

Prepared for:
ConCOVE

Where is the front door?

An investigation of the workforce entry
points into the construction and
infrastructure sectors

October 2023



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Executive summary

Context

ConCOVE connects and aligns industry, learners, and vocational education to reimagine clear, equitable, and supported career pathways within the construction and infrastructure sectors.

To gain the benefits of growing our workforce we need to understand how people enter careers in the construction and infrastructure sectors. Careers in construction and infrastructure incorporate multiple entry points including direct from school, industry and via full-time tertiary study. Often the focus for attraction and retention initiatives is on entry points from school or entry points for young adults or unemployed. There is little focus on entry into the sectors from other sectors or industries.

Research objectives and methodology

The aim of this research is to better understand the multiple entry points into the construction and infrastructure sectors, and their effectiveness at attracting and retaining people into careers in these sectors. In this sense, it is exploratory in nature, rather than aiming to solve a specific problem at this stage. In this work, we have looked to answer the following research questions:

- Where are the entry points into the construction and infrastructure sectors?
- What initiatives are in place to support entry?
- Are these initiatives effective at supporting people into work?

We then aim to identify opportunities to promote existing initiatives or create new ones, and to identify where further research efforts should be prioritised.

A mixed-method approach has been used to undertake this work, involving:

1. Online desk research,
2. Interviews with initiative leads,
3. Quantitative data collection using the Stats NZ Integrated Data Infrastructure (IDI), and
4. Modelling and analysis of estimated initiative effectiveness.

Key findings

Number of new entrants into construction and infrastructure

The construction and infrastructure sectors significantly contribute to New Zealand's economy, contributing 7% of the total GDP and employing over 10% of the national workforce. In 2022, the size of the construction and infrastructure sectors was **just over 400,000 people**. This, in turn, comprised of 255,000 in the construction sector, 66,000 in the infrastructure sector and 87,000 in supporting services.

Many people enter the workforce each year - about **80,000** worked in construction or infrastructure industries for the first time in 2022. Mainly, this inflow acts as workforce replacement (balancing outflows of people leaving the workforce) and, to a lesser extent, it reflects industry growth over the last decade.

Of new entrants, 21% were Māori (17,700); 9% were Pasifika (7,400); and the remaining 70% were other ethnicities, including European, Asian and MELAA (59,300). Relative to all new entrants, Māori and Pacific are disproportionately high at younger ages, with Māori and Pacific new entrants making up 40% of all 15 to 24 year olds.

In addition, 25% of all new entrants were women (21,600) and just 22% of these female entrants were Māori or Pasifika compared to 33% of male new entrants.

Entry points into the sectors

People in the construction and infrastructure sectors enter the workforce at different points in their careers and life. For this work, we considered five main entry points into paid employment based on what an individual was doing *in the 12 months before their first employment in the industry*¹.

Entry point	New entrants in 2022		
	Construction	Infrastructure	Total ²
Industry changers	35,200	10,000	56,700
Secondary school leavers	6,300	900	8,900
Tertiary graduates	3,400	900	5,900
Migrants	400	20	500
Job seeker support	2,200	400	3,000
Other / unknown	6,100	1,100	9,400
Total	53,700	13,300	84,400

Table 1: New entrants into construction and infrastructure industry groups in 2022

As Table 1 shows, the majority of new entrants to the sectors are industry changers (66%). That is, most new entrants had some prior work experience or background and were changing industries into construction or infrastructure. Note that individuals changing between construction and infrastructure sub-sectors are included here as industry changers – but this is a relatively small fraction. Most new entrants come from outside of the sectors entirely.

A much smaller percentage (10%) were secondary school leavers - having left school in the year before entering the workforce. There are approximately 60,000 school leavers each year³, so this represents about 15% of all school leavers. As the sector makes up about 10% of the national workforce, this is higher than we would expect.

Only 7% of new entrants entered directly from tertiary study (i.e., they completed some pre-employment training before earning income from a construction or infrastructure business for the first time, like from a university or polytechnic).

The remaining ~17% of new entrants in 2022 consisted of migrants, individuals on job seeker support benefits, and those whose origins could not be identified in administrative datasets or did not fall into

¹ The five main entry points are: Secondary school leavers, Tertiary graduates, Industry changers, Migrants, Job seeker support, Other / unknown, and are formally defined in the Definitions section.

² Totals also include new entrants from the Support services industry group.

³ <https://www.educationcounts.govt.nz/statistics/what-happens-to-school-leavers>

the prior categories. This includes examples like young NEETS (not employed or in education or training), individuals coming back out of retirement, and mothers returning to the workforce.

Existing initiatives promoting and supporting entry

A wide range of initiatives exist to promote and attract people into the construction and infrastructure sectors. Some initiatives are targeted at one particular entry point (for example, initiatives targeting secondary school students), while other initiatives target multiple groups (like career expos, networking events, and recruitment companies). Through this work, we have undertaken a scan of existing initiatives and categorised them into the following five types:

1. Secondary school programmes,
2. Tertiary programmes,
3. Cadetship and internship programmes,
4. Employment brokering and recruitment services,
5. Talent attraction and industry promotion.

We estimate that between 150 - 300 initiatives are currently underway aimed at facilitating entry into the construction or infrastructure sectors. In total, we estimate that between 150,000 and 200,000 people were engaged with such initiatives in the last year. The total number of Māori / Pasifika participants was estimated at about 16,000 - 50,000 and the total number of female participants was estimated at 10,000 – 30,000. The wide ranges in these estimates reflect mainly the uncertainty in the number of people reached by relative low touch initiatives such as private sector employment brokering and career websites.

Effectiveness of existing initiatives

The initiatives and programmes that were reviewed within this work had different objectives, and therefore different measures of success. However, for this work, the following measures were used as a proxy for initiative effectiveness, defined as follows:

- **Attraction** - The percentage of initiative participants that went on to work in the construction or infrastructure sectors within one year of participation.
- **Retention** - The percentage of participants retained in the sector for at least two years.
- **Progression** - The percentage of participants that progress into relevant training.

In terms of attraction, the IDI is a valuable data source to estimate the conversion into employment in the sectors⁴. Supplementary information supplied through the interview and desk research phases has also contributed to forming an overall picture of conversion rates. Table 2 below summarises the estimated, average conversion rates into employment for each of the five initiative types.

⁴ For those initiatives that can be detected in the IDI, which are described in the Stats NZ IDI section.

Initiative type	Estimated, average conversion into employment
1. Secondary school programmes	20% - 40%
2. Tertiary programmes	60% - 70%
3. Cadetship & internship programmes	85% - 95%
4. Employment brokering & recruitment	20% - 70%
5. Talent attraction & promotion	20% - 40%

Table 2: Estimated, average conversion into employment by initiative type

The IDI is also a valuable data source to estimate retention in the sectors. While we don't have visibility of all initiatives in the IDI, we can track people's movements based on their broad entry points. Table 3 below shows the two-year retention rates for new entrants to the construction and infrastructures sectors based on their entry point.

Entry point	Estimated, average 2-year retention rate
1. Secondary school leavers	40%
2. Tertiary education graduates	40%
3. Industry changers	47%
4. Migrants	41%
5. MSD clients	33%
6. Other / unknown	55%

Table 3: 2-year retention rates by entry point

For a small number of initiatives, we were able to measure the percentage of participants that progress into relevant tertiary training using the IDI. We do not have supplementary data at this stage for other initiative types.

Initiative type	Estimated, average progression into training
1. Secondary school programmes	30% - 50%

Table 4: Estimated, average progression into tertiary training by initiative type

Opportunities for initiatives and research

Future initiatives

We identify five opportunities where there is room for further investigation or for future initiatives, based on the findings of this research.

1. **Explore 'try before you buy' initiatives for potential industry changers** – ways for people to get a taster of what it is like working in the construction and infrastructure sectors before committing to leaving their current employment and sector.

2. **Bring the job to the person (create automatic doors)** – Close the gap between initiatives and employment by bringing employers to the initiatives. Facilitating this with ‘connector’ organisations or individuals.
3. **Consider a wāhine peer-to-peer nationwide network** – Build on existing Women in Trades and Infrastructure initiatives, to facilitate opportunities for peer-to-peer support for women nationwide. This could look like a network of women in the workforce supporting other women by providing peer-to-peer support and answering questions.
4. **Increase pastoral care support for Māori and Pasifika** – Continue to support and promote initiatives with pastoral care components, and not just in the early stages of tertiary education and employment.
5. **Promote industry-government-tertiary collaboration** – Promote initiatives that engage multiple groups with different strengths and offerings.

Further research

This research has provided a broad overview of the types of initiatives in place to support entry into the construction and infrastructure sectors. Further research could build on this. Four ideas to consider are:

- **Expand and refine the initiative database** – There is significant scope to expand and refine the database over time. There will be initiatives missed (particularly region-specific ones), and many where attributes have been assumed.
- **Undertake a deep dive into industry changers** – Industry changers are the main source of new entrants to the sectors, and hence a key group to ensure ease of entry for. Further work, including qualitative research, will help us understand the employment pathways of past industry changers, and potential future ones.
- **Investigate interactions between touch points** – Further work is needed to understand possible interactions at play between initiatives. For example, the likelihood of students entering pre-trades courses after graduating from a trades academy, and progression with the same tertiary provider.
- **Evolve the effectiveness measures** – We have proposed three measures for an initiative’s ability to attract people into the workforce and retain them. These measures are not perfect, and do not tell the whole story. Further work will be needed to critique these measures, refine them, and identify new ones.

Introduction

Context

Purpose of ConCOVE

ConCOVE was established in 2020, with the mission of connecting and aligning industry, learners, and vocational education to reimagine clear, equitable, and supported career pathways within the construction and infrastructure sectors. It is tasked with engaging with the New Zealand construction and infrastructure sectors to understand workforce needs and to reimagine vocational education and training in these sectors.

Research into workforce entry points

The construction and infrastructure sectors are a significant contributor to New Zealand's economy, employing over 10% of the national workforce. In recent years, the industry has experienced substantial growth, highlighting the importance of attracting and retaining workers.

Previous work has been undertaken to identify where people are entering the construction and infrastructure workforce at a high level. However, little has been done to characterise and evaluate the relative effectiveness of these entry points to influence the propensity of people to enter the sectors and go on to build successful careers in it.

Research objectives

Key objectives

This research aims to build on work already undertaken by investigating further the various entry points into the workforce. In particular, it aims to explore the following research questions:

- Where are the entry points into the construction and infrastructure sectors?
- What initiatives are in place to support entry?
- Are these initiatives effective at attracting and retaining people into careers in these sectors?

This work also aims to explore particular trends relating to Māori, Pasifika and women in the sectors.

How this research can be used

This research aims to provide data-based evidence with which to inform future initiative development and investment, and policy surrounding the entry points. In particular, it aims to prompt discussions between industry, government and training providers around:

- Where the opportunities exist to promote or expand existing initiatives?
- Where does there appear to be a 'gap' or need for new initiatives to support entry?
- Where is further research needed?

We acknowledge that workforce entry points are a large and complex topic, and this work does not attempt to answer all questions, but rather act as a foundation from which to build on.

Methodology

Overview of approach

This work has utilised a mixed method approach to address the research objectives, including engagement with industry experts, interviews, desk research, quantitative data collection, analysis and modelling.

Stages of work

Work was undertaken between February and July 2023, and comprised of the following stages:

1. Scoping and design
2. Initiative scan and interviews
3. Quantitative analysis of entry point sizes and characteristics
4. Analysis of existing initiatives
5. Identifying opportunities for future initiatives.

Each of these stages are described below.

Stage 1: Scoping and design

Two plans were developed with ConCOVE; one to identify a set of broad workforce entry points, and one to develop a database of existing initiatives aimed at supporting people into the sectors of interest. These frameworks were developed by drawing on existing research undertaken by Scarlatti, incorporating prior feedback from ConCOVE and other industry experts.

Stage 2: Initiative scan and interviews

The second stage had two parts. The first part involved building the database of initiatives through desk research. The second involved undertaking a set of 15 interviews with a range of organisations delivering initiatives and entry points, to better understand their objectives, reach, and effectiveness. They did this by enquiring about typical participation rates, the types of people engaged with the initiative, and observed progression rates into employment. Refer to page 53 for the interview guide used.

Stage 3: Quantitative analysis of entry point sizes and characteristics

The third stage of work aimed to quantify the number of people entering through each entry point (as defined in Stage 1) and understand the typical characteristics of these new entrants. The main data source for this stage of work was the Stats NZ IDI – described in the following section. Research questions in this stage included:

- How many people are entering the construction and infrastructure workforce each year, through each of the entry points, and for each industry group?⁵

⁵ Industry groups refer to the categorisation developed between Scarlatti and Waihanga Ara Rau for the sub-sectors of construction, infrastructure, and support services.

- What are the characteristics (i.e. demographic segmentations) of the people entering through each entry point?

Stage 4: Analysis of existing initiatives

The fourth stage of work aimed to analyse and estimate the effectiveness of initiatives. For this work, we have used two measures of effectiveness:

1. **Attraction** – The percentage of initiative participants that went on to work in the construction or infrastructure sectors within one year.
2. **Retention** – The percentage of participants that were retained in the sectors for at least two years.

In some cases, this information could be obtained using the IDI (discussed in the following section), or providers were able to supply us with this information (or partial information). However, for many initiatives, this data was not available, and a modelling approach was used instead.

We have also looked to measure **progression into training** and qualifications, where data exists (and timeframes allow).

Stage 5: Identifying opportunities for future initiatives

The final stage of this work was then to draw on the entry point and initiative analysis, to identify where the opportunities for future initiatives exist. Research questions included:

- How might the propensity of a person to get a job (attraction) in the construction and infrastructure workforce be influenced if an intervention were introduced?
- How might the propensity of a person to stay (retention) in the construction and infrastructure workforce be influenced if an intervention were introduced?
- What are the factors worth considering before deciding whether to establish an intervention?

Data sources

Stats NZ IDI

The primary data source used in this work is the Statistics NZ Integrated Data Infrastructure (IDI)⁶. The IDI is a large research database containing de-identified microdata about people and households. It contains data from a range of government agencies, surveys, and non-government organisations. Datasets used in this work include:

- **IRD tax and income data** – Income data is used to identify who is in the workforce at a given point in time. That is, we can identify who is earning from an enterprise in the construction or infrastructure sectors in the years of interest (based on a set of industry codes).
- **Secondary and tertiary education data** – Secondary school and tertiary training data (provided by the Ministry of Education and Tertiary Education Commission) is used to identify who is currently in training, and who has previously undertaken training.

⁶ www.stats.govt.nz/integrated-data/integrated-data-infrastructure.

- **2018 Census** – The Census (as well as other Stats NZ records) allow us to identify demographic characteristics of interest.
- **Immigration NZ** – Border movements and visa application data allows us to identify entry of migrant workers to the workforce.

Limitations and caveats

Below are some of the main limitations of using the IDI for this research.

- **Industry vs occupation data** – Although we can easily identify people in the construction and infrastructure industries, we have less visibility as to the occupations they are working in over time. For example, an individual could be an accountant moving between industries.
- **Not all initiatives of interest can be identified in the IDI** – Many initiatives of interest in this work could not be identified in administrative datasets.
- **Quantitative data is limited in explanatory power** – IDI data is useful, but it does not provide the whole picture. It can identify who has entered the workforce and who has not, but it cannot explain individuals' choices. We can only make limited inferences based on this data.
- **There is a time lag for data to appear in the IDI** – There is a time lag in the data available to us in the IDI. Income and tax records for employees is relatively current (there might be a ~3-month time lag), however tax records for self-employed and business owners have a much longer lag (some may take years to submit their annual tax return).

IDI disclaimer

These results are not official statistics. They have been created for research purposes from the Integrated Data Infrastructure (IDI) which is carefully managed by Stats NZ. For more information about the IDI please visit <https://www.stats.govt.nz/integrated-data/>.

The results are based in part on tax data supplied by Inland Revenue to Stats NZ under the Tax Administration Act 1994 for statistical purposes. 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.

Definitions

Defining the construction and infrastructure sectors

This research has sought to align the definition of the construction and infrastructure sectors with other work undertaken by the ConCOVE, as well as Workforce Development Councils (Waihanga Ara Rau and Hanga Aro Rau). This definition is based on a list of ANZSIC industry codes (Australia New Zealand Standard Industrial Classification). Refer to page 51 for a full list of industry codes in each sector group.

Sector group	Examples of industries included
Construction	Carpentry services, roofing services, electrical services, kitchen and bathroom design, air conditioning and heating services, and plumbing services.
Infrastructure	Electricity transmission and distribution, gas supply, sewerage and drainage services, and water supply.
Support services	Architectural services, engineering design and engineering consulting services, surveying and mapping services, hardware and building supplies retailing, floor coverings retailing, electrical, electronic and gas appliance retailing, furniture and floor coverings wholesaling, and plumbing goods wholesaling.

Table 5: Examples of industries within sector groups

Defining touch points with the construction & infrastructure sectors

It is also important to define what we mean by touch points and entry points. For this work, we consider two touch points:

- 1. First touch point with the sector** – this means the first interaction an individual has with the construction or infrastructure sectors, whether that be a work experience programme at school, a careers expo after school, a website, or otherwise.
- 2. First touch point with paid employment** – this is the first instance of paid employment in the construction or infrastructure sectors. For this work, when we refer to entry points more generally, they are engaging with the construction and infrastructure sectors through this touch point.

Entry points as pathways into paid employment are defined in Table 6 below.

