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.

Visit acs.org.au for more information.
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 (>AU$3.9b), France (>AU$2.3b), the United Kingdom (>£1.6b), Japan (>£1.6b) and Canada (>£1b). Australia’s relatively modest investment stands at AU$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.
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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

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.
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.
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

[Graph showing labour force growth and job creation]
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.

**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.

<table>
<thead>
<tr>
<th>Industry</th>
<th>Automatable</th>
<th>Unimpacted*</th>
<th>New Tech</th>
<th>New Non-Tech</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Care &amp; Social Assistance</td>
<td>-0.2M</td>
<td>1.6M</td>
<td>0.2M</td>
<td>1.1M</td>
</tr>
<tr>
<td>Education &amp; Training</td>
<td></td>
<td></td>
<td>1.1M</td>
<td>0.6M</td>
</tr>
<tr>
<td>Retail &amp; Wholesale Trade</td>
<td>-0.5M</td>
<td>1.2M</td>
<td>0.2M</td>
<td>0.3M</td>
</tr>
<tr>
<td>Construction</td>
<td>-0.3M</td>
<td>0.9M</td>
<td>0.4M</td>
<td></td>
</tr>
<tr>
<td>Accommodation &amp; Food Services</td>
<td>-0.2M</td>
<td>0.8M</td>
<td>0.4M</td>
<td></td>
</tr>
<tr>
<td>Professional, Scientific &amp; Technical Services</td>
<td>0.2M</td>
<td>0.8M</td>
<td>0.4M</td>
<td></td>
</tr>
<tr>
<td>Public, Administration &amp; Safety</td>
<td></td>
<td></td>
<td>0.7M</td>
<td>0.2M</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>-0.2M</td>
<td>0.4M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transport, Postal &amp; Warehousing</td>
<td>-0.2M</td>
<td>0.4M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Services</td>
<td></td>
<td></td>
<td>0.3M</td>
<td></td>
</tr>
<tr>
<td>Administrative &amp; Support Services</td>
<td>0.3M</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial &amp; Insurance Services</td>
<td>0.2M</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agriculture, Forestry &amp; Fishing</td>
<td>0.2M</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rental, Hiring &amp; Real Estate Service</td>
<td>0.2M</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arts &amp; Recreational Services</td>
<td>0.2M</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information, Media &amp; Telecommunications</td>
<td>0.1M</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mining</td>
<td>0.1M</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electricity, Gas, Water &amp; Water S.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PEOPLE IMPACT**

<table>
<thead>
<tr>
<th>Tech Jobs</th>
<th>Non-Tech Jobs</th>
<th>Total Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2M</td>
<td>4.1M</td>
<td>5.3M</td>
</tr>
</tbody>
</table>

**INDUSTRY GROWTH**

<table>
<thead>
<tr>
<th>New Tech Jobs</th>
<th>New Non-Tech Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>15%</td>
<td>22%</td>
</tr>
</tbody>
</table>

*Automation % differs to rest of the report as is based on the 2034 grown workforce not current workforce.
The impact of automation on men and women is not equal

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

<table>
<thead>
<tr>
<th>Role</th>
<th>Unimpacted %</th>
<th>Augmentable %</th>
<th>Automatable %</th>
<th>No. impacted employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waiters</td>
<td>47%</td>
<td>34%</td>
<td>19%</td>
<td>139.8K</td>
</tr>
<tr>
<td>Bar Attendants and Baristas</td>
<td>44%</td>
<td>43%</td>
<td>13%</td>
<td>107.7K</td>
</tr>
<tr>
<td>Kitchenhands</td>
<td>38%</td>
<td>17%</td>
<td>45%</td>
<td>107.5K</td>
</tr>
<tr>
<td>Sales Assistants (General)</td>
<td>42%</td>
<td>37%</td>
<td>20%</td>
<td>106.5K</td>
</tr>
<tr>
<td>Chefs</td>
<td>68%</td>
<td>31%</td>
<td></td>
<td>96.6K</td>
</tr>
<tr>
<td>Cafe &amp; Restaurant Managers</td>
<td>51%</td>
<td>36%</td>
<td>13%</td>
<td>66.0K</td>
</tr>
<tr>
<td>Fast Food Cooks</td>
<td>36%</td>
<td>20%</td>
<td>44%</td>
<td>48.6K</td>
</tr>
<tr>
<td>Cooks</td>
<td>35%</td>
<td>53%</td>
<td></td>
<td>39.3K</td>
</tr>
<tr>
<td>Retail Managers</td>
<td>44%</td>
<td>37%</td>
<td>19%</td>
<td>35.9K</td>
</tr>
<tr>
<td>Cafe Workers</td>
<td>47%</td>
<td>34%</td>
<td>19%</td>
<td>32.9K</td>
</tr>
</tbody>
</table>

### IMPACT LEGEND

- Unimpacted %
- Augmentable %
- Automatable %

### TECHNOLOGY IMPACT ON 10 MOST COMMON ROLES AT YEAR 15

<table>
<thead>
<tr>
<th>Type</th>
<th>No. impacted employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Automation</td>
<td>0K</td>
</tr>
<tr>
<td>Fixed Robotics</td>
<td>50k</td>
</tr>
<tr>
<td>Mobile Robotics</td>
<td>100K</td>
</tr>
<tr>
<td>Collaborative Robotics</td>
<td>150K</td>
</tr>
<tr>
<td></td>
<td>200K</td>
</tr>
<tr>
<td></td>
<td>250K</td>
</tr>
<tr>
<td></td>
<td>300K</td>
</tr>
<tr>
<td></td>
<td>350K</td>
</tr>
</tbody>
</table>

**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.
### 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%

### Jobs Most Exposed to Automation

<table>
<thead>
<tr>
<th>Role</th>
<th>Yr 10</th>
<th>Yr 15</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kitchenhands</td>
<td>49%</td>
<td>38%</td>
<td>107.5K</td>
</tr>
<tr>
<td>Fast Food Cooks</td>
<td>49%</td>
<td>36%</td>
<td>48.6K</td>
</tr>
<tr>
<td>Checkout Operators and Office Cashiers</td>
<td>45%</td>
<td>39%</td>
<td>18.9K</td>
</tr>
<tr>
<td>Receptionists</td>
<td>52%</td>
<td>42%</td>
<td>17.8K</td>
</tr>
<tr>
<td>Delivery Drivers</td>
<td>43%</td>
<td>32%</td>
<td>12.2K</td>
</tr>
</tbody>
</table>

### Jobs Most Exposed to Augmentation

<table>
<thead>
<tr>
<th>Role</th>
<th>Yr 10</th>
<th>Yr 15</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bar Attendants and Baristas</td>
<td>56%</td>
<td>44%</td>
<td>107.7K</td>
</tr>
<tr>
<td>Cooks</td>
<td>47%</td>
<td>35%</td>
<td>39.3K</td>
</tr>
<tr>
<td>Hotel and Motel Managers</td>
<td>63%</td>
<td>54%</td>
<td>27.4K</td>
</tr>
<tr>
<td>Hotel Service Managers</td>
<td>63%</td>
<td>54%</td>
<td>8.2K</td>
</tr>
<tr>
<td>Bakers and Pastrycooks</td>
<td>50%</td>
<td>36%</td>
<td>4.1K</td>
</tr>
</tbody>
</table>

### Impact Legend
- Unimpacted %
- Augmentable %
- Automatable %
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**
- **Visual Merchandiser** (84.0 pivot score)
- **Dietetic Technician** (81.2 pivot score)
- **School Teacher** (76.9 pivot score)

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

**Delivery Driver**
- **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**

<table>
<thead>
<tr>
<th>Ability Gaps</th>
<th>Current Ability</th>
<th>Gap</th>
<th>Future Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical Thinking</td>
<td>▶️</td>
<td>▶️</td>
<td>▶️</td>
</tr>
<tr>
<td>Sales &amp; Marketing</td>
<td>▶️</td>
<td>▶️</td>
<td>▶️</td>
</tr>
<tr>
<td>Reading Comprehension</td>
<td>▶️</td>
<td>▶️</td>
<td>▶️</td>
</tr>
<tr>
<td>Design</td>
<td>▶️</td>
<td>▶️</td>
<td>▶️</td>
</tr>
<tr>
<td>Coordination</td>
<td>▶️</td>
<td>▶️</td>
<td>▶️</td>
</tr>
<tr>
<td>Clerical</td>
<td>▶️</td>
<td>▶️</td>
<td>▶️</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Starting Jobs in 2019</th>
<th>Automatable jobs by 2034</th>
<th>Additional jobs by 2034</th>
<th>Total number of jobs in 2034</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,025K</td>
<td>223K</td>
<td>362K</td>
<td>1,257K</td>
</tr>
</tbody>
</table>

ADDITIONAL TECH JOBS REQUIRED (top 15)

- Software Developers, Systems Software: 5.2K
- Software Developers, Applications: 5.2K
- Process Improvement Analysis: 3.7K
- Data Engineers: 3.6K
- Infrastructure Services Analysts (IT): 3.2K
- Data Integrators: 3.2K
- Data Scientists: 3.0K
- Data Analysts: 2.8K
- Robotic Engineers: 2.5K
- Strategy Analysts: 2.3K
- Software Quality Assurance Engineers and Testers: 2.3K
- Security Testers: 2.3K
- Tester/Test Analysts: 1.8K
- Process Improvement Managers: 1.8K
- Operations Research Analysts: 1.8K
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

<table>
<thead>
<tr>
<th>Role</th>
<th>Unimpacted</th>
<th>Augmentable</th>
<th>Automatable</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial Cleaners</td>
<td>32%</td>
<td>28%</td>
<td>40%</td>
<td>80.8K</td>
</tr>
<tr>
<td>Domestic Cleaners</td>
<td>35%</td>
<td>28%</td>
<td>37%</td>
<td>43.2K</td>
</tr>
<tr>
<td>Human Resource Professionals</td>
<td>45%</td>
<td>39%</td>
<td>16%</td>
<td>28.5K</td>
</tr>
<tr>
<td>Gardeners</td>
<td>41%</td>
<td>28%</td>
<td>32%</td>
<td>28.1K</td>
</tr>
<tr>
<td>Tourism and Travel Advisers</td>
<td>25%</td>
<td>31%</td>
<td>45%</td>
<td>26.2K</td>
</tr>
<tr>
<td>Cleaners and Laundry Workers</td>
<td>35%</td>
<td>28%</td>
<td>37%</td>
<td>14.7K</td>
</tr>
<tr>
<td>Garden and Nursery Labourers</td>
<td>40%</td>
<td>27%</td>
<td>33%</td>
<td>13.6K</td>
</tr>
<tr>
<td>General Clerks</td>
<td>39%</td>
<td>42%</td>
<td>16%</td>
<td>12.3K</td>
</tr>
<tr>
<td>Housekeepers</td>
<td>35%</td>
<td>31%</td>
<td>37%</td>
<td>10.7K</td>
</tr>
<tr>
<td>Other Cleaners</td>
<td>40%</td>
<td>28%</td>
<td>37%</td>
<td>8.0K</td>
</tr>
</tbody>
</table>

IMPACT LEGEND
Unimpacted % Augmentable % Automatable %

TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15

<table>
<thead>
<tr>
<th>Technology</th>
<th>No. impacted employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Robotics</td>
<td>80K</td>
</tr>
<tr>
<td>Navigation Robotics</td>
<td>20K</td>
</tr>
<tr>
<td>Process Automation</td>
<td>40K</td>
</tr>
<tr>
<td>Fixed Robotics</td>
<td>60K</td>
</tr>
</tbody>
</table>

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 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

<table>
<thead>
<tr>
<th>Role</th>
<th>Yr 10 Unimpacted %</th>
<th>Yr 10 Augmentable %</th>
<th>Yr 10 Automatable %</th>
<th>Yr 15 Unimpacted %</th>
<th>Yr 15 Augmentable %</th>
<th>Yr 15 Automatable %</th>
<th>Risk (Risk Value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packers</td>
<td>35%</td>
<td>22%</td>
<td>43%</td>
<td>26%</td>
<td>25%</td>
<td>50%</td>
<td>7.2K</td>
</tr>
<tr>
<td>Call or Contact Centre Workers</td>
<td>47%</td>
<td>15%</td>
<td>38%</td>
<td>37%</td>
<td>16%</td>
<td>47%</td>
<td>6.9K</td>
</tr>
<tr>
<td>Storepersons</td>
<td>39%</td>
<td>17%</td>
<td>44%</td>
<td>30%</td>
<td>18%</td>
<td>52%</td>
<td>4.2K</td>
</tr>
<tr>
<td>Receptionists</td>
<td>47%</td>
<td>18%</td>
<td>35%</td>
<td>36%</td>
<td>18%</td>
<td>46%</td>
<td>4.1K</td>
</tr>
<tr>
<td>Keyboard Operators</td>
<td>36%</td>
<td>24%</td>
<td>40%</td>
<td>28%</td>
<td>24%</td>
<td>49%</td>
<td>3.6K</td>
</tr>
</tbody>
</table>

