

Economics Working Paper Series
Faculty of Business, Economics and Law
Auckland University of Technology

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2026/04

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Abstract

Research and policy often summarise higher education using broad tertiary categories. Using New Zealand Household Labour Force Survey microdata (2016–2024), this paper shows why that aggregation matters. Separating postgraduate, bachelor's, and certificate qualifications reveals a steep hierarchy: in 2024, postgraduate and bachelor's premiums are about 34% and 24% relative to secondary education, while the certificate premium is near zero. Aggregation also distorts gender comparisons. Pooled estimates suggest women earn higher tertiary returns than men, but this difference largely disappears once qualification levels are separated: it is compositional, reflecting men's concentration in low-return certificates. Disaggregation by qualification level is therefore essential.

Keywords: Higher education, Returns to education, Qualifications, Vocational education, Gender, New Zealand

1 Introduction

Tertiary education is widely regarded as a foundation of labour market success and social mobility (Psacharopoulos and Patrinos 2018; Card 1999). In New Zealand, as elsewhere, individuals with tertiary qualifications earn substantially more on average than those with secondary education alone (Hyslop, Le, and Riggs 2020; Mahoney 2014). Yet tertiary education encompasses a wide range of credentials—from short vocational certificates to doctoral degrees—that may carry very different labour market values. Most existing evidence for New Zealand collapses these into a single category, comparing “tertiary” to “secondary” and reporting a mean return. This paper asks what that aggregation hides.

The question is not merely one of measurement precision. Aggregating across qualification levels may be misleading. If the return to a bachelor’s degree differs sharply from the return to a vocational certificate, then any statistic computed over the pooled “tertiary” group depends on the mix of credentials within it—and that mix may differ systematically across groups of workers. A comparison that appears to describe how the labour market rewards education may instead reflect who holds which qualification. The clearest case, developed below, is gender: men and women hold different tertiary credentials in different proportions, so a pooled comparison of their returns conflates the reward to a credential with its distribution.

This paper estimates wage returns to tertiary education in New Zealand from 2016 to 2024 using Household Labour Force Survey microdata, disaggregated by qualification level. The central contribution is to separate the returns to postgraduate, bachelor’s, and certificate qualifications—a distinction still often obscured in aggregate measures of tertiary returns—and to show that this disaggregation changes the substantive conclusions one would draw from the data. Two findings carry the argument. First, the three qualification levels occupy a steep and persistent hierarchy: postgraduate and bachelor’s degrees command large premiums, while certificate-level credentials yield a limited premium, and one that has declined toward zero over the period. Certificates—a large segment of tertiary provision in New Zealand, publicly funded and central to skills and workforce policy—are, in hourly wage terms, barely distinguishable from secondary schooling by the end of the period.

Second, this heterogeneity resolves an apparent puzzle about gender. Estimated with a single tertiary dummy, women’s returns appear considerably larger than men’s, a gap

that might be misread as evidence that the labour market rewards men’s and women’s tertiary qualifications differently. Estimated separately by qualification level, this apparent difference largely disappears: by 2024, men and women earn statistically indistinguishable premiums within postgraduate, bachelor’s, and certificate qualifications, and the pooled gap is mainly compositional. Men are far more likely than women to hold certificates—the credential with the lowest returns—so the pooled “tertiary” category is, for men, weighted toward low-return credentials. The apparent female advantage is largely an artefact of aggregation, not a feature of how the labour market rewards qualifications. The argument follows directly from comparing returns and credential shares across the two groups.

The paper’s contribution is deliberately focused: it shows that the standard practice of treating tertiary education as a single category obscures a hierarchy of credentials steep enough to change substantive conclusions, and that disaggregating by qualification level is therefore essential for interpreting returns—and gender differences in returns—correctly. The estimates are descriptive rather than causal, and the question of why men and women sort into different credentials lies beyond the paper’s scope; Section 3.3 sets out these boundaries.

These findings speak to an issue that extends well beyond New Zealand. Higher education systems in most countries encompass degree, certificate-level, and vocational qualifications, and research and policy routinely summarise them with broad tertiary or higher-education categories. The New Zealand evidence shows how much such categories can conceal: a limited and declining premium for intermediate vocational credentials, consistent with patterns documented in the United Kingdom (Espinoza and Speckesser 2022) and elsewhere, and a gender difference in returns that is largely an artefact of credential composition. For policy, the limited certificate premium raises questions about the hourly wage value of a large part of the vocational education system, while the compositional account of the gender gap implies that interventions aimed at gender equality in returns should address the upstream segregation of men and women into different credentials, not the within-credential reward structure—which the evidence here shows to be broadly similar.

The remainder of the paper proceeds as follows. Section 2 reviews the literature on returns to tertiary education and the heterogeneity it conceals. Section 3 describes the

data and empirical strategy. Section 4 presents the results: the qualification hierarchy and the declining certificate premium (Section 4.1), and the compositional account of the gender gap (Section 4.2). Section 5 discusses implications and concludes. Sectoral and distributional results, which document further heterogeneity in returns but are not central to the argument, are reported in an Online Appendix.

2 Literature Review

2.1 Returns to higher education: a brief overview

The economic return to education is among the most extensively documented relationships in applied economics. Since the foundational work of Mincer (1974) and Becker (1964), a large literature has established that additional education is associated with higher earnings, with a global private return of approximately 9% per year of schooling (Psacharopoulos and Patrinos 2018). Returns to higher education specifically have risen in many countries over recent decades, even as tertiary attainment has expanded (Psacharopoulos and Patrinos 2018; OECD 2024).

A common feature of much of this evidence is that it treats higher or tertiary education as a single category, comparing it with secondary attainment and reporting an average return.¹ This is a substantive limitation rather than a matter of convenience. Higher education in most systems spans qualifications with very different durations, fields, and labour-market orientations, from short vocational certificates and diplomas to bachelor’s and postgraduate degrees. A single average return is informative only if these credentials are reasonably homogeneous in value—an assumption that the international evidence reviewed next calls into question.

