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Secondary and Tertiary Educational Attainment and Income Levels for Maori and Non-Maori Over Time

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ABSTRACT

This study examines how relative income levels, and in particular the income returns to post-compulsory and higher education (education beyond age 16) for Maori compare to Non-Maori, and how they have changed over the 1986–1996 decade. The analysis focussing on the Maori population extends earlier research for the overall New Zealand population (Maani, 1994, 1996a, 1996b, 1997, 1999). The study utilises individual level data and 20% samples of the 1986 and 1996 Censuses of the Population. Statistical sample characteristics, restricted and unrestricted 'earnings function' estimates across ethnicity, and stability tests over time indicate that the Maori population was at a disadvantage in both 1986 and 1996 in terms of educational attainment, employment and income levels. While the returns to post-compulsory education were significant compared to no qualifications, the participation of Maori in post-compulsory education after a decade is still significantly less than the Non-Maori group, as more than 60% of Maori males and females in 1996 still had no school qualifications. The returns to education are greater for Maori compared to Non-Maori, despite lower attainment levels. This is primarily since Maori with no qualifications are relatively more disadvantaged with respect to Non-Maori than are Maori with qualifications. Given the link between educational attainment and income levels, the study shows that in 1996 Maori with 'no school qualification' were at a greater relative disadvantage than they were in 1986, with the income gap having narrowed at the tertiary education level, in particular for women.

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by

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I. Introduction

This study examines the link between income levels and educational attainment for the Maori and Non-Maori populations in New Zealand over time. Utilising individual level data for the 1996 and 1986 census years, the study examines the relative post-compulsory and tertiary educational attainment of Maori relative to Non-Maori in New Zealand. The study further examines the contribution of educational attainment to relative Maori income levels.

The link between educational qualifications and income levels has been of interest for a number of reasons including the income distribution effects of educational investments, and the international literature in this field is vast and growing. See for example, Miller, 1982, and McNabb and Richardson, 1989 for Australia; Ogilvy, 1970 and Hunt and Hicks, 1985, Gibson 1998, Dixon 1998, Chapple and Rea, 1999 for New Zealand; Demetriades and Psacharopoulos, 1987 for Cyprus; Rumberger, 1987, and Raymond and Sesnowitz, 1983 for the U.S.; and Vaillancourt, 1986 for Canada).

The analysis of rates of return to education that are comparable across more than one time period has, in turn, been pursued in relatively few studies. For example, Maani (1997, 1999) has examined the returns to post-compulsory education in New Zealand across four census years. Earlier research utilising New Zealand census data for 1981, 1986, 1991 and 1996 (Maani, 1994, 1997, 1999) have provided evidence on the link between educational attainment and expected lifetime income levels.[1] These studies have shown that the returns to higher education for the overall population are positive and significant. Moreover, the results have strongly indicated that consistent with the significant increases in participation rates in post-compulsory education, market rewards to education have been significant and higher in 1996 compared to 1981 and 1986.[2] Studies by Winklemann and Winklemann, 1998, 1999 using the New Zealand census, Dixon (1998) using the Household Labour Force Survey, and Gibson (1998) of a sample of twins in New Zealand show results that are compatible with the above findings on the link between educational attainment and incomes.

This study extends previous research in the field by examining the educational attainment and *income returns* to education of Maori relative to the Non-Maori population using New Zealand census data. Two earlier New Zealand studies have examined the *employment* outcomes of Maori and non-Maori (Chapple and Rea 1999 using the Household Labour Force Survey, and Winklemann 1997 using census data).

Using semi-logarithmic regression analyses of 'earnings functions', and utilising the 20% samples of the 1986 and 1996 Censuses of Population and individual level data, the study examines the market reward to educational investments across Maori and Non-Maori ethnic groups. The use of data over a ten-year period allows the analysis of changes in relative educational attainment and income levels of the over the decade of the study, and allows formal tests of the stability of coefficients over time.

While the focus of the study is on Maori and Non-Maori comparisons, four ethnic categories of 'Maori', 'Part-Maori', 'European' and 'Other Ethnicity' are utilised in the study, where Maori refers to those who identify solely with the Maori ethnicity, and 'Part-Maori' refers to those who identify with both Maori and at least another ethnicity. This allows a more in depth examination of Maori education and income levels relative to the Non-Maori population, since an analysis suggests that the two groups demonstrate

different educational attainment levels. The above specification also allows the separate consideration of the European population from the Other Ethnic groups. This is especially useful because of salient differences between the European and 'Other Ethnic groups' populations, which includes the Pacific Island group, and also other Non-European Non-Maori immigrants with higher education. This is due to the New Zealand immigration policy since 1991, where language barrier and other experiences of new immigrants are expected to affect the 1996 'Other Ethnic' returns to higher education (see for example, Maani, 1999 and Winklemann and Winklemann, 1998).

The study provides analyses of the statistical sample characteristics and formal econometric models to estimate the relative income levels and rewards to education of Maori and Non-Maori over the decade of the study. The plan of this report is as follows: A description of the data set, and the statistical characteristics of the samples are provided in Section II. Section III presents the model and econometric results of returns to secondary and tertiary education based on 'earningsfunction' regression analyses of income levels, over the 1986 and 1996 census years. In these analyses comparisons across ethnic groups are made, and formal stability tests provide statistical comparisons of the returns to educational attainment by ethnicity over the ten-year period. Finally, conclusions follow in Section IV.

II. Data and Characteristics of Sample

The data set for the study consists of the twenty-percent sample of the New Zealand Census of Population and Dwellings for 1996 and 1986, and the samples consist of those in the age group 16–65. Of the various New Zealand data sets, the census utilised provides the most suitable option by representing the overall New Zealand population, providing comparable information across ethnicity and time, information on educational qualifications and sufficient observations at each education level. A 20% sample, as opposed to a 5% or a 10% sample was chosen to allow larger numbers of Maori population at the higher education levels.

The census provides information on an individual's highest educational qualifications, making a distinction between the levels of School Certificate (year 11), Sixth Form Certificate (Year 12), Bursary (Year 13), Post-School Diploma, University Bachelor's degree, and Postgraduate degrees, in comparison to the control group with no secondary school qualifications.[3]

The largest component of income in the census is earnings, but it also includes unearned income such as interest, rent, and government assistance. To the extent that higher unearned income is likely to be positively correlated with higher earned income, the overall effect of the inclusion of these incomes may be to result in rates of return that are higher than those based on earnings alone. However, the inclusion of 'government assistance' as a part of income in the census is likely to introduce a negative correlation and somewhat flatten the age-income profiles, thereby decreasing the above effect. Despite this characteristic of the data, the New Zealand census provides the most suitable source of data for the study. Since higher education may result in both increased earned and unearned income, the marginal returns estimated may be considered as the differences in the relative standard of living associated with different education levels.[4]

A characteristic of the data set is that in the 1996 census, and compared to the 1991 and 1986 census years, a relatively larger number of individuals had identified themselves as Part-Maori (see for example, Tables 1.1 and 1.2). While this may have resulted from the younger age composition of the Part-Maori population, or lesser out-migration of the group, it is also likely that other factors such as greater identification with Maori ethnicity due to the public effect of the Waitangi Settlements, or simply the way that the 1996 Census question was phrased had an effect.[5] This factor has some implications in comparing the relative educational attainment and income levels of the Part-Maori to the European population over the decade. For example, in examining the relative educational attainment and income levels of the Part-Maori group over the decade, changes to some extent reflect the composition of the group, with the inclusion of some individuals who were classified as European in 1986 as Part-Maori in 1996.[6]

A summary of the characteristics of the 1986 and 1996 samples for the Maori and Non-Maori populations are provided in Tables 1.1 and 1.2 for males and females, respectively. Most significantly, this analysis shows lower education and income levels for the Maori population across the two census years, as the Maori population shows the greatest educational and income disadvantage compared to the European population. The Part-Maori population, in turn, has characteristics more favourable than for Maori, but less favourable than the European population. The analysis further confirms the usefulness of considering Maori and Part-Maori separately, as the two groups show consistently different characteristics.[7]

Table 1.1 further shows a very modest improvement in Maori male educational attainment over the decade toward reducing the educational gap. For example, as Table 1.1 indicates, in 1986, the majority of the Maori male population (64.2%) had no school qualifications, compared with 32.2% of the European population, and 42.8% of the Part-Maori population. By 1996, all ethnic groups showed increased educational attainment. However, the attainment for the Maori males was alarmingly modest compared to all other groups, as a decade later, still the majority (63.5%) had no school qualifications, compared with 29.4% of the European males and 38.1% of the Part-Maori. The improvement for this level of education for Maori was the most modest at 0.68% or less than one percentage point, compared to 2.83% for the European, and 7.73% for the 'Other Ethic' groups.[8]

Educational attainment at the tertiary level has also been markedly different for the Maori and Non-Maori populations over the decade. For example, in 1986 less than 1% of the Maori population (0.77%), or 1 out of 120 Maori males had a Bachelor's degree, and a lower proportion of 0.37%, or only 1 out of 270, had a post-graduate degree. By 1996, these ratios had improved to 1/63 with a Bachelor's degree, and 1/167 with a post-graduate degree. In comparison, 1 of every 19 Europeans had a Bachelor's degree in 1986, and 1 of every 11 European in 1996. In addition, 1 of every 30 Europeans had a Post-graduate degree in 1986 and 1 out of 21 by 1996.

Table 1.2 with results for females is consistent with Table 1.1 in showing educational disadvantage for the Maori and Part-Maori females. However, Table 1.2 further shows significantly greater relative educational achievement for Maori and Part-Maori females compared to the male samples over the decade. For example, while in 1986, 67.5% of Maori females had no school qualifications, by 1996, this proportion had decreased to 60.8% or below the male Maori ratios. Likewise, while in 1986 only 1 in 454 Maori females had post-graduate qualifications, by 1996 the ratio had increased to 1 in 151, a ratio that was 1 of 83 in 1996 for the Part-Maori, 1 of 29 for European females, and 1 of 21 of the Other Ethnic groups.

Tables 1.1 and 1.2 further show that the sample with Other Ethnicity had proportionally highest tertiary educational levels. These 'higher education' attainment levels, and their significant growth over the decade, however, mainly reflect the effect of the immigration policy in New Zealand since 1991 with greater emphasis on the educational attainment criteria.

Tables 1.1 and 1.2 further show mean income differentials and unemployment rates between the Maori and Non-Maori populations across the decade, for males and females. In 1986, the mean income for Maori men was at 73.5% of the mean income of European males. In 1996, this ratio had deteriorated to 63.8%. The income levels for Part-Maori men were relatively higher at 85.0% of the European mean income in 1986 and 76.9% in 1996. The mean income level for 'Other Ethnic groups' was also at 66.5% of the European mean income in 1996.

Mean female income levels were closer across ethnic groups, and this partly reflects the generally lower income levels of females of all ethnic groups. For example, mean Maori female income levels were at 84.3% of European females in 1986, and at 74.4% in 1996. Part-Maori females, however, experienced an improvement in their relative income levels from 0.8% of European female income levels in 1986 to 86.5% in 1996.

Finally, Tables 1.1 and 1.2 show that Maori and Part-Maori had higher unemployment rates, they were more likely to be out of the labour force, and less likely to be employed full-time than the Part-Maori and the European populations. The Maori population, in particular, had consistently less advantageous educational attainment and labour market outcomes than the Part-Maori. These labour market outcomes were more accentuated by 1996. For example, the Maori unemployment rate in 1996 was 1.5 times the Part-Maori and 3.3 times the European Unemployment.

Tables 2.1 and 2.2 show the ethnicity, mean income levels, and labour market outcomes by educational attainment levels for males and females, respectively. These are extensions of the analyses in Maani (1997, 1999) in providing data on the Maori and Non-Maori populations. Tables 2.1 and 2.2 show the link between average incomes, labour market outcomes, and educational attainment levels. A comparison of the last row of Tables 1.1 and 1.2 on the *share of each ethnicity in the overall population*, and rows 3–6 of Tables 2.1 and 2.2 on the *proportion of each educational attainment group by ethnicity* highlights the degree to which the Maori population is disproportionately over-represented in the 'No Qualifications' group and under-represented in post-compulsory secondary and tertiary educational attainment groups. For example, in 1996, while Maori males comprised 7.0% of the sample, they constituted 13.63% of those without qualifications, but 0.95% of those with Post-graduate qualifications, and 1.3% of those with Bachelor's qualifications. Despite increased participation rates of Maori youth in tertiary education over the decade, these ratios represented very modest improvements in the relative average educational qualifications of the overall Maori population over the decade. This is partly due to increases in educational attainment of all ethnic groups over the decade, but also the increased number of immigrants with higher educational degrees since 1991. Nevertheless, this analysis highlights the relatively adverse educational position of the Maori and Part-Maori populations.

The analyses in Tables 1.1 and 1.2 are extended in Tables 3.1 and 3.2, in providing a comparison of mean 'income' and 'unemployment' levels of Maori and Non-Maori by educational attainment, regardless of labour force participation. A more extensive set of relevant analyses are also presented in Tables A.1-A.4 in Appendix A, which also include the age and other labour market outcomes for each group. Tables 3.3 and 3.4, in turn, provide relative mean income levels for those employed 'full-time' by ethnicity and educational qualifications.

Tables 3.1 and 3.2 show increased mean income levels and decreased unemployment rates by educational attainment. They further show that within each educational category Maori and Part-Maori income levels are generally lower than for the European group. Since these income levels are based on overall samples, these mean income levels incorporate the effects of a number of factors including employment outcomes, hours of work, human capital levels and occupation and industry of employment. These statistics indicate that the Maori population has a greater share of unemployment, and lower income levels associated with lower relative educational attainment levels.

To further represent the link between education and income levels by ethnicity Figures I-IV provide age income profiles for 'full-time employed' males and females by educational qualification and ethnicity. These income profiles show lower and generally flatter profiles for women, and Maori, especially at the lower education levels.

It may be noted that due to the low Maori participation rates in tertiary education especially in the older age groups, the number of observations for Maori postgraduate study is small for mature and older Maori. This is in particular true for Maori women in 1986. As a result, the data on Maori higher education show greater variance than for lower school qualifications such as the group with no school qualifications.[9]

The analysis of mean income levels by ethnicity in Tables 3.3 and 3.4 for the samples of 'Full-time employed' males and females respectively is useful in adjusting for labour market outcomes. This analysis shows that while income levels are lower for Maori, and to a lesser extent, Part-Maori within each educational attainment category, once considering those working full-time the income gap is narrower. For example, the 1996 mean income of Maori males with 'No Qualifications' is at 77.5% of the European mean income levels, and with 'Bachelor's Qualifications' it is at 71.4%. For females, the gap is narrower at 82.5% for 'No Qualifications', and 86.5% with 'Bachelor's Qualifications'.

