

Women in Trades

**Part 5: Data and
insights - a qualitative
analysis of women in
trades and the trade
sector workforce**

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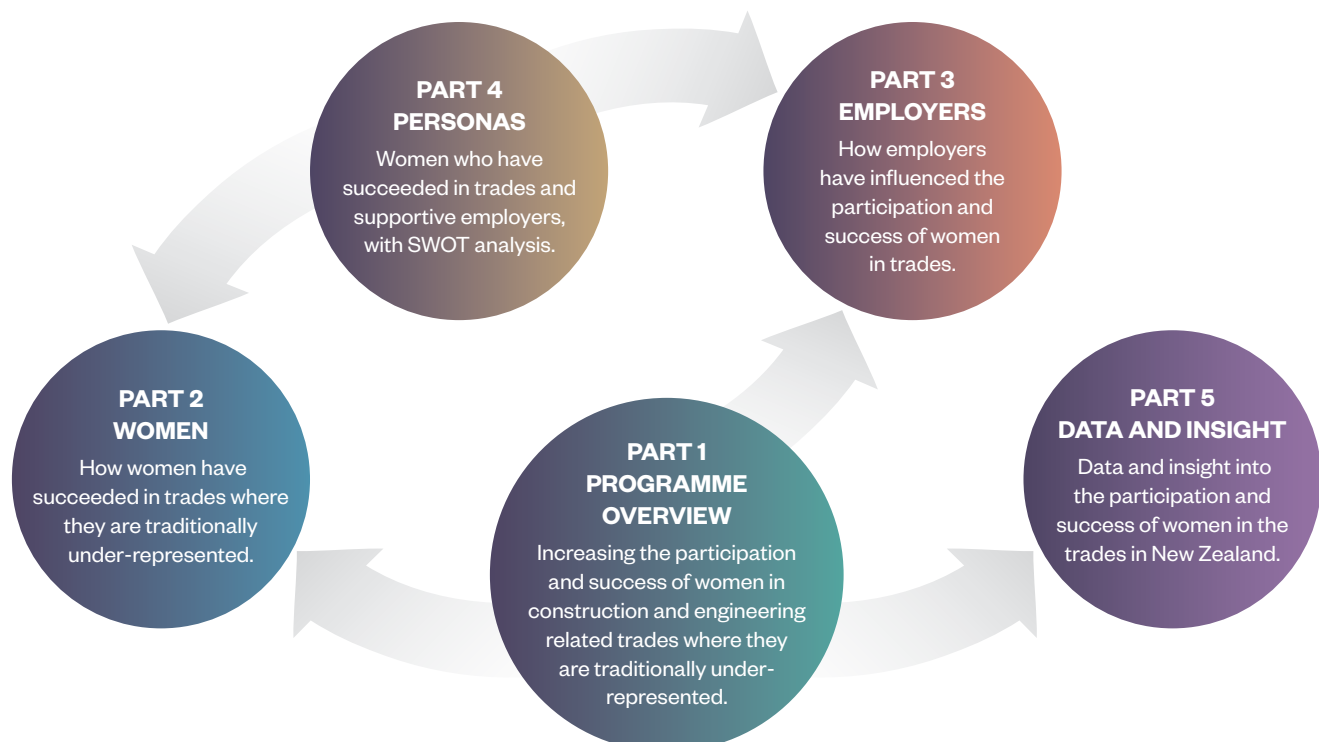
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Programme of Work

The programme of work includes the following interrelated components. All documents are available via the Ako Aotearoa project page: www.ako.ac.nz/knowledge-centre/what-are-the-characteristics-of-an-effective-learning-journey-for-women-entering-trades



IDI and IRD disclaimer

The results in this report and on the Sweet Analytics website are not official statistics. They have been created for research purposes from the Integrated Data Infrastructure (IDI), managed by Statistics New Zealand.

The opinions, findings, recommendations, and conclusions expressed are those of the author(s), not Statistics NZ.

Access to the anonymised data used in this study was provided by Statistics NZ under the security and confidentiality provisions of the Statistics Act 1975. Only people authorised by the Statistics Act 1975 are allowed to see data about a particular person, household, business, or organisation, and the results have been confidentialised to protect these groups from identification and to keep their data safe.

Careful consideration has been given to the privacy, security, and confidentiality issues associated with using administrative and survey data in the IDI. Further detail can be found in the Privacy impact assessment for the Integrated Data Infrastructure on the Statistics New Zealand website.

The results are based in part on tax data supplied by Inland Revenue to Statistics NZ under the Tax Administration Act 1994. This tax data must be used only for statistical purposes, and no individual information may be published or disclosed in any other form or provided to Inland Revenue for administrative or regulatory purposes.

Any person who has had access to the unit record data has certified that they have been shown, have read, and have understood section 81 of the Tax Administration Act 1994, which relates to secrecy. Any discussion of data limitations or weaknesses is in the context of using the IDI for statistical purposes and is not related to the data's ability to support Inland Revenue's core operational requirements.

Report highlights



Over **24,000** women are employed in the trades sector in New Zealand, but women only occupy about **3%** of actual trades roles.



Women are **twice as likely** to enter trades training from working in non-trade industries. While men are **three times as likely** to enter straight out of high school.



Tradeswomen are safer pairs of hands, making **three times fewer** ACC claims compared to their male counterparts.



One in three tradeswomen are business owners.



More than **half** of female trade apprentices are still engaged in an industry related to their training after ten years.



Women who completed a BCATS unit standard at school were **ten times more likely** than their peers to go on to train with BCITO.



Tradeswomen are more ethnically diverse with more than **twice the proportion** of Pasifika and Asian workers compared to men.

Executive summary

Introduction

This paper presents research findings from an extensive programme of quantitative analysis of the trades sector workforce in New Zealand conducted by Scarlatti, a research, analytics and evaluation firm. This study is part of the Women in Trades Research Project (Part 5: Programme Data), a three-year project, jointly commissioned by the Ministry for Women and Ako Aotearoa, to increase the participation and success of women in construction and engineering related trades where they are traditionally underrepresented.

This study was conducted using the Statistics NZ Integrated Data Infrastructure (IDI), primarily census data, IRD tax records and education enrolment data.

Objectives

The aim of this research is to increase sectoral understanding of the attributes, dynamics and trends that exist in the trades sector workforce, in order to inform better decision-making among trades sector stakeholders. Key focus areas include the participation of women in trades and the impact of engagement with vocational education and training.

Online resources

The research presented in this document reflects a set of selected industries and occupations that we have defined as being part of the overall trades sector (see Appendix 1 for details). To view interactive charts and make different industry selections, follow the links included at the end of each section of this report or go to <https://sweetanalytics.co.nz/>.

This site is also the best resource for more information about the definitions, sources and methodologies used in this work.

Overview of analysis and findings

The following is a brief summary of each of the analyses that was conducted as part of this study, along with the key findings and, where applicable, recommendations or suggestions for further research.

1. Women's participation in the trades

Establishing a baseline

In order to develop strategies to increase the employment of women in trades sector industries, it is important to begin from a position of knowledge about current levels of participation. We also need to be able to track changes to participation rates over time in order to identify sectors that are achieving relative success at increasing the participation of women, and to be able to monitor the impact of specific interventions aimed at attracting more women to the trades.

Establishing a baseline estimate of the participation rate of women in the various trades sector industries is not, however, as straightforward as it may sound. This is because each of the available data sources that we might consider using to generate an accurate estimate of the participation of women in the trades, comes with its own set of limitations:

- A census-defined workforce is the most precise and complete definition but can only give a snapshot in time every five years.
- A workforce defined by using IRD tax records can be tracked over a shorter timeframe but cannot be narrowed down by occupation, so includes a large number of non-trades roles such as administration and support staff.
- The combination of census and IRD records gives us a more realistic estimate of the number of women employed in trades sector industries, but changes over time are still likely to be driven by changes in non-trades roles.
- The combination of IRD and ITO enrolment records gives a workforce that can be tracked closely over time and consists mainly of trades roles, but it represents only a fraction of the total workforce (such as those who have recently been in training).

Each definition contributes to our understanding of the workforce and their combination gives us a clearer picture of the number of women in trades, what roles they have, and how these numbers have been changing over time.

We find that the number of women in trades has been increasing, but only in line with the growth of the overall workforce. The participation of women as a share of overall trades roles does not appear to have changed much over the last two decades, hovering around 3%.

Some industries, such as *painting & decorating*, are attracting more women at a rapid pace, while in many others the proportion has been essentially unchanged. Industries that are not attracting more women may be able to look to those that are for ideas about how to increase the participation of women in their workforces.

To view related online content, including interactive charts, please visit:

<https://www.sweetanalytics.co.nz/content/women-trades-over-time>

Snapshot of women in trades

We are also interested in understanding if there are differences between the characteristics of women and men in the trades sector workforce, which might provide insight into strategies to boost participation among the former. We use census data for this analysis as this gives the most accurate like-for-like comparison between men and women in trades roles.

Overall, women in the trades workforce are slightly older and more ethnically diverse than men. There is a small difference in the age profile of the male and female workforce. Females are relatively less likely to participate in the workforce before they turn 25 and after they turn 55. Consequently, relatively more of the female workforce are in the mid-age range. The reduced proportion of women under 25 in trade roles appears consistent with findings elsewhere in the Women in Trades project that women may be more attracted to trade roles once they have gained some work experience in other occupations.

We also find that women are self-employed at similar rates to men.

To view related online content, including interactive charts, please visit:

<https://www.sweetanalytics.co.nz/content/snapshot-women-trades>

2. Pathways to training

Trainee origins

With the IDI we can track people through their enrolment with education providers, through work in IRD records and even overseas departures. This gives us the ability to see what ITO trainees were doing in the years leading up to their training.

The majority of trainees at the three main trades sector ITOs (BCITO, Competenz and Skills Org) have come directly from prior employment of some kind, although looking further back reveals that many of these individuals have recently been enrolled in secondary schooling. This implies that for many individuals there is a gap between leaving secondary school and entering ITO training. It appears that during this gap most of these individuals are working, often in an industry unrelated to their eventual training, while some spend this gap engaging in some other form of tertiary training.

Over two thirds (68%) of female ITO trainees were in employment of any kind in the year prior to training, compared to only 56% for men. Conversely, only 4% of female trainees came directly from secondary school, whereas 17% of male trainees did. This last finding is significant for the discussion of BCATS below.

To view related online content, including interactive charts, please visit:

<https://www.sweetanalytics.co.nz/content/where-do-apprentices-arrive/>

Secondary-Tertiary Programmes

Secondary-Tertiary Programmes (STPs) is a term normally used to refer solely to Ministry of Education-funded Trades Academies. The term has been used more broadly recently, to encompass all partnerships between tertiary education organisations and schools that aim to provide students who are at risk of disengaging from education with opportunities for more hands-on, practical education experiences often not available in a typical classroom setting.

STPs typically include unit standards that introduce students to the skills required for a career in the related industry. These unit standards also contribute to NCEA qualifications.

BCITO has a suite of Level 1-3 unit standards and qualifications designed specifically for secondary school students. BCITO supports secondary schools and others to deliver the Building, Construction, and Allied Trades Skills (BCATS) suite through the provision of student and teacher resources.

Students can achieve the BCATS unit standards as a school subject as well as through TEC's Gateway programme, Trades Academies, Māori and Pacific Trades Training (MPTTs), and/or through programmes designed for second-chance learners. The unit standards introduce students to the skills required for a career in the building and construction industry. In this work we only consider students who complete BCATS unit standards while enrolled at secondary school.

Our analysis aims to determine the effectiveness of BCATS in guiding students into careers or further training in the building and construction industry and, from this, to draw conclusions about the potential of STPs in general to attract more students, and more women in particular, into trades sector careers.

We find that the number of students taking BCATS standards has increased in recent years, with almost 10% of 2016 school leavers completing at least one.

Students who complete BCATS standards are more likely to go on to ITO training and, in particular, training with BCITO. After controlling for a number of other influencing factors, we find that BCATS

alumni are about twice as likely to choose BCITO training compared to other recent school leavers who started ITO training. This shows that BCATS is doing a good job at guiding school leavers towards training and employment in the building and construction sector.

While secondary to tertiary programmes are not primarily focussed on increasing the transitions of women into training, their “try before you buy” approach makes them a potentially valuable tool for this purpose by providing a relatively low risk way for girls and their parents to experiment with what might otherwise be perceived as a riskier training and career choice.

Our analysis of BCATS hints at STPs being a potentially useful tool for increasing the participation of women in industry training as it has clearly been effective at encouraging more students into ITO training within their industry. However, boys currently complete BCATS units at a significantly higher rate than girls (approximately ten times). This suggests that attracting more girls into STPs like BCATS in the first place may be a worthwhile approach to consider.

This could involve redesigning trades-relevant STPs to make them more attractive to girls and/or promoting STPs more explicitly to girls in any communication efforts. Working with schools, teachers and careers advisers to ensure that girls are receiving information and advice about trade-relevant STPs at an early enough stage could also be beneficial.

That said, we note the finding discussed above, under *Snapshot of women in trades* and *Trainee origins*, that the proportion of women entering trades roles directly from school, while they are young, is relatively lower than that for men. This suggests that efforts to encourage women into trades roles from other workforces is probably a better use of investment at this stage.

To view related online content, including interactive charts, please visit:

<https://www.sweetanalytics.co.nz/content/evaluating-bcats/>

4. Post-training outcomes

Destinations after training

To observe what happens to trades ITO trainees after training, we combine enrolment records from the three trades sector ITOs (BCITO, Competenz and Skills Org) with IRD data, which allows us to track each trainee’s primary activity for each year after the start of their training. Training and education records are given precedence over working, so individuals are classified as a trainee until completion of their course even if they are also working while training.

Of those who enter trades ITO training, we find a majority remain engaged within the same industry many years after starting training, with many progressing into self-employed positions (although women seem to show far lower progression into self-employment than men).

Although there are some differences in pathway by age – with younger trainees more likely to be overseas ten years later and older trainees making the transition to the workforce slightly faster – long-term retention doesn’t seem to be significantly affected by the age of the trainee at the time they start training.

To view related online content, including interactive charts, please visit:

<https://www.sweetanalytics.co.nz/content/where-do-apprentices-end/>

Accident rates

Improving safety and reducing the number of accidents is an important goal for everyone involved in the trades. To determine what impact, if any, ITO training is having on improving safety and reducing workplace accidents, we analyse ACC claims data from between 2010 and 2016.

The clearest conclusion is that women in the trades have fewer accidents than men. Attracting more women to the trades may therefore lead to safer work environments. Conceivably, adding more women could also have an effect by changing workplace culture and habits; although this is speculation rather than a conclusion that we can draw from IDI data.

The effect of ITO training on accidents is ambiguous; ITO-trained workers actually make *more* ACC claims than those who do not have training, but the number of compensation days per claim is slightly lower for trained workers, which may indicate that the claims correspond to less serious accidents.

The simplest potential explanation for this data is that ITO-trained workers make claims for smaller accidents that untrained workers are more likely to ignore. The reasons why this might be the case are unclear and may relate to differences between businesses that employ apprentices and those that do not, or even differences inherent to the type of individuals who are drawn to ITO training. Whatever the reason, this may be an area worthy of further analysis.

To view related online content, including interactive charts, please visit:

<https://www.sweetanalytics.co.nz/content/accident-rates-trades>

5. Workforce analysis

Underutilisation

Underutilisation is a measure of untapped capacity in the labour market. It is a broader measure than unemployment, which only counts individuals who are not in the workforce but are actively looking for a job (“jobseekers”). Underutilisation adds to this total those who are underemployed (individuals who are employed but, if given the opportunity, would work more hours) as well as the *potential* workforce (workers who aren’t currently seeking work but would take work if offered a job, plus individuals who cannot work at the moment but are likely to become available for work in the next four weeks).

Our analysis of underutilisation in New Zealand points to several potential pools of untapped capacity in the labour market, both for the wider economy and for the trades sector specifically.

Underutilisation is higher for women than men, but the effect of age appears to be considerably stronger than that of sex. Underutilisation is particularly high for both men and women who are under 20, at more than 45%, having still not recovered from a surge following the global financial crisis and local recession of more than a decade ago. Making better use of these young people is therefore one option for increasing capacity in the trades sector.

The trades sector appears to be doing a reasonably good job of attracting previously underutilised men, attracting a greater proportion of these individuals than the primary, manufacturing or retail sectors. However, when it comes to attracting previously underutilised women, the trades sector performs poorly, attracting only around 1%. Increasing this proportion therefore represents another option for increasing capacity in the trades sector.

To view related online content, including interactive charts, please visit:

<https://www.sweetanalytics.co.nz/content/underutilization-rates-new-zealand>

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Introduction

Background

This paper presents research findings from an extensive quantitative study of the trades sector workforce in New Zealand conducted by Scarlatti, a research, analytics and evaluation firm.

This study is part of the Women in Trades Research Project (Part 5: Programme Data), a three year project jointly commissioned by the Ministry for Women and Ako Aotearoa to increase the participation and success of women in construction and engineering related trades where they are traditionally underrepresented.

The scope of this particular study is, however, somewhat broader than the Women in Trades Research Project as some of the analyses focus on the wider trades sector workforce. This research will inform an ongoing programme of research by the Ministry of Business, Innovation and Employment (MBIE), the Industry Training Federation (ITF), and other partners, including the eleven Industry Training Organisations (ITOs), examining New Zealand's workforce. This programme encompasses multiple projects which include, but are not limited to, patterns of employment, measuring training outcomes and attracting talent.

Objectives

The aim of this research is to increase sectoral understanding of the attributes, dynamics and trends that exist in the trades sector workforce, in order to inform better decision-making among trades sector stakeholders, particularly in the area of vocational education and training. Two key areas are of particular interest for this study:

- **The participation of women in the trades** – To what extent are women underrepresented in the trades sector workforce, and what opportunities or potential strategies exist to increase women's participation in the trades and trades sector industry training?
- **Trades sector industry training** – How do individuals arrive at and engage with trades sector vocational education and training, and what are its impacts on these individuals over time?

Methodology

This study was conducted using the Integrated Data Infrastructure (IDI), a large database managed by Statistics New Zealand. The IDI contains microdata about people and households from a range of government agencies, Statistics NZ surveys including the Census, and non-government organisations.¹

The research presented in this paper primarily utilises census data, IRD tax records and education enrolment data. By querying the IDI database, we can identify trends and patterns in this data giving insights into the trades sector.

The IDI allows researchers to examine different populations and sub-populations; but to protect the privacy of individuals, results will be suppressed if the population sizes become too small. This can pose

¹ <https://www.stats.govt.nz/integrated-data/integrated-data-infrastructure/data-in-the-idi/>

problems when researching smaller industry sectors and/or women's participation as, in some cases, the exact population used for each of the following analyses will vary slightly.

Throughout this paper we refer to the trades sector industries. For a list of the industries that we have included in this definition, please see Appendix 1.