2.2 Heterogeneity by qualification level

A growing body of international research shows that returns to higher education vary substantially by the level and type of qualification. The distinction most relevant to this paper is between degree-level qualifications and sub-degree vocational credentials—certificates and diplomas. Degree-level qualifications consistently command large premi-

1. Throughout, “wage premium” refers to a regression-adjusted wage differential by highest qualification, relative to a baseline of secondary education.

ums, and postgraduate qualifications larger ones still (Altonji, Arcidiacono, and Maurel 2016; Psacharopoulos and Patrinos 2018). Sub-degree vocational credentials present a more mixed and, in several countries, deteriorating picture.

Evidence from the United Kingdom is particularly developed. Espinoza and Speckesser (2022) document low and in some cases negligible wage returns to higher technical and intermediate vocational qualifications, especially when compared with academic credentials at a nominally similar level of the framework. The wage value of such qualifications depends heavily on field and on whether they lead to occupational licensing or regulated trades; broad-based certificates offer little wage advantage over upper-secondary schooling on average. Similar heterogeneity has been documented across European systems, where vocational credentials yield strong early-career returns in some countries but flatter lifetime profiles than academic qualifications (Hanushek et al. 2017).

The pattern extends well beyond the United Kingdom. In the United States, a long line of research on community colleges distinguishes the returns to associate’s degrees and diplomas from those to shorter certificates: Kane and Rouse (1995) established substantial returns to two-year college credentials, and subsequent work using administrative data finds sizeable earnings returns to associate’s degrees and diplomas alongside much smaller returns to certificates, with wide variation across fields of study (Jepsen, Troske, and Coomes 2014). Across Europe, average returns to vocational and academic qualifications are broadly comparable at a given level, but with substantial variation across countries (McGuinness et al. 2025), and meta-analytic evidence indicates that the advantages of vocational education operate primarily through employment rather than wages (Kemper et al. 2025). Two regularities from this literature are directly relevant here. First, the labour-market value of sub-degree credentials depends heavily on their level and field: higher-level diplomas and technically oriented programmes carry meaningful premiums, while shorter and broad-based certificates often do not (Jepsen, Troske, and Coomes 2014; Espinoza and Speckesser 2022). Second, vocational credentials frequently yield employment returns—higher employment probability and stability—that are not visible in hourly wage premiums (Kemper et al. 2025; OECD 2024).

The implication is that the heterogeneity hidden within broad “tertiary” or “higher-education” categories is not a peripheral measurement issue. Where sub-degree credentials account for a substantial share of post-school qualifications in a given workforce,

and where their wage value differs sharply from degree-level credentials, the aggregate return depends heavily on the qualification mix of the comparison group. New Zealand is a useful case for examining this empirically, for several reasons. Its qualifications framework (the NZQF) is a single unified structure that assigns one level to each academic and vocational credential, allowing a cleaner disaggregation by level than is possible in systems with parallel academic and vocational frameworks. Certificate-level qualifications are held by around one quarter of the wage and salary earners studied here (Table 1), and are a core part of publicly funded provision central to skills, training, and workforce policy. The wage structure is compressed by OECD standards (OECD 2024; Zuccollo et al. 2013), which makes the New Zealand estimates a conservative benchmark for the premiums such credentials might command elsewhere. And post-secondary attainment is close to parity across genders (as Section 4.2 shows), which isolates the effect of credential composition from any difference in the propensity to hold a post-school qualification at all. Yet the New Zealand evidence base has rarely separated certificate returns from those of degrees. Indeed, the most comprehensive review of the New Zealand evidence reports that returns are typically summarised for broad groupings such as “sub-degree” or “degree and above”, and notes that pooling postgraduate with bachelor’s qualifications is likely to mask differences across levels (Scott 2025). Disaggregating returns by qualification level is therefore important for interpreting aggregate post-school returns.

2.3 Returns to tertiary education in New Zealand

Within this international literature, evidence for New Zealand is consistent with the broad picture but more limited in scope. Studies using census and survey data report substantial earnings advantages for tertiary-qualified workers relative to those with secondary schooling (Mahoney 2014; Hyslop, Le, and Riggs 2020). New Zealand’s tertiary wage premium is, however, modest by OECD standards: relative earnings of tertiary-educated workers are lower than in most comparator economies, a pattern attributed to a compressed wage structure and a labour market in which tertiary qualifications are widely held (OECD 2024; Zuccollo et al. 2013). Most of this evidence treats tertiary education as a single category, encompassing credentials from NZQF Level 4 certificates to Level 10 doctorates, and reporting an average return.

2.4 Gender differences in returns

A robust international regularity is that women tend to earn higher average returns to schooling than men. Psacharopoulos and Patrinos (2018), synthesising estimates from 139 countries, report this as a general pattern, and it has been interpreted as evidence that the marginal value of education is high for women. This regularity is typically established using pooled measures of education—years of schooling, or a tertiary indicator—rather than estimates disaggregated by qualification level. The explanations proposed for it emphasise selection into employment, the steeper consequences of discrimination at low education levels, and distributional mechanisms (Dougherty 2005). More recent work examines the gender composition of fields of study, but since female-dominated fields carry lower returns, field composition operates against rather than in favour of a female advantage (Seehuus and Strømme 2025). One candidate explanation has received little attention. The gender segregation of vocational education is a documented regularity across OECD systems (OECD 2024): men are consistently over-represented in vocational certificates. Where those certificates carry lower returns, this segregation makes it plausible that the pooled female advantage partly reflects the distribution of men and women across qualification *levels* within the broad tertiary category, rather than differential reward within levels.

