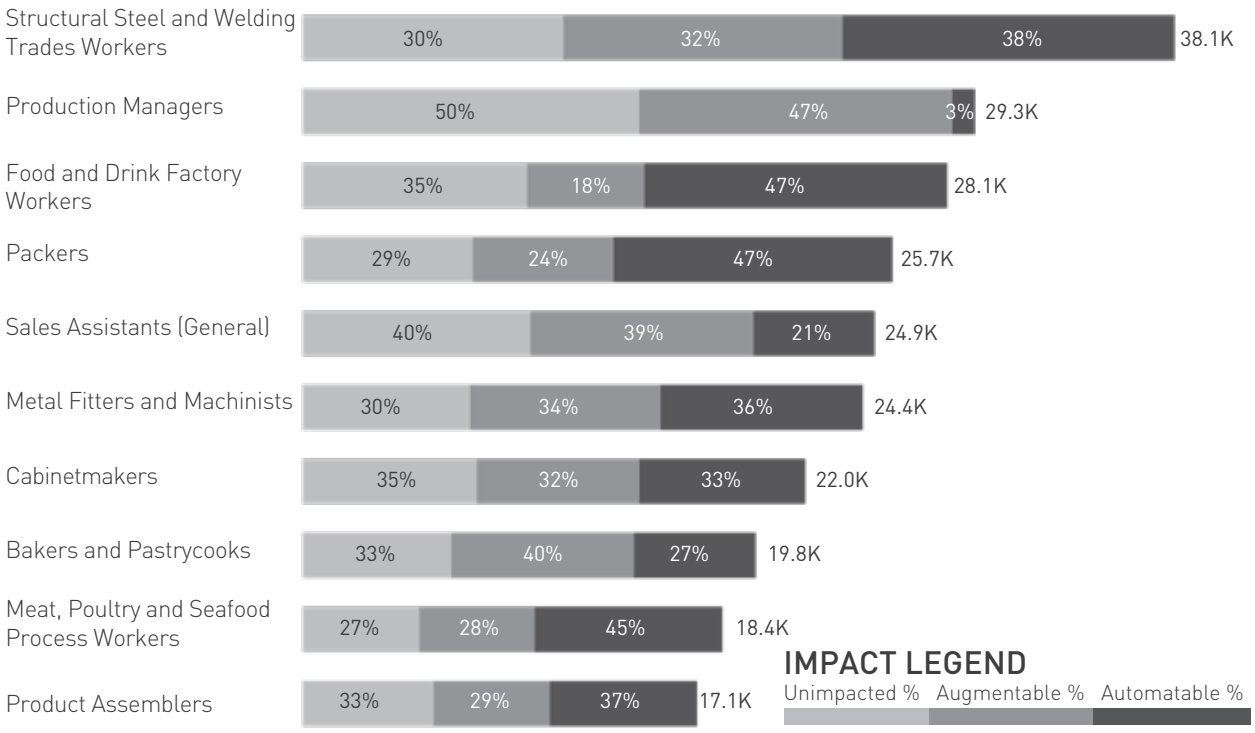
ADDITIONAL TECH JOBS REQUIRED (top 15)



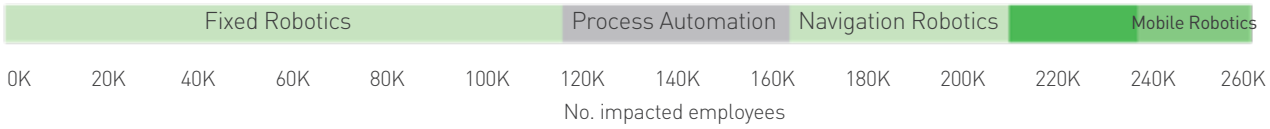
Manufacturing - long term (15 years)

The impact of automation and augmentation differs based on underlying skills and activities for each role.

TECHNOLOGY IMPACT ON 10 MOST COMMON ROLES AT YEAR 15



TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15



KEY FINDINGS:

193K people are at risk of automation over the next 15 years, 75% of which are male. Roles in the Manufacturing industry are more subject to augmentation rather than automation.

PEOPLE IMPACT

193K TOTAL AUTOMATABLE

49K 144K

TECH IMPACT

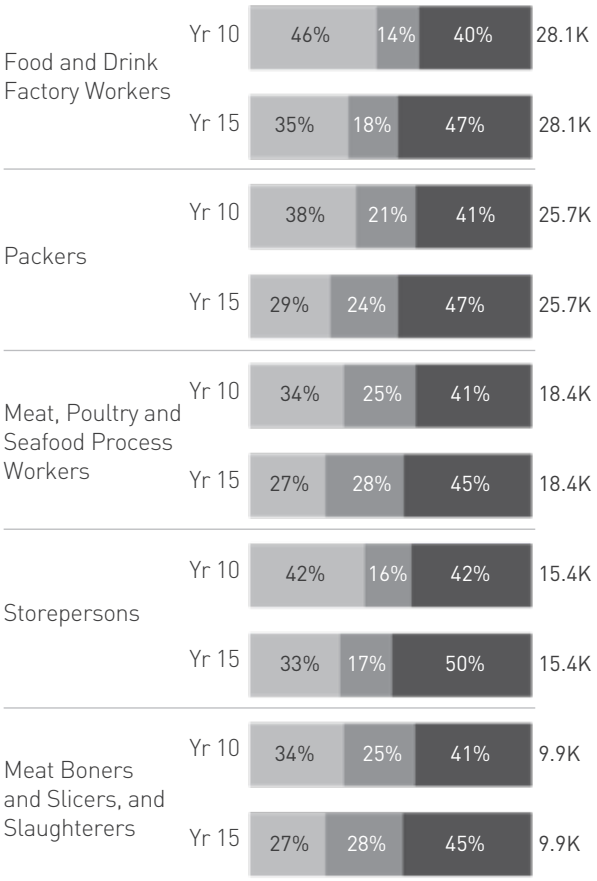
33% AUGMENTABLE

30% AUTOMATABLE

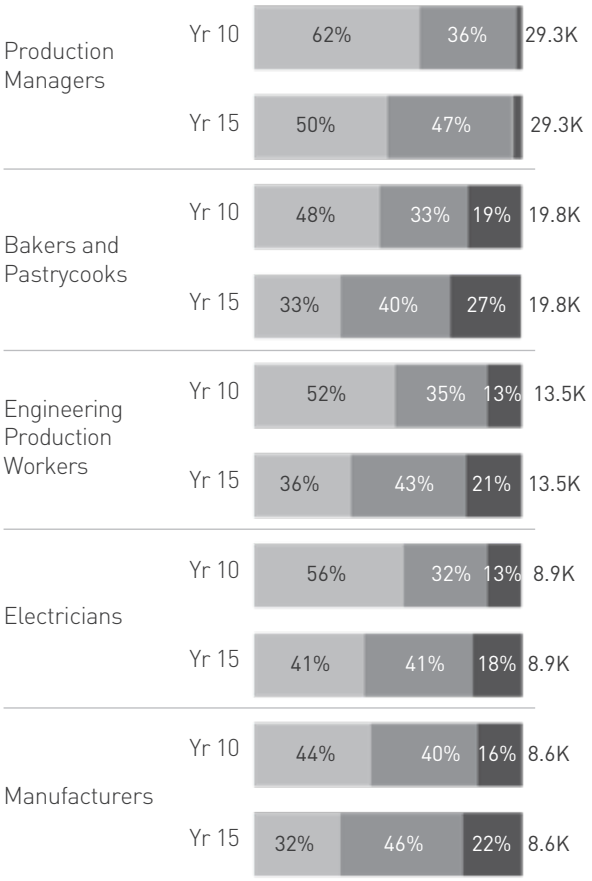
14% CAPACITY GAIN

Some roles are more easily automated while other roles are more susceptible to augmentation.

JOBS MOST EXPOSED TO AUTOMATION



JOBS MOST EXPOSED TO AUGMENTATION



IMPACT LEGEND

Unimpacted % Augmentable % Automatable %

KEY FINDINGS:

Storepersons are the most automatable role with an estimated 8K people at risk.
Production managers are the most augmentable role with the potential to augment 14K people.

JOB FAMILY ANALYSIS

Of the top 25 roles in this industry, they also have a presence in other industries.

- The top 3 industries for these roles are:
  - Retail and Wholesale Trade : 31.5%
  - Construction: 12.8%
  - Transport, Postal and Warehousing: 7.9%

Re-skilling and transition potential exists from high risk Manufacturing jobs to low risk jobs

The following re-skilling pathways are available to transition at risk workers to less automatable target careers. Many at risk professionals have transferrable skills, and need to only focus on skill and knowledge gaps to transition to new, lower risk, occupations.

EXAMPLE PATHWAYS

Current job (Risk at year 15) → Future job (more secure)

Food & Drink Factory Worker

47% AUTOMATABALE
13.2K people at risk
28.1K people in job

- **Cook** (96.4 pivot score)
- **Visual Merchandiser** (84.0 pivot score)
- **Education Aide** (59.1 pivot score)

Packer

47% AUTOMATABALE
13.2K people at risk
25.7K people in job

- **Medical Technician** (79.8 pivot score)
- **Furniture Finisher** (77.0 pivot score)
- **Animal Attendants & Trainer** (62.6 pivot score)

Meat, Poultry & Seafood Process Worker

45% AUTOMATABALE
8.3K people at risk
18.4K people in job

- **Cook** (86.6 pivot score)
- **Visual Merchandiser** (57.1 pivot score)
- **Veterinary Nurse** (43.3 pivot score)

DETAILED TRANSITION PATHWAY

JOB

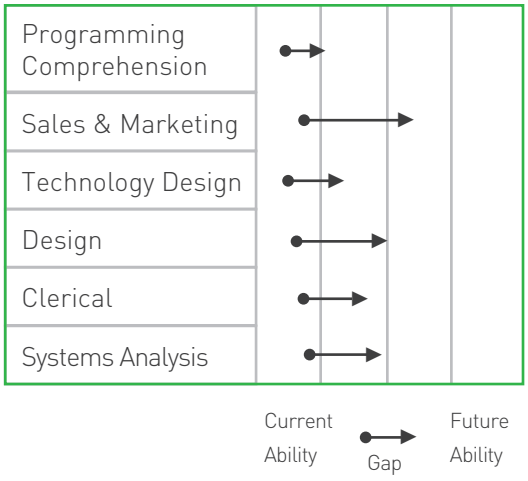
Food & Drink Factory Worker

Automatable 47%
Augmentable 18%

JOB CORRIDOR

- Visual Merchandiser
- Cook
- Gallery, Museum & Tour Guide
- Personal Care Consultant
- Barber

KEY SKILL AND KNOWLEDGE GAPS | **ABILITY GAPS**



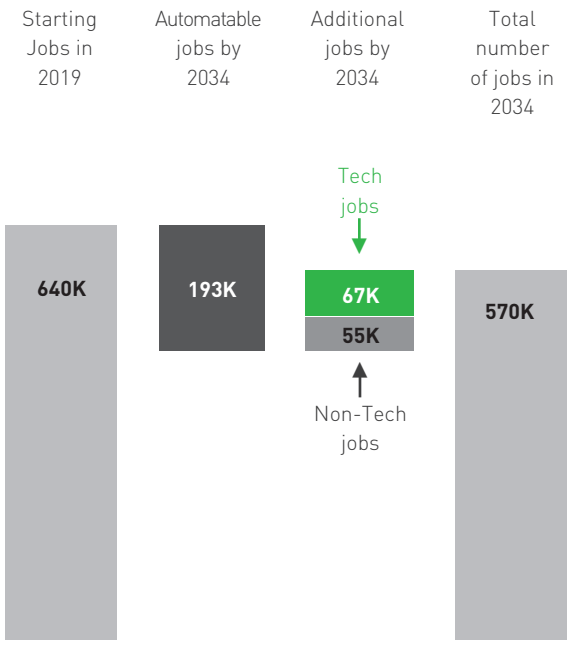
Implementation of emerging technology could lead to the generation of 67K new technology jobs over the next 15 years

Over the next 15 years an additional 122K jobs could be added to the Manufacturing Industry. This comprises of:

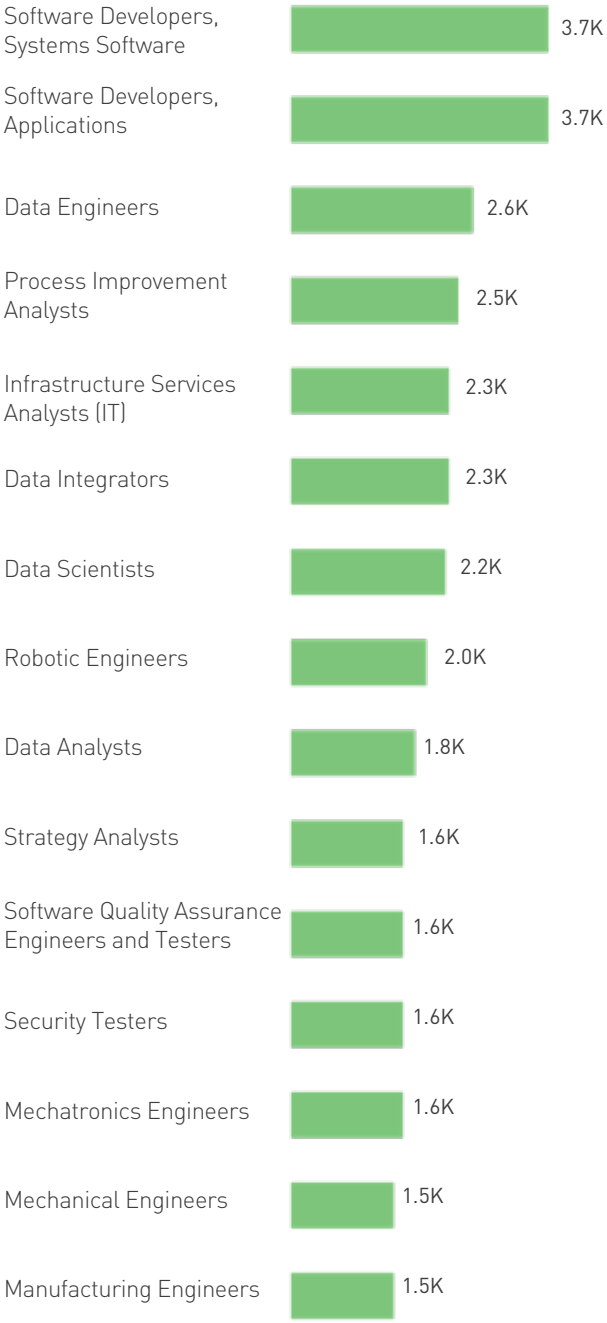
- 55% or 67K technical jobs
- 45% or 55K non-technical jobs

However during this period, 193K roles within the industry could be automated by technology, leading to a net decrease of 11% or 70K roles for the industry.

MODELLED JOB GROWTH



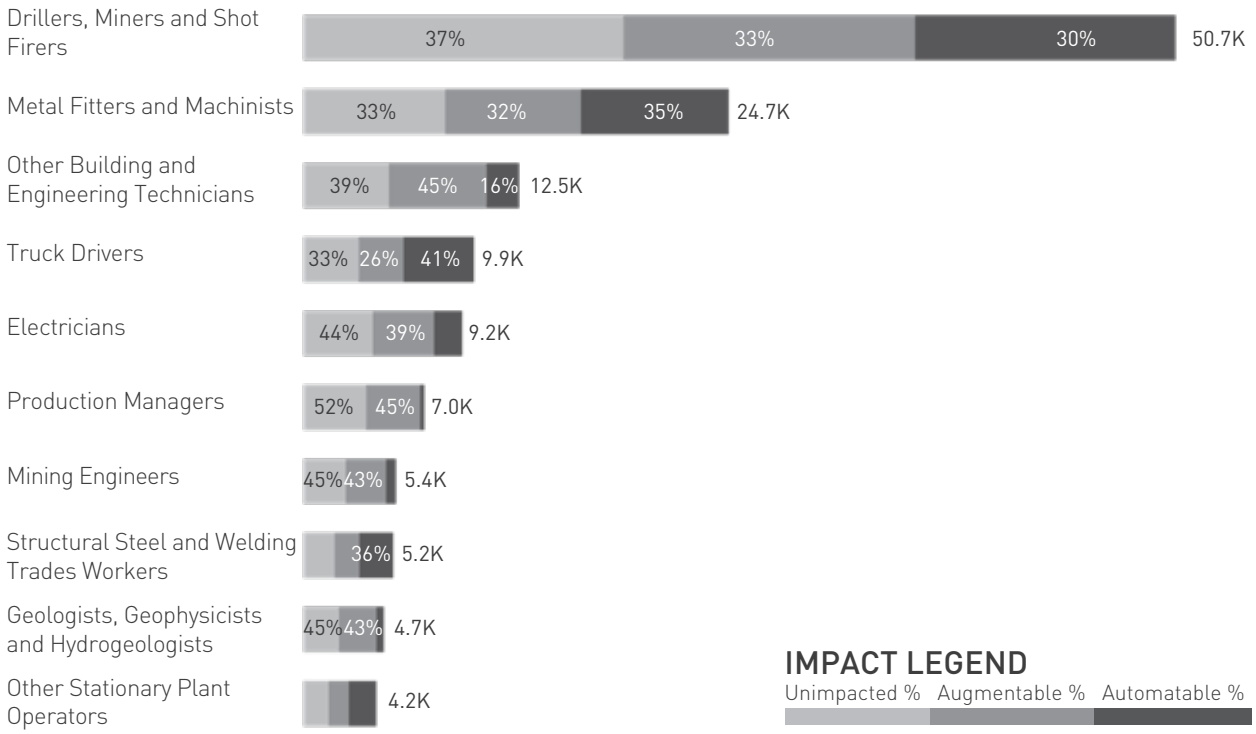
ADDITIONAL TECH JOBS REQUIRED (top 15)



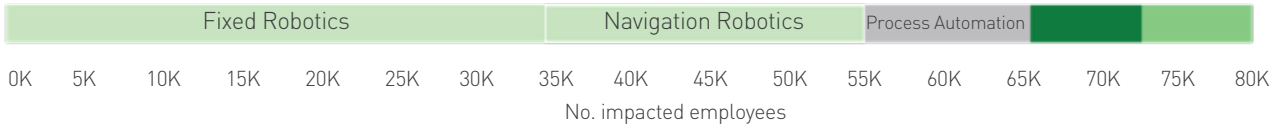
Mining - long term (15 years)

The impact of automation and augmentation differs based on underlying skills and activities for each role.