Entry point	Definition
School leavers	Finished a secondary programme within two years before starting work (to account for leavers taking a gap year straight after school).
Tertiary graduates	Finished a tertiary programme within the year before starting work.
Industry changers	Have IRD records with specified income codes from a different ANZSIC Level 4 industry within the year before starting work. Currently takes the highest income source as the relevant industry if multiple income sources are detected.
Migrants	Has entered the country on a “Working” or “Working holiday” visa within the year before starting work and has no prior work experience in IRD records.
Job seeker support	Most recent income source is labelled as a benefit in IRD records, within the year before starting work.
Other / unknown	Does not meet the criteria of any above sources, e.g., this will include NEETs that are not receiving a benefit and people who are on parental leave etc.

Table 6: Employment entry point definitions.

Part 1: Entry points into the construction & infrastructure sectors

Setting the scene

Part 1 of this work focuses on creating an overview of the workforce, answering questions like; what is the workforce composition, where are new entrants coming from, who are they, and if there is a majority origin point – what does this look like?

Workforce size over time

Before exploring the entry points into the construction and infrastructure sectors, it is useful to provide some basic facts about the workforces which these new entrants are entering into. Figure 1 below shows the size of the construction and infrastructure sectors over time, between 2018 and 2022. We observe some workforce growth – in particular since 2020. In 2022, the combined workforce size was **just over 400,000 people**. This is comprised of:

- 255,000 in the construction sector
- 66,000 in infrastructure sector
- 87,000 in the supporting sectors.

Note that this analysis aggregates by ANZSIC industry codes (as noted in the methodology section). The implication of this approach means that if a single person worked in multiple industries in a single year, they will be counted multiple times. According to our investigation, this inflates the total workforce size by no more than 5%.

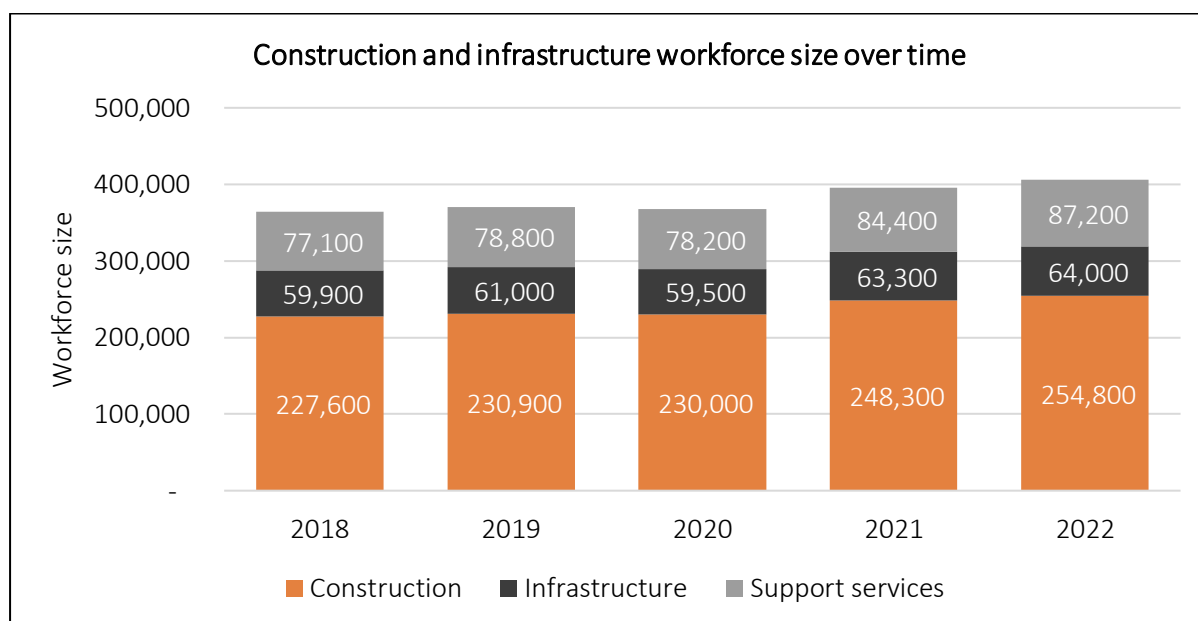


Figure 1: Workforce size over time

Number of new entrants over time

Now, out of the total workforce, what proportion of this is made up of new entrants? For this work, we define new entrants as those who have earned from a particular industry for the first time – and in what calendar year this has occurred (identified based on their income and tax records). Figure 2 below shows the corresponding number of new entrants each year between 2018 and 2022. The total volume of new entrants, as indicated below is **approximately 86,000** in 2022.

Note: that this analysis aggregates by ANZSIC industry codes (as noted in the methodology section). The implication of this approach means that if a single person worked in multiple industries in a single year, they will be counted multiple times. According to our investigation, this inflates the total workforce size by no more than 5%.

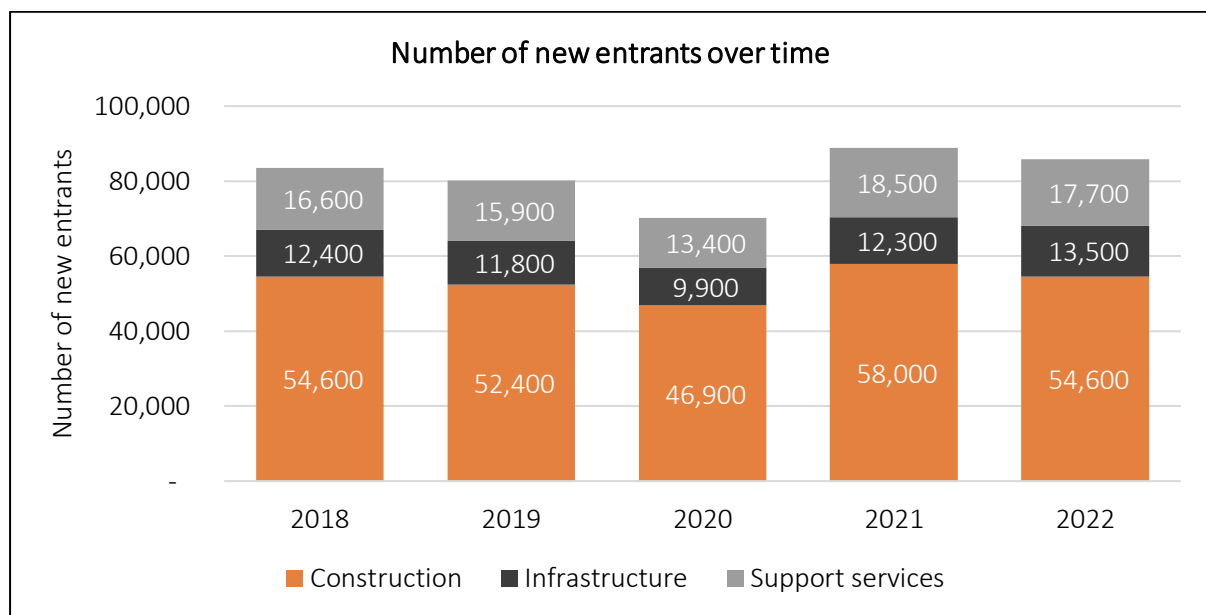


Figure 2: Number of new entrants over time

Origins of new entrants

Figure 3 below shows the breakdown of the entry points into the sectors in 2022. That is, a breakdown according to what individuals were doing in **the year prior to entering an industry for the first time**. We observe that the largest group of new entrants to the construction and infrastructure sectors are industry changers (66%). According to similar pieces of work we have done for other sectors, industry changers are typically the predominant group of new entrants. Refer to page 19 to see where these industry changers are coming from.

This is followed by secondary school leavers (10% - approximately 8,900). There were 59,500 school leavers in 2020, so those entering construction and infrastructure represent 15% of all school leavers. Tertiary graduates (7%) are also a notable entry point. Migrant numbers were low in 2022, presumably as a result of COVID-related border closures, but have historically been slightly higher.

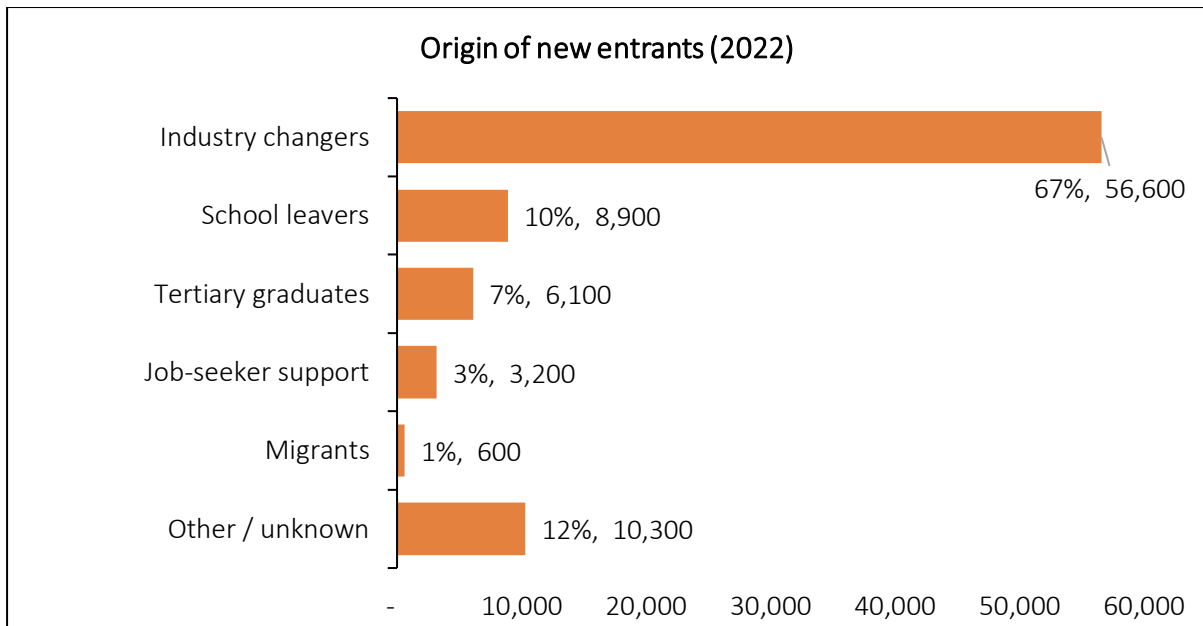


Figure 3: Origin of new entrants (2022)

There is some variation in new entrant sources, as shown in Figure 4 below. It appears that:

- Higher proportions of school leavers are seen in plumbing, drain-laying and gas-fitting; finishing trades; onsite construction and masonry; and retail and wholesale (shown in orange). This could correlate to the types of trades academies currently being facilitated.
- Higher proportions of tertiary graduates are seen in electrical trades, as well as construction and infrastructure services (shown in brown).
- Higher proportions of industry changers are seen in offsite construction, civil infrastructure, and utilities (shown in grey).

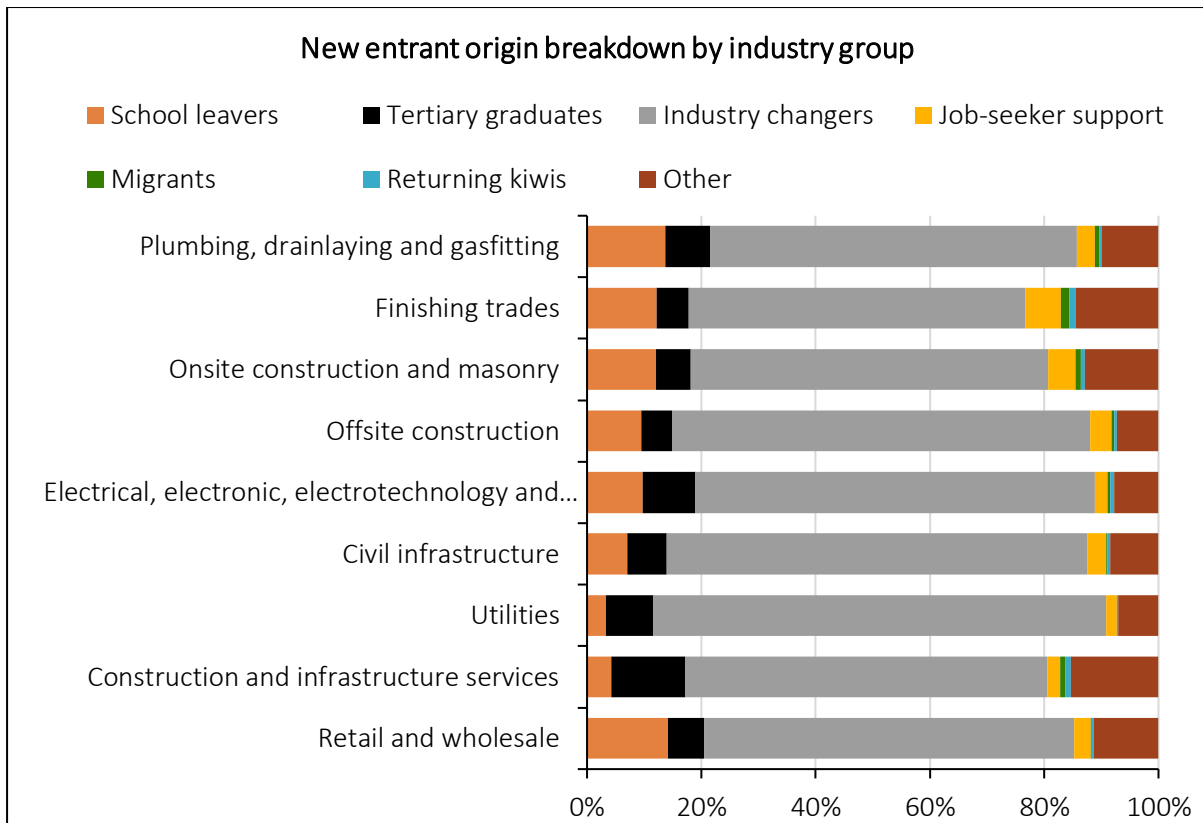


Figure 4: Origin of new entrants by industry group (2022)

Demographics of new entrants

Figure 5 and Figure 6 below show the age and ethnicity breakdown of new entrants to the construction and infrastructure sectors in 2022. Of the total volume of new entrants in 2022 (approximately 85,000⁷):

- 21% of new entrants were Māori (17,400); 9% were Pasifika (8,000); and the remaining 70% were other ethnicities, including European, Asian and MELAA (59,300).
- 33% of new entrants were between the age of 15 and 24 and just under 30% were between the age of 25 to 34. This suggests that new entrants tend to be younger than middle age; about 18% of new entrants were 35 to 44 years old while roughly 20% were 45+. There was a higher proportion of Māori and Pacific new entrants at younger ages, with Māori and Pacific new entrants making up 40% of all 15 to 24 year olds. This proportion tapered off as age brackets increased with Māori and Pacific new entrants only making up 20% of 45+ year olds (see Figure 6).

⁷ Note minor differences in numbers for different attribute combinations, due to IDI data suppression and rounding.

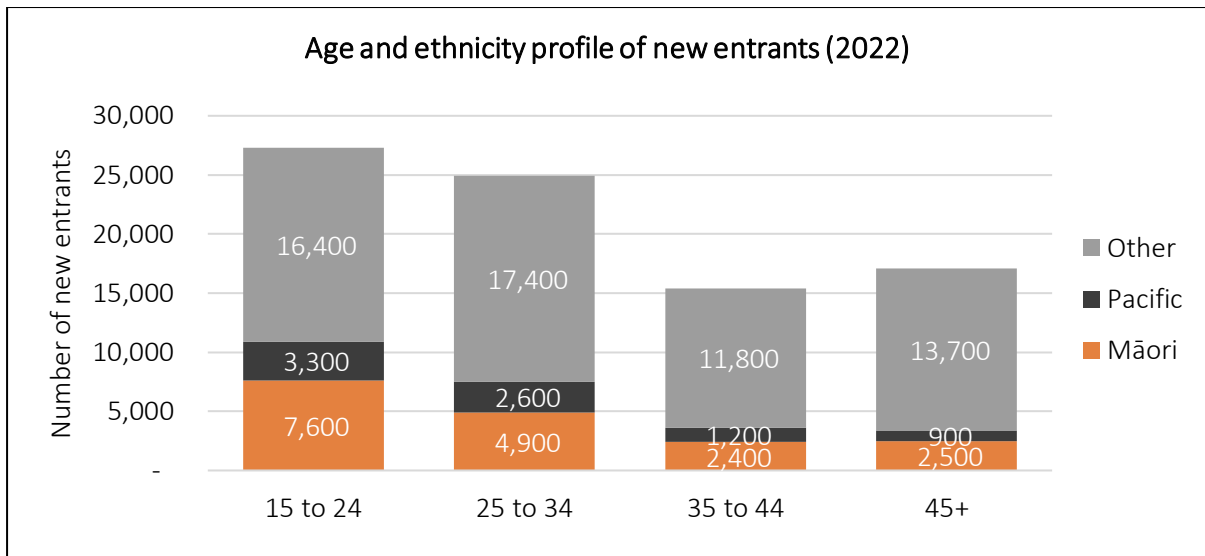


Figure 5: Age and ethnicity profile of new entrants (2022)

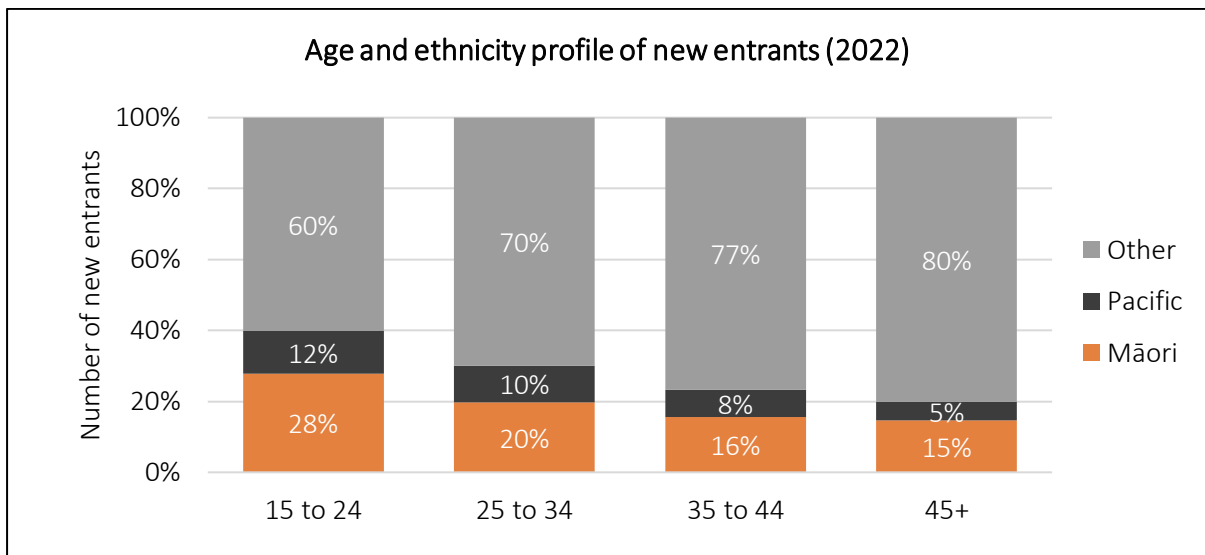


Figure 6: Age and ethnicity profile of new entrants (2022)

Figure 7 and Figure 8 below shows the ethnicity and gender breakdown of new entrants. 25% of new entrants were women (21,600). 33% of male new entrants were Māori or Pasifika. This proportion was a bit lower for women, with Māori and Pasifika making up 22% of all female new entrants. Note minor differences in numbers for different attribute combinations, due to IDI data suppression and rounding.