A more comprehensive set of statistical measures from which Tables 3.3 and 3.4 are derived, including the average age and the number of observations for each educational attainment level, is also presented in Tables B.1-B.4 in Appendix B, for both the 'All Employed' and 'Full-time Employed' samples.

One important result from Tables 3.1–3.4 and Tables B.1–B.4 is that average income levels are lower for the Maori population even when controlling for educational qualification. This indicates disadvantage in either transferring education to market rewards, or the effect of other factors such as a difference in the quality or the field of study in the education received.

A second and more positive result is that ethnicity is not income destiny, and that the dispersion of income by education within ethnic groups is far greater than the differences in mean income levels for the same education level and across ethnic groups

One would note in Tables in Appendix B the younger composition of Maori and Part Maori compared to the European population, which could partly explain lower income levels for Maori across and within each educational category. For example, in the samples of the 'Full-time Employed' males in 1996 (in Table B.3 in Appendix B) the average age of Maori males with 'No Qualifications' was 36.7 compared to 42.0 for the European group. Likewise, for females the average ages were respectively 38.4 and 43.7 years. This age difference is however less pronounced among tertiary graduates by 1996, indicating more comparable age structures for graduates. The econometric analyses in the next section which control for age, employment status, educational attainment and ethnicity provide estimates of income levels by ethnicity which make these important adjustments.

III. 'Earnings Function' Estimates

The purpose of the econometric analyses in this section is to examine the link between educational attainment and income levels by ethnicity. An objective of the econometric analyses is to examine whether the income differentials demonstrated in mean income levels of the Maori and Non-Maori samples continues to exist once adjustments for age and educational qualifications are made. It is further of interest to examine whether the income levels associated with similar higher educational attainment for Maori and Non-Maori differ in 1986 and 1996. This question is of further interest, since expected lifetime rewards to educational investments are expected to influence participation rates in post-compulsory education, where consistently lower rewards for an ethnic group would in turn result in lower educational investments and attainment over time.

The models estimated are semi-logarithmic with binary variables for educational qualifications (see for example, Heckman and Polacheck, 1974; and Dougherty and Jimenez, 1991).[10] The model takes the general form across ethnic groups:

$$\ln Y_i = a + b_1 \text{School Cert}_i \text{ (Year 11)} + b_2 \text{ Sixth Form Cert}_i \text{ (Year 12)} + b_3 \text{Bursary}_i \text{ (Year 13)} + b_4 \text{Diploma}_i + b_5 \text{Bachelor's Degree}_i + b_6 \text{Postgrad. Degree}_i + c_1 \text{ Maori}_i + c_2 \text{ Part-Maori}_i + c_3 \text{ Other Ethnicity}_i + b_7 \text{EXP}_i + b_8 \text{EXP}_i^2 + u_i \quad (1)$$

where the dependent variable is the natural logarithm of annual income in current dollars. The model incorporates before-tax income levels.[11] The excluded educational qualification level is 'with no school qualifications', and the base and omitted ethnic category is the European. Variable EXP measures the potential years of work experience by educational qualification level, in the usual quadratic form.[12]

Model 1 provides useful estimates of the difference in the earnings of Maori, Non-Maori and European samples, but it restricts the coefficients for educational qualifications and experience to remain constant across ethnic groups. The unrestricted estimation of the above model is obtained through the estimation of the four subsamples by ethnicity:

$$\ln Y_{ik} = a + b_1 \text{School Cert}_{ik} \text{ (Year 11)} + b_2 \text{ Sixth Form Cert}_{ij} \text{ (Year 12)} + b_3 \text{Bursary}_{jk} \text{ (Year 13)} + b_4 \text{Diploma}_{ik} + b_5 \text{Bachelor's Degree}_{ik} + b_6 \text{Postgrad. Degree}_{ik} + b_7 \text{EXP}_{ik} + b_8 \text{EXP}_{ik}^2 + v_{ik} \quad (2)$$

where *k* stands for each of the four ethnic groups. Model 2 is estimated for both 1986 and 1996 allowing a comparison of Maori relative income returns to education compared to the base European income levels with similar levels of education in each time period, and over the decade.

For formal statistical tests and *inferences* on the differences in coefficients by ethnicity in a given year and over time, auxiliary stability tests have also been conducted and reported. The tests involved pooling together the 20% samples for the 1986 and 1996 census years, where the binary variable technique and the Wald test are performed.[13]. Inference on the differences of coefficients by ethnicity, and the stability of each coefficient over time is made through t-tests relating to interaction effects for all coefficients over the two census years of the following model, providing t-tests of differences of coefficients across ethnicity and over time:

$\ln Y_i = a + b_1 \text{School Cert}_i$ (Year 11)$+ b_2$ Sixth Form Cert$_i$ (Year 12) $+ b_3 \text{Bursary}_i$ (Year 13)$+ b_4 \text{Diploma}_i + b_5 \text{Bachelor's Degree}_i + b_6 \text{Postgrad. Degree}_i + c_1$ Maori$_i$ $+ c_2$ Part-Maori$_i$ $+ c_3$ Other Ethnicity$_i$ $+ \sum d_j$ethnicity, experience, education, and year interaction effects $+ b_7 \text{EXP}_i + b_8 \text{EXP}_i^2 + v_i$ (3)

Model 3 coefficient estimates are equivalent to the four unrestricted equations of Model 2. Therefore, from Model 3, the differential t-tests are reported for inference on the relative income position of Maori by education level, in each time period, and over time.

Since sample characteristics and age-income profiles are significantly different for males and females, throughout the report separate analyses are presented for the two groups (See for example, Maani 1997, 1999). In addition, estimates are presented separately for the samples of the employed, and its sub-sample of the full-time employed, to account for the effect of the hours of work. It may be noted that although earnings functions in the Labour Economics field generally include a number of variables such as race, family status, union membership, firm size, etc., in this study the interest is in the overall rates of return to an educational degree. Further extensions of Model 2, however, provide estimates when controlling for occupation and Industry. All models estimated utilise the White adjustment to correct for detected heteroscedasticity and for efficient estimators.

Income Effects of Secondary and Tertiary Education by Ethnicity:

Estimates of Model 1 presented in Table 4.1 show significant returns to educational qualifications and higher returns over the decade. These results further estimate income levels that while controlling for educational qualifications, were significantly lower for Maori, and to a lesser extent Part-Maori compared to the European group.

The usual relevant adjustments are made to interpret the coefficients in Table 4.1 as a *percentage* gain in income in relation to dichotomous (binary) variables for educational qualifications, given the semi-logarithmic functional forms of the 'earnings functions' (see e.g. Halvorsen and Palmquist, 1980).[14] For example, the *percentage* gain in income from an education level is derived as: $g_j = [\exp(b_j) - 1]$ times 100, where g_j reflects the percentage gain relating to this education level, and b_j is the regression coefficient (in Tables 4.1 – 6.4).[15]

In Table 4.1 results income levels are estimated at levels that were 18.8% less for full-time employed Maori men (coefficient of –0.172), and 8.3% less for women (coefficient of –0.077) in 1996. Income levels were in comparison, 5.3% less for full-time employed Part-Maori men (coefficient of –0.052) and not statistically different for full-time Part-Maori and European women in 1996. These results, which control for age and education level, provide estimates of income differentials that are smaller than those in the analysis of mean income levels in the previous section.

As noted earlier Model 1 *restricts* the coefficients for educational qualifications and experience to remain constant across ethnic groups. Tests of whether this restriction holds (based on the results of Model 1, and Model 2 presented later in Tables 4.2-4.5) indicate the usefulness of unrestricted models, which allow coefficients to vary across ethnic groups. While the restriction could not be rejected for the female samples in 1996, it is significantly rejected in the case of male earnings functions, indicating that income rewards to education vary more significantly for males with ethnicity.

The estimates of Model 2 for each of the four ethnic groups provided in Tables 4.2-4.5 show significant returns to post-compulsory educational degrees, but flatter income profiles in relation to experience for females and for Maori. Within each ethnic group, the returns to post-compulsory secondary and tertiary education are also significant. In particular, in the case of women, Maori, and Other Ethnic groups the returns to higher education are greater, since they are relative to lower income levels for the base group with no school qualifications. For example, columns 4 and 8 of Table 4.2 and Table 4.4 (for Maori and European ethnicity) indicate that a Bachelor's degree wasassociated with income levels that were 106% higher than with no school qualifications (a coefficient of 0.725) for Maori men working full-time in 1996. This compared to 92.6% higher for the European group (coefficient of 0.674). For Maori females, in turn, the comparable results were 129% higher (coefficient of 0.832) and for European females 82.4% (coefficient of 0.601). These results are consistent with results of Gibson (1998) for a sample of twins in New Zealand, which also finds higher returns to education for Maori, but lower educational attainments for Maori.

Figures V and VI provide visual representation of the income-experience profiles for six educational qualifications based on the estimated models for full-time employed males and females in 1996. An examination of these figures reveals greater dispersion in income levels by ethnicity for males than for females, where the greatest income dispersion can be observed for males with a Bachelor's degree. In addition, while European income levels are consistently higher among the males, Part-Maori have the next level of income, in some cases not significantly different from European income levels. In contrast, and consistent with our earlier results, either Maori or Other Ethnicity possess the lowest age income profiles, reflecting the lowest relative income positions among the four ethnic groups. This is expected to partly reflect the effect of differences in hours of work during the year, and differences in the hourly wage rates.

In the case of females, while Maori women had lower income levels, the gap by ethnicity is generally smaller or non-significant, especially at higher education levels. For both males and females with tertiary education, however, the group with Other Ethnicity has the lowest relative income position. This is especially true by a significant margin in the case of a Bachelor's degree, which is expected to reflect the employment outcomes for recent immigrants from non-traditional non-English speaking countries, but with higher educational qualifications.

Stability Tests of Maori Income Levels in Each Time Period and Over Time:

The results of Tables 4.1–4.5 and Figures 5–6 indicate that the returns to post-compulsory education have been significant over the 1986-1996 decade for the four ethnic groups considered, while the returns vary across ethnic groups. The results further show that Maori base-level incomes were lower at statistically significant levels in both 1986 and 1996.

To facilitate a comparison of the coefficients by ethnicity in Tables 4.2–4.5, and for inference on the *differences in the coefficients,* the results of Model 3 are summarised in Tables 5.1 and 5.2 for full-time employed males and females, respectively. Part one of each table provides the coefficients of income returns to each education degree, and years of experience, for each ethnic group in 1986 relative to the base European group in that year. For example, $\mathbf{b_{M86}\text{-}b_{E86}}$ in the first column of Table 5.1 represents the

difference in the coefficient for an educational level for Maori compared to the European group with the same level of education in 1986. The corresponding tstatistic, in turn, represents the t-value for the test of the significance of the difference in the coefficients ($\mathbf{b_{M86}}$ **and** $\mathbf{b_{E86}}$). Part 2 of Tables 5.1 and 5.2 provide similar information for 1996.

Part 3 of Tables 5.1 and 5.2 summarise the results of the stability test of the coefficients by ethnicity *over time*. Column 7 provides the differences in the coefficients for the base European group between 1986 and 1996, while columns 8–11 provide the relative change in the coefficients for each of the other three ethnic groups *relative* to the European group with the same characteristic over the decade. The corresponding t statistic, in turn, is in relation to the difference over time.

Notably, Table 5.1 statistically confirms the earlier findings that compared to the European population, and controlling for educational attainment, the Maori population had lower income levels in both 1986 and 1996. For Maori and Other Ethnic males with no school qualifications the disadvantage had increased over the decade.

Parts 1 and 2 of Tables 5.1 and 5.2 further statistically confirm the flatter experience income profiles of Maori, Part-Maori and the Other Ethnic group, with the latter having the flattest profiles.

The estimates in columns 4 of Table 5.1 for full-time employed males in 1996 indicate that Maori males with no school qualifications had income levels that were 15.9% lower (a coefficient differential of –0.148) than the Non-Maori European male with similar qualifications in that year. This suggests that the labour market penalty for not having school qualifications is greater for Maori than for the European population. In comparison, the income levels of the Part-Maori were not significantly different from the control group, while the Other Ethnicity group had the lowest relative income levels at levels 21.6% lower (a coefficient differential of–0.196).

In comparison, Maori females with 'no school qualifications' had income levels that were 18.2% lower, and the Other Ethnic group had incomes 20.9% lower than European females. For females, a statistically significant difference between Part-Maori and European income levels was not present.

The results in Tables 5.1 and 5.2 further indicate that obtaining post-compulsory education was associated with relative income gains for Maori that were significantly higher than the European group. The results in column 4 of Table 5.1 estimate additional income returns to the Sixth Form School Certificate that were 5.5% higher (a coefficient differential of 0.054) for full-time employed Maori males and 21.5% higher (a coefficient of differential 0.195) for Maori females. Higher income returns for Maori are statistically significant for most education levels. In the case of postgraduate education, the expected returns for Maori males were 21.4% higher than for Europeans (coefficient of 0.117) and for Maori females they were 22.9% higher (coefficient of 0.207).

These significant differences partly reflect greater employment opportunities and access to new occupations with post-compulsory education, and partly due to the lower base income levels of Maori without school qualifications. Nevertheless, these results suggest that post-compulsory education provides options for Maori in raising their absolute and relative income levels.

This is consistent with the results of Chapple and Rea (1999) and Winklemann and Winklemann (1997) who have provided evidence on the link between schooling and *employment*, respectively using the Household Labour Force Survey data and the New Zealand Census. The analysis in this report has provided evidence on the link between education and *income* disparity of the Maori and non-Maori populations.

Stability Test for Maori Income Levels Over Time

The analysis in part 3 of Tables 5.1 and 5.2 extends the analyses in Table 4.2-4.5 for each census year to provide a formal test of potential *changes* in the income returns to various educational degrees for Maori and Non-Maori groups over the two census years.

The results show that the returns to post-compulsory educational degrees had increased across ethnic groups, and that the changes to income returns to education over the decade were variable across ethnicity.