### Jobs Most Exposed to Augmentation

<table>
<thead>
<tr>
<th>Role</th>
<th>Yr 10 Unimpacted %</th>
<th>Yr 10 Augmentable %</th>
<th>Yr 10 Automatable %</th>
<th>Yr 15 Unimpacted %</th>
<th>Yr 15 Augmentable %</th>
<th>Yr 15 Automatable %</th>
<th>Risk (Risk Value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human Resource Professionals</td>
<td>56%</td>
<td>35%</td>
<td>8%</td>
<td>45%</td>
<td>39%</td>
<td>16%</td>
<td>28.5K</td>
</tr>
<tr>
<td>Conference and Event Organisers</td>
<td>70%</td>
<td>28%</td>
<td>2%</td>
<td>60%</td>
<td>37%</td>
<td>17%</td>
<td>7.1K</td>
</tr>
<tr>
<td>Advertising, Public Relations and Sales Managers</td>
<td>67%</td>
<td>32%</td>
<td>1%</td>
<td>56%</td>
<td>42%</td>
<td>2%</td>
<td>5.0K</td>
</tr>
<tr>
<td>Human Resource Managers</td>
<td>68%</td>
<td>32%</td>
<td>0%</td>
<td>60%</td>
<td>39%</td>
<td>1%</td>
<td>4.4K</td>
</tr>
<tr>
<td>Handypersons</td>
<td>52%</td>
<td>28%</td>
<td>21%</td>
<td>35%</td>
<td>36%</td>
<td>29%</td>
<td>4.3K</td>
</tr>
</tbody>
</table>

### 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% AUTOMATAABLE
- 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% AUTOMATAABLE
- 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% AUTOMATAABLE
- 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)

**KEY SKILL AND KNOWLEDGE GAPS**

<table>
<thead>
<tr>
<th>CURRENT ABILITY</th>
<th>ABILITY GAP</th>
<th>FUTURE ABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Ability</td>
<td>Gap</td>
<td>Future Ability</td>
</tr>
</tbody>
</table>

**JOB CORRIDOR**

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

<table>
<thead>
<tr>
<th>Starting Jobs in 2019</th>
<th>Automatable jobs by 2034</th>
<th>Additional jobs by 2034</th>
<th>Total number of jobs in 2034</th>
</tr>
</thead>
<tbody>
<tr>
<td>426K</td>
<td>141K</td>
<td>44K</td>
<td>422K</td>
</tr>
</tbody>
</table>

ADDITIONAL TECH JOBS REQUIRED (top 15)

- Software Developers, Systems Software 2.5K
- Software Developers, Applications 2.5K
- Data Engineers 1.7K
- Process Improvement Analysis 1.6K
- Infrastructure Services Analysts (IT) 1.5K
- Data Integrators 1.5K
- Data Scientists 1.4K
- Robotic Engineers 1.3K
- Data Analysts 1.2K
- Strategy Analysts 1.1K
- Software Quality Assurance Engineers and Testers 1.1K
- Security Testers 1.1K
- Mechatronics Engineers 1.0K
- Mechanical Engineers 1.0K
- Manufacturing Engineers 1.0K
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

Livestock Farmers  
- 46% Unimpacted  
- 22% Augmentable  
- 32% Automatable  
- 90.3K

Crop Farmers  
- 45% Unimpacted  
- 19% Augmentable  
- 36% Automatable  
- 50.6K

Mixed Crop and Livestock Farmers  
- 45% Unimpacted  
- 19% Augmentable  
- 36% Automatable  
- 31.7K

Livestock Farm Workers  
- 41% Unimpacted  
- 22% Augmentable  
- 32% Automatable  
- 28.6K

Crop Farm Workers  
- 45% Unimpacted  
- 19% Augmentable  
- 36% Automatable  
- 25.1K

Farmers and Farm Managers  
- 59% Unimpacted  
- 33% Augmentable  
- 9% Automatable  
- 9.4K

Agriculture, Forestry and Horticultural Plant Operators  
- 46% Unimpacted  
- 24% Augmentable  
- 30% Automatable  
- 8.4K

Garden and Nursery Labourers  
- 46% Unimpacted  
- 24% Augmentable  
- 30% Automatable  
- 4.8K

Packers  
- 34% Unimpacted  
- 22% Augmentable  
- 44% Automatable  
- 4.7K

Mixed Crop and Livestock Farm Workers  
- 45% Unimpacted  
- 19% Augmentable  
- 36% Automatable  
- 3.8K

IMPACT LEGEND
- Unimpacted %  
- Augmentable %  
- Automatable %

TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15

- Navigation Robotics
- Process Automation
- Fixed Robotics
- Assistive Robotics

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 Female  
- 71K Male  
- 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.

**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% AUTOMATAABLE
- 91K people at risk
- 25.1K people in job

**Shearer**
- 32% AUTOMATAABLE
- 1.1K people at risk
- 3.5K people in job

**Agriculture & Horticulture Plant Operators**
- 30% AUTOMATAABLE
- 2.5K people at risk
- 8.4K people in job

DETAILED TRANSITION PATHWAY

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

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

**Agriculture & Horticulture Plant Operators**
- Aged and Disabled Carer (80.3 pivot score)
- Visual Merchandiser (70.6 pivot score)
- Florist (69.5 pivot score)

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

**Services Orientation**
- Computer & Electronics
- Systems Analysis
- Customer & Personal Service
- Learning Strategies
- Therapy & Counselling
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**

Starting Jobs in 2019  Automatable jobs by 2034  Additional jobs by 2034  Total number of jobs in 2034

<table>
<thead>
<tr>
<th></th>
<th>Tech jobs</th>
<th>Non-Tech jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>308K</td>
<td>99K</td>
<td>28K</td>
</tr>
<tr>
<td>99K</td>
<td>28K</td>
<td>19K</td>
</tr>
<tr>
<td>255K</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ADDITIONAL TECH JOBS REQUIRED (top 15)**

- Software Developers, Systems Software: 1.5K
- Software Developers, Applications: 1.5K
- Data Engineers: 1.0K
- Robotic Engineers: 1.0K
- Process Improvement Analysis: 0.9K
- Infrastructure Services Analysts (IT): 0.9K
- Data Integrators: 0.9K
- Data Scientists: 0.9K
- Mechatronics Engineers: 0.8K
- Mechanical Engineers: 0.7K
- Manufacturing Engineers: 0.7K
- Data Analysts: 0.7K
- Strategy Analysts: 0.6K
- Software Quality Assurance Engineers and Testers: 0.6K
- Security Testers: 0.6K

TECHNOLOGY IMPACTS ON THE AUSTRALIAN WORKFORCE
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**

<table>
<thead>
<tr>
<th>Role</th>
<th>Unimpt. %</th>
<th>Augmentable %</th>
<th>Automatable %</th>
<th>No. Impacted Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sports Coaches, Instructors and Officials</td>
<td>77%</td>
<td>22%</td>
<td></td>
<td>18.9K</td>
</tr>
<tr>
<td>Fitness Instructors</td>
<td>75%</td>
<td>24%</td>
<td></td>
<td>10.4K</td>
</tr>
<tr>
<td>Gaming Workers</td>
<td>40%</td>
<td>20%</td>
<td>40%</td>
<td>8.0K</td>
</tr>
<tr>
<td>Amusement, Fitness and Sports Centre Managers</td>
<td>80%</td>
<td>20%</td>
<td></td>
<td>8.0K</td>
</tr>
<tr>
<td>Music Professionals</td>
<td>67%</td>
<td>33%</td>
<td></td>
<td>7.7K</td>
</tr>
<tr>
<td>Sportspersons</td>
<td>77%</td>
<td>21%</td>
<td></td>
<td>7.7K</td>
</tr>
<tr>
<td>Sales Assistants (General)</td>
<td>40%</td>
<td>39%</td>
<td>21%</td>
<td>5.6K</td>
</tr>
<tr>
<td>Greenkeepers</td>
<td>44%</td>
<td>26%</td>
<td>30%</td>
<td>5.4K</td>
</tr>
<tr>
<td>Receptionists</td>
<td>39%</td>
<td>18%</td>
<td>44%</td>
<td>4.7K</td>
</tr>
<tr>
<td>Waiters</td>
<td>45%</td>
<td>35%</td>
<td>20%</td>
<td>4.6K</td>
</tr>
</tbody>
</table>

**Top 5 Technologies Affecting This Industry at Year 15**

- Process Automation: 0K
- Navigation Robotics: 5K
- Generative Design: 10K
- Solution Discovery: 15K

**Impact Legend**

- Unimpt. %: Unimputed employees
- Augmentable %: Augmentable employees
- Automatable %: Automatable employees

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

### JOBS MOST EXPOSED TO AUTOMATION

<table>
<thead>
<tr>
<th>Role</th>
<th>Unimpacted %</th>
<th>Augmentable %</th>
<th>Automatable %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Game Workers</td>
<td>Yr 10 55%</td>
<td>Yr 15 40%</td>
<td>Yr 10 49%</td>
</tr>
<tr>
<td></td>
<td>8.0K</td>
<td>8.0K</td>
<td>4.7K</td>
</tr>
<tr>
<td>Receptionists</td>
<td>Yr 10 49%</td>
<td>Yr 15 39%</td>
<td>Yr 10 42%</td>
</tr>
<tr>
<td></td>
<td>4.7K</td>
<td>4.7K</td>
<td>3.4K</td>
</tr>
<tr>
<td>Livestock Farm Workers</td>
<td>Yr 10 60%</td>
<td>Yr 15 42%</td>
<td>Yr 10 52%</td>
</tr>
<tr>
<td></td>
<td>3.4K</td>
<td>3.4K</td>
<td>2.3K</td>
</tr>
<tr>
<td>General Clerks</td>
<td>Yr 10 52%</td>
<td>Yr 15 42%</td>
<td>Yr 10 46%</td>
</tr>
<tr>
<td></td>
<td>2.3K</td>
<td>2.3K</td>
<td>2.2K</td>
</tr>
<tr>
<td>Other Miscellaneous Labourers</td>
<td>Yr 10 46%</td>
<td>Yr 15 31%</td>
<td>Yr 10 46%</td>
</tr>
<tr>
<td></td>
<td>2.2K</td>
<td>2.2K</td>
<td>2.2K</td>
</tr>
</tbody>
</table>

### JOBS MOST EXPOSED TO AUGMENTATION

<table>
<thead>
<tr>
<th>Role</th>
<th>Unimpacted %</th>
<th>Augmentable %</th>
<th>Automatable %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual Arts and Crafts Professionals</td>
<td>Yr 10 62%</td>
<td>Yr 15 42%</td>
<td>Yr 10 54%</td>
</tr>
<tr>
<td></td>
<td>4.4K</td>
<td>4.4K</td>
<td>3.4K</td>
</tr>
<tr>
<td>Bar Attendants and Baristas</td>
<td>Yr 10 54%</td>
<td>Yr 15 41%</td>
<td>Yr 10 57%</td>
</tr>
<tr>
<td></td>
<td>3.4K</td>
<td>3.4K</td>
<td>2.7K</td>
</tr>
<tr>
<td>Authors, and Book and Script Editors</td>
<td>Yr 10 57%</td>
<td>Yr 15 37%</td>
<td>Yr 10 60%</td>
</tr>
<tr>
<td></td>
<td>2.7K</td>
<td>2.7K</td>
<td>2.6K</td>
</tr>
<tr>
<td>Journalists and Other Writers</td>
<td>Yr 10 60%</td>
<td>Yr 15 47%</td>
<td>Yr 10 63%</td>
</tr>
<tr>
<td></td>
<td>2.6K</td>
<td>2.6K</td>
<td>2.4K</td>
</tr>
<tr>
<td>Arts Professionals</td>
<td>Yr 10 63%</td>
<td>Yr 15 43%</td>
<td>Yr 10 63%</td>
</tr>
<tr>
<td></td>
<td>2.4K</td>
<td>2.4K</td>
<td>2.4K</td>
</tr>
</tbody>
</table>

### 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% AUTOMATABLE
- 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% AUTOMATABLE
- 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% AUTOMATABLE
- 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**

<table>
<thead>
<tr>
<th>ABILITY GAPS</th>
<th>Current Ability</th>
<th>Gap</th>
<th>Future Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persuasion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer Personal Service</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service Orientation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales &amp; Marketing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negotiation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clerical</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Starting Jobs in 2019</th>
<th>Automatable jobs by 2034</th>
<th>Additional jobs by 2034</th>
<th>Total number of jobs in 2034</th>
</tr>
</thead>
<tbody>
<tr>
<td>174K</td>
<td>24K</td>
<td>13K</td>
<td>235K</td>
</tr>
</tbody>
</table>

ADDITIONAL TECH JOBS REQUIRED (top 15)

- Software Developers, Systems Software: 0.7K
- Software Developers, Applications: 0.7K
- Data Engineers: 0.5K
- Process Improvement Analysts: 0.5K
- Data Scientists: 0.5K
- Infrastructure Services Analysts (IT): 0.5K
- Data Integrators: 0.5K
- Data Analysts: 0.4K
- Strategy Analysts: 0.3K
- Software Quality Assurance Engineers and Testers: 0.3K
- Security Testers: 0.3K
- Robotic Engineers: 0.3K
- Tester/Test Analysts: 0.3K
- Process Improvement Managers: 0.3K
- Operations Research Analysts: 0.3K
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