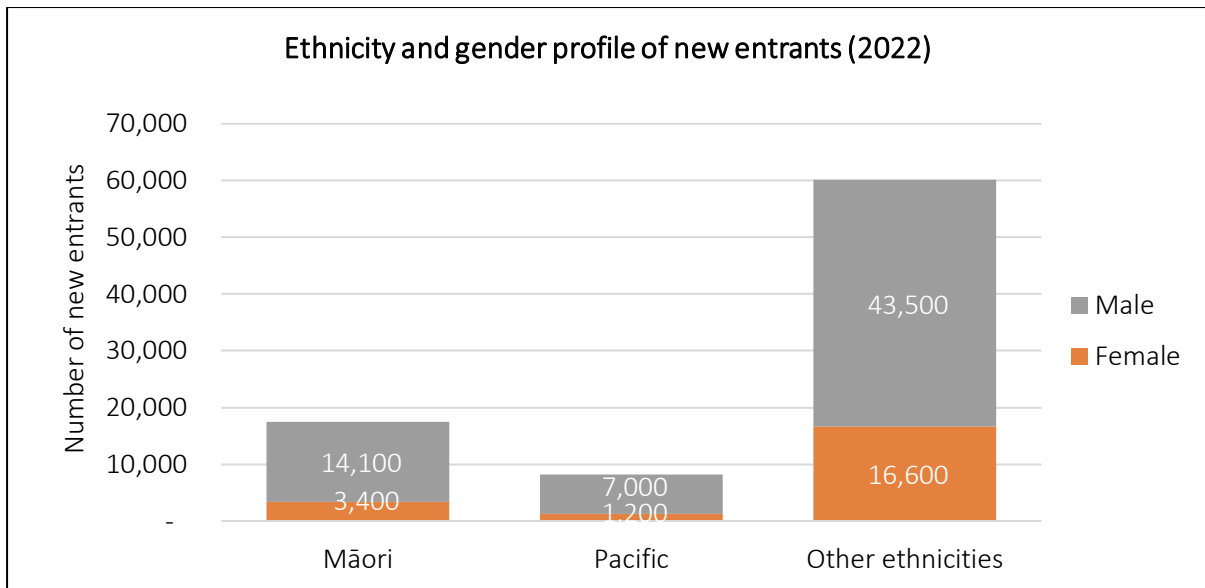


Figure 7: Ethnicity and gender profile of new entrants (2022)

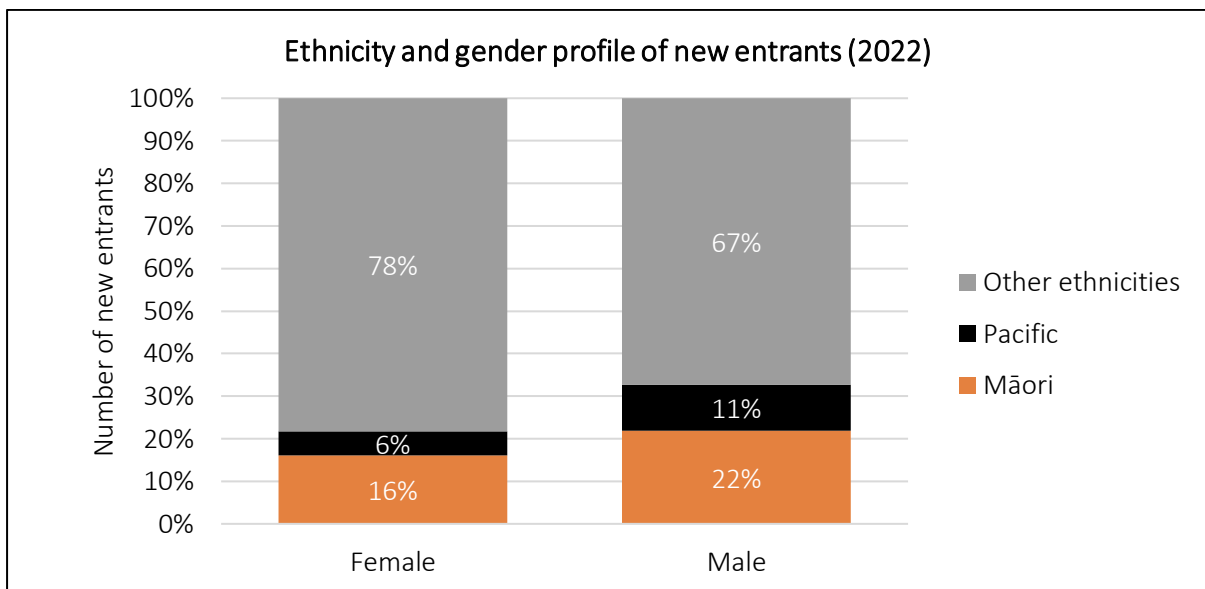


Figure 8: Ethnicity and gender profile of new entrants (2022)

Figure 9 below shows the career stage of new entrants, based on their age (and aggregating across categories presented in Figure 5). In 2022, 51% of new entrants were between the ages of 21 and 34 - what we refer to below as 'early career' entrants. As shown earlier, just 10% of new entrants come direct from school (those aged 18-20 have left school in the last year).

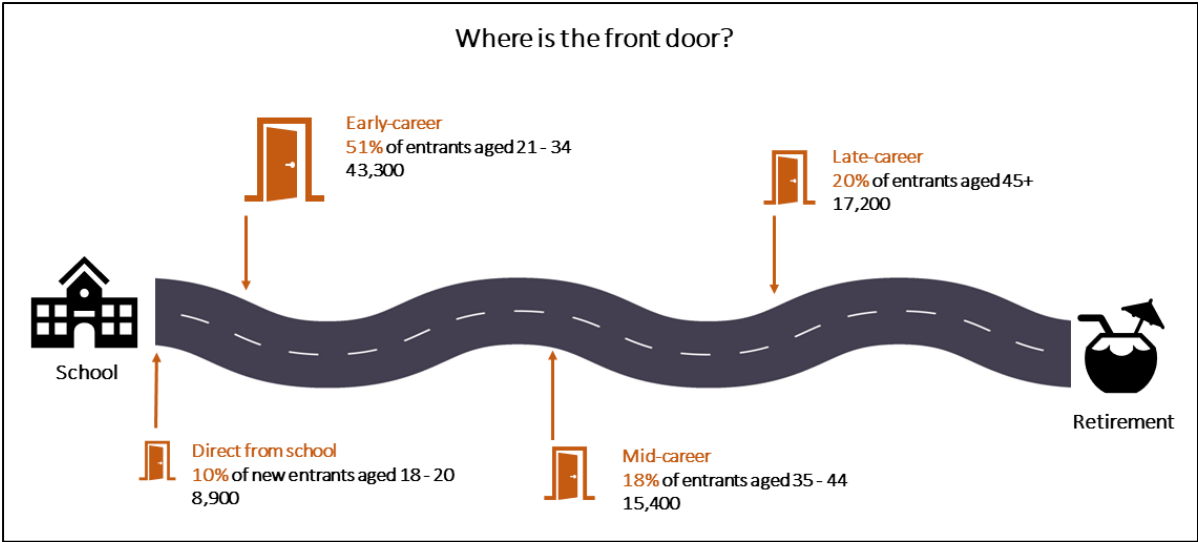


Figure 9: Career stage of new entrants in 2022

Industry changer deep dive

As was shown in Figure 3, almost two thirds of new entrants to the construction and infrastructure sectors enter as industry changers (that is, they have work experience prior to entering these sectors). Considering the volume of these new entrants, further analysis (a 'deep dive') has been undertaken to identify which sectors and industries these new entrants come from (see Figure 10 and Figure 11).

We observe similar trends for industry changers who move into construction and infrastructure. In both cases, approximately a third of industry changers are moving between industries within the broader construction and infrastructure sectors (shown in blue in Figure 10). For example, from civil infrastructure to carpentry services. A quarter are coming from the manufacturing, engineering, and logistics sector (shown in orange). This is likely unsurprising, as this sector would have a number of transferable skills. A third are coming from the services sector – which includes retail, hospitality, and contact centres (shown in grey).

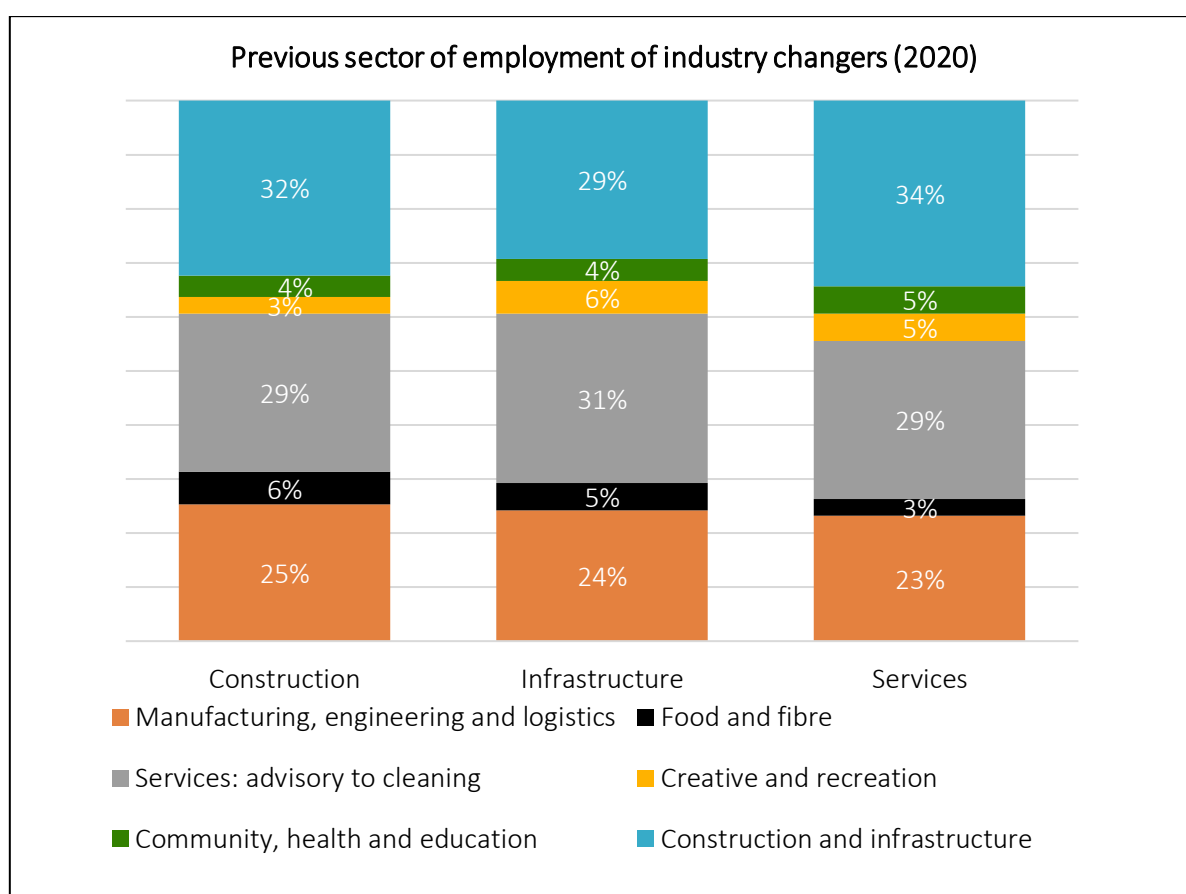


Figure 10: Workforce Development Council / sector movement of industry changers

Figure 11 displays a more granular view into specific industry groups industry changers are moving from. Further work is needed to understand the demographics of industry changers within each of these groups.

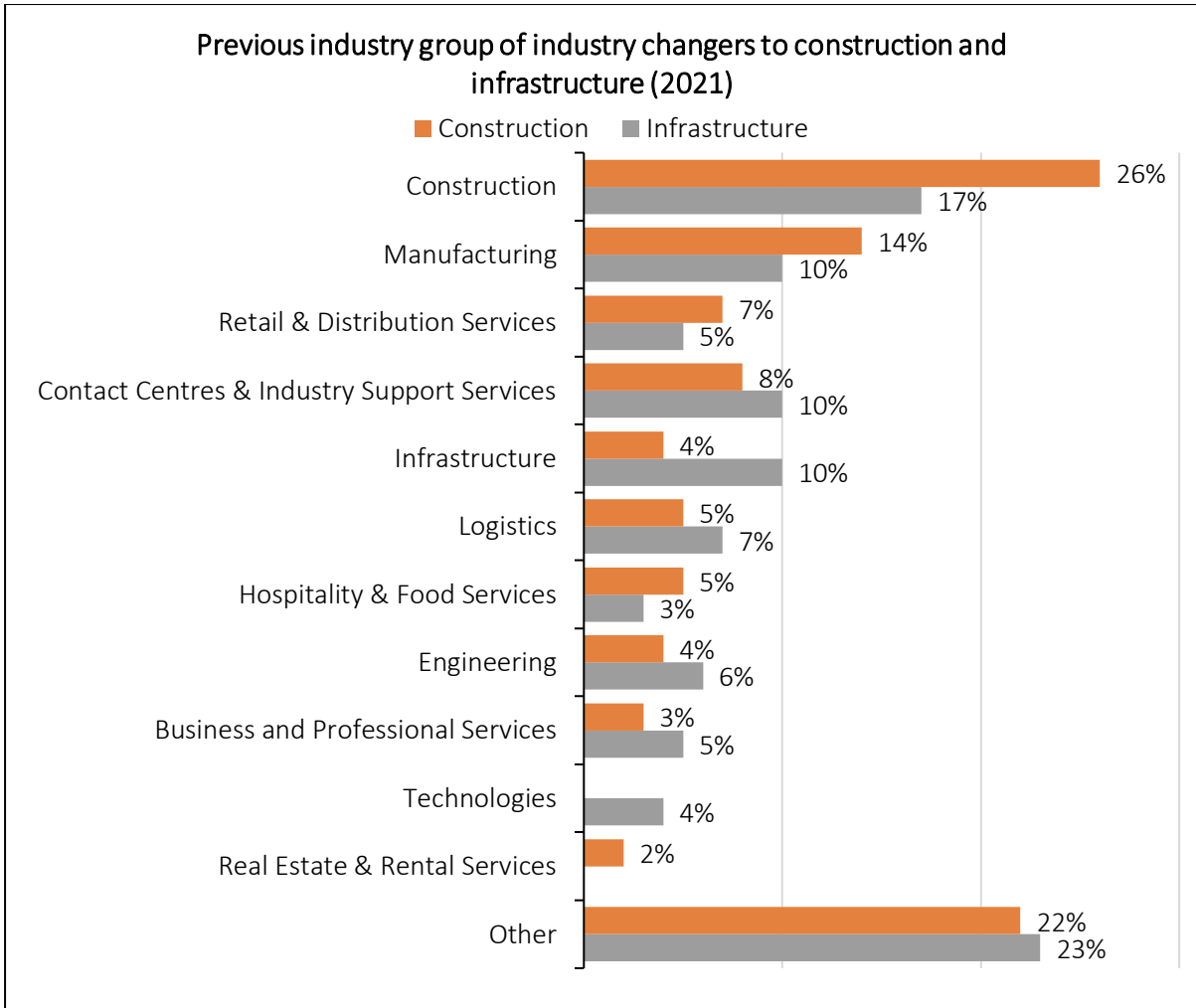


Figure 11: Previous industry group of industry changers

Part 2: Existing initiatives supporting entry

Overview of initiatives

Part 1 aimed to provide an overview of the entry points into paid employment in the construction and infrastructure sectors (including entrance over time as well as origins and demographics of new entrants). Part 2 examines estimates of reach and participation in each type of initiative we have identified, using data from Stats NZ IDI and data from interviews/communication with initiative leads. Where IDI data (up to 2021) and initiative leads provide a lot of rich data, we have been able to conduct a case-study into numbers, demographics, and progression into employment. A summary of total reach and reach by demographic attributes is at the end of this section.