TECHNOLOGY IMPACT ON 10 MOST COMMON ROLES AT YEAR 15



TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15



KEY FINDINGS:

50K people are at risk of automation over the next 15 years, 84% of which are male. Roles in the Mining industry are more subject to augmentation rather than automation.

PEOPLE IMPACT

6K 42K

50K TOTAL AUTOMATABLE

TECH IMPACT

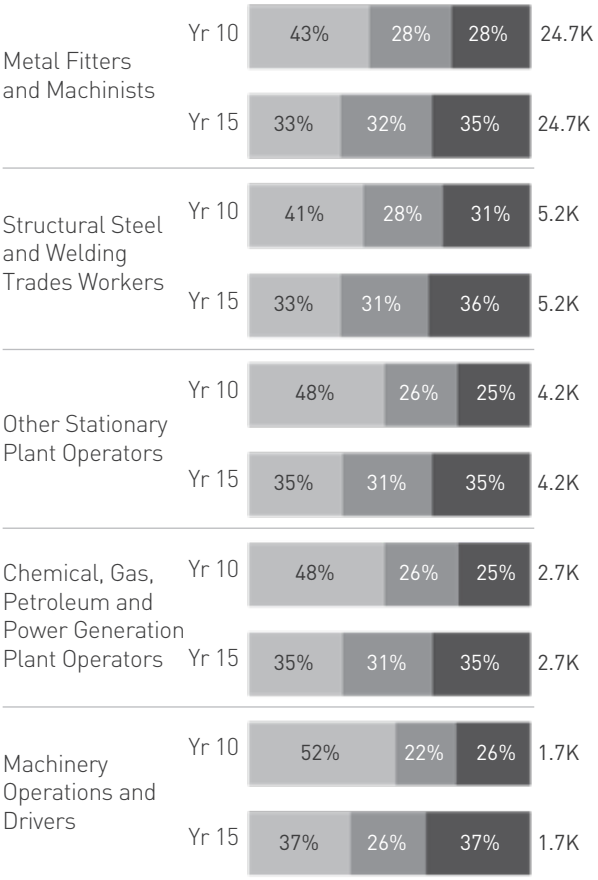
34% AUGMENTABLE

25% AUTOMATABLE

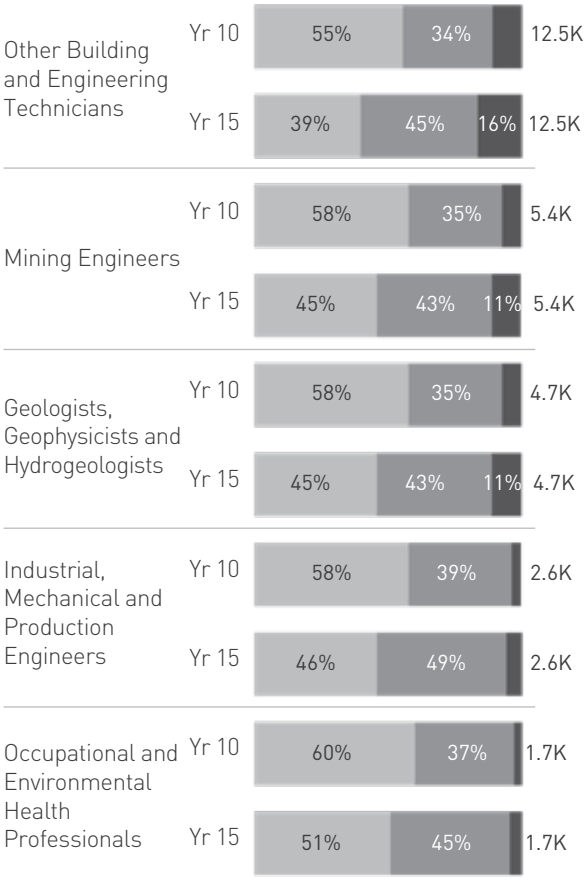
13% CAPACITY GAIN

Some roles are more easily automated while other roles are more susceptible to augmentation.

JOBS MOST EXPOSED TO AUTOMATION



JOBS MOST EXPOSED TO AUGMENTATION



IMPACT LEGEND

Unimpacted % Augmentable % Automatable %

KEY FINDINGS:

Machine operators and drivers are the most automatable role with an estimated 600 people at risk. Industrial, mechanical and production engineers are the most augmentable role with the potential to augment 1K people.

JOB FAMILY ANALYSIS

Of the top 25 roles in this industry, they also have a presence in other industries.

- The top 3 industries for these roles are:
  - Construction: 15.1%
  - Transport, Postal and Warehousing: 9.9%
  - Manufacturing: 9.8%

Re-skilling and transition potential exists from high risk Mining jobs to low risk jobs

The following re-skilling pathways are available to transition at risk workers to less automatable target careers. Many at risk professionals have transferrable skills, and need to only focus on skill and knowledge gaps to transition to new, lower risk, occupations.

EXAMPLE PATHWAYS

Current job (Risk at year 15) → Future job (more secure)

Structural Streel & Welding Trades Worker

36% AUTOMATABALE
1.9K people at risk
5.2K people in job

- **Solar Photovoltaic Installer** (83.4 pivot score)
- **Medical Technician** (71.7 pivot score)
- **Upholsterer** (68.0 pivot score)

Metal Fitters & Machinist

35% AUTOMATABALE
8.6K people at risk
24.7K people in job

- **Solar Photovoltaic Installer** (91.7 pivot score)
- **Model Makers, Wood** (74.3 pivot score)
- **Bricklayer & Stonemason** (68.1 pivot score)

Drillers, Miners & Shot Firers

30% AUTOMATABALE
15.2K people at risk
50.7K people in job

- **Solar Energy Installation Manager** (86.3 pivot score)
- **Explosive Engineer** (83.7 pivot score)
- **Forest & Conversation Technician** (76.7 pivot score)

DETAILED TRANSITION PATHWAY

JOB

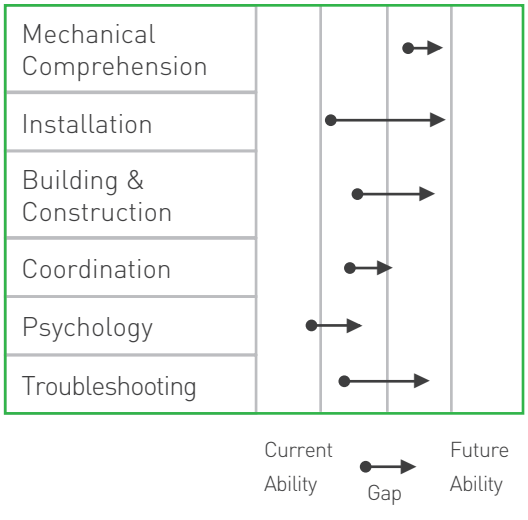
Structural Streel & Welding Trades Worker

Automatable 36%
Augmentable 31%

JOB CORRIDOR

- Solar Photovoltaic Installer
- Medical Technician
- Upholsterer
- Bricklayer, and Carpenters and Joiners
- Cook

KEY SKILL AND KNOWLEDGE GAPS | **ABILITY GAPS**



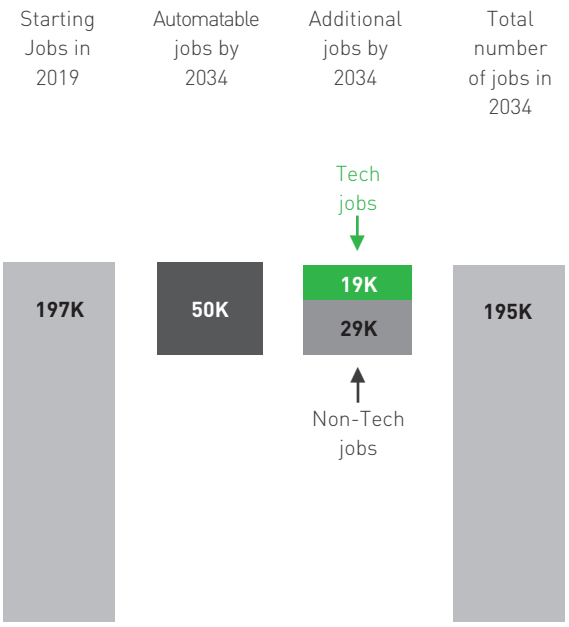
Implementation of emerging technology could lead to the generation of 19K new technology jobs over the next 15 years

Over the next 15 years an additional 48K jobs could be added to the Mining Industry. This comprises of:

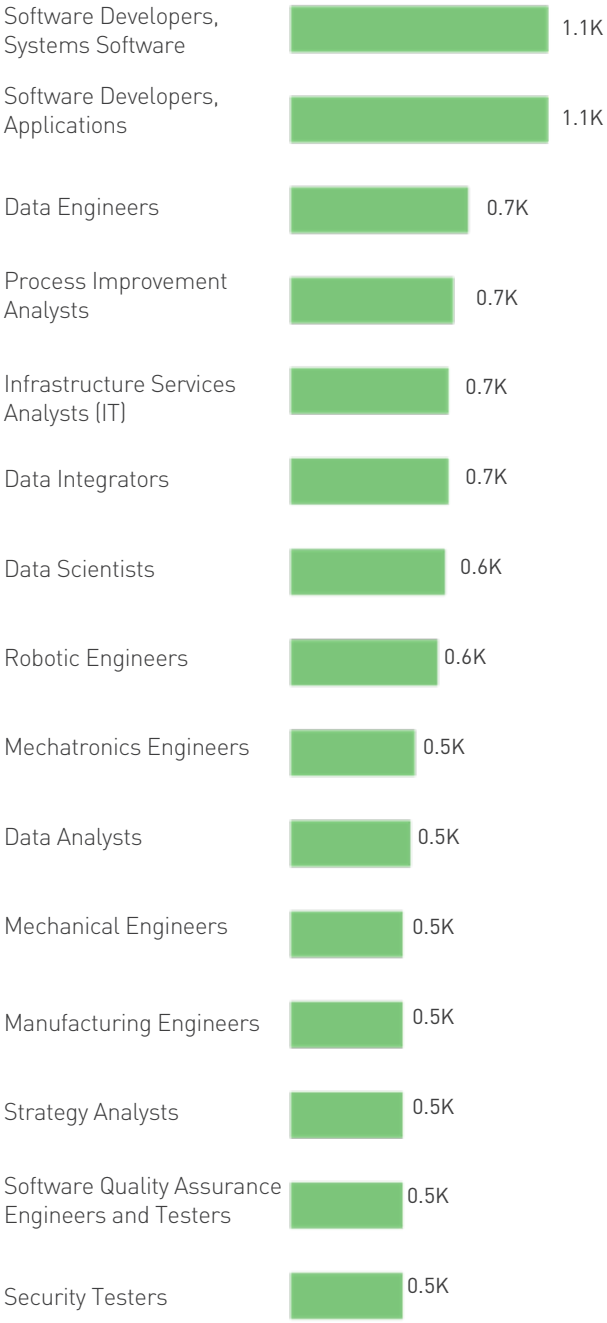
- 40% or 19K technical jobs
- 60% or 29K non-technical jobs

However during this period, 50K roles within the industry could be automated by technology, leading to a net decrease of 1% or 2K roles for the industry.

MODELLED JOB GROWTH



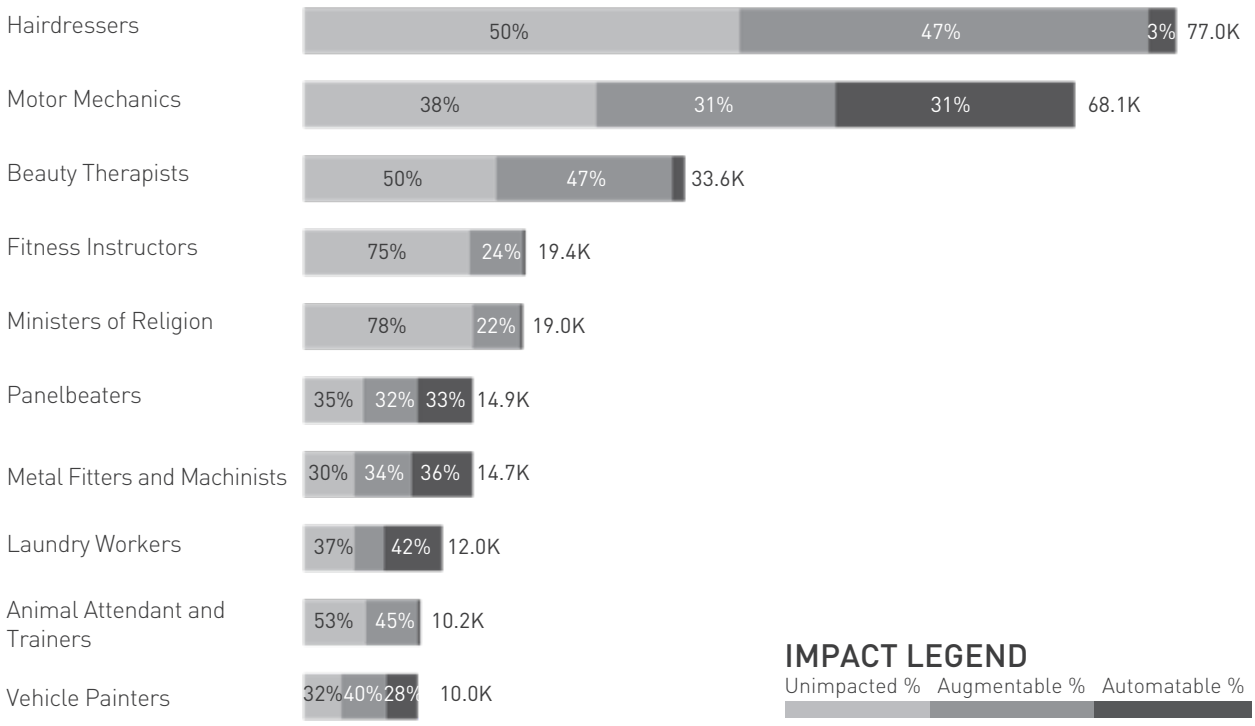
ADDITIONAL TECH JOBS REQUIRED (top 15)



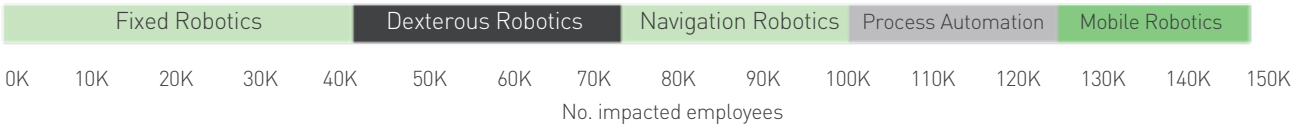
Other Services - long term (15 years)

The impact of automation and augmentation differs based on underlying skills and activities for each role.

TECHNOLOGY IMPACT ON 10 MOST COMMON ROLES AT YEAR 15



TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15



KEY FINDINGS:

88K people are at risk of automation over the next 15 years, 69% of which are male. Roles in the Other Services industry are more subject to augmentation rather than automation.