As column 8 in Tables 5.1 and 5.2 indicates, the returns to all education degrees had increased for European males, and for post-compulsory secondary, Bachelor's and Post-graduate degrees had increased for females, over the decade[16]

Notably, Table 5.1 statistically confirms the earlier finding that compared to the European population, and controlling for educational attainment, the Maori population had lower income levels in both 1986 and 1996. For Maori and Other Ethnic males with no school qualifications the disadvantage had increased over the decade. For example, for full-time employed males, and compared to European males in that category, the income differences were 4.5% in 1986, compared to 10.9% in 1996 (respectively, with coefficients of –0.044 for 'Maori' in 1986 and –0.0148 in 1996, or a difference of –0.104 in column 8 of Table 5.1). For the 'Part-Maori' with no school qualifications, in turn, a 6% income disadvantage in 1986 had changed to income levels that were not statistically different in 1996.

For Maori females with educational qualifications, in turn, the gap with European incomes had decreased significantly, and in the case of Part-Maori the gap had disappeared. Only in the case of females of Other Ethnicity the income difference was far more significant in 1996, at income levels that were 19.5% lower than for the European full-time employed females (a change in the relative coefficient of –0.178 in column 11 of Table 5.2). As noted earlier, this result is expected to partly reflect labour market outcomes for immigrants.

A notable result is that the returns to a Bachelor's degree for the Maori sample were significantly higher in 1996 compared to a decade earlier. For example, the income returns to a Bachelor's Degree were 15.6% higher in 1996 for full-time employed Maori men than in 1986. Likewise, the returns to a post-graduate degree had increased by 38.7% for full-time employed Maori men, and by 42.2% for full-time employed Maori females (respectively, with coefficients of 0.326 for males and 0.352 in column 8 of Tables 5.1 and 5.2, respectively). Column 8 of Table 5.2 further reveals that for Maori females the returns to most post-compulsory educational qualifications had increased significantly over the decade, a result that is consistent with the significant increases in the participation of Maori females in post-compulsory education over the decade (as noted in Table 1.2).

The results for Part-Maori do not show consistent significant changes to returns to educational qualifications over the decade. Since Part-Maori income levels with higher education have not been significantly lower than European income levels, this result indicates the changes for the two groups have been comparable over the decade.

One interesting question worthy of further analysis in future studies is that why Part Maori have educational attainment and income levels that are more similar to the European population than the Maori population. For example, one explanation is that Part-Maori ethnicity reflects language, cultural, and other characteristics that are more similar to the European population, and that therefore they result in investments in education and links into the job market that more closely resemble the European population. This would also be consistent with the hypothesis that Maori face greater economic or informational barriers to obtaining education, due to education and income levels, rural living and other cultural factors. However, is it plausible that identifying with Maori ethnicity could in turn be endogenous? For example, if individuals of Maori descent who are disadvantaged are more likely than others to identify as Maori rather than part-Maori or European, the estimates of educational attainment and the income gap between Maori and other groups would be over-estimated. In contrast, if economically advanced individuals of Maori descent are more likely to identify as Maori, the opposite would be true, and there would be an under-estimation of the gap. The ideal assumption is of course, that identification with an ethnicity is exogenous to educational attainment or income levels.

Finally, the results for the Other Ethnic groups show significant increases to returns to *post-compulsory secondary* education and Diplomas over the decade. This result is expected to reflect the effect of increased educational participation of Polynesian and other ethnic groups over the decade, opening new job opportunities for both men and women. The returns to a *Bachelor's degree* for males, however, showed a significant deterioration over the decade. As discussed earlier this finding is expected to reflect the less advantageous labour market outcomes experienced by immigrants since 1991 partly due to initial language barrier, despite higher educational qualifications.

The results of the stability tests in this section indicate that the returns to various educational qualifications had generally increased over the decade. For Maori males the returns to tertiary education were significantly higher relative to no school qualifications in 1996 than they were in 1986. For Maori females, the returns to all post-compulsory secondary degrees, a Diploma, and Post-graduate studies had also grown significantly over the decade.

An extension of the Models estimated for each ethnic group further included 'Occupation' and 'Industry' control variables. Nine one digit 'Occupation' and nine 'Industry' categories were controlled for.[17] The results of these models presented in Tables 6.1–6.4 indicate that educational qualifications impact income levels to a great extent through access to occupations and industries otherwise not open to an individual. The omitted occupation category was the highest paying category of 'Managers, Administrators, and Legislators' in 1996, and 'Professional and Scientific Occupations' in 1986, hence the negative signs for occupation coefficients. As Tables 6.1–6.4 show the 1996 and 1986 census occupation classifications were different and therefore different specifications for the two years are chosen.[18]

A comparison of Tables 6.1–6.4 to their equivalents 4.2–4.5 without occupation and industry control variables shows the greater explanatory power of the models with the inclusion of the control variables, and decreases in the estimated returns to education coefficients. This is consistent with the expectation that post-compulsory education increases incomes partly through access to occupations and industries, and partly within those categories. This impact on the results is relatively more significant for the Maori and Other Ethnicity samples than for the European and Part-Maori groups, indicating a greater role played in 1986 and 1996 by access to higher paying occupations and industries.

The results in this section finally indicate that for those with 'no school qualifications' the income gap between Maori and European had increased over the decade. However, with post-compulsory secondary or tertiary education levels the gap was narrowing, or not changing at statistically significant levels.

IV Conclusions

This study has examined how relative income levels, and in particular the income returns to post-compulsory and higher education (education beyond age 16) for Maori compare to the Non-Maori, and how they have changed over the 1986–1996 decade. The analysis focussing on the Maori population, has extended earlier research for the overall New Zealand population.

The results indicated that the Maori population was at a disadvantage in terms of educational attainment, employment and income levels, in both 1986 and 1996, but that Maori participation in post-compulsory education had increased over time. However, when considering the overall Maori population, and with improvements over a decade, still more than 60% of Maori males and females had no school qualifications in 1996.

The Part-Maori population has qualification levels that are more favourable than for Maori, but less advantageous than the European population.

Since all ethnic groups have experienced increased participation in post-compulsory education over the decade, and given the greater link between employment and educational attainment in New Zealand over the 1980s and 1990s (see e.g. Maani 1997, 1999), this means that the relative position of Maori in terms of income and employment had deteriorated over the decade. For example, while in 1986 the mean male Maori income was 73.5% of mean European male income levels, the ratio had dropped to 63.8% in 1996. Likewise, for females the income ratio had dropped from 84.3% to 74.4%. Further statistical results in Tables 1.1–3.4 and in Appendices A and B indicated that the Maori income disadvantage was partly associated with less employment, greater unemployment and a lower probability of working 'full-time'.

When comparing full-time employed Maori and Non-Maori with Europeans, the income gap was narrower in both census years, and for the small but increasing number of Maori with high educational qualifications at Post-graduate levels the income gap disappears for women, and narrows for men at mean incomes of 87.6% of European male income levels with Post-graduate education.

Further 'earnings function' analyses indicated that the returns to post-compulsory education were significant for both men and women and across ethnic groups, and that they had increased for many education levels over the decade. The results further showed relatively higher income returns to educational attainment for Maori. This is partly a reflection of relatively lower income levels for Maori without school qualifications.

An implication of this result is that for Maori the lower income levels without school qualifications impose a greater relative opportunity cost of not pursuing with post compulsory education. A further implication of this result is that these positive returns to education would tend to increase the Maori demand for post-compulsory education. However, the fact that still the majority of the Maori population did not possess school qualifications in 1996 indicates that other barriers impose a great negative effect on the Maori demand for further education. These could include financial, rural, socio-economic, language, cultural, and school quality factors. Nevertheless the results of the study suggest that investing in higher education provides options for the Maori population in to reducing the income gap.

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Table 1.1 — Sample Characteristics: Males

Means
(Standard Deviations)

Personal Characteristics	Maori		Part-Maori		European		Other	
	1986	1996	1986	1996	1986	1996	1986	1996
Age	33.08	35.99	31.48	33.60	37.85	39.27	33.56	35.07
	(12.26)	(12.16)	(11.98)	(11.70)	(13.74)	(12.90)	(11.78)	(11.69)
Annual Income ($)								
1986 Dollars	$14,349	—	$16,597	—	$19,521	—	$15,025	—
	($7,953)		($9,808)		($11,845)		($10,177)	
1996 Dollars	$23,575	$20,470	$27,269	$26,217	$32,072	$34,071	$24,687	$22,662
	($13,067)	($16,160)	($16,115)	($21,660)	($19,462)	($27,400)	($16,721)	($22,771)
Relative to European Mean Income in the Census Year	73.5%	63.8%	85.0%	76.9%	100%	100%	76.9%	66.5%
Highest Qualification								
(Percentage of Sample)								
No Qualifications	64.21%	63.53%	42.84%	38.05%	32.18%	29.35%	45.05%	37.32%
School Certificate	10.82%	11.61%	13.73%	14.55%	11.63%	11.75%	11.64%	7.38%
U.E./Sixth Form Cert.	4.08%	6.40%	7.51%	10.42%	8.26%	9.74%	7.29%	7.32%
Bursary	1.22%	3.72%	3.72%	8.30%	3.81%	6.99%	6.50%	10.48%
Diploma	18.53%	12.54%	27.56%	22.44%	35.55%	28.72%	19.88%	14.47%
Bachelor's Degree	0.77%	1.60%	2.63%	4.52%	5.25%	8.77%	6.17%	15.18%
Postgraduate Qual.	0.37%	0.60%	2.01%	1.72%	3.32%	4.68%	3.47%	7.85%
Sample Proportion with:								
-Bachelor's Degree	1 / 120	1 / 63	1 / 38	1 / 22	1 / 19	1 / 11	1 / 16	1 / 7
-Postgraduate Qualification	1 /270	1 / 167	1 / 38	1 / 58	1 / 30	1 / 21	1 / 29	1 / 13
Labour Force Status								
(Percentage of Sample)								
All Employed	83.09%	65.11%	88.36%	77.89%	87.53%	83.84%	83.76%	66.35%
Employed Full-Time	77.14%	57.61%	83.69%	71.11%	84.42%	77.31%	79.66%	58.06%
Unemployed	7.45%	12.78%	5.03%	8.33%	2.53%	3.84%	5.23%	9.87%
Out of Labour Force	9.18%	22.10%	6.27%	13.78%	9.61%	12.32%	10.63%	23.78%
Sample Size	14,962	12,157	3,875	9,204	157,667	138,392	8,658	12,888
Percentage of Sample	8.1%	7.0%	2.1%	5.3%	85.2%	80.2%	4.6%	7.5%

Table 1.2 — Sample Characteristics: Females

Means
(Standard Deviations)

Personal	Maori		Part-Maori		European		Other	
Characteristics	1986	1996	1986	1996	1986	1996	1986	1996
Age	33.34	35.95	31.10	33.62	38.13	39.32	33.85	34.84
	(12.23)	(12.06)	(11.80)	(11.56)	(13.80)	(12.82)	(12.22)	(11.55)
Annual Income ($)								
1986 Dollars	$8,301	—	$9,167	—	$9,841	—	$8,943	—
	($5,821)		($6,915)		($7,891)		($7,209)	
1996 Dollars	$13,638	$14,238	$15,061	$16,561	$16,170	$19,145	$14,693	$14,525
	($9,564)	($11,863)	($11,360)	($14,370)	($12,965)	($17,658)	($11,845)	($14,695)
Relative to European Mean Income in the Census Year	84.3%	74.4%	80.8%	86.5%	100%	100%	90.7%	75.9%
Highest Qualification								
(Percentage of Sample)								
No Qualifications	67.48%	60.78%	43.80%	37.13%	38.84%	29.87%	47.37%	40.16%
School Certificate	14.05%	13.68%	18.91%	17.36%	16.37%	16.29%	14.61%	8.89%
U.E./Sixth Form Cert.	4.61%	8.07%	10.52%	12.90%	9.40%	11.75%	7.36%	7.58%
Bursary	1.03%	3.50%	2.71%	7.66%	3.09%	6.19%	5.56%	9.83%
Diploma	12.18%	11.78%	20.79%	19.62%	26.97%	25.18%	18.65%	15.44%
Bachelor's Degree	0.43%	1.53%	2.26%	4.12%	3.39%	7.27%	4.47%	13.29%
Postgraduate Qual.	0.22%	0.66%	1.01%	1.21%	1.94%	3.45%	1.98%	4.81%
Sample Proportion with:								
-Bachelor's Degree	1 /232	1 / 65	1 / 44	1 / 24	1 / 29	1 / 14	1 / 22	1 / 8
-Postgraduate Qualification	1 / 454	1 / 151	1 / 99	1 / 83	1 / 52	1 / 29	1 / 51	1 / 21
Labour Force Status								
(Percentage of Sample)								
All Employed	54.14%	46.93%	63.40%	61.49%	63.81%	69.41%	62.14%	52.51%
Employed Full-Time	43.23%	33.30%	49.73%	43.18%	46.02%	45.77%	51.39%	38.98%
Unemployed	9.27%	11.84%	6.82%	8.19%	3.79%	3.51%	6.07%	8.56%
Out of Labour Force	36.43%	41.23%	29.61%	30.32%	32.23%	27.09%	31.56%	38.94%
Sample Size	13,339	12,109	3,945	10,147	147,210	140,557	7,988	13,273
Percentage of Sample	7.7%	6.9%	2.3%	5.8%	85.4%	79.8%	4.6%	7.5%

Table 2.1 — Labour Force Status, Ethnicity and Income of Males

1986: by Highest Educational Qualification

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Age	39.27	32.83	31.72	27.06	38.71	35.34	40.34
	(14.13)	(13.38)	(13.72)	(11.53)	(12.62)	(11.07)	(10.83)
Ethnicity (% of Sample)							
Maori	14.57%	7.53%	4.19%	2.65%	4.50%	1.27%	0.99%
Part-Maori	2.52%	2.48%	2.00%	2.09%	1.73%	1.13%	1.38%
European	76.99%	85.30%	89.47%	87.10%	90.97%	91.67%	92.35%
Other	5.92%	4.69%	4.34%	8.16%	2.79%	5.92%	5.29%
Income (1996 dollars)	$25,981	$27,712	$28,989	$21,625	$34,750	$45,438	$52,682
	($15,382)	($16,907)	(18,368)	($20,127)	($17,783)	($26,204)	($26,605)
Labour Force Status							
Employed	83.44%	91.19%	88.71%	61.14%	90.90%	90.07%	92.88%
Employed Full-Time	79.41%	88.21%	85.87%	55.70%	88.03%	86.74%	89.60%
Unemployed	4.14%	2.82%	2.74%	9.03%	1.77%	2.47%	1.55%
Out of the Labour Force	12.09%	5.72%	8.28%	29.57%	6.98%	7.23%	5.22%
Sample Size	65,928	21,488	14,548	6,899	61,606	9,021	5,672