<table>
<thead>
<tr>
<th>Role</th>
<th>Unimpacted %</th>
<th>Augmentable %</th>
<th>Automatable %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carpenters and Joiners</td>
<td>39%</td>
<td>30%</td>
<td>31%</td>
</tr>
<tr>
<td>Construction Managers</td>
<td>60%</td>
<td>35%</td>
<td>5%</td>
</tr>
<tr>
<td>Electricians</td>
<td>45%</td>
<td>38%</td>
<td>17%</td>
</tr>
<tr>
<td>Plumbers</td>
<td>46%</td>
<td>27%</td>
<td>27%</td>
</tr>
<tr>
<td>Painting Trades Workers</td>
<td>36%</td>
<td>29%</td>
<td>35%</td>
</tr>
<tr>
<td>Building and Plumping Labourers</td>
<td>46%</td>
<td>27%</td>
<td>27%</td>
</tr>
<tr>
<td>Architectural, Building and Surveying Technicians</td>
<td>43%</td>
<td>33%</td>
<td>24%</td>
</tr>
<tr>
<td>Plasterers</td>
<td>37%</td>
<td>39%</td>
<td>25%</td>
</tr>
<tr>
<td>Concreters</td>
<td>39%</td>
<td>31%</td>
<td>30%</td>
</tr>
<tr>
<td>Earthmoving Plant Operators</td>
<td>47%</td>
<td>28%</td>
<td>24%</td>
</tr>
</tbody>
</table>

IMPACT LEGEND
Unimpacted % Augmentable % Automatable %

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

### JOBS MOST EXPOSED TO AUTOMATION

<table>
<thead>
<tr>
<th>Role</th>
<th>Unimpacted</th>
<th>Augmentable</th>
<th>Automatable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Painting Trades Workers</td>
<td>46%</td>
<td>26%</td>
<td>28%</td>
</tr>
<tr>
<td></td>
<td>36%</td>
<td>29%</td>
<td>35%</td>
</tr>
<tr>
<td>Wall and Floor Tilers</td>
<td>49%</td>
<td>26%</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>37%</td>
<td>29%</td>
<td>33%</td>
</tr>
<tr>
<td>Truck Drivers</td>
<td>46%</td>
<td>24%</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td>35%</td>
<td>25%</td>
<td>40%</td>
</tr>
<tr>
<td>Insulation and Home Improvement Installers</td>
<td>58%</td>
<td>17%</td>
<td>24%</td>
</tr>
<tr>
<td></td>
<td>42%</td>
<td>23%</td>
<td>36%</td>
</tr>
<tr>
<td>Structural Steel and Welding Trades Workers</td>
<td>43%</td>
<td>27%</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td>35%</td>
<td>30%</td>
<td>35%</td>
</tr>
<tr>
<td>Electricians</td>
<td>62%</td>
<td>29%</td>
<td>12%</td>
</tr>
<tr>
<td></td>
<td>45%</td>
<td>38%</td>
<td>17%</td>
</tr>
<tr>
<td>Plasterers</td>
<td>47%</td>
<td>32%</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>37%</td>
<td>39%</td>
<td>25%</td>
</tr>
<tr>
<td>Bricklayers and Stonemasons</td>
<td>45%</td>
<td>43%</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>36%</td>
<td>50%</td>
<td>14%</td>
</tr>
<tr>
<td>Civil Engineering Professionals</td>
<td>65%</td>
<td>33%</td>
<td>12%</td>
</tr>
<tr>
<td></td>
<td>54%</td>
<td>43%</td>
<td>12%</td>
</tr>
<tr>
<td>Airconditioning and Refrigeration Mechanics</td>
<td>55%</td>
<td>30%</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td>43%</td>
<td>36%</td>
<td>21%</td>
</tr>
</tbody>
</table>

### JOBS MOST EXPOSED TO AUGMENTATION

<table>
<thead>
<tr>
<th>Role</th>
<th>Unimpacted</th>
<th>Augmentable</th>
<th>Automatable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricians</td>
<td>62%</td>
<td>29%</td>
<td>12%</td>
</tr>
<tr>
<td></td>
<td>45%</td>
<td>38%</td>
<td>17%</td>
</tr>
<tr>
<td>Plasterers</td>
<td>47%</td>
<td>32%</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>37%</td>
<td>39%</td>
<td>25%</td>
</tr>
<tr>
<td>Bricklayers and Stonemasons</td>
<td>45%</td>
<td>43%</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>36%</td>
<td>50%</td>
<td>14%</td>
</tr>
<tr>
<td>Civil Engineering Professionals</td>
<td>65%</td>
<td>33%</td>
<td>12%</td>
</tr>
<tr>
<td></td>
<td>54%</td>
<td>43%</td>
<td>12%</td>
</tr>
<tr>
<td>Airconditioning and Refrigeration Mechanics</td>
<td>55%</td>
<td>30%</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td>43%</td>
<td>36%</td>
<td>21%</td>
</tr>
</tbody>
</table>

### 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% AUTOMATABLE**
- 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% AUTOMATABLE**
- 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% AUTOMATABLE**
- 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**

<table>
<thead>
<tr>
<th>Ability Gaps</th>
<th>Troubleshooting</th>
<th>Mechanical</th>
<th>Mathematics</th>
<th>Engineering and Technology</th>
<th>Installation</th>
<th>Building and Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>→</td>
<td>→</td>
<td>→</td>
<td>→</td>
<td>→</td>
<td>→</td>
</tr>
<tr>
<td>Future</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Starting Jobs in 2019</th>
<th>Automatable jobs by 2034</th>
<th>Additional jobs by 2034</th>
<th>Total number of jobs in 2034</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,160K</td>
<td>290K</td>
<td>415K</td>
<td>1,393K</td>
</tr>
</tbody>
</table>

ADDITIONAL TECH JOBS REQUIRED (top 15)

- Software Developers, Systems Software: 5.9K
- Software Developers, Applications: 5.9K
- Data Engineers: 4.2K
- Process Improvement Analysts: 3.8K
- Data Scientists: 3.7K
- Infrastructure Services Analysts (IT): 3.7K
- Data Integrators: 3.7K
- Robotic Engineers: 3.1K
- Data Analysts: 2.8K
- Mechatronic Engineers: 2.6K
- Strategy Analysts: 2.6K
- Software Quality Assurance Engineers and Testers: 2.6K
- Security Testers: 2.6K
- Mechanical Engineers: 2.4K
- Manufacturing Engineers: 2.4K
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

<table>
<thead>
<tr>
<th>Role</th>
<th>Unimpacted %</th>
<th>Augmentable %</th>
<th>Automatable %</th>
<th>No. impacted employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary School Teachers</td>
<td>50%</td>
<td>50%</td>
<td>50%</td>
<td>216.5K</td>
</tr>
<tr>
<td>Secondary School Teachers</td>
<td>49%</td>
<td>51%</td>
<td>49%</td>
<td>200.6K</td>
</tr>
<tr>
<td>Education Aides</td>
<td>54%</td>
<td>38%</td>
<td>8%</td>
<td>118.9K</td>
</tr>
<tr>
<td>University Lecturers and Tutors</td>
<td>61%</td>
<td>37%</td>
<td>6%</td>
<td>71.6K</td>
</tr>
<tr>
<td>Private Tutors and Teachers</td>
<td>61%</td>
<td>35%</td>
<td>8%</td>
<td>44.8K</td>
</tr>
<tr>
<td>Child Carers</td>
<td>73%</td>
<td>24%</td>
<td>4%</td>
<td>44.3K</td>
</tr>
<tr>
<td>General Clerks</td>
<td>42%</td>
<td>40%</td>
<td>8%</td>
<td>43.0K</td>
</tr>
<tr>
<td>Vocational Education Teachers (Aus) / Polytechni..</td>
<td>53%</td>
<td>46%</td>
<td>1%</td>
<td>34.8K</td>
</tr>
<tr>
<td>School Principals</td>
<td>78%</td>
<td>22%</td>
<td>0%</td>
<td>29.2K</td>
</tr>
<tr>
<td>Sports Coaches, Instructors and Officials</td>
<td>77%</td>
<td>23%</td>
<td>0%</td>
<td>28.8K</td>
</tr>
</tbody>
</table>

TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15

- Sensory Perception
- Solution Discovery
- Generative Design
- Process Automation

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

### JOBS MOST EXPOSED TO AUTOMATION

<table>
<thead>
<tr>
<th>Job</th>
<th>Unimpacted %</th>
<th>Augmentable %</th>
<th>Automatable %</th>
<th>Year 10</th>
<th>Year 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education Aides</td>
<td>64%</td>
<td>31%</td>
<td>118.9K</td>
<td></td>
<td></td>
</tr>
<tr>
<td>University Lecturers and Tutors</td>
<td>73%</td>
<td>26%</td>
<td>71.6K</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private Tutors and Teachers</td>
<td>71%</td>
<td>27%</td>
<td>44.8K</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child Carers</td>
<td>81%</td>
<td>17%</td>
<td>44.3K</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professionals</td>
<td>80%</td>
<td>17%</td>
<td>18.9K</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### JOBS MOST EXPOSED TO AUGMENTATION

<table>
<thead>
<tr>
<th>Job</th>
<th>Unimpacted %</th>
<th>Augmentable %</th>
<th>Automatable %</th>
<th>Year 10</th>
<th>Year 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary School Teachers</td>
<td>62%</td>
<td>37%</td>
<td>216.5K</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary School Teachers</td>
<td>63%</td>
<td>37%</td>
<td>200.6K</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vocational Education Teachers (Aus) / Polytechnic Teachers (NZ)</td>
<td>63%</td>
<td>36%</td>
<td>34.8K</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Education Teachers</td>
<td>68%</td>
<td>32%</td>
<td>27.1K</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counsellors</td>
<td>63%</td>
<td>37%</td>
<td>8.2K</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 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% AUTOMATABLE
- 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% AUTOMATABLE
- 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% AUTOMATABLE
- 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)

**DETAILLED 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**

<table>
<thead>
<tr>
<th>Current Ability</th>
<th>Gap</th>
<th>Future Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complex Problem Solving</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education and Training</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation Monitoring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering and Technology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality Control Analysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

36
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

<table>
<thead>
<tr>
<th></th>
<th>Starting Jobs in 2019</th>
<th>Automatable jobs by 2034</th>
<th>Additional jobs by 2034</th>
<th>Total number of jobs in 2034</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tech jobs</td>
<td>93K</td>
<td></td>
<td></td>
<td>1,871K</td>
</tr>
<tr>
<td>Non-Tech jobs</td>
<td>636K</td>
<td></td>
<td></td>
<td>1,871K</td>
</tr>
<tr>
<td></td>
<td>1,225K</td>
<td></td>
<td></td>
<td>1,871K</td>
</tr>
</tbody>
</table>

ADDITIONAL TECH JOBS REQUIRED (top 15)

- Software Developers, Systems Software: 5.5K
- Software Developers, Applications: 5.0K
- Data Engineers: 4.5K
- Data Scientists: 4.1K
- Process Improvement Analysts: 3.8K
- Infrastructure Services Analysts (IT): 3.5K
- Data Integrators: 3.5K
- Data Analysts: 3.4K
- Strategy Analysts: 2.5K
- Software Quality Assurance Engineers and Testers: 2.5K
- Security Testers: 2.5K
- Project Analyst: 2.0K
- Business Intelligence & Analytics Managers: 2.0K
- Tester/Test Analysts: 1.9K
- Process Improvement Managers: 1.9K
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**

<table>
<thead>
<tr>
<th>Role</th>
<th>Unimpacted %</th>
<th>Augmentable %</th>
<th>Automatable %</th>
<th>No. Impacted Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Truck Drivers</td>
<td>30%</td>
<td>27%</td>
<td>43%</td>
<td>11.8K</td>
</tr>
<tr>
<td>Electricians</td>
<td>41%</td>
<td>41%</td>
<td>18%</td>
<td>9.1K</td>
</tr>
<tr>
<td>Electrical Distribution Trades Workers</td>
<td>34%</td>
<td>34%</td>
<td>32%</td>
<td>7.3K</td>
</tr>
<tr>
<td>Other Stationary Plant Operators</td>
<td>32%</td>
<td>32%</td>
<td>36%</td>
<td>4.2K</td>
</tr>
<tr>
<td>Contract, Program and Project Administrators</td>
<td>72%</td>
<td>26%</td>
<td>18%</td>
<td>4.2K</td>
</tr>
<tr>
<td>Electrical Engineers</td>
<td>48%</td>
<td>46%</td>
<td>32%</td>
<td>3.7K</td>
</tr>
<tr>
<td>Other Specialist Managers</td>
<td>71%</td>
<td>22%</td>
<td>11.8K</td>
<td>11.8K</td>
</tr>
<tr>
<td>General Clerks</td>
<td>42%</td>
<td>40%</td>
<td>18%</td>
<td>2.8K</td>
</tr>
<tr>
<td>Information Officers</td>
<td>50%</td>
<td>43%</td>
<td>29%</td>
<td>2.7K</td>
</tr>
<tr>
<td>Building and Plumbing Labourers</td>
<td>42%</td>
<td>29%</td>
<td>29%</td>
<td>2.7K</td>
</tr>
</tbody>
</table>

**Top 5 Technologies Affecting This Industry at Year 15**

<table>
<thead>
<tr>
<th>Technology</th>
<th>No. Impacted Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Navigation Robotics</td>
<td>0K</td>
</tr>
<tr>
<td>Process Automation</td>
<td>5K</td>
</tr>
<tr>
<td>Solution Discovery</td>
<td>10K</td>
</tr>
<tr>
<td>Predictive Analysis</td>
<td>15K</td>
</tr>
<tr>
<td>Fixed Robotics</td>
<td>20K</td>
</tr>
</tbody>
</table>