The interpretation of such gender differences depends critically on what is being held constant. A higher pooled return for women may reflect a genuinely higher reward to a given credential, or it may reflect the fact that men and women hold systematically different credentials. Where men and women are unevenly distributed across qualification levels—and across fields with different labour-market value—a pooled comparison conflates the reward attached to a credential with its distribution across the two groups. This distinction is well understood in the literature on gender wage gaps, where decomposition methods routinely separate differences in characteristics from differences in returns (Blau and Kahn 2017; Goldin 2014). It has been applied less often to the specific question of returns to higher education by qualification level, where the relevant “characteristic” is simply which credential a worker holds. The analysis below shows that, for New Zealand at least, this distinction is decisive.

2.5 Contribution

The paper contributes to the international literature on heterogeneity in returns to higher education in two related ways. First, it provides a clear empirical illustration that broad tertiary categories can hide substantial differences in labour-market returns across credentials: using New Zealand microdata that permit consistent disaggregation over 2016–2024, it estimates returns separately for postgraduate, bachelor’s, and certificate qualifications and shows that the three command very different wage premiums. Second, it shows how this credential-level heterogeneity reshapes the interpretation of gender differences in returns. Because men and women hold qualifications in different proportions, a pooled comparison of their returns conflates the reward attached to a credential with its distribution across the two groups. To the author’s knowledge, this compositional mechanism has received little direct attention as an explanation for the widely documented female advantage in pooled returns to schooling. The result is a clear example of how aggregation, in addition to obscuring qualification-level patterns, can distort substantive conclusions about group differences.

3 Data and Methods

3.1 Data Source and Sample

This study uses microdata from Stats NZ’s Household Labour Force Survey (HLFS), accessed through the Integrated Data Infrastructure (IDI) (Stats NZ 2016, 2025). The HLFS is a nationally representative quarterly survey that provides detailed information on employment, hours worked, and earnings. Several features make it well-suited for this analysis: the availability of usual hours worked allows construction of hourly wages, avoiding the confounding of education returns with differences in hours worked; the large sample size provides sufficient power to estimate returns separately by qualification level, gender, and sector; and the detailed educational attainment variable maps directly to the New Zealand Qualifications Framework (NZQF), permitting the disaggregation that is central to this study.

The analysis covers 2016–2024. A survey redevelopment in 2016 introduced methodological changes that created a structural break with earlier years (Stats NZ 2016); re-

stricting to post-2016 data ensures internal consistency and comparable disaggregation by qualification level.

The sample includes wage and salary earners aged 25–64, excluding self-employed individuals and observations with missing information. Self-employed workers are excluded because the HLFS does not record an hourly wage for them; their earnings are not separable from returns to capital and business ownership. This restriction is not neutral with respect to the paper’s findings, and Section 3.3 discusses its likely direction. The analytical sample also excludes workers whose highest qualification is below upper secondary education, so that all estimates compare tertiary qualification levels against a clearly defined upper-secondary baseline. Hourly wages are constructed from usual weekly earnings and hours, expressed in 2024 New Zealand dollars, deflated using the Consumers Price Index (CPI). All statistics apply HLFS calibration weights.

Educational attainment is classified into four categories following the International Standard Classification of Education (ISCED 2011; UNESCO Institute for Statistics 2012). Under this framework, NZQF Levels 1–3 correspond to upper secondary education (ISCED 3), Levels 4–6 to post-secondary non-tertiary and short-cycle tertiary (ISCED 4–5), Level 7 to bachelor’s or equivalent (ISCED 6), and Levels 8–10 to master’s and doctoral levels (ISCED 7–8). Qualifications are grouped as follows: *Secondary* (NZQF Levels 1–3, the baseline category), *Certificate* (Levels 4–6, including trade certificates and diplomas), *Bachelor* (Level 7), and *Postgraduate* (Levels 8–10). Grouping Levels 4–6 into a single certificate category follows New Zealand statistical practice and preserves adequate cell sizes for the gender-specific and year-specific estimates that are central to the analysis. Because ISCED classifies some qualifications in this group as post-secondary non-tertiary rather than tertiary, the paper uses “post-school qualifications” where precision about the international classification matters. Online Appendix Table A3 reports returns estimated separately for Levels 4, 5, and 6, and Section 4.1 discusses where the distinction is informative.

Hourly wages are constructed without trimming; Online Appendix Table A5 shows that the baseline estimates are robust to excluding the top and bottom 1% of the hourly wage distribution: trimming reduces the postgraduate premium by one to three log points, consistent with high wages in the right tail among postgraduate-qualified workers, and leaves the bachelor’s and certificate estimates essentially unchanged.

Table 1 reports descriptive statistics for three reference years. The educational composition of the workforce shifted modestly over the period, with the share holding postgraduate qualifications rising from around 17% to around 20% and bachelor's degrees from 33% to 35%, while certificate and secondary shares declined. Mean hourly wages, expressed in 2024 NZD, increased modestly for all qualification groups over the period. Raw wage gaps relative to secondary education remained sizeable for postgraduate and bachelor's qualifications, while the gap between certificate holders and secondary-educated workers narrowed. The demographic composition reflects New Zealand's increasing ethnic diversity, with the share of Asian workers rising from 17% to 26% between 2016 and 2024, while the proportion of NZ-born workers declined from 64% to 56%.

