

Degree apprenticeships in Aotearoa New Zealand Quantitative analysis

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EXECUTIVE SUMMARY

This summary encompasses two technical documents pivotal to understanding the feasibility and implementation of degree-level apprenticeships in New Zealand.

Part A: Understanding the Opportunities in New Zealand

This document analyzes potential industries for degree-level apprenticeships based on employee numbers and qualification levels using data from Statistics New Zealand. It identifies key sectors such as Engineering Design and Consulting Services, House Construction, and Architectural Services as prime candidates due to their high demand for skilled employees. The analysis categorizes industries into four quadrants, highlighting those with both high employee numbers and skill levels, thus presenting significant opportunities for apprenticeship programs.

Part B: Lessons from England

This document reviews the growth of degree-level apprenticeships in England from 2015/16 to 2022/23, particularly in construction and built environment sectors. Using data from the UK Department for Education, it showcases the rapid expansion and discusses the enrolment patterns in England. It notes the importance of adapting the successful UK model to fit New Zealand's unique context.



PART A: Understanding where the opportunities lie: An analysis of ConCOVE industries by number of employees and their qualification attainment

<u>Objective</u>: This analysis sought to identify industries that might be viable for degree-level apprenticeships because they have a high skill requirement and a large number of employees.

<u>Approach</u>: This analysis categorised the industries within the scope of ConCOVE based on the total number of employees and the percentage of employees with qualifications at Level five or higher on the New Zealand Qualifications and Credentials Framework. We also used these data to identify those industries with the largest number of similarly qualified staff.

<u>Data Collection</u>: This analysis was based on a customised data set from Statistics New Zealand. The dataset presents the highest qualification obtained by people aged 15 years or older employed in New Zealand who were usually resident in New Zealand at the 2018 census. These data were disaggregated by industry reported at the ANZSIC06 level four classification.

<u>Data Processing</u>: To clearly represent our findings visually, we produced a fourquadrant chart (see Figure One). Each axis of this chart was determined by calculating the mean value for the total number of employees and the mean value for the percentage of employees with qualifications at level five or higher.

This chart serves as a useful tool for identifying industries that are large and have a high percentage of highly qualified staff, which are potential candidates for degree-level apprenticeships.



Source: Statistics New Zealand. 2019. Customised data set – employees by industry by highest qualification – 2018 census.

Note: The data point for the 'House Construction' industry (51,000 employees with 20 per cent qualified at level five or higher was excluded for readability.

Each quadrant was defined as follows:

- Quadrant I (Top-Right): Industries with a higher-than-average number of employees and a higher-than-average percentage of employees with qualifications at level five or higher.
- Quadrant II (Top-Left): Industries with a lower-than-average number of employees but a higher-than-average percentage of employees with qualifications at level five or higher.
- Quadrant III (Bottom-Left): Industries with a lower-than-average number of employees and a lower-than-average percentage of employees with qualifications at level five or higher.
- Quadrant IV (Bottom-Right): Industries with a higher-than-average number of employees but a lower-than-average percentage of employees with qualifications at level five or higher.

<u>Visualisation</u>: A scatter plot was generated with the x-axis representing the total number of employees and the y-axis representing the percentage of employees with qualifications at level five or higher. Red dashed lines were drawn at the mean values of both variables to distinguish the four quadrants.

<u>Results</u>: The following (Quadrant I) industries had the highest skilled and relatively high numbers of employees:

- Engineering Design and Engineering Consulting Services,
- House Construction, and
- Architectural Services.

These industries accounted for 40,443 employees, equivalent to 12 per cent of all construction and infrastructure employees in 2018.

The industries with fewer but similarly skilled employees (Quadrant II) were:

- Other Heavy and Civil Engineering Construction,
- Electrical Services,
- Road and Bridge Construction,
- Wired Telecommunications Network Operation,
- Hardware and Building Supplies Retailing,
- Non-Residential Building Construction,
- Other Telecommunications Network Operation,
- Plumbing Services,
- Electricity Distribution
- Surveying and Mapping Services,
- Painting and Decorating Services,
- Other Construction Services n.e.c.,
- Electrical, Electronic and Gas Appliance Retailing,
- Air Conditioning and Heating Services,
- Site Preparation Services, and
- Wooden Structural Fitting and Component Manufacturing

Those Quadrant II industries had 27,897 employees, equivalent to 9 per cent of all employees. Each industry may have a relatively high demand for degree-level apprenticeships but would potentially generate fewer potential enrolments than those in Quadrant I.



The industries in Quadrant III comprised 21 industries with 200,868 employees, accounting for 61 per cent of all employees. These industries have fewer employees and lower-than-average skill levels.

Finally, the remaining 12 industries in Quadrant IV had relatively more employees but, on average, lower skill levels. These industries had 57,534 employees, or 18 per cent of the total number of employees.

Profile of qualification attainment: When we broaden our frame of reference to encompass the fifteen industries with 5,000 or more employees, we detect three general categories.