PEOPLE IMPACT

27K 61K

88K

TOTAL AUTOMATABLE

TECH IMPACT

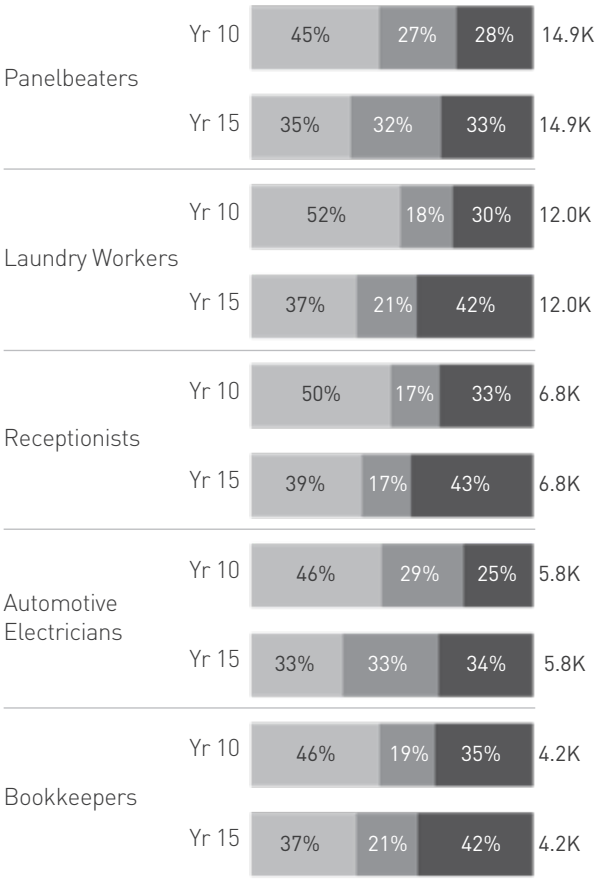
35% AUGMENTABLE

19% AUTOMATABLE

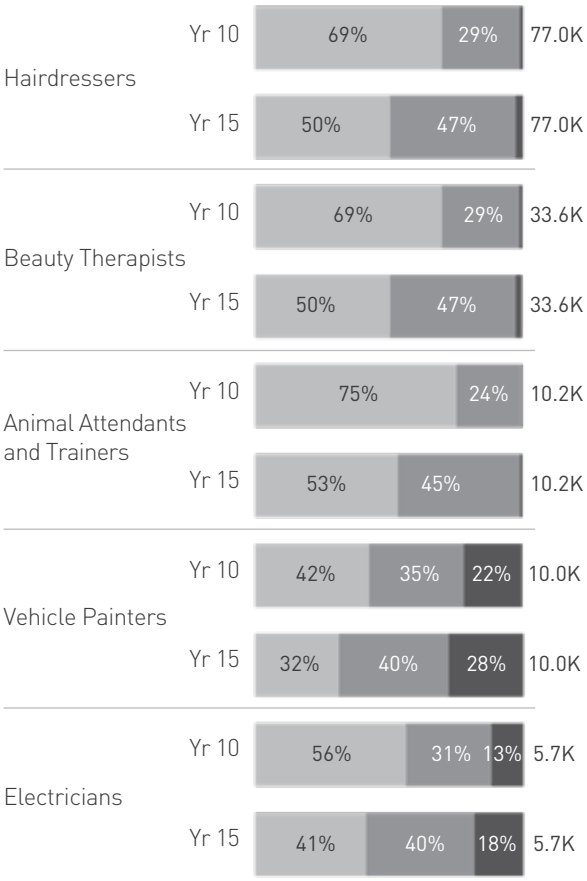
13% CAPACITY GAIN

Some roles are more easily automated while other roles are more susceptible to augmentation.

JOBS MOST EXPOSED TO AUTOMATION



JOBS MOST EXPOSED TO AUGMENTATION



IMPACT LEGEND

Unimpacted % Augmentable % Automatable %

KEY FINDINGS:

Receptionists are the most automatable role with an estimated 3K people at risk.
Hairdressers are the most augmentable role with the potential to augment 36K people.

JOB FAMILY ANALYSIS

Of the top 25 roles in this industry, they also have a presence in other industries.

- The top 3 industries for these roles are:
  - Healthcare and Social Assistance: 16.3%
  - Retail and Wholesale Trade: 14.1%
  - Construction: 10.2%

Re-skilling and transition potential exists from high risk Other Services jobs to low risk jobs

The following re-skilling pathways are available to transition at risk workers to less automatable target careers. Many at risk professionals have transferrable skills, and need to only focus on skill and knowledge gaps to transition to new, lower risk, occupations.

EXAMPLE PATHWAYS

Current job (Risk at year 15) → Future job (more secure)

Laundry Workers

42% AUTOMATABALE
5.0K people at risk
12.0K people in job

- **Personal Carers and Assistant** (93.0 pivot score)
- **Cook** (88.8 pivot score)
- **Child Carer** (84.3 pivot score)

Automotive Electrician

34% AUTOMATABALE
2.0K people at risk
5.8K people in job

- **Medical Technician** (69.3 pivot score)
- **Mech. Engineering Trades Worker** (59.8 pivot score)
- **Electrician** (59.4 pivot score)

Panel Beaters

33% AUTOMATABALE
4.9K people at risk
14.9K people in job

- **Solar Photovoltaic Installer** (84.5 pivot score)
- **Visual Arts and Crafts Professional** (61.4 pivot score)
- **Upholsterer** (61.2 pivot score)

DETAILED TRANSITION PATHWAY

JOB

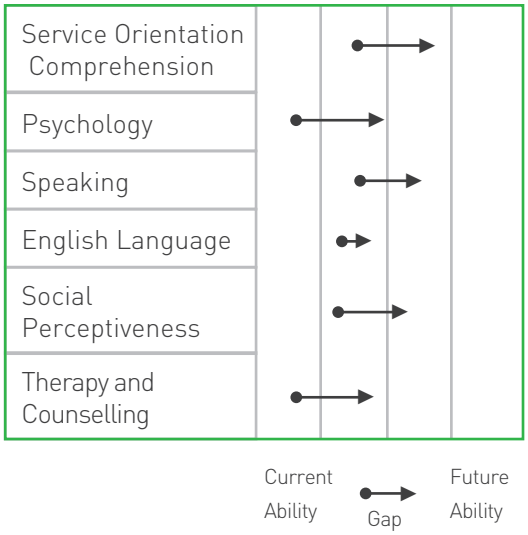
Laundry Worker

Automatable 42%
Augmentable 21%

JOB CORRIDOR

- Personal Carers and Assistant
- Cook
- Child Carer
- Visual Merchandiser
- Bar Attendants and Barista

KEY SKILL AND KNOWLEDGE GAPS | **ABILITY GAPS**



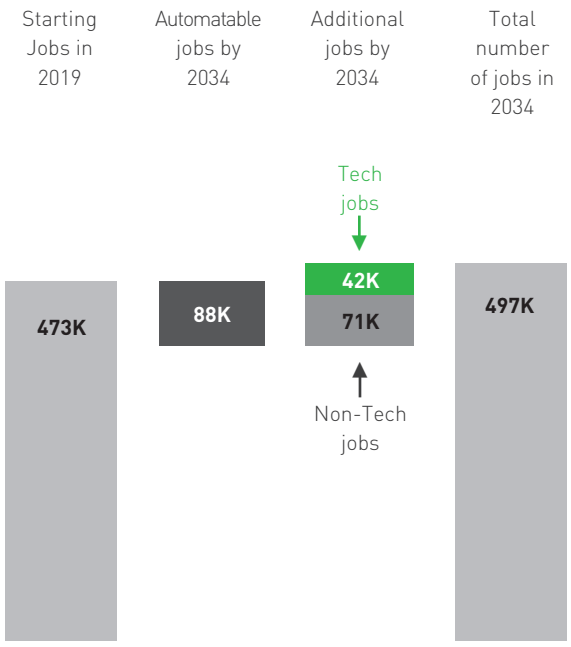
Implementation of emerging technology could lead to the generation of 42K new technology jobs over the next 15 years

Over the next 15 years an additional 113K jobs could be added to the Other Services Industry. This comprises of:

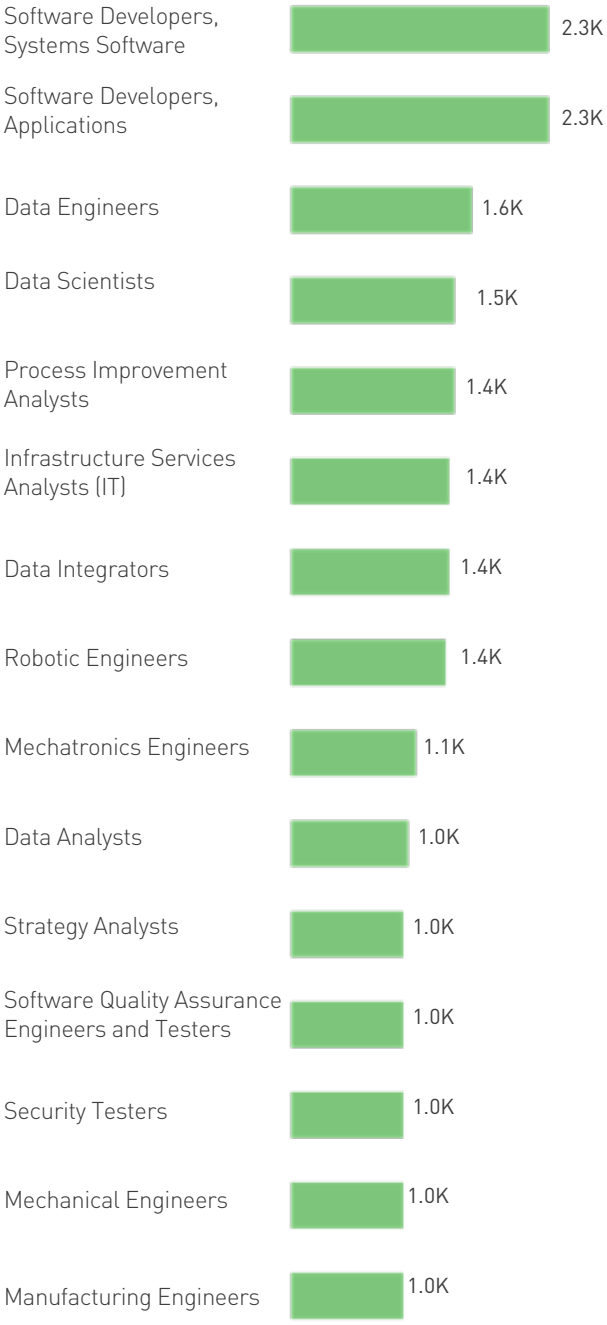
- 37% or 42K technical jobs
- 63% or 71K non-technical jobs

However during this period, 88K roles within the industry could be automated by technology, leading to a net increase of 5% or 24K roles for the industry.

MODELLED JOB GROWTH



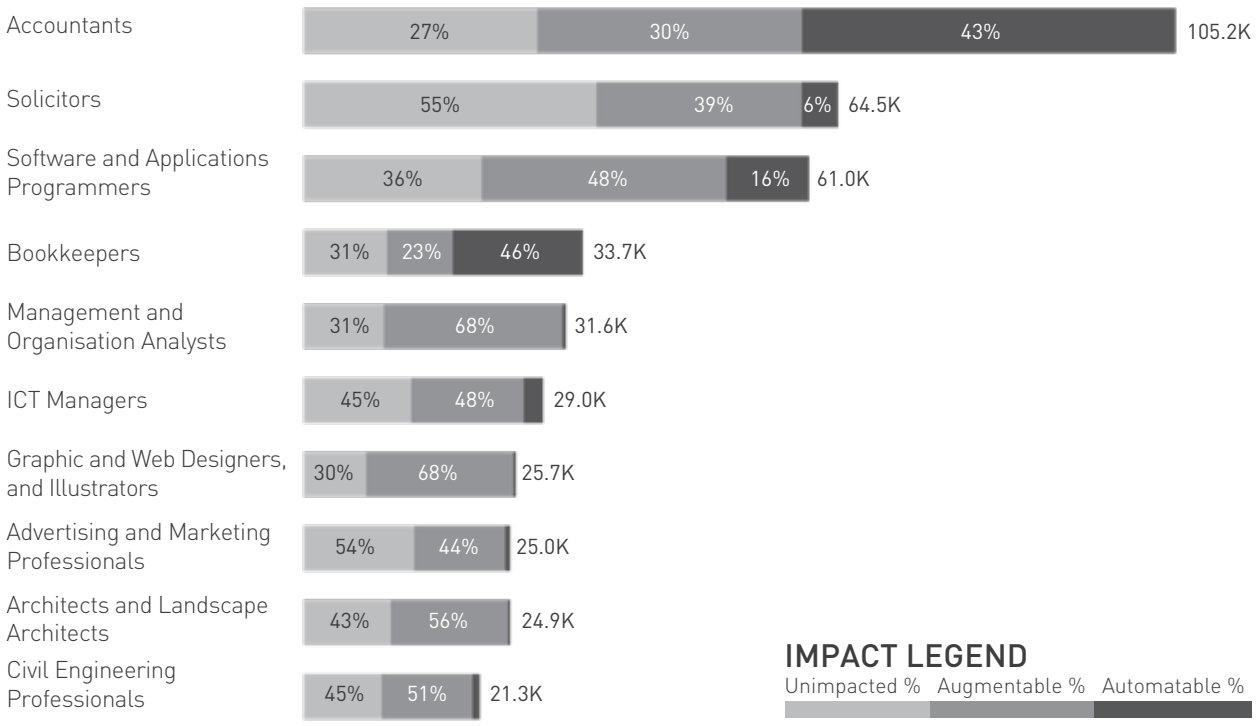
ADDITIONAL TECH JOBS REQUIRED (top 15)



Professional, Scientific and Technical Services - long term (15 years)

The impact of automation and augmentation differs based on underlying skills and activities for each role.

TECHNOLOGY IMPACT ON 10 MOST COMMON ROLES AT YEAR 15



TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15

KEY FINDINGS:

184K people are at risk of automation over the next 15 years, 54% of which are female. Roles in the Professional, Scientific and Technical Services industry are more subject to augmentation rather than automation.

PEOPLE IMPACT

100K 84K

184K

TOTAL AUTOMATABLE

TECH IMPACT

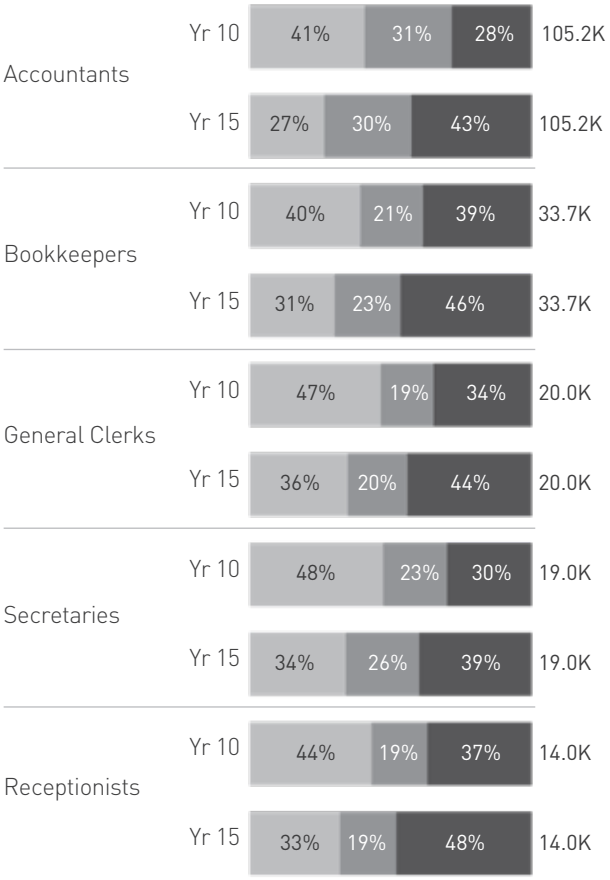
41%
AUGMENTABLE

19%
AUTOMATABLE

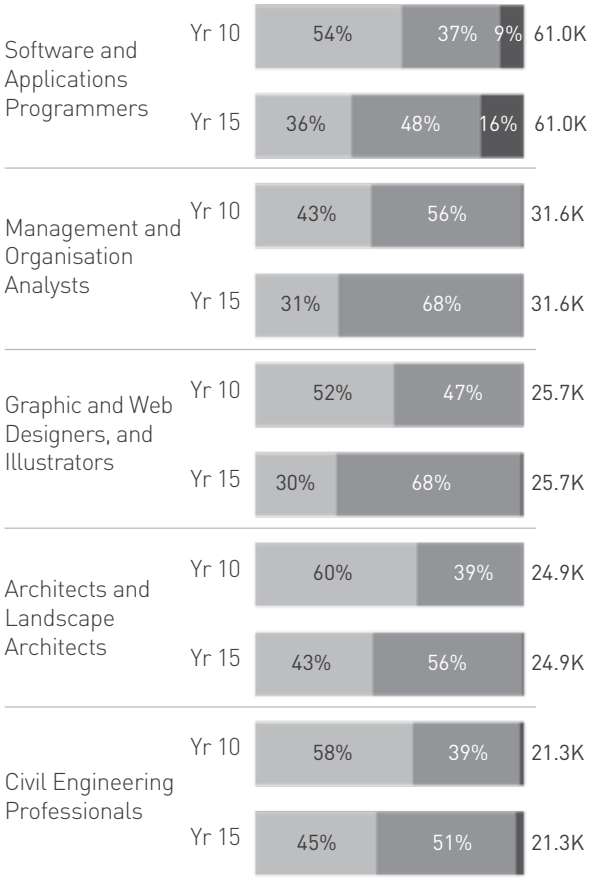
18%
CAPACITY GAIN

Some roles are more easily automated while other roles are more susceptible to augmentation.