Structure

The results of this research are presented in four sections:

1. **Women's participation in the trades** – We develop and implement a methodology to estimate the number of women employed in trades roles in New Zealand and explore the demographic characteristics of women in the trades sector workforce.
2. **Pathways to training** – We investigate where trades sector trainees arrive from and assess the impact of Secondary-Tertiary Programmes (STPs) on increasing participation in trades sector industry training.
3. **Post-training outcomes** – We assess the impact of industry training on trades sector employees, including retention in the industry and accident rates.
4. **Workforce analysis** – We dive into the utilisation of excess labour market capacity, and highlight available sources of recruitment for the trade sector.

1. Women's participation in the trades

Establishing a baseline

We know that the proportion of women working in trades occupations in New Zealand is much lower than that of men, but just how low is it and how has it changed over time?

Introduction

In order to develop strategies to boost women's employment in trades sector industries, it is important to begin from a position of knowledge about current levels of participation. We also need to be able to track changes to participation rates over time in order to identify sectors that are achieving relative success at increasing the participation of women, and to be able to monitor the impact of specific interventions aimed at attracting more women to the trades.

Establishing a baseline estimate of the participation rate of women in the various trades sector industries is not, however, as straightforward as it may sound. This is because each of the available data sources that we might consider using to generate an accurate estimate of the participation of women in the trades comes with its own set of limitations, which are discussed in turn below.

Census data

Our first port of call is the census. Typically held every five years, the census asks everyone in New Zealand to state their occupation and the industry of the business that they work for. Census data therefore gives us a robust estimate of the overall employment of women in each of the trades sector industries.

The census also allows us to break down each industry's workforce by occupation, enabling us to exclude non-trades occupations such as 'office manager' or 'general clerk' and focus instead on the actual trades roles in which we are interested.

The main limitation of the census data is frequency. The census gives us a precise snapshot of the workforce, but only for a single point in time (usually) every five years². With such lengthy gaps between data points, it can be difficult to assess the impact of interventions aimed at boosting the participation of women in the trades, as it is not possible to attribute any changes to the intervention itself, as there are any number of unrelated or external factors that could also have had an impact during that five-year period.

At the time of writing, the latest available data is from the 2018 census which coincides with the start of the Women in Trades project. We may not be able to fully assess the impact of the programme with census data until the 2023 census.

That said, the single point estimate that the census does provide is still useful for calibrating our baseline due to the high level of confidence that census data affords us. Based on the census, women make up only 1-4% of trade roles across most sectors, with the lowest proportions in the *brick & block* and *plumbing, drainlaying & gasfitting* industries, both of which have fewer than 1% of their trades roles occupied by women.

² The census scheduled for 2011 was delayed until 2013 creating a seven-year gap from the previous census (2006), and a five-year gap to the next census (2018). The 2011 Census was not held on 8 March 2011 as planned, due to the Christchurch earthquake on 22 February 2011. At that time the 2011 Census could not have been successfully completed given the national state of emergency and the probable impact on census results.

Design and drafting (kitchen) emerges as a major outlier, with slightly more women (55%) than men working in the industry. Among the more traditional trades, *painting & decorating* has the largest proportion of women employees, but this is still just 8%.

Figure 1 shows the proportion of women in each trades sector industry whose given occupation was a trades role in the census. Most industries have seen an increase in the proportion of women from 2013 to 2018. One exception to this was mechanical engineers.

Figure 1: Census defined participation rate of women within trade roles

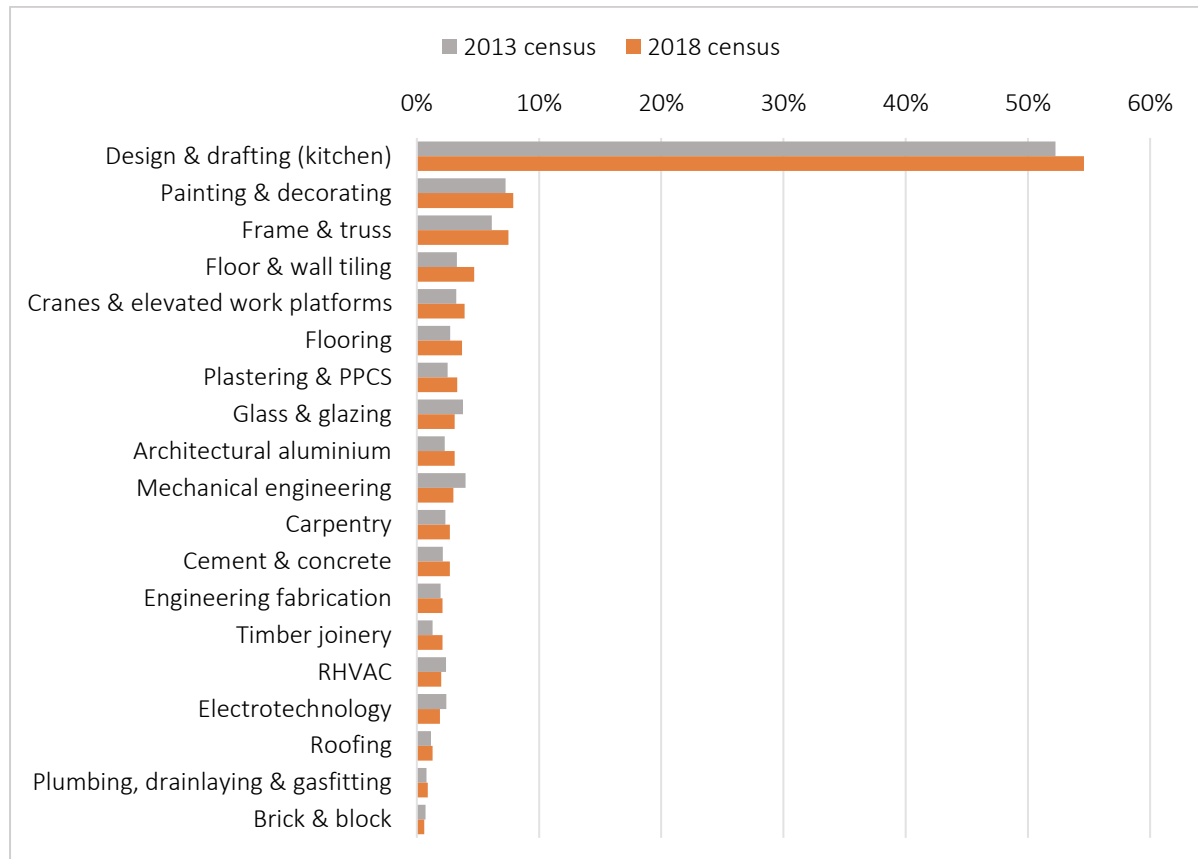
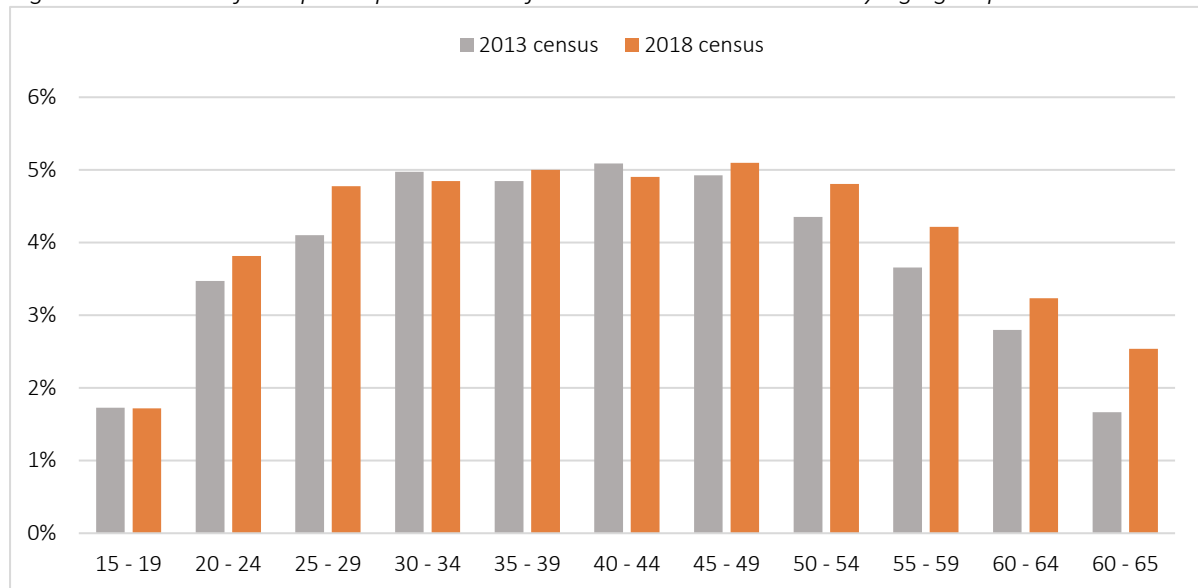


Figure 2 shows the proportion of women across all trade occupations broken down by age group. Demographically, women’s participation in the trades peaks between the ages of 30 and 50, with few women participating in their early or later life. Between censuses, the largest rise in participation from women has been in the 50+ age group, which is the result of the higher proportion of middle-aged women continuing to work in the trades. Promisingly, there has been an increase of women in their 20s working in trade sectors, however participation of women in the trades in their youth, particularly in their teens, is significantly lower, which identifies weaknesses in capturing female school leavers into the trades.

Figure 2: Census defined participation rate of women within trade roles by age group



IRD records

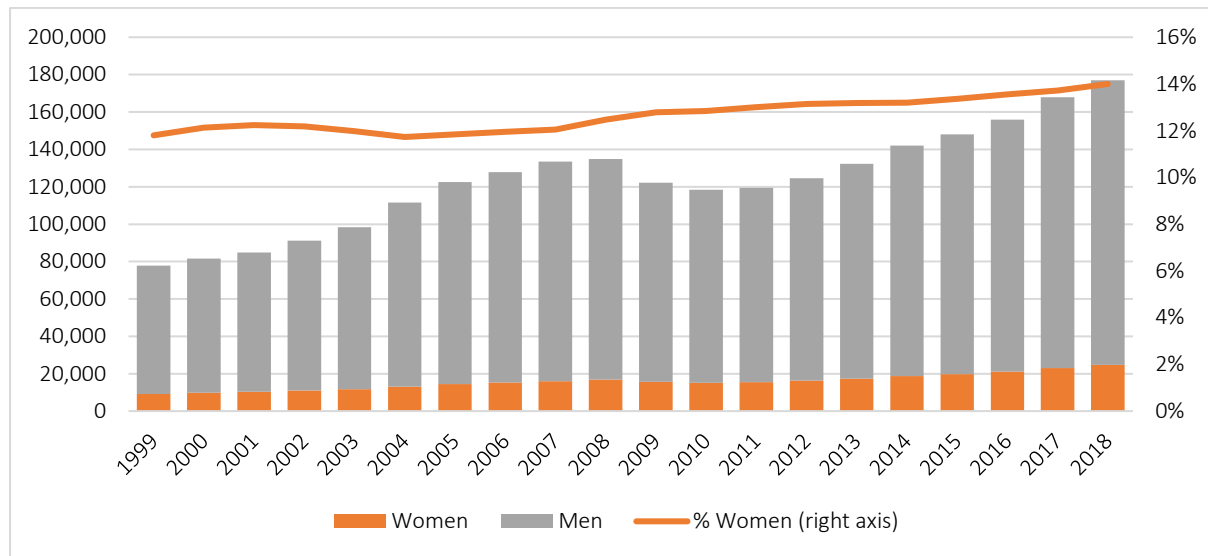
Tax records held by the Inland Revenue Department (IRD), which are updated quarterly, provide a more frequently updated dataset than the census. These records link every employee and employer in New Zealand to a business that is itself linked to a specific industry. We can therefore identify all individuals who received income from a business that was linked to each of the trades sector industries, and we can track this on a quarterly basis.

A major limitation of the IRD data is that, unlike the census, these records cannot be broken down by occupation. This means that for the trades industries we are interested in, we cannot distinguish between tradespeople and non-trades occupations such as administration or support staff. As a large proportion of administration and support staff are women, the overall proportion of women linked by the IRD data to each of the trades industries in this dataset is much greater than in the census data where non-trades occupations can be excluded.

In addition to the proportion of women in each industry appearing unrealistically high as a result, this feature of the IRD data also means that any changes that may have taken place in the participation rates for women within trades occupations could easily have been obscured by incidental changes in the (significantly larger) number of women employed in administration and support roles in those same industries.

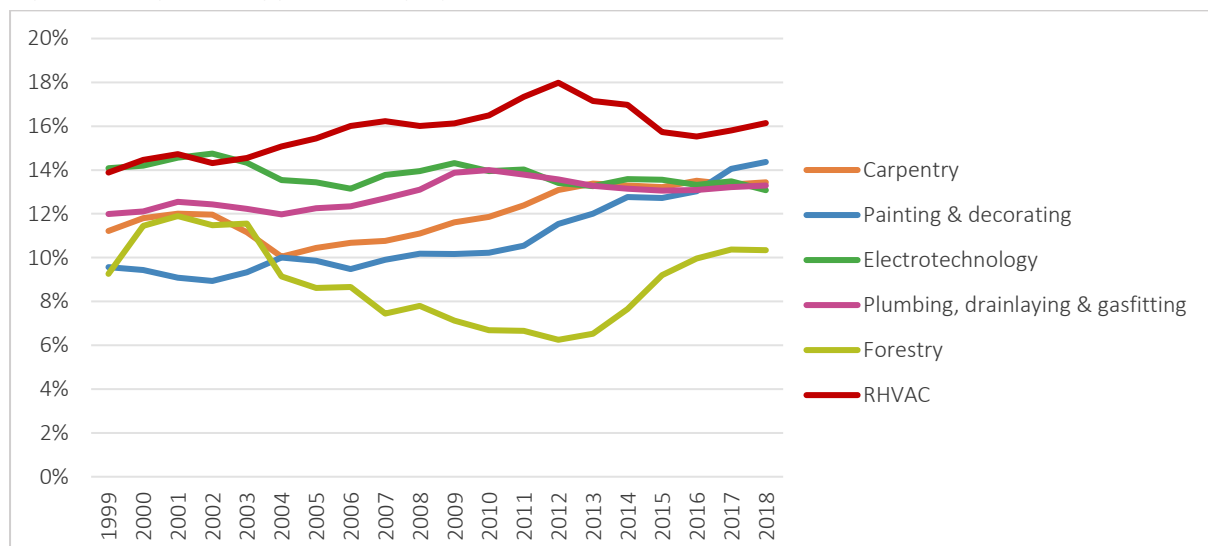
Again, despite these limitations, it is still worthwhile comparing trends between the various trades sector industries to seek out any identifiable differences. According to the IRD data, while the absolute number of women employed in the trades sector has increased steadily over the last two decades (from 9,187 in 1999 to 24,780 in 2018), women as a proportion of the overall workforce have only increased by 2.2% during that same period (from 11.8% to 14.0%, see Figure 3).

Figure 3: Number of workers in the trades sector over time, by gender



The trend in the proportion of women employed varies between industries. For example, *painting & decorating* has had an increase in the proportion of women from about 10% to over 14% between 1999 and 2018, while the proportion of women in *electrotechnology* during the same period has remained relatively flat, dropping slightly from around 14% to just over 13%. The proportion of women employed in *refrigeration, heating, ventilation and air-conditioning (RHVAC)* rose from 14% to 18% before falling back to around 16%, while the proportion in *forestry* saw the opposite pattern, dropping from 12% to almost 6% before recovering to around 10% (see Figure 4).

Figure 4: Proportion of female employees in selected trades sector industries over time

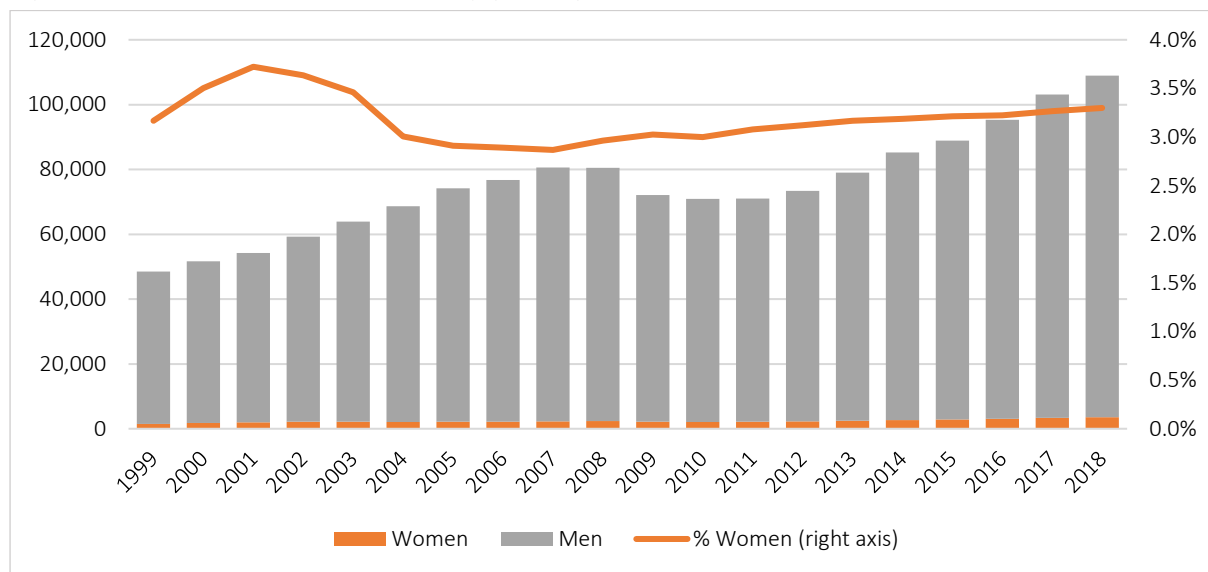


Census data combined with IRD records

One approach we can take to partially mitigate the limitations of both the census data (frequency) and IRD records (inability to exclude non-trades roles) is to merge these datasets to create a combined measure. By rescaling the IRD data to match census data, we can create an estimate of the trend in employment over time that has a more realistic proportion for women’s participation rates than the IRD data alone. To do this, we take the proportion of women employed in each trades sector industry as calculated from IRD records in each year and rescale these proportions so that they match those calculated from the census. This scaling factor is then used for every year in the IRD data.