Table 1: Sample Characteristics: Wage and Salary Earners Aged 25–64 with at Least Upper-Secondary Education, Selected Years

	2016	2020	2024
<i>Education (%)</i>			
Postgraduate	17.2	19.1	20.5
Bachelor	32.9	34.1	34.6
Certificate	25.1	23.8	23.0
Secondary	24.8	23.1	22.0
<i>Mean hourly wage (NZD, 2024 prices)</i>			
Postgraduate	51.5 (29.2)	53.2 (26.6)	52.9 (28.7)
Bachelor	45.0 (35.5)	45.6 (22.7)	47.3 (23.7)
Certificate	38.0 (19.5)	38.5 (16.1)	38.3 (14.9)
Secondary	35.3 (21.0)	36.7 (16.6)	37.3 (16.8)
<i>Demographics (%)</i>			
Women	48.9	49.3	49.7
Full-time employment	87.0	88.1	89.4
NZ-born	64.2	60.6	56.3
<i>Ethnicity (%)</i>			
European	66.1	61.2	55.3
Māori	9.9	10.5	10.6
Pacific	4.5	4.8	5.0
Asian	17.3	20.6	25.7
MELAA	1.4	1.7	2.3
Other	0.8	1.2	1.2
Mean age (years)	41.9	41.5	44.2
Weighted population	1,049,799	1,227,842	1,448,026
Unweighted sample size	7,815	9,459	10,245

Notes: The table reports statistics using HLFS calibration weights, which describe the analytical sample: wage and salary earners aged 25–64 whose highest qualification is at least upper secondary education (NZQF Level 1 or above). Full-time employment is defined as usually working 30 or more hours per week. Standard deviations of hourly wages in parentheses. Unweighted sample sizes are random-rounded to base three in accordance with Stats NZ confidentiality rules. Ethnicity is measured on a prioritised single-response basis, so the categories are mutually exclusive and sum to 100%.

MELAA = Middle Eastern, Latin American, African.

3.2 Model Specification

I estimate wage returns using log-linear regressions based on the Mincerian earnings function (Mincer 1974). The specification is estimated separately for each year. For individual i in a given year:

$$\ln w_i = \alpha + \beta_1 Postgrad_i + \beta_2 Bachelor_i + \beta_3 Certificate_i + X_i' \gamma + \varepsilon_i, \quad (1)$$

where $\ln w_i$ is log real hourly wages, the education dummies capture highest qualification relative to secondary education (the omitted category), and X_i includes gender, age, age squared, number of dependent children, ethnicity, region, full-time status, and an indicator for being New Zealand-born. Industry and occupation are excluded from the baseline specification to avoid controlling for channels through which education affects wages. Estimating the model separately by year allows the coefficients β_1 – β_3 , and the wage premiums they imply, to vary across the period; the tables and figures report these year-specific estimates. Real hourly wages are expressed in constant 2024 NZD, so comparisons of premiums across years are not affected by general wage inflation.

Mean regressions capture average returns but may mask distributional heterogeneity. As a complement, quantile regressions (Koenker and Bassett 1978) at the 20th, 40th, 60th, and 80th percentiles are estimated, with coefficients interpreted as conditional wage gaps—the difference in log wages between workers with a given qualification and secondary-educated workers, conditional on covariates, at each point of the conditional wage distribution. These distributional results are reported in the Online Appendix.

3.3 Identification and Limitations

The estimates in this paper capture conditional wage associations rather than causal effects. Because individuals are not randomly assigned to qualification levels, the coefficients may reflect unobserved differences—in ability, family background, or motivation—that influence both educational attainment and earnings; a large literature suggests that ability-adjusted wage premiums are typically 10–15% lower than unadjusted estimates, with the broad ranking of returns left intact (Card 1999; Psacharopoulos 2024). Two features of the design limit the practical consequences of this bias for the questions the paper addresses. First, the central contribution is the *comparison* of premiums across quali-

fication levels and the *interpretation* of gender differences as compositional rather than reward-based; these comparisons depend on the relative ordering of coefficients, which is less sensitive to ability bias than absolute levels. Second, industry and occupation are excluded from the baseline specification because they may mediate the relationship between education and wages. Since education can affect occupational and industry sorting, controlling for these variables would remove potentially important channels through which education influences earnings; the sectoral results in the Online Appendix are accordingly presented as within-sector descriptive associations, not as estimates that fully account for selection.

Comparing premiums across years requires the further assumption that the selection process generating each qualification group is broadly stable over the period. The main policy change in the period, Fees-Free tertiary study from 2018, operated on entering cohorts and would affect the qualification composition of the 25–64 workforce only with a substantial lag; no change in access or in the qualifications framework generated a sharp compositional break within this window. This supports but does not guarantee the assumption. The declining certificate premium documented in Section 4.1 is therefore best understood as a reduced-form pattern consistent with several mechanisms, including compositional change, credential inflation, and a genuine fall in the market value of intermediate vocational qualifications; Section 5.1 discusses these mechanisms.

Three further limitations warrant mention. First, the exclusion of self-employed workers is likely to bear unevenly on the qualification groups compared here. Self-employment is concentrated in trades—construction, electrical, automotive—where certificate-level credentials are most common, and where returns to those credentials may be realised through business ownership rather than through an hourly wage. Because men are both more likely to be self-employed and more likely to hold certificates, this restriction may understate the labour-market value of certificate qualifications, and may do so asymmetrically by gender. The direction of the resulting bias is toward a lower measured certificate premium; its magnitude cannot be assessed with these data. This bounds the interpretation of the certificate result without altering the paper’s central comparison, which concerns qualification levels within the wage and salary workforce. Second, the HLFS does not record field of study, an important source of within-level heterogeneity; in particular, the analysis cannot distinguish high-return from low-return programmes

within the certificate category, a point taken up in Sections 4.1 and 5.1. Third, educational attainment is self-reported, introducing potential measurement error common to survey-based analyses of education returns (Psacharopoulos and Patrinos 2018).

4 Results

The results show that wage premiums vary substantially across qualification levels, and that this variation changes how gender differences in returns should be interpreted. Section 4.1 documents the qualification hierarchy and the declining certificate premium; Section 4.2 shows how this heterogeneity accounts for the apparent gender gap in pooled returns. Further heterogeneity in returns by industry and across the wage distribution is documented in the Online Appendix; the qualification hierarchy broadly holds within industries, and certificate premiums are uniformly low across sectors, suggesting that the low certificate premium is not driven primarily by sectoral composition.