JOBS MOST EXPOSED TO AUTOMATION



JOBS MOST EXPOSED TO AUGMENTATION



IMPACT LEGEND

Unimpacted % Augmentable % Automatable %

KEY FINDINGS:

Receptionists are the most automatable role with an estimated 7K people at risk.
Graphic and web designers, and illustrators are the most augmentable role with the potential to augment 18K people.

JOB FAMILY ANALYSIS

Of the top 25 roles in this industry, they also have a presence in other industries.

- The top 3 industries for these roles are:
  - Healthcare and Social Assistance: 10.0%
  - Public Administration and Safety: 9.1%
  - Construction: 7.7%

Re-skilling and transition potential exists from high risk Professional, Scientific and Technical jobs to low risk jobs

The following re-skilling pathways are available to transition at risk workers to less automatable target careers. Many at risk professionals have transferrable skills, and need to only focus on skill and knowledge gaps to transition to new, lower risk, occupations.

EXAMPLE PATHWAYS

Current job (Risk at year 15) → Future job (more secure)

Accountant

43% AUTOMATABALE
44.9K people at risk
105.2K people in job

- **Fraud Examiners** (86.8 pivot score)
- **Information & Organisation Prof.** (84.4 pivot score)
- **Actuarial Managers** (77.2 pivot score)

Secretary

39% AUTOMATABALE
7.5K people at risk
19.0K people in job

- **Change Analyst** (88.8 pivot score)
- **Copy Writer** (83.7 pivot score)
- **Media Buyer** (78.0 pivot score)

ICT Business & Systems Analyst

31% AUTOMATABALE
3.7K people at risk
11.7K people in job

- **Information & Organisation Prof.** (97.0 pivot score)
- **Infrastructure Services Analyst (IT)** (96.2 pivot score)
- **Cyber Security Analyst** (95.7 pivot score)

DETAILED TRANSITION PATHWAY

JOB

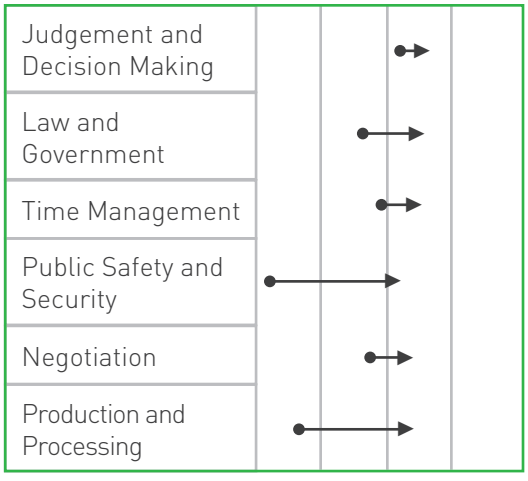
Accountant

Automatable 43%
Augmentable 30%

JOB CORRIDOR

- Fraud Examiners, Investigator & Analyst
- Information & Organisation Professional
- Actuarial Manager
- Change Analyst
- Project Analyst

KEY SKILL AND KNOWLEDGE GAPS | **ABILITY GAPS**



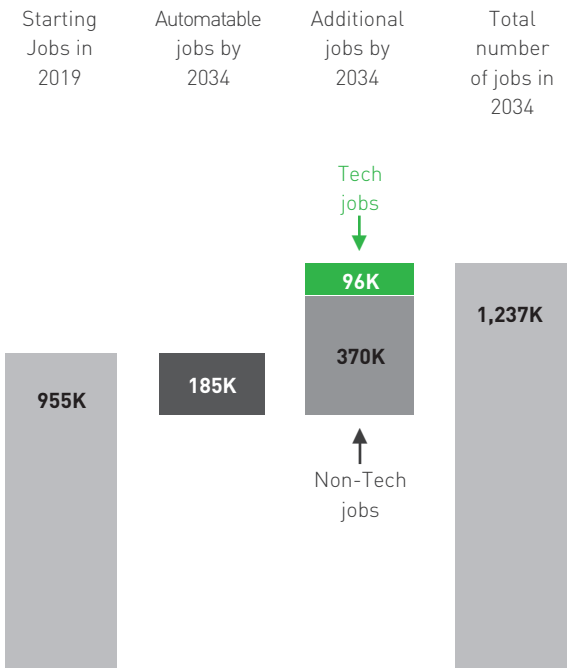
Implementation of emerging technology could lead to the generation of 96K new technology jobs over the next 15 years

Over the next 15 years an additional 466K jobs could be added to the Professional, Scientific and Technical Services Industry. This comprises of:

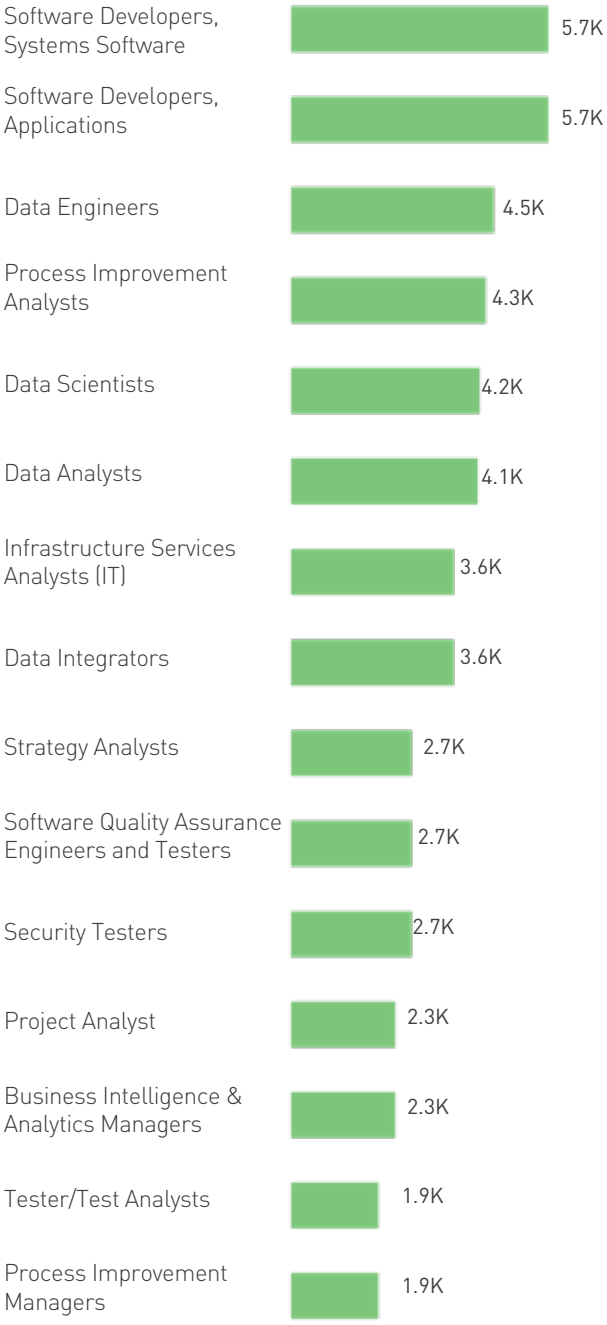
- 21% or 96K technical jobs
- 79% or 370K non-technical jobs

However during this period, 185K roles within the industry could be automated by technology, leading to a net increase of 29% or 281K roles for the industry.

MODELLED JOB GROWTH



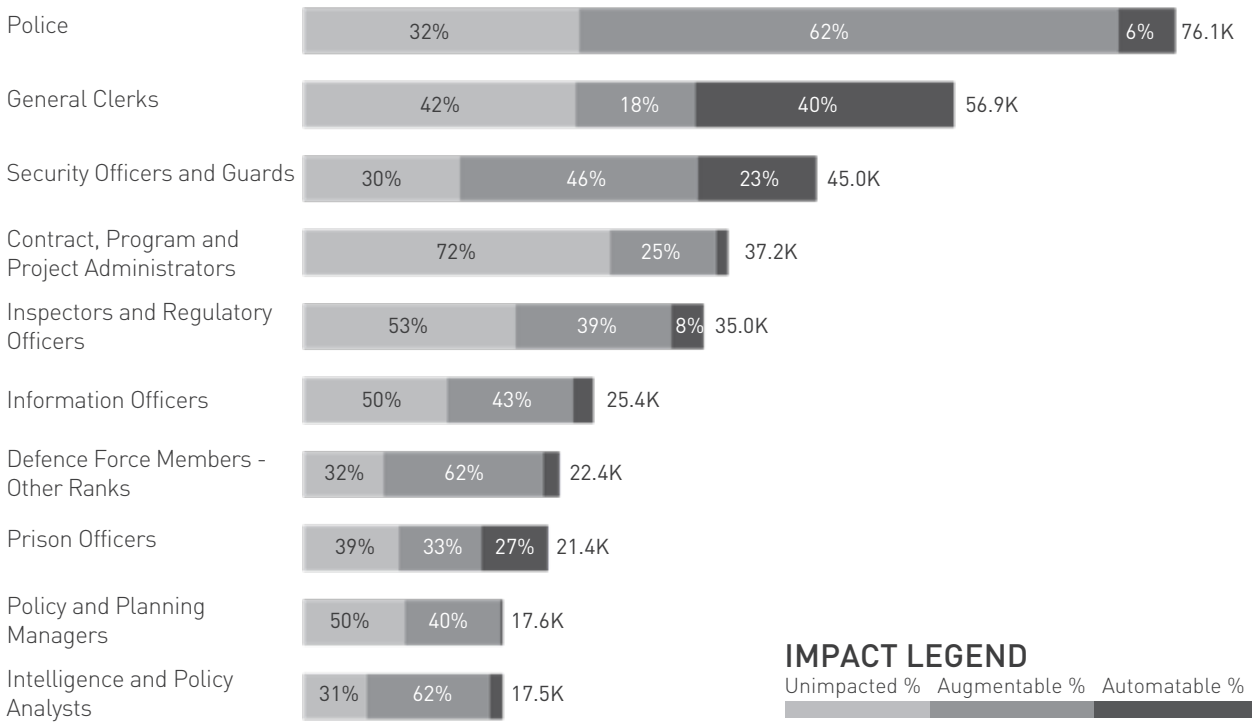
ADDITIONAL TECH JOBS REQUIRED (top 15)



Public Administration and Safety- long term (15 years)

The impact of automation and augmentation differs based on underlying skills and activities for each role.

TECHNOLOGY IMPACT ON 10 MOST COMMON ROLES AT YEAR 15



TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15

KEY FINDINGS:

156K people are at risk of automation over the next 15 years, 53% of which are male. Roles in the Public Administration and Safety industry are more subject to augmentation rather than automation.

PEOPLE IMPACT

73K 83K

156K TOTAL AUTOMATABLE

TECH IMPACT

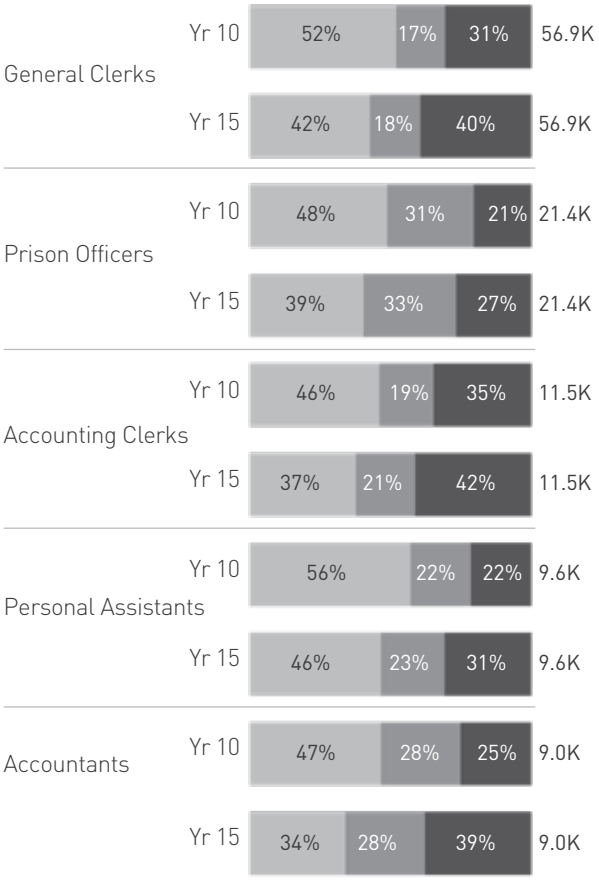
38% AUGMENTABLE

17% AUTOMATABLE

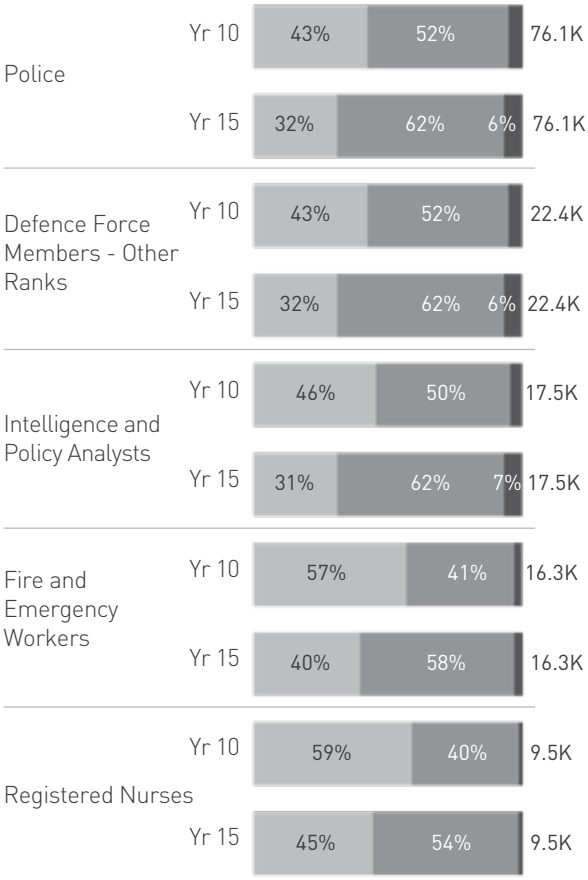
17% CAPACITY GAIN

Some roles are more easily automated while other roles are more susceptible to augmentation.

JOBS MOST EXPOSED TO AUTOMATION



JOBS MOST EXPOSED TO AUGMENTATION



IMPACT LEGEND

Unimpacted % Augmentable % Automatable %

KEY FINDINGS:

Accounting clerks are the most automatable role with an estimated 5K people at risk.
Police are the most augmentable role with the potential to augment 47K people.

JOB FAMILY ANALYSIS

Of the top 25 roles in this industry, they also have a presence in other industries.

- The top 3 industries for these roles are:
  - Healthcare and Social Assistance: 30.5%
  - Professional, Scientific and Technical Services: 9.5%
  - Education and Training: 5.0%

Re-skilling and transition potential exists from high risk Public Administration & Safety jobs to low risk jobs

The following re-skilling pathways are available to transition at risk workers to less automatable target careers. Many at risk professionals have transferrable skills, and need to only focus on skill and knowledge gaps to transition to new, lower risk, occupations.