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

**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% AUTOMATABLE
- 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% AUTOMATABLE
- 1,5K people at risk
- 4,2K people in job

**Anesthesiologist Assistant**
- (63.2 pivot score)

**Museum Technician & Conservator**
- (55.8 pivot score)

**Building & Plumbing Labourer**
- 29% AUTOMATABLE
- 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**

<table>
<thead>
<tr>
<th>Ability Gaps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Learning</td>
</tr>
<tr>
<td>Computers and Electronics</td>
</tr>
<tr>
<td>Complex Problem Solving</td>
</tr>
<tr>
<td>English Language</td>
</tr>
<tr>
<td>Systems Evaluation</td>
</tr>
<tr>
<td>Personnel and Human Resources</td>
</tr>
</tbody>
</table>

**Current Ability ➔ 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

<table>
<thead>
<tr>
<th>Starting Jobs in 2019</th>
<th>Automatable jobs by 2034</th>
<th>Additional jobs by 2034</th>
<th>Total number of jobs in 2034</th>
</tr>
</thead>
<tbody>
<tr>
<td>106K</td>
<td>26K</td>
<td>10K</td>
<td>111K</td>
</tr>
</tbody>
</table>

ADDITIONAL TECH JOBS REQUIRED (top 15)

- Software Developers, Systems Software: 0.6K
- Software Developers, Applications: 0.6K
- Data Engineers: 0.4K
- Process Improvement Analysts: 0.4K
- Data Scientists: 0.4K
- Infrastructure Services Analysts (IT): 0.4K
- Data Integrators: 0.4K
- Data Analysts: 0.3K
- Strategy Analysts: 0.3K
- Software Quality Assurance Engineers and Testers: 0.3K
- Security Testers: 0.3K
- Robotics Engineers: 0.2K
- Tester/Test Analysts: 0.2K
- Process Improvement Managers: 0.2K
- Operations Research Analysts: 0.2K
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

<table>
<thead>
<tr>
<th>Role</th>
<th>Unimpacted</th>
<th>Augmentable</th>
<th>Automatable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank Workers</td>
<td>27%</td>
<td>24%</td>
<td>49%</td>
</tr>
<tr>
<td>Financial Investment Advisers and Managers</td>
<td>38%</td>
<td>50%</td>
<td>12%</td>
</tr>
<tr>
<td>Insurance, Money Market &amp; Statistical Clerks</td>
<td>24%</td>
<td>23%</td>
<td>53%</td>
</tr>
<tr>
<td>Credit and Loans Officer (Aus) / Finance Clerks (NZ)</td>
<td>29%</td>
<td>34%</td>
<td>37%</td>
</tr>
<tr>
<td>Financial Brokers</td>
<td>38%</td>
<td>15%</td>
<td>47%</td>
</tr>
<tr>
<td>Financial Dealers</td>
<td>22%</td>
<td>57%</td>
<td>20%</td>
</tr>
<tr>
<td>Accountants</td>
<td>27%</td>
<td>30%</td>
<td>43%</td>
</tr>
<tr>
<td>Management and Organisation Analysts</td>
<td>31%</td>
<td>68%</td>
<td>12.0K</td>
</tr>
<tr>
<td>Software and Applications Programmers</td>
<td>36%</td>
<td>48%</td>
<td>11.5K</td>
</tr>
<tr>
<td>General Clerks</td>
<td>36%</td>
<td>44%</td>
<td>10.5K</td>
</tr>
</tbody>
</table>

IMPACT LEGEND
Unimpacted % Augmentable % Automatable %

TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15

<table>
<thead>
<tr>
<th>Technology</th>
<th>No. impacted employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Automation</td>
<td>61.8K</td>
</tr>
<tr>
<td>Predictive Analysis</td>
<td>28.4K</td>
</tr>
<tr>
<td>Generative Design</td>
<td>26.2K</td>
</tr>
<tr>
<td>Solution Discovery</td>
<td>23.7K</td>
</tr>
<tr>
<td>Financial Brokers</td>
<td>17.2K</td>
</tr>
<tr>
<td>Financial Dealers</td>
<td>15.4K</td>
</tr>
<tr>
<td>Accountants</td>
<td>14.5K</td>
</tr>
<tr>
<td>Management and Organisation Analysts</td>
<td>12.0K</td>
</tr>
<tr>
<td>Software and Applications Programmers</td>
<td>11.5K</td>
</tr>
<tr>
<td>General Clerks</td>
<td>10.5K</td>
</tr>
</tbody>
</table>

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

### 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% AUTOMATABLE
- 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% AUTOMATABLE
- 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% AUTOMATABLE
- 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**

- Computer and Electronics
- Critical Thinking
- Education and Training
- Judgement and Decision Making
- Public Safety and Security
- Management of Personnel Resources

**ABILITY GAPS**

<table>
<thead>
<tr>
<th>Current Ability</th>
<th>Gap</th>
<th>Future Ability</th>
</tr>
</thead>
</table>
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**

<table>
<thead>
<tr>
<th>Starting Jobs in 2019</th>
<th>Automatable jobs by 2034</th>
<th>Additional jobs by 2034</th>
<th>Total number of jobs in 2034</th>
</tr>
</thead>
<tbody>
<tr>
<td>353K</td>
<td>108K</td>
<td>38K</td>
<td>332K</td>
</tr>
</tbody>
</table>

**ADDITIONAL TECH JOBS REQUIRED (top 15)**

- Software Developers, Systems Software: 2.3K
- Software Developers, Applications: 2.3K
- Process Improvement Analysts: 1.9K
- Data Analysts: 1.8K
- Data Engineers: 1.7K
- Data Scientists: 1.5K
- Infrastructure Services Analysts (IT): 1.4K
- Data Integrators: 1.4K
- Strategy Analysts: 1.1K
- Software Quality Assurance Engineers and Testers: 1.1K
- Security Testers: 1.1K
- Project Analysts: 0.9K
- Business Intelligence & Analytics Managers: 0.9K
- Tester/Test Analysts: 0.8K
- Process Improvement Managers: 0.8K
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

166K females | 31K males

197K total automatable

Technology Impact

39% augmentable | 11% automatable | 16% capacity gain

Top 5 Technologies Affecting This Industry at Year 15

- Process Automation
- Assistive Robotics
- Sensory Perception
- Generative Design
- Mobile Robotics

Impact Legend

Unimpacted % | Augmentable % | Automatable %
Some roles are more easily automated while other roles are more susceptible to augmentation.

### Jobs Most Exposed to Automation

<table>
<thead>
<tr>
<th>Role</th>
<th>Yr 10 Impact</th>
<th>Yr 15 Impact</th>
<th>Automatable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enrolled and Mothercraft Nurses</td>
<td>60%</td>
<td>40%</td>
<td>46.1K</td>
</tr>
<tr>
<td>Dental Assistants</td>
<td>57%</td>
<td>30%</td>
<td>30.8K</td>
</tr>
<tr>
<td>Medical Technicians</td>
<td>37%</td>
<td>53%</td>
<td>28.4K</td>
</tr>
<tr>
<td>Health and Welfare Service Managers</td>
<td>30%</td>
<td>59%</td>
<td>26.0K</td>
</tr>
<tr>
<td>Medical Imaging Professionals</td>
<td>61%</td>
<td>32%</td>
<td>22.3K</td>
</tr>
</tbody>
</table>

### Jobs Most Exposed to Augmentation

<table>
<thead>
<tr>
<th>Role</th>
<th>Yr 10 Impact</th>
<th>Yr 15 Impact</th>
<th>Augmentable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enrolled and Mothercraft Nurses</td>
<td>60%</td>
<td>40%</td>
<td>46.1K</td>
</tr>
<tr>
<td>Dental Assistants</td>
<td>46%</td>
<td>54%</td>
<td>28.4K</td>
</tr>
<tr>
<td>Medical Technicians</td>
<td>37%</td>
<td>53%</td>
<td>28.4K</td>
</tr>
<tr>
<td>Physiotherapists</td>
<td>58%</td>
<td>42%</td>
<td>27.7K</td>
</tr>
<tr>
<td>Midwives</td>
<td>60%</td>
<td>40%</td>
<td>25.1K</td>
</tr>
<tr>
<td>Nurse Managers</td>
<td>47%</td>
<td>52%</td>
<td>21.1K</td>
</tr>
</tbody>
</table>

**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)

<table>
<thead>
<tr>
<th>Current Job</th>
<th>Future Job</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Keyboard Operator</strong></td>
<td><strong>Cyber Security Analyst</strong></td>
</tr>
<tr>
<td>45% AUTOMATABLE</td>
<td>(74.8 pivot score)</td>
</tr>
<tr>
<td>4.1K people at risk</td>
<td></td>
</tr>
<tr>
<td>10.1K people in job</td>
<td></td>
</tr>
<tr>
<td><strong>Medical Laboratory Scientist</strong></td>
<td><strong>Diagnostic Medical Sonographer</strong></td>
</tr>
<tr>
<td>31% AUTOMATABLE</td>
<td>(90.5 pivot score)</td>
</tr>
<tr>
<td>4.3K people at risk</td>
<td></td>
</tr>
<tr>
<td>13.9K people in job</td>
<td></td>
</tr>
<tr>
<td><strong>Dental Assistant</strong></td>
<td><strong>Surgical Technologist</strong></td>
</tr>
<tr>
<td>19% AUTOMATABLE</td>
<td>(97.1 pivot score)</td>
</tr>
<tr>
<td>6.0K people at risk</td>
<td></td>
</tr>
<tr>
<td>30.8K people in job</td>
<td></td>
</tr>
</tbody>
</table>

**KEY SKILL AND KNOWLEDGE GAPS**

<table>
<thead>
<tr>
<th>Current Ability</th>
<th>Future Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repairing</td>
<td>Operations Analysis</td>
</tr>
<tr>
<td>Science</td>
<td>Computer and Electronics</td>
</tr>
<tr>
<td>Engineering and Technology</td>
<td>Science</td>
</tr>
<tr>
<td>Mechanical</td>
<td>Repairing</td>
</tr>
</tbody>
</table>

**ABILITY GAPS**

- Operations Analysis
- Computer and Electronics
- Science
- Engineering and Technology
- Repairing
- Mechanical

**JOB CORRIDOR**

**Keyboard Operator**
- Automatable 45%
- Augmentable 34%

**ICT Security Consultant**
- (73.8 pivot score)

**Information and Organisation Professional**
- (74.1 pivot score)

**Cyber Security Analyst**
- (72.9 pivot score)

**First-Line Supervisor of Customer Service Reps.**
- (80.7 pivot score)

**Infrastructure Services Analyst (IT)**
- (85.5 pivot score)

**Physiotherapist**
- (85.5 pivot score)
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**

<table>
<thead>
<tr>
<th>Starting Jobs in 2019</th>
<th>Automatable jobs by 2034</th>
<th>Additional jobs by 2034</th>
<th>Total number of jobs in 2034</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ADDITIONAL TECH JOBS REQUIRED (top 15)**

- Software Developers, Systems Software: 8.7K
- Software Developers, Applications: 8.7K
- Data Engineers: 6.4K
- Process Improvement Analysts: 6.2K
- Data Scientists: 6.0K
- Infrastructure Services Analysts (IT): 5.4K
- Data Integrators: 5.4K
- Data Analysts: 5.0K
- Strategy Analysts: 3.9K
- Software Quality Assurance Engineers and Testers: 3.9K
- Security Testers: 3.9K
- Robotics Engineers: 3.4K
- Tester/Test Analysts: 3.0K
- Process Improvement Managers: 3.0K
- Operations Research Analysts: 3.0K
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

<table>
<thead>
<tr>
<th>Role</th>
<th>Unimpacted %</th>
<th>Augmentable %</th>
<th>Automatable %</th>
<th>No. Impacted Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telecommunications Trades Workers</td>
<td>27%</td>
<td>38%</td>
<td>35%</td>
<td>14.8K</td>
</tr>
<tr>
<td>Journalists and Other Writers</td>
<td>41%</td>
<td>57%</td>
<td>12.8K</td>
<td></td>
</tr>
<tr>
<td>Film, Television, Radio and Stage Directors</td>
<td>51%</td>
<td>44%</td>
<td>5%</td>
<td>8.8K</td>
</tr>
<tr>
<td>ICT Managers</td>
<td>44%</td>
<td>48%</td>
<td>8%</td>
<td>8.7K</td>
</tr>
<tr>
<td>Artistic Directors, and Media Producers and Presenters</td>
<td>47%</td>
<td>52%</td>
<td>7.3K</td>
<td></td>
</tr>
<tr>
<td>Telecommunications Engineering Professionals</td>
<td>34%</td>
<td>54%</td>
<td>12%</td>
<td>7.0K</td>
</tr>
<tr>
<td>Advertising, Public Relations and Sales Managers</td>
<td>53%</td>
<td>45%</td>
<td>6.4K</td>
<td></td>
</tr>
<tr>
<td>Software and Applications Programmers</td>
<td>35%</td>
<td>49%</td>
<td>16%</td>
<td>5.5K</td>
</tr>
<tr>
<td>Performing Arts Technicians</td>
<td>48%</td>
<td>51%</td>
<td>24%</td>
<td>5.4K</td>
</tr>
<tr>
<td>Sales Representatives</td>
<td>33%</td>
<td>43%</td>
<td>24%</td>
<td>5.3K</td>
</tr>
</tbody>
</table>

