The second Institute Insight on the Changing Nature of Work in Tasmania explores how the global transition from an industrial to a knowledge and service based economy is being experienced in Tasmania. Insight One provided a snapshot of the Tasmanian workforce: how men and women engage with work; how this differs by age; and the implications for policy development and the broader goal of ensuring that all Tasmanians have the opportunity to participate in work. Insight Two extends this analysis by examining the changing nature of the workforce by industry sector since 2006, including analysis of the relative economic contribution of each sector.

Key findings since 2006:

- The size of the workforce increased in ten of the 19 industry sectors.
- The size of the workforce does not necessarily reflect the contribution of the industry sector to the Tasmanian economy in terms of Gross State Product (GSP).
- The healthcare and social assistance sector became the largest workforce and contributed the greatest growth in both absolute and relative terms to the whole Tasmanian workforce.
- The Tasmanian workforce is dominated by industry sectors which are largely publicly funded.
- The greatest job losses were experienced by men employed full time in the male-dominated, manufacturing sector.
- The greatest job gains were experienced by women employed part time in the services based sectors of health care and social assistance and education and training.
- The construction industry was the only sector in which the majority of workforce growth was in full time employment (74.2 per cent of additional construction jobs were full time).
  - Men took up nine in ten of the additional jobs in the construction sector.
- More than half the workforce in six of the 19 industry sectors was aged over 45.
  - This included two of the largest and fastest growing sectors: healthcare and social assistance (54.6 per cent); and education and training (54.4 per cent).

1 The workforce consists of all those people who were employed at the time of the ABS Census of Population and Housing.
Tasmanian workforce by industry sector

While the Tasmanian workforce grew 4.8 per cent (9,672 people) from 2006 to 2016, the composition of the workforce by industry sector shifted considerably. Of the 19 ANZSIC\(^1\) sectors, 10 experienced an employment increase and nine experienced a decline. Figure 1 shows the proportion of the workforce by industry sector (i.e. the relative contribution of the sector to the whole Tasmanian workforce) for 2016 and 2006, as well as the percentage point change over the decade. The health care and social assistance sector was the greatest contributor to employment in Tasmania in 2016. Its contribution to the total Tasmanian workforce increased by 2.9 percentage points to 14.7 per cent (30,683 people) and surpassed retail trade as the top employment sector. Retail, which went from first to second place, experienced a decline of 840 workers and now employs 11.3 per cent of the total Tasmanian workforce (a 1.0 percentage point decline). There was a marked shift for the manufacturing sector, which is no longer one of the top five employing industry sectors in Tasmania, falling from third to seventh place. Manufacturing’s contribution to the workforce declined by more than one third to 7.1 per cent, a loss of 6,316 jobs since 2006.

Education and training replaced manufacturing as the third largest workforce contributor (up 1.1 percentage points to 9.6 per cent of the workforce), rising from fifth place in 2006. Public administration and safety kept its position as the fourth largest contributor to the workforce, while accommodation and food services (often used as proxy for tourism related employment) made it into the top five, rising from sixth to fifth place. The employment contribution of accommodation and food services increased by 0.8 percentage points to 7.9 per cent (16,541 people).

The construction sector remained in sixth position, although its workforce contribution increased by 1.0 percentage point to 7.9 per cent of the workforce. While the arts and recreation services sector contributes a relatively smaller proportion of the total workforce, it provided the fifth greatest proportionate change to the Tasmanian workforce over the decade, up 0.5 of a percentage point to 1.9 per cent of the workforce (4,017 people). This growth reflects the changing economic structure of the state and its focus on the service and tourism sector as well as the contribution of private investment like Mona, particularly coming off a relatively low base.