EXAMPLE PATHWAYS

Current job (Risk at year 15) → Future job (more secure)

Call or Contact Centre Worker

45% AUTOMATABALE
3.5K people at risk
7.9K people in job

- **Copy Writer** (89.6 pivot score)
- **Change Analyst** (79.1 pivot score)
- **Content Manager** (75.9 pivot score)

Personal Assistant

31% AUTOMATABALE
3.0K people at risk
9.6K people in job

- **Change Analyst** (93.3 pivot score)
- **Information & Organisation Prof.** (85.3 pivot score)
- **Media Buyer** (82.9 pivot score)

Prison Officer

27% AUTOMATABALE
5.8K people at risk
21.4K people in job

- **Sheriff & Deputy Sheriff** (94.7 pivot score)
- **Social & Human Service Assistant** (89.2 pivot score)
- **Diversional Therapist** (80.9 pivot score)

DETAILED TRANSITION PATHWAY

JOB

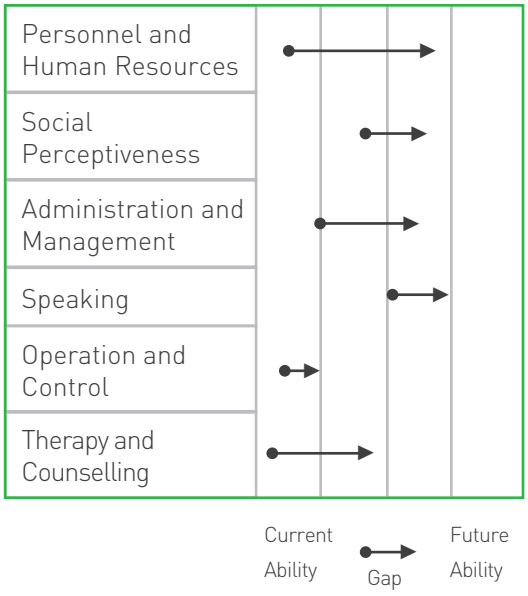
Call Centre Worker

Automatable 45%
Augmentable 15%

JOB CORRIDOR

- Change Analyst
- Copy Writer
- Content Manager
- Fundraiser
- Advertising Sales Agent

KEY SKILL AND KNOWLEDGE GAPS | **ABILITY GAPS**



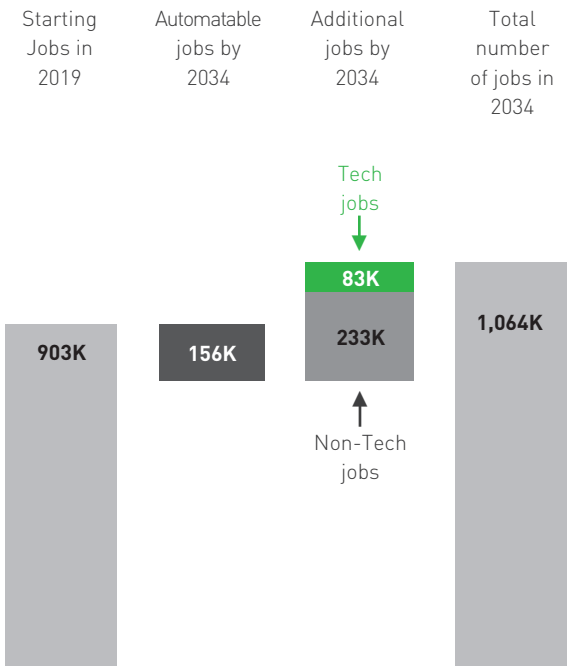
Implementation of emerging technology could lead to the generation of 83K new technology jobs over the next 15 years

Over the next 15 years an additional 316K jobs could be added to the Public Administration and Safety Industry. This comprises of:

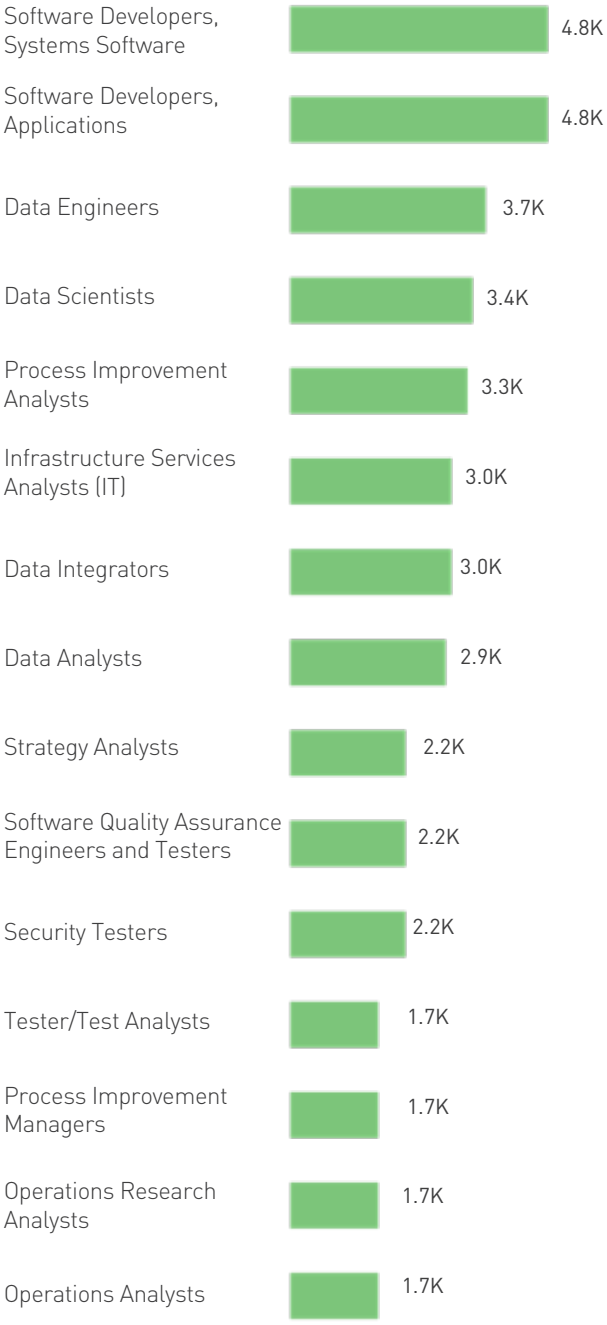
- 26% or 83K technical jobs
- 74% or 233K non-technical jobs

However during this period, 156K roles within the industry could be automated by technology, leading to a net increase of 18% or 161K roles for the industry.

MODELLED JOB GROWTH



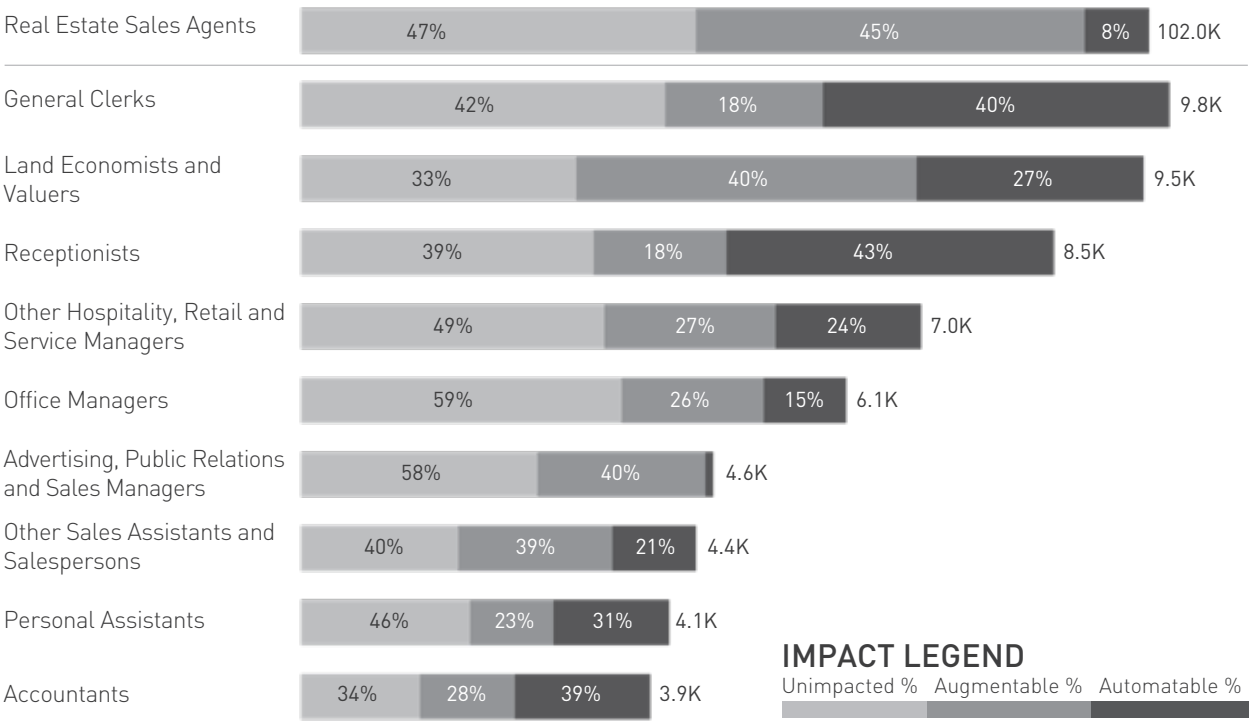
ADDITIONAL TECH JOBS REQUIRED (top 15)



Rental, Hiring and Real Estate Services - long term (15 years)

The impact of automation and augmentation differs based on underlying skills and activities for each role.

TECHNOLOGY IMPACT ON 10 MOST COMMON ROLES AT YEAR 15



TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15

KEY FINDINGS:

36K people are at risk of automation over the next 15 years, 58% of which are female. Roles in the Rental, Hiring and Real Estate Services industry are more subject to augmentation rather than automation.

PEOPLE IMPACT

21K 15K

36K

TOTAL AUTOMATABLE

TECH IMPACT

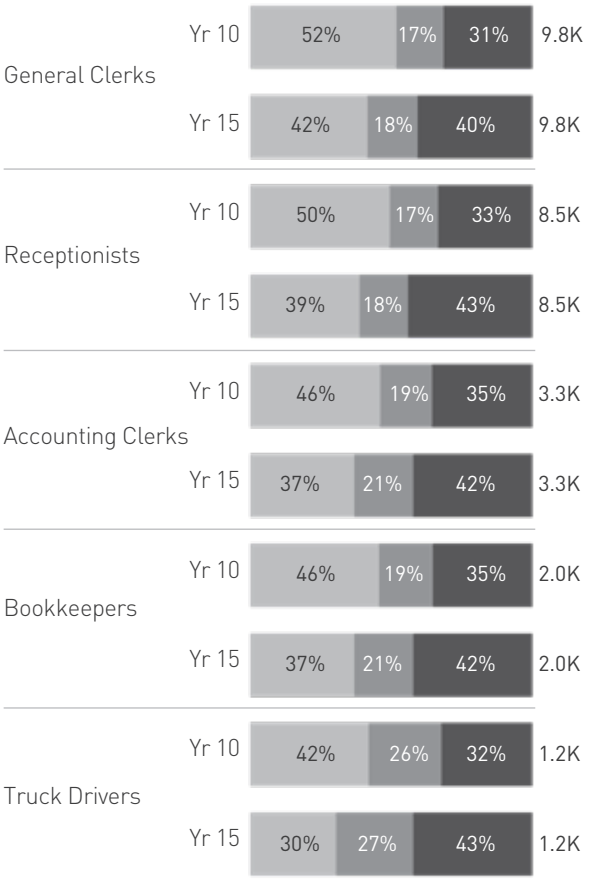
37%
AUGMENTABLE

17%
AUTOMATABLE

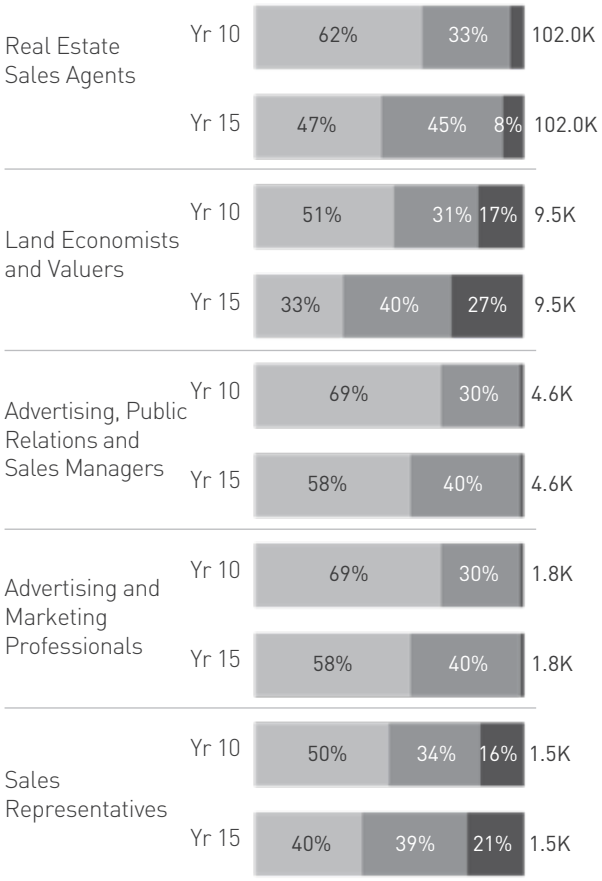
17%
CAPACITY GAIN

Some roles are more easily automated while other roles are more susceptible to augmentation.

JOBS MOST EXPOSED TO AUTOMATION



JOBS MOST EXPOSED TO AUGMENTATION



IMPACT LEGEND

Unimpacted % Augmentable % Automatable %

KEY FINDINGS:

Receptionists are the most automatable role with an estimated 4K people at risk.
Real Estate Sales Agents are the most augmentable role with the potential to augment 46K people.

JOB FAMILY ANALYSIS

Of the top 25 roles in this industry, they also have a presence in other industries.

- The top 3 industries for these roles are:
  - Retail and Wholesale Trade: 23.9%
  - Professional, Scientific and Technical Services: 10.0%
  - Construction: 8.0%

Re-skilling and transition potential exists from high risk Rental, Hiring & Real Estate Services jobs to low risk jobs

The following re-skilling pathways are available to transition at risk workers to less automatable target careers. Many at risk professionals have transferrable skills, and need to only focus on skill and knowledge gaps to transition to new, lower risk, occupations.

EXAMPLE PATHWAYS

Current job (Risk at year 15) → Future job (more secure)

Bookkeeper

42% AUTOMATABALE
0.8K people at risk
2.0K people in job

- **Change Analyst** (78.9 pivot score)
- **Copy Writer** (75.4 pivot score)
- **ICT Security Consultant** (67.9 pivot score)

Car Detailer

33% AUTOMATABALE
0.5K people at risk
1.6K people in job

- **Solar Photovoltaic Installer** (84.5 pivot score)
- **Camera Operators** (61.5 pivot score)
- **Visual Arts & Crafts Professional** (61.4 pivot score)

Land Economist & Valuer

27% AUTOMATABALE
2.6K people at risk
9.5K people in job

- **Real Estate Sales Agent** (87.3 pivot score)
- **Information & Organisation Prof.** (77.2 pivot score)
- **Cyber Security Analyst** (73.8 pivot score)

DETAILED TRANSITION PATHWAY

JOB

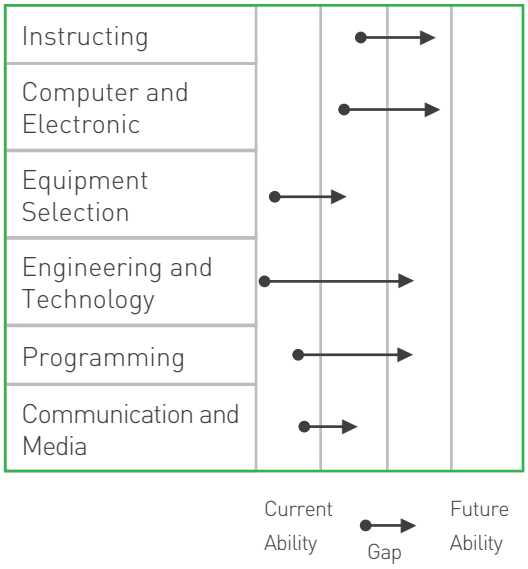
Bookkeeper

Automatable 42%
Augmentable 21%

JOB CORRIDOR

- ICT Security Consultant
- Information & Organisation Professional
- Copy Writer
- Change Analyst
- Massage Therapist

KEY SKILL AND KNOWLEDGE GAPS | **ABILITY GAPS**



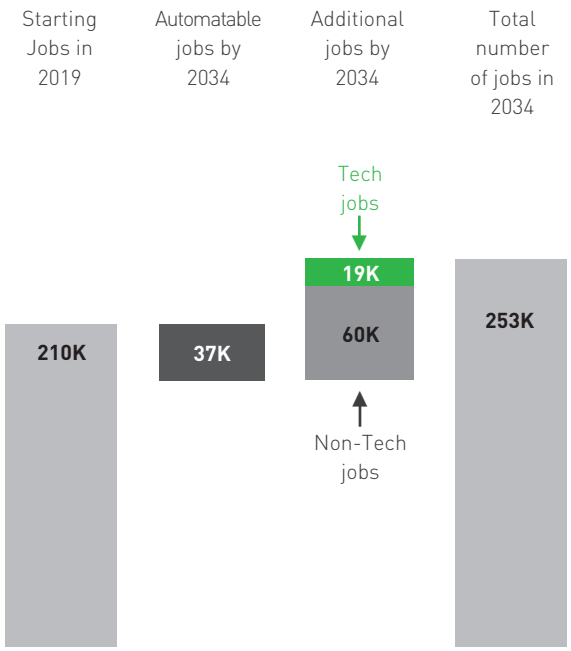
Implementation of emerging technology could lead to the generation of 19K new technology jobs over the next 15 years

Over the next 15 years an additional 79K jobs could be added to the Rental Hiring and Real Estate Services Industry. This comprises of:

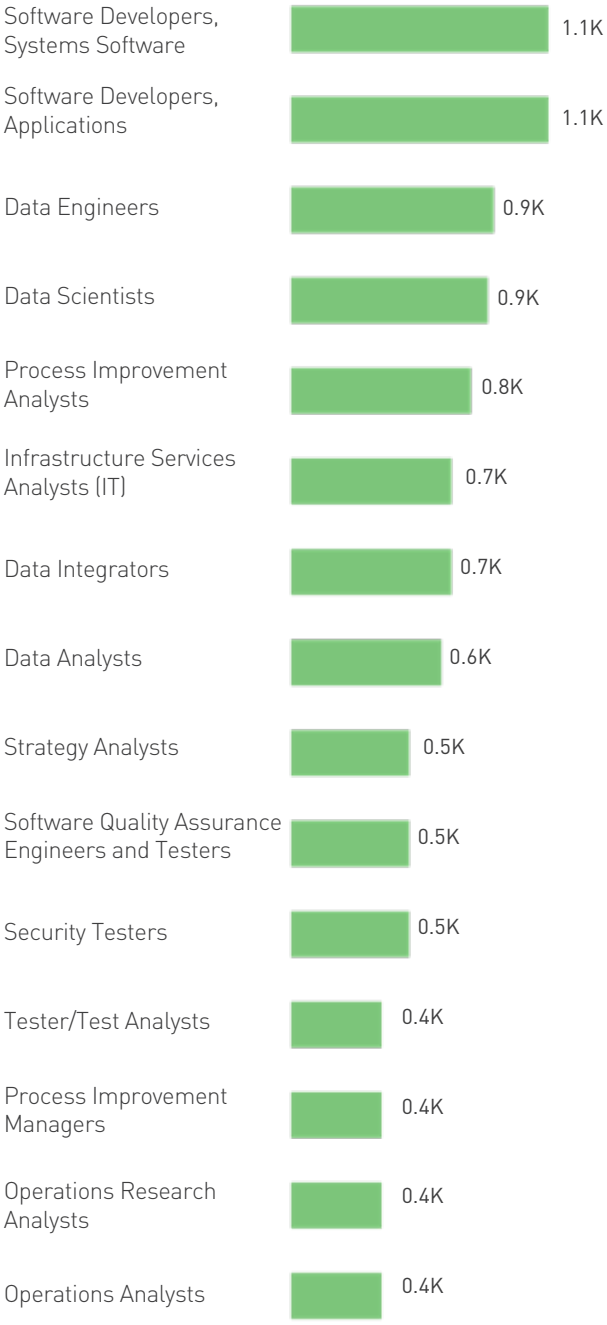
- 24% or 19K technical jobs
- 76% or 60K non-technical jobs

However during this period, 37K roles within the industry could be automated by technology, leading to a net increase of 20% or 43K roles for the industry.