### Top 5 Technologies Affecting This Industry at Year 15

<table>
<thead>
<tr>
<th>Technology</th>
<th>Process Automation</th>
<th>Solution Discovery</th>
<th>Generative Design</th>
<th>Predictive Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telecommunications</td>
<td>10K</td>
<td>20K</td>
<td>30K</td>
<td>40K</td>
</tr>
<tr>
<td>Engineering Professionals</td>
<td>5K</td>
<td>10K</td>
<td>15K</td>
<td>20K</td>
</tr>
<tr>
<td>Software and Applications</td>
<td>25K</td>
<td>35K</td>
<td>40K</td>
<td>50K</td>
</tr>
<tr>
<td>Programmers</td>
<td>35K</td>
<td>45K</td>
<td>50K</td>
<td>60K</td>
</tr>
<tr>
<td>Performing Arts Technicians</td>
<td>50K</td>
<td>65K</td>
<td>70K</td>
<td>80K</td>
</tr>
</tbody>
</table>

### 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.
### 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%

---

#### JOBS MOST EXPOSED TO AUTOMATION

<table>
<thead>
<tr>
<th>Role</th>
<th>Unimpacted</th>
<th>Augmentable</th>
<th>Automatable</th>
<th>Yr 10</th>
<th>Yr 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telecommunications Trades Workers</td>
<td>45%</td>
<td>30%</td>
<td>24%</td>
<td>14.8K</td>
<td>14.8K</td>
</tr>
<tr>
<td>ICT Sales Assistants</td>
<td>44%</td>
<td>40%</td>
<td>16%</td>
<td>4.7K</td>
<td>4.7K</td>
</tr>
<tr>
<td>Telecommunications Technical Specialists</td>
<td>42%</td>
<td>28%</td>
<td>30%</td>
<td>4.1K</td>
<td>4.1K</td>
</tr>
<tr>
<td>ICT Sales Professionals</td>
<td>44%</td>
<td>40%</td>
<td>16%</td>
<td>3.9K</td>
<td>3.9K</td>
</tr>
<tr>
<td>ICT Support Technicians</td>
<td>44%</td>
<td>34%</td>
<td>21%</td>
<td>3.0K</td>
<td>3.0K</td>
</tr>
</tbody>
</table>

#### JOBS MOST EXPOSED TO AUGMENTATION

<table>
<thead>
<tr>
<th>Role</th>
<th>Unimpacted</th>
<th>Augmentable</th>
<th>Automatable</th>
<th>Yr 10</th>
<th>Yr 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journalists and Other Writers</td>
<td>56%</td>
<td>43%</td>
<td>12.8K</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Artistic Directors, and Media Producers &amp; Presenters</td>
<td>61%</td>
<td>38%</td>
<td>7.3K</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telecommunications Engineering Professionals</td>
<td>47%</td>
<td>44%</td>
<td>9%</td>
<td>7.0K</td>
<td></td>
</tr>
<tr>
<td>Performing Arts Technicians</td>
<td>65%</td>
<td>34%</td>
<td>5.4K</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graphic and Web Designers, and Illustrators</td>
<td>52%</td>
<td>48%</td>
<td>3.4K</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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% AUTOMATABLE
- 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% AUTOMATABLE
- 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% AUTOMATABLE
- 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**

<table>
<thead>
<tr>
<th>Reading Comprehension</th>
<th>Communication and Media</th>
<th>Social Perceptiveness</th>
<th>History and Archaeology</th>
<th>Management of Material Resources</th>
<th>Telecommunication</th>
</tr>
</thead>
<tbody>
<tr>
<td>▶</td>
<td>▶</td>
<td>▶</td>
<td>▶</td>
<td>▶</td>
<td>▶</td>
</tr>
</tbody>
</table>

Current Ability ➔ Future Ability
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**

<table>
<thead>
<tr>
<th>Starting Jobs in 2019</th>
<th>Automatable jobs by 2034</th>
<th>Additional jobs by 2034</th>
<th>Total number of jobs in 2034</th>
</tr>
</thead>
<tbody>
<tr>
<td>179K</td>
<td>32K</td>
<td></td>
<td>209K</td>
</tr>
</tbody>
</table>

**ADDITIONAL TECH JOBS REQUIRED (top 15)**

- Software Developers, Systems Software: 1.1K
- Software Developers, Applications: 1.1K
- Data Engineers: 0.8K
- Process Improvement Analysts: 0.8K
- Data Scientists: 0.8K
- Data Analysts: 0.7K
- Infrastructure Services Analysts (IT): 0.7K
- Data Integrators: 0.7K
- Strategy Analysts: 0.5K
- Software Quality Assurance Engineers and Testers: 0.5K
- Security Testers: 0.5K
- Project Analyst: 0.4K
- Business Intelligence & Analytics Managers: 0.4K
- Tester/Test Analysts: 0.4K
- Process Improvement Managers: 0.4K
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

<table>
<thead>
<tr>
<th>Role</th>
<th>Unimpacted %</th>
<th>Augmentable %</th>
<th>Automatable %</th>
<th>No. Impacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural Steel and Welding Trades Workers</td>
<td>30%</td>
<td>32%</td>
<td>38%</td>
<td>38.1K</td>
</tr>
<tr>
<td>Production Managers</td>
<td>50%</td>
<td>47%</td>
<td>3%</td>
<td>29.3K</td>
</tr>
<tr>
<td>Food and Drink Factory Workers</td>
<td>35%</td>
<td>18%</td>
<td>47%</td>
<td>28.1K</td>
</tr>
<tr>
<td>Packers</td>
<td>29%</td>
<td>24%</td>
<td>47%</td>
<td>25.7K</td>
</tr>
<tr>
<td>Sales Assistants (General)</td>
<td>40%</td>
<td>39%</td>
<td>21%</td>
<td>24.9K</td>
</tr>
<tr>
<td>Metal Fitters and Machinists</td>
<td>30%</td>
<td>34%</td>
<td>36%</td>
<td>24.4K</td>
</tr>
<tr>
<td>Cabinetmakers</td>
<td>35%</td>
<td>32%</td>
<td>33%</td>
<td>22.0K</td>
</tr>
<tr>
<td>Bakers and Pastrycooks</td>
<td>33%</td>
<td>40%</td>
<td>27%</td>
<td>19.8K</td>
</tr>
<tr>
<td>Meat, Poultry and Seafood Process Workers</td>
<td>27%</td>
<td>28%</td>
<td>45%</td>
<td>18.4K</td>
</tr>
<tr>
<td>Product Assemblers</td>
<td>33%</td>
<td>29%</td>
<td>37%</td>
<td>17.1K</td>
</tr>
</tbody>
</table>

**TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15**

- Fixed Robotics
- Process Automation
- Navigation Robotics
- Mobile Robotics

**IMPACT LEGEND**

- Unimpacted %
- Augmentable %
- Automatable %

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

### Jobs Most Exposed to Automation

<table>
<thead>
<tr>
<th>Role</th>
<th>Year 10 Impact</th>
<th>Year 15 Impact</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food and Drink Factory Workers</td>
<td>46%</td>
<td>35%</td>
<td>28.1K</td>
</tr>
<tr>
<td>Packers</td>
<td>38%</td>
<td>29%</td>
<td>25.7K</td>
</tr>
<tr>
<td>Meat, Poultry and Seafood Process Workers</td>
<td>34%</td>
<td>27%</td>
<td>18.4K</td>
</tr>
<tr>
<td>Storepersons</td>
<td>42%</td>
<td>33%</td>
<td>15.4K</td>
</tr>
<tr>
<td>Meat Boners and Slicers, and Slaughterers</td>
<td>34%</td>
<td>27%</td>
<td>9.9K</td>
</tr>
</tbody>
</table>

### Jobs Most Exposed to Augmentation

<table>
<thead>
<tr>
<th>Role</th>
<th>Year 10 Impact</th>
<th>Year 15 Impact</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production Managers</td>
<td>62%</td>
<td>50%</td>
<td>29.3K</td>
</tr>
<tr>
<td>Bakers and Pastrycooks</td>
<td>48%</td>
<td>33%</td>
<td>19.8K</td>
</tr>
<tr>
<td>Engineering Production Workers</td>
<td>52%</td>
<td>36%</td>
<td>13.5K</td>
</tr>
<tr>
<td>Electricians</td>
<td>56%</td>
<td>41%</td>
<td>8.9K</td>
</tr>
<tr>
<td>Manufacturers</td>
<td>44%</td>
<td>32%</td>
<td>6.6K</td>
</tr>
</tbody>
</table>

**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% AUTOMATABLE**
- **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% AUTOMATABLE**
- **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% AUTOMATABLE**
- **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**

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

**KEY SKILL AND KNOWLEDGE GAPS**

<table>
<thead>
<tr>
<th>Ability Gaps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programming Comprehension</td>
</tr>
<tr>
<td>Sales &amp; Marketing</td>
</tr>
<tr>
<td>Technology Design</td>
</tr>
<tr>
<td>Design</td>
</tr>
<tr>
<td>Clerical</td>
</tr>
<tr>
<td>Systems Analysis</td>
</tr>
</tbody>
</table>

**Current Ability**

**Future Ability**
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

<table>
<thead>
<tr>
<th>Starting Jobs in 2019</th>
<th>Automatable jobs by 2034</th>
<th>Additional jobs by 2034</th>
<th>Total number of jobs in 2034</th>
</tr>
</thead>
<tbody>
<tr>
<td>640K</td>
<td>193K</td>
<td>67K</td>
<td>570K</td>
</tr>
</tbody>
</table>

ADDITIONAL TECH JOBS REQUIRED (top 15)

- Software Developers, Systems Software: 3.7K
- Software Developers, Applications: 3.7K
- Data Engineers: 2.6K
- Process Improvement Analysts: 2.5K
- Infrastructure Services Analysts (IT): 2.3K
- Data Integrators: 2.3K
- Data Scientists: 2.2K
- Robotic Engineers: 2.0K
- Data Analysts: 1.8K
- Strategy Analysts: 1.6K
- Software Quality Assurance Engineers and Testers: 1.6K
- Security Testers: 1.6K
- Mechatronics Engineers: 1.6K
- Mechanical Engineers: 1.5K
- Manufacturing Engineers: 1.5K
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

<table>
<thead>
<tr>
<th>Role</th>
<th>Unimpacted %</th>
<th>Augmentable %</th>
<th>Automatable %</th>
<th>No. impacted employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drillers, Miners and Shot Firers</td>
<td>37%</td>
<td>33%</td>
<td>30%</td>
<td>50.7K</td>
</tr>
<tr>
<td>Metal Fitters and Machinists</td>
<td>33%</td>
<td>32%</td>
<td>35%</td>
<td>24.7K</td>
</tr>
<tr>
<td>Other Building and Engineering Technicians</td>
<td>39%</td>
<td>45%</td>
<td>16%</td>
<td>12.5K</td>
</tr>
<tr>
<td>Truck Drivers</td>
<td>33%</td>
<td>26%</td>
<td>41%</td>
<td>9.9K</td>
</tr>
<tr>
<td>Electricians</td>
<td>44%</td>
<td>39%</td>
<td></td>
<td>9.2K</td>
</tr>
<tr>
<td>Production Managers</td>
<td>52%</td>
<td>45%</td>
<td></td>
<td>7.0K</td>
</tr>
<tr>
<td>Mining Engineers</td>
<td>45%</td>
<td>33%</td>
<td></td>
<td>5.4K</td>
</tr>
<tr>
<td>Structural Steel and Welding Trades Workers</td>
<td>36%</td>
<td></td>
<td></td>
<td>5.2K</td>
</tr>
<tr>
<td>Geologists, Geophysicists and Hydrogeologists</td>
<td>45%</td>
<td>43%</td>
<td></td>
<td>4.7K</td>
</tr>
<tr>
<td>Other Stationary Plant Operators</td>
<td></td>
<td></td>
<td></td>
<td>4.2K</td>
</tr>
</tbody>
</table>

IMPACT LEGEND

Unimpacted %   Augmentable %   Automatable %

TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15

- Fixed Robotics
- Navigation Robotics
- Process Automation

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

- 50K people at risk
- 6K unimpacted
- 42K augmentable
- 42K automatable

TECH IMPACT

- 34% augmentable
- 25% automatable
- 13% capacity gain
Some roles are more easily automated while other roles are more susceptible to augmentation.