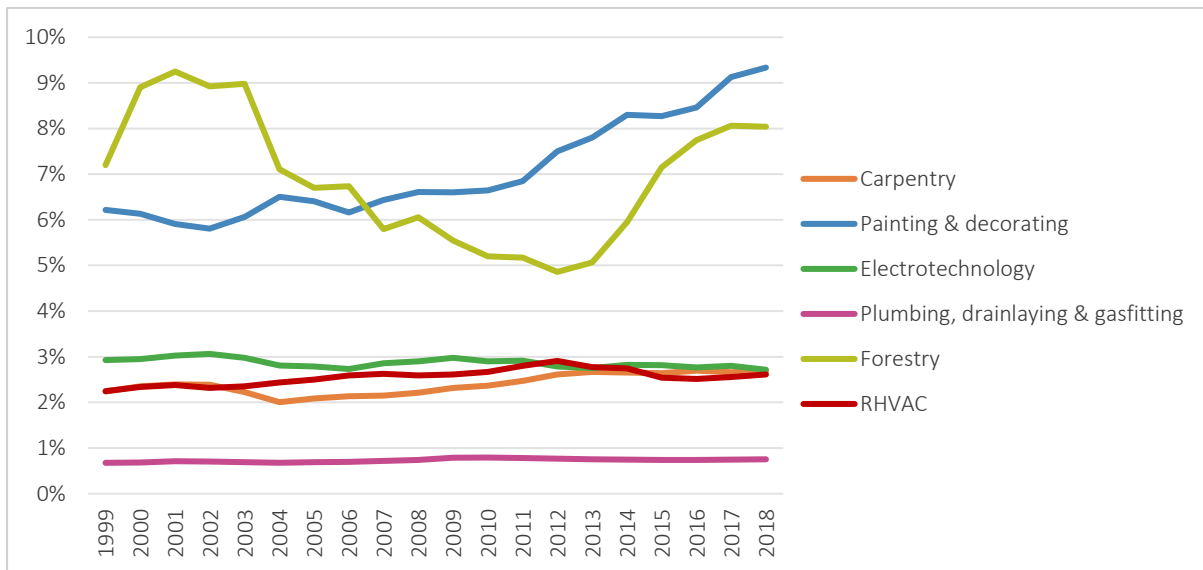
While this approach results in more realistic proportions for women’s employment (under 10%), it is still likely that changes over time are being driven predominantly by changes in the number of women employed in *non-trades* occupations, who significantly outnumber women in trades roles. Once data for the 2023 census becomes available, this calibration can be re-assessed and modified if necessary. This caveat notwithstanding, this approach indicates that the overall proportion of women employed in actual trades roles is around 3.3%, and while this number has increased slowly from a low of 2.9% in 2007, it had been as high as 3.7% in 2001 (see Figure 5). The peak in 2001 is largely explained by the forestry industry, which compared to other trade industries had a high proportion of women in the census data and a large overall workforce size, while other industries did not follow this pattern (see Figure 6).

Figure 5: Workers in the trades sector by gender from IRD data normalised to match the census



Based on this measure we see that the proportion of women in *electrotechnology* has remained flat at just under 3%, while in *carpentry* it has increased gradually from a low of 2.0% (in 2004) up to 2.7% in 2018. *Painting & decorating* has had a much stronger increase from about 6% to over 9%, while in *forestry* the proportion of women has had large fluctuations with a high of 9.2% and a low of 4.9%. *Plumbing, drainlaying & gasfitting* has barely moved, fluctuating between 0.7% and 0.8%, while *RHVAC* has seen a very slight upward trend from 2.2% to 2.6% (see Figure 6).

Figure 6: Women's participation rate by industry from IRD data normalised to match the census



IRD records combined with ITO enrolment

Arguably, a more robust approach to estimating changes in women's participation in actual trades occupations over time is to combine the IRD tax data with enrolment records held by the various Industry Training Organisations (ITOs) serving the trades industries.

By doing this, we can restrict our analysis to only those employees who have recently been in training, effectively utilising women's participation in trades training as a leading indicator of women's participation in trades occupations. The logic of this approach is that individuals who have trained for a trades occupation and are now employed in that industry are highly likely to be working in actual trades occupations as opposed to non-trades roles such as administration or support.

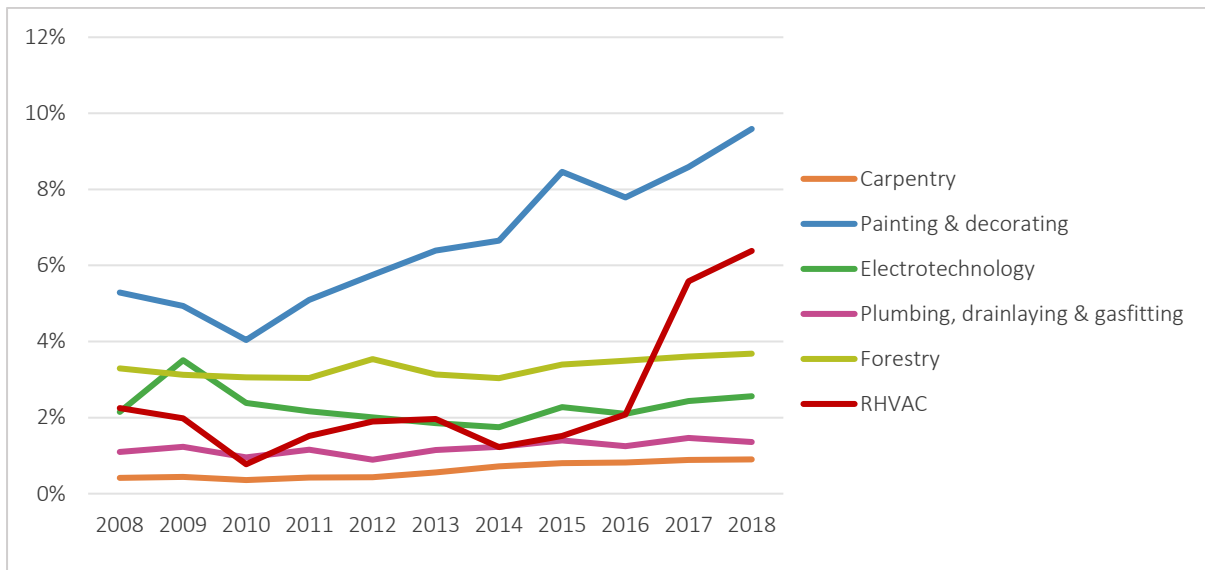
To combine these datasets, we define recently trained workers as those who are working in an industry in a given year and have trained with the relevant ITO for that industry in the preceding five years. This definition gives us participation rates for women in each trades sector industry that conform much more closely to the census-defined workforce than the IRD-defined workforce, while still allowing us to monitor changes over time.

This approach also has the added benefit of representing the population that are most able to be impacted by interventions that stakeholders in the sector can implement; in other words, those who have engaged with the industry training system.

The main limitation of this approach is that it only focusses on a specific subset of the overall workforce for each trades industry – those who have been through industry training – meaning if there are any significant differences between the trained and untrained trades sector workforces, we are not able to easily pick them up.

Using this approach to compare trades industries, we can see that *painting & decorating*, and *RHVAC* in particular, have shown a large increase in the proportion of recently trained women in trades occupations. Other sectors, such as *carpentry*, *electrotechnology*, *forestry* and *plumbing, drainlaying & gasfitting* have either been steady or had a very slight upward trend in the proportion of women in trades roles (see Figure 7).

Figure 7: Proportion of recently trained female workers by industry



Summary

Overall, the number of women in the trades has been increasing, but only in line with the growth of the total workforce. The participation of women as a share of overall trades roles doesn't appear to have changed much over the last two decades.

There are several ways to define a workforce in each of the trades sector industries, and each definition comes with its own advantages and limitations:

- The census-defined workforce is the most precise and complete definition but can only give a snapshot in time every five years.
- The IRD-defined workforce can be tracked over a shorter timeframe but cannot be narrowed down by occupation, so includes a large number of non-trades roles such as administration and support staff.
- The combination of census and IRD records gives us a more realistic estimate of women's employment in trades sector industries, but changes over time are still likely to be driven by changes in non-trades roles.
- The combination of IRD and ITO records gives a workforce that can be tracked closely over time and consists mainly of tradespeople, but it represents only a fraction of the total workforce (those who have recently been in training).

Each definition contributes to our understanding of the workforce and their combination gives us a clearer picture of the number of women in trades, what roles they have, and how these numbers have been changing over time.

Recommendations

Some industries, such as *painting & decorating*, are attracting more women at a rapid pace, while in many others the proportion has been essentially unchanged. Industries that are not attracting more women may want to look to those that are, for ideas about how to increase women's participation in their workforces.

Further research

We identified issues using IRD tax records for tracking women in trade roles, primarily due to higher rates of women in administrative roles for trades businesses. Further research could explore whether exposure to the trades through administrative roles impacts decisions to change careers, or whether this group could be leveraged to draw more women into trade roles. For instance, encouraging the wife of a builder who does the accounts to highlight potential women candidates for the business.

A regional breakdown to identify concentrations of women in trades could be of value, particularly for the purpose of remedial action that could be pinpointed in places like Christchurch with construction. Additional work around female working owners could also be useful.

Online resources

To view related online content, including interactive charts, please visit:

<https://www.sweetanalytics.co.nz/content/women-trades-over-time/>

Snapshot of women in trades

What are the characteristics of women working in the trades, and do they differ from those of men in any observable, meaningful ways?

Introduction

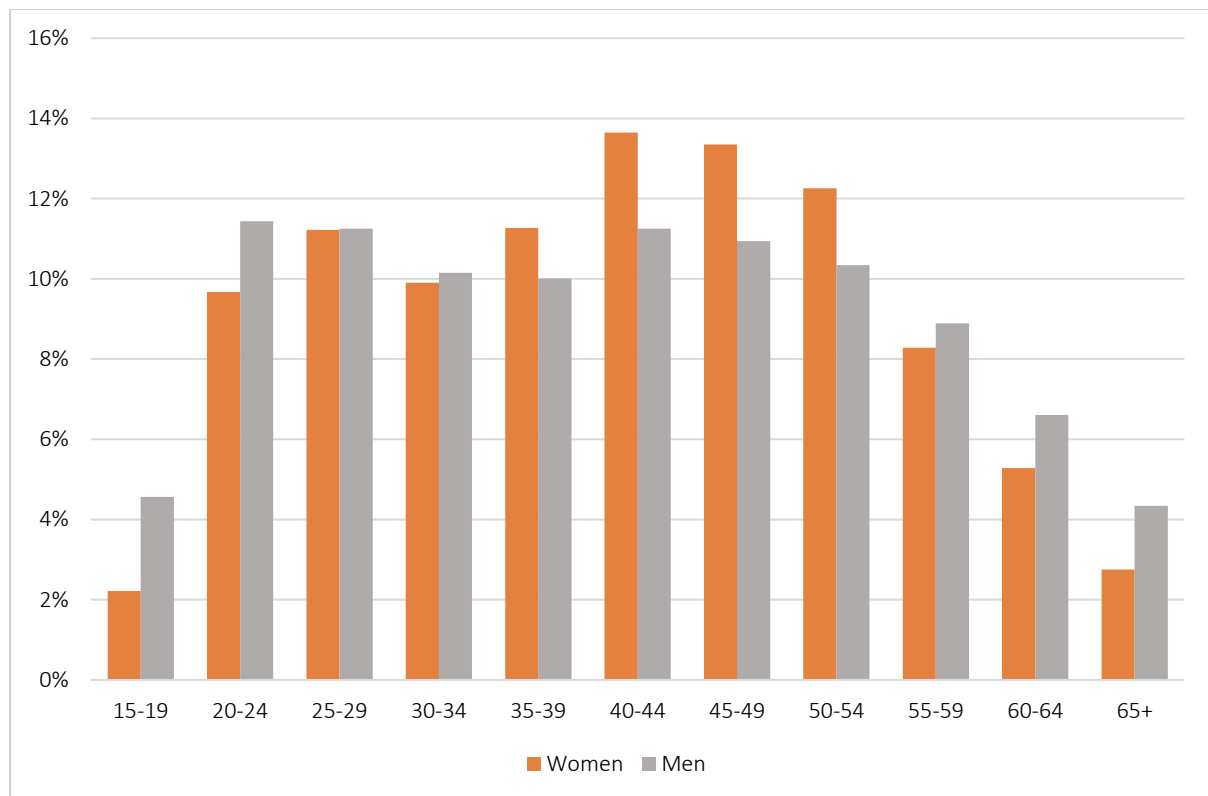
We are interested in understanding if there are differences between the characteristics of women and men in the trades sector workforce, which could provide insight into strategies to boost the former's participation. We use census data for this analysis as this gives the most accurate like-for-like comparison between men and women in trades roles.

Age distribution

Looking first at the trades sector as a whole, we find that the women's workforce is slightly older than the men's. The median age for women in the overall trades sector is 37.1, whereas for men it is 35.6.

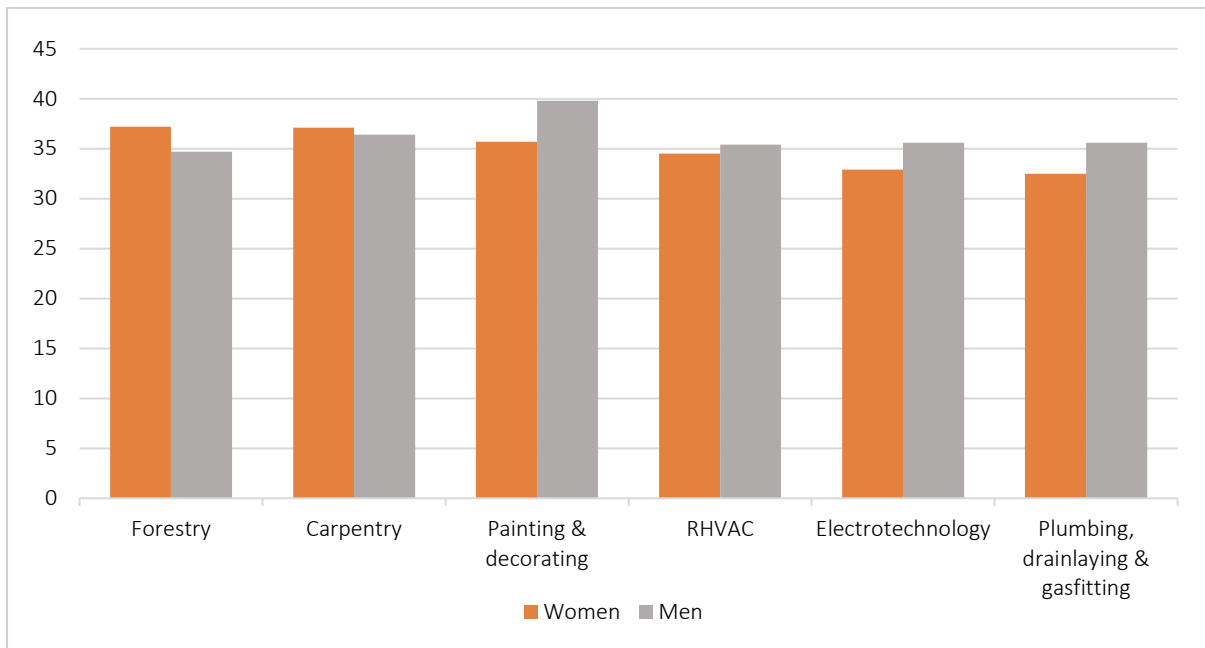
Looking at the distribution of ages, we see that there are relatively fewer women than men in their twenties to mid-thirties, but more women workers relative to men from around the age of 35 to 54 (see Figure 8).

Figure 8: Age profile of women and men employed in trade roles



There is also a degree of variation in the age of the women's workforce between industries, for example the median age of women working in the *forestry* sector is 37.2 while for *plumbing, drainlaying & gasfitting* it is just 32.5 (see Figure 9).

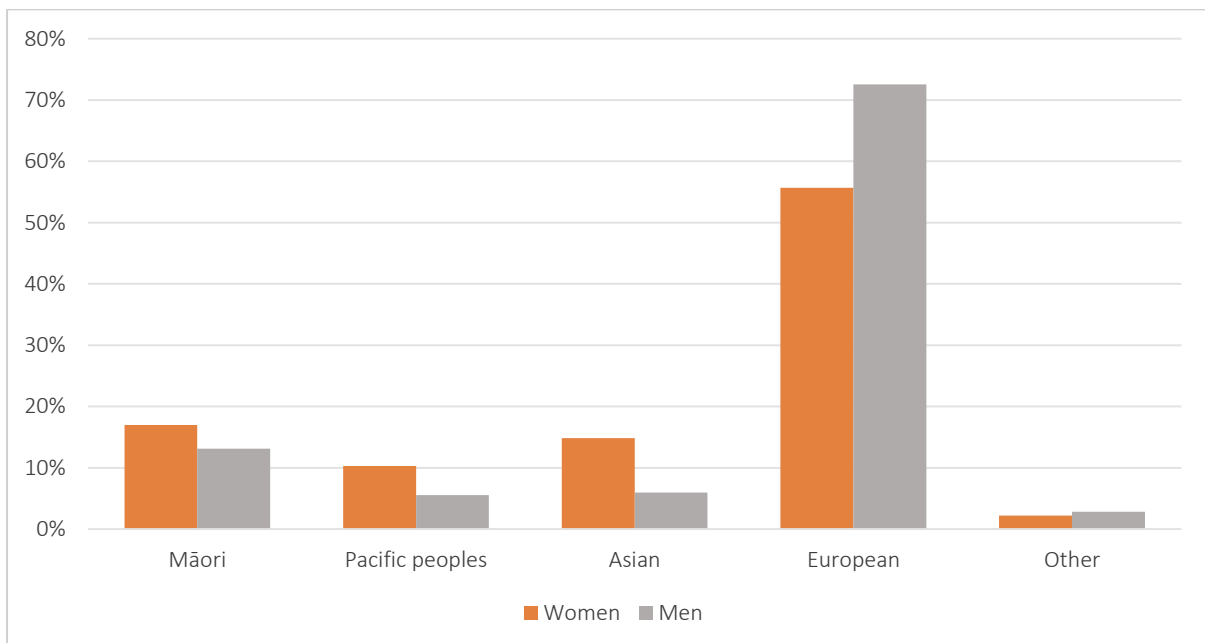
Figure 9: Median age of workers in the trades sector by industry



Ethnicity

Figure 10 compares the ethnicities of women and men in the trades sector workforce. Overall, we find that the women's workforce is more ethnically diverse; around 73% of men in the workforce are European while only 56% of women are. Māori and Pacific workers make up a somewhat higher proportion of women in the workforce, and a significantly higher proportion of women (15%) are Asian compared to men (6%).