MODELLED JOB GROWTH



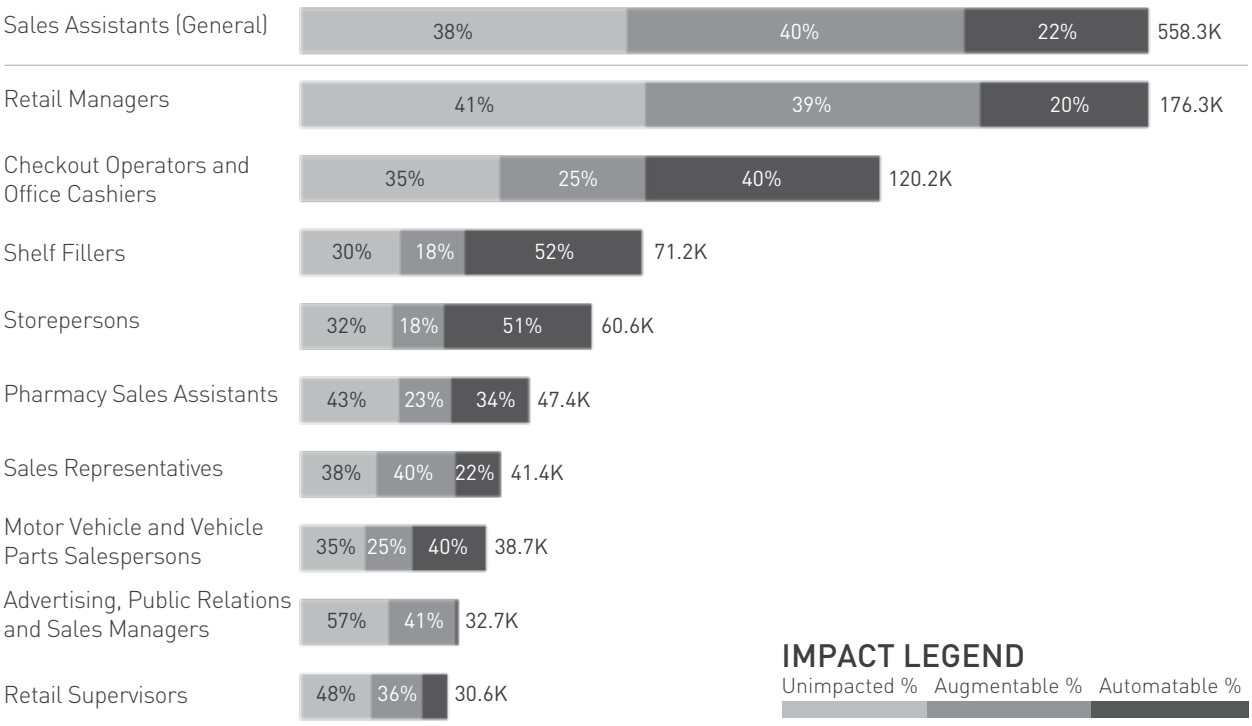
ADDITIONAL TECH JOBS REQUIRED (top 15)



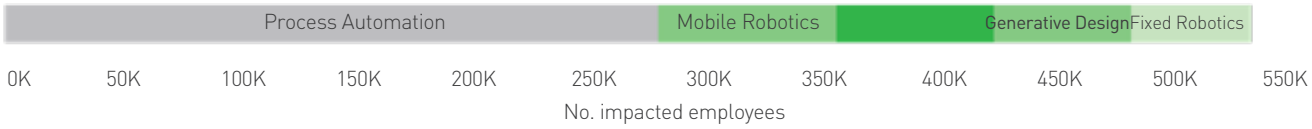
Retail and Wholesale Trade - long term (15 years)

The impact of automation and augmentation differs based on underlying skills and activities for each role.

TECHNOLOGY IMPACT ON 10 MOST COMMON ROLES AT YEAR 15



TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15



KEY FINDINGS:

458K people are at risk of automation over the next 15 years, 52% of which are female. Roles in the Retail and Wholesale Trade industry are more subject to augmentation rather than automation.

PEOPLE IMPACT

458K TOTAL AUTOMATABLE

239K 219K

TECH IMPACT

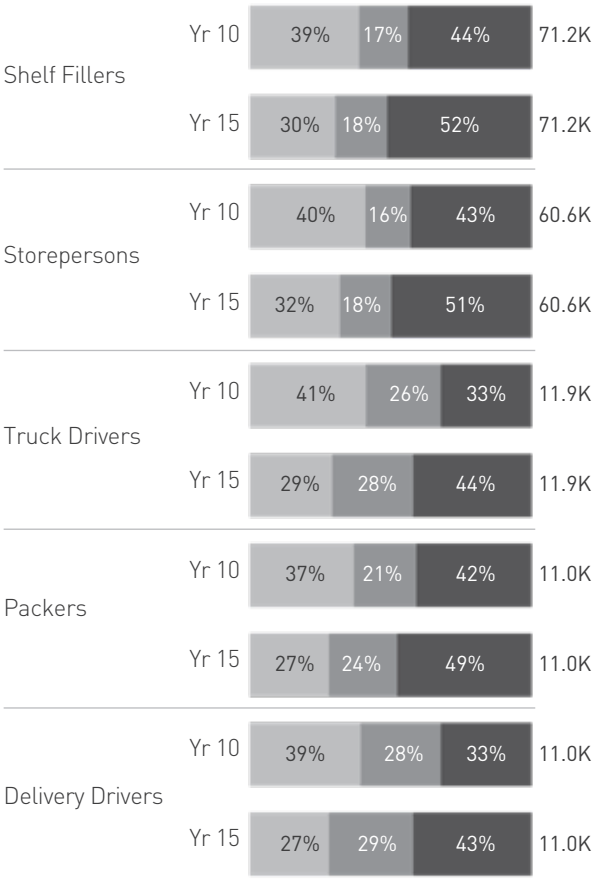
34% AUGMENTABLE

27% AUTOMATABLE

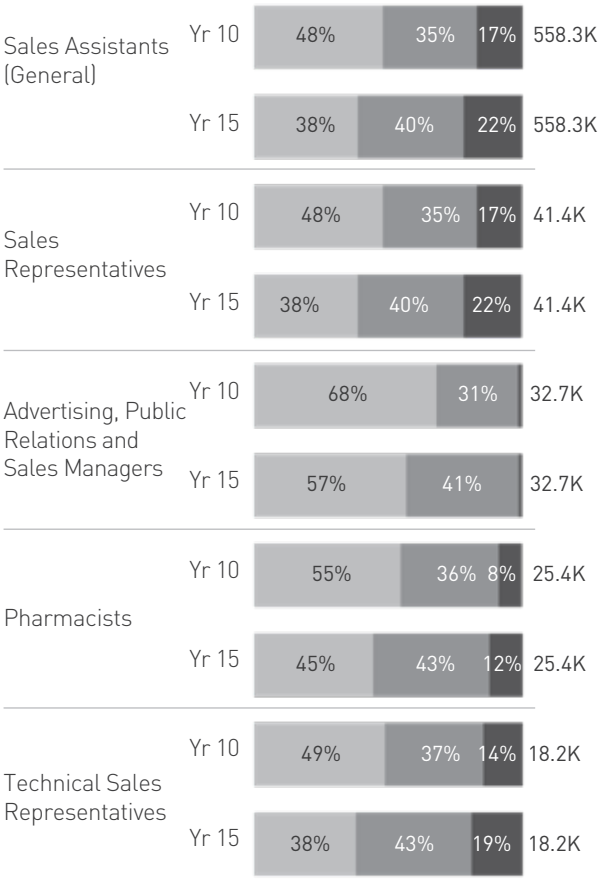
15% CAPACITY GAIN

Some roles are more easily automated while other roles are more susceptible to augmentation.

JOBS MOST EXPOSED TO AUTOMATION



JOBS MOST EXPOSED TO AUGMENTATION



IMPACT LEGEND

Unimpacted % Augmentable % Automatable %

KEY FINDINGS:

Shelf fillers are the most automatable role with an estimated 37K people at risk. Technical sales representatives are the most augmentable role with the potential to augment 8K people.

JOB FAMILY ANALYSIS

Of the top 25 roles in this industry, they also have a presence in other industries.

- The top 3 industries for these roles are:
  - Transport, Postal and Warehousing: 7.7%
  - Accommodation and Food Services: 6.5%
  - Professional, Scientific and Technical Services: 6.0%

Re-skilling and transition potential exists from high risk Retail and Wholesale Trade jobs to low risk jobs

The following re-skilling pathways are available to transition at risk workers to less automatable target careers. Many at risk professionals have transferrable skills, and need to only focus on skill and knowledge gaps to transition to new, lower risk, occupations.

EXAMPLE PATHWAYS

Current job (Risk at year 15) → Future job (more secure)

Shelf Filler

52% AUTOMATABALE
37.1K people at risk
71.2K people in job

- **Aged & Disabled Carer** (90.8 pivot score)
- **Visual Merchandiser** (89.6 pivot score)
- **Social Media Influencer** (59.0 pivot score)

Store person

51% AUTOMATABALE
30.7K people at risk
60.6K people in job

- **Personal Carer & Assistant** (83.4 pivot score)
- **Visual Merchandiser** (72.6 pivot score)
- **Child Carer** (66.2 pivot score)

Sales Assistant

22% AUTOMATABALE
121.2K people at risk
558.3K people in job

- **Visual Merchandiser** (95.9 pivot score)
- **Sports and Fitness Worker** (86.0 pivot score)
- **ICT Sales Professional** (72.0 pivot score)

DETAILED TRANSITION PATHWAY

JOB

Shelf Filler

Automatable 52%
Augmentable 18%

JOB CORRIDOR

- Social Media Influencer
- Visual Merchandiser
- Aged & Disabled Carer
- Dietetic Technician
- Hairdresser

KEY SKILL AND KNOWLEDGE GAPS	ABILITY GAPS
Technology Design	
Fine Arts	
Negotiation	
Sociology and Anthropology	
Social Perceptiveness	
Biology	

Current Ability → Gap → Future Ability

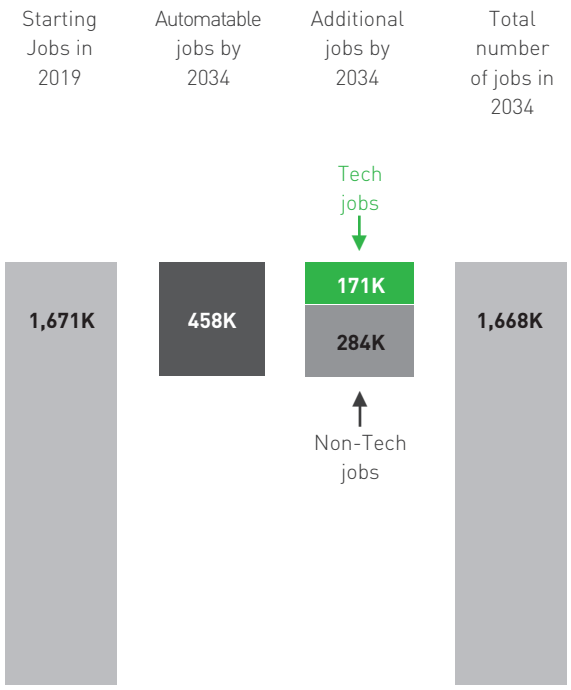
Implementation of emerging technology could lead to the generation of 171K new technology jobs over the next 15 years

Over the next 15 years an additional 455K jobs could be added to the Retail and Wholesale Trade Industry. This comprises of:

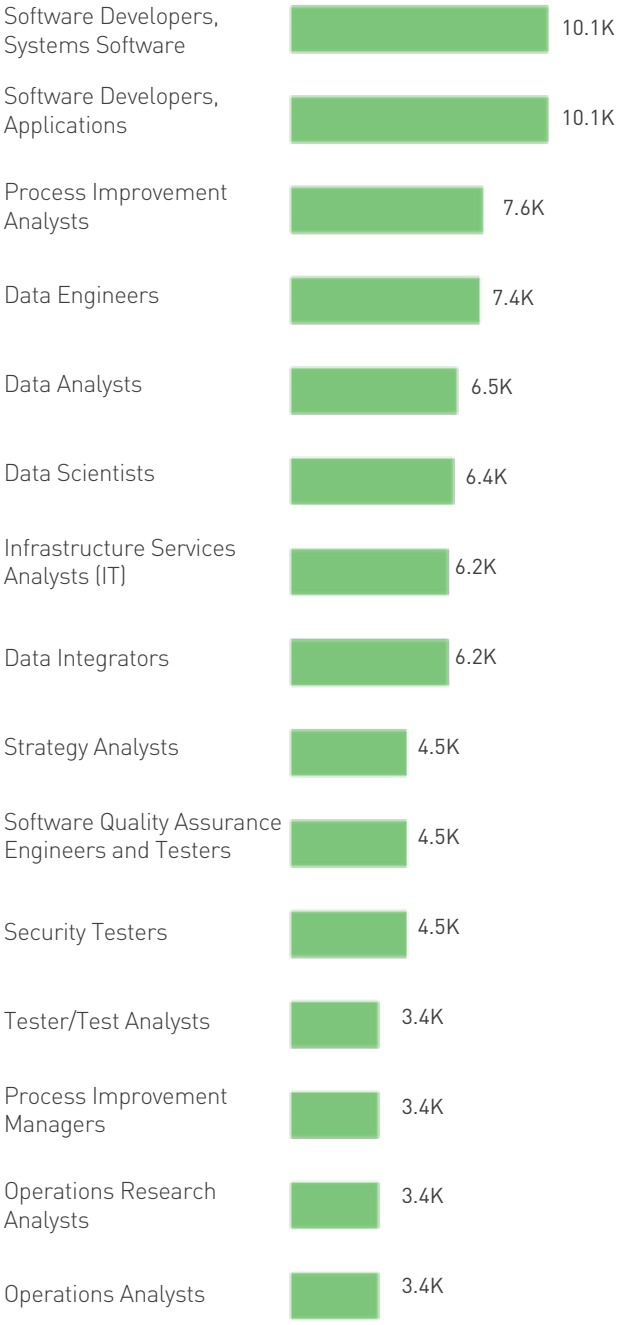
- 38% or 171K technical jobs
- 62% or 284K non-technical jobs

However during this period, 458K roles within the industry could be automated by technology, leading to a net decrease of 0% or 3K roles for the industry.