We have categorised three industries as ones where industries where degreelevel training is a registration requirement or a customary expectation. These industries are Architectural Services, Engineering Design and Engineering Consulting Services, and Wired telecommunications network operations.

There are three additional industries where level four qualifications are more common: Electrical Services, Plumbing Services, and Air Conditioning and Heating Services.

Implications: Industries with more employees and higher skill requirements on average (Quadrant I) are more likely to have higher demand for degree-level apprenticeships than other industries.

However, Quadrant IV industries comprise more employees, accounting for six of the ten industries with the highest number of degree-qualified staff (see Table 1).

The results suggest that a small number of industries have the highest demand for degree-qualified staff. However, the high proportion of degree-qualified staff in (Quadrant II) industries with relatively few employees may offer niche markets for innovative programmes.

Table one: Industries with the greatest number of employees with level five or higher qualifications, 2018 census

Industry	Category	Quadrant	Employees with level 5+ qualifications (no.)	Employees with level 5+ qualification (% of all employees)
Engineering Design and Engineering Consulting Services	More employees Higher skills	1	16,701	68%
House Construction	More employees Lower skills	3	10,536	20%
Architectural Services	More employees Higher skills	1	7,242	79%
Other Heavy and Civil Engineering Construction	More employees Lower skills	3	5,439	27%
Electrical Services	More employees Lower skills	3	4,605	21%
Road and Bridge Construction	More employees Lower skills	3	3,942	24%
Wired Telecommunications Network Operation	More employees Higher skills	1	3,933	57%
Hardware and Building Supplies Retailing	More employees Lower skills	3	3,477	20%
Non-Residential Building Construction	More employees Lower skills	3	3,309	27%
Other Telecommunications Network Operation	Fewer employees Higher skills	2	2,112	58%



Several industries listed in Figure Two have a high proportion and number of people with advanced technical qualifications. This finding suggests that either they offer a strong platform for expanding access to degree-level education and and training, or existing training and education arrangements offer scope for people to develop skills and competencies at a range of levels. While this analysis does not consider emerging or smaller industries with significant growth potential and skill needs, they may also be suitable candidates.

<u>Limitations</u>: This methodology relies on the data's accuracy and representativeness. Following the 2018 Census, Statistics New Zealand assessed the highest qualification variable as moderate quality and the industry variable as high quality.

Using data from the 2018 census means that the analysis may not capture the most current industry trends or shifts in employment and qualification patterns.

Please note that the diagram only visualises two dimensions of the industries' characteristics, and there may be other relevant factors not considered in this analysis. This approach may oversimplify the complex dynamics within industries, such as specific job roles, varying levels of skill requirements within the same industry, and emerging sectors not fully captured by traditional classification systems.

This analysis does not account for skills mismatches, a phenomenon whereby employees possess qualifications and competencies that do not align with the demands of their job, either being overqualified or underqualified for the tasks they are required to perform.

Readers should also note that employees within a given industry generally have a wide range of skill requirements. For example, the Architectural Services industry has eleven distinct occupations with varying skill requirements.





PART B: Understanding where the opportunities lie: Lessons from England

<u>Objective</u>: This analysis described changes in the number of degree apprenticeships in England between 2015/16 and 2022/23. We also examined data on the mix of construction and built environment apprenticeships by vocation in England.

<u>Approach</u>: We used administrative data produced by the Department for Education in the United Kingdom to describe the patterns of enrolments in degree-level and masters-level apprenticeships with a particular focus on the construction and built environment industry.

<u>Data Collection</u>: This analysis was based on official statistics produced by the Department for Education in the United Kingdom. The datasets present the total number of enrolments and new starts in degree apprenticeships.

<u>Data Processing</u>: We presented the flow (new enrolments) and stock (total number at each year) of degree apprenticeships in gross numbers and relative to the overall total number of apprenticeships, including by the variables of interest where these were available.

<u>Visualisation</u>: The results were presented as bar and line charts (flow and stock numbers) and tables (percentage shares and extrapolated results).

<u>Results</u>: The total number of degree-level apprenticeship enrolments in England grew rapidly from 830 in 2015/16 to 71,590 in 2022/23. A similar pattern applied to masters-level apprenticeships which grew from 30 to 57,310 over the same period (see Figure Three and Table Two).



Enrolments in degree-level apprenticeships in construction and the built environment have also grown rapidly. The total number of new starters of degree-level apprenticeships in this industry was 3,175 up 54 per cent from 2,056 in 2018/19. Construction and built environment new starters made up 13 per cent of all new starters of degree-level apprenticeships in 2022/23, down from 19 per cent in 2018/19 (see Table Three).

Most new enrolments in degree-level apprenticeships in construction and the built environment industry over the last five years were by people pursuing careers as charted surveyors (6,280 or 48 per cent) and civil engineers (3,100 or 24 per cent) (see Table Four).