Table 2.1 — Labour Force Status, Ethnicity and Income of Males

1996: by Highest Educational Qualification

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Age	41.90	36.29	33.38	27.37	39.68	37.33	41.29
	(13.14)	(12.17)	(11.50)	(11.58)	(11.84)	(11.13)	(10.52)
Ethnicity (% of Sample)							
Maori	13.63%	7.07%	4.82%	3.69%	3.37%	1.32%	0.95%
Part-Maori	6.18%	6.71%	5.94%	6.24%	4.57%	2.83%	2.05%
European	71.70%	81.46%	83.41%	79.03%	87.93%	82.54%	83.89%
Other	8.49%	4.76%	5.84%	11.03%	4.13%	13.31%	13.12%
Income (1996 dollars)	$24,241	$30,191	$32,309	$20,900	$35,291	$48,096	$57,148
	($19,857)	($23,043)	($25,547)	($24,399)	($23,876)	($36,542)	($38,406)
Labour Force Status							
Employed	71.31%	86.04%	87.63%	68.87%	88.05%	87.70%	88.10%
Employed Full-Time	65.07%	80.64%	81.69%	51.25%	82.66%	80.64%	82.58%
Unemployed	7.23%	4.91%	4.00%	6.82%	3.18%	4.18%	3.88%
Out of the Labour Force	21.46%	9.06%	8.37%	24.31%	8.76%	8.12%	8.02%
Sample Size	56,659	19,966	16,157	12,244	45,195	14,704	7,716

Table 2.2 — Labour Force Status, Ethnicity and Income of Females

1986: by Highest Educational Qualification

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Age	41.73	33.64	30.35	27.21	36.94	33.03	37.69
	(13.65)	(12.68)	(12.98)	(12.92)	(12.57)	(10.23)	(10.88)
Ethnicity (% of Sample)							
Maori	12.56%	6.72%	3.98%	2.63%	3.72%	1.04%	0.97%
Part-Maori	2.41%	2.67%	2.69%	2.04%	1.88%	1.62%	1.30%
European	79.75%	86.42%	89.53%	86.86%	90.98%	90.85%	92.61%
Other	5.28%	4.18%	3.80%	8.47%	3.41%	6.49%	5.12%
Income (1996 dollars)	$13,099	$15,223	$16,922	$12,266	$19,048	$23,946	$28,168
	($10,358)	($11,584)	($12,056)	($11,525)	($13,869)	($17,788)	($20,267)
Labour Force Status							
Employed	54.44%	67.31%	71.08%	47.31%	72.24%	74.81%	79.19%
Employed Full-Time	36.63%	50.78%	58.86%	35.22%	52.96%	58.13%	61.82%
Unemployed	4.57%	4.36%	3.91%	10.84%	3.60%	4.57%	2.88%
Out of the Labour Force	41.81%	28.22%	24.86%	41.68%	23.96%	20.59%	17.70%
Sample Size	71,675	27,889	15,455	5,242	43,638	5,498	3,085

Table 2.2 — Labour Force Status, Ethnicity and Income of Females

1996: by Highest Educational Qualification

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Age	43.73	37.73	32.71	25.62	38.71	34.65	38.51
	(12.72)	(11.45)	(10.35)	(10.84)	(11.92)	(10.32)	(10.51)
Ethnicity (% of Sample)							
Maori	12.60%	6.02%	4.93%	3.78%	3.49%	1.47%	1.41%
Part-Maori	6.45%	6.41%	6.61%	6.94%	4.87%	3.32%	2.16%
European	71.84%	83.28%	83.39%	77.63%	86.62%	81.19%	85.21%
Other	9.12%	4.29%	5.08%	11.65%	5.02%	14.02%	11.22%
Income (1996 dollars)	$13,826	$18,215	$19,288	$11,972	$21,480	$26,325	$33,432
	($13,035)	($16,220)	($16,376)	($13,873)	($17,204)	($22,031)	($26,573)
Labour Force Status							
Employed	50.53%	70.84%	73.82%	62.97%	76.72%	78.47%	81.48%
Employed Full-Time	31.74%	47.13%	51.95%	33.27%	52.38%	59.09%	62.58%
Unemployed	5.63%	4.23%	3.88%	7.68%	3.53%	4.58%	4.10%
Out of the Labour Force	44.02%	24.93%	22.30%	29.36%	19.75%	16.94%	14.42%
Sample Size	58,440	27,501	19,814	11,204	40,855	12,585	5,687

Table 3.1 — Income and Unemployment Rates by Ethnicity and Highest Educational Qualification: Males

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
1986:							
Income (1996 dollars)							
Maori	$21,887	$22,881	$24,242	$23,787	$28,844	$33,679	$43,586
	($11,906)	($12,163)	($12,938)	($18,899)	($14,126)	($22,800)	($25,198)
Part-Maori	$23,816	$25,257	$24,612	$23,994	$32,128	$40,627	$46,424
	($13,053)	($13,997)	($14,125)	($22,370)	($16,061)	($23,673)	($28,024)
European	$27,145	$28,490	$29,600	$22,087	$35,270	$46,282	$53,305
	($16,053)	($17,403)	($18,704)	($20,174)	($17,934)	($26,160)	($26,404)
Other Ethnicity	$21,845	$22,622	$22,997	$15,395	$28,977	$35,826	$45,125
	($12,079)	($12,955)	($15,344)	($18,287)	($16,191)	($25,446)	($28,371)
Unemployment Rate							
Maori	8.72%	6.49%	5.08%	7.10%	4.33%	5.22%	1.79%
Part-Maori	6.81%	3.57%	5.50%	11.11%	2.25%	3.92%	3.85%
European	3.08%	2.36%	2.46%	8.79%	1.57%	2.29%	1.45%
Other Ethnicity	5.43%	4.76%	4.91%	11.72%	3.72%	4.49%	2.67%
1996:							
Income (1996 dollars)							
Maori	$18,229	$22,048	$24,096	$17,383	$26,190	$33,467	$53,572
	($13,928)	($15,819)	($17,750)	($18,021)	($17,859)	($27,743)	($32,955)
Part-Maori	$21,557	$25,558	$27,120	$18,223	$31,626	$43,810	$51,290
	($17,006)	($19,418)	($21,710)	($19,365)	($21,653)	($34,004)	($35,726)
European	$26,379	$31,619	$33,793	$22,581	$36,251	$51,449	$60,286
	($21,138)	($23,767)	($26,228)	($25,603)	($24,086)	($36,838)	($37,995)

Table 3.1 — Income and Unemployment Rates by Ethnicity and Highest Educational Qualification: Males

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
1996: (continued)							
Income (1996 dollars)							
Other Ethnicity	$17,792	$24,391	$23,154	$11,548	$26,338	$29,659	$38,243
	($14,337)	($19,728)	($20,373)	($16,255)	($22,148)	($29,351)	($36,218)
Unemployment Rate							
Maori	14.94%	10.76%	8.10%	11.95%	7.68%	6.19%	2.74%
Part-Maori	11.28%	8.44%	6.05%	8.64%	5.42%	3.85%	4.43%
European	5.06%	3.93%	3.44%	6.16%	2.64%	2.88%	2.47%
Other Ethnicity	10.21%	7.99%	6.46%	8.81%	8.47%	12.11%	12.85%

Table 3.2 — Income and Unemployment rates by Ethnicity and Highest Educational Qualification: Females

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
1986:							
Income (1996 dollars)							
Maori	$12,330	$13,928	$16,290	$11,955	$19,075	$22,735	$29,327
	($8,337)	($9,239)	($10,582)	($9,432)	($12,382)	($13,848)	($21,595)
Part-Maori	$12,909	$13,563	$16,399	$12,138	$18,912	$26,103	$26,313
	($9,386)	($9,990)	($11,640)	($9,486)	($13,277)	($15,428)	($17,650)
European	($13,232)	$15,412	$16,980	$12,479	$19,107	$24,124	$28,563
	($10,691)	($11,823)	($12,139)	($11,606)	($13,989)	($17,764)	($20,242)
Other Ethnicity	$13,006	$14,461	$16,571	$10,209	$17,516	$21,107	$21,290
	($9,925)	($10,671)	($11,820)	($11,550)	($12,375)	($18,965)	($19,986)
Unemployment Rate							
Maori	9.60%	10.67%	6.18%	14.49%	6.77%	7.02%	3.33%
Part-Maori	6.89%	7.91%	6.75%	7.48%	5.37%	8.99%	7.50%
European	3.62%	3.67%	3.68%	11.16%	3.33%	4.40%	2.56%
Other Ethnicity	5.97%	6.34%	4.93%	7.21%	6.24%	5.32%	7.59%
1996:							
Income (1996 dollars)							
Maori	$12,251	$15,258	$16,741	$12,520	$19,158	$24,943	$42,111
	($9,933)	($11,245)	($12,374)	($12,078)	($13,786)	($19,657)	($27,427)
Part-Maori	$13,465	$16,290	$18,494	$12,036	$19,804	$26,855	$35,824
	($11,024)	($13,511)	($15,562)	($12,949)	($14,942)	($20,266)	($26,487)
European	$14,395	$18,643	$19,635	$12,463	$21,940	$27,709	$34,522
	($13,788)	($16,855)	($16,776)	($14,375)	($17,511)	($22,340)	($26,588)

Table 3.2 — Income and Unemployment rates by Ethnicity and Highest Educational Qualification: Females

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
1996: (continued)							
Income (1996 dollars)							
Other Ethnicity	$11,775	$16,939	$17,095	$8,487	$16,770	$18,330	$23,604
	($11,536)	($12,035)	($13,507)	($10,689)	($14,975)	($18,955)	($24,127)
Unemployment Rate							
Maori	12.92%	11.35%	9.83%	12.50%	9.54%	4.86%	1.25%
Part-Maori	9.82%	8.85%	6.11%	9.65%	6.38%	5.26%	0.81%
European	3.69%	3.20%	3.23%	7.06%	2.86%	3.41%	2.93%
Other Ethnicity	7.86%	7.37%	5.77%	9.04%	8.15%	11.22%	13.95%