Figure 10: Ethnic profile of women and men working in trade roles



Self-employment

Across the trades, 25% of women are self-employed compared to 23% for men (see Figure 11). This pattern varies somewhat from sector to sector (see Figure 12); *plastering & PPCS* has the highest rate of self-employment at 60%, while *engineering fabrication* has the lowest at just 5%.³

Figure 11: Gender breakdown of employment type within the trades

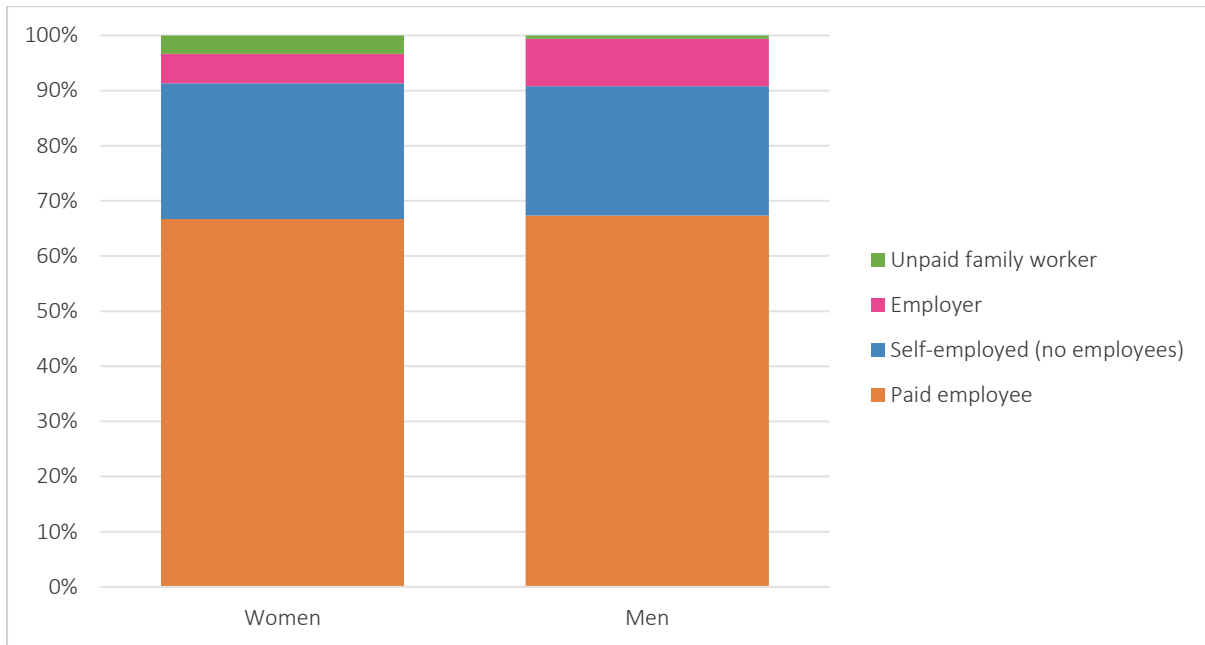
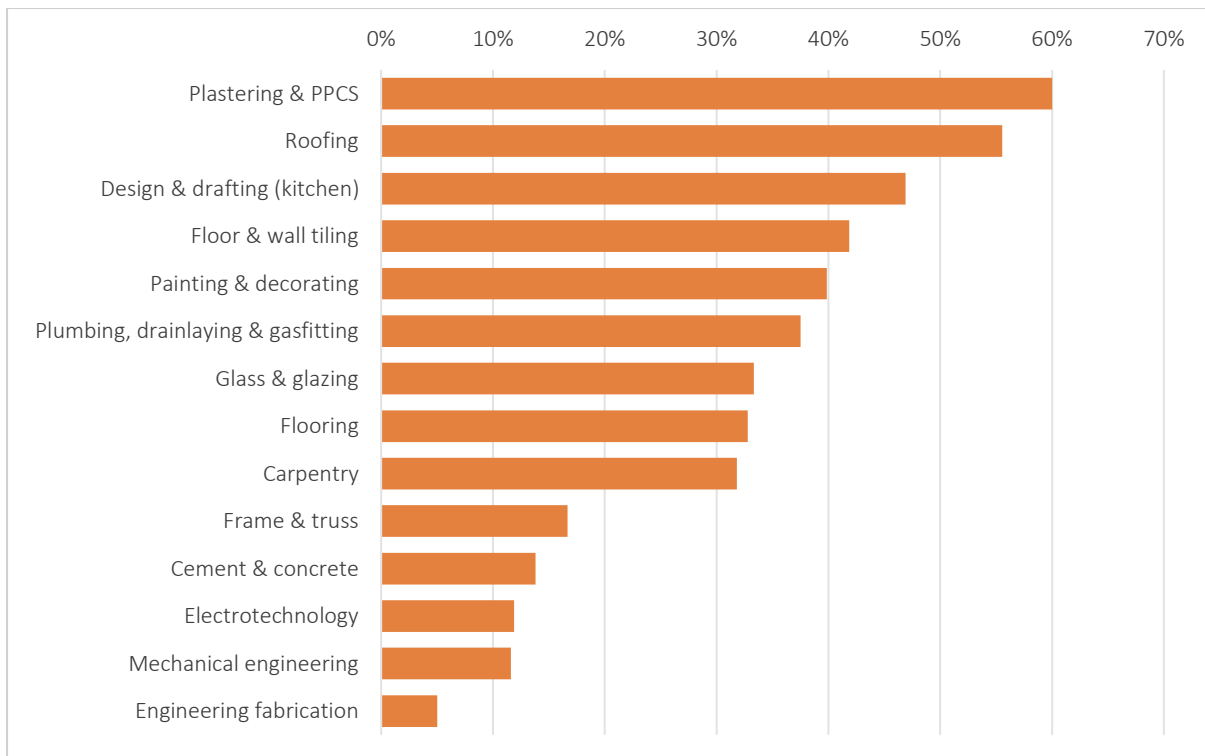


Figure 12: Self-employment rate of women by sector



³ Due to low numbers, which could allow for identification of individuals, results are suppressed in the IDI for some industries, including *architectural aluminium*, *brick & block*, *cranes & elevated work platforms*, *RHVAC* and *timber joinery*.

Summary

For the trades sector as a whole, women in the workforce are slightly older than men. The median age for women in the overall trades sector is 37.1, whereas for men it is 35.6. The difference seems likely to be due to a combination of parenthood and pathways, although this cannot be proven with the data that we have.

The women's trades workforce is also more ethnically diverse than the men's workforce, with a lower proportion of European workers, and a higher proportion of Asian, Māori and Pacific workers.

Women in the trades sector are self-employed at similar rates to men, although the pattern varies between industries.

Further research

Tradeswomen are generally found to be more ethnically diverse. This may be attributed to programmes such as Māori and Pasifika Trades Training. Further research could evaluate the impact of these programmes or dig deeper to explore ethnic differences in the pathways into the trades. Such research would probably best fit within a wider evaluation of the impact of MPTT.

This section identified a significant number of female business owners in the trades. Further research could explore whether businesses run by women are more successful in recruiting other women into the trades.

Online resources

To view related online content, including interactive charts, please visit:

<https://www.sweetanalytics.co.nz/content/snapshot-women-trades/>

2. Pathways to training

Trainee origins

Where do trades industry ITO trainees typically come from, and what pathways have they taken into training?

Introduction

To gain a better understanding of the type of backgrounds ITO trainees and apprentices come from, we utilise ITO enrolment records combined with income tax data from the IRD. We categorise all new intakes into each of the three main trades sector ITOs (BCITO, Competenz and Skills Org) for each year prior to starting training, which is based on training enrolments and working history found in IRD tax records. Where there is duplication in the categorisation, education enrolments take precedence over work; for example, someone working while studying at university would be categorised as a university student as opposed to an employee.

We consider both the immediate year prior to starting training as well as further back in time in order to create a complete picture of the pathway each trainee has taken.

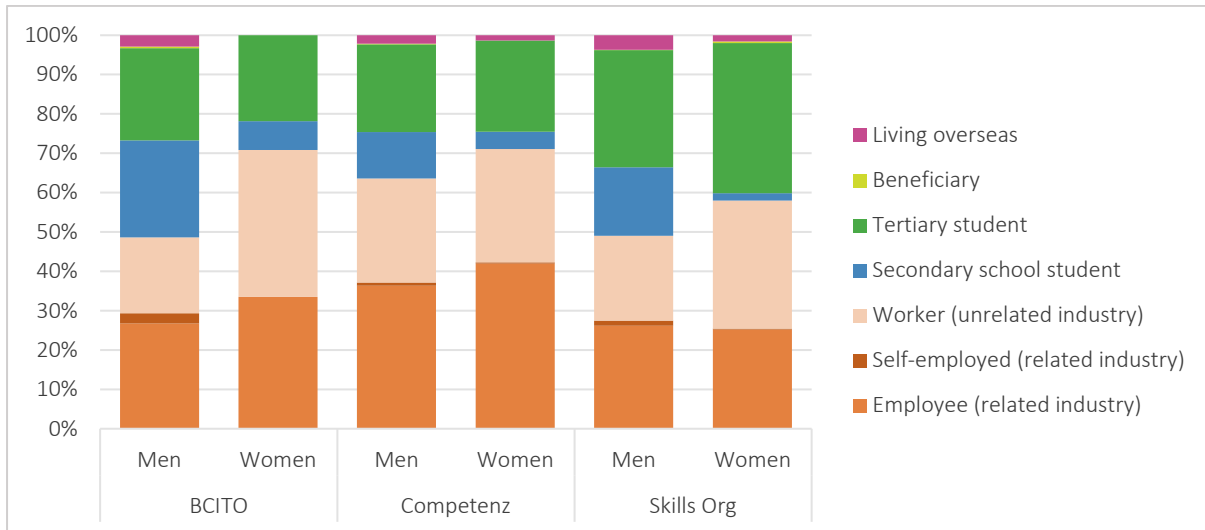
The year prior to training

Looking first at the year immediately prior to the start of ITO training (Figure 13), we find that across each ITO, a large proportion of trainees have arrived from employment of some kind, often from an industry related to the ITO. Relatively few trainees arrive directly from secondary schooling, however, in general, more men than women make this direct school-to-ITO transition. This is an important observation for attracting women into trades roles as it suggests that the focus should be on recruiting women from other workforces rather than from schools.⁴

Comparing ITOs, Competenz attracts the highest proportion of its trainees directly from the workforce at around 65%. Skills Org attracts the highest proportion of trainees from other tertiary training at around 31%, and the BCITO attracts the most students directly from secondary school at 24%. For each ITO, between a quarter and a third of the women they attract come from unrelated industries.

⁴ The TEC report, *'Drawing the Future: Exploring the career aspirations of New Zealand children'* (Feb 2020), found that the career aspirations of young people across the country are set from a young age, with a large percentage of children aspiring similar types of jobs. The survey, the first of its type conducted in New Zealand, found clear patterns of bias along ethnic, gender and socio-economic lines, which limit children's horizons and aspirations. And there are marked differences between the jobs girls and boys aspire to; with 10 times more girls than boys wanting to become teachers and 4 times more boys than girls aspiring to become engineers (civil, mechanical or electrical). These findings matter because the aspirations can predict, and limit, study and career choices later on.

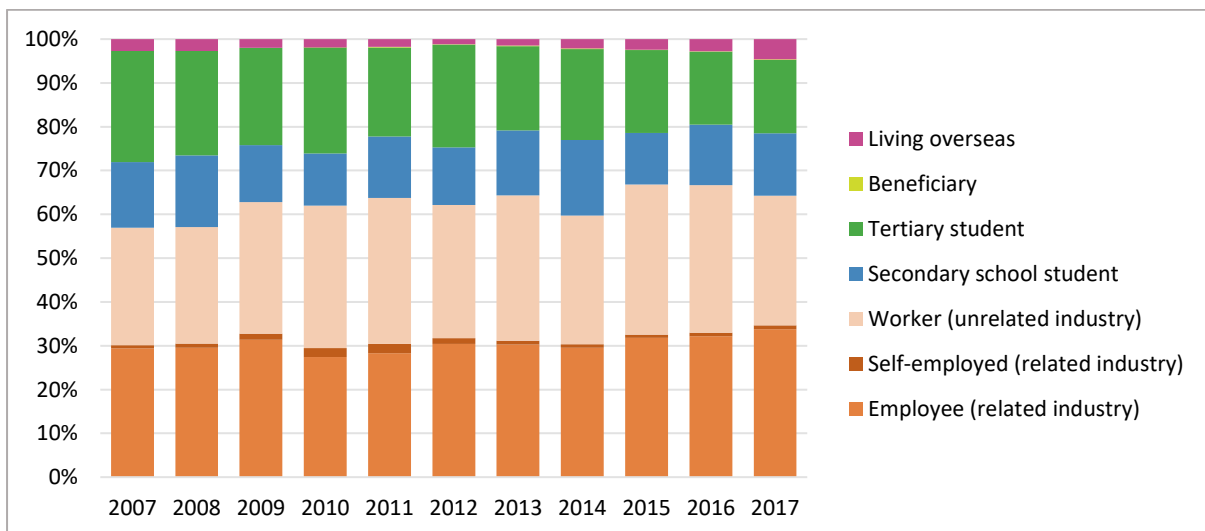
Figure 13: Primary activity of ITO trainees in the year prior to starting training, by gender



Origin of ITO trainees over time

We can look at changes in the origin of new ITO trainees over time for the trades sector as a whole. Although there is some year-to-year variation, the overall proportions have been broadly stable for the past decade. For example, the proportion of new trainees who had been employees in a related industry in 2007 was 18%, while in 2017 it was 21%. Similarly, 16.5% of trainees came directly from secondary school in 2007, compared to 16.2% in 2017. The only exception seems to be trainees who arrive from other tertiary training, which has seen a gradual decline from around 28% of the total intake in 2007 to just 19% in 2017 (see Figure 14).

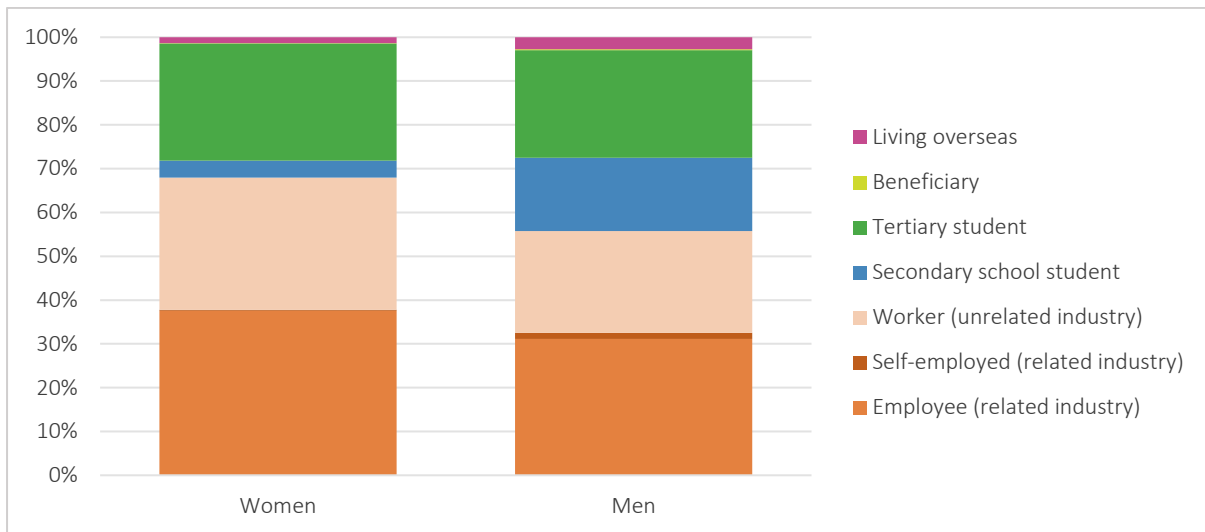
Figure 14: Primary activity of new trades ITO trainees in the year prior to starting training



Demographic differences

We can drill further into the data to see if there are any differences in the origin of new ITO trainees based on gender, age or ethnicity. Looking first at gender we can see that 38% of female trainees were employed in a related industry in the year leading up to starting ITO training, compared to only 31% for male trainees (see Figure 15).

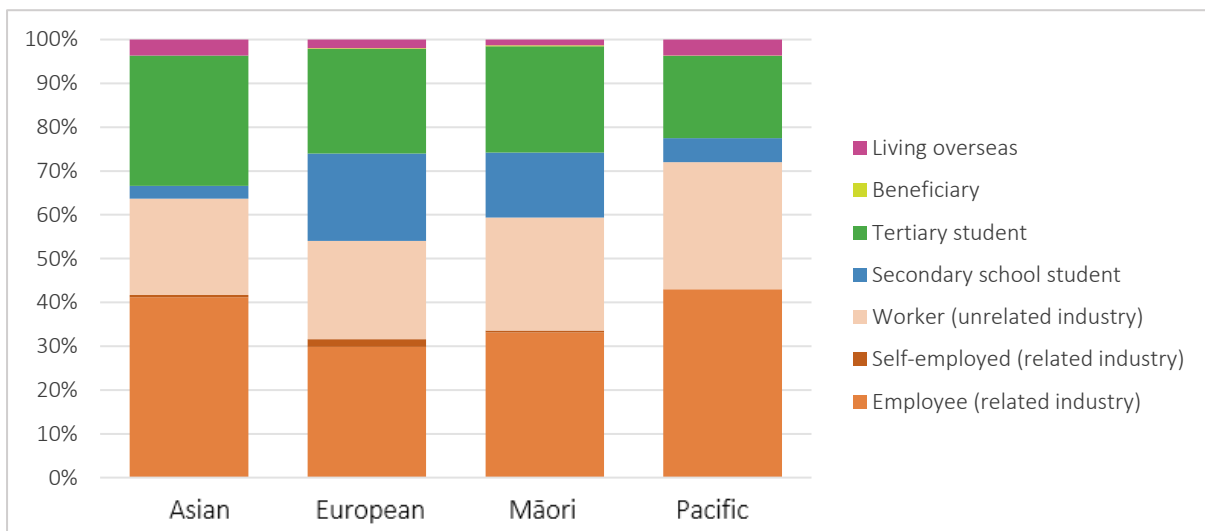
Figure 15: Primary activity of new trades ITO trainees (2007-14) prior to training, by gender



In fact, over two thirds (68%) of female ITO trainees were in employment of any kind in the year prior to training, compared to only 56% for men. Conversely, only 4% of female trainees came directly from secondary school, whereas 17% of male trainees did. This last finding is important

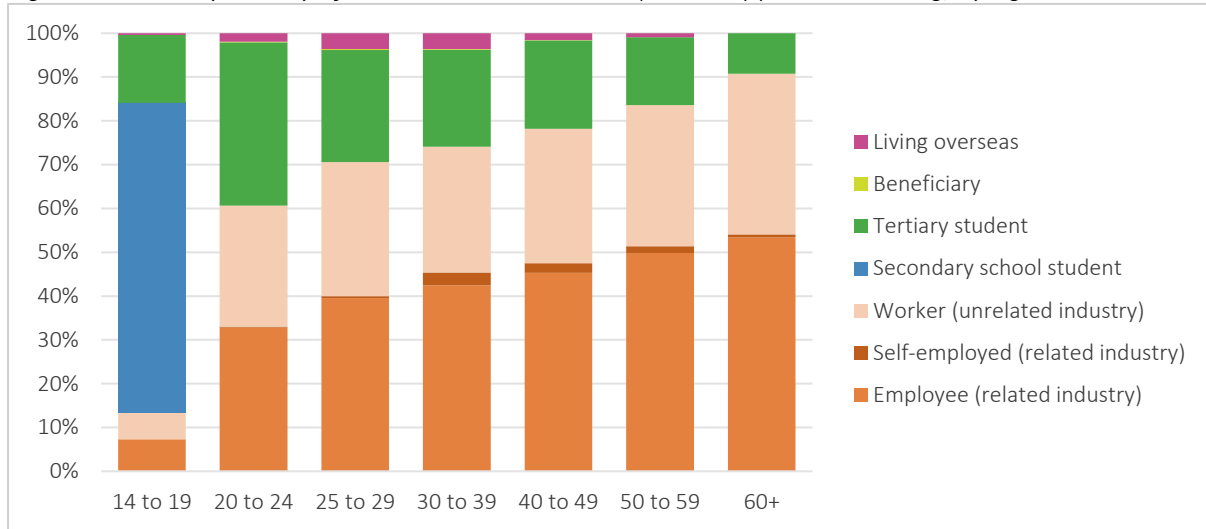
Looking at ethnicity we can see that new trainees who are European are more likely to have arrived directly from secondary school than other ethnic groups, while Asian trainees are more likely than others to have previously been enrolled in tertiary training. Pacific trainees are the most likely to have been an employee in a related industry, or indeed to have been in any kind of employment, immediately prior to becoming an ITO trainee (see Figure 16).