MODELLED JOB GROWTH



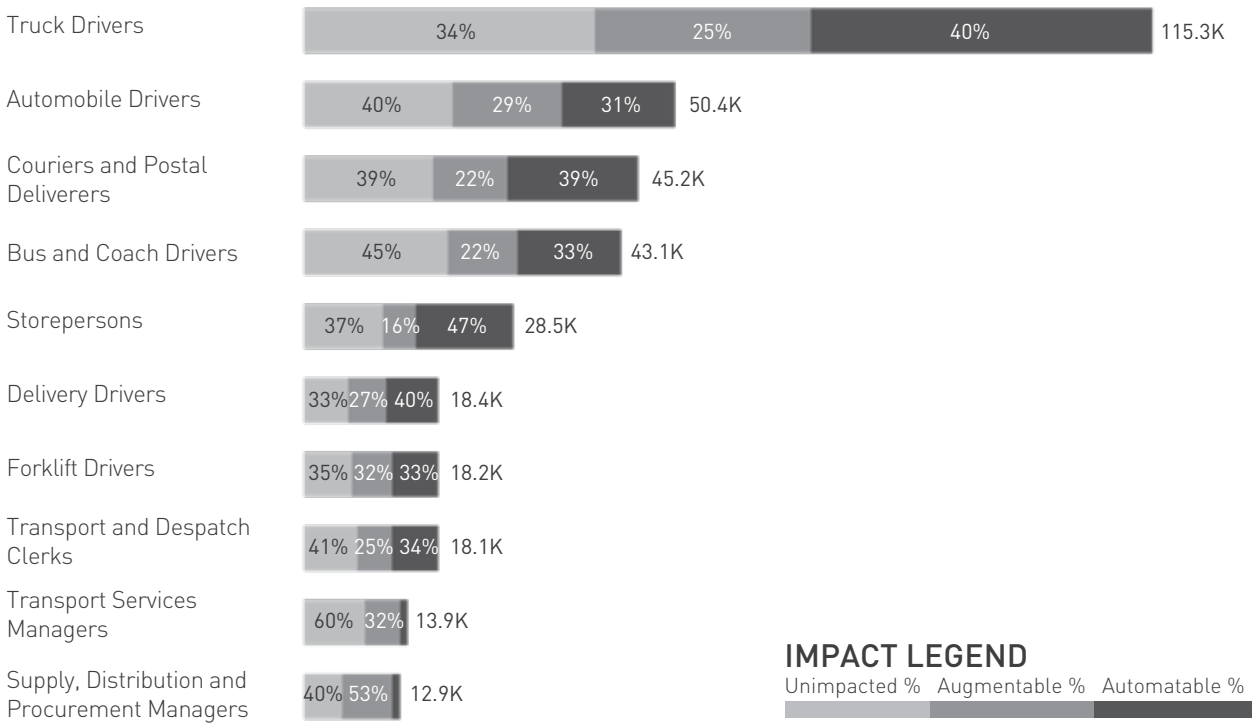
ADDITIONAL TECH JOBS REQUIRED (top 15)



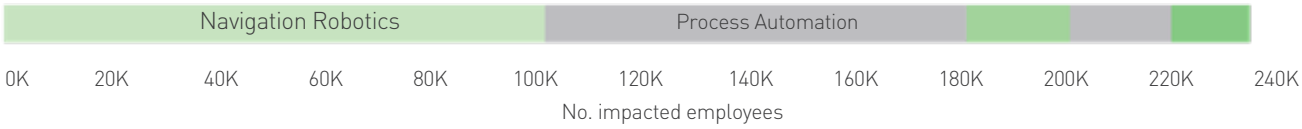
Transport, Postal and Warehousing - long term (15 years)

The impact of automation and augmentation differs based on underlying skills and activities for each role.

TECHNOLOGY IMPACT ON 10 MOST COMMON ROLES AT YEAR 15



TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15



KEY FINDINGS:

197K people are at risk of automation over the next 15 years, 80% of which are male. Roles in the Transport, Postal and Warehousing industry are more subject to automation rather than augmentation.

PEOPLE IMPACT

39K 157K

197K TOTAL AUTOMATABLE

TECH IMPACT

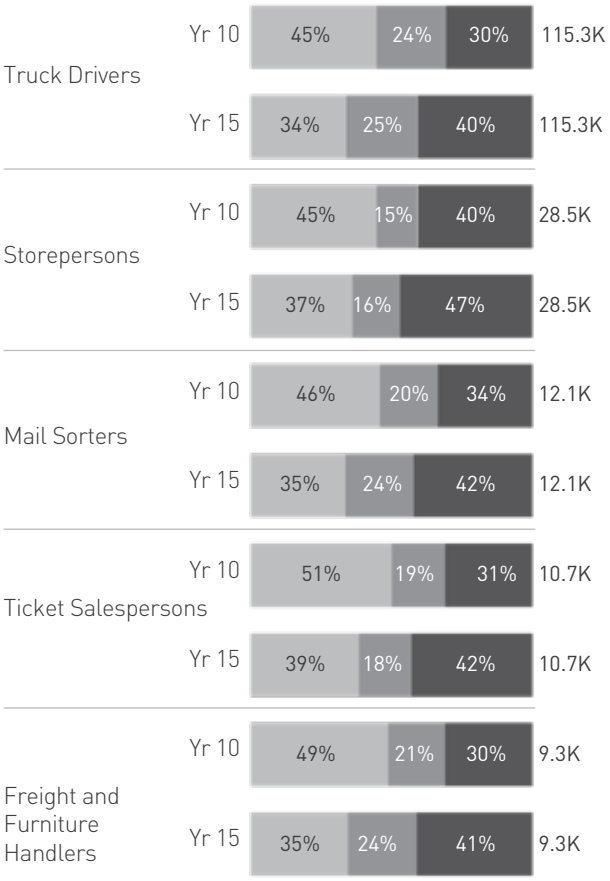
26% AUGMENTABLE

33% AUTOMATABLE

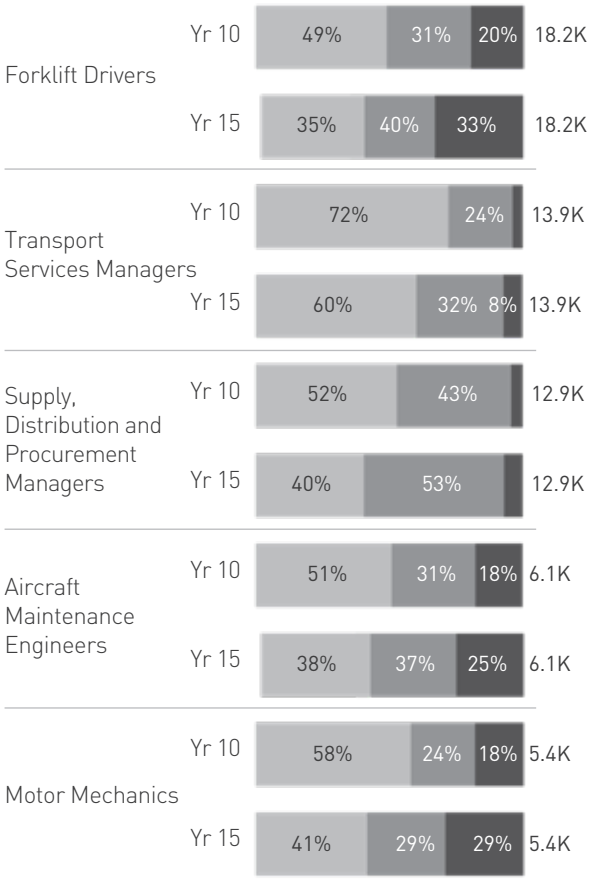
11% CAPACITY GAIN

Some roles are more easily automated while other roles are more susceptible to augmentation.

JOBS MOST EXPOSED TO AUTOMATION



JOBS MOST EXPOSED TO AUGMENTATION



IMPACT LEGEND

Unimpacted % Augmentable % Automatable %

KEY FINDINGS:

Storepersons are the most automatable role with an estimated 13K people at risk.
Supply, distribution and procurement managers are the most augmentable role with the potential to augment 7K people.

JOB FAMILY ANALYSIS

Of the top 25 roles in this industry, they also have a presence in other industries.

- The top 3 industries for these roles are:
  - Retail and Wholesale Trade: 35.0%
  - Accommodation and Food Services: 6.1%
  - Public Administration and Safety: 5.5%

Re-skilling and transition potential exists from high risk Transport, Postal & Warehousing jobs to low risk jobs

The following re-skilling pathways are available to transition at risk workers to less automatable target careers. Many at risk professionals have transferrable skills, and need to only focus on skill and knowledge gaps to transition to new, lower risk, occupations.

EXAMPLE PATHWAYS

Current job (Risk at year 15) → Future job (more secure)

Mail Sorter

42% AUTOMATABALE
5.1K people at risk
12.1K people in job

- **Aged & Disabled Carer** (82.8 pivot score)
- **Child Carer** (67.3 pivot score)
- **Cook** (64.0 pivot score)

Freight & Furniture Handler

41% AUTOMATABALE
3.8K people at risk
9.3K people in job

- **Personal Carer & Assistant** (76.8 pivot score)
- **Cook** (70.0 pivot score)
- **Visual Merchandiser** (68.2 pivot score)

Delivery Driver

40% AUTOMATABALE
7.3K people at risk
18.4K people in job

- **Personal Care Consultant** (79.7 pivot score)
- **Animal Attendants & Trainer** (73.4 pivot score)
- **Cook** (73.2 pivot score)

DETAILED TRANSITION PATHWAY

JOB

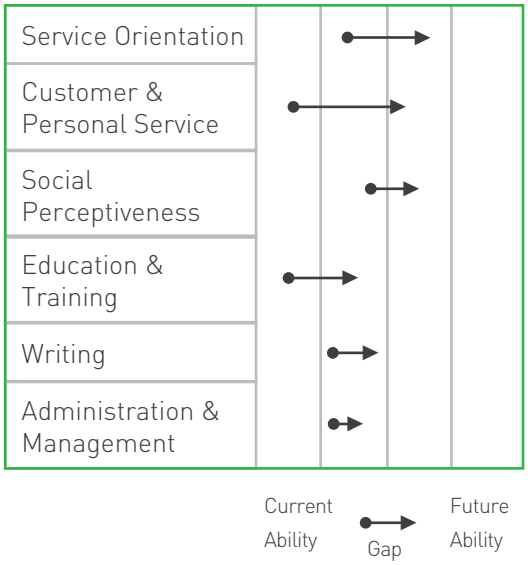
Mail Sorter

Automatable 42%
Augmentable 24%

JOB CORRIDOR

- Aged & Disabled Carer
- Child Carer
- Cook
- Visual Merchandiser
- Education Aides

KEY SKILL AND KNOWLEDGE GAPS | **ABILITY GAPS**



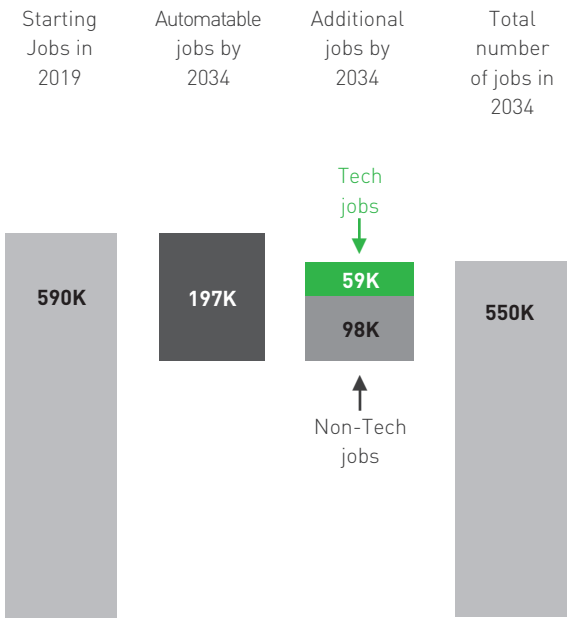
Implementation of emerging technology could lead to the generation of 59K new technology jobs over the next 15 years

Over the next 15 years an additional 157K jobs could be added to the Transport, Postal and Warehousing Industry. This comprises of:

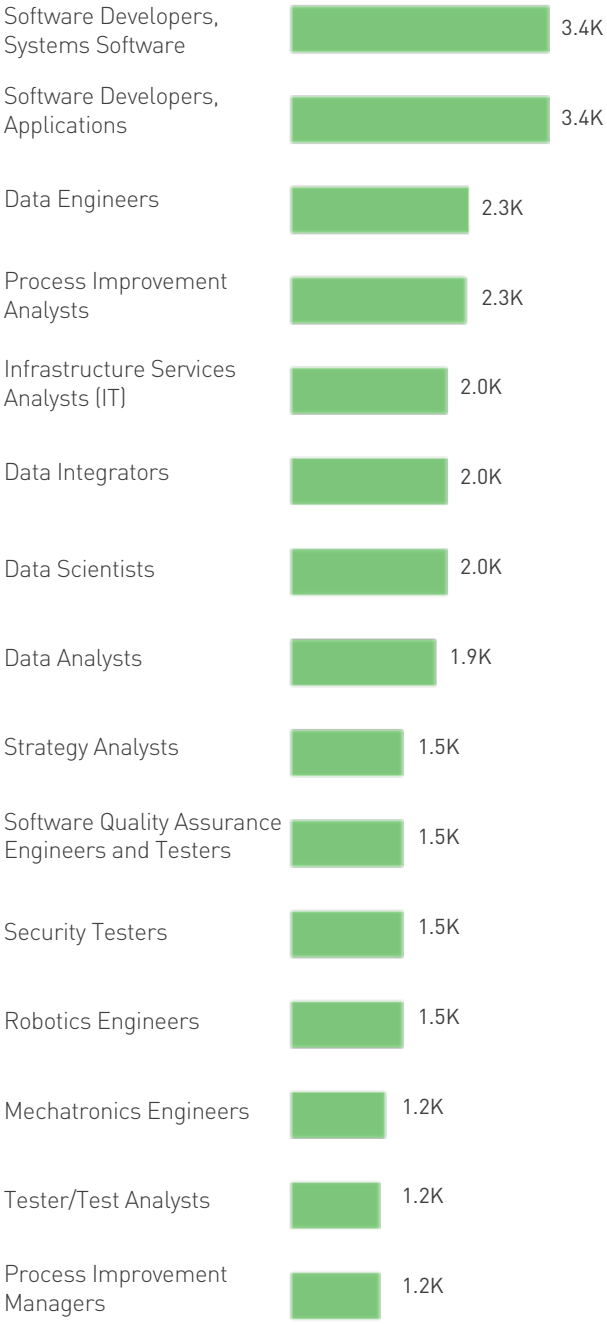
- 37% or 59K technical jobs
- 63% or 98K non-technical jobs

However during this period, 197K roles within the industry could be automated by technology, leading to a net decrease of 7% or 40K roles for the industry.

MODELLED JOB GROWTH



ADDITIONAL TECH JOBS REQUIRED (top 15)



03

Methodology

Faethm's approach to creating workforce data

Our data is built from publicly available datasets or inferred using predictive modelling via available source data.

1 Census Collection

Census data was gathered for Australia with job classifications mapped to Faethm's job taxonomy to enable like-for-like comparison of country workforce data.

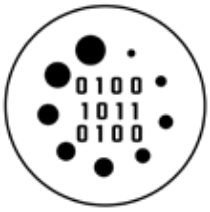
2 Data Cleaning

All roles in each industry were reviewed. Any role that was not considered to be a good fit for that industry was removed.

3 Workforce Growth

2016 Australian census data was proportionally scaled to the May 2019 Australian workforce number provided by the Australian Bureau of Statistics.

4 Faethm AI



All job-data was then loaded to the Faethm Platform to predict the impact of emerging technology on each job over 15 years. Unless otherwise specified, predictions are for 2034 based on 2019 workforce (i.e. not incorporating 15 years of workforce growth).

Faethm's Demand Model

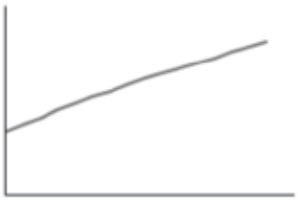
We apply a data science approach to answer an economic question: where in the economy will jobs decline and new jobs grow? Our approach is split into four parts.