Based on the initiative scan undertaken in this work, we have categorised initiatives into five broad types:

1. Secondary school programmes
2. Tertiary programmes
3. Cadetship & internship programmes
4. Employment brokering & recruitment services
5. Talent attraction & promotion.

Each of these initiative types can be further broken down into sub types, and sub-sub types (as shown in Figure 12 below). We acknowledge that this mapping is not perfect, and we envisage that it will continue to evolve and be iterated over time. Rather, it is intended to be a starting point with which to think about the **diversity in initiatives** at work to get people into the construction and infrastructure sectors. Estimates of participation and reach, as mentioned previously, are based on a combination of Stats NZ IDI data, interview data, and benchmarking of similar initiatives.

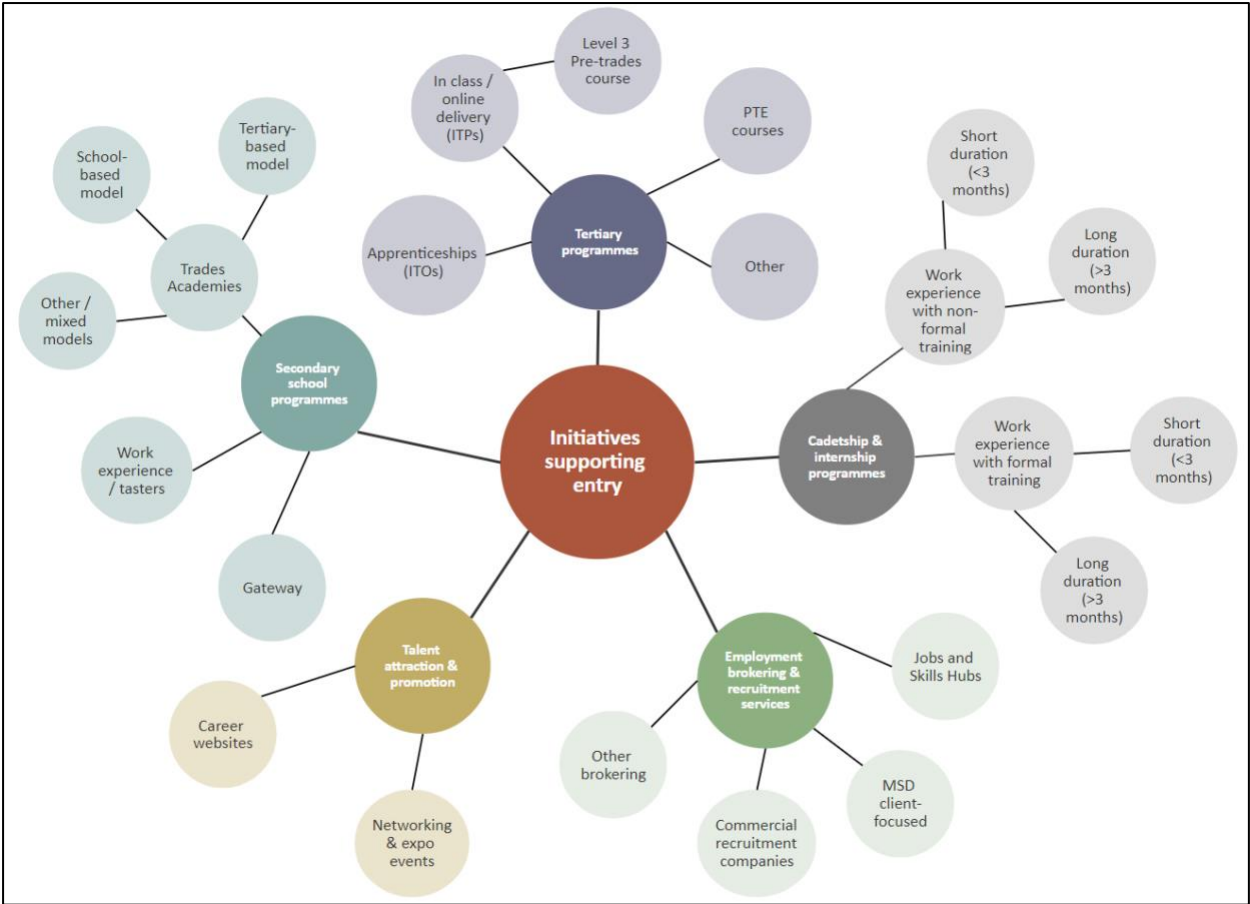


Figure 12: Mapping of initiative types

1. Secondary school programmes

The initiative scan revealed that there are a range of existing programmes aimed at secondary school students in New Zealand. We segment secondary school programmes into two types: trades academies; and Gateway and other work experience or taster programmes.

Trades academies

Trades academies are secondary-tertiary programmes that provide senior secondary students access to a broad range of trades or technology learning opportunities to ensure they stay engaged in education⁸. There are several different running models, mainly categorised based on the delivery site (a school or a tertiary provider, or a combination of both).

Gateway and other work experience and taster programmes

Work experience and taster initiatives are those programmes that give secondary school students an opportunity to try out a trade for a few hours a week, or sometimes one-off taster expo. The main intervention is Gateway, but there are also other programmes. Gateway enables schools to provide senior secondary school students (years 11-13+⁹) with opportunities to access structured workplace learning. In Table 7, we estimate the total number of students participating in secondary school programmes in 2022.

Initiative type	Sub type	Sub-sub type	Est. total students 2022
Secondary school programmes	Trades academies	School-based model	1,000 - 1,500
		Tertiary-based model	1,000 - 1,500
		Other / mixed models	200 - 500
	Work experience & tasters	Gateway	2,500 – 3,500
		Other taster programmes	400 - 600
Totals			5,000 - 8,000

Table 7: Estimated total number of students participating in secondary school programmes in 2022

2. Tertiary programmes

A large number of individuals will engage in tertiary education either prior to entering the construction and infrastructure workforce or, in many cases, simultaneously.

New Zealand Apprenticeships and Managed Apprenticeships

The majority of apprenticeships in New Zealand are facilitated by a division of Te Pūkenga’s work-based learning unit (WBL divisions)¹⁰ where an individual is in employment in the sectors.

Some polytechnics, institutes of technology (ITPs), and private training establishments (PTEs) also offer workplace-based training, leading to qualifications that are comparable to those offered through WBL divisions. These programmes are referred to as Managed Apprenticeships.

⁸ <https://www.education.govt.nz/school/student-support/supporting-transitions/trades-academies/>

⁹ 11-13+ is in reference to students that complete secondary school education beyond the standard 13-year programme, and are in this year 14 etc.

¹⁰ These were previously called Industry Training Organisations (ITOs)

Pre-trades courses

Pre-trades courses are level 3 courses that prepare people to enter work in the trades, or an apprenticeship. Several ITPs and Private Training Establishments (PTEs) offer pre-trades courses. [Māori Pasifika Trades Training \(MPTT\)](#) provides funding and pastoral care to Māori and Pasifika individuals to participate in training programmes like these. In Table 8, we estimate the total number of students/workers participating in tertiary programmes in 2022.

Initiative type	Sub type	Sub-sub type	Est. total students enrolled in 2022
Tertiary programmes	ITO - Work-based learning	Apprenticeships (NZA)	35,000
	ITP - pre-employment training	Pre-trades course	11,000
		Managed Apprenticeships	2,800
	PTE - pre-employment training	Pre-trades course	1,800
		Managed apprenticeships	200
Totals			~50,000

Table 8: Estimated total number of students enrolled tertiary programmes in 2022

3. Cadetship & internship programmes

Several different models exist for cadetship and internship programmes. These vary by duration, the type of training provided during the programme (formal or non-formal), how they are funded, and the pathway into employment afterwards.

Work experience with formal course component

These are cadetships or internships that incorporate a formal course component as part of their programme. Many of these programmes are commercially run by larger businesses that tie in employment after they are concluded. Examples include the [North Power Cadetship Programme](#) based the upper North Island and Northland, and the [Downer Cadetship Programme](#) across the country.

Work experience with non-formal training

Non-formal training consists of upskilling through methods that do not result in formal qualifications, but still grow and prepare an individual to enter the workforce. Many of these programmes are run by larger construction businesses and they tend to be shorter than those with a formal course component (3 months or less). Examples of programmes include the [Fulton Hogan Infrastructure Skill Centre](#), and the [Downer Summer Internship Programme](#).

In Table 9, we estimate the total number of participants in cadetship and internship programmes in 2022.

Initiative type	Sub type	Sub-sub type	Est. total participants 2022
Cadetship & internship programmes	Work experience & formal training	Short duration (<3 months)	50 - 150
		Long duration (>3 months)	300 - 700
	Work experience & non-formal training	Short duration (<3 months)	350 - 600
		Long duration (>3 months)	50 - 200
Totals			700 - 1,600

Table 9: Estimated total number of participants in cadetship and internship programmes in 2022

4. Employment brokering & recruitment services

Brokering and recruitment services have a few distinct models, with some focusing on recruitment, and others facilitating both recruitment and brokering.

Jobs and Skills Hubs

Jobs and Skills Hubs blend together brokering and recruitment as they often work with local businesses to train, facilitate employment opportunities, and to pass on recruitment drives. Most are in or around Auckland but are slowly expanding to other parts of the country with one now in Dunedin and others taking shape.

MSD client-focused

The Ministry of Social Development has several targeted employment brokering initiatives that prepare their clients (mainly those on benefits) to enter and succeed in their new position. This is mainly done through on-the-job work experience like in Skills for Industry – in job training, or Mana in Mahi programmes, but programmes like the Limited Service Volunteer course are designed to prepare and inspire people into work.

Commercial recruitment companies

Commercial recruitment company models mainly facilitate recruitment through online job boards or online advertisements of employment opportunities like the Māori and Pacific Jobs Board or Mana Recruitment. Mana Recruitment also provides training for people looking to upskill through their branch called Mana Academy. Since these initiatives primarily occupy an online platform, their reach is often quite substantial.

In Table 10, we estimate the total number of people reached by brokering and recruitment services in 2022.

Initiative type	Sub type	Sub-sub type	Est. total people reached 2022
Employment brokering & recruitment services	Jobs and Skills Hub	-	2,000 - 4,000
	MSD client-focused	-	700 - 1,500
	Commercial recruitment companies	-	60,000 - 120,000
	Other brokering and recruitment	-	400 - 700
Totals			60,000 - 130,000

Table 10: Estimated total number of people reached by brokering and recruitment services in 2022

5. Talent attraction & promotion

Talent attraction & promotion initiatives play an important role in advertising and outreach for the construction and infrastructure sectors. Promotion can take place in many ways, but the main distinction between the models is whether they are in person or online. Events often have a specific target audience, like school leavers or women.

Networking and expo events

[Women in Trades](#) is a not-for-profit that promotes trades as a viable career option to women and employers. They provide spaces for women to find out more about trades training and careers - putting on events and career expos around the country. [Girls with Hi-Vis](#) gives female students the opportunity to hear from women in the industry and learn what a career in the infrastructure sector can offer. There were 37 Girls with Hi-Vis events were run in 2023, with 800 students registered.

Career websites

There are several different models of websites in the attraction and promotion sphere. Some are broadly career-promotion and information based, while others support under-represented groups in the construction and infrastructure, like women and Māori. [EPIC Careers in Infrastructure](#) is a career-promotion website that highlights the impact you can make in the industry, and in comparison, [TradeCareers](#) is a website that champions women engaging in and entering the trades.

In Table 11, we estimate the total number of people reached by talent attraction and promotion events and websites in 2022. With websites, reach is measured by number of website views.

Initiative type	Sub type	Sub-sub type	Est. total people reached 2022
Talent attraction & promotion	Networking and expo events	-	1,000 - 4,000
	Career websites	-	16,000 - 37,000 ¹¹
Totals			17,000 - 40,000

Table 11: Estimated total number of people reached by talent attraction and promotion events and websites in 2022

¹¹ Note that this estimate has been adjusted to estimate unique individual views, rather than simply total job ad link clicks. This number would be several multiples larger.

Case study: Trades academies

As noted earlier, trades academies are specialised programmes for secondary school students that teach them the skills needed to enter trades of all kinds. There are several different running models, and initiatives that support the running of these academies.

Trades academy models include:

- School-based: where the trades academy component is taught at the secondary school (can be a different school to the one they normally attend) - 13% of trades academy students.
- Tertiary-based: where the trades academy component is 100% at the tertiary provider - 66% of trades academy students.
- Mixed models: where the teaching is shared between the school and tertiary institution - 21% of trades academy students.

Number of students over time

The number of people engaged in trades academies has grown over three times since their introduction in 2013 (refer to Figure 13). No matter the year, there appears to be a relatively even split between people enrolled in tertiary-based model and people enrolled in school-based models. In 2021, there were:

- 237 secondary schools operating a formalised trades academy and funded accordingly.
- Approximately 3,300 students enrolled in a trades academy.

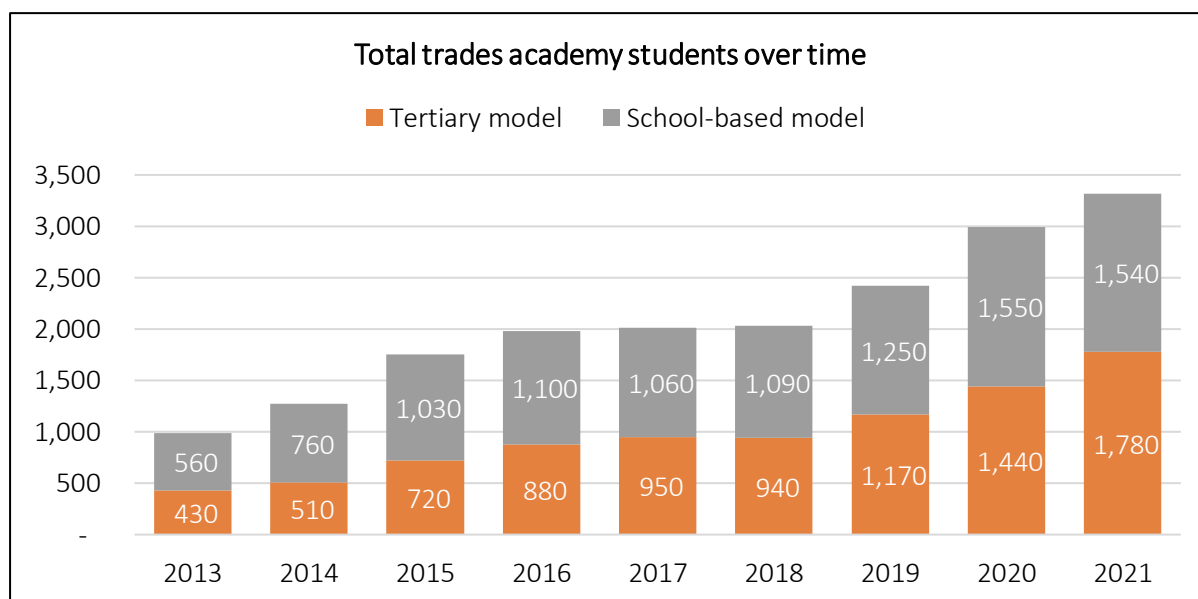


Figure 13: Number of people enrolled into a trades academy, Stats NZ IDI

Demographics of trades academy students

The below graphs show demographic breakdowns at the total level. Figure 14 shows that both models see the same ratio of men to women (with 93% being men).