Figure 16: Primary activity of new trades ITO trainees (2007-14) prior to training, by ethnicity



Finally, looking at differences by age, we can see that the younger the trainee, the more likely they are to have arrived from other training (secondary school for under 19s, and tertiary training for older groups). Trainees who were self-employed in a trades industry prior to starting training are mostly over 30 (see Figure 17).

Figure 17: Primary activity of new trades ITO trainees (2007-14) prior to training, by age



Looking further back

We can repeat some of the above analysis beyond the year prior to starting ITO training, and look further back into the history of trainees. This reveals that many male trainees were recently enrolled in secondary school, whereas this is not seen as strongly for women. Conversely, women are more likely to have been working, either in a related industry or another industry altogether, relative to men. This pattern suggests that the trades sector ITOs tend to be capturing women later in their careers, when they are further removed from secondary schooling (see Figure 18 for men and Figure 19 for women).

Figure 18: Primary activity of male ITO trainees each year prior to starting training

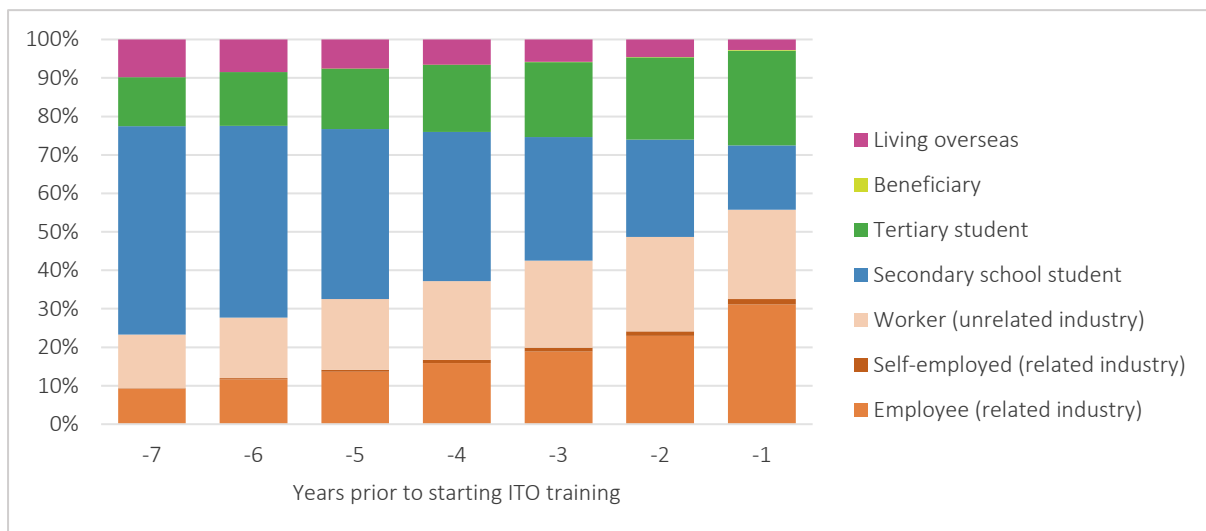
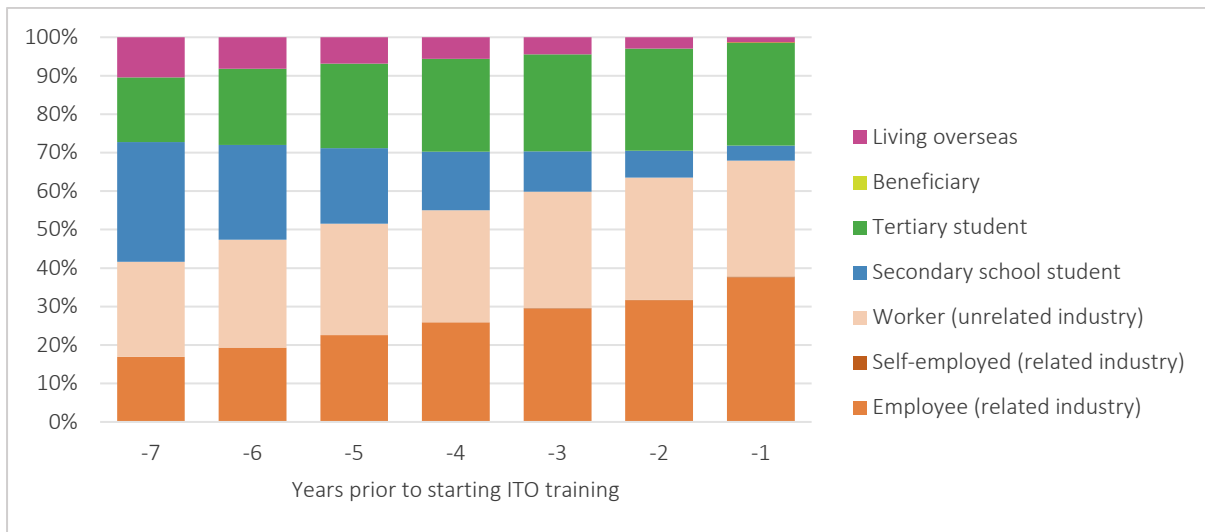


Figure 19: Primary activity of female ITO trainees each year prior to starting training



Summary

With the IDI we can track people through their enrolment with education providers, through work in IRD records, and even overseas departures. This gives us the ability to see what ITO trainees were doing in the years leading up to their training. This section has highlighted that the pathways women take into the trades is generally a longer one, usually working in sectors unrelated to the trades before entering training. Men on the other hand are far more likely to enter trades training soon after leaving secondary school. This finding suggests there should be more effort made to change women's perceptions of the trades at a secondary school level.

The majority of trades sector ITO trainees have come directly from prior employment of some kind, although looking further back reveals that many of these individuals have recently been enrolled in secondary schooling. This implies that for many individuals there is a gap between leaving secondary school and entering ITO training. It appears that during this gap most of these individuals are working, often in an industry unrelated to their eventual training, while some spend this gap engaging in some other form of tertiary training.

Online resources

To view related online content, including interactive charts, please visit: <https://www.sweetanalytics.co.nz/content/where-do-apprentices-arrive/>

Secondary-Tertiary Programmes

Do Secondary-Tertiary Programmes influence trades sector training and career choices in a meaningful way, or are they simply attracting individuals who were already planning a career in the trades?

Introduction

Secondary-Tertiary Programmes (STPs) is a term normally used to refer solely to Ministry of Education-funded Trades Academies. The term has been used more broadly recently, to encompass all partnerships between tertiary education organisations and schools that aim to provide students who are at risk of disengaging from education with opportunities for more hands-on, practical education experiences than in the typical classroom setting.⁵

STPs typically include unit standards that introduce students to the skills required for a career in the related industry. These unit standards also contribute to NCEA qualifications.

In this section, we present analysis of the effectiveness of the National Certificate in Building, Construction, and Allied Trades Skills (BCATS)-linked Secondary-Tertiary Programmes.

BCITO has a suite of Level 1-3 unit standards and qualifications designed specifically for secondary school students and supports secondary schools and others to deliver the Building, Construction, and Allied Trades Skills (BCATS) suite through the provision of student and teacher resources.

Students can achieve the BCATS unit standards as a school subject, as well as through TEC's Gateway programme, Trades Academies, MPTTs, and/or through programmes designed for second-chance learners. The unit standards introduce students to the skills required for a career in the building and construction industry. In this study we only consider students completing BCATS unit standards while enrolled at secondary school.

Our analysis aims to determine the effectiveness of BCATS in guiding students into careers or further training in the building and construction industry, and from this to draw conclusions about the potential of STPs in general to attract more students, and more women in particular, into trades sector careers.

How many students are taking BCATS?

The number of students taking BCATS standards has increased rapidly since their introduction. In 2016, of the approximately 60,000 school leavers, some 6,000 of them (10%) had completed a Level 1 or 2 BCATS standard, up from just 3,200 (5%) in 2009 (see Figure 20 and 21). The number of boys completing BCATS standards (5,550) is, however, over ten times the number of girls who complete (450).

⁵ Education Review Office (2015), *Secondary-Tertiary Programmes (Trade Academies): What works and next steps*.

Figure 20: Number and proportion of male school leavers completing BCATS standards

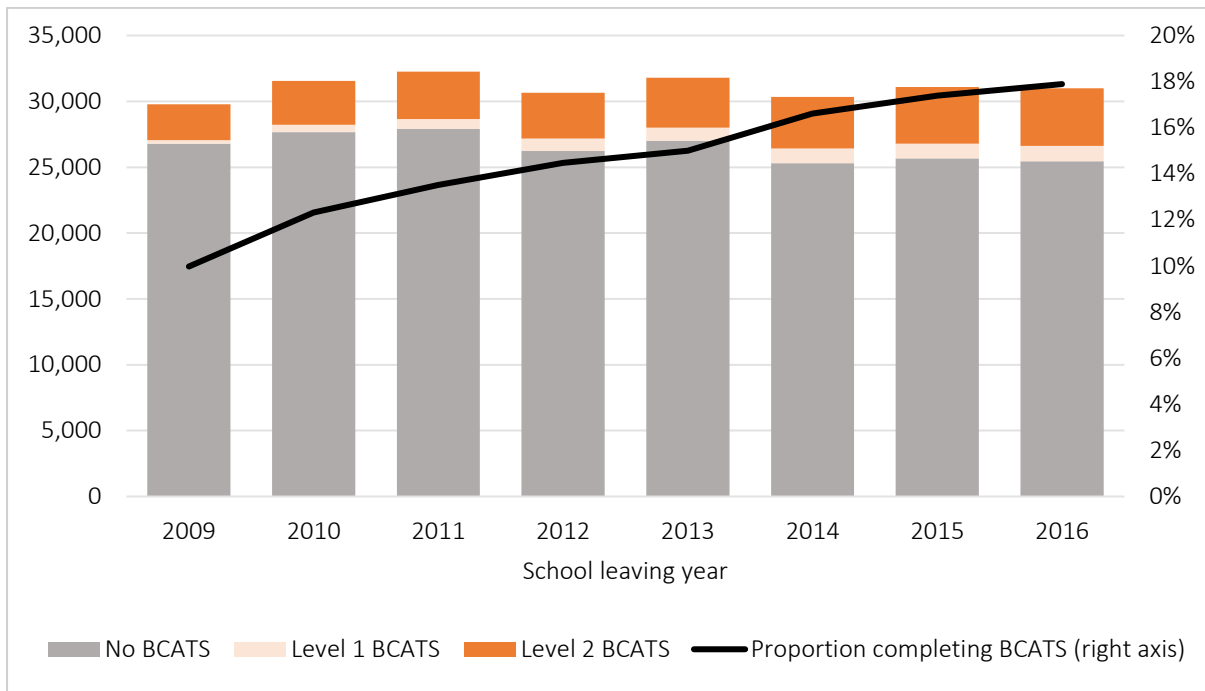
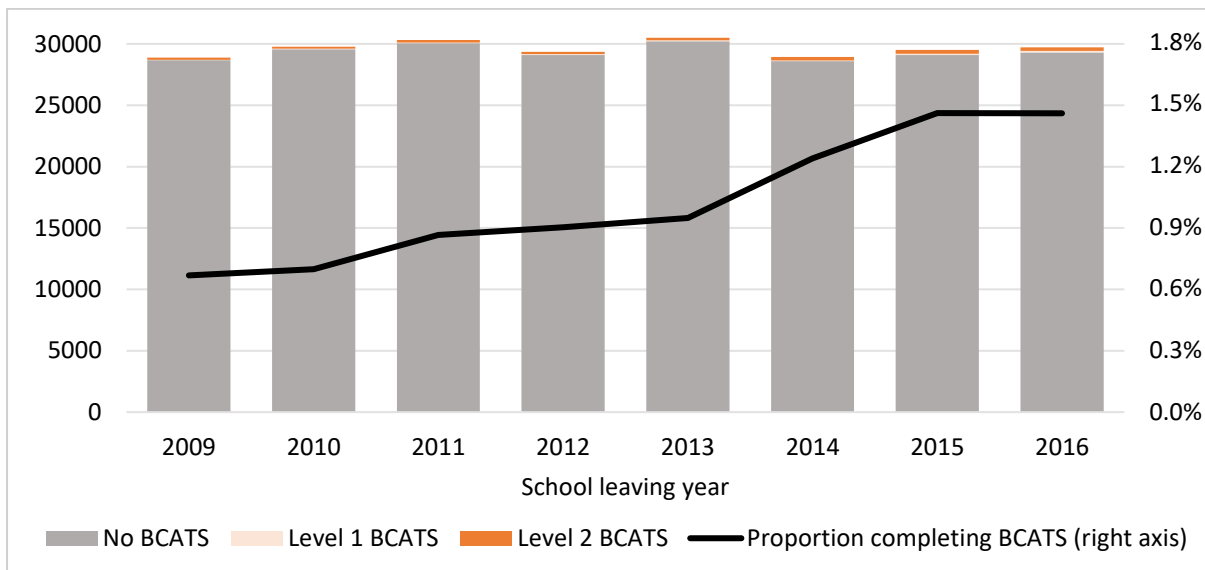


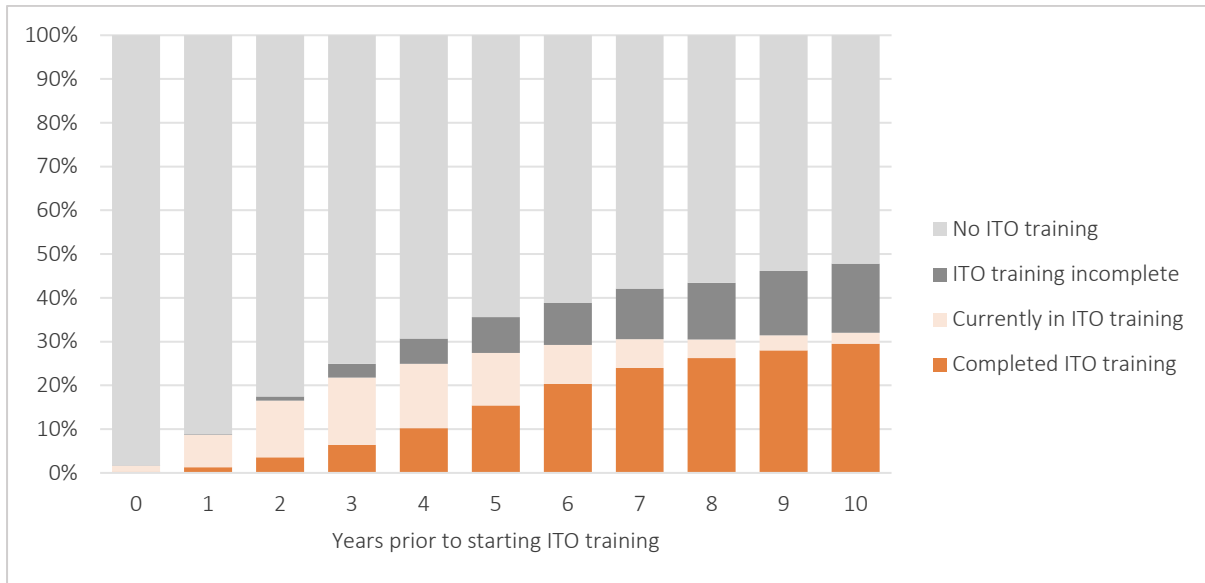
Figure 21: Number and proportion of female school leavers completing BCATS standards



How many BCATS alumni go on to ITO training?

In the years after completing a BCATS qualification, a significant proportion of completers begin training with ITOs. The number of alumni completing ITO training increases gradually over the decade following their last BCATS standard, reaching about 30% after 10 years. The rate for women is significantly lower, but this is consistent with women’s lower participation in ITO training overall (see Figure 22).

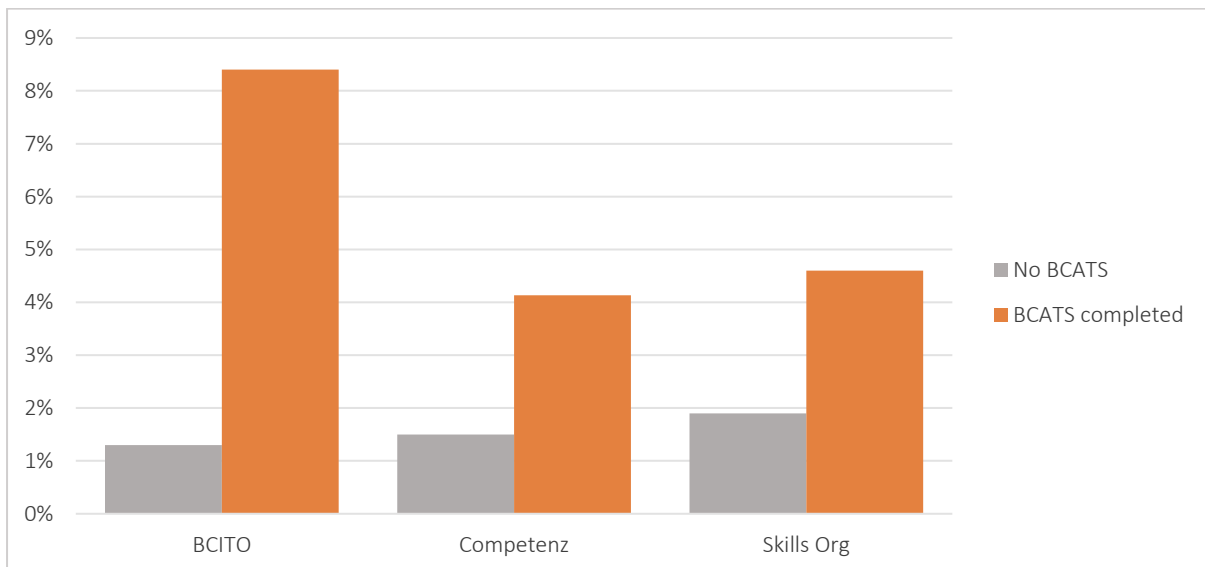
Figure 22: ITO training activity of BCATS completers each year after completing their last standard



Effect of BCATS on trades sector ITO enrolment

To further investigate the effect of completing BCATS unit standards on school leavers' choices, we compare them with school leavers who did not complete these standards. We then calculate the percentage among each group that goes into training with each of the three main trades sector ITOs. We can see that BCATS alumni are disproportionately more likely to participate in trades sector ITO training than their non-BCATS peers. We also see that BCITO in particular attracts a greater proportion of BCATS students than the other two trades sector ITOs, which is to be expected as BCATS is a building and construction STP (see Figure 23).