A list of the ten vocations in construction and the built environment industry with the largest number of new starters in degree-level apprenticeships over the period is presented as Table Five.



Year	Degree-level <u>New</u> starts	Masters-level <u>New</u> starts	Degree-level Total enrolments (no.)	Masters-level Total enrolments (no.)	All apprenticeships Total enrolments (no.)	Degree-level Total enrolments (%)	Masters-level Total enrolments (%)
2015/16	740	30	830	30			
2016/17	1,650	50	2,450	80			
2017/18	6,370	4,500	8,680	4,580			
2018/19	10,820	11,660	18,560	15,990	393,380	5%	4%
2019/20	15,050	15,410	31,990	29,890	322,530	10%	9%
2020/21	19,630	19,570	45,620	43,670	321,440	14%	14%
2021/22	23,550	19,680	60,690	51,570	349,190	17%	15%
2022/23	25,030	21,760	71,590	57,310	337,140	21%	17%

Table two: Number of degree-level and masters-level apprenticeships in England by type, 2015/16 to 2022/23

Sources: 2015/16 to 2017/18 data: Department for Education, Permanent data table 'Subjects and levels - detailed series' from 'Apprenticeships and traineeships', UK Government. Retrieved on 21 February 2024: URL: https://explore-education-statistics.service.gov.uk/data-tables/permalink/6682fd2a-fe26-4af9-c71e-08dc2e333b3f

2018/19 to 2022/23 data: Department for Education, Permanent data table, Subjects - Starts, Enrolments by Age, Sex, Ethnicity, LLDD, SSA, Detailed level, STEM' from 'Apprenticeships', UK Government. Retrieved on 21 February 2024: URL: https://explore-education-statistics.service.gov.uk/data-tables/permalink/704ff79a-0f21-4184-c71d-08dc2e333b3f"

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Year	Degree-level <u>New</u> starts (no.)	Degree-level <u>New</u> starts (% of all new starts)
2018/19	2,056	19%
2019/20	2,744	18%
2020/21	2,275	12%
2021/22	2,880	12%
2022/23	3,175	13%

Source: Department for Education, Underlying data - apprenticeship starts, UK Government. Retrieved on 21 February 2024: URL: <u>https://content.explore-education-</u>statistics.service.gov.uk/api/releases/65138748-e0ca-4ab1-aa3b-27c8312c6376/files/3ea562b6-195e-4403-9a00-bf2f55fe97f9

Table four: Top ten vocations among new starts in degree-level apprenticeships in construction and the built environment in England, cumulative new starts, 2018/19 to 2022/23

Category	Total (cumulative new starts)	Total (cumulative new starts) (% of all)
Chartered Surveyor (Degree) (ST0331)	6,280	48%
Civil Engineer (Degree) (ST0417)	3,100	24%
Building Services Design Engineer (Degree) (ST0372)	750	6%
Construction Quantity Surveyor (Degree) (ST0045)	460	4%
Construction Site Management (Degree) (ST0047)	340	3%
Building Control Surveyor (Integrated Degree) (ST0652)	290	2%
Architectural Assistant (Integrated Degree) (ST0534)	130	1%
Transport Planner (Integrated Degree) (ST0698)	90	1%
Design and Construction Management (Degree) (ST0044)	50	0%
Building Services Engineering Site Management (Degree) (ST0040)	40	0%
Total	13,130	100%

Source: "2018/19 to 2022/23 data available only: Department for Education, Permanent data table

'Subjects - Starts, Achievements, Enrolments by Age, Sex, Ethnicity, LLDD, SSA, Detailed level, Standard-framework name and code' for 6, Architect (Integrated Degree) (ST0533), Architectural Assistant (Integrated Degree) (ST0534), Bricklayer (ST0095), Building Control Surveyor (Integrated Degree) (ST0652) and 71 other filters in England between 2018/19 and 2022/23', UK Government. Retrieved on 21 February 2024: URL: https://explore-education-statistics.service.gov.uk/data-tables/fast-track/2d65b4d1-d95d-40a5-6630-08dc0dea598f"

Year	Degree-level Total enrolments (no.)	Share of degree-level enrolments (%)	Share of all apprenticeships (%)
2018/19	3,230	17%	1%
2019/20	5,420	17%	2%
2020/21	6,870	15%	2%
2021/22	8,530	14%	2%
2022/23	9,850	14%	3%
Average	6,780	15%	2%

Table five: Number of degree-level enrolments in construction and the built environment in England, 2018/19 to 2022/23

Source: Department for Education, Enrolments for 'Subjects - Starts, Achievements, Enrolments by Detailed level, Degree flag, Std-fyk, flag, STEM, SSA T1 and 2, Route' for 6, Construction and the Built Environment and Higher Apprenticeship in England between 2018/19 and 2022/23: URL: https://explore-education-statistics.service.gov.uk/data-tables/permalink/facaaa5b-101f-4937-4b17-08dc344b73cf