4.1 Wage premiums by qualification level

Table 2 reports OLS estimates of wage premiums by qualification level for three reference years. The results reveal a clear educational hierarchy: postgraduate qualifications yield the highest returns, followed by bachelor’s degrees, while certificate-level credentials generate low and declining premiums throughout the period.

Table 2: Wage Premiums by Qualification Level (OLS), 2016–2024

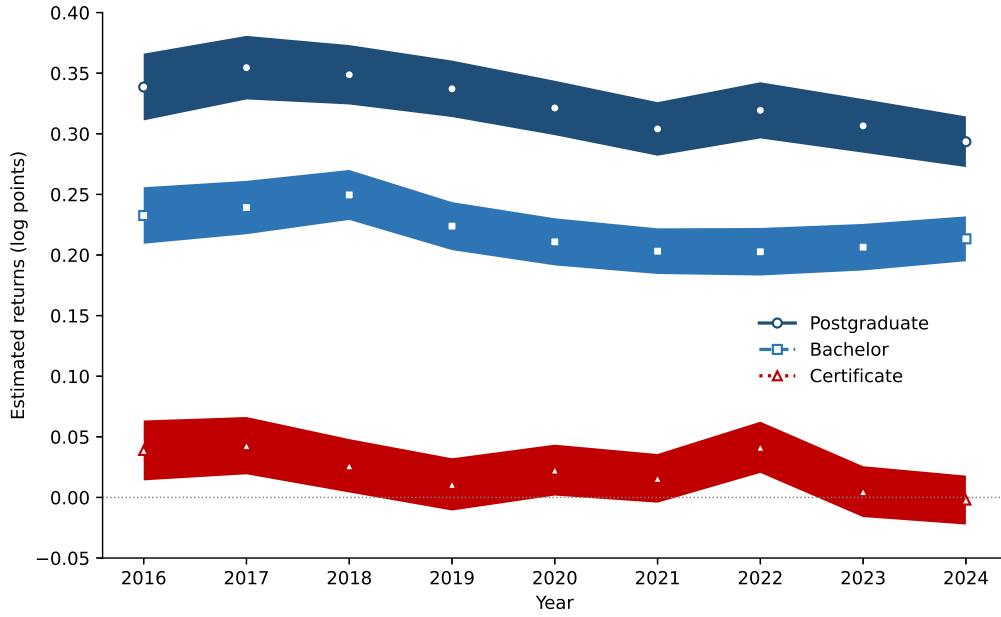
	2016	2020	2024
Postgraduate	0.339 (0.014)	0.321 (0.011)	0.293 (0.011)
Bachelor	0.233 (0.012)	0.211 (0.010)	0.213 (0.009)
Certificate	0.039 (0.013)	0.023 (0.011)	−0.002 (0.010)
Controls	Yes	Yes	Yes

Notes: Coefficients are estimated log-point wage premiums relative to secondary education (NZQF Levels 1–3), from separate year-specific OLS regressions based on the specification in Equation 1. Controls include gender, age, age squared, number of dependent children, ethnicity, region, full-time status, and an indicator for being New Zealand-born. Standard errors in parentheses. The approximate proportional wage gap implied by a coefficient β is $e^\beta - 1$; for small coefficients the two are close, but the distinction matters at higher qualification levels. Percentage figures reported in the text apply this transformation.

Postgraduate qualifications command the highest premiums. The estimated coefficient of 0.339 in 2016 corresponds to a wage gap of approximately 40% relative to secondary-educated workers, declining to 0.293 (around 34%) by 2024, a downward movement of roughly six percentage points. Bachelor’s degrees yield substantial but lower premiums: the coefficient is stable at around 0.21–0.23, implying a wage gap close to 26% in 2016 and 24% in 2024. Certificate-level qualifications stand apart: their premium is modest throughout, falling from 0.039 in 2016 (about 4%) to 0.023 in 2020 and −0.002 by 2024, a value statistically indistinguishable from zero. Possible explanations for this low and falling premium are discussed in Section 5.1.

Figure 1 traces the evolution of these premiums from 2016 to 2024. The ranking of the three qualification levels holds throughout the period: postgraduate premiums consistently exceed bachelor’s premiums, which in turn exceed certificate premiums. The postgraduate premium peaks in 2017 and declines gradually thereafter, with a brief uptick in 2022; the bachelor’s premium reaches its lowest point around 2021 before recovering slightly. Certificate premiums follow a steady downward trend toward zero.

Figure 1: Wage Premiums by Qualification Level, 2016–2024



Notes: Coefficients from annual OLS regressions, expressed as log-point premiums relative to secondary education. Shaded bands represent 95% confidence intervals.

These certificate credentials (NZQF Levels 4–6) encompass a heterogeneous set of programmes, from trade certificates in construction and manufacturing to diplomas in business administration and health support, and the category itself illustrates the paper’s central point about aggregation. Estimated separately (Online Appendix Table A3), the three NZQF levels within it behave very differently: Level 6 diplomas carry a stable and significant premium of roughly 12 log points throughout the period; the Level 5 premium declines from about 7 log points in 2016 to zero; and the Level 4 premium is statistically indistinguishable from zero in 2016 and significantly negative (−3.4 log points) by 2024. Because Levels 4 and 5 together account for roughly 85% of certificate holders, the aggregate certificate premium tracks their trajectory, and the stable Level 6 premium is concealed by its minority weight. The decline of the aggregate premium reflects falling premiums within Levels 4 and 5 rather than a compositional shift toward lower levels, whose shares are roughly stable over the period.