Figure 23: Percentage of school leavers enrolling with each ITO (2009-2016)

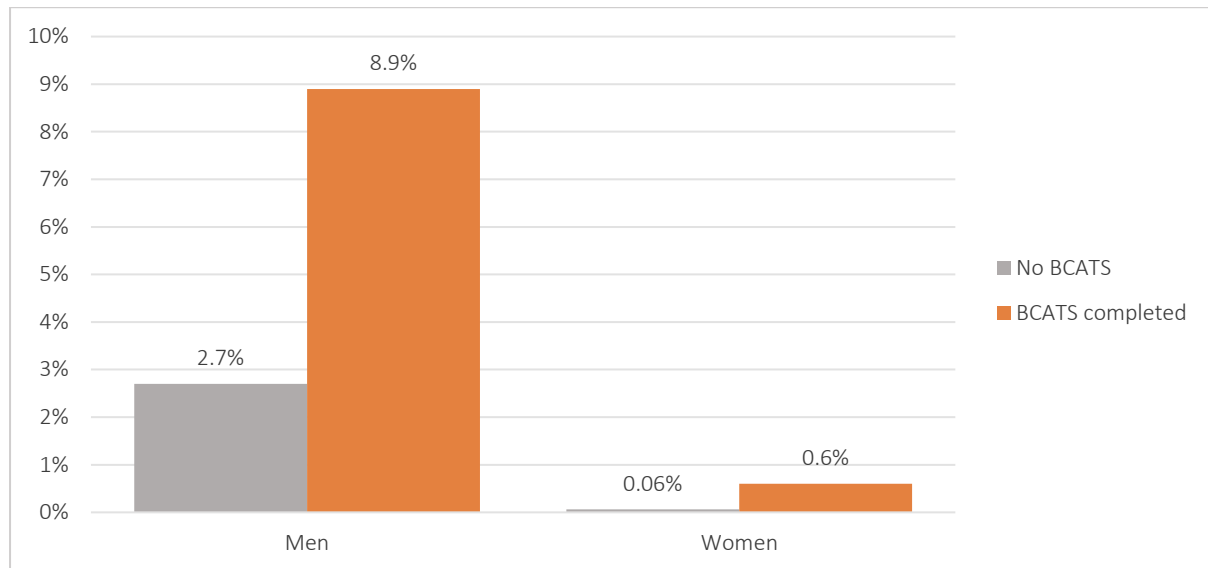


When controlling for gender we find that the overall percentage of women enrolling with BCITO is significantly lower (see [Error! Not a valid bookmark self-reference.](#) Figure 24).

- Only 0.06% of girls who did *not* complete a BCATS standard went on to enrol with BCITO.
- Of those who *did* complete a BCATS standard, 0.6% went on to enrol with BCITO.

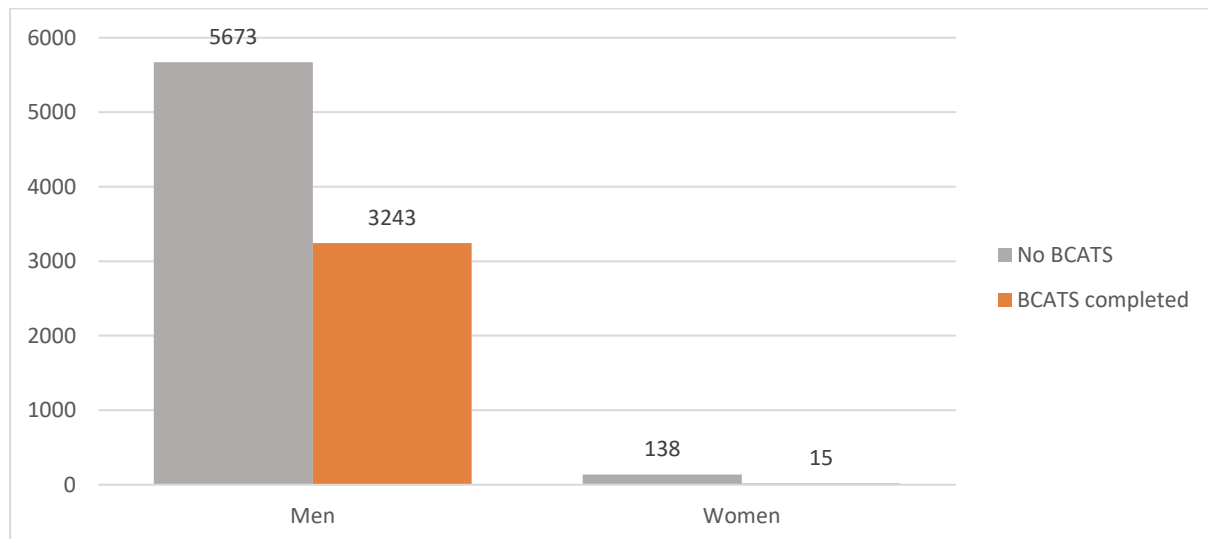
While still a small percentage, this means girls who complete a BCATS standard are around ten times more likely to enrol with BCITO than girls who did not.

Figure 24: Percentage of school leavers enrolling with BCITO by gender (2009-2016)



Proportionally, school leavers who have completed a BCATS standard are more likely to have enrolled with BCITO. However, in terms of absolute numbers, most school leavers who enrol with BCITO have not completed a BCATS standard (see Figure 25). This indicates that the BCATS programme is currently not reaching a significant number of school leavers who might be considering the trades, suggesting there is room to expand the programme at school.

Figure 25: Number of school leavers enrolling with BCITO by gender (2009-2016)



This analysis suggests that STPs such as BCATS could indeed be an effective approach for getting more women into trades sector ITO training and apprenticeships, but only if they can be attracted into these programmes in the first place while at secondary school.

The ‘Drawing the Future’ research report⁶ identified that “New Zealand boys are approximately nine times more likely to want to be a trade worker”. The results of our work have found evidence that

⁶ <https://www.tec.govt.nz/assets/Publications-and-others/TEC-Drawing-the-Future-Report-v2.pdf>

BCATS has been successful in exposing young women to trade roles and has had some influence in establishing a pathway from secondary school

Controlling for other factors

From Figure 23 above, it is unclear whether BCATS is:

- Attractive to students who would have gone on to train with BCITO anyway.
- Encouraging students who would have gone to other ITOs to, instead, go to BCITO.
- Encouraging students who would have pursued study or career options outside of ITO training to, instead, go to BCITO.

To try to understand this better, we performed a logistic regression analysis controlling for the characteristics of each student (including school grades), as well as instances where parental employment was in the building, construction, or allied trade sectors.

In Table 1, we present the effect that each of these controlled factors has on the likelihood of choosing BCITO among those who enrolled with any ITO in the five years after leaving school.

Table 1: Likelihood ratio of school leavers enrolling into BCITO over other ITOs

Factor	Effect on choosing BCITO vs other ITOs
Completing a Level 2 BCATS standard	2.6x as likely
Gender	Men 38x as likely
Gaining university entrance	0.5x as likely
Father in building/construction	1.6x as likely
European ethnicity	1.7x as likely
Decile	1.1x as likely per unit increase in decile

Even after controlling for these factors, it appears that BCATS has a significant effect in encouraging students into training and careers in the building, construction, and allied trade sectors.

Note: Completing a Level 2 BCATS standard shows a significant effect; however, completing only a Level 1 standard does not.

Summary

The number of students taking BCATS standards has increased in recent years, with almost 10% of 2016 school leavers having completed a BCATS standard. While the number of girls taking BCATS has doubled from 2009 to 2016, their participation is still over 10 times lower than boys.

Students who complete BCATS standards are more likely to go on to ITO training and, in particular, training with BCITO. Women school leavers who had completed BCATS enrolled in BCITO at 10 times the rate of women who did not. However, there were significantly lower enrolments for women in comparison to men.

After controlling for several other factors, we find that BCATS alumni are about twice as likely to choose BCITO training compared to other recent school leavers who started ITO training. This shows that BCATS

is doing a good job at guiding school leavers towards training and employment in the building and construction sector.

Recommendations

While secondary to tertiary programmes are not exclusively focussed on increasing transitions of women into training, their “try before you buy” approach makes them a potentially valuable tool for this purpose by providing a relatively low risk way for girls and their parents to experiment with what would otherwise be a riskier training and career choice. Our analysis of BCATS also points to STPs as a potentially useful tool for increasing the participation of women in industry training, as it has clearly been effective at encouraging more students into ITO training within their industry.

Males currently complete BCATS units at a significantly higher rate than females (over ten times). This suggests that attracting more females into STPs like BCATS in the first place may be a worthwhile approach to consider. This could involve redesigning trades-relevant STPs to make them more attractive to girls and/or promoting STPs more explicitly to girls in any communication efforts. Working with schools, teachers and careers advisers to ensure that girls are receiving information and advice about trade-relevant STPs at an early enough stage would also be beneficial.

We found that the uptake of BCATS alumni into ITO training was significantly higher than that for non-BCATS school leavers. However, within the BCATS group, alumni women showed significantly lower enrolment rates. As women participating in these courses would likely hold an interest in the trades, this group could be targets for advisers and careers material to increase the transition rate of women from school into trades training and careers.

That said, we note from the findings, discussed earlier in this report, that the proportion of women entering trades roles directly from school, while they are young, is relatively lower than that for men. This suggests that efforts to encourage women into trades roles from other workforces is probably a better use of investment at this stage.

Online resources

To view related online content, including interactive charts, please visit:

<https://www.sweetanalytics.co.nz/content/evaluating-bcats/>

3. Post-training outcomes

Destinations after training

What happens to trades ITO trainees after training? Do they enter the trades workforce, continue training, or do something else entirely?

Introduction

To observe what happens to trades ITO trainees after training, we combine enrolment records from the three trades sector ITOs (BCITO, Competenz and Skills Org) with IRD data which allows us to track each trainee’s primary activity for each year after the start of their training. Training and education records are given precedence over working, so individuals will be classified as a trainee until completion of their course even if they are also working while training. Note that we include those who go on to complete training as well as those who leave without completing their qualification.

Trainee destinations

Looking at what happens to trainees in the years after they begin training, we see a steady transition out of trades ITO training and into employment or self-employment, mostly within the industry related to the training (see Figure 26 for male trainees and Figure 27 for female trainees).

The further ahead we look, though, the more trainees we lose track of as ‘others’ or ‘unknowns.’ This could be due to overseas departures, unpaid family work, or other reasons leading them to not be present across the databases we are able to analyse.

If we limit our scope to only those for whom records can be maintained (by removing ‘others’ and ‘unknowns’ as in the charts below) we find that over 50% of both male and female trades sector ITO trainees are still engaged in a related industry after ten years through either employment or continued training.

Fewer women make the transition into self-employment than men, which may be partly due to training in areas with low self-employment rates compared to the more traditional trade sectors.

Figure 26: Primary activity of male ITO trainees each year after starting ITO training

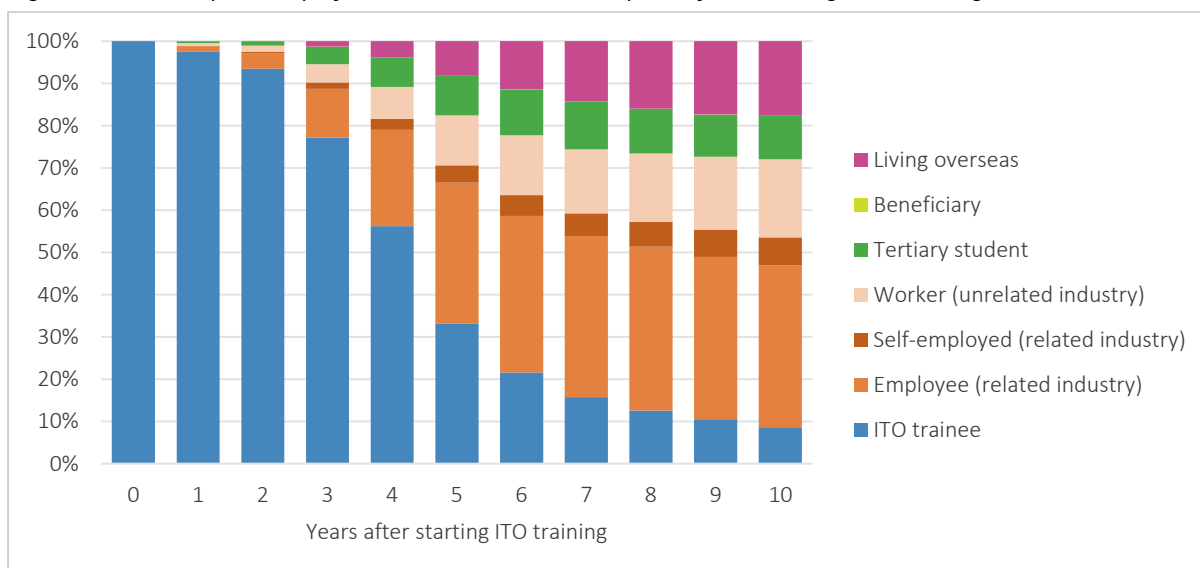
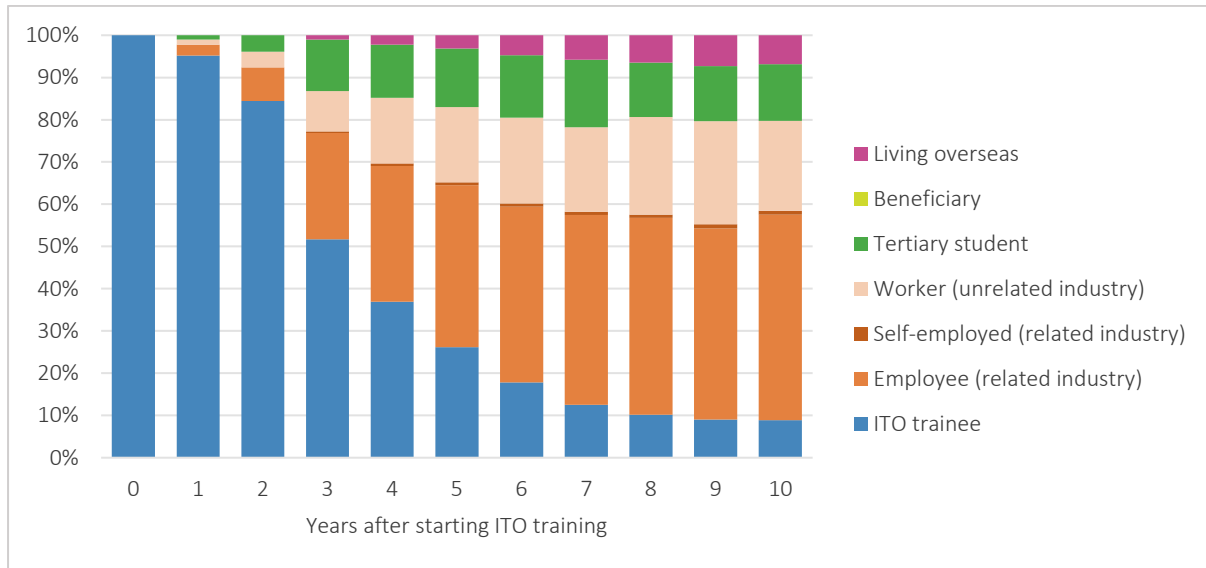


Figure 27: Primary activity of female ITO trainees each year after starting ITO training



Impact of trainee age on post-training destinations

We are interested in whether a trainee’s age at the time they first enter ITO training has an impact on what they are likely to be doing in the future. To assess this, we can repeat the above analysis but this time focus on two distinct age cohorts, those who were aged 19 or younger when they began training (Figure 28) and those who were aged 30-39 (Figure 29). To give ourselves large enough data sets to analyse, we have grouped together all trainees who began training at a trades sector ITO between the years of 2007 and 2014.

Perhaps unsurprisingly, we see that ten years after they begin training, the 19 or younger cohort are much more likely to be overseas (22%) than are the 30-39 year-olds (10%). Younger trainees also appear to remain in ITO training for slightly longer than their older counterparts, with 67% of the 19 or younger cohort still enrolled after four years compared with only 48% for the 30-39 year olds. It doesn’t take long for these figures to converge, however, with only 22% and 21% remaining in ITO training after six years, respectively.