1 Assess who in the workforce is at risk of automation and who will be enhanced by augmentation

a. Country census data is joined to Faethm skills and task data

b. The Faethm model determines those tasks likely to be automated and augmented over 15 years

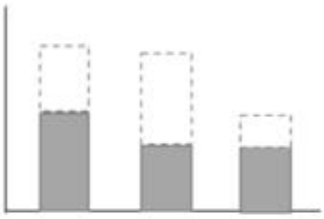
2 Calculate employment demand based on expected GDP growth from historic productivity measures



a. Future employment growth is derived from both historic GDP and labour productivity gains

b. The impact of automation, augmentation, and tech-addition is also applied to include future labour productivity gains

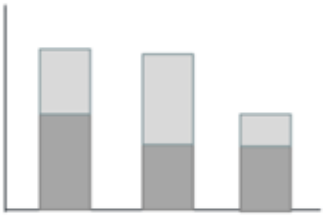
3 Determine which industries will benefit from jobs growth



a. Total economic growth determines the total demand for workers across the economy

b. To determine industry demand, historic industry job-opening data, as well as 73 other factors, are used to forecast industry growth over 15 years

4 Identify which jobs will be in demand



a. Within an industry, we first determine the technology occupations required based on the extent of automation and augmentation

b. We then complete the remaining demand by expanding the post-automated distribution of occupations within the industry

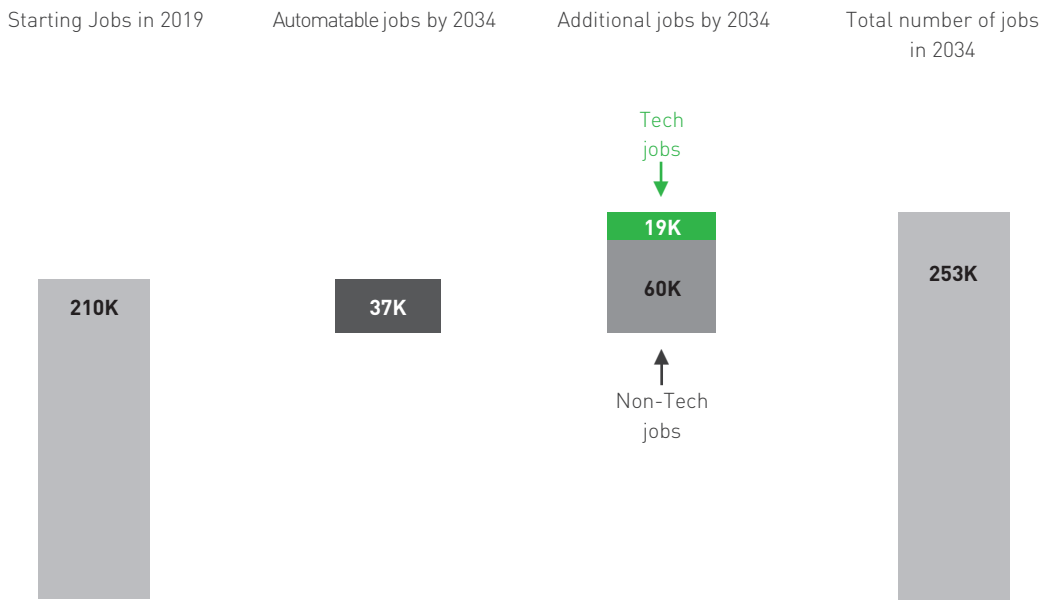
Workforce Addition

Technology will lead to the creation and evolution of current jobs.

Over the next 15 years, there will be significant changes to the job composition within industries as some jobs are automated, augmented and new jobs are added. Leveraging the Faethm demand model, we have broken job creation into two categories:

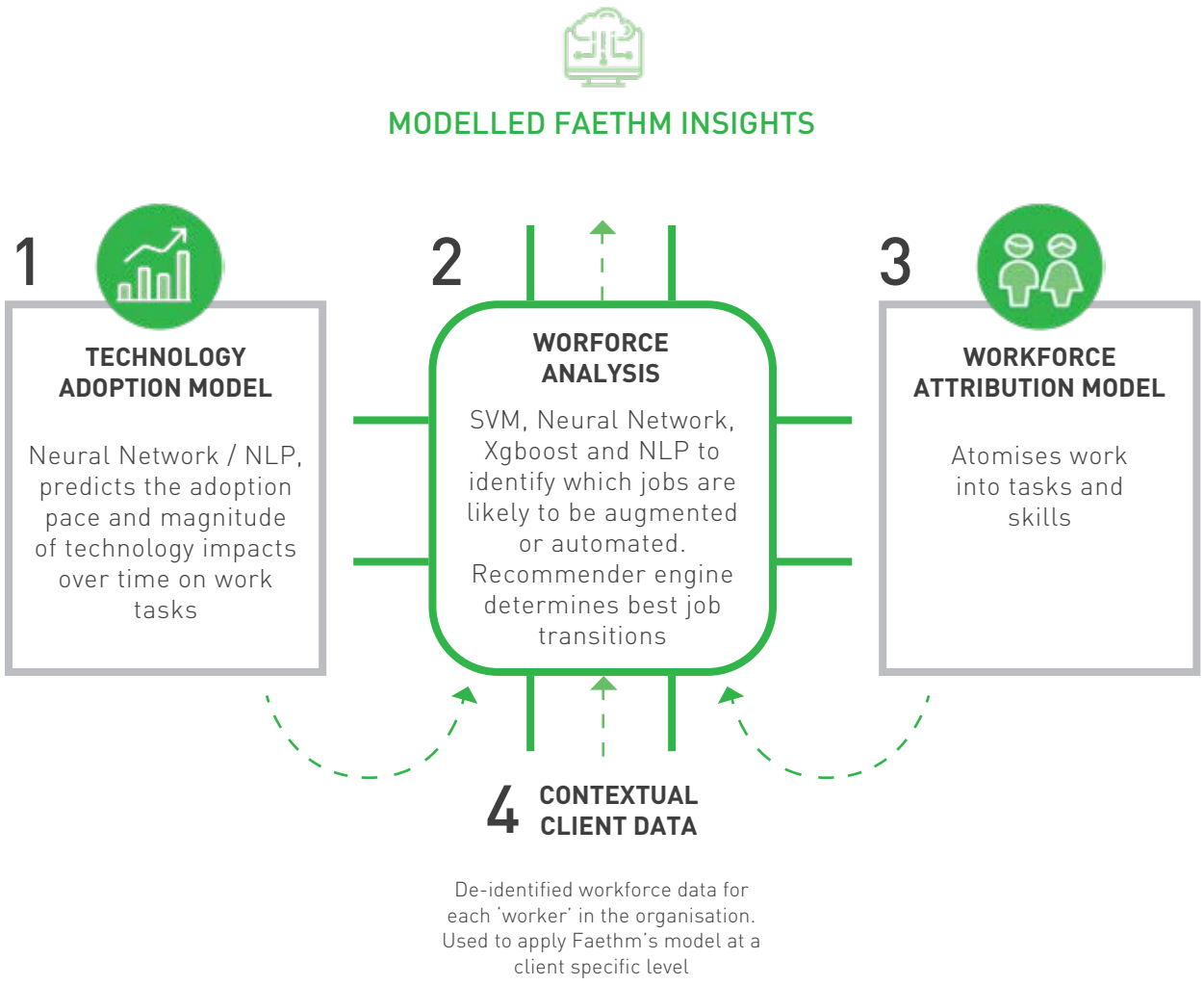
- Non-Tech jobs – these are jobs in the industry that we expect demand to increase over the next 15 years.
- Technology jobs - jobs required to implement new technologies. Jobs such as software developers, data scientists and cyber security will be in high demand. Many supporting operational jobs such as project and operations analysts will also be required to support implementation.

EXAMPLE JOB GROWTH FOR AN INDUSTRY



Technology Impact Predictions

The Faethm Platform identifies the probability of each role being automated or augmented over time. Machine learning algorithms are applied across two key models: the Technology Adoption Model, and the Work Attribution Model.



Job Corridor

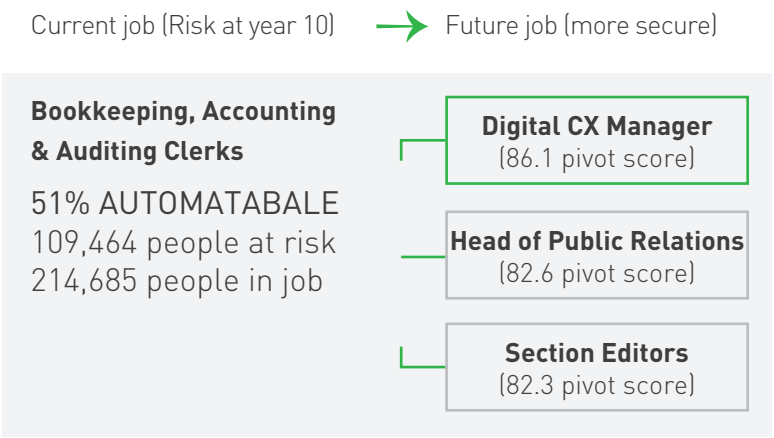
The job corridor helps identify the best job transitions.

Faethm's job corridor identifies the ideal next job based on several metrics presented as a Pivot score.

The Pivot score considers two measures of job similarity: the first based on each of the job attributes, such as skills, abilities, knowledge and activities; and the second on the values and behaviours typically found in individuals within the job.

Together these measures identify suitable jobs: jobs requiring similar skills and those an individual might actually like to transition to. In combination, the future job transitions are then ranked by considering jobs with future economic demand, similar salary levels, and, most importantly, lower levels of Automation risk. The best transitions will show a Pivot score above 80 and harder transitions – requiring more education - below 80.

EXAMPLE:



Today, Faethm provides the most granular and sophisticated data on the planet

Faethm Micro to Macro Data	VS	Leading Global Consulting Co. Macro Data
Conducting 4 validation programs, now and ongoing, 14 academic-quality technical white papers (so far) have been written and/or distributed for academic review.		**Completed a 2019 report for the Singaporean Government on the effects of technological change on the future workforce of the financial services industry.**
Multiple skill taxonomies of nearly 3,000 skills		Skills taxonomy developed of 42 skills
Describes 1,500 jobs and 60,000 job titles		Described 121 jobs
A task model of nearly 20,000 tasks		-
The technology adoption model has global, country and industry specific Availability and Adoption S-curves for 17 categories		30 validation sessions with representative firms in Singapore
Assessments on over 2 billion of the world's workforce		Representative of Singapore's financial services sector
Updated quarterly		**Captured a moment in time**

Evaluation and Validation of Modelling

Faethm considers data and model quality to be of utmost importance to our clients and has invested time to build a robust scientific approach to evaluation and validation that would be typical of high-impact academic research. Briefly, Faethm is conducting four programmes of validation, now and ongoing:

1 COMPONENT ANALYSIS – isolation of model components to test statistical validity of individual parts;

2 COMPARATIVE ANALYSIS – to explore uncertainty from internal variability through comparison to alternative methods;

3 PROXY ANALYSIS – comparison to real observed outcomes; and finally,

4 SCIENTIFIC PEER REVIEW – academic-quality technical white papers have been written and distributed for academic peer review.

Excluding academic research, no product or service providing analysis of workforce data is evaluated or validated using scientific methodologies. Overall, the Faethm model is determined to be a robust and validated approach to project the future impact of technology on work.

Faethm's Technology Taxonomy

YEAR 1

Scope of Faethm model

Programmed I

Pre-defined technologies

Process Automation
Code programmed to complete pre-defined, logical and rule-based processing tasks.

Fixed Robotics
Fixed robots that handle and manipulate objects in a pre-defined way.

Mobile Robotics
Mobile robots programmed to move between points in a controlled environment.

Narrow AI

Reactive technologies

Voice Response
Tools that use ML and sensors to reactively interpret queries and offer a pre-defined response.

Suggestion Provision
Tools that reactively use ML to prioritise data to identify relevant recommendations.

Recognition Vision
Tools that reactively use ML and sensors to recognise and classify data meaningfully.

Predictive Analysis
Tools that reactively use ML to conduct narrow analysis and make related predictions.

This colour code has been used throughout the Industry Analysis Section

EXTENT OF HUMAN INPUT

Dependent (relies on human ability)

AI MATURITY & EXISTENCE

Commercialised (developed with widespread adoption)

(predictable future)

YEAR 15

Broad AI

Proactive technologies

Conversation Exchange
Systems that use ML and sensors to interpret and engage in conversation.

Decision Generation
Systems that use ML to evaluate input data to determine the best course of action.

Dexterous Robotics
Robots with flexible functions capable of adapting dynamically using sensors and ML.

Sensory Perception
Systems that use ML and sensors to detect and extract meaning from external stimuli.

Reinforced AI

Self-improving technologies

Creative Origination
Agents using RL and sensors to invent new and original concepts beyond known data.

Navigation Robotics
Robots using RL and sensors to navigate autonomously in unstructured environments.

Solution Discovery
Agents using RL and sensors to digest and solve unstructured, complex problems.

Generative Design
Agents using RL and sensors to interpret creative data and generate concepts.

Collaborative Robotics
Robot using RL and sensors to co-contribute to generating shared meaning.

Assistive Robotics
Robots using RL and sensors to physically interact with humans in an emotive manner.

Collaborative (works alongside human ability)

In R&D (prototyped with limited adoption)

04

About Faethm

About Faethm

Launched in October 2017, the Faethm Platform is a globally unique SaaS analytics platform that is defining technology decisions and the workforce of the future. The Faethm Platform is underpinning a wide range of valuable outcomes for companies and governments that span technology investment and deployment; market, industry and trade strategy; strategic workforce management and learning and development.

Michael Priddis
Chief Executive Officer

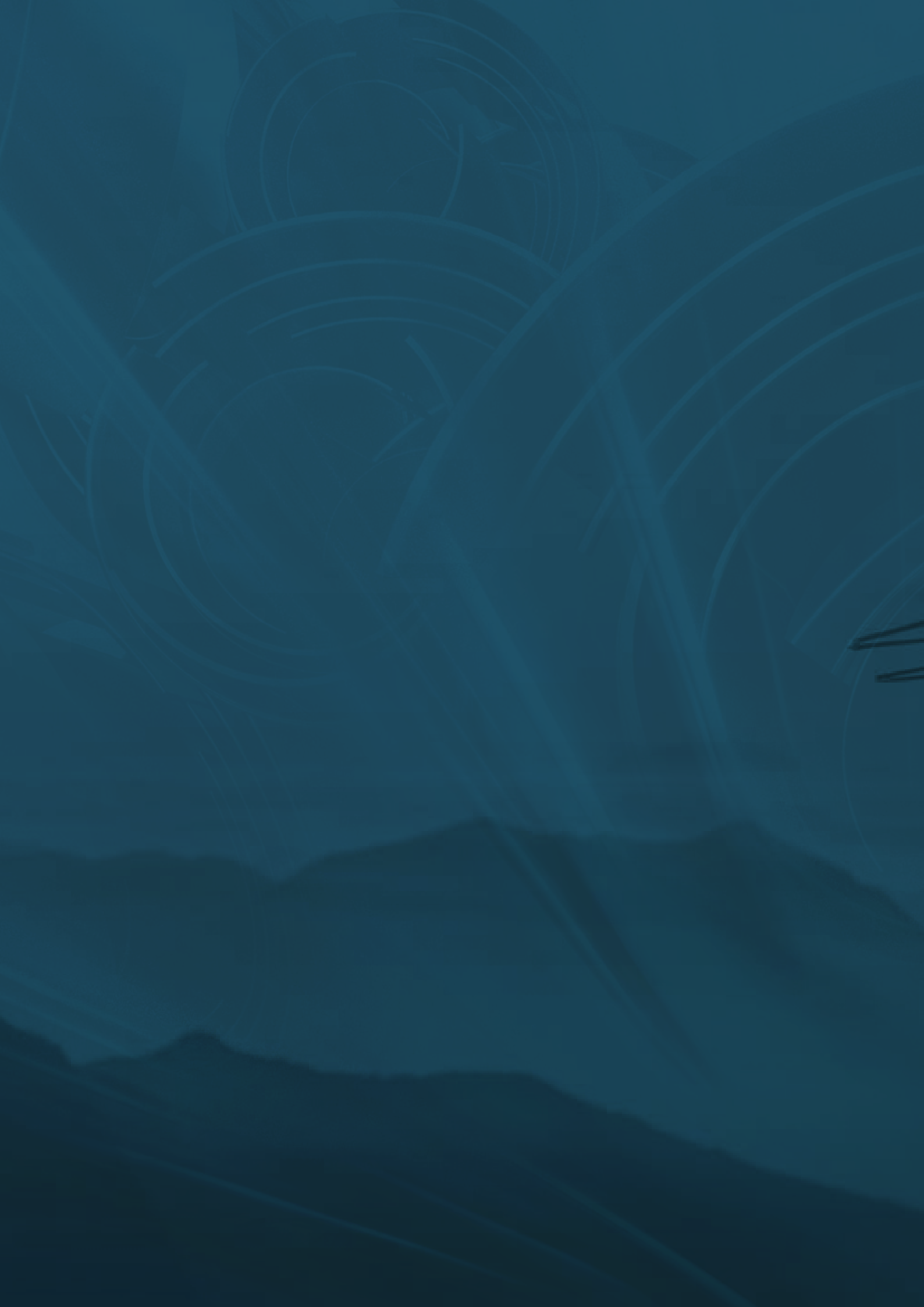
Before co-founding Faethm, Michael was a Partner and Managing Director, Asia of The Boston Consulting Group's technology innovation practice, Digital Ventures. Prior to this Mike founded and led S&C, an award-winning design firm that was acquired by BCG.

Greg Miller
Executive Director

Prior to Faethm, Greg held global technology leadership roles including GM Global Partner Operations at SAP and senior roles at PeopleSoft, Unisys and Oracle. Greg also founded the not-for-profit Navegar Institute, to research and advocate for tech issues.

Richard George
Chief Data Scientist

Richard started his career as a research scientist (PhD Bioinformatics) in academia and early stage biotech. Post-MBA and a stint in life-science venture capital, he pivoted to strategy consulting and managing Advanced Analytics at Woolworths and Quantium.



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