4.2 The gender gap as an artefact of aggregation

The qualification hierarchy documented in Section 4.1 has a direct and somewhat counterintuitive implication for how gender differences in returns should be interpreted. This

subsection shows that the apparent female advantage in returns to tertiary education—visible in pooled estimates and consistent with international averages—is largely an artefact of aggregating across qualification levels.

A useful starting point is the pooled estimate. The bottom row of Table 3 reports returns estimated with a single tertiary dummy, combining all qualification levels. On this specification, women’s estimated returns exceed men’s throughout the period. The difference is largest, and clearly statistically significant, in 2016: a coefficient of 0.203 for women against 0.128 for men. It narrows thereafter, to 0.173 against 0.128 in 2024, implying wage premiums of roughly 19% and 14% respectively. Taken at face value, this pattern would place New Zealand alongside the international regularity that women earn higher average returns to schooling than men (Psacharopoulos and Patrinos 2018), and might be misread as evidence that the labour market rewards men’s and women’s tertiary qualifications differently.

Disaggregation changes this picture substantially. The upper panel of Table 3 reports returns estimated separately by qualification level. In 2016, within-level point estimates uniformly favoured women, by between three and six log points across levels in the separate regressions of Table 3. The interacted specification of Online Appendix Table A4, which constrains the covariate coefficients to be common across genders, yields differences of four to five log points, but formal tests of equality do not reject equal returns at conventional levels: the largest individual difference, for certificates, has $p = 0.052$, and the joint test across the three levels has $p = 0.20$. From 2020 onward, within-level differences are small, mixed in sign, and far from statistical significance; by 2024 the joint test yields $p = 0.71$. The contrast with the pooled specification is therefore informative rather than stark: a pooled gender gap that appears substantial, and within-level differences that were modest at the start of the period and absent thereafter.

Table 3: Wage Premiums by Qualification Level and Gender (OLS), 2016–2024

	2016		2020		2024	
	Men	Women	Men	Women	Men	Women
Postgraduate	0.306 (0.021)	0.361 (0.018)	0.333 (0.018)	0.312 (0.015)	0.279 (0.017)	0.302 (0.014)
Bachelor	0.213 (0.020)	0.247 (0.015)	0.204 (0.015)	0.209 (0.014)	0.197 (0.014)	0.220 (0.012)
Certificate	0.008 (0.018)	0.063 (0.015)	0.025 (0.016)	0.000 (0.014)	−0.007 (0.014)	−0.008 (0.015)
Tertiary (single dummy)	0.128 (0.017)	0.203 (0.018)	0.139 (0.015)	0.168 (0.015)	0.128 (0.016)	0.173 (0.017)
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Coefficients represent log-point wage premiums relative to secondary education, from regressions estimated separately by gender. Standard errors in parentheses. The bottom row reports estimates using a single tertiary dummy combining all qualification levels. Formal tests of the equality of returns by gender within each qualification level, from a fully interacted specification, are reported in Online Appendix Table A4.

The reconciliation is compositional. Table 4 reports the distribution of qualifications by gender for 2024, over the same analytical sample used throughout the paper. The overall propensity to hold any post-school qualification is very similar by gender: in 2024, around 78% of both men and women hold a qualification above upper-secondary level.² The compositional difference lies within that group. Among male workers, roughly one-third hold certificate-level qualifications, compared with under one-fifth of female workers—a gap of close to 15 percentage points. This concentration of men in certificate programmes reflects longstanding patterns of gender segregation in vocational education, with men predominating in trades (construction, automotive, electrical) and women in healthcare support and business administration (Ministry of Education, New Zealand 2024). Conversely, women are more likely to hold bachelor’s degrees and postgraduate qualifications. Overall, a clear majority of female workers hold a bachelor’s degree or higher, compared with under half of men.

2. The gender difference in the share holding only secondary education is not statistically significant in 2024 ($p = 0.64$) or 2020 ($p = 0.19$). In 2016, women were modestly but significantly more likely than men to hold no post-school qualification (26.8% against 23.0%, $p < 0.001$); the shares had converged by 2020.

Table 4: Educational Composition by Gender (%), 2024

Qualification Level	Men	Women	Difference (M–W)
Secondary (NZQF 1–3)	21.8 (0.6)	22.2 (0.6)	–0.4
Certificate (NZQF 4–6)	30.4 (0.7)	15.4 (0.5)	+15.0***
Bachelor (NZQF 7)	30.3 (0.7)	38.9 (0.7)	–8.6***
Postgraduate (NZQF 8–10)	17.5 (0.6)	23.5 (0.6)	–6.0***
<i>Bachelor + Postgraduate combined</i>	<i>47.8</i>	<i>62.4</i>	<i>–14.6</i>
Total	100.0	100.0	—

Notes: Percentages calculated using HLFS calibration weights, over the analytical sample of wage and salary earners aged 25–64 whose highest qualification is at least upper secondary education (consistent with Table 1 and the regression sample). The 15.0 percentage point gap in certificate holdings is the largest single difference between genders. Standard errors of the weighted proportions in parentheses.

*** indicates that the gender difference is statistically significant at the 1% level (z -tests from independent samples); the difference in secondary shares is not statistically significant in 2024 ($p = 0.64$).

This compositional asymmetry explains the apparent gender gap in aggregate tertiary returns. When all tertiary qualifications are pooled into a single dummy variable, the “tertiary” group for men contains a much larger share of certificate holders (who earn near-zero premiums) than the corresponding group for women. A shift-share calculation makes the mechanism precise. Applying common within-level premiums to each gender’s observed credential mix—in 2024, among men holding any post-school qualification, roughly 39% hold certificates, 39% bachelor’s degrees, and 22% postgraduate qualifications, against approximately 20%, 50%, and 30% among women—yields a composition-weighted gap of between 4.3 and 4.8 log points in every year of the period, accounting for the majority of the pooled difference in 2016 and essentially all of it by 2024. The narrowing of the pooled gap over the period reflects the disappearance of the modest within-level differences observed in 2016, not a change in credential composition.