Figure I: Full-Time Employed European Males 1996

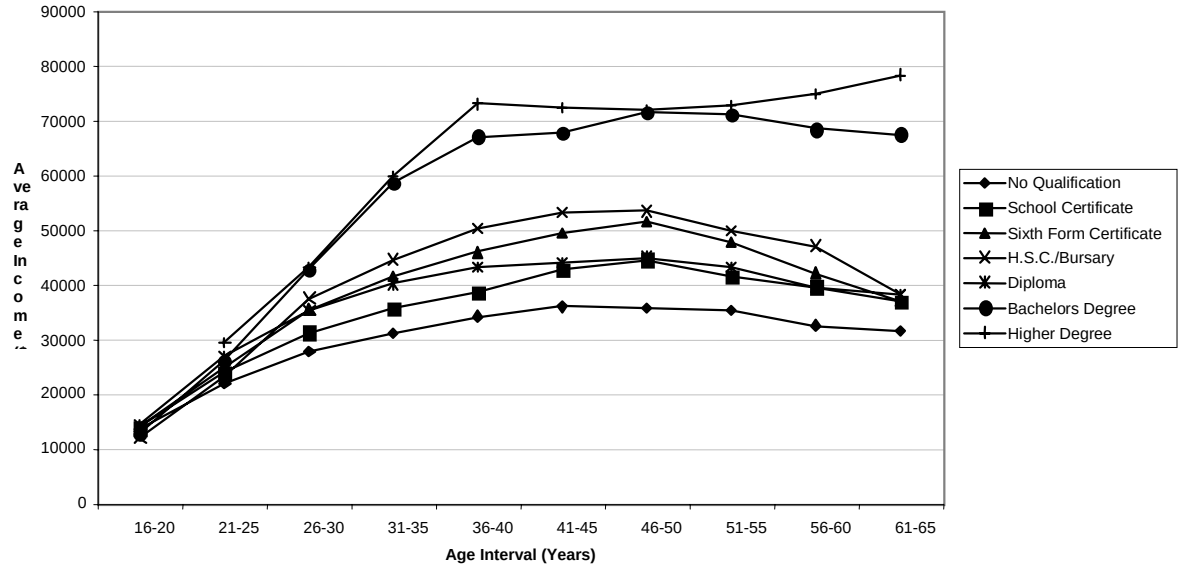


Figure II: Full-Time Employed European Females 1996

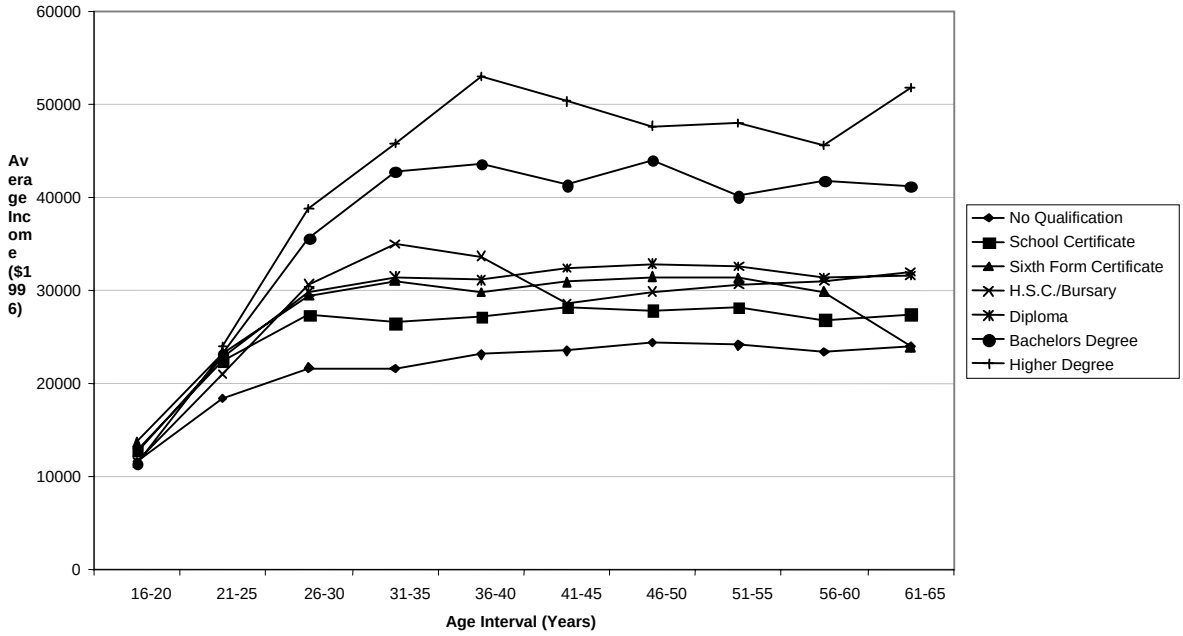


Figure III: Full-Time Employed Maori Males 1996

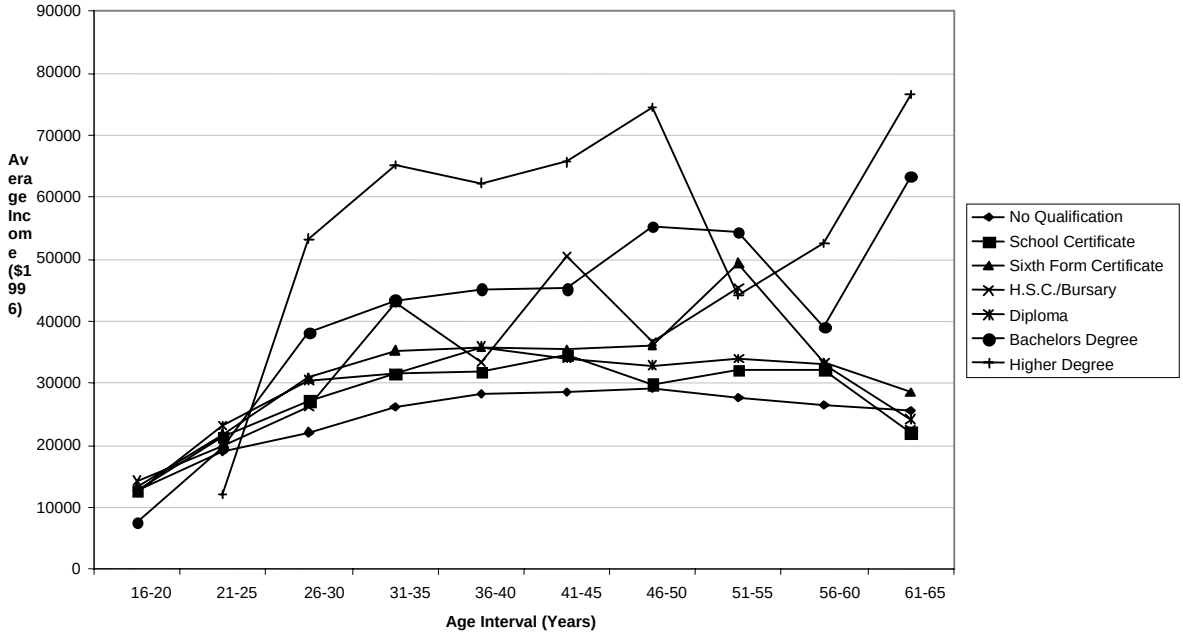


Figure IV: Full-Time Employed Maori Females 1996

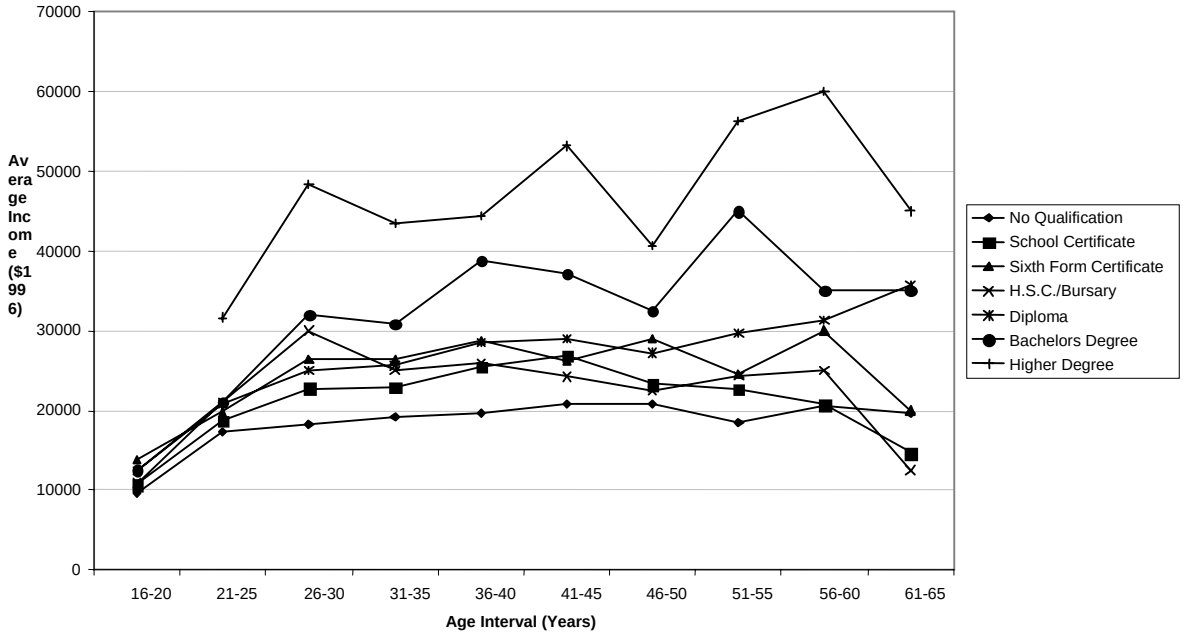


Table 3.3 — Income by Ethnicity and Highest Educational Qualification: Full-time Employed Males

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
1986:							
Income (1996 dollars)							
Maori	$24,558	$24,675	$25,910	$29,667	$30,582	$37,612	$46,724
	($11,366)	($11,694)	($12,534)	($18,456)	($13,429)	($22,451)	($24,337)
Part-Maori	$25,794	$26,581	$26,301	$32,830	$33,640	$44,714	$52,171
	($12,614)	($13,827)	($14,002)	($23,180)	($15,503)	($21,940)	($25,552)
European	$29,710	$29,798	$31,414	$32,976	$37,229	$49,976	$56,106
	($15,843)	($17,359)	($18,494)	($19,931)	($17,354)	($24,831)	($25,069)
Other Ethnicity	$24,103	$24,033	$26,765	$28,486	$31,067	$42,824	$51,132
	($11,270)	($12,415)	($14,206)	($20,309)	($15,421)	($23,463)	($26,241)
Mean Income as percentage of European Income at Educational Level:							
Maori	82.6%	82.8%	82.5%	90.0%	82.1%	75.2%	83.3%
Part-Maori	86.8%	89.2%	83.7%	99.5%	90.3%	89.4%	93.0%
Other Ethnicity	81.1%	80.6%	85.2%	86.4%	83.42%	85.7%	91.1%
1996:							
Income (1996 dollars)							
Maori	$24,693	$26,361	$28,416	$26,179	$30,734	$40,805	$57,704
	($13,862)	($15,918)	($17,255)	($19,996)	($17,433)	($28,721)	($31,883)
Part-Maori	$26,992	$28,954	$30,913	$27,481	$35,470	$50,152	$59,894
	($17,092)	($19,707)	($21,784)	($20,979)	($21,352)	($33,342)	($33,785)
European	$31,849	$34,667	$37,107	$35,167	$39,536	$57,115	$65,846
	($21,543)	($23,820)	($26,165)	($27,640)	($23,491)	($35,902)	($36,491

Table 3.3 — Income by Ethnicity and Highest Educational Qualification: Full-time Employed Males

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
1996: (continued)							
Income (1996 dollars)							
Other Ethnicity	$23,420	$28,213	$28,371	$26,184	$33,668	$42,049	$53,053
	($14,257)	($19,900)	($19,654)	($20,269)	($21,464)	($30,217)	($36,112)
Mean Income as percentage of European Income at Educational Level:							
Maori	76.9%	76.0%	76.6%	74.4%	77.7%	71.4%	87.6%
Part-Maori	84.7%	83.5%	83.3%	78.1%	89.7%	87.8%	90.9%
Other Ethnicity	73.5%	81.3%	76.5%	74.4%	85.1%	73.6%	80.6%

Table 3.4 — Income by Ethnicity and Highest Educational Qualification: Full-Time Employed Females

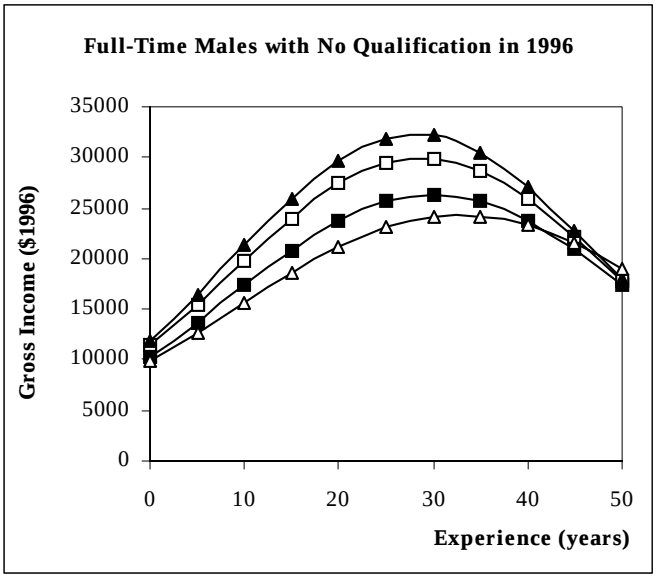
Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
1986:							
Income (1996 dollars)							
Maori	$17,443	$18,755	$20,510	$18,593	$23,918	$28,957	$34,770
	($7,938)	($8,743)	($10,172)	($9,097)	($10,919)	($11,536)	($21,467)
Part-Maori	$18,316	$18,376	$20,890	$19,462	$25,259	$34,084	$34,289
	($9,498)	($9,443)	($10,474)	($8,457)	($12,117)	($11,301)	($16,391)
European	$20,169	$21,449	$22,173	$21,946	$26,297	$32,723	$37,306
	($10,758)	($10,676)	($10,711)	($11,472)	($12,482)	($15,387)	($18,682)
Other Ethnicity	$18,575	$19,559	$22,286	$21,250	$23,090	$30,089	$32,491
	($9,073)	($8,642)	($10,240)	($12,585)	($10,751)	($17,016)	($19,115)
Mean Income as percentage of European Income at Educational Level:							
Maori	86.5%	87.4%	92.5%	84.7%	90.9%	88.5%	93.2%
Part-Maori	90.8%	85.7%	94.2%	88.7%	96.0%	104.1%	91.9%
Other Ethnicity	92.1%	91.2%	100%	96.8%	87.8%	92..0%	87.1%
1996:							
Income (1996 dollars)							
Maori	$18,956	$21,576	$22,966	$20,350	$25,777	$31,091	$45,651
	($11,702)	($12,743)	($13,128)	($11,289)	($12,828)	($20,450)	($25,658)
Part-Maori	$20,453	$23,619	$24,453	$19,957	$26,428	$34,285	$43,179
	($12,651)	($14,329)	($14,301)	($15,347)	($14,562)	($18,139)	($25,646)
European	$22,957	$26,140	$26,688	$22,954	$29,472	$35,935	$44,101
	($15,526)	($16,467)	($15,898)	($16,549)	($16,944)	($21,829)	($25,564)

Table 3.4 — Income by Ethnicity and Highest Educational Qualification: Full-Time Employed Females

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
1996: (continued)							
Income (1996 dollars)							
Other Ethnicity	$18,552	$22,534	$23,234	$19,428	$24,883	$30,024	$38,365
	($11,522)	($11,612)	($12,159)	($12,490)	($14,195)	($18,508)	($24,483)
Mean Income as percentage of European Income at Educational Level:							
Maori	82.5%	82.5%	86.0%	88.6%	87.5%	86.5%	103.5%
Part-Maori	89.1%	90.3%	91.6%	86.9%	89.7%	95.4%	97.9%
Other Ethnicity	80.8%	86.2%	87.0%	84.6%	84.4%	83.6%	87.0%

Figure V: Estimated Income by Ethnicity

Full-time Employed Males: 1996



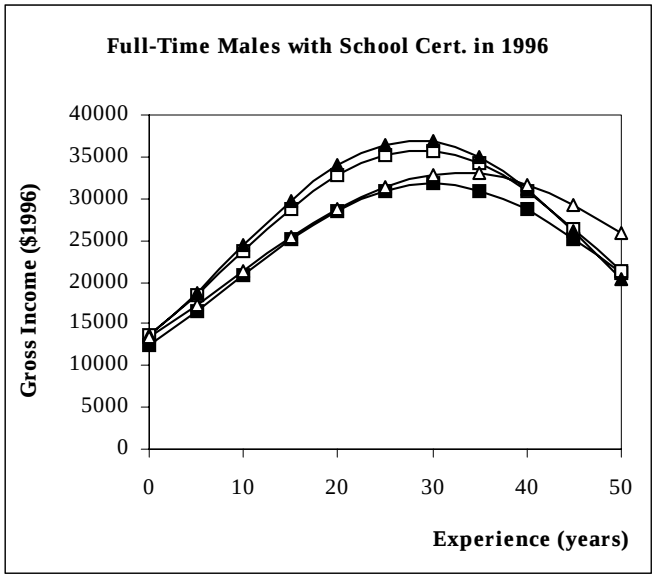
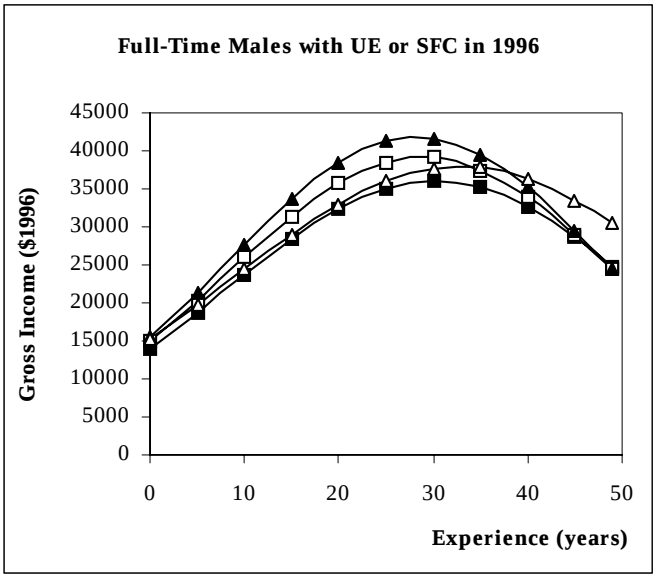