Figure 28: Primary activity of ITO trainees who were age 19 or younger (2007-14), each year after starting ITO training

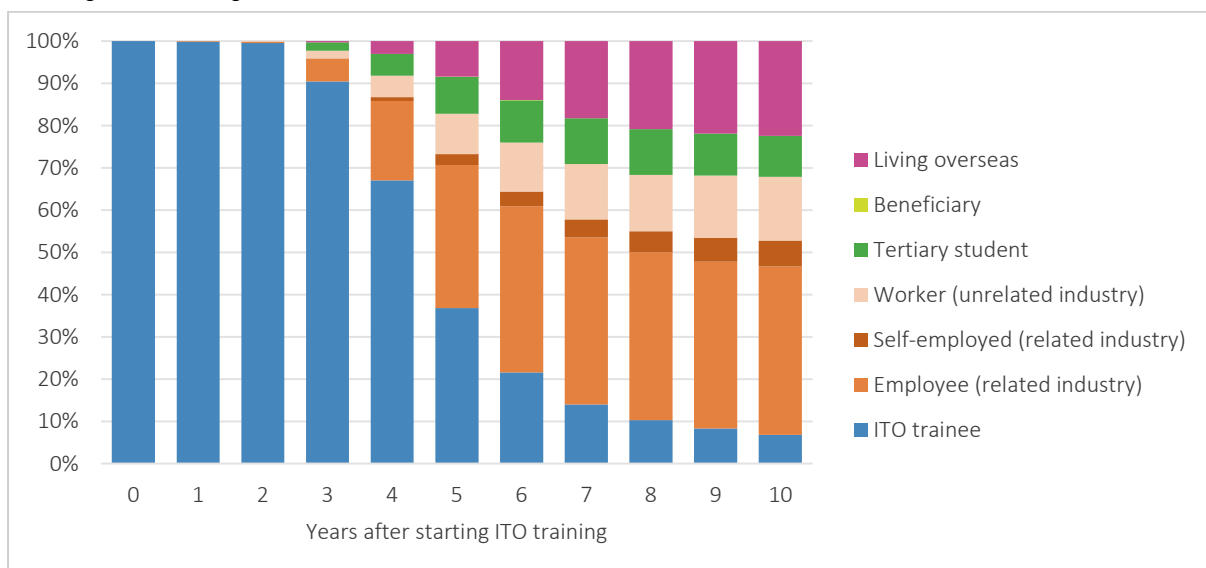
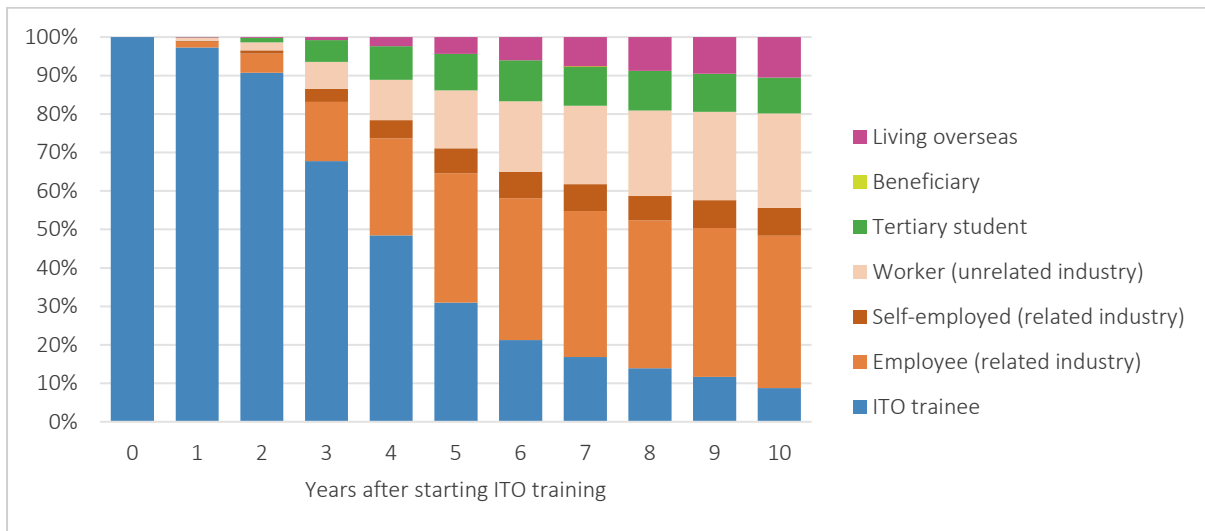
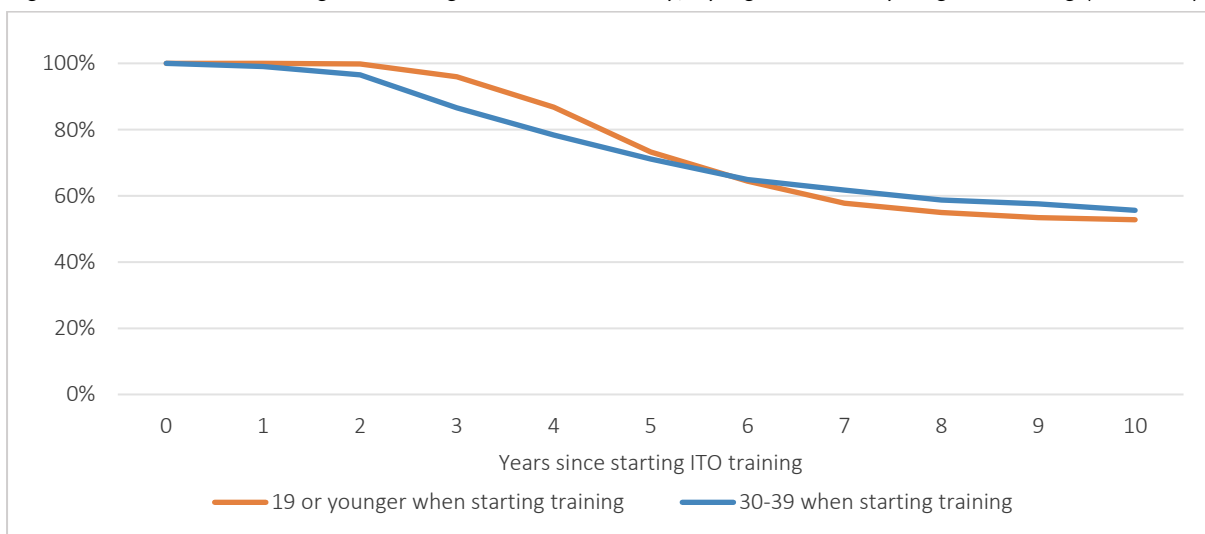


Figure 29: Primary activity of ITO trainees each year after starting ITO training, who were age 30 to 39 when they began (2007-14)



Overall retention in an industry related to the training is remarkably consistent between the two cohorts. Ten years after they first begin training, 53% of the younger cohort and 56% of the older group are still engaged in a related industry through either work or further training (see Figure 30).

Figure 30: Trainees working or training in related industry, by age when they began training (2007-14)



Summary

Of those who enter trades ITO training, we find a majority remain engaged within the same industry ten years after starting training (50% for men, 60% for women). More men than women progress into self-employment possibly reflecting differences in the choice of industries chosen by men and women and the size of firms within these industries. Women are less likely than men to be living overseas 10 years after ITO training. However, this difference may be an indirect result of the age in which women enter ITO training rather than a lower disposition to live overseas. Although there are some differences in pathway by age – with younger trainees more likely to be overseas ten years later, and older trainees making the transition to the workforce slightly faster – long-term retention does not seem to be significantly affected by the age of the trainee at the time they start training.

Online resources

To view related online content, including interactive charts, please visit:

<https://www.sweetanalytics.co.nz/content/where-do-apprentices-end/>

Accident rates

Does ITO training have an impact on the rate at which accidents happen in the workplace?

Introduction

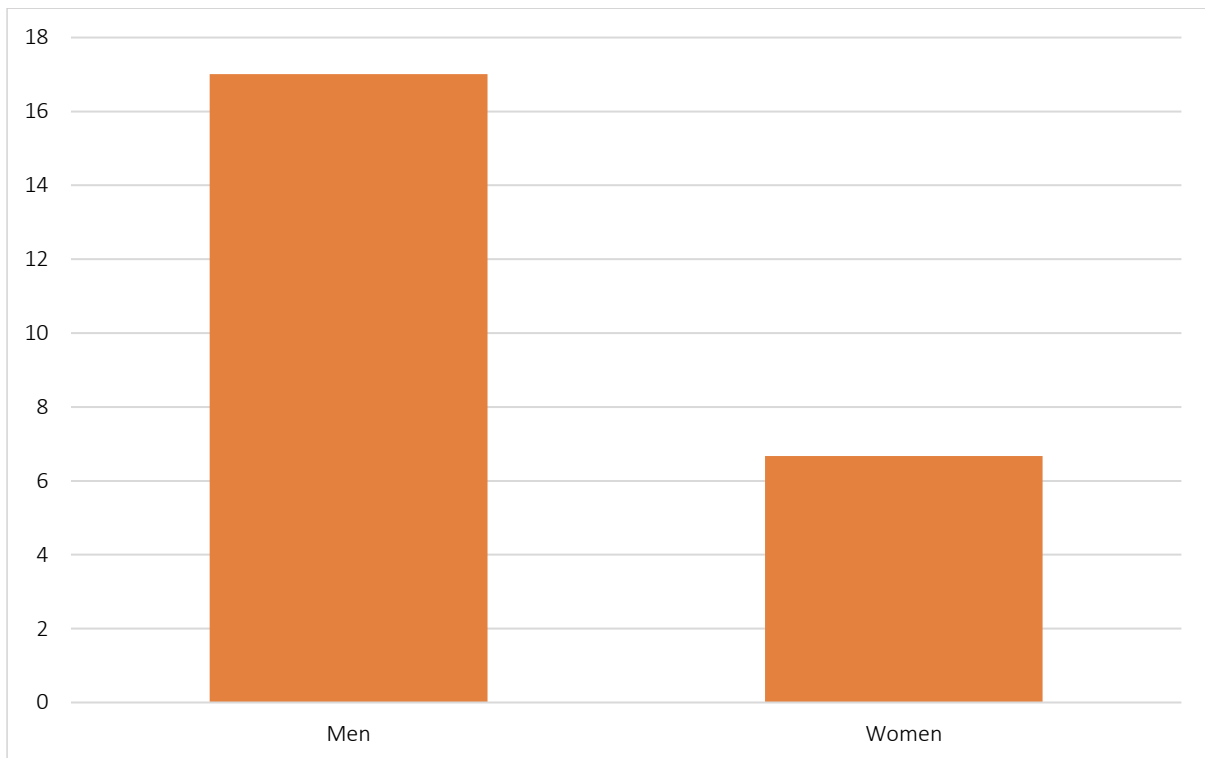
Improving safety and reducing the number of accidents is an important goal for everyone involved in the trades. To determine what impact, if any, ITO training is having on improving safety and reducing workplace accidents, we analyse ACC claims data from between 2010 and 2016.

Effect of gender

We first look at data broken down by gender and find that women in trades' roles make significantly fewer ACC claims than men, indicating that they have fewer accidents. We use the census definition of working in trades, so office and administration staff are excluded from these statistics. This highlights a potential advantage to industry from attracting more women into trades; they will likely have fewer accidents than men, so having a larger proportion of women in the workforce may shift overall practices towards being safer (see Figure 31).

At the end of this section, the Sweet Analytics link allows the reader to investigate this by industry. The core finding seems to hold true, that women make fewer accident claims than men, though the size of this difference does vary by industry.

Figure 31: Number of work-related ACC claims per 100 workers per year, by gender (2010 to 2016)

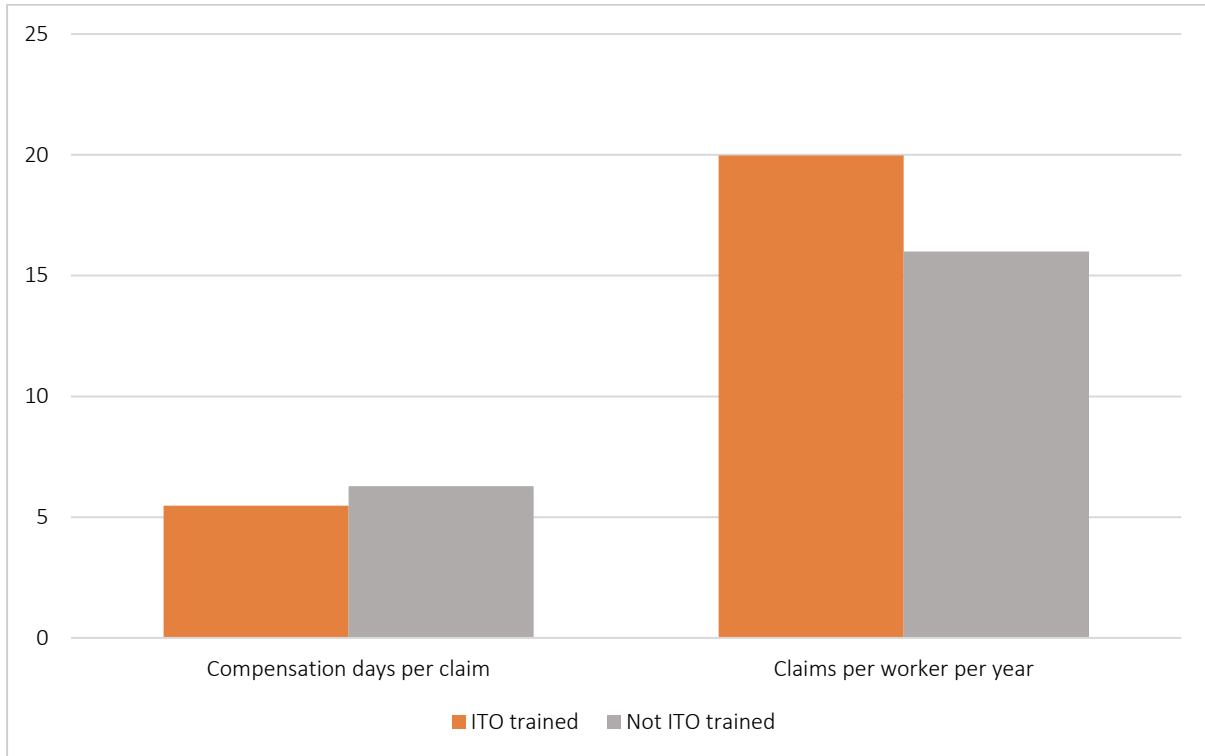


Effect of ITO training

Somewhat unexpectedly, tradespeople who have had ITO training actually make *more* ACC claims than those who do not have training. On the other hand, the number of compensation days per claim is slightly lower for trained workers, which may indicate the claims correspond to less serious accidents.

One possible explanation for this may be that ITO-trained workers are simply more likely to make an ACC claim when they are involved in smaller, less severe accidents, which untrained workers may be ignoring. This may be worth exploring in future research (see Figure 32).

Figure 32: Number of work-related ACC claims per 100 workers per year and compensation days per claim, by ITO training (2010 to 2016)



Summary

Women in the trades sector make fewer accident claims than men. Assuming men and women are equally likely to make a claim, this implies that women in the trades have fewer accidents than men. Attracting more women to the trades may therefore lead to safer work environments.

The effect of ITO training on accidents is somewhat ambiguous, with ITO-trained workers making more claims but receiving fewer compensation days per claim. One potential explanation of the data is that ITO-trained workers make claims for smaller accidents that may be ignored by untrained workers, although this is purely speculative.

Online resources

To view related online content, including interactive charts, please visit:

<https://www.sweetanalytics.co.nz/content/accident-rates-trades/>

4. Workforce analysis

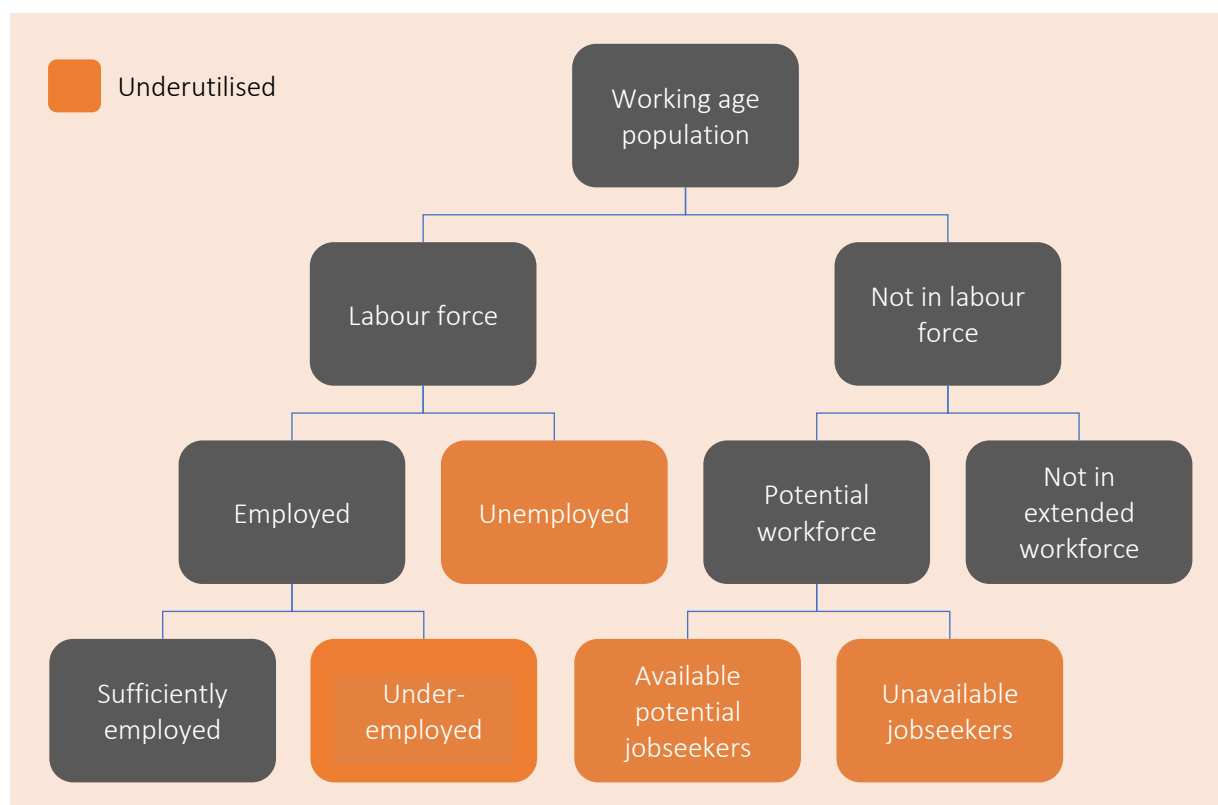
Underutilisation

How effective are the trades sector industries at attracting workers who are being underutilised elsewhere?

Introduction

Underutilisation is a measure of untapped capacity in the labour market. It is a broader measure than unemployment, which only counts individuals who are not in the workforce but are actively looking for a job (“jobseekers”). Underutilisation adds to this total those who are underemployed (individuals who are employed but, if given the opportunity, would work more hours) as well as the *potential* workforce (workers who aren’t currently seeking work but would take work if offered a job, plus individuals who cannot work at the moment but are likely to become available for work in the next four weeks).