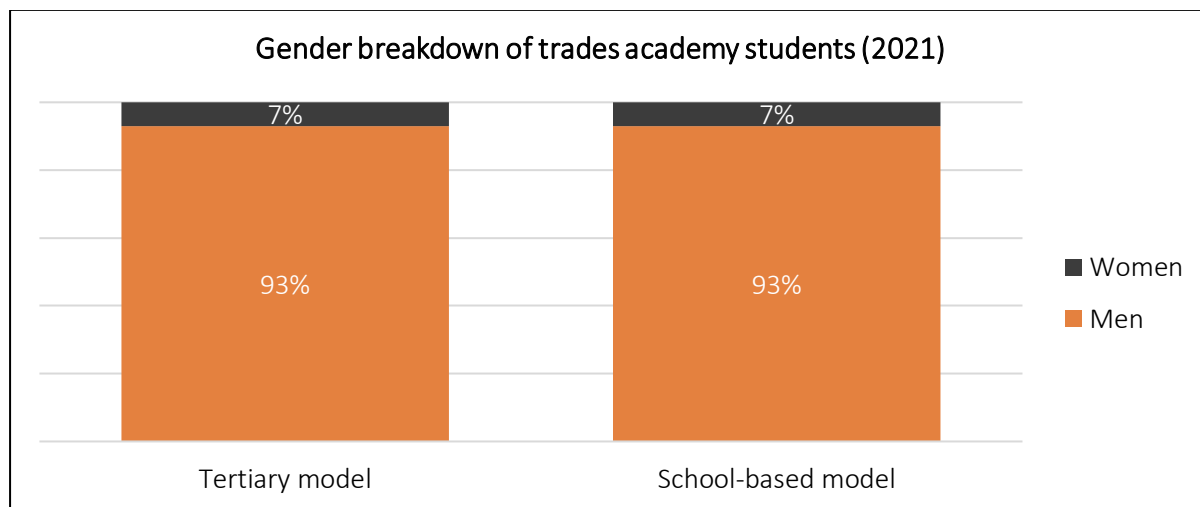


Figure 14: Gender breakdown of trades academy students (2021)

As Figure 15 shows, a higher proportion of both Māori and Pasifika enter the tertiary-based model (38% and 22% respectively), compared to the school-based model (31% and 15% respectively),

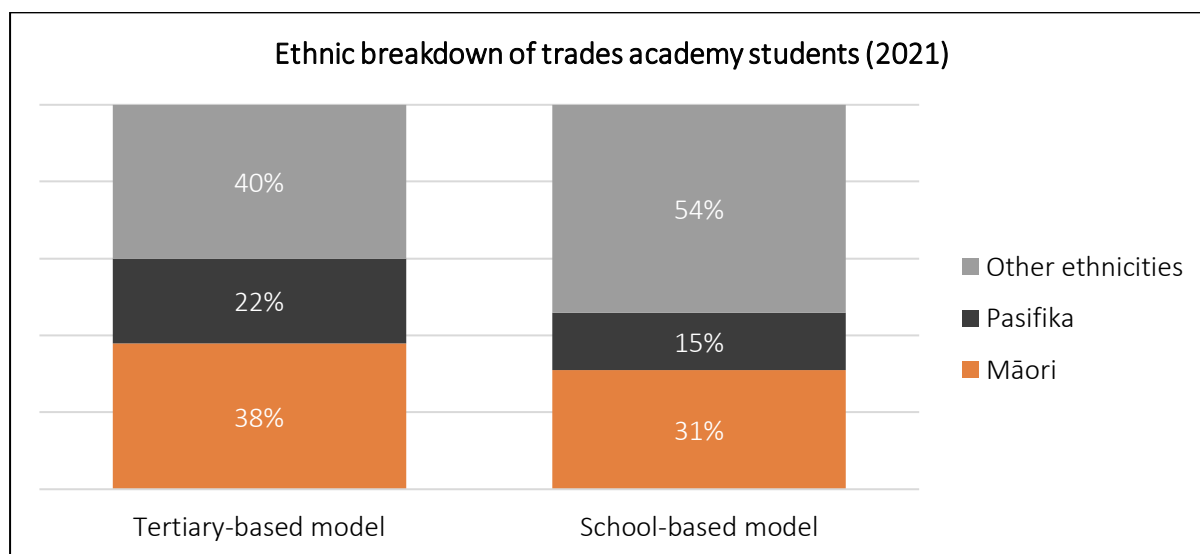


Figure 15: Ethnic breakdown of trades academy students (2021)

Figure 16 illustrates that the majority of students in both models (81% and 83%) have a household deprivation index of 4 or more.

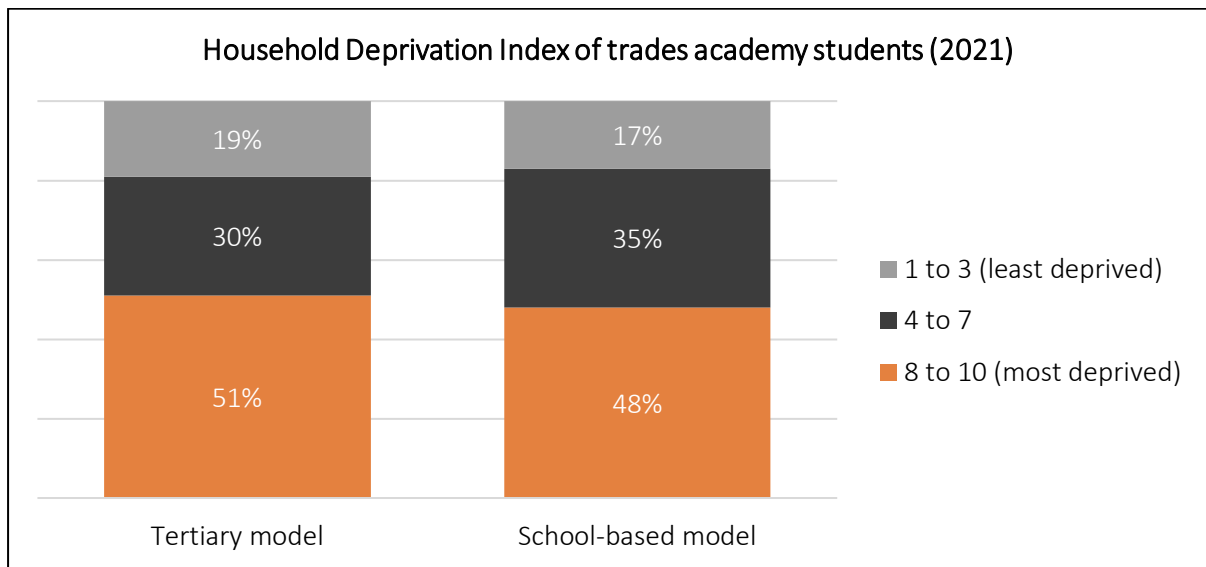


Figure 16: Deprivation Index breakdown of trades academy students (2021)

We note that there will be variation in these demographics across regions, e.g., Auckland in particular would have a higher percentage of Māori and Pasifika enrolments.

Progression into employment

The below graph spans 2015 and 2021 and reflects on how much time (in years) trades academy students were taking each year to progress to employment (refer to Figure 17).

It shows that between 2015 and 2021, approximately 35-45% of the students that enrolled into a trades academy entered into employment in the construction and infrastructure sectors within 3 years after completion (shown by the combination of orange, black and grey). It appears that the first few years are key to encourage secondary school leavers to pursue trades as a career.

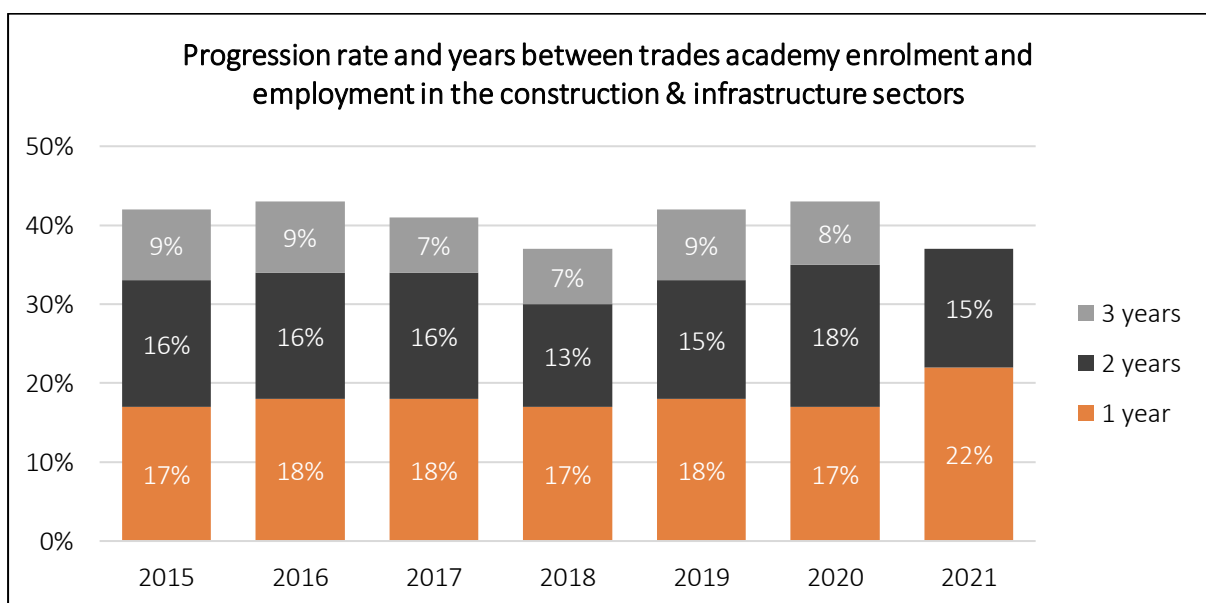


Figure 17: Progression rates and years before entering employment for trades academy students

Table 12 below shows the progression rates into employment of the 2019 cohort of students, broken down by their Household Deprivation Index. There is a stark difference here - a much higher proportion of students living in the least deprived areas progress into employment in the sectors (56%) compared to students living in the most deprived areas (just 36%). Note, however, that the absolute number of learners in the least deprived areas is much smaller.

2019 cohort	<1 year	1 - 2 years	2 - 3 years	Total % employed in <3 years	Starting cohort size
HDI 1 to 3 (least deprived)	26%	22%	8%	56%	390
HDI 4 to 7	23%	17%	9%	49%	840
HDI 8 to 10 (most deprived)	12%	13%	11%	36%	1,420
Total	18%	15%	9%	42%	2,650

Table 12: Progression rate into employment for trades academy students, 2019 cohort by Household Deprivation Index

Progression into tertiary education

We are also interested in seeing how many trades academy students' progress into tertiary education (and then onto employment). For this analysis, we identified the 2019 cohort of students, and observed who progressed into relevant tertiary training¹², whether that be with work-based learning (with an ITO) or a pre-trades course (with an ITP or PTE). Note that for this analysis, we only have visibility of tertiary enrolments up until 2022 - so these learners may enrol after this point.

Figure 18 below shows the progression rates into tertiary education, comparing those students engage in the tertiary trades academy model and school-based model. Those engaged in the tertiary model appear more likely to progress into pre-trades tertiary course with an ITP or PTE (38%) than those in a school-based model (20%). Progression into work-based training appears similar (approximately 25%). Note that these progression rates may increase as more IDI data becomes available.

We also track the number of learners who then progress from a pre-trades course (with an ITP or PTE) into employment. Initial investigation suggests that approximately 42% of students from the 2019 cohort enrolled in a pre-trades course, and then went on to work in the sector by 2023.

¹² Relevant tertiary training defined as a set of construction and infrastructure related NZSCED codes.

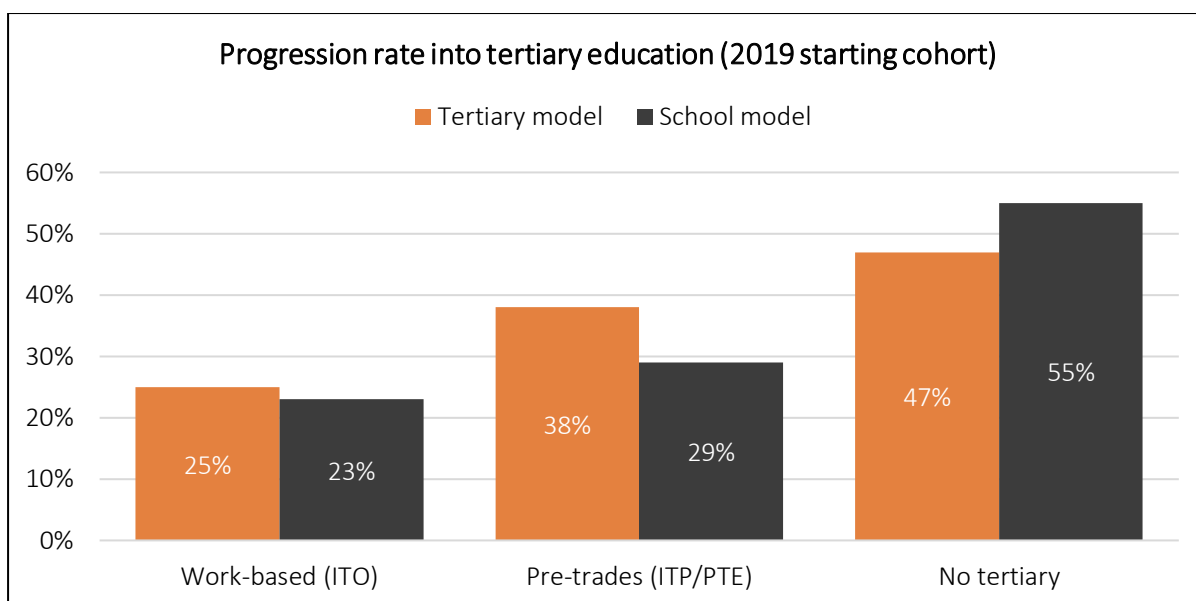


Figure 18: Progression rate into tertiary education of trades academy students

Table 13 below shows the breakdown of progression rates into tertiary education, by Household Deprivation Index. A similar trend is observed to progression into employment. Those living in the least deprived regions are much more likely to progress into tertiary training (56%) than those in most deprived areas (40%).

2019 cohort	Work-based (ITO)	Pre-trades (ITP/PTE)	Total % in any tertiary	Starting cohort size
HDI 1 to 3 (least deprived)	30%	38%	56%	390
HDI 4 to 7	29%	34%	52%	840
HDI 8 to 10 (most deprived)	17%	28%	40%	1,420
Total	23%	31%	46%	2,650

Table 13: Tertiary progression rates of trades academy students by Household Deprivation Index

Case study: Pre-trades courses

Number of participants over time

For individuals interested in a trade but not sure it is right for them, a pre-trade training course gives them the chance to try it without committing long term. We found from our interviews with initiative leads that some employers prefer apprentices to do a pre-apprenticeship training course before offering them an apprenticeship. Pre-trade training courses are mainly offered by Te Pūkenga and private training establishments (PTEs). Māori and Pasifika students enrolled in pre-trade courses are eligible for a scholarship from Māori and Pasifika Trades Training (MPTT) that will provide them with funding and pastoral care to support and guide their efforts while studying and moving into employment.

Figure 19 shows that the number of students enrolled in pre-trades courses has been consistent at around 2,500 enrolments since 2018. A larger number than usual were enrolled in 2021, with about

3,200 enrolments, possibly due to work uncertainty after COVID-19 lockdowns. In terms of the funding split, MPTT-funded¹³ individuals consistently make up between approximately 20-25% of all the L3 pre-trades courses since 2018.

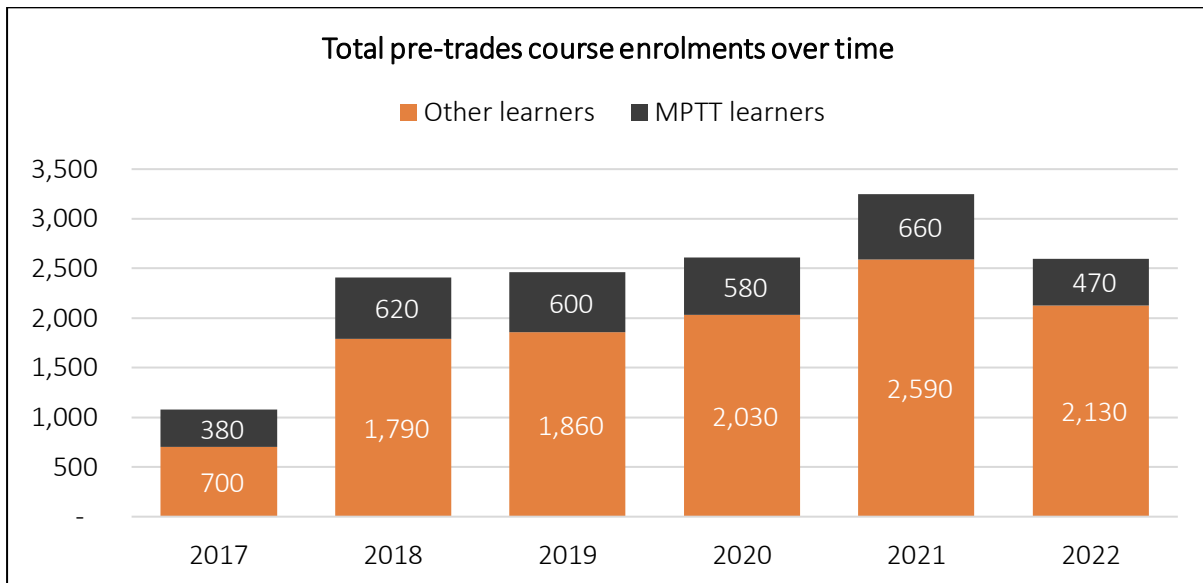


Figure 19: Total pre-trades course enrolments over time, Stats NZ IDI

Demographics of pre-trades participants

The below graphs show demographic breakdowns at the total level. Figure 20 shows that the ratio of men to women (with approximately 86% being men) is the same for different funding types.