Figure V: Estimated Income by Ethnicity (continued)

Full-time Employed Males: 1996



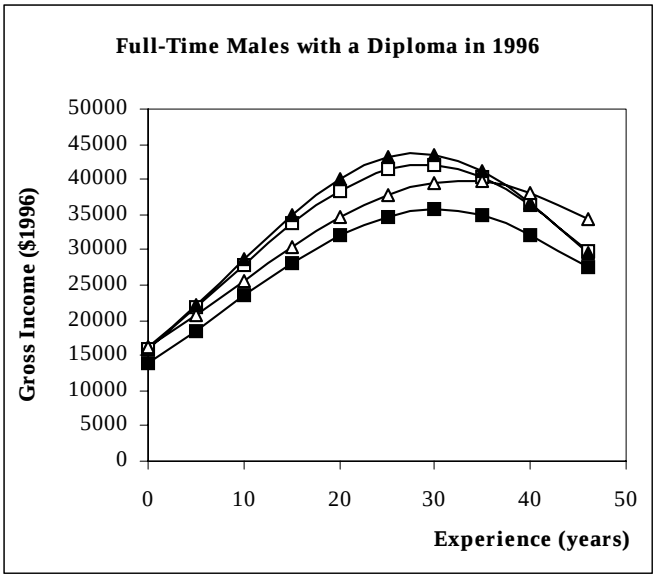
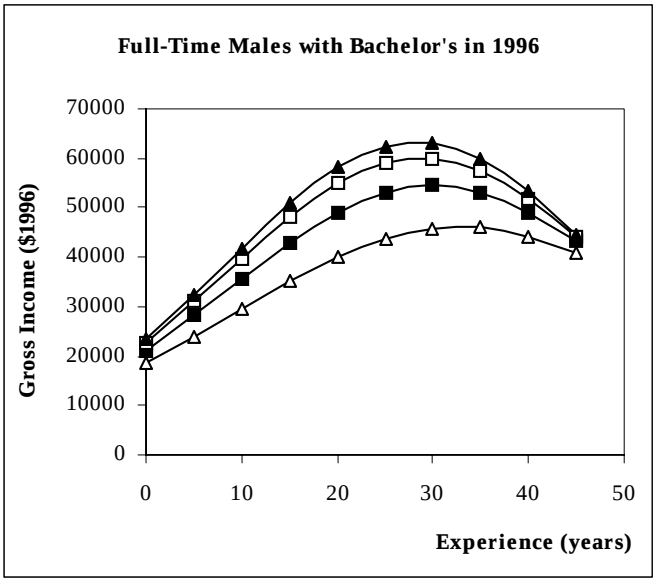
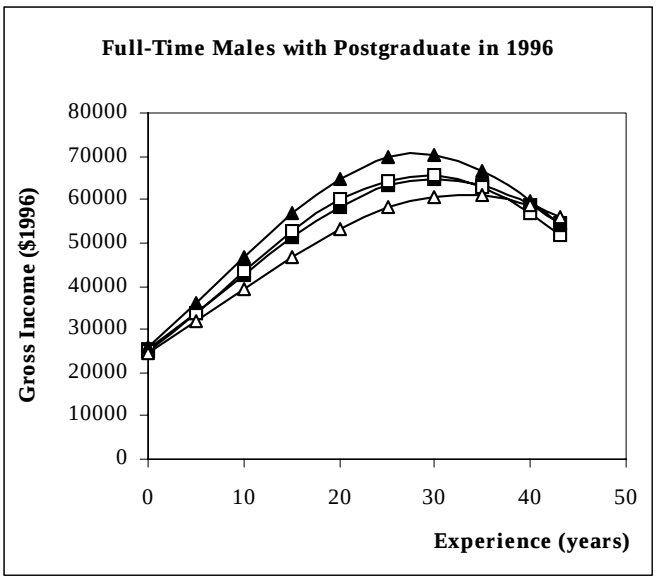


Figure V: Estimated Income by Ethnicity (continued)

Full-time Employed Males: 1996





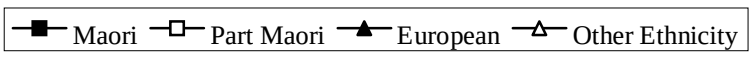
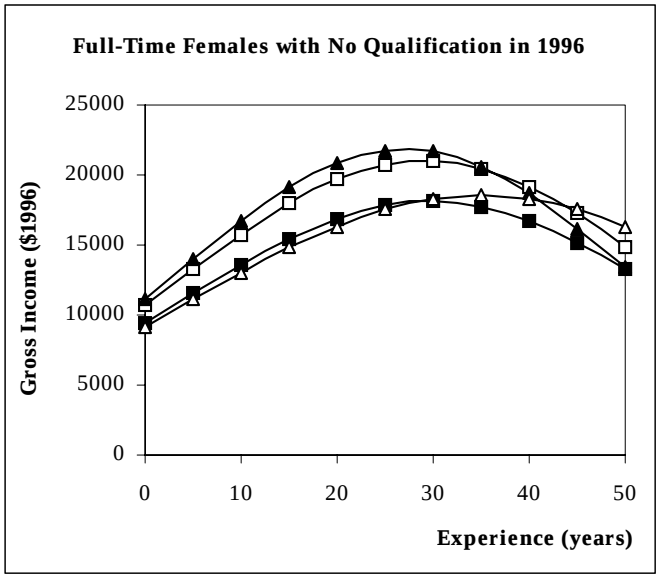


Figure VI: Estimated Income by Ethnicity

Full-time Employed Females: 1996



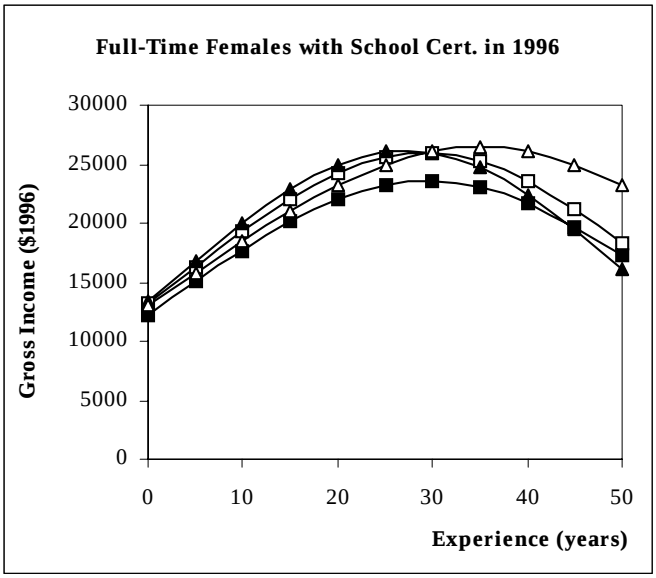
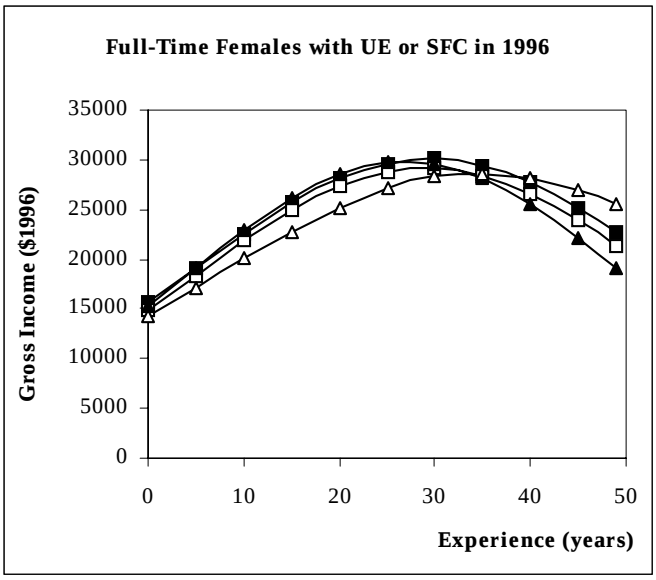


Figure VI: Estimated Income by Ethnicity (continued)

Full-time Employed Females: 1996



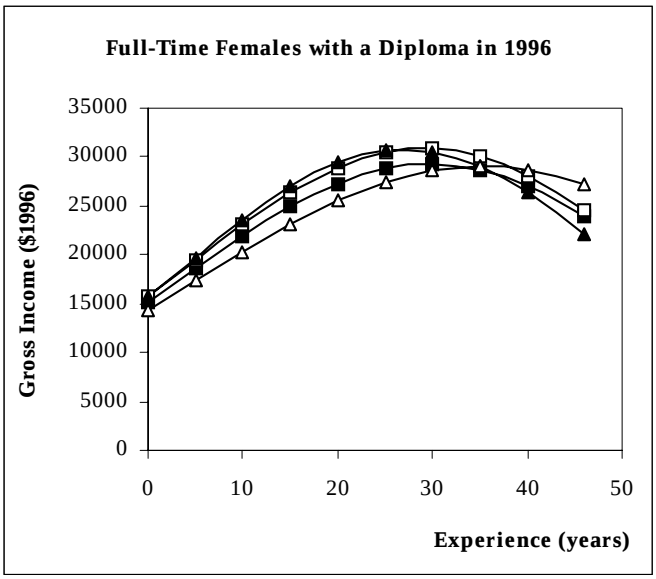
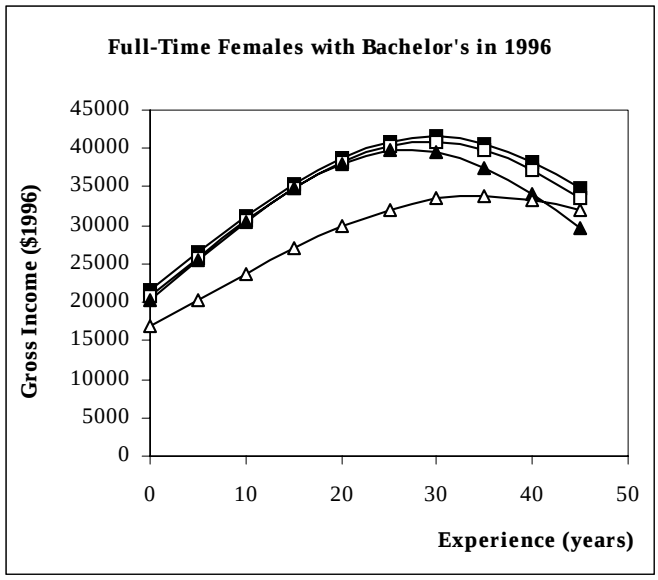
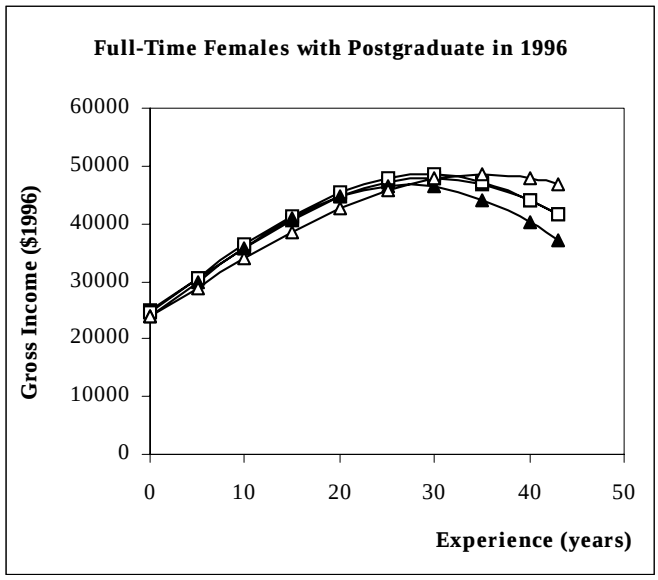


Figure VI: Estimated Income by Ethnicity (continued)

Full-time Employed Females: 1996





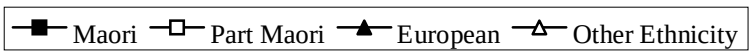


Table 4.1 — Income Effects of Secondary and Tertiary Education of Males and Females: 1986 and 1996

(Dependent Variable: The Natural Logarithm of Annual Income)
Least Squares Regression Coefficients
(t-ratios)

Explanatory Variables	Males				Females			
	1986		1996		1986		1996	
	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time
Intercept	9.110	9.120	9.238	9.384	9.001	8.965	9.006	9.299
	(2228.11)	(2260.21)	(1444.72)	(1514.26)	(1358.57)	(1524.23)	(1060.73)	(1137.21)
School Certificate	0.092	0.095	0.165	0.153	0.156	0.172	0.226	0.206
	(21.31)	(22.24)	(28.96)	(27.91)	(24.10)	(28.999)	(30.05)	(28.86)
UE or SFC	0.205	0.216	0.228	0.276	0.281	0.310	0.387	0.342
	(41.30)	(43.99)	(45.99)	(46.36)	(36.72)	(45.51)	(46.39)	(44.54)
Bursary	0.212	0.263	0.062	0.276	0.157	0.278	–0.072	0.272
	(24.26)	(30.08)	(7.32)	(33.03)	(11.16)	(21.25)	(6.67)	(24.32)
Diploma	0.275	0.281	0.321	0.317	0.318	0.351	0.410	0.369
	(89.26)	(92.32)	(70.27)	(72.30)	(52.16)	(62.29)	(60.39)	(56.50)
Bachelor's Degree	0.601	0.619	0.660	0.677	0.565	0.640	0.687	0.624
	(92.82)	(97.01)	(91.97)	(99.16)	(46.86)	(58.29)	(70.46)	(69.67)
Postgraduate Qualification	0.672	0.690	0.793	0.801	0.686	0.706	0.887	0.801
	(91.92)	(95.97)	(91.46)	(96.33)	(45.05)	(51.77)	(72.79)	(73.35)
Maori	–0.116	–0.114	–0.199	–0.172	–0.012	–0.077	0.013	–0.080
	(25.47)	(25.08)	(27.38)	(25.32)	(1.383)	(10.30)	(1.337)	(9.14)
Part-Maori	–0.009	–0.005	–0.052	–0.052	0.036	0.063	0.093	–0.014
	(1.23)	(0.689)	(7.23)	(7.71)	(3.35)	(6.50)	(10.78)	(1.80)
Other Ethnicity	–0.162	–0.154	–0.220	–0.183	0.062	–0.028	0.007	–0.121
	(27.19)	(26.06)	(28.36)	(24.94)	(7.313)	(48.84)	(0.76)	(13.972)