**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 Steel & Welding Trades Worker**
- 36% AUTOMATAABLE
- 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% AUTOMATAABLE
- 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% AUTOMATAABLE
- 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 Steel & 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**

- Mechanical Comprehension
- Installation
- Building & Construction
- Coordination
- Psychology
- Troubleshooting

**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

<table>
<thead>
<tr>
<th>Starting Jobs in 2019</th>
<th>Automatable jobs by 2034</th>
<th>Additional jobs by 2034</th>
<th>Total number of jobs in 2034</th>
</tr>
</thead>
<tbody>
<tr>
<td>197K</td>
<td>50K</td>
<td>19K</td>
<td>195K</td>
</tr>
</tbody>
</table>

ADDITIONAL TECH JOBS REQUIRED (top 15)

- Software Developers, Systems Software: 1.1K
- Software Developers, Applications: 1.1K
- Data Engineers: 0.7K
- Process Improvement Analysts: 0.7K
- Infrastructure Services Analysts (IT): 0.7K
- Data Integrators: 0.7K
- Data Scientists: 0.6K
- Robotic Engineers: 0.6K
- Mechatronics Engineers: 0.5K
- Data Analysts: 0.5K
- Mechanical Engineers: 0.5K
- Manufacturing Engineers: 0.5K
- Strategy Analysts: 0.5K
- Software Quality Assurance Engineers and Testers: 0.5K
- Security Testers: 0.5K
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

<table>
<thead>
<tr>
<th>Role</th>
<th>Unimpacted %</th>
<th>Augmentable %</th>
<th>Automatable %</th>
<th>No. Impacted Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hairdressers</td>
<td>50%</td>
<td>47%</td>
<td>3%</td>
<td>77.0K</td>
</tr>
<tr>
<td>Motor Mechanics</td>
<td>38%</td>
<td>31%</td>
<td>31%</td>
<td>68.1K</td>
</tr>
<tr>
<td>Beauty Therapists</td>
<td>50%</td>
<td>47%</td>
<td>3%</td>
<td>33.6K</td>
</tr>
<tr>
<td>Fitness Instructors</td>
<td>75%</td>
<td>24%</td>
<td>3%</td>
<td>19.4K</td>
</tr>
<tr>
<td>Ministers of Religion</td>
<td>78%</td>
<td>22%</td>
<td>3%</td>
<td>19.0K</td>
</tr>
<tr>
<td>Panelbeaters</td>
<td>35%</td>
<td>32%</td>
<td>33%</td>
<td>14.9K</td>
</tr>
<tr>
<td>Metal Fitters and Machinists</td>
<td>30%</td>
<td>34%</td>
<td>36%</td>
<td>14.7K</td>
</tr>
<tr>
<td>Laundry Workers</td>
<td>37%</td>
<td>42%</td>
<td>3%</td>
<td>12.0K</td>
</tr>
<tr>
<td>Animal Attendant and Trainers</td>
<td>53%</td>
<td>45%</td>
<td>3%</td>
<td>10.2K</td>
</tr>
<tr>
<td>Vehicle Painters</td>
<td>32%</td>
<td>40%</td>
<td>28%</td>
<td>10.0K</td>
</tr>
</tbody>
</table>

IMPACT LEGEND
Unimpacted % | Augmentable % | Automatable %

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

**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% AUTOMATAABLE
- 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% AUTOMATAABLE
- 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% AUTOMATAABLE
- 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**

<table>
<thead>
<tr>
<th>Current Ability</th>
<th>Future Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Orientation</td>
<td></td>
</tr>
<tr>
<td>Comprehension</td>
<td></td>
</tr>
<tr>
<td>Psychology</td>
<td></td>
</tr>
<tr>
<td>Speaking</td>
<td></td>
</tr>
<tr>
<td>English Language</td>
<td></td>
</tr>
<tr>
<td>Social Perceptiveness</td>
<td></td>
</tr>
<tr>
<td>Therapy and Counselling</td>
<td></td>
</tr>
</tbody>
</table>
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**

<table>
<thead>
<tr>
<th>Starting Jobs in 2019</th>
<th>Automatable jobs by 2034</th>
<th>Additional jobs by 2034</th>
<th>Total number of jobs in 2034</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>473K</td>
<td>88K</td>
<td>42K</td>
<td>497K</td>
</tr>
</tbody>
</table>

**ADDITIONAL TECH JOBS REQUIRED (top 15)**

- Software Developers, Systems Software: 2.3K
- Software Developers, Applications: 2.3K
- Data Engineers: 1.6K
- Data Scientists: 1.5K
- Process Improvement Analysts: 1.4K
- Infrastructure Services Analysts (IT): 1.4K
- Data Integrators: 1.4K
- Robotic Engineers: 1.4K
- Mechatronics Engineers: 1.1K
- Data Analysts: 1.0K
- Strategy Analysts: 1.0K
- Software Quality Assurance Engineers and Testers: 1.0K
- Security Testers: 1.0K
- Mechanical Engineers: 1.0K
- Manufacturing Engineers: 1.0K
**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

<table>
<thead>
<tr>
<th>Role</th>
<th>Unimpacted</th>
<th>Augmentable</th>
<th>Automatable</th>
<th>No. Impacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accountants</td>
<td>27%</td>
<td>30%</td>
<td>43%</td>
<td>105.2K</td>
</tr>
<tr>
<td>Solicitors</td>
<td>55%</td>
<td>39%</td>
<td>6%</td>
<td>64.5K</td>
</tr>
<tr>
<td>Software and Applications Programmers</td>
<td>36%</td>
<td>48%</td>
<td>16%</td>
<td>61.0K</td>
</tr>
<tr>
<td>Bookkeepers</td>
<td>31%</td>
<td>23%</td>
<td>46%</td>
<td>33.7K</td>
</tr>
<tr>
<td>Management and Organisation Analysts</td>
<td>31%</td>
<td>68%</td>
<td></td>
<td>31.6K</td>
</tr>
<tr>
<td>ICT Managers</td>
<td>45%</td>
<td>48%</td>
<td></td>
<td>29.0K</td>
</tr>
<tr>
<td>Graphic and Web Designers, and Illustrators</td>
<td>30%</td>
<td>68%</td>
<td></td>
<td>25.7K</td>
</tr>
<tr>
<td>Advertising and Marketing Professionals</td>
<td>54%</td>
<td>44%</td>
<td></td>
<td>25.0K</td>
</tr>
<tr>
<td>Architects and Landscape Architects</td>
<td>43%</td>
<td>56%</td>
<td></td>
<td>24.9K</td>
</tr>
<tr>
<td>Civil Engineering Professionals</td>
<td>45%</td>
<td>51%</td>
<td></td>
<td>21.3K</td>
</tr>
</tbody>
</table>

### IMPACT LEGEND

- Unimpacted %
- Augmentable %
- Automatable %

### TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15

<table>
<thead>
<tr>
<th>Technology</th>
<th>No. Impacted Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Automation</td>
<td>0K</td>
</tr>
<tr>
<td>Solution Discovery</td>
<td>50K</td>
</tr>
<tr>
<td>Predictive Analysis</td>
<td>100K</td>
</tr>
<tr>
<td></td>
<td>150K</td>
</tr>
<tr>
<td></td>
<td>200K</td>
</tr>
<tr>
<td></td>
<td>250K</td>
</tr>
<tr>
<td></td>
<td>300K</td>
</tr>
<tr>
<td></td>
<td>350K</td>
</tr>
<tr>
<td></td>
<td>400K</td>
</tr>
</tbody>
</table>

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

**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)

<table>
<thead>
<tr>
<th>Accountant</th>
<th>Fraud Examiners (86.8 pivot score)</th>
<th>Information &amp; Organisation Prof. (84.4 pivot score)</th>
<th>Actuarial Managers (77.2 pivot score)</th>
</tr>
</thead>
<tbody>
<tr>
<td>43% AUTOMATA BALE</td>
<td>44.9K people at risk</td>
<td>105.2K people in job</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Secretary</th>
<th>Change Analyst (88.8 pivot score)</th>
<th>Copy Writer (83.7 pivot score)</th>
<th>Media Buyer (78.0 pivot score)</th>
</tr>
</thead>
<tbody>
<tr>
<td>39% AUTOMATA BALE</td>
<td>7.5K people at risk</td>
<td>19.0K people in job</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ICT Business &amp; Systems Analyst</th>
<th>Information &amp; Organisation Prof. (97.0 pivot score)</th>
<th>Infrastructure Services Analyst (IT) (96.2 pivot score)</th>
<th>Cyber Security Analyst (95.7 pivot score)</th>
</tr>
</thead>
<tbody>
<tr>
<td>31% AUTOMATA BALE</td>
<td>3.7K people at risk</td>
<td>11.7K people in job</td>
<td></td>
</tr>
</tbody>
</table>

**DETAILLED 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**

<table>
<thead>
<tr>
<th>Ability Gaps</th>
<th>Judgement and Decision Making</th>
<th>Law and Government</th>
<th>Time Management</th>
<th>Public Safety and Security</th>
<th>Negotiation</th>
<th>Production and Processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Ability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Future Ability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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**

<table>
<thead>
<tr>
<th>Starting Jobs in 2019</th>
<th>Automatable jobs by 2034</th>
<th>Additional jobs by 2034</th>
<th>Total number of jobs in 2034</th>
</tr>
</thead>
<tbody>
<tr>
<td>955K</td>
<td>185K</td>
<td>370K</td>
<td>1,237K</td>
</tr>
</tbody>
</table>

**ADDITIONAL TECH JOBS REQUIRED (top 15)**

1. Software Developers, Systems Software - 5.7K
2. Software Developers, Applications - 5.7K
3. Data Engineers - 4.5K
4. Process Improvement Analysts - 4.3K
5. Data Scientists - 4.2K
6. Data Analysts - 4.1K
7. Infrastructure Services Analysts (IT) - 3.6K
8. Data Integrators - 3.6K
9. Strategy Analysts - 2.7K
10. Software Quality Assurance Engineers and Testers - 2.7K
11. Security Testers - 2.7K
12. Project Analyst - 2.3K
13. Business Intelligence & Analytics Managers - 2.3K
14. Tester/Test Analysts - 1.9K
15. Process Improvement Managers - 1.9K
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

Police
- 32% Augmentable
- 62% Automatable
- 6% Unimpacted
- Total: 76.1K

General Clerks
- 42% Augmentable
- 18% Automatable
- 40% Unimpacted
- Total: 56.9K

Security Officers and Guards
- 30% Augmentable
- 46% Automatable
- 23% Unimpacted
- Total: 45.0K

Contract, Program and Project Administrators
- 72% Augmentable
- 25% Automatable
- 3% Unimpacted
- Total: 37.2K

Inspectors and Regulatory Officers
- 53% Augmentable
- 39% Automatable
- 8% Unimpacted
- Total: 35.0K

Information Officers
- 50% Augmentable
- 43% Automatable
- 7% Unimpacted
- Total: 25.4K

Defence Force Members - Other Ranks
- 32% Augmentable
- 62% Automatable
- 6% Unimpacted
- Total: 22.4K

Prison Officers
- 39% Augmentable
- 33% Automatable
- 27% Unimpacted
- Total: 21.4K

Policy and Planning Managers
- 50% Augmentable
- 40% Automatable
- 10% Unimpacted
- Total: 17.6K

Intelligence and Policy Analysts
- 31% Augmentable
- 62% Automatable
- 7% Unimpacted
- Total: 17.5K

TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15

- Process Automation
- Navigation Robotics
- Solution Discovery
- Sensory Perception
- Predictive Analysis

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

### JOBS MOST EXPOSED TO AUTOMATION

<table>
<thead>
<tr>
<th>Role</th>
<th>Yr 10</th>
<th>Yr 15</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Clerks</td>
<td>52%</td>
<td>42%</td>
<td>56.9K</td>
</tr>
<tr>
<td>Prison Officers</td>
<td>48%</td>
<td>39%</td>
<td>21.4K</td>
</tr>
<tr>
<td>Accounting Clerks</td>
<td>46%</td>
<td>37%</td>
<td>11.5K</td>
</tr>
<tr>
<td>Personal Assistants</td>
<td>56%</td>
<td>46%</td>
<td>9.6K</td>
</tr>
<tr>
<td>Accountants</td>
<td>47%</td>
<td>34%</td>
<td>9.0K</td>
</tr>
</tbody>
</table>

### JOBS MOST EXPOSED TO AUGMENTATION

<table>
<thead>
<tr>
<th>Role</th>
<th>Yr 10</th>
<th>Yr 15</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Police</td>
<td>43%</td>
<td>32%</td>
<td>76.1K</td>
</tr>
<tr>
<td>Defence Force Members - Other Ranks</td>
<td>43%</td>
<td>32%</td>
<td>22.4K</td>
</tr>
<tr>
<td>Intelligence and Policy Analysts</td>
<td>46%</td>
<td>31%</td>
<td>17.5K</td>
</tr>
<tr>
<td>Fire and Emergency Workers</td>
<td>57%</td>
<td>40%</td>
<td>16.3K</td>
</tr>
<tr>
<td>Registered Nurses</td>
<td>59%</td>
<td>45%</td>
<td>9.5K</td>
</tr>
</tbody>
</table>