Figure 33: Definition of underutilisation in the New Zealand labour market



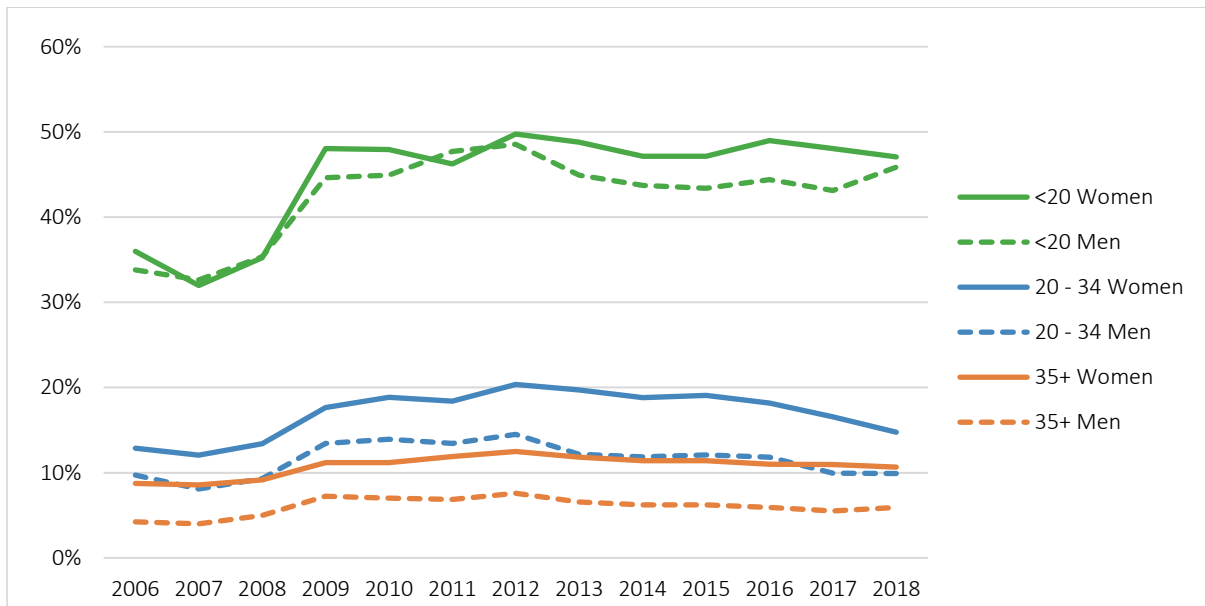
Underutilisation in New Zealand

Figure 34 shows the underutilisation rate in New Zealand by age and gender over time. Immediately apparent from this chart is that underutilisation is much higher for individuals who are under 20 than for older age groups. While underutilisation rose for all age groups from 2007 to 2009 (coinciding with the global financial crisis and local recession), this increase was largest for people under 20 and, unlike other groups, underutilisation for these young people still has not returned to pre-crisis levels.

A second notable feature of this data is that while, for the younger age group, underutilisation rates for men and women are relatively similar, among the older groups a clear and persistent divergence emerges, with women more underutilised than men by an average of around five percentage points. This may be partly explained by motherhood or the fact that women are more likely to work in service

sector roles, which have higher rates of underemployment, whereas men are more likely to work in trades sector jobs – such as construction – where underemployment is very low.

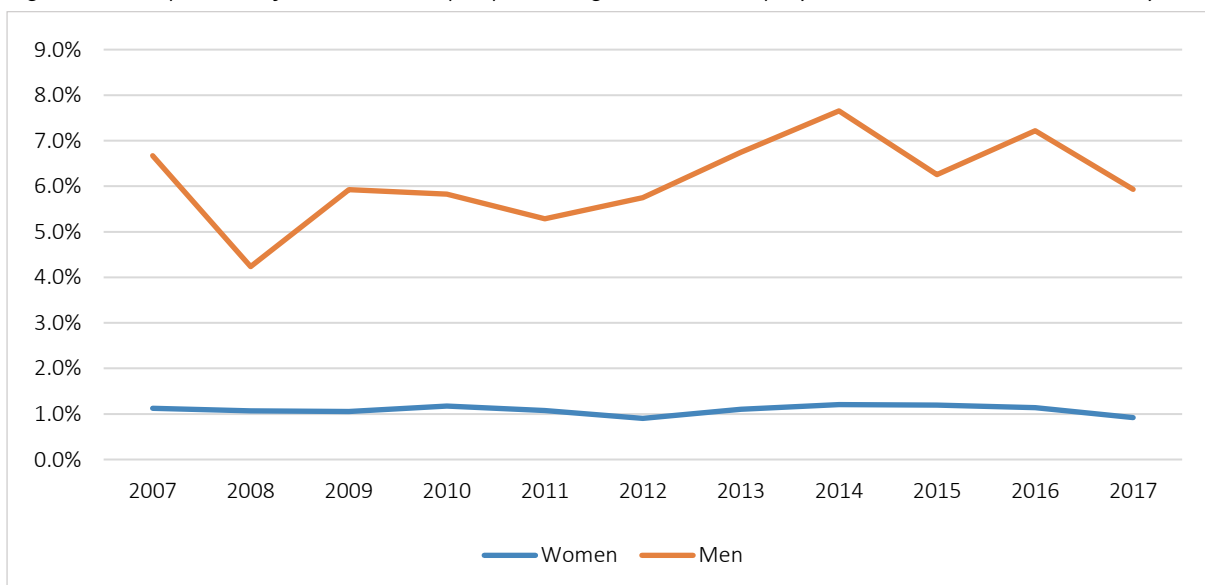
Figure 34: Underutilisation rate in New Zealand, by age and gender over time



Are the trades attracting underutilised people?

To see whether or not the trades sector is making good use of previously untapped capacity in the New Zealand labour market, we can track the proportion of underutilised individuals over time who go on to be employed in the trades sector workforce within the subsequent three years. We find that the rate at which underutilised men have gone on to be employed in the trades sector workforce has fluctuated over the past decade between 4.2% and 7.7%, with the latest available figure of 5.9% in 2018. Meanwhile, the rate at which underutilised women have gone on to be employed in the trades sector has remained remarkably constant over this time, ranging from a low of 0.9% to a high of just 1.2% (see Figure 35).

Figure 35: Proportion of underutilised people who go on to be employed in the trades within three years



To place the trades sector’s performance in terms of attracting previously underutilised individuals we compare the proportion of underutilised individuals who go on to be employed in the trades sector within three years with the corresponding figures for three other industries (see Figure 36 for men and Figure 37 for women).

Figure 36: Proportion of underutilised men who go on to be employed in four select sectors within three years

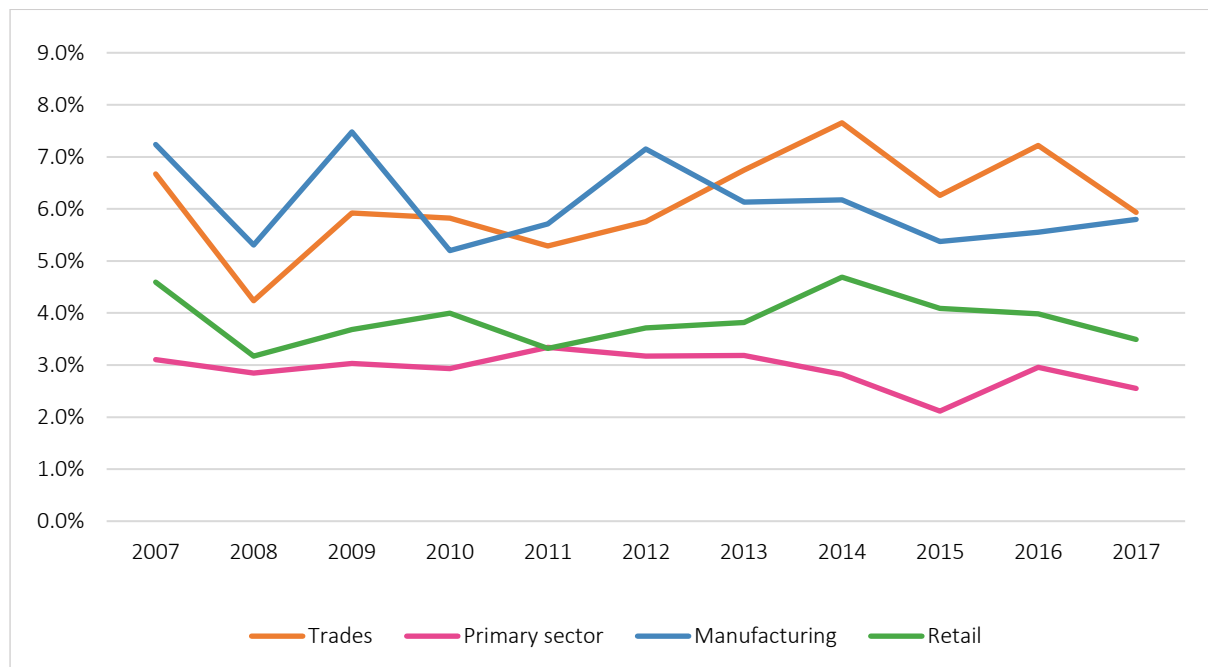
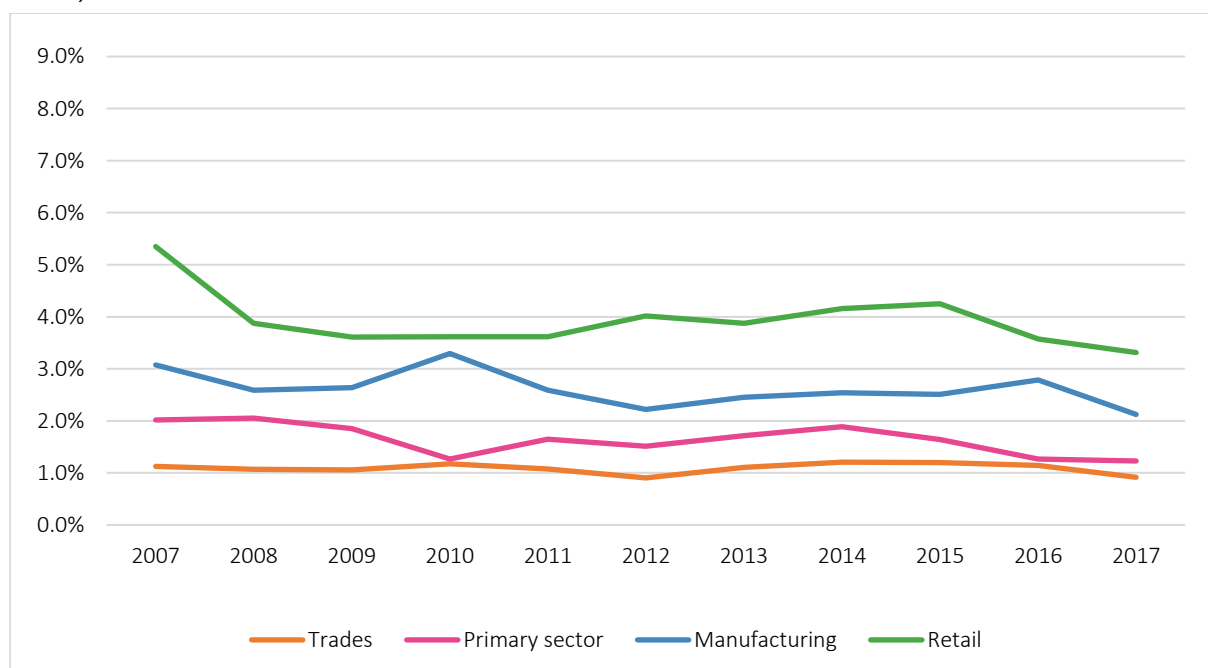


Figure 37: Proportion of underutilised women who go on to be employed in four select sectors within three years



The trades sector appears to be relatively effective at attracting underutilised male workers when compared to the primary and retail sectors, and about as effective as the manufacturing sector. When it comes to attracting previously underutilised women, however, the trades sector does not fare well, with the lowest proportion among these four industries for each of the last ten years.

Summary

The analysis of underutilisation in New Zealand points to several potential pools of untapped capacity in the labour market, both for the wider economy and for the trades sector specifically.

Underutilisation is particularly high for both men and women who are under 20, at more than 45%, having still not recovered from a surge following the global financial crisis and local recession of more than a decade ago. Making better use of these young people is therefore one option for increasing capacity in the trades sector.

Recommendations

The trades sector appears to be doing a reasonably good job of attracting previously underutilised male workers, attracting a greater proportion of these individuals than the primary, manufacturing or retail sectors. However, when it comes to attracting previously underutilised women, the trades sector performs poorly, attracting only around 1%. Increasing this proportion therefore represents another option for increasing capacity in the trades sector.

Online resources

To view related online content, including interactive charts, please visit:

<https://www.sweetanalytics.co.nz/content/underutilization-rates-new-zealand/>

Appendix 1 - Trades sector industries

Table 2 lists the industries that were included in our definition of the trades sector when querying the IDI. To view interactive charts and make different industry selections, follow the links included at the end of each section of this report or go to www.sweetanalytics.co.nz.

Table 2: Industries included in definition of the trades sector and relevant ITO

Industry	Relevant ITO
Architectural aluminium	BCITO
Brick and block	BCITO
Carpentry	BCITO
Cement and concrete	BCITO
Design and drafting (Kitchen)	BCITO
Floor and wall tiling	BCITO
Flooring	BCITO
Frame and truss	BCITO
Glass and glazing	BCITO
Painting and decorating	BCITO
Plastering and PPCS	BCITO
Roofing	BCITO
Steel prefabrication and erection	BCITO
Stonemasonry	BCITO
Timber joinery	BCITO
Forestry	Competenz
Mechanical Engineering	Competenz
RHVAC	Competenz
Cranes and Elevated Work Platforms	Skills Org
Electrotechnology	Skills Org
Plumbing, Drainlaying and Gasfitting	Skills Org
Rigging	Skills Org
Scaffolding	Skills Org

Facebook Pages and Web Links



Connexis

The Girls with Hi-Vis® initiative, led by Ultimit – Women in Infrastructure. The objective is to raise awareness and increase the number of women working in trade and technical roles in the Infrastructure Industries.

www.connexis.org.nz/ultimit-women-infrastructure



Skills

The Skills Organisation group for New Zealand-based Women in Trades.

Female tradies are out there, breaking stereotypes and working hard; connecting with each other in this group is a great way to get the support, conversation and laughs you need from other chicks doing the same as you.

www.skills.org.nz

www.facebook.com/groups/SkillsWomenInTrades



Manukau Institute of Technology

Supporting the demand for skilled tradespeople qualified in building, carpentry, plumbing and gasfitting, drainlaying, electrical services, and refrigeration and air conditioning with pre-trade, in-trade and Women in Trades Training Scholarships.

www.manukau.ac.nz

www.facebook.com/manukau.institute



MITO

MITO is an industry training organisation. They design qualifications and training programmes that meet the needs of the automotive, transport, logistics, industrial textile fabrication and extractive industries.

www.mito.org.nz

www.facebook.com/MITONewZealand/



Building & Construction Industry Training Organisation (BCITO)

A group for female BCITO apprentices to connect, share stories plus experiences and more importantly have peer to peer support with others going through the same journey as they are.

www.bcito.org.nz

www.facebook.com/groups/BCITOBuidingWomen

The 2018 *My Boss: Legend* campaign presents a short video that celebrates two 'Pioneering Legends'.

www.bcito.org.nz/employers-industry/women-in-construction/

The pages also include the construction sector goals for 2025 and 2040 and a comprehensive list of other organisations that have useful info about diversity and other employment-related topics. 'Trade up' links to information about construction apprenticeships at www.bcito.org.nz/getstarted

The she'll be right campaign video is at www.youtube.com/watch?time_continue=4&v=8fxGkXSgeT8



Competenz

Competenz works with 36 industries including engineering, manufacturing, baking, print and more.

www.competenz.org.nz

www.facebook.com/competenzskills



MPTT Auckland

MPTT Auckland is helping Māori and Pasifika become leaders in the trades. As demand for skilled tradespeople grows, trainees are supporting Auckland's economic growth while creating social change. The practical skills learned are life changing for individuals, their whānau and Kiwi communities.

www.yousegotchoices.nz

Trades skills give you choices – both in your career and your life. You'll learn practical skills that earn you cash, build your mana, and give you the know-how to help your whānau and community.

www.facebook.com/maoripasifikatrades



National Association of Women in Construction (NAWIC)

A voluntary, non-profit association of women who work either in the construction industry or for business organisations who provide services to the construction industry.

www.nawic.org.nz

www.facebook.com/NAWICNewZealand

Research Funding Partners



The Ministry for Women, Minitanga mō ngā Wāhine, is the Government's principal advisor on achieving better results for women, and wider New Zealand.

Women in trades: interviews with employers and tradeswomen (2011)
www.women.govt.nz/documents/women-trades-interviews-employers-and-tradeswomen-2011

Trading choices: Young people's career decisions and gender segregation in the trades (2008)
www.women.govt.nz/sites/public_files/trading-choices-young-peoples-decisions-and-gender-segregation-in-the-trades.pdf

Growing your trades workforce: how to attract women to your jobs (2014)
www.women.govt.nz/sites/public_files/2070-MWA_employers%20handbook%20web.pdf

Māori and Pasifika women in trades
www.women.govt.nz/documents/m%20C4%81ori-and-pasifika-women-trades



This publication is part of a three-year programme, jointly commissioned by the Ministry for Women and Ako Aotearoa, to increase the participation and success of women in construction and engineering-related trades where they are traditionally under-represented.

www.ako.ac.nz/knowledge-centre/what-are-the-characteristics-of-an-effective-learning-journey-for-women-entering-trades

Project Outputs

The research findings, summary recommendations and timeline are available in this project report; additional documents are available online via the Ako Aotearoa project page.

Part 1: Women in Trades Research Programme Overview

This document includes the executive summaries from the first two projects and a snapshot of learnings from the third. It highlights findings and lists the major influencers, enablers and barriers for women working in trades.

The perceptions, barriers and influence of employers who have or have not employed women, (Part 2) and the initial findings from the NZ Government's Integrated Data Infrastructure (IDI) (Part 5) are also presented.

www.ako.ac.nz/knowledge-centre/what-are-the-characteristics-of-an-effective-learning-journey-for-women-entering-trades

Part 3: Employer Perspectives

This part of the research look at the differences between employers with and without women tradespeople, employers views on the main strengths of and barriers to women tradespeople, employer identified ways to attract more women tradespeople and what employers can do to attract more women tradespeople.

www.ako.ac.nz/knowledge-centre/what-are-the-characteristics-of-an-effective-learning-journey-for-women-entering-trades

Part 4: Personas

These personas are fictional characters created to represent different groups of women on their learning and employment journey into the trades and trade employers. They are based on the responses from focus groups, individual interviews and survey responses. Personas help to guide the design and development of resources, engagement and products by creating an understanding of user needs.

www.ako.ac.nz/knowledge-centre/what-are-the-characteristics-of-an-effective-learning-journey-for-women-entering-trades

Part 5: Programme Data

Initial data is available on the Sweet Analytics website.

Proportion of women over time, Recently trained workers, Snapshot of women in trades, Gender breakdown of women's participation in different trades, Origins and Destinations of ITO trainees, Secondary to tertiary programmes and Income outcomes.

www.sweetanalytics.co.nz/2-general/47-women-in-trades-over-time

2018 Detailed Sector Profile Document

This document provides detailed (61 pages) information on the Industry, occupations, skills and demographics of industries included in the Women in Trades Research Consortia.

www.ako.ac.nz/knowledge-centre/what-are-the-characteristics-of-an-effective-learning-journey-for-women-entering-trades