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\(^1\) Australian and New Zealand Standard Industrial Classification
Importantly, the size, or direction, of change of the workforce does not necessarily reflect the contribution of the industry sector to the Tasmanian economy in terms of Gross State Product (GSP). Figure 2 shows the proportion of the GSP for each industry sector (the relative contribution of the sector to the Tasmanian economy) for 2015/16 and 2005/06 as well as the percentage point change over the decade. Despite a reduction in the size of the workforce, the agriculture, forestry and fishing sector overtook manufacturing as the greatest contributor to the Tasmanian economy in the 2015/16 financial year, accounting for 10.3 per cent of GSP, a 0.5 percentage point increase on its contribution in 2005/06. In addition to suffering substantial employment decline, manufacturing fell from first to third position in terms of contribution to GSP, falling from 11.5 per cent of GSP in 2005/06 to 8.3 per cent in 2015/16.

As well as increasing the size of the workforce, the health care and social assistance sector also increased its GSP contribution, up 2.3 percentage points to 10.0 per cent of GSP, becoming the second greatest contributor to GSP, surpassing construction, which dropped to fourth, education and training, which remained fifth and transport, postal and warehousing, which dropped to sixth.

Considerable increases to GSP contribution over the decade emerged from financial and insurance services (1.1 percentage points); professional, scientific and technological services (1.0 percentage points); and information media and telecommunications (0.7 percentage points), despite relatively smaller workforces (and overall contribution to GSP for the latter two).

Table 1. Industry Sectors, Top 5 employing and proportionate change, Tasmania, 2006 and 2016

<table>
<thead>
<tr>
<th>Employing Industries</th>
<th>Change since 2006</th>
<th>Contribution to GSP (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Growth</td>
<td>Decline</td>
</tr>
<tr>
<td>2006</td>
<td>2016</td>
<td></td>
</tr>
<tr>
<td>Retail Trade</td>
<td>Health Care and Social Assistance</td>
<td>Health Care and Social Assistance</td>
</tr>
<tr>
<td>Health Care and Social Assistance</td>
<td>Retail Trade</td>
<td>Education and Training</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>Education and Training</td>
<td>Construction</td>
</tr>
<tr>
<td>Public Administration and Safety</td>
<td>Public Administration and Safety</td>
<td>Accommodation and Food Services</td>
</tr>
<tr>
<td>Education and Training</td>
<td>Accommodation and Food Services</td>
<td>Art and Recreation Services</td>
</tr>
</tbody>
</table>

Figure 2. GSP by ANZSIC industry sector, contribution and percentage point change, 2015/16 and 2005/06, Tasmania

Source: ABS, Australian National Accounts: State Accounts, 2015-16, Cat. No. 5220.0, author calculations

Acronym Key:
Refer to page 2
Workforce change by industry: comparison with Australia

The broad patterns of structural change for industry sectors within the economy, and the subsequent impact on the workforce, are consistent for Tasmania and Australia. However, there are some clear trends and differences.

Figure 3 shows the percentage change in employment by industry sector over the period 2006 to 2016 for Tasmania and Australia. For all sectors which experienced employment growth over the period for both Tasmania and Australia, Tasmania's growth rate was considerably lower than Australia's.

For all sectors which experienced employment decline over the period for both Tasmania and Australia, the rate of decline was greater for Tasmania than Australia, except for the agriculture, forestry and fishing sector (a 0.2 per cent decline compared with a 5.0 per cent decline nationally).

Tasmania experienced a decline in the size of the workforce in six sectors that experienced growth in Australia: retail trade; transport; postal and warehousing; information media and telecommunications; rental, hiring and real estate services; financial and insurance services; and public administration and safety.

For both Tasmania and Australia the four sectors of arts and recreation services; mining; healthcare and social assistance; and electricity, gas, water and waste services were among the top five fastest growing. However, while construction rounded out Tasmania's top five, education and training rounded out the top five nationally.

It is worth noting that three of the top four fastest growing sectors - arts and recreation services; mining; and electricity, gas, water and waste services - make up only 4.6 per cent of the whole Tasmanian workforce. However, healthcare and social assistance accounts for 14.7 per cent.

For both Tasmania and Australia, manufacturing and wholesale trade suffered the greatest declines since 2006. Together in 2006 these sectors contributed 14.1 per cent of the total Tasmanian workforce, declining to 9.3 per cent by 2016.