The scope of this interpretation—what it does and does not imply about the wages men and women actually earn—is taken up in Section 5.2.

A further test reinforces this compositional interpretation. If the labour market rewarded men’s and women’s credentials differently, the difference might appear not at the mean but at specific points of the wage distribution—most plausibly as a “glass ceiling”, whereby women’s returns fall short of men’s among higher earners. Estimating returns by qualification level separately for each gender across the conditional wage distribution (Online Appendix Table A2) provides no evidence of such an effect. At the 80th percentile, postgraduate premiums are almost identical for men and women, as are bachelor’s premiums; at lower percentiles women’s bachelor’s returns somewhat exceed men’s. The within-level similarity of returns documented above therefore appears to hold across the distribution, not only at the mean: the quantile estimates do not reveal a pattern of systematically lower within-level premiums for women at the top of the conditional wage distribution.

5 Discussion and Conclusion

This paper has estimated wage returns to tertiary education in New Zealand from 2016 to 2024, disaggregated by qualification level. Two findings carry the argument: a steep hierarchy of returns across qualification levels that holds throughout the period, with a certificate premium close to zero; and a gender gap in pooled returns that disappears when disaggregated. This section draws out their interpretation and implications.

5.1 The qualification hierarchy and the certificate premium

The results confirm a steep gradient in wage returns: postgraduate qualifications yield premiums of approximately 34%, bachelor’s degrees around 24%, and a certificate premium indistinguishable from zero by 2024. The ranking of the three levels holds across the 2016–2024 period, though the premiums themselves shift modestly within it. The postgraduate premium fell by roughly six percentage points, from around 40% to around 34%, over the period; this may reflect the expansion of postgraduate attainment, compression in sectors that employ postgraduate-qualified workers, or changes in the composition of that group, which the descriptive estimates cannot separate. The most striking element is the certificate result. Certificate-level credentials (NZQF Levels 4–6) account for around one quarter of the analytical sample, yet by 2024 they conferred no measurable hourly

wage advantage over secondary schooling, and the modest premium they carried at the start of the period—about 4%—had disappeared by its end.

This finding does not imply that vocational education lacks value; rather, it indicates that such value is not captured as a sizeable hourly wage premium in this specification. It may instead operate through employment access, job stability, or licensing, none of which is measured here. Five interpretations merit consideration.

First, certificates may function primarily as *access credentials* that certify minimum competencies required for entry to specific occupations without conferring a wage premium above what secondary-educated workers earn in similar roles. A Licensed Building Practitioner certificate, for instance, is legally required for restricted building work, but once a worker is employed, wages are determined largely by experience, employer, and regional conditions rather than by the credential itself. On this reading, the return to certificates is an *employment return*—access to stable jobs and career pathways—rather than a wage return.

Second, the near-zero average masks *within-certificate heterogeneity*, part of which is directly observable. As shown in Online Appendix Table A3, Level 6 diplomas retain a stable premium of roughly 12 log points throughout the period, while Levels 4 and 5—which dominate the category numerically—carry low premiums that decline to zero, with the Level 4 premium significantly negative by 2024. Beyond the level dimension, certificates span fields from electrical and plumbing trades to retail and general administration, and these are unlikely to carry equal value. Trade certificates in high-demand technical fields may command meaningful premiums that are offset, in the average, by certificates in lower-paid service occupations. Because the HLFS does not record field of study, this field dimension cannot be examined directly here, but both dimensions imply that the certificate category should not be treated as homogeneous.

Third, the pattern is consistent with *credential inflation*: as certificate attainment has expanded, employers may have raised qualification requirements for positions that once required only secondary schooling, without a corresponding adjustment to wages. Certificates may thus have become necessary for access to certain jobs without becoming sufficient for wage advancement.

Fourth, the premium is measured relative to a *comparison group* of secondary-educated workers, some of whom hold substantial experience or employer-provided training that

substitutes for a formal credential. This would compress the measured premium without implying that certificates have no value, although the effect should be tempered by the inclusion of age as a control, to the extent that age proxies for labour-market experience.

Fifth, sustained increases in the statutory *minimum wage* compressed the lower half of the New Zealand wage distribution over the period, with wage growth concentrated at lower percentiles (Hyslop, Maré, and Stelling 2025). Because certificate holders and secondary-educated workers are over-represented in that part of the distribution, this compression would mechanically narrow the certificate premium—although the decline of the premium across the entire conditional wage distribution, not only at lower quantiles (Online Appendix B), suggests this is at most a partial explanation.

The data cannot adjudicate between these mechanisms, and they are not mutually exclusive. What the evidence establishes is the pattern itself: a large and policy-relevant share of tertiary credentials in New Zealand carries little hourly wage premium, and this should inform how the vocational system is evaluated.

5.2 The gender gap as a compositional artefact

The second finding concerns gender. Estimated with a pooled tertiary indicator, women appear to earn substantially higher returns than men—roughly 19% against 14% in 2024. Estimated separately by qualification level, this apparent difference largely disappears: by 2024, men and women earn statistically indistinguishable premiums within postgraduate, bachelor’s, and certificate qualifications, and the modest within-level differences observed in 2016 had vanished by 2020.

The explanation is compositional. Because men are far more likely than women to hold near-zero-return certificates, while women are concentrated in higher-return degrees, the pooled “tertiary” category is, for men, weighted toward a low-return credential. The apparent female advantage reflects *which* credentials men and women hold, not *how* those credentials are rewarded. This pattern is consistent with the international regularity that women record higher returns to schooling (Psacharopoulos and Patrinos 2018), and shows that, for New Zealand, that regularity is in large part an aggregation effect. It is also consistent with official analysis of 2024 earnings data, which finds near-identical proportional degree premiums for men and women (Scott 2025); the present paper complements that descriptive finding by identifying the compositional mechanism through which the

apparent pooled advantage arises.