Table 4.1 — Income Effects of Secondary and Tertiary Education of Males and Females: 1986 and 1996

(Dependent Variable: The Natural Logarithm of Annual Income)
Least Squares Regression Coefficients
(t-ratios)

Explanatory Variables	Males				Females			
	1986		1996		1986		1996	
	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time
(continued)								
Experience	0.0526	0.0517	0.0806	0.069	0.00018	0.0284	0.0444	0.0484
	(139.98)	(138.19)	(150.32)	(131.23)	(0.289)	(48.84)	(66.90)	(71.32)
Experience^2	–0.00093	–0.00090	–0.0015	–0.0012	0.000048	–0.00050	–0.00075	–0.00087
	(110.24)	(106.19)	(123.49)	(103.79)	(3.269)	(34.76)	(49.86)	(55.02)
F	4480.22	4683.28	4573.14	3653.33	498.11	918.05	1671.78	1311.00
$\bar{R}^2$	0.2358	0.2514	0.2528	0.2405	0.0482	0.1131	0.1378	0.1575
Sample Size	159,667	153,400	138,318	126,848	107,919	79,087	114,969	77,074

Table 4.2 — Income Effects of Secondary and Tertiary Education of Maori Males and Females: 1986 and 1996

(Dependent Variable: The Natural Logarithm of Annual Income)
Least Squares Regression Coefficients
(t-ratios)

Explanatory Variables	Maori Males				Maori Females			
	1986		1996		1986		1996	
	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time
Intercept	9.059	9.071	9.056	9.237	8.826	8.884	8.810	9.151
	(666.50)	(663.91)	(352.01)	(374.35)	(449.26)	(490.50)	(256.90)	(273.89)
School Certificate	0.106	0.111	0.224	0.186	0.186	0.155	0.253	0.263
	(7.94)	(8.19)	(10.75)	(9.59)	(8.64)	(8.04)	(9.31)	(10.33)
UE or SFC	0.243	0.257	0.312	0.313	0.352	0.330	0.508	0.508
	(13.39)	(14.93)	(12.73)	(14.22)	(12.67)	(13.65)	(16.43)	(18.90)
Bursary	0.439	0.442	0.319	0.365	0.465	0.363	0.396	0.414
	(15.08)	(15.06)	(9.83)	(9.31)	(9.62)	(6.93)	(9.72)	(10.09)
Diploma	0.264	0.262	0.325	0.304	0.401	0.380	0.516	0.479
	(24.72)	(24.27)	(16.73)	(16.63)	(18.88)	(19.97)	(19.50)	(19.71)
Bachelor's Degree	0.500	0.519	0.743	0.725	0.888	0.767	0.946	0.832
	(9.49)	(9.58)	(19.10)	(17.96)	(12.66)	(11.08)	(21.63)	(19.86)
Postgraduate Qualification	0.456	0.470	0.981	0.900	0.714	0.559	1.206	0.969
	(6.85)	(7.12)	(20.69)	(18.87)	(10.01)	(8.06)	(25.43)	(21.20)
Experience	0.047	0.046	0.075	0.063	0.015	0.027	0.054	0.044
	(33.99)	(33.23)	(32.26)	(29.27)	(7.01)	(13.54)	(19.07)	(15.44)
Experience²	–0.00085	–0.00084	–0.00132	–0.00104	–0.00021	–0.00045	–0.00090	–0.00075
	(27.37)	(26.79)	(26.67)	(23.55)	(3.97)	(9.22)	(14.94)	(11.80)

Table 4.2 — Income Effects of Secondary and Tertiary Education of Maori Males and Females: 1986 and 1996

(Dependent Variable: The Natural Logarithm of Annual Income)
Least Squares Regression Coefficients
(t-ratios)

Explanatory Variables	Maori Males				Maori Females			
	1986		1996		1986		1996	
	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time
(continued)								
F	276.99	269.97	264.12	227.18	83.15	98.53	181.71	135.34
$\overline{\mathbf{R}}^{\mathbf{2}}$	0.1517	0.1580	0.2122	0.2075	0.0841	0.1201	0.2051	0.2144
Sample Size	12,350	11,463	7,816	6,910	7,161	5,714	5,604	3,938

Table 4.3 — Income Effects of Secondary and Tertiary Education of Part-Maori Males and Females: 1986 and 1996

(Dependent Variable: The Natural Logarithm of Annual Income)
Least Squares Regression Coefficients
(t-ratios)

Explanatory Variables	Part-Maori Males				Part-Maori Females			
	1986		1996		1986		1996	
	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time
Intercept	9.072	9.058	9.182	9.341	8.765	8.800	8.993	9.280
	(451.66)	(451.95)	(373.52)	(398.81)	(273.15)	(321.09)	(307.36)	(342.62)
School Certificate	0.133	0.138	0.184	0.178	0.219	0.177	0.213	0.206
	(6.60)	(6.58)	(8.57)	(8.84)	(6.21)	(5.95)	(7.84)	(8.37)
UE or SFC	0.268	0.285	0.286	0.268	0.409	0.468	0.440	0.328
	(9.78)	(10.59)	(11.67)	(11.86)	(9.20)	(13.73)	(14.67)	(12.64)
Bursary	0.306	0.377	0.132	0.205	0.318	0.446	0.201	0.277
	(5.50)	(7.09)	(4.36)	(6.96)	(3.78)	(7.89)	(5.62)	(7.99)
Diploma	0.286	0.296	0.363	0.340	0.451	0.459	0.465	0.383
	(15.89)	(16.48)	(18.92)	(18.80)	(13.91)	(17.09)	(18.67)	(16.29)
Bachelor's Degree	0.565	0.562	0.697	0.695	0.892	0.929	0.775	0.664
	(16.96)	(17.70)	(19.51)	(20.89)	(13.63)	(21.62)	(20.56)	(20.47)
Postgraduate Qualification	0.693	0.689	0.777	0.783	0.959	0.846	1.028	0.835
	(19.77)	(19.66)	(19.91)	(20.68)	(16.01)	(13.66)	(26.97)	(22.61)
Experience	0.053	0.056	0.079	0.067	0.026	0.045	0.046	0.046
	(27.95)	(28.39)	(35.48)	(31.46)	(8.27)	(17.66)	(19.38)	(19.64)
Experience²	–0.00089	–0.00096	–0.00143	–0.0012	–0.00041	–0.00079	–0.00071	–0.00080
	(20.55)	(20.59)	(28.19)	(23.95)	(4.92)	(11.33)	(13.35)	(14.25)

Table 4.3 — Income Effects of Secondary and Tertiary Education of Part-Maori Males and Females: 1986 and 1996

(Dependent Variable: The Natural Logarithm of Annual Income)
Least Squares Regression Coefficients
(t-ratios)

Explanatory Variables	Part-Maori Males				Part-Maori Females			
	1986		1996		1986		1996	
	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time
(continued)								
F	226.55	237.78	297.70	261.83	60.47	131.94	214.00	178.70
$\overline{\mathbf{R}}^{\mathbf{2}}$	0.3501	0.3744	0.2506	0.2438	0.1630	0.3375	0.2169	0.2480
Sample Size	3,349	3,165	7,098	6,472	2,443	1,899	6,152	4,311

Table 4.4 — Income Effects of Secondary and Tertiary Education of European Males and Females: 1986 and 1996

(Dependent Variable: The Natural Logarithm of Annual Income)
Least Squares Regression Coefficients
(t-ratios)

Explanatory Variables	European Males				European Females			
	1986		1996		1986		1996	
	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time
Intercept	9.103	9.115	9.248	9.385	8.989	8.977	9.074	9.319
	(2073.65)	(2087.94)	(1327.45)	(1387.57)	(1316.16)	(1362.04)	(951.32)	(1009.70)
School Certificate	0.086	0.088	0.146	0.134	0.150	0.173	0.201	0.181
	(18.19)	(18.70)	(22.87)	(21.88)	(20.63)	(25.66)	(23.34)	(22.01)
UE or SFC	0.195	0.207	0.270	0.259	0.280	0.288	0.345	0.313
	(35.41)	(38.45)	(38.68)	(38.84)	(33.69)	(37.41)	(36.24)	(35.44)
Bursary	0.196	0.249	0.027	0.264	0.126	0.290	–0.183	0.250
	(19.48)	(25.40)	(2.86)	(28.22)	(7.30)	(19.21)	(14.58)	(18.91)
Diploma	0.273	0.279	0.304	0.302	0.315	0.345	0.382	0.343
	(81.72)	(83.85)	(60.54)	(62.39)	(48.73)	(54.39)	(49.81)	(46.10)
Bachelor's Degree	0.594	0.613	0.657	0.674	0.563	0.619	0.658	0.601
	(85.12)	(89.43)	(84.57)	(91.16)	(41.87)	(51.37)	(59.88)	(58.87)
Postgraduate Qualification	0.661	0.680	0.772	0.783	0.691	0.705	0.829	0.763
	(82.58)	(88.49)	(81.81)	(86.40)	(41.05)	(47.04)	(58.93)	(61.24)
Experience	0.054	0.052	0.081	0.071	–0.0001	0.028	0.0414	0.050
	(132.58)	(129.34)	(139.36)	(122.25)	(0.17)	(42.10)	(55.78)	(65.37)
Experience^2	–0.00095	–0.00091	–0.00148	–0.00125	0.000067	–0.00049	–0.00071	–0.00092
	(104.47)	(99.63)	(115.33)	(97.43)	(4.45)	(30.18)	(42.31)	(51.46)
F	5133.97	5325.94	4726.99	4038.62	562.89	946.60	1756.04	1328.47
$\bar{R}^2$	0.2302	0.2441	0.2474	0.2334	0.0459	0.1009	0.1272	0.1428
Sample Size	136,789	131,925	114,983	106,089	93,522	67,425	96,373	63,746

Table 4.5 — Income Effects of Secondary and Tertiary Education of Other Ethnic Males and Females: 1986 and 1996

(Dependent Variable: The Natural Logarithm of Annual Income)
Least Squares Regression Coefficients
(t-ratios)

Explanatory Variables	Other Ethnic Males				Other Ethnic Females			
	1986		1996		1986		1996	
	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time
Intercept	8.997	9.040	8.948	9.190	8.955	8.964	8.733	9.128
	(464.43)	(481.09)	(310.85)	(336.99)	(367.56)	(392.85)	(274.39)	(288.84)
School Certificate	0.115	0.111	0.314	0.309	0.155	0.149	0.409	0.351
	(5.81)	(5.77)	(12.14)	(12.40)	(6.71)	(7.10)	(14.95)	(13.63)
UE or SFC	0.232	0.252	0.474	0.445	0.375	0.401	0.525	0.433
	(9.74)	(11.31)	(18.15)	(18.06)	(13.91)	(17.26)	(17.55)	(14.38)
Bursary	0.203	0.209	0.130	0.440	0.158	0.150	0.159	0.313
	(7.06)	(7.28)	(3.92)	(13.68)	(3.84)	(4.06)	(4.65)	(9.07)
Diploma	0.315	0.311	0.488	0.495	0.299	0.314	0.427	0.449
	(20.20)	(20.11)	(22.43)	(24.61)	(12.55)	(14.13)	(14.97)	(17.20)
Bachelor's Degree	0.746	0.744	0.558	0.640	0.558	0.618	0.589	0.601
	(29.77)	(30.87)	(19.38)	(23.96)	(12.03)	(14.07)	(17.70)	(20.82)
Postgraduate Qualification	0.809	0.819	0.899	0.922	0.667	0.730	0.924	0.958
	(27.85)	(28.80)	(27.31)	(30.22)	(13.31)	(15.04)	(21.21)	(24.80)
Experience	0.043	0.040	0.075	0.055	0.014	0.026	0.060	0.040
	(22.28)	(21.07)	(29.90)	(23.35)	(5.75)	(11.78)	(22.25)	(14.52)
Experience^2	–0.00071	–0.00064	–0.00124	–0.00084	–0.00020	–0.00045	–0.00092	–0.00058
	(15.67)	(14.48)	(22.72)	(16.46)	(3.32)	(8.48)	(14.79)	(8.99)
F	291.78	298.16	305.01	251.00	53.24	78.67	216.75	144.46
$\bar{R}^2$	0.2442	0.2578	0.2242	0.2134	0.0786	0.1331	0.2016	0.1844
Sample Size	7,200	6,844	8,418	7,374	4,899	4,046	6,837	5,076

Table 5.1 — Changes in Relative Income Returns to Educational Attainment by Ethnic Group over Time: Full-Time Males

(Dependent Variable: The Natural Logarithm of Annual Income)
Least Squares Regression Coefficients
(t-ratios)

	1986			1996			Relative Change 1986-1996			
	Maori	Part-Maori	Other	Maori	Part-Maori	Other	European	Maori	Part-Maori	Other
Explanatory Variables	b_{M86}-b_{E86}	b_{P86}-b_{E86}	b_{O86}-b_{E86}	b_{M96}-b_{E96}	b_{P96}-b_{E96}	b_{O96}-b_{E96}	b_{E96}-b_{E86}	(b_{M96}-b_{E96}) -(b_{M86}-b_{E86})	(b_{P96}-b_{E96}) -(b_{P86}-b_{E86})	(b_{O96}-b_{E96}) -(b_{O86}-b_{E86})
Intercept	–0.044	–0.058	–0.075	–0.148	–0.045	–0.196	0.270	–0.104	0.014	–0.121
	(3.06)	(2.88)	(3.88)	(5.81)	(1.87)	(6.94)	(33.55)	(3.57)	(0.43)	(3.54)
School Certificate	0.022	0.050	0.022	0.052	0.043	0.174	0.046	0.030	–0.006	0.152
	(1.56)	(2.35)	(1.13)	(2.55)	(2.11)	(6.77)	(5.93)	(1.19)	(0.22)	(4.68)
UE or Sixth Form Cert.	0.051	0.078	0.046	0.054	0.008	0.186	0.053	0.003	–0.070	0.140
	(2.80)	(2.89)	(2.00)	(2.35)	(0.37)	(7.25)	(6.13)	(0.11)	(1.96)	(4.07)
Diploma	–0.017	0.018	0.033	0.002	0.038	0.193	0.023	0.019	0.020	0.160
	(1.50)	(0.98)	(2.06)	(0.11)	(2.07)	(9.30)	(3.97)	(0.87)	(0.79)	(6.15)
Bachelor's Degree	–0.094	–0.052	0.131	0.051	0.021	–0.034	0.061	0.145	0.072	–0.165
	(1.72)	(1.61)	(5.21)	(1.25)	(0.63)	(1.23)	(6.04)	(2.13)	(1.57)	(4.41)
Postgraduate Qualification	–0.211	0.009	0.138	0.117	–0.001	0.138	0.103	0.327	–0.010	–0.00006
	(3.17)	(0.26)	(4.70)	(2.41)	(0.02)	(4.34)	(8.69)	(3.98)	(0.19)	(0.001)