<table>
<thead>
<tr>
<th>Top 5</th>
<th>Tasmania</th>
<th>Australia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth (%)</td>
<td>Decline (%)</td>
<td>Growth (%)</td>
</tr>
<tr>
<td>Arts and Recreation Services</td>
<td>37.9</td>
<td>Wholesale Trade</td>
</tr>
<tr>
<td>Mining</td>
<td>36.0</td>
<td>Manufacturing</td>
</tr>
<tr>
<td>Health Care and Social Assistance</td>
<td>31.3</td>
<td>Financial and Insurance Services</td>
</tr>
<tr>
<td>Electricity, Gas, Water and Waste Services</td>
<td>21.4</td>
<td>Information Media and Telecommunications</td>
</tr>
<tr>
<td>Construction</td>
<td>20.2</td>
<td>Rental, Hiring and Real Estate Services</td>
</tr>
</tbody>
</table>

Institute for the Study of Social Change

Institute Insights Insight Two THE TASMANIAN WORKFORCE BY INDUSTRY SECTOR
Industry sector workforce by sex

When the workforce is analysed by sex, there are clear distinctions between industry sectors (See Figure 4). In 2016, three quarters of workers in the traditional industry based sectors (agriculture, forestry and fishing; manufacturing; electricity, gas, water and waste services; wholesale trade; transport, postal and warehousing) were men. In the mining and construction sectors nine in ten workers were men. For the health care and social assistance sector, almost four in five workers were women and around three in five workers in financial and insurance services; retail trade; and accommodation and food services were women.

While the size of the workforce for each industry sector either expanded or declined in absolute terms in the decade since 2006, the experience was vastly different for men and women.

- Of the additional workers in the health care and social assistance and education and training sectors, around four in five were women.
- Of the additional workers in construction industry, more than nine in ten were men.
- Of the job losses in the manufacturing sector, around four in five were men.
- Of the job losses in the wholesale trade sector, around two thirds were men.
- The net loss in the public administration and safety workforce was offset by gains in employment by women.

**Figure 4.** Male and female employment by industry sector, Tasmania, 2016

**Source:** ABS Census of Population and Housing, 2016; author calculations

**Acronym Key:** Refer to page 2

**Figure 5.** Workforce by industry sector, change for men and women, 2006 to 2016, Tasmania

**Source:** ABS Census of Population and Housing, 2006, 2016; author calculations
Industry sector by type of employment

In 2016, more workers were employed full time than part time in most industry sectors, particularly for the male dominated, traditional industry based sectors. Around nine in ten workers were employed full time in mining; and electricity, gas, water and waste services. Around three quarters were employed full time in manufacturing; construction; and wholesale trade. A greater proportion of workers was employed part time in the service based sectors: retail trade; accommodation and food services; administration and support services; health care and social assistance; and arts and recreation services, three of which are in the top five employing sectors.

While the size of the workforce for each industry sector either expanded or declined in absolute terms in the decade since 2006, so too did the numbers employed either full time or part time.

- Of the 7,059 additional jobs in the health care and social assistance sector, around three in five were part time.
- Of the 3,142 additional jobs in the education and training sector, around two in three were part time.
- Of the 2,889 additional jobs in the construction industry, around three quarters were full time.
- Of the 2,410 additional jobs in the accommodation and food services sector, almost nine in ten were part time.
- The net growth in the administration and support services workforce was offset by a loss in full time jobs (129 jobs).
- Net declines in the public administration, safety and retail trade workforces caused by full time job losses were partially offset by increases in part time workers.
- Of the 5,667 job losses in the manufacturing sector, more than nine in ten were full time.
- Of the 2,294 job losses in the wholesale trade sector, three quarters were full time.

Source: ABS Census of Population and Housing, 2006 and 2016; author calculations

NB differences in absolute numbers compared with Figure 5 is due to ‘inadequately described’ and ‘not stated’ responses for different variables in both the 2006 and 2016 Censuses.
Ageing workforce by industry sector

As Institute Insight One pointed out, the Tasmanian workforce is ageing. This process of ageing differs by industry sector and for men and women. In 2016, more than half the workforce was aged over 45 for six of the 19 industry sectors, including two of the largest and fastest growing sectors: healthcare and social assistance; and education and training. Over the next 15 to 20 years around half the workers in these sectors are likely to exit the workforce.