### 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)**

<table>
<thead>
<tr>
<th>Job</th>
<th>Automatable</th>
<th>Augmentable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Call or Contact Centre Worker</td>
<td>45%</td>
<td>15%</td>
</tr>
<tr>
<td>3.5K people at risk</td>
<td>7.9K people in job</td>
<td></td>
</tr>
<tr>
<td>Copy Writer</td>
<td>(89.6 pivot score)</td>
<td></td>
</tr>
<tr>
<td>Change Analyst</td>
<td>(79.1 pivot score)</td>
<td></td>
</tr>
<tr>
<td>Content Manager</td>
<td>(75.9 pivot score)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Job</th>
<th>Automatable</th>
<th>Augmentable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Assistant</td>
<td>31%</td>
<td>14%</td>
</tr>
<tr>
<td>3.0K people at risk</td>
<td>9.6K people in job</td>
<td></td>
</tr>
<tr>
<td>Change Analyst</td>
<td>(93.3 pivot score)</td>
<td></td>
</tr>
<tr>
<td>Information &amp; Organisation Prof.</td>
<td>(85.3 pivot score)</td>
<td></td>
</tr>
<tr>
<td>Media Buyer</td>
<td>(82.9 pivot score)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Job</th>
<th>Automatable</th>
<th>Augmentable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prison Officer</td>
<td>27%</td>
<td>11%</td>
</tr>
<tr>
<td>5.8K people at risk</td>
<td>21.4K people in job</td>
<td></td>
</tr>
<tr>
<td>Sheriff &amp; Deputy Sheriff</td>
<td>(94.7 pivot score)</td>
<td></td>
</tr>
<tr>
<td>Social &amp; Human Service Assistant</td>
<td>(89.2 pivot score)</td>
<td></td>
</tr>
<tr>
<td>Diversional Therapist</td>
<td>(80.9 pivot score)</td>
<td></td>
</tr>
</tbody>
</table>

### DETAILED TRANSITION PATHWAY

**Call Centre Worker**

Automatable 45%
Augmentable 15%

**Change Analyst**

**Content Manager**

**Copy Writer**

**Information & Organisation Prof.**

**Media Buyer**

**Key skill and knowledge gaps**

<table>
<thead>
<tr>
<th>Skill and Knowledge Gaps</th>
<th>Current Ability</th>
<th>Gap</th>
<th>Future Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personnel and Human Resources</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Perceptiveness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administration and Management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speaking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation and Control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Therapy and Counselling</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

72
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

<table>
<thead>
<tr>
<th>Starting Jobs in 2019</th>
<th>Automatable jobs by 2034</th>
<th>Additional jobs by 2034</th>
<th>Total number of jobs in 2034</th>
</tr>
</thead>
<tbody>
<tr>
<td>903K</td>
<td>156K</td>
<td>83K</td>
<td>1,064K</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ADDITIONAL TECH JOBS REQUIRED (top 15)

- Software Developers, Systems Software: 4.8K
- Software Developers, Applications: 4.8K
- Data Engineers: 3.7K
- Data Scientists: 3.4K
- Process Improvement Analysts: 3.3K
- Infrastructure Services Analysts (IT): 3.0K
- Data Integrators: 3.0K
- Data Analysts: 2.9K
- Strategy Analysts: 2.2K
- Software Quality Assurance Engineers and Testers: 2.2K
- Security Testers: 2.2K
- Tester/Test Analysts: 1.7K
- Process Improvement Managers: 1.7K
- Operations Research Analysts: 1.7K
- Operations Analysts: 1.7K
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

<table>
<thead>
<tr>
<th>Role</th>
<th>Unimpacted %</th>
<th>Augmentable %</th>
<th>Automatable %</th>
<th>No. impacted employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Estate Sales Agents</td>
<td>47%</td>
<td>45%</td>
<td>8%</td>
<td>102K</td>
</tr>
<tr>
<td>General Clerks</td>
<td>42%</td>
<td>18%</td>
<td>40%</td>
<td>9.8K</td>
</tr>
<tr>
<td>Land Economists and Valuers</td>
<td>33%</td>
<td>40%</td>
<td>27%</td>
<td>9.5K</td>
</tr>
<tr>
<td>Receptionists</td>
<td>39%</td>
<td>18%</td>
<td>43%</td>
<td>8.5K</td>
</tr>
<tr>
<td>Other Hospitality, Retail and Service Managers</td>
<td>49%</td>
<td>27%</td>
<td>24%</td>
<td>7.0K</td>
</tr>
<tr>
<td>Office Managers</td>
<td>59%</td>
<td>26%</td>
<td>15%</td>
<td>6.1K</td>
</tr>
<tr>
<td>Advertising, Public Relations and Sales Managers</td>
<td>58%</td>
<td>40%</td>
<td>4.6K</td>
<td></td>
</tr>
<tr>
<td>Other Sales Assistants and Salespersons</td>
<td>40%</td>
<td>39%</td>
<td>21%</td>
<td>4.4K</td>
</tr>
<tr>
<td>Personal Assistants</td>
<td>46%</td>
<td>23%</td>
<td>31%</td>
<td>4.1K</td>
</tr>
<tr>
<td>Accountants</td>
<td>34%</td>
<td>28%</td>
<td>39%</td>
<td>3.9K</td>
</tr>
</tbody>
</table>

IMPACT LEGEND
Unimpacted %  Augmentable %  Automatable %

TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15

- Process Automation
- Generative Design
- Solution Discovery
- Collaborative Robotics
- Sensory Perception

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
36K
21K 15K TOTAL AUTOMATABLE

TECH IMPACT
37% AUGMENTABLE 17% AUTOMATABLE 17% CAPACITY GAIN

74
Some roles are more easily automated while other roles are more susceptible to augmentation.

### 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%

### JOBS MOST EXPOSED TO AUTOMATION

<table>
<thead>
<tr>
<th>Role</th>
<th>Unimpacted</th>
<th>Augmentable</th>
<th>Automatable</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Clerks</td>
<td>52%</td>
<td>17%</td>
<td>31%</td>
</tr>
<tr>
<td>Receptionists</td>
<td>50%</td>
<td>17%</td>
<td>33%</td>
</tr>
<tr>
<td>Accounting Clerks</td>
<td>46%</td>
<td>19%</td>
<td>35%</td>
</tr>
<tr>
<td>Bookkeepers</td>
<td>46%</td>
<td>19%</td>
<td>35%</td>
</tr>
<tr>
<td>Truck Drivers</td>
<td>42%</td>
<td>26%</td>
<td>32%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Unimpacted</th>
<th>Augmentable</th>
<th>Automatable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yr 10</td>
<td>52%</td>
<td>17%</td>
<td>31%</td>
</tr>
<tr>
<td>Yr 15</td>
<td>42%</td>
<td>18%</td>
<td>40%</td>
</tr>
<tr>
<td>Yr 10</td>
<td>50%</td>
<td>17%</td>
<td>33%</td>
</tr>
<tr>
<td>Yr 15</td>
<td>39%</td>
<td>18%</td>
<td>43%</td>
</tr>
<tr>
<td>Yr 10</td>
<td>46%</td>
<td>19%</td>
<td>35%</td>
</tr>
<tr>
<td>Yr 15</td>
<td>37%</td>
<td>21%</td>
<td>42%</td>
</tr>
<tr>
<td>Yr 10</td>
<td>46%</td>
<td>19%</td>
<td>35%</td>
</tr>
<tr>
<td>Yr 15</td>
<td>37%</td>
<td>21%</td>
<td>42%</td>
</tr>
<tr>
<td>Yr 10</td>
<td>42%</td>
<td>26%</td>
<td>32%</td>
</tr>
<tr>
<td>Yr 15</td>
<td>30%</td>
<td>27%</td>
<td>43%</td>
</tr>
</tbody>
</table>

### JOBS MOST EXPOSED TO AUGMENTATION

<table>
<thead>
<tr>
<th>Role</th>
<th>Unimpacted</th>
<th>Augmentable</th>
<th>Automatable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Estate Sales Agents</td>
<td>62%</td>
<td>33%</td>
<td>102.0K</td>
</tr>
<tr>
<td>Land Economists and Valuers</td>
<td>51%</td>
<td>31%</td>
<td>9.5K</td>
</tr>
<tr>
<td>Advertising, Public Relations</td>
<td>69%</td>
<td>30%</td>
<td>4.6K</td>
</tr>
<tr>
<td>Advertising and Marketing</td>
<td>58%</td>
<td>40%</td>
<td>1.8K</td>
</tr>
<tr>
<td>Sales Representatives</td>
<td>50%</td>
<td>34%</td>
<td>1.5K</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Unimpacted</th>
<th>Augmentable</th>
<th>Automatable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yr 10</td>
<td>62%</td>
<td>33%</td>
<td>102.0K</td>
</tr>
<tr>
<td>Yr 15</td>
<td>47%</td>
<td>45%</td>
<td>8%</td>
</tr>
<tr>
<td>Yr 10</td>
<td>51%</td>
<td>31%</td>
<td>9.5K</td>
</tr>
<tr>
<td>Yr 15</td>
<td>33%</td>
<td>40%</td>
<td>27%</td>
</tr>
<tr>
<td>Yr 10</td>
<td>69%</td>
<td>30%</td>
<td>4.6K</td>
</tr>
<tr>
<td>Yr 15</td>
<td>58%</td>
<td>40%</td>
<td>4.6K</td>
</tr>
<tr>
<td>Yr 10</td>
<td>69%</td>
<td>30%</td>
<td>1.8K</td>
</tr>
<tr>
<td>Yr 15</td>
<td>58%</td>
<td>40%</td>
<td>1.8K</td>
</tr>
<tr>
<td>Yr 10</td>
<td>50%</td>
<td>34%</td>
<td>1.5K</td>
</tr>
<tr>
<td>Yr 15</td>
<td>40%</td>
<td>39%</td>
<td>21%</td>
</tr>
</tbody>
</table>

### IMPACT LEGEND
- Unimpacted %
- Augmentable %
- Automatable %
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)

<table>
<thead>
<tr>
<th>Current Job</th>
<th>Future Job</th>
<th>Automation Score</th>
<th>At Risk</th>
<th>In Job</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bookkeeper</strong></td>
<td><strong>Change Analyst</strong></td>
<td>(78.9 pivot score)</td>
<td>42%</td>
<td>21%</td>
</tr>
<tr>
<td></td>
<td><strong>Copy Writer</strong></td>
<td>(75.4 pivot score)</td>
<td>0.8K</td>
<td>2.0K</td>
</tr>
<tr>
<td></td>
<td><strong>ICT Security Consultant</strong></td>
<td>(67.9 pivot score)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Car Detailer</strong></td>
<td><strong>Solar Photovoltaic Installer</strong></td>
<td>(84.5 pivot score)</td>
<td>33%</td>
<td>67%</td>
</tr>
<tr>
<td></td>
<td><strong>Camera Operators</strong></td>
<td>(61.5 pivot score)</td>
<td>0.5K</td>
<td>1.6K</td>
</tr>
<tr>
<td></td>
<td><strong>Visual Arts &amp; Crafts Professional</strong></td>
<td>(61.4 pivot score)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Land Economist &amp; Valuer</strong></td>
<td><strong>Real Estate Sales Agent</strong></td>
<td>(87.3 pivot score)</td>
<td>27%</td>
<td>73%</td>
</tr>
<tr>
<td></td>
<td><strong>Information &amp; Organisation Prof.</strong></td>
<td>(77.2 pivot score)</td>
<td>2.6K</td>
<td>9.5K</td>
</tr>
<tr>
<td></td>
<td><strong>Cyber Security Analyst</strong></td>
<td>(73.8 pivot score)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### DETAILED TRANSITION PATHWAY

#### JOB

<table>
<thead>
<tr>
<th>Current Job</th>
<th>Future Job</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bookkeeper</td>
<td>ICT Security Consultant</td>
</tr>
<tr>
<td>Copy Writer</td>
<td>Change Analyst</td>
</tr>
<tr>
<td>ICT Security Consultant</td>
<td>Solar Photovoltaic Installer</td>
</tr>
<tr>
<td>Visual Arts &amp; Crafts Professional</td>
<td>Camera Operators</td>
</tr>
</tbody>
</table>

#### KEY SKILL AND KNOWLEDGE GAPS

<table>
<thead>
<tr>
<th>Current Ability</th>
<th>Gap</th>
<th>Future Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer and Electronic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment Selection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering and Technology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Programming</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication and Media</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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

Starting Jobs in 2019 | Automatable jobs by 2034 | Additional jobs by 2034 | Total number of jobs in 2034
--- | --- | --- | ---
210K | 37K | 19K | 253K

TECHNOLOGY IMPACTS ON THE AUSTRALIAN WORKFORCE

ADDITIONAL TECH JOBS REQUIRED (top 15)