This interpretation has a specific scope. It concerns the *percentage premium* attached to each qualification level relative to secondary education, which is similar across genders. It does not imply that men and women with tertiary education earn equal wages—they do not, owing to occupational segregation, hours, and career interruptions well documented elsewhere (Goldin 2014; Blau and Kahn 2017). The claim is that the conditional wage premium associated with holding a given credential does not differ appreciably by gender, and that pooled estimates suggesting otherwise are misleading. Nor does it imply that education closes the gender wage gap documented in that literature: where women’s average wages are lower within a qualification level, similar proportional premiums preserve the underlying gap—and a similar percentage premium translates into a smaller absolute gain.

5.3 Policy implications

Three implications follow, framed here for the design of higher education systems rather than for labour-market policy alone. They are framed as directions rather than prescriptions, given the descriptive nature of the analysis.

Career information. The steep gradient across qualification levels—and in particular the certificate premium’s decline toward zero—is not widely reflected in the information available to students choosing post-secondary pathways. Expanding access to qualification-level labour market outcome data, such as that compiled by the Tertiary Education Commission, would support more informed choices, provided it is communicated alongside other dimensions of value such as employment stability and career progression.

Vocational-to-degree pathways. For workers already holding certificates, the observed gap between certificate and degree premiums suggests that credential upgrading may be associated with higher wages, although the present analysis does not estimate the causal effect of such transitions. Credit-transfer arrangements between polytechnics and universities remain limited in New Zealand (New Zealand Productivity Commission 2017); expanding them would lower the cost of moving from certificate to degree study. Because men are disproportionately represented among certificate holders, such pathways would, in practice, benefit male workers more.

Gender segregation at its source. The compositional account implies that gender

differences in pooled returns originate upstream, in the segregation of men and women into different credentials, rather than in the within-credential reward structure—which the evidence shows to be already similar. Interventions aimed at gender equality in returns may therefore be more effectively directed at the educational choices that channel men and women into different qualifications than at within-occupation pay equity.

5.4 Limitations and future research

Several limitations should be acknowledged beyond those discussed in Section 3.3. The analysis cannot control for field of study, an important source of within-level heterogeneity: engineering, IT, and health-science graduates earn substantially more than humanities and social-science graduates at the same qualification level (Scott and Ali 2024). If men and women sort into different fields within a qualification level, within-level returns that appear similar by gender could conceal field-driven differences. This does not overturn the main finding—the pooled gender gap disappears under disaggregation by level regardless of field composition—but it bounds its interpretation. Linking HLFS records to tertiary education data through the IDI would allow returns to be estimated by field and is a natural next step.

The analysis also focuses on hourly wages, and so excludes non-wage outcomes—employment stability, job security, career progression—that may differ across qualification levels and that are particularly relevant to interpreting the value of certificates. International evidence suggests vocational qualifications often yield larger employment returns than wage returns (OECD 2024). Finally, the estimates are descriptive: as set out in Section 3.3, they should be read as conditional wage gaps rather than causal returns, and the comparison over time rests on an assumption of broadly stable selection that the data cannot test directly.

5.5 Conclusion

This paper estimated wage returns to tertiary education in New Zealand from 2016 to 2024, disaggregating a category that the existing New Zealand evidence has largely treated as homogeneous. Two findings follow. There is a steep and persistent hierarchy of returns: postgraduate and bachelor’s qualifications command substantial premiums, while certificate-level credentials carry a limited and declining hourly wage premium.

And the apparent gender gap in returns is largely an artefact of this hierarchy: it arises because men and women hold different credentials rather than because the labour market rewards them differently, and by the end of the period composition accounts for essentially all of the pooled difference.

The broader lesson is methodological as well as substantive. A single “tertiary versus secondary” comparison can conflate credentials of very different value, and because credential mix varies systematically across groups, the resulting averages can mislead—most clearly in the case of gender. Disaggregating tertiary education by qualification level is, on the evidence presented here, a precondition for interpreting returns correctly. The value of tertiary education in New Zealand remains substantial, but it depends on which qualification is held, and policy should avoid treating tertiary qualifications as interchangeable.

Acknowledgments

I thank Lisa Meehan, Leon Iusitini, and Gail Pacheco for valuable comments and guidance.

Declarations

Funding. No funding was received for conducting this study.

Competing interests. The author has no competing interests to declare that are relevant to the content of this article.

Ethics approval. This study was approved by the Auckland University of Technology Ethics Committee (AUTECH) on 21 August 2025, reference 25/244, “Understanding the Value of Tertiary Education in New Zealand: Trends in Wage Premiums, Policy Evaluation, and Broader Social Benefits”. The approval is valid until 21 August 2028. The study analyses de-identified microdata held in Statistics New Zealand’s Integrated Data Infrastructure (IDI); access was granted by Stats NZ under conditions designed to give effect to the security and confidentiality provisions of the Data and Statistics Act 2022. No identifiable individual-level data were accessed.

Consent. Not applicable; the study uses pre-existing de-identified survey microdata.

Data availability. The results in this study 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/>. Access to the data used in this study was provided by Stats NZ under conditions designed to give effect to the security and confidentiality provisions of the Data and Statistics Act 2022. The results presented in this study are the work of the author, not Stats NZ or individual data suppliers. The underlying microdata cannot be shared publicly; access is available to approved researchers through Stats NZ.

Use of generative AI. During the preparation of this manuscript, the author used ChatGPT (OpenAI) and Claude (Anthropic) to assist with drafting and revising text, structuring parts of the argument, checking calculations and analytical consistency, and supporting the preparation of figures. All substantive interpretations, methodological decisions, statistical analyses, verification of results, and final wording were reviewed and determined by the author, who takes full responsibility for the content of the manuscript.

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