The age and sex structure for each industry sector workforce is set out in Figure 8. These graphs clearly illustrate the dominant sex and age groups for each sector and provide an insight into the future workforce opportunities and challenges for each sector.

Table 3. Ageing workforce by industry sector, proportion and number aged 45 and over, 2016

<table>
<thead>
<tr>
<th>Industry Sector</th>
<th>45 years and older</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport, Postal and Warehousing</td>
<td>59.7</td>
</tr>
<tr>
<td>Health Care and Social Assistance</td>
<td>54.6</td>
</tr>
<tr>
<td>Education and Training</td>
<td>54.4</td>
</tr>
<tr>
<td>Rental, Hiring and Real Estate Services</td>
<td>53.5</td>
</tr>
<tr>
<td>Public Administration and Safety</td>
<td>52.9</td>
</tr>
<tr>
<td>Agriculture, Forestry and Fishing</td>
<td>52.8</td>
</tr>
<tr>
<td>Administrative and Support Services</td>
<td>49.9</td>
</tr>
<tr>
<td>Wholesale Trade</td>
<td>48.9</td>
</tr>
<tr>
<td>Electricity, Gas, Water and Waste Services</td>
<td>48.7</td>
</tr>
<tr>
<td>Mining</td>
<td>47.3</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>47.2</td>
</tr>
<tr>
<td>Professional, Scientific and Technical Services</td>
<td>46.5</td>
</tr>
<tr>
<td>Other Services</td>
<td>43.2</td>
</tr>
<tr>
<td>Information Media and Telecommunications</td>
<td>42.2</td>
</tr>
<tr>
<td>Construction</td>
<td>42.1</td>
</tr>
<tr>
<td>Arts and Recreation Services</td>
<td>41.6</td>
</tr>
<tr>
<td>Financial and Insurance Services</td>
<td>41.5</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>35.1</td>
</tr>
<tr>
<td>Accommodation and Food Services</td>
<td>25.7</td>
</tr>
</tbody>
</table>

Source: ABS Census of Population and Housing, 2016; author calculations
Ageing workforce by industry sector

Figure 8. Workforce age and sex structures by industry sector, Tasmania, 2016

Source: ABS Census of Population and Housing, 2006, 2016; author calculations

- Professional, Scientific and Technical Services
- Health Care and Social Assistance
- Financial and Insurance Services
- Accommodation and Food Services
- Construction
- Transport, Storage and Warehousing
- Information Media and Telecommunications
- Rental, Hiring and Real Estate Services
- Arts and Recreation Services
- Manufacturing
- Electricity, Gas, Water and Waste Services
- Wholesale Trade
- Retail Trade

Male Female
Ageing workforce by industry sector

Figure 8. Workforce age and sex structures by industry sector, Tasmania, 2016

Source: ABS Census of Population and Housing, 2006, 2016; author calculations

Financial and Insurance Services

Rental, Hiring and Real Estate Services

Professional, Scientific and Technical Services

Administrative and Support Services

Public Administration and Safety

Education and Training

Health Care and Social Assistance

Arts and Recreation Services

Other Services

Male
Female
The changing nature of work in Tasmania

There has been considerable structural change in the Tasmanian economy and the associated workforce since 2006, shifting from an economy with a large manufacturing and agriculture based workforce to one that is increasingly dominated by the services sector (particularly sectors largely reliant on public funding) and ageing at a rapid rate.

While there has been overall growth in Tasmania’s workforce since 2006, nine industry sectors experienced decline in both absolute\(^1\) and relative\(^2\) terms. All of these sectors were in the wider private, traded sector, except for the public administration and safety industry sector. This essentially has the effect of increasing Tasmania’s, and Tasmanians’, reliance on public monies as a form of income. This is likely the result of:

- Population ageing (and associated changes to consumption patterns).
- Workforce rationalisation in the private sector (related to investment in capital and technology).
- Changing markets (it is no longer viable for higher wage economies to produce traded goods, which have declined in structural value).
- Changing policy positions of governments.