<table>
<thead>
<tr>
<th>Role</th>
<th>Jobs Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software Developers, Systems Software</td>
<td>1.1K</td>
</tr>
<tr>
<td>Software Developers, Applications</td>
<td>1.1K</td>
</tr>
<tr>
<td>Data Engineers</td>
<td>0.9K</td>
</tr>
<tr>
<td>Data Scientists</td>
<td>0.9K</td>
</tr>
<tr>
<td>Process Improvement Analysts</td>
<td>0.8K</td>
</tr>
<tr>
<td>Infrastructure Services Analysts (IT)</td>
<td>0.7K</td>
</tr>
<tr>
<td>Data Integrators</td>
<td>0.7K</td>
</tr>
<tr>
<td>Data Analysts</td>
<td>0.6K</td>
</tr>
<tr>
<td>Strategy Analysts</td>
<td>0.5K</td>
</tr>
<tr>
<td>Software Quality Assurance Engineers and Testers</td>
<td>0.5K</td>
</tr>
<tr>
<td>Security Testers</td>
<td>0.5K</td>
</tr>
<tr>
<td>Tester/Test Analysts</td>
<td>0.4K</td>
</tr>
<tr>
<td>Process Improvement Managers</td>
<td>0.4K</td>
</tr>
<tr>
<td>Operations Research Analysts</td>
<td>0.4K</td>
</tr>
<tr>
<td>Operations Analysts</td>
<td>0.4K</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Role</th>
<th>Unimpacted</th>
<th>Augmentable</th>
<th>Automatable</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales Assistants (General)</td>
<td>38%</td>
<td>40%</td>
<td>22%</td>
<td>558.3K</td>
</tr>
<tr>
<td>Retail Managers</td>
<td>41%</td>
<td>39%</td>
<td>20%</td>
<td>176.3K</td>
</tr>
<tr>
<td>Checkout Operators and Office Cashiers</td>
<td>35%</td>
<td>25%</td>
<td>40%</td>
<td>120.2K</td>
</tr>
<tr>
<td>Shelf Fillers</td>
<td>30%</td>
<td>18%</td>
<td>52%</td>
<td>71.2K</td>
</tr>
<tr>
<td>Storepersons</td>
<td>32%</td>
<td>18%</td>
<td>51%</td>
<td>60.6K</td>
</tr>
<tr>
<td>Pharmacy Sales Assistants</td>
<td>43%</td>
<td>23%</td>
<td>34%</td>
<td>47.4K</td>
</tr>
<tr>
<td>Sales Representatives</td>
<td>38%</td>
<td>40%</td>
<td>22%</td>
<td>41.4K</td>
</tr>
<tr>
<td>Motor Vehicle and Vehicle Parts Salespersons</td>
<td>35%</td>
<td>25%</td>
<td>40%</td>
<td>38.7K</td>
</tr>
<tr>
<td>Advertising, Public Relations and Sales Managers</td>
<td>57%</td>
<td>41%</td>
<td>32.7K</td>
<td></td>
</tr>
<tr>
<td>Retail Supervisors</td>
<td>48%</td>
<td>36%</td>
<td>30.6K</td>
<td></td>
</tr>
</tbody>
</table>

IMPACT LEGEND
Unimpacted %  Augmentable %  Automatable %

TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15

<table>
<thead>
<tr>
<th>Technology</th>
<th>Process Automation</th>
<th>Mobile Robotics</th>
<th>Generative Design</th>
<th>Fixed Robotics</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. impacted employees</td>
<td>0K 50K 100K 150K 200K 250K 300K 350K 400K 450K 500K 550K</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Category</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>239K</td>
</tr>
<tr>
<td>Female</td>
<td>219K</td>
</tr>
</tbody>
</table>

TECH IMPACT

<table>
<thead>
<tr>
<th>Category</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Augmentable</td>
<td>34%</td>
</tr>
<tr>
<td>Automatable</td>
<td>27%</td>
</tr>
<tr>
<td>Capacity Gain</td>
<td>15%</td>
</tr>
</tbody>
</table>
**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%

---

**JOBS MOST EXPOSED TO AUTOMATION**

<table>
<thead>
<tr>
<th>Role</th>
<th>Yr 10 Unimpacted %</th>
<th>Yr 10 Augmentable %</th>
<th>Yr 10 Automatable %</th>
<th>Yr 15 Unimpacted %</th>
<th>Yr 15 Augmentable %</th>
<th>Yr 15 Automatable %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shelf Fillers</td>
<td>39%</td>
<td>17%</td>
<td>44%</td>
<td>30%</td>
<td>18%</td>
<td>52%</td>
</tr>
<tr>
<td>Storepersons</td>
<td>40%</td>
<td>16%</td>
<td>43%</td>
<td>32%</td>
<td>18%</td>
<td>51%</td>
</tr>
<tr>
<td>Truck Drivers</td>
<td>41%</td>
<td>26%</td>
<td>33%</td>
<td>29%</td>
<td>28%</td>
<td>44%</td>
</tr>
<tr>
<td>Packers</td>
<td>37%</td>
<td>21%</td>
<td>42%</td>
<td>27%</td>
<td>24%</td>
<td>49%</td>
</tr>
<tr>
<td>Delivery Drivers</td>
<td>39%</td>
<td>28%</td>
<td>33%</td>
<td>27%</td>
<td>29%</td>
<td>43%</td>
</tr>
</tbody>
</table>

**JOBS MOST EXPOSED TO AUGMENTATION**

<table>
<thead>
<tr>
<th>Role</th>
<th>Yr 10 Unimpacted %</th>
<th>Yr 10 Augmentable %</th>
<th>Yr 10 Automatable %</th>
<th>Yr 15 Unimpacted %</th>
<th>Yr 15 Augmentable %</th>
<th>Yr 15 Automatable %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales Assistants (General)</td>
<td>48%</td>
<td>35%</td>
<td>17%</td>
<td>38%</td>
<td>40%</td>
<td>22%</td>
</tr>
<tr>
<td>Sales Representatives</td>
<td>48%</td>
<td>35%</td>
<td>17%</td>
<td>38%</td>
<td>40%</td>
<td>22%</td>
</tr>
<tr>
<td>Advertising, Public Relations and Sales Managers</td>
<td>68%</td>
<td>31%</td>
<td>22%</td>
<td>57%</td>
<td>41%</td>
<td>32.7K</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>55%</td>
<td>36%</td>
<td>8%</td>
<td>45%</td>
<td>43%</td>
<td>12%</td>
</tr>
<tr>
<td>Technical Sales Representatives</td>
<td>49%</td>
<td>37%</td>
<td>14%</td>
<td>38%</td>
<td>43%</td>
<td>19%</td>
</tr>
</tbody>
</table>
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% AUTOMATABLE
  - 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% AUTOMATABLE
  - 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% AUTOMATABLE
  - 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%
  - Visual Merchandiser
  - Aged & Disabled Carer (90.8 pivot score)
  - Social Media Influencer (59.0 pivot score)

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

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

```
Current Ability  Future Ability
```

80
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

Starting Jobs in 2019 | Automatable jobs by 2034 | Additional jobs by 2034 | Total number of jobs in 2034
---|---|---|---
1,671K | 458K | 171K | 1,668K

ADDITIONAL TECH JOBS REQUIRED (top 15)

- Software Developers, Systems Software
- Software Developers, Applications
- Process Improvement Analysts
- Data Engineers
- Data Analysts
- Data Scientists
- Infrastructure Services Analysts (IT)
- Data Integrators
- Strategy Analysts
- Software Quality Assurance Engineers and Testers
- Security Testers
- Tester/Test Analysts
- Process Improvement Managers
- Operations Research Analysts
- Operations Analysts

TECHNOLOGY IMPACTS ON THE AUSTRALIAN WORKFORCE
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

<table>
<thead>
<tr>
<th>Role</th>
<th>Unimpacted %</th>
<th>Augmentable %</th>
<th>Automatable %</th>
<th>No. impacted employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Truck Drivers</td>
<td>34%</td>
<td>25%</td>
<td>40%</td>
<td>115.3K</td>
</tr>
<tr>
<td>Automobile Drivers</td>
<td>40%</td>
<td>29%</td>
<td>31%</td>
<td>50.4K</td>
</tr>
<tr>
<td>Couriers and Postal Deliverers</td>
<td>39%</td>
<td>22%</td>
<td>39%</td>
<td>45.2K</td>
</tr>
<tr>
<td>Bus and Coach Drivers</td>
<td>45%</td>
<td>22%</td>
<td>33%</td>
<td>43.1K</td>
</tr>
<tr>
<td>Storepersons</td>
<td>37%</td>
<td>16%</td>
<td>47%</td>
<td>28.5K</td>
</tr>
<tr>
<td>Delivery Drivers</td>
<td>33% 27% 40%</td>
<td></td>
<td></td>
<td>18.4K</td>
</tr>
<tr>
<td>Forklift Drivers</td>
<td>35% 32% 33%</td>
<td></td>
<td></td>
<td>18.2K</td>
</tr>
<tr>
<td>Transport and Despatch Clerks</td>
<td>41% 25% 34%</td>
<td></td>
<td></td>
<td>18.1K</td>
</tr>
<tr>
<td>Transport Services Managers</td>
<td>60% 32% 13.9K</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply, Distribution and Procurement Managers</td>
<td>40% 53% 12.9K</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TOP 5 TECHNOLOGIES AFFECTING THIS INDUSTRY AT YEAR 15

- Navigation Robotics: 0K - 240K
- Process Automation: 0K - 240K

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

- Total Automatable: 197K
  - Male: 157K
  - Female: 39K

TECH IMPACT

- Augmentable: 26%
- Automatable: 33%
- Capacity Gain: 11%
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%

### JOBS MOST EXPOSED TO AUTOMATION

<table>
<thead>
<tr>
<th>Role</th>
<th>Yr 10 Unimpacted</th>
<th>Yr 10 Augmentable</th>
<th>Yr 10 Automatable</th>
<th>Yr 15 Unimpacted</th>
<th>Yr 15 Augmentable</th>
<th>Yr 15 Automatable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Truck Drivers</td>
<td>45%</td>
<td>24%</td>
<td>30%</td>
<td>34%</td>
<td>25%</td>
<td>40%</td>
</tr>
<tr>
<td>Forklift Drivers</td>
<td>49%</td>
<td>31%</td>
<td>20%</td>
<td>35%</td>
<td>40%</td>
<td>33%</td>
</tr>
<tr>
<td>Storepersons</td>
<td>45%</td>
<td>15%</td>
<td>40%</td>
<td>37%</td>
<td>16%</td>
<td>47%</td>
</tr>
<tr>
<td>Transport Services Managers</td>
<td>72%</td>
<td>24%</td>
<td>40%</td>
<td>60%</td>
<td>32%</td>
<td>8%</td>
</tr>
<tr>
<td>Mail Sorters</td>
<td>46%</td>
<td>20%</td>
<td>34%</td>
<td>35%</td>
<td>24%</td>
<td>47%</td>
</tr>
<tr>
<td>Supply, Distribution and Procurement Managers</td>
<td>52%</td>
<td>43%</td>
<td>12.9K</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ticket Salespersons</td>
<td>51%</td>
<td>19%</td>
<td>31%</td>
<td>39%</td>
<td>18%</td>
<td>42%</td>
</tr>
<tr>
<td>Aircraft Maintenance Engineers</td>
<td>51%</td>
<td>31%</td>
<td>6.1K</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freight and Furniture Handlers</td>
<td>49%</td>
<td>21%</td>
<td>30%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor Mechanics</td>
<td>58%</td>
<td>24%</td>
<td>18%</td>
<td>41%</td>
<td>29%</td>
<td>29%</td>
</tr>
</tbody>
</table>
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% AUTOMATABLE
- 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% AUTOMATABLE
- 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% AUTOMATABLE
- 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

- Service Orientation
- Customer & Personal Service
- Social Perceptiveness
- Education & Training
- Writing
- Administration & Management
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

<table>
<thead>
<tr>
<th>Starting Jobs in 2019</th>
<th>Automatable jobs by 2034</th>
<th>Additional jobs by 2034</th>
<th>Total number of jobs in 2034</th>
</tr>
</thead>
<tbody>
<tr>
<td>590K</td>
<td>197K</td>
<td>59K</td>
<td>550K</td>
</tr>
</tbody>
</table>

ADDITIONAL TECH JOBS REQUIRED (top 15)

- Software Developers, Systems Software: 3.4K
- Software Developers, Applications: 3.4K
- Data Engineers: 2.3K
- Process Improvement Analysts: 2.3K
- Infrastructure Services Analysts (IT): 2.0K
- Data Integrators: 2.0K
- Data Scientists: 2.0K
- Data Analysts: 1.9K
- Strategy Analysts: 1.5K
- Software Quality Assurance Engineers and Testers: 1.5K
- Security Testers: 1.5K
- Robotics Engineers: 1.5K
- Mechatronics Engineers: 1.2K
- Tester/Test Analysts: 1.2K
- Process Improvement Managers: 1.2K
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**

<table>
<thead>
<tr>
<th>Starting Jobs in 2019</th>
<th>Automatable jobs by 2034</th>
<th>Additional jobs by 2034</th>
<th>Total number of jobs in 2034</th>
</tr>
</thead>
<tbody>
<tr>
<td>210K</td>
<td>37K</td>
<td>60K</td>
<td>253K</td>
</tr>
</tbody>
</table>

Tech jobs ➣ 19K ➤ Non-Tech jobs ➤ 50K ➣ 253K
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.

**MODELLED FAETHM INSIGHTS**

1. **TECHNOLOGY ADOPTION MODEL**
   - Neural Network / NLP, predicts the adoption pace and magnitude of technology impacts over time on work tasks

2. **WORKFORCE ANALYSIS**
   - SVM, Neural Network, Xgboost and NLP to identify which jobs are likely to be augmented or automated.
   - Recommender engine determines best job transitions

3. **WORKFORCE ATTRIBUTION MODEL**
   - Atomises work into tasks and skills

4. **CONTEXTUAL CLIENT DATA**
   - De-identified workforce data for each ‘worker’ in the organisation. Used to apply Faethm’s model at a client specific level
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:

Current job (Risk at year 10) → Future job (more secure)

- **Bookkeeping, Accounting & Auditing Clerks**
  - 51% AUTOMATAABLE
  - 109,464 people at risk
  - 214,685 people in job

- **Digital CX Manager**
  - (86.1 pivot score)

- **Head of Public Relations**
  - (82.6 pivot score)

- **Section Editors**
  - (82.3 pivot score)
Today, Faethm provides the most granular and sophisticated data on the planet

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

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

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
(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.

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Collaborative (works alongside human ability)

In R&D (prototyped with limited adoption)
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 Quantum.