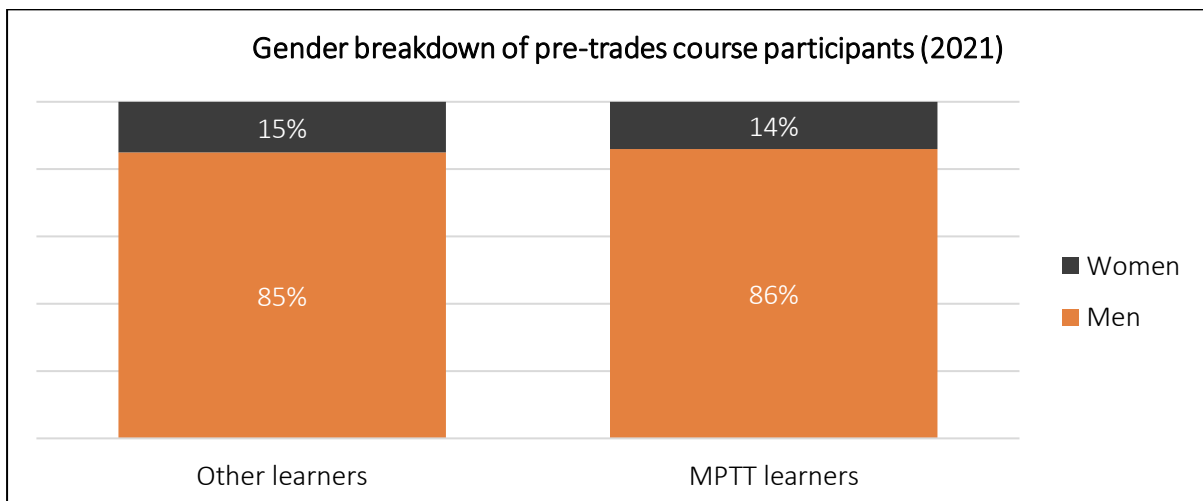


Figure 20: Gender breakdown of pre-trades course participants (2021)

However, as illustrated in Figure 21, MPTT is solely for Māori and Pasifika, with around two thirds Māori and one third Pasifika receiving the funding.

¹³ Māori Pasifika Trades Training (MPTT)

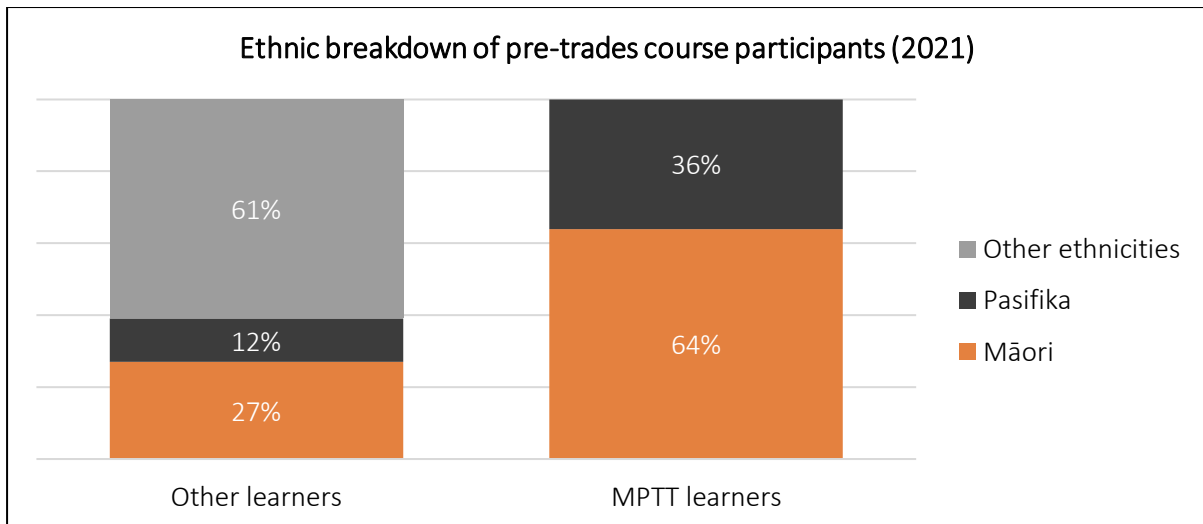


Figure 21: Ethnic breakdown of pre-trades course participants (2021)

As shown in Figure 22, learners receiving MPTT funding are more likely to sit within the upper end of the household deprivation index.

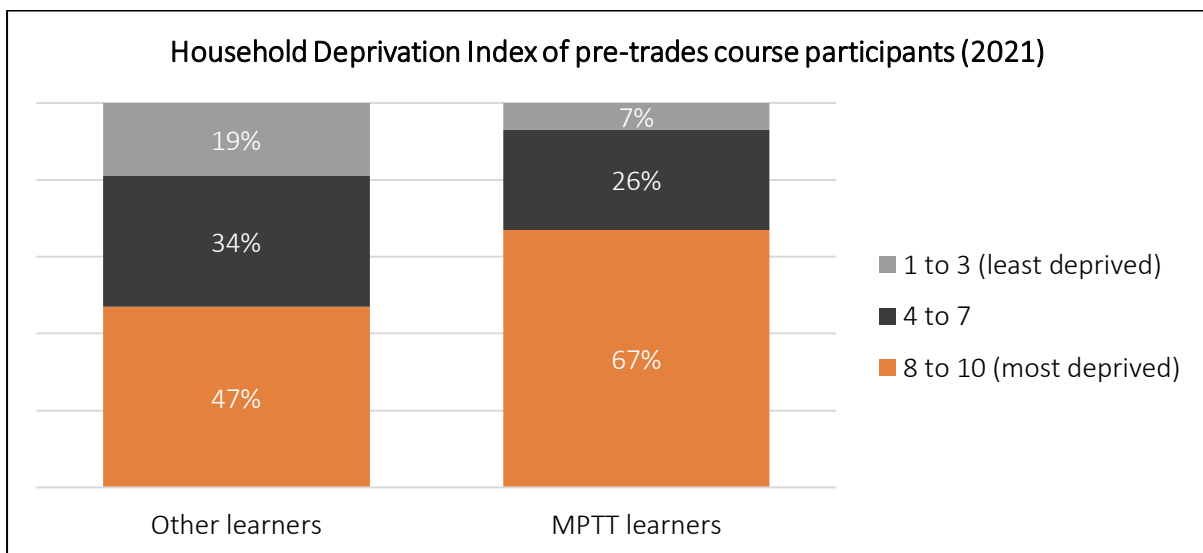


Figure 22: Household Deprivation Index breakdown of pre-trades course participants (2021)

Progression into employment

The below graph spans 2017 and 2022 and reflects on how much time (in years) pre-trades students were taking each year to progress to employment (refer to Figure 23). Figure 23 below shows that within the first year after a pre-trades course, between 15-24% of course participants seek employment in the construction and infrastructure sectors (ignoring 2017). Within the first two years, approximately 18-27% of course participants seek employment within these sectors. During COVID-19, in 2019, nearly 80% of pre-trades course participants sought employment in the construction and infrastructure sectors.

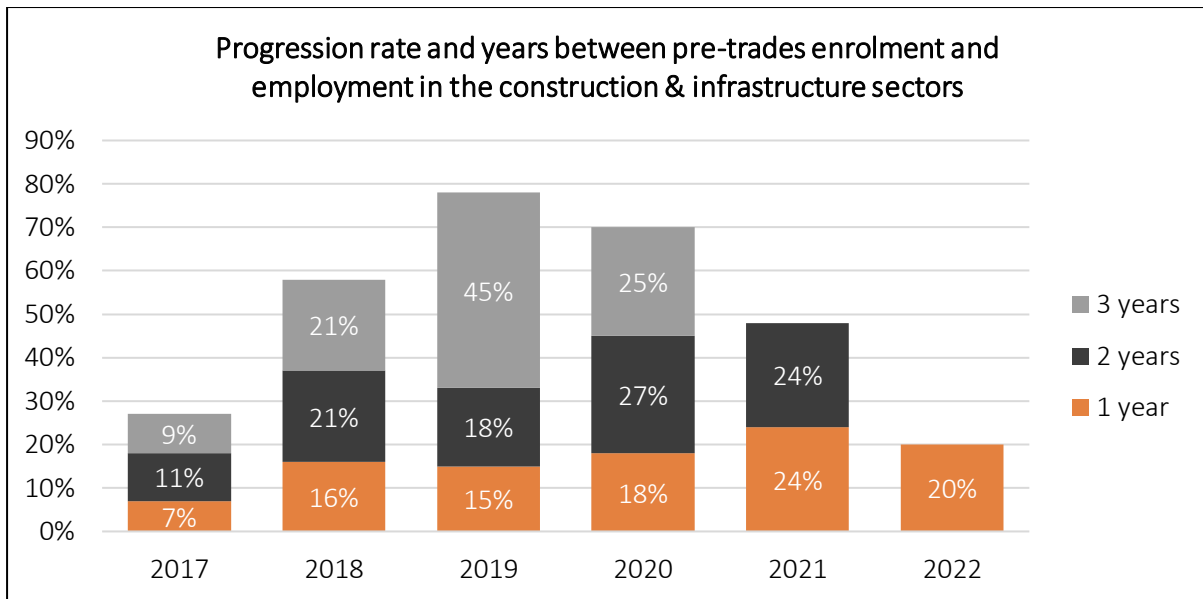


Figure 23: Progression rates and years before entering employment for pre-trades course participants

Figure 24 demonstrates that Māori MPTT participants appear to be more likely to enter construction and infrastructure employment within 2 years, compared to Māori people who are not MPTT participants (48% compared to 39% for Māori students). There is some increase for Pasifika using MPTT, but it is not high enough to suggest it is a significant factor in their success.

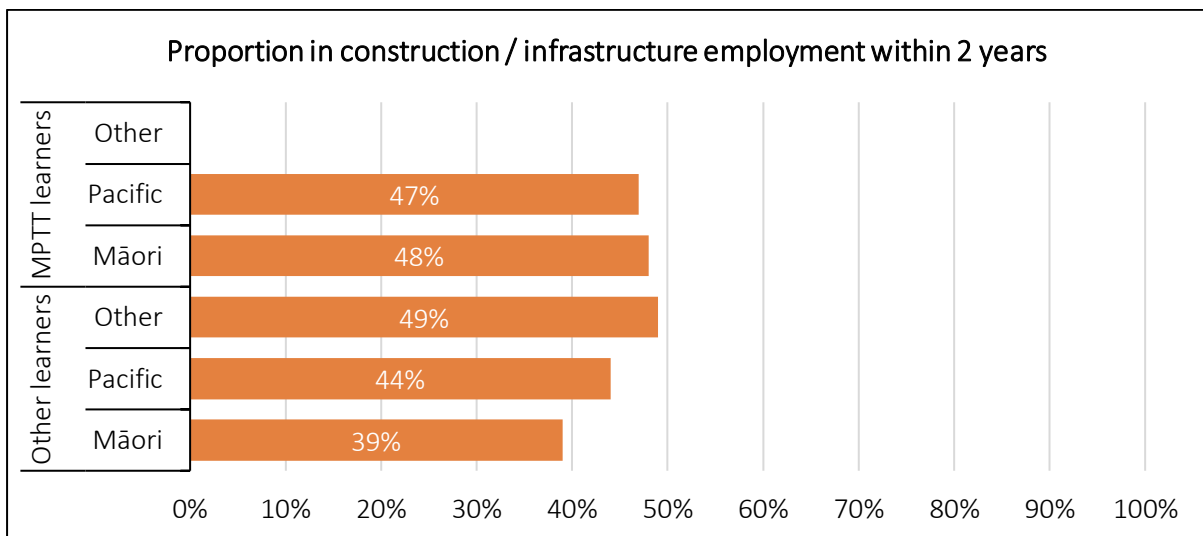


Figure 24: Conversion rate of pre-trades course participants into employment in the construction and infrastructure sectors within 2 years of finishing their programme (2021 cohort)

Case study: Cadetship programmes

Several different models exist for cadetship and internship programmes. A sample cadetship programme is showcased to explore demographic composition and employment rates of participants. This example cadetship programme is part of a large commercial company in New Zealand and had 60 participants in 2022¹⁴. As this is one cadetship programme, this case study does not look at number of students over time, nor the Household Deprivation Index, as this data was not available.

Demographics of cadets

Below cadetship enrolments are broken down at the total level. They show that this particular cadetship attracts more Māori than any other ethnicity (58%), and a higher proportion of men to women (30% compared to 18%).

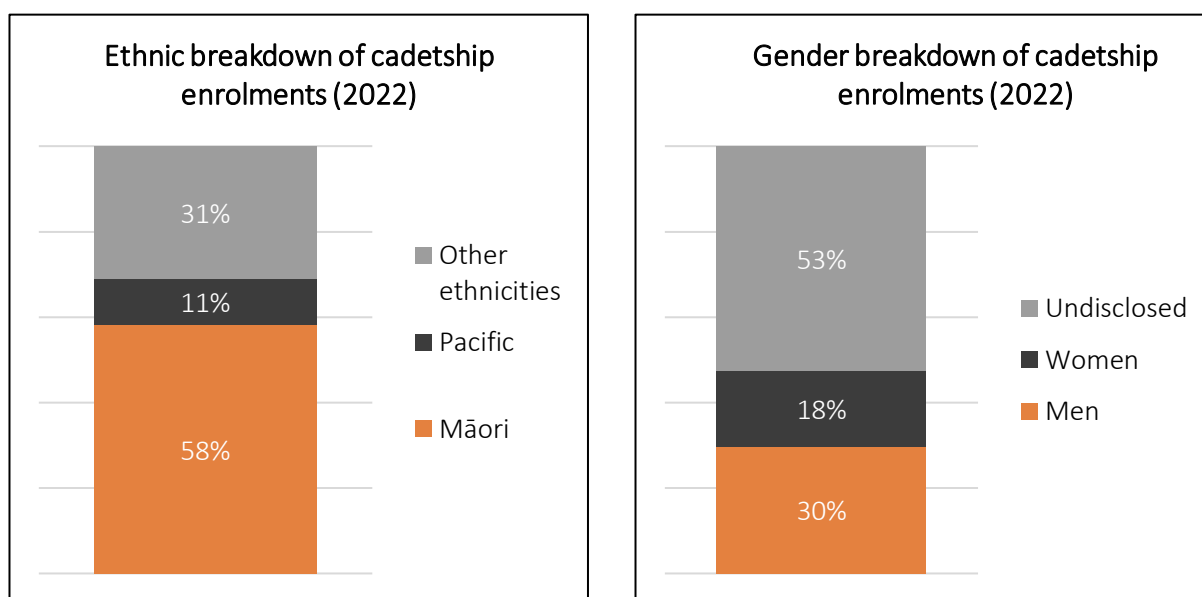


Figure 25: Ethnic and gender breakdowns of cadetship enrolments

¹⁴ For privacy reasons, the name of the company cannot be disclosed.

Progression into employment

Figure 26 shows that the retention / progression of these cadetship participants has been very high at 80-81% over 2021-22, which implies that there is a high level of fulfilment in their chosen job.

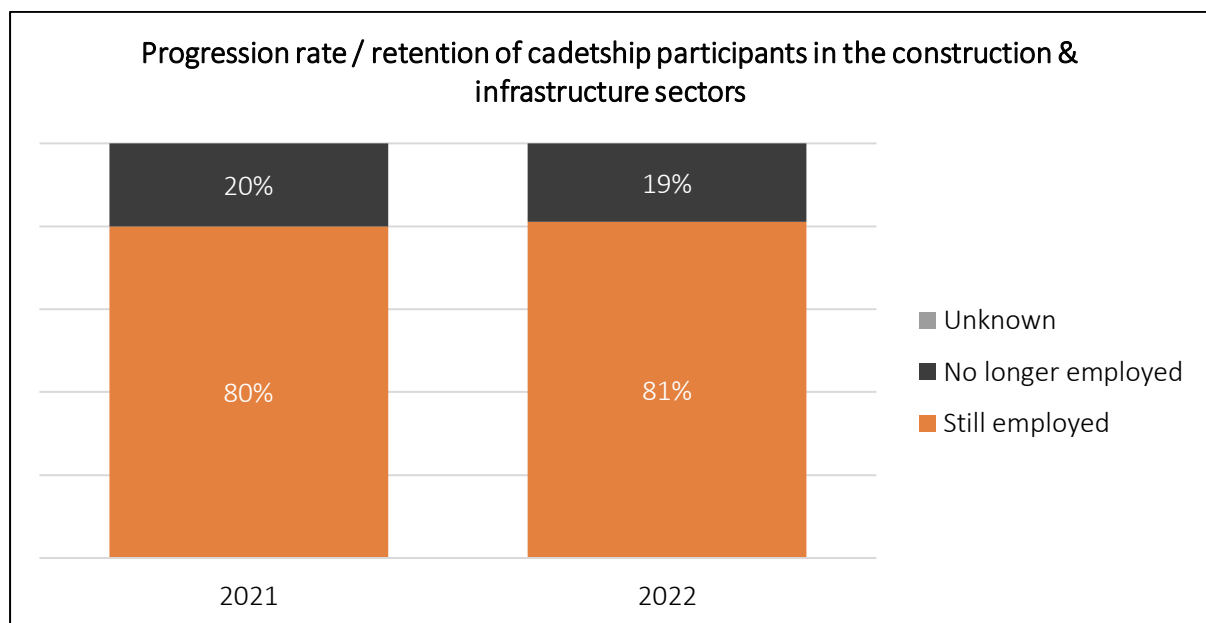


Figure 26: Progression rate / retention of cadetship participants in the construction & infrastructure sectors

Again, we note that these graphs reflect total numbers, and there would be variation across regions, e.g., Auckland in particular would have a higher percentage of Māori and Pasifika.

Total initiative reach

Estimated total reach

Across all initiative types, we estimate that the total reach in 2022 was between 150,000 and 200,000 people (as seen in Table 14). However, we acknowledge that several individuals will engage with multiple initiatives in a given year, so the number of unique individuals will be lower than this. We also acknowledge that this is a wide confidence interval - reflecting the need for further data collection and refinement of estimates in time.

What we can observe, however, is that unsurprisingly, employment brokering services have the ability to reach a large number of people. Nevertheless, this 'reach' is typically passive and short in duration (for example, contacting a recruitment company, or accessing a job website). The other categories are what we would refer to as 'active' initiatives, as they require more interaction and/or time commitment from the person.