Comparing industry sectors’ relative contribution to the economy in terms of GSP and workforce reveals evidence of broader structural change since 2006. For many sectors, increased contribution to GSP did not necessarily equate to more jobs and vice versa. Figure 9 shows how the industry sectors can be differentiated into four quadrants - higher productivity sectors; sectors experiencing relative growth; lower productivity sectors; and sectors experiencing relative decline - based on the combination of their respective changes in contribution to GSP and the workforce.

Six industry sectors – financial and insurance services; information media and telecommunications; agriculture, forestry and fishing; rental, hiring and real estate services; wholesale trade; and retail trade - experienced a greater relative contribution to GSP despite a relative decline in the contribution to the workforce, indicating higher productivity sectors.

Four out of the 19 industry sectors are experiencing relative growth in both workforce and GSP and two of those - professional, scientific and technical services; and administrative and support services - had an increase in contribution to GSP that was greater than the increase in the contribution to the workforce, indicating growing industries with relatively higher levels of productivity.

Conversely, for the other two “relative growth” sectors - health care and social assistance; and other services - the growth in the contribution to the workforce was greater than the increase in the contribution to GSP over the decade to 2016, indicating these are growing but labour intensive industries.

Another six sectors - mining; electricity, gas, water and waste services; arts and recreation; accommodation and food services; education and training; and construction - had an increase in the contribution to the workforce but a decrease in contribution to GSP, indicating lower productivity sectors.

Three sectors - manufacturing; public administration and safety; and electricity, gas, water and waste services - experienced a decline in both their relative contribution to GSP and to the workforce, indicating overall relative decline.

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1  Total number of employees in the sector
2  Relative to other sectors contribution to the Tasmanian workforce
Figure 9. Change in the relative contribution to GSP and the Tasmanian workforce, by industry sector, 2006 to 2016

Source: ABS Census of Population and Housing, 2006, 2016;
The changing nature of work in Tasmania extends to how men and women engage with work within industry sectors. Most industry sectors are dominated by either men or women, reinforcing (or perhaps reflecting) cultural norms. Men dominate the traditional manufacturing and industrial based sectors of the 20th century and are largely employed full time. Women dominate the care and services sector and are largely employed part time. The distribution of men and women employed full time and part time, is more even in ‘generic skill’ industries like public administration and safety; and administration and support services; as well ‘new’ industries such as information media and telecommunications; and professional, scientific and technical services. However, the contribution of these ‘new’ industries to the whole Tasmanian workforce is small.

The phenomenon of the disappearing working man is driven by the changing industry base, reducing the proportion of the Tasmanian workforce employed full time as well as the proportion employed in the private, traded sector. Combined with the growth in part time employment, largely in publicly funded sectors, this trend could have serious, detrimental implications for household wealth, income security and future consumption patterns of Tasmanians.

Given that more than half the workforce in six of the 19 industry sectors is aged over 45, including in two of the largest and fastest growing sectors - healthcare and social assistance; and education and training - it is likely that over the next 15 to 20 years around half the workers will exit the workforce. This will create challenges in projecting and planning for new and replacement labour, and providing appropriate education and training services. This is particularly relevant given the changing mix of employment currently being experienced in the Tasmanian economy. The opportunity however, is workforce renewal, including the potential for increased productivity, if managed well.

Policy implications

There are challenges and opportunities associated with ageing and shifting workforces. Key issues include:

- How to maintain engagement and productivity in the workforce by older workers.
- How to transfer knowledge and skills to younger workers as increasing numbers of people exit the workforce.
- How to project employment demand for new jobs and labour to replace an ageing/retiring workforce.
- How to transfer skills and knowledge across industries as workforces fluctuate with changing economic, social and political conditions.
- How to influence changing gender stereotypes to encourage men and women to consider work opportunities in non-traditional sectors.
- How to increase employment in the private, traded sectors for both men and women.
- How to reverse the decline in full time employment to ensure Tasmanians have the opportunity to improve their economic and social prosperity and well-being.

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