Initiative type	Est. total participation 2022
1. Secondary school programmes	5,000 - 8,000
2. Tertiary programmes	~50,000
3. Cadetship & internship programmes	700 - 1,600
4. Employment brokering & recruitment	60,000 – 130,000
5. Talent attraction & promotion	17,000 - 40,000
Total	150,000 - 200,000

Table 14: Estimated total participation in each initiative type in 2022

Estimated reach of Māori and Pasifika

This scan identified a large number of initiatives which specifically aimed to attract Māori and Pasifika into the sectors across all initiative types bar secondary school programmes. The most well-known are the [Māori and Pasifika Trades Training \(MPTT\)](#) initiative that provides training, funding, and pastoral care to participants; the [Te Puni Kōkiri Cadetships](#) to develop, mentor and train Māori staff; the [Wāhine on the Tools](#) web-series on the TradeCareers website. Additionally, there are also several kaupapa Māori initiatives including [Whakaahu Whakamua – Adult Work-Ready Programme](#) and [Education To Employment Brokerage \(EEB\)](#) (branches of Tai Tokerau Trades Training); [Aukaha](#) a consultancy delivering recruitment and training services; [Mana Recruitment](#) a Māori and Pasifika-specific recruitment company; and [Toa Takitini \(Success Together\)](#) a work experience and taster programme in partnership with Te Puni Kōkiri and the Downer Group.

Table 15 displays the estimated engagement of Māori and Pasifika participants across different initiative types. Māori and Pasifika participation counts are often small, so to minimise suppression of small counts, these groups have been combined.

Initiative type	Māori / Pasifika participants in 2022
1. Secondary school programmes	1,800-2,800
2. Tertiary programmes	5,500 – 7,500
3. Cadetship & internship programmes	150-400
4. Employment brokering & recruitment	6,200-25,000
5. Talent attraction & promotion	1,900-15,000
Total	16,000-50,000

Table 15: Estimated total engagement of Māori / Pasifika participants by initiative type in 2022

Estimated reach of women

As seen earlier, there are also several initiatives in place to promote careers in the construction and infrastructure sectors to women. This includes events facilitated by the [National Association of Women in Construction NZ](#) and not-for-profit organisation [Women In Trades \(WIT\)](#), the [Construction Sector Accord's Diversity in Construction](#) initiative, and [Girls with Hi-Vis](#) - promoting careers in infrastructure. There are also a number of careers expo events run around the country. It is difficult to determine precisely the effectiveness of these talent attraction and promotion events at attracting women into the construction and infrastructure sectors, but our modelling of loosely analogous initiatives within the sectors suggests that attraction rates are low. Table 16 displays the estimated engagement of women across initiative types.

Similarly, women are also significantly underrepresented in the construction and infrastructure industry as the reach of women is 11%, with only 5 (3.6%) out of the 136 initiatives targeted towards them.

Initiative type	Women participants in 2022
1. Secondary school programmes	600-1,000
2. Tertiary programmes	3,500-4,500
3. Cadetship & internship programmes	60-170
4. Employment brokering & recruitment	3,700-16,000
5. Talent attraction & promotion	2,400-9,300
Total	10,000 – 30,000

Table 16: Estimated total engagement of women participants in construction / infrastructure initiatives by type in 2022

Estimated reach by target audience group

Table 17 displays the estimated reach for different target audiences, based on approximate splits of target audiences reached by each initiative. What this modelling shows us is that in absolute terms, a large number of potential industry changers are being reached by industry attraction initiatives – driven largely by job advertisement and career promotion websites. However, this is a relatively 'indirect' initiative type, with minimal direct-person contact. In comparison, initiatives aimed at school leavers and tertiary students are more targeted. Combined, we estimate that 40% of those reached by industry attraction initiatives are school leavers or tertiary students.

Target audience	Est. reached in 2022	% reached in 2022
School leavers	21,000-35,000	17%
Tertiary	45,000-50,000	24%
Industry changers	66,000-110,000	52%
Migrants	3,000-4,900	2%
MSD clients	5,400-7,900	4%
Other	1,800-2,400	1%
Total	150,000 - 200,000	100%

Table 17: Estimated reach by target audience in 2022

Figure 27 below compares the percentage breakdown of audiences reached by industry promotion initiatives, with new entrants to the construction and infrastructure sectors. We see that the distributions are not too dissimilar – initiative reach is roughly aligned with the proportions of individuals entering the industry through each path.

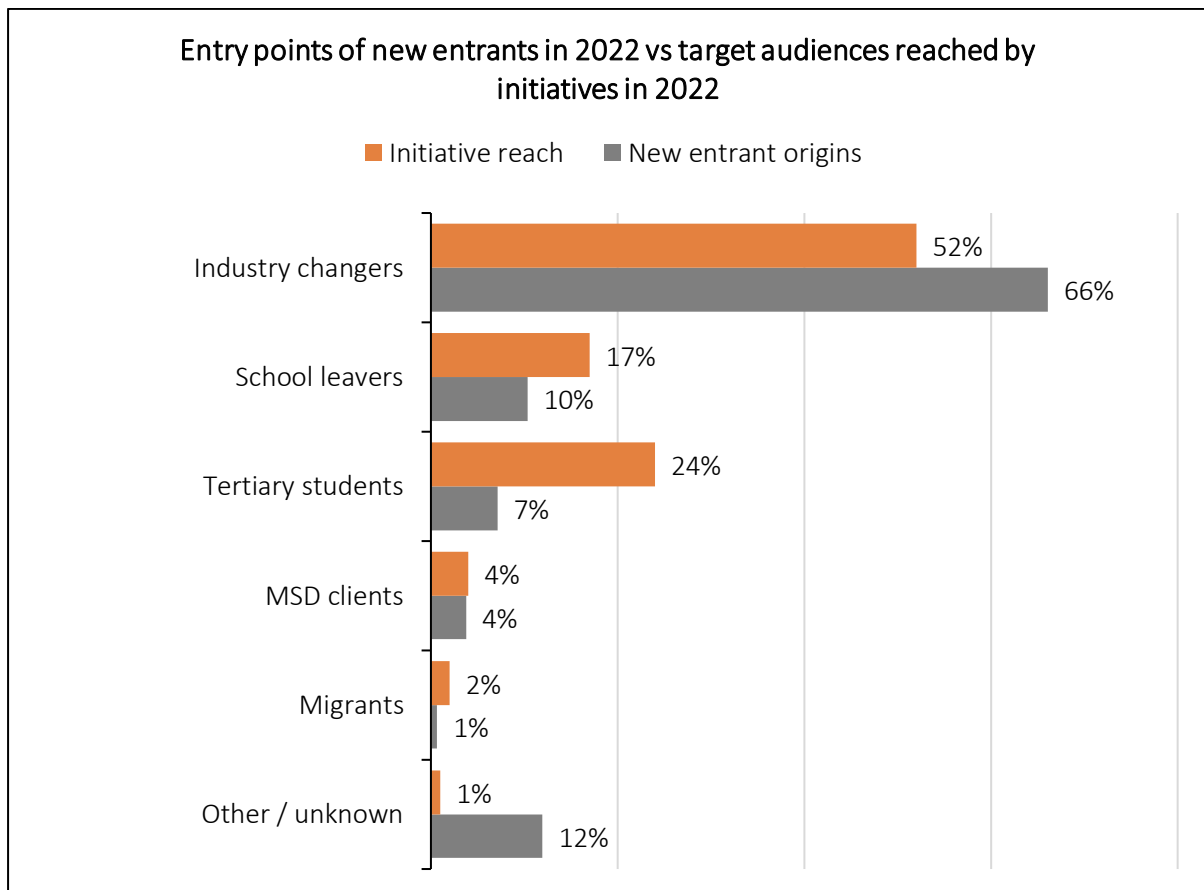


Figure 27: Comparing entry point breakdowns with initiative reach

Part 3: Effectiveness of existing initiatives

Overview of analysis

Earlier sections of this report:

- Identified the **entry points** into the construction & infrastructure sectors, and the rough volumes of people entering through each point (Part 1).
- Provided a high-level **overview of initiative types** that exist to support or promote entry into the workforce, estimated initiative reach and a small number of case studies (Part 2).

Part 3 of this report aims to measure the effectiveness of entry points and the initiatives supporting entry.

Measures of effectiveness

We are interested in understanding the effectiveness of initiatives to attract people into and retain people within careers in the construction and infrastructure sectors. For this work, we measure attraction and retention effectiveness as follows:

Effectiveness at attracting people into careers

- Total % of initiative cohort that enter the construction & infrastructure sectors within two years
- Total % of women cohort
- Total % of Māori and Pasifika cohort.

Effectiveness at retaining people in careers

- Total % of initiative cohort that enter the construction & infrastructure sectors that remains for two+ years
- Total % of women cohort
- Total % of Māori and Pasifika cohort.

Purpose and scope of measures

We have selected these measures because an initiative may be good at attracting a cohort into the workforce (for example, there may be a direct path into employment as part of the initiative), but have low industry retention (e.g., people leave within two years). On the other hand, an initiative may appear to have small numbers of total participants (i.e., low attraction), but a high retention rate – particularly for priority groups.

Other measures could also be used to evaluate an initiative's effectiveness. As such, these measures alone should not be used to make any claims about an initiative's effectiveness as a whole.

Characteristics of success

Aside from these measures, the interviews undertaken within this work also uncovered a variety of characteristics that successful initiatives typically have. These are explored more on page 44.

Data sources

IDI longitudinal data

To assess initiative effectiveness, we use a mixed-method approach. For many of the initiatives within scope, we can identify initiative participants in the IDI, and monitor whether or not they enter employment in the sectors, and for how long they are retained.

For this analysis, we have identified a starting cohort in a particular year, e.g., 2019, and tracked the number of them that are in employment one year later (in 2020), and still in the sectors two years after that (2022).

	Year engaged in initiative (Year 0)	Year in employment (+1 year later)	Year assessed for retention (+3 years later)
Analysis cohort	2019	2020	2022

Table 18: Years tracked for analysis cohort

Initiatives we have analysed using this approach include:

- Trades academies
- Pre-trades courses (including students funded by MPTT).

Initiative-supplied datasets

There are some initiatives for which data existed publicly or was supplied during the interviewing phase. For many of these initiatives, staff have a sense of how many participants are in employment 3-6 months later, but it is rare for these providers to track participants for much longer than this 3-6 month point. Initiatives in this group include specific cadetship programmes (anonymous commercial companies).

Modelling effectiveness

For many initiatives within scope of this work, we were unable to identify participants using the IDI, and initiative-owned datasets have not, or have not yet, been supplied. In these cases, we have used a modelling approach, drawing on what we do know about each initiative. **All initiative types** are analysed under this method, with our estimates being verified or enhanced by the data received.

An important part of our modelling approach is acknowledging the uncertainty and approximation in the inputs at this stage. To manage this, we input ranges rather than fixed data points, reflecting our estimate of the uncertainty for each initiative. The outputs of this model are therefore also presented as ranges.

The following section explores the results of these analyses.

Estimated employment and retention rates

Estimated employment rates

Using the data sources described above, we have developed tables of estimated employment rates broken down by initiative type (see Table 19). We observe that:

- **Cadetships and internship programmes have the highest conversion rate into employment.** However, this is arguably more an attribute of the initiative than a true ‘conversion rate’, as most programmes lead directly into a permanent role (all going to plan).
- **Secondary school programmes have relatively low percentages that go directly to employment.** However, analysis shown earlier shows that many trades academy participants go on to work in the sectors two or three years later (the rates below focus on conversion one year later). This could partially be explained by students remaining at school to participate in year 13 and moving to tertiary study before seeking employment.
- **Employment brokering and recruitment has the largest participant engagement, but the widest confidence interval for conversion into employment.** This is a broad category type, which includes everything from Jobs Skills Hubs (which have high conversion rates because they offer an intensive one-to-one job placement service) to recruitment services like Seek and TradeMe (which have much lower engagement intensiveness).

Initiative type	Est. total engagement 2019	Est. % in employment 2020	Est. # in employment
1. Secondary school programmes	4,500-9,000	15% - 29%	890-1,700
2. Tertiary programmes	23,000-59,000	34% - 81%	17,000-39,000
3. Cadetship & internship programmes	680-1,600	89% - 91%	610-1,500
4. Employment brokering & recruitment	66,000-130,000	36% - 38%	24,000-47,000
5. Talent attraction & promotion	17,000-40,000	4% - 5%	800-1,900
Total	110,000-240,000	-	43,000-91,000

Table 19: Estimated total engagement and employment by initiative type

Estimated industry retention

The IDI also provides a valuable data source to estimate retention in the sectors. We don’t have visibility of all initiatives in the IDI, but we can track people’s movements based on their entry points. Table 20 below shows the two-year retention rates for new entrants to the construction and infrastructure sectors based on their entry point. This analysis tracks a cohort that enter the workforce in 2016 (allowing for enough time to accumulate industry tenure).

Entry point	2-year retention rate
1. Secondary school leavers	40%
2. Tertiary graduates	40%
3. Industry changers	47%
4. Migrants	41%
5. Job seeker support	33%
6. Other / unknown	55%

Table 20: 2-year retention rate by entry point

Figure 28 below shows the retention curve of different groups in an industry. That is, of a cohort of new entrants in a particular year (2016 in this case), how many months are they retained in the industry for. We observe some differences in industry retention between entry point cohorts. We see that those previously on a job-seeker benefit have the lowest industry retention (just 23% retained for 36 months). Industry changers have the highest retention (35% after 36 months).

About 30% of the starting migrants are retained for at least 36 months. Note however, that this category encompasses several visa types, ranging from short term working holiday / work visas, to multi-year skilled migrant categories.

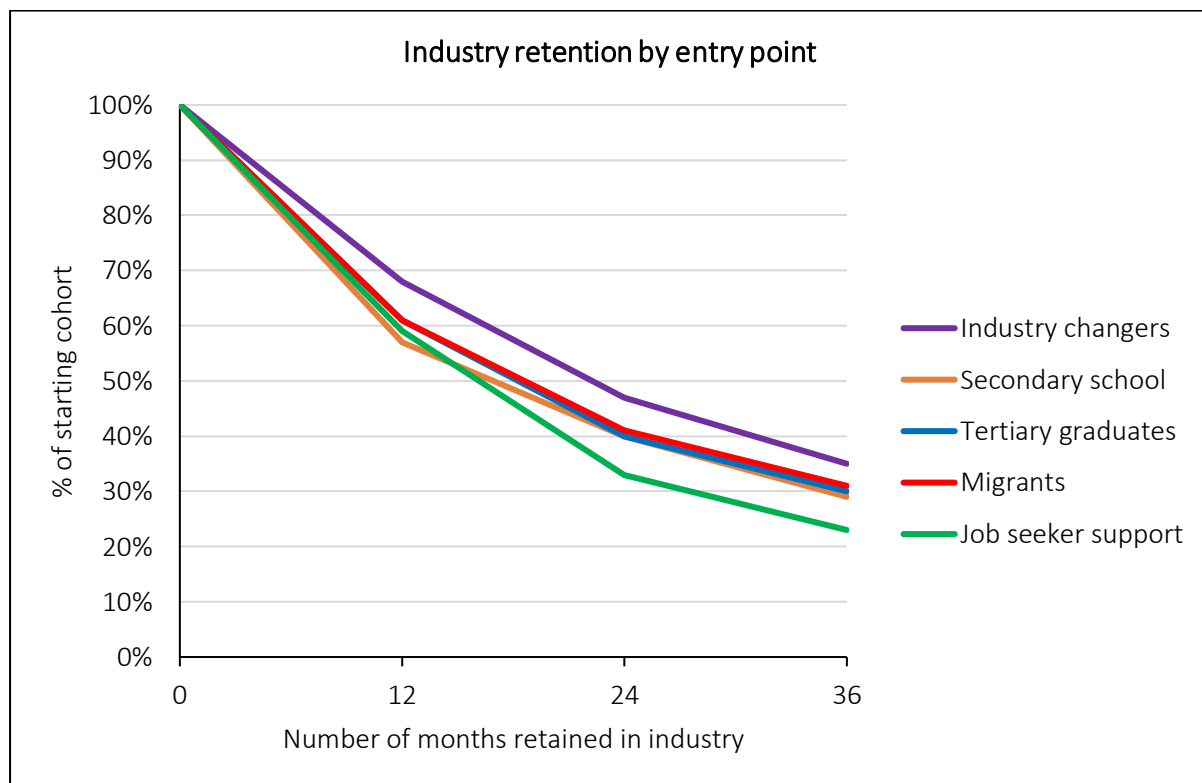


Figure 28: Industry retention by entry point (2016 starting cohort)

Qualitative insights into attributes of effective initiatives

Below are some common themes that are consistent across all the most effective initiatives that help to make them successful, based on discussions with initiative providers. Aspects cited for the theme's success are listed under each finding, and to protect the privacy of the schools that we interviewed we have not included their names.

Having a job lined up after the programme has finished

Having a job lined up after the initiative proved to be a hugely motivating factor for participants.

- This is often the case for many cadetship, internship, and apprenticeship programmes.
- A bonus if the programme is based in the intended workplace to get used to environment.
- Participants did not need to spend additional time and energy finding job afterwards.

Incorporating pastoral care and mentoring

Engagement with individuals can take place in many ways, from passive information sharing, to tutoring a course, all the way to one-on-one mentoring. An important difference between these methods is how much support individuals are given. Aspects included:

- Providing one-on-one mentoring or pastoral care saw the most people going into meaningful employment or apprenticeships. This was even more important for Māori and Pasifika focused initiatives.
- Building and retaining a family-like network with other participants and industry after the programme ends so there is support for the individuals to fall back on.

A great example of this is one secondary school's trades academy programme which is fully contextualised into their school environment and provides ample opportunity for one-on-one time with tutors and teachers.

Led by strong champions with passion for their work

The most successful interventions are often led by engaging and passionate individuals in small class settings. These individuals are the heart and soul of the programme which helps to give it something special.

- An important aspect was being supported by a few key and passionate individuals, sometimes volunteers like retired tradespeople who come to pass on their skills.
- There are concerns about the longevity of interventions after they or their volunteer support moves on, so finding suitable, passionate replacements is vital.

A great example is having the founder(s) of a trades academy be key individual(s) who work tirelessly to keep it at a high standard and help it expand to meet the interests of their students.

Being able to relate to role-model figures

Several secondary schools saw that providing access to / prioritising tutors who were women for young women on their programme brought the most engagement. Primarily this is because the young women then had relatable role models to look up to and inspire them to stick at the programme.

More than one session is best

Initiative duration also stuck out as an important factor, with interventions that have mandatory weekly attendance or were longer than a few hours having higher estimated percentages going onto meaningful employment or apprenticeships. Aspects of this include:

- Having consistent exposure and expectation to attend both helped to inspire and increase reliability of individuals when going onto look for or being offered employment.
- Especially for school leavers, having a programme that stretched over a few years allowed for the development of maturity, reliability, and a large enough skill set to have the best chance at seeking employment.

Incorporating life-skills, soft skills, and starting certifications

Often overlooked when thinking about preparing individuals for employment are the numerous other certifications and skills needed for success outside of formal / informal qualifications. Examples include:

- Drivers' licenses
- License endorsements / other vehicle training
- Health and safety certification / training
- Literacy and numeracy capabilities
- Soft skills like interview and communication skills.

Drivers' licenses are particularly important in construction and infrastructure as worksites can be in many different locations, and there is often an expectation to be able to operate other vehicles like forklifts as well. Similarly, literacy and numeracy skills are also crucial, especially for career progression beyond entry-level positions as they can then see a future for themselves within the industry.

Developing cultural competence in *at least* participant-facing staff

Downer highlighted that cultural competence of staff, particularly first-level managers is key for retention of Māori individuals who have cultural needs that may not be understood or met without this. For example, allowance to attend a Hui which might stretch over a few days, or respectful usage of shared workspaces. Wide-spread inclusion of cultural competence creates a welcoming and safe environment where everyone can feel respected.

Creating a network of organisations through multiple industries

When multiple funders and industry connections augment this it creates a much stronger network. Downer and Corrections both have scope across multiple sectors / industries, and with funding support from MSD they have facilitated many successful interventions. Corrections is a special case because as much as they provide employment and training within their system, they also help individuals find employment after release with industry partners like Downer.

Conclusions

Key findings

Entry points into the construction and infrastructure sectors

More than 80,000 people enter the construction and infrastructure sectors each year. People enter through various paths, and at different stages of their life and career. The main entry point is through what we refer to as industry changers - approximately 66% of all new entrants in 2022. They typically have prior work experience, but the majority are still young or relatively early in their career. Industries they have transitioned from include from within the wider construction industry, the manufacturing industry, and the retail, distribution, contact services industries.

A much smaller percentage (10%, 8,900 in 2022) are secondary school leavers - having left school in the year prior to entering the workforce. There are approximately 60,000 school leavers each year, so this represents about 15% of all school leavers. Just 7% of new entrants have recently completed tertiary study (i.e. have completed some pre-employment training) before earning income from a construction or infrastructure business for the first time.

Initiatives supporting entry

There are a broad range of initiatives that exist to support people into the workforce. In this work, we categorise initiatives into five main types (and sub types): secondary school programmes, tertiary programmes, cadetships and internships, recruitment and job brokering services, and talent attraction and promotion efforts.

We see that secondary and tertiary entry points are well-served - through a significant increase in trades academies in recent years, and a broad range of tertiary training delivery modes. Although there are a range of initiatives that industry changers can access and utilise (for example tertiary training courses, recruitment services, careers expo), few intentionally target this cohort (that we are aware of). This is a potential area for further investigation – see below.

Measuring initiative effectiveness

Each initiative has its own objectives and measures of success. For this work, we analyse this set of initiatives against our own two measures, as indicators of their ability to attract people into the construction and infrastructure sectors, as well as retain them in careers. Overall, existing initiatives appear to be effective at supporting into employment in the sectors. Attributes that appear to be linked to the likelihood of employment include having a direct path to employment as part of the initiative, pastoral care, duration of initiative and degree of active contact with participants. Examples of this include cadetship and internship programmes, as well as Jobs and Skills Hubs.

Industry retention is a second measure explored in this work. Although we observe some differences in industry retention between entry points, at this stage, it is difficult to conclude whether this is linked to the pre-employment initiatives they were involved with, or whether it is linked primarily to attributes of their most recent employment (and have therefore limited analysis into retention rates in this work).

Opportunity areas for future initiatives

There are a range of opportunities to support people into careers in the construction and infrastructure sectors. This section aims to highlight what we identify to be some potential opportunities.

1. Explore 'try before you buy' initiatives for potential industry changers

The opportunity

Two-thirds of new entrants to the construction and infrastructure workforces in 2022 were 'industry changers', and so it is important to consider where the front door is for this potential future pool of workers. There is unlikely to be one effective 'silver bullet' initiative that suits all industry changers, but rather, various initiatives to suite a diverse range of needs.

Work experience / taster programmes are one such way for industry changer to find the front door to the sectors. Initiatives of this type could help alleviate individuals' uncertainty through **no-regret exposure** of jobs in the construction and infrastructure sectors before they decide to leave their current employment.

Implementing 'try before you buy' initiatives could be offered by employers offering a combination of volunteering and learning in a practical setting. Other models could include weekend volunteer or work experience taster programmes, or evening courses.

Note that these initiatives should not aim to generate new interest about the sectors across a broad range of people. Rather, they should target and support those who already express an interest in changing industries. That is, these initiatives shouldn't aim to persuade, but rather to support entry. Rather than building a new pathway, this clears existing pathways by reducing barriers for potential industry changers.

Things to consider:

- **Range of exposure** - Creating exposure to the range of opportunities in construction & infrastructure. Not just one trade.
- **After hours events** - Creating opportunities around usual working hours (evenings, weekends) to allow someone to gain exposure before leaving their current job.
- **Clear next steps** - Have potential employers and training provider representatives attend the events to showcase and provide clear next steps for those interested.
- **Inclusive of all ages** - Existing taster courses appear to be aimed at school leavers. It is important to remember that a large proportion of industry changers have been out of school for many years and may feel excluded from such courses.

Existing initiatives to learn from and build on

- 1 or 3 day taster courses (e.g. [NZMA](#), [Wintec](#))
- Volunteering opportunities (e.g. [Habitat for Humanity](#), [Mitre 10 Helping Hands](#))

Further research to shape this opportunity

- Primary research would be beneficial to understand what steps industry changers *actually took* before changing industries. For example, did they have any industry exposure before making the switch (or if not, would they have liked this).

- A scan of existing programmes that could fit the ‘try before you buy’ model.
- Identify channels to promote initiatives through.

2. Bring the job to the person (create automatic doors)

The opportunity

This research has highlighted several initiatives which provide a direct path into employment. Most notable of these are cadetship and internship programmes, with subsequent employment rates upwards of 80%. There is an opportunity to adopt elements of this in other parts of the entry point network.

Two examples of where this could be done more effectively are in trades academies and pre-trades courses. Trades academy school liaisons we talked to spoke of their own connections and networks with employers, which they drew on to match students with employment opportunities. This process works, as long as the school liaison remains at the school (and poses risks if that individual leaves). We have also heard from employers that they want to be more connected with schools and trades academies, but don’t know how to engage. One solution to address both needs would see the role of connecting students with employers centralised, i.e. - bringing a job to the student, and creating an automatic door into the workforce. A similar process could work for tertiary programmes.

The key component of this model is ‘connector’ organisations. That is, organisations and individuals tasked with matching individuals to the right employment opportunity (and on scale). These connectors would be well-networked with employers, and aware of the range of opportunities available. Such organisations already exist, including Jobs and Skills Hubs, Ara and Education to Employment (E2E) programmes, with examples noted below. In essence, this opportunity looks to create and build on existing programmes that seek to reduce the silos in the network, create strong connection points and promote collaboration across the career journey.

Things to consider:

- **The role of ‘connectors’** - Specific organisations or individuals tasked with connecting employers with those waiting at the door. Building on what already exists, rather than re-inventing the wheel.
- **Cadetships on scale** - Cadetship programmes are proven to be effective, but is it feasible to scale these up to meet future demand?
- **Group employment schemes** - Region-based groups of SMEs could serve a similar function to large companies like Downer to run similar programmes.

Existing initiatives to learn from and build on

- Existing connectors (e.g. Jobs and Skills Hubs, [Ara Education Charitable Trust \(AECT\)](#))
- Cadetship programmes (e.g. Downer, Fulton Hogan, North Power)
- Education to employment programmes/brokers (e.g. [Tai Tokerau Trades Training Education to Employment Brokerage \(EEB\)](#), [Youth 2 Work](#), [Southern Youth Development](#))

Further research to shape this opportunity

- Further understanding into the role that Jobs and Skills Hubs are already doing in this space.

- Interviews with employers, schools and tertiary providers to understand how they could see this working more effectively.

3. Create a wāhine peer-to-peer nationwide network

The opportunity

This research identified several initiatives in place to promote careers in the construction and infrastructure sectors to women. This includes those run by Women in Trades, events facilitated by the National Association of Women in Construction NZ, and the Construction Sector Accord's Diversity in Construction initiative. There are also a number of careers expo events run around the country. It is difficult to determine precisely the effectiveness of these talent attraction and promotion events at attracting women into the construction and infrastructure sectors, but our modelling of loosely analogous initiatives within the food and fibre sector suggests that attraction rates are low.

Insights from the qualitative analysis highlighted the importance of having role models who are women to encourage engagement, but these are hard to come by, particularly for schools and trades academies. To create practical cost-effective initiatives, you must intervene where you have critical mass of people.

One way to tackle this would be to expand the existing Women in Trades platform to create a nationwide network of women to support other women in the sectors. That is, to create a self-sustaining way for peer-to-peer support in answering questions (e.g. what it is like working in the industry, personal experiences in the workplace) and seeking help.

Things to consider:

- **Facilitator role** - Who will facilitate such a network, and how will it be funded. Collaboration across construction and infrastructure?
- **Inclusivity across age groups** - Women of all ages could benefit from such support (not just school leavers, which promotion websites are often aimed at).
- **Supporting groups** – How can all individuals, including men, support such a network?

Existing initiatives to learn from and build on

- In Construction / Infrastructure (e.g. Women in Trades, Girls with Hi-Vis)
- In other sectors (e.g. NZ Young Farmers, Filipino Farmers Association)

Further research to shape this opportunity

- Who could facilitate / establish a nationwide network - undertake a feasibility study in the first instance.

4. Increase pastoral care support for Māori and Pasifika

The opportunity

We identified several initiatives specifically aimed at Māori and Pasifika. However, we also observe that conversion rates into employment appear to be lower compared to non-Māori/Pasifika in the same initiative cohorts (and similar trends have been observed for industry retention). This was the case for trades academy students, apprentices and pre-trades students.

What is promising, is the employment rates of Māori and Pasifika learners engaged in the MPTT programme. We observe that employment rates of Māori and Pasifika learners who received MPTT scholarship funding were on par with non-Māori/Pasifika learners in pre-trades courses. That is, participation in the MPTT programme appeared to have closed the ethnic difference in employment rates. Further research is needed to understand the relative contribution that each component of the MPTT programme has (including the scholarship funding that learners receive, as well as the pastoral support).

Although further investigation is first needed to validate whether this was, in fact, the key attribute supporting Māori and Pasifika into employment, pastoral care should continue to be a key component in future initiatives, and in increased volumes.

Existing initiatives to learn from and build on

- Māori and Pacific Trades Training (MPTT)

Further research to shape this opportunity

- Interviews with MPTT scholarship funding recipients to tease out the relative importance of each aspect of the MPTT programme in enabling their success (pastoral care vs funding).
- Engage with Te Pūkenga and PTEs to tease out what effective initiatives may look like in the coming year to provide pastoral care to learners engaged in apprenticeships and ITP pre-trades courses.

5. Promote industry-government-tertiary collaboration

The opportunity

In this work, we have identified several initiatives that have been designed and facilitated by multiple groups. Collaboration initiatives often include 1) a funder (e.g. MBIE), 2) an existing connection to people available to work (e.g. MSD, Jobs Skills Hubs), and 3) a job opportunity (e.g. Downer, Fulton Hogan). Partnerships prove successful when a single group is not well-suited to all three roles.

Examples we observe in this work include MSD partnering with groups like Downer and Fulton Hogan to provide funding and client connections for internship and cadetship type programmes. Another example of such collaboration is Corrections connecting with work-based tertiary providers to connect people directly into training where there is a need. Things to consider:

- **Brokering role** - Who is actively identifying and facilitating collaboration opportunities?
- **Organic collaboration** – Where does this type of collaboration appear to occur organically? How can this be replicated elsewhere? E.g. the Downer-type internship programmes.

Existing initiatives to learn from and build on

- Jobs Skills Hubs – funded by MSD, connecting with construction businesses and tertiary organisations.

Further research to shape this opportunity

- A more comprehensive scan of all such initiatives (and additional evaluation of these) is needed.

Appendices

Appendix 1: Industries within scope

Sector	Industry group	Industry	Workforce size
Construction	Onsite Construction and masonry	Heavy Machinery and Scaffolding Rental and Hiring	2,580
		Carpentry Services	5,800
		Concreting Services	6,700
		Fire and Security Alarm Installation Services	10,740
		Hire of Construction Machinery with Operator	2,080
		House Construction	61,700
		Non-Residential Building Construction	18,100
		Other Building Installation Services	5,500
		Other Construction Services	16,300
		Other Residential Building Construction	7,300
		Roofing Services	6,100
		Site Preparation Services	15,800
		Structural Steel Erection Services	1,580
		Bricklaying Services	3,300
	Offsite Construction	Prefabricated Metal Building Manufacturing	590
		Glazing Services	2,880
		Concrete Product Manufacturing	4,830
		Prefabricated Wooden Building Manufacturing	660
		Wooden Structural Fittings and Components Manufacturing	7,500
		Ready-Mixed Concrete Manufacturing	1,930
		Architectural Aluminium Product Manufacturing	6,890
	Electrical, Electronic, Electrotechnology and Telecommunications	Domestic Appliance Repair and Maintenance	1,510
		Electrical Services	26,100
		Electronic (except Domestic Appliance) and Precision Equipment Repair and Maintenance	1,970
		Other Telecommunications Network Operation	5,045
		Other Telecommunications Services	1,270
		Wired Telecommunications Network Operation	6,240
		Painting and Decorating Services	16,800
		Plastering and Ceiling Services	8,100
		Tiling and Carpeting Services	6,200
Plumbing, Drainlaying and Gas fitting		Air Conditioning and Heating Services	7,700
	Plumbing Services	17,500	
Infrastructure	Civil Infrastructure	Land Development and Subdivision	2,500
		Other Heavy and Civil Engineering Construction	20,400
		Road and Bridge Construction	24,900
	Utilities	Electricity Distribution	6,190
		Fossil Fuel Electricity Generation	2,418
		Hydro-electricity Generation	1,912
		On Selling Electricity and Electricity Market Operation	1,425

Sector	Industry group	Industry	Workforce size
		Other Electricity Generation	55
		Gas Supply	640
		Sewerage and Drainage Services	50
		Water Supply	1,840
Support Services	Construction and Infrastructure Services	Architectural Services	10,700
		Engineering Design and Engineering Consulting Services	35,000
		Surveying and Mapping Services	3,220
	Retail and Wholesale	Hardware and Building Supplies Retailing	24,400
		Floor Coverings Retailing	3,290
		Electrical, Electronic and Gas Appliance Retailing	6,760
		Furniture and Floor Coverings Wholesaling	1,940
		Plumbing Goods Wholesaling	1,450

Table 21: Industries within scope (workforce size at 2020)

Appendix 2: Interview question guide

We would now like to ask you a few questions about the initiatives your organisation is involved with, the typically demographics of participants, and the impacts you think the initiative is making on participants.

Part 1: Understanding the intervention

These first few questions will help us understand a bit more about the intervention(s).

1. Can you tell us a bit about [the initiative / intervention / project]?
2. How long has it been running for?
3. What industries does it relate to? Specific to one (e.g., residential building) or general?
4. How many people are engaged with it each year?
5. How long are individuals engaged with it? Hours/days/months/years?
6. Roughly how much investment is put into it (if known / able to be disclosed)?
7. Is talent attraction the only objective of your intervention, or are there other objectives (e.g., public perception of the industry, awareness)?

Part 2: Demographics of participants

8. When does the intervention typically happen in an individual's life / career?
9. What is the typical demographic composition of those engaged with the intervention?
 - Age, gender, ethnicity, socioeconomic background.

Part 3: Impact of the Intervention

10. Do you know / have a sense of what participants were doing after the project / initiative?
 - How many went into industry-relevant **training**?
 - Completed or not completed?
 - How many entered the **workforce**?
 - Timeline between intervention and when they entered the workforce (years?)
 - Where else?
11. Can you think of any other ways we can track your participants (in the IDI or otherwise)

Closing

That comes to the end of our questions. Thank you so much for participating in this interview and helping us. Before we finish, do you have any other comments to share or questions for us?