Table 5.1 — Changes in Relative Income Returns to Educational Attainment by Ethnic Group over Time: Full-Time Males

(Dependent Variable: The Natural Logarithm of Annual Income)
Least Squares Regression Coefficients
(t-ratios)

	1986			1996			Relative Change 1986-1996			
	Maori	Part-Maori	Other	Maori	Part-Maori	Other	European	Maori	Part-Maori	Other
Explanatory Variables	b_{M86}-b_{E86}	b_{P86}-b_{E86}	b_{O86}-b_{E86}	b_{M96}-b_{E96}	b_{P96}-b_{E96}	b_{O96}-b_{E96}	b_{E96}-b_{E86}	(b_{M96}-b_{E96}) -(b_{M86}-b_{E86})	(b_{P96}-b_{E96}) -(b_{P86}-b_{E86})	(b_{O96}-b_{E96}) -(b_{O86}-b_{E86})
(continued)										
Experience	–0.0064	0.0032	–0.0127	–0.0078	–0.0034	–0.0152	0.0181	–0.0014	–0.0066	–0.0025
	(4.43)	(1.64)	(6.56)	(3.53)	(1.55)	(6.20)	(25.59)	(0.54)	(2.25)	(0.80)
Experience^2	0.000079	–0.000042	0.00027	0.00021	0.000082	0.00041	–0.00033	0.00013	0.00012	0.00013
	(2.44)	(0.91)	(6.05)	(4.45)	(1.67)	(7.66)	(21.19)	(2.23)	(1.84)	(1.90)

Table 5.2 — Changes in Relative Income Returns to Educational Attainment by Ethnic Group over Time: Full-Time Females

(Dependent Variable: The Natural Logarithm of Annual Income)
Least Squares Regression Coefficients
(t-ratios)

	1986			1996			Relative Change 1986-1996			
	Maori	Part-Maori	Other	Maori	Part-Maori	Other	European	Maori	Part-Maori	Other
Explanatory Variables	b_{M86}-b_{E86}	b_{P86}-b_{E86}	b_{O86}-b_{E86}	b_{M96}-b_{E96}	b_{P96}-b_{E96}	b_{O96}-b_{E96}	b_{E96}-b_{E86}	(b_{M96}-b_{E96}) -(b_{M86}-b_{E86})	(b_{P96}-b_{E96}) -(b_{P86}-b_{E86})	(b_{O96}-b_{E96}) -(b_{O86}-b_{E86})
Intercept	–0.093	–0.177	–0.012	–0.167	–0.038	–0.190	0.342	–0.075	0.138	–0.178
	(4.75)	(6.38)	(0.52)	(4.88)	(1.37)	(5.76)	(30.12)	(1.90)	(3.52)	(4.39)
School Certificate	–0.017	0.005	–0.024	0.082	0.025	0.171	0.008	0.099	0.021	0.194
	(0.84)	(0.15)	(1.08)	(3.10)	(1.01)	(6.29)	(0.77)	(2.96)	(0.53)	(5.57)
UE or Sixth Form Cert.	0.042	0.180	0.113	0.195	0.015	0.119	0.025	0.153	–0.166	0.006
	(1.63)	(5.25)	(4.63)	(6.96)	(0.54)	(3.80)	(2.15)	(4.03)	(3.81)	(0.16)
Diploma	0.035	0.114	–0.031	0.135	0.040	0.105	–0.001	0.100	–0.074	0.136
	(1.73)	(4.22)	(1.35)	(5.38)	(1.66)	(3.87)	(0.13)	(3.11)	(2.05)	(3.83)
Bachelor's Degree	0.148	0.310	–0.001	0.230	0.063	–0.00006	–0.017	0.082	–0.248	0.001
	(2.08)	(7.08)	(0.03)	(5.40)	(1.90)	(0.002)	(1.10)	(0.99)	(4.50)	(0.02)
Postgraduate Qualification	–0.146	0.141	0.025	0.207	0.072	0.195	0.058	0.352	–0.068	0.170
	(2.03)	(2.25)	(0.49)	(4.41)	(1.91)	(4.80)	(2.95)	(4.10)	(0.93)	(2.62)

Table 5.2 — Changes in Relative Income Returns to Educational Attainment by Ethnic Group over Time: Full-Time Females

(Dependent Variable: The Natural Logarithm of Annual Income)
Least Squares Regression Coefficients
(t-ratios)

	1986			1996			Relative Change 1986-1996			
	Maori	Part-Maori	Other	Maori	Part-Maori	Other	European	Maori	Part-Maori	Other
Explanatory Variables	b_{M86}-b_{E86}	b_{P86}-b_{E86}	b_{O86}-b_{E86}	b_{M96}-b_{E96}	b_{P96}-b_{E96}	b_{O96}-b_{E96}	b_{E96}-b_{E86}	(b_{M96}-b_{E96}) -(b_{M86}-b_{E86})	(b_{P96}-b_{E96}) -(b_{P86}-b_{E86})	(b_{O96}-b_{E96}) -(b_{O86}-b_{E86})
(continued)										
Experience	–0.00071	0.0188	–0.0018	–0.0056	–0.0045	–0.0095	0.0221	–0.0048	–0.0223	–0.0077
	(0.34)	(7.06)	(0.79)	(1.90)	(1.43)	(3.30)	(21.93)	(1.34)	(6.19)	(2.10)
Experience^2	0.000041	–0.00029	0.000043	0.00017	0.00013	0.00034	–0.00043	0.00013	0.00042	0.00030
	(0.77)	(4.19)	(0.77)	(2.65)	(2.21)	(5.16)	(17.59)	(1.58)	(4.64)	(3.48)

Table 6.1 — Income Effects of Secondary and Tertiary Education of Maori Males and Females (Incorporating One Digit Occupation and Industry): 1986 and 1996

(Dependent Variable: The Natural Logarithm of Annual Income)
Least Squares Regression Coefficients
(t-ratios)

Explanatory Variables	Maori Males				Maori Females			
	1986		1996		1986		1996	
	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time
Intercept	9.387	9.402	9.709	9.725	9.272	9.247	9.883	9.670
	(149.80)	(149.40)	(193.16)	(174.23)	(51.27)	(49.98)	(120.66)	(97.94)
School Certificate	0.069	0.069	0.091	0.082	0.119	0.094	0.132	0.092
	(6.82)	(6.69)	(5.50)	(4.83)	(8.70)	(7.15)	(6.21)	(4.21)
UE or SFC	0.162	0.162	0.217	0.192	0.180	0.153	0.246	0.175
	(11.14)	(11.02)	(10.58)	(9.45)	(9.03)	(7.64)	(9.86)	(6.60)
Bursary	0.334	0.356	0.046	0.146	0.195	0.188	0.145	0.223
	(9.37)	(9.68)	(1.11)	(3.39)	(3.50)	(3.31)	(2.94)	(4.12)
Diploma	0.239	0.239	0.217	0.202	0.280	0.273	0.284	0.234
	(29.03)	(28.19)	(13.02)	(12.04)	(19.56)	(19.73)	(12.07)	(9.72)
Bachelor's Degree	0.325	0.340	0.303	0.241	0.606	0.550	0.609	0.452
	(5.86)	(5.97)	(5.46)	(3.84)	(6.03)	(5.43)	(12.64)	(8.23)
Postgraduate	0.413	0.443	0.598	0.553	1.005	0.942	1.086	1.042
Qualification	(4.36)	(4.52)	(6.62)	(6.25)	(4.32)	(3.99)	(11.65)	(9.80)
Professional/Tech	–0.023	–0.028	—	—	–0.245	–0.203	—	—
Occupation	(0.38)	(0.46)			(1.39)	(1.14)		
Professional	—	—	–0.135	–0.097	—	—	–0.189	–0.129
Occupation			(3.17)	(2.11)			(5.33)	(3.39)
Technical	—	—	–0.214	–0.213	—	—	–0.129	–0.042
Occupation			(5.67)	(5.25)			(3.51)	(1.10)

Table 6.1 — Income Effects of Secondary and Tertiary Education of Maori Males and Females (Incorporating One Digit Occupation and Industry): 1986 and 1996

(Dependent Variable: The Natural Logarithm of Annual Income)
Least Squares Regression Coefficients
(t-ratios)

Explanatory Variables	Maori Males				Maori Females			
	1986		1996		1986		1996	
	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time
(continued)								
Clerical	–0.176	–0.181	–0.212	–0.168	–0.163	–0.138	–0.163	–0.083
Occupation	(2.92)	(2.97)	(5.55)	(4.10)	(0.93)	(0.77)	(5.08)	(2.36)
Service Occupation	0.019	0.016	–0.162	–0.144	–0.649	–0.382	–0.585	–0.387
	(0.32)	(0.26)	(4.90)	(3.90)	(3.69)	(2.14)	(17.61)	(10.91)
Sales Occupation	–0.075	–0.077	—	—	–0.554	–0.425	—	—
	(1.20)	(1.23)			(3.14)	(2.37)		
Agriculture and	–0.399	–0.404	–0.429	–0.353	–0.705	–0.628	–0.978	–0.725
Fishery Workers	(6.44)	(6.49)	(9.51)	(6.94)	(3.87)	(3.38)	(11.85)	(7.32)
Trades Workers	—	—	–0.249	–0.224	—	—	–0.352	–0.295
			(7.41)	(6.02)			(5.44)	(3.81)
Plant and Machine	—	—	–0.282	–0.262	—	—	–0.487	–0.414
Operation			(8.76)	(7.23)			(12.44)	(9.01)
Elementary	—	—	–0.399	–0.341	—	—	–0.665	–0.497
Occupation			(11.95)	(9.19)			(18.35)	(11.27)
Product./Transport	–0.303	–0.305	—	—	–0.454	–0.403	—	—
Workers	(5.14)	(5.14)			(2.59)	(2.26)		
Mining	0.260	0.254	0.196	0.278	—	—	—	—
Industry	(9.58)	(9.35)	(2.34)	(3.10)				
Manufacturing	0.105	0.095	0.188	0.192	0.108	0.104	0.193	0.302

Table 6.1 — Income Effects of Secondary and Tertiary Education of Maori Males and Females (Incorporating One Digit Occupation and Industry): 1986 and 1996

(Dependent Variable: The Natural Logarithm of Annual Income)
Least Squares Regression Coefficients
(t-ratios)

Explanatory Variables	Maori Males				Maori Females			
	1986		1996		1986		1996	
	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time
(continued)								
Industry	(5.62)	(5.10)	(5.61)	(5.12)	(2.57)	(2.08)	(2.81)	(3.62)
Electricity	0.114	0.110	0.216	0.223	—	—	—	—
Industry	(4.81)	(4.65)	(2.36)	(2.32)				
Construction	0.012	0.024	0.140	0.133	0.104	0.114	–1.321	—
Industry	(0.60)	(1.16)	(4.00)	(3.43)	(1.40)	(1.36)	(1.18)	
Wholesale	–0.081	–0.086	–0.012	0.026	0.084	0.084	–0.228	0.046
Industry	(3.80)	(4.06)	(0.35)	(0.67)	(1.90)	(1.65)	(3.13)	(0.51)
Transport	0.148	0.140	0.161	0.168	0.165	0.199	–0.019	0.198
Industry	(7.25)	(6.93)	(4.41)	(4.17)	(3.69)	(3.87)	(0.25)	(2.05)
Finance Industry	0.032	0.024	0.119	0.128	0.040	0.049	–0.022	0.197
	(0.89)	(0.66)	(2.90)	(2.89)	(0.85)	(0.91)	(0.29)	(2.19)
Community and	–0.041	–0.044	0.104	0.128	0.083	0.108	–0.138	0.125
Social Services	(2.05)	(2.21)	(3.11)	(3.42)	(1.96)	(2.18)	(1.96)	(1.43)
Experience	0.040	0.040	0.047	0.043	0.024	0.027	0.028	0.029
	(38.45)	(36.94)	(23.88)	(22.04)	(15.29)	(17.73)	(11.37)	(10.68)
Experience²	–0.00072	–0.00072	–0.00082	–0.00074	–0.00034	–0.00043	–0.00049	–0.00048
	(30.01)	(28.57)	(19.52)	(17.64)	(8.98)	(11.76)	(9.26)	(7.88)
F	228.07	215.82	76.03	62.13	138.98	119.32	96.33	61.59
$\bar{R}^2$	0.3142	0.3200	0.2450	0.2367	0.3120	0.3349	0.3469	0.3412
Sample Size	10,904	10,045	5,549	4,731	6,086	4,700	3,948	2,457

Table 6.2 — Income Effects of Secondary and Tertiary Education of Part-Maori Males and Females (Incorporating One Digit Occupation and Industry): 1986 and 1996

(Dependent Variable: The Natural Logarithm of Annual Income)
Least Squares Regression Coefficients
(t-ratios)

Explanatory Variables	Part-Maori Males				Part-Maori Females			
	1986		1996		1986		1996	
	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time
Intercept	9.247	9.173	9.912	9.986	8.476	9.730	9.775	9.757
	(51.12)	(44.57)	(157.86)	(167.33)	(36.08)	(12.36)	(94.61)	(48.65)
School Certificate	0.092	0.109	0.130	0.111	0.154	0.117	0.141	0.087
	(4.55)	(5.35)	(7.23)	(6.33)	(5.87)	(4.36)	(6.70)	(4.19)
UE or SFC	0.288	0.292	0.175	0.166	0.268	0.224	0.195	0.182
	(8.83)	(8.92)	(8.05)	(7.82)	(7.95)	(6.64)	(8.59)	(8.23)
Bursary	0.385	0.430	0.023	0.169	0.386	0.362	0.073	0.113
	(5.45)	(6.05)	(0.76)	(5.51)	(4.59)	(4.25)	(2.20)	(3.19)
Diploma	0.289	0.296	0.228	0.219	0.273	0.250	0.217	0.192
	(17.62)	(17.84)	(13.97)	(13.77)	(9.23)	(8.07)	(10.01)	(9.29)
Bachelor's Degree	0.454	0.471	0.437	0.420	0.563	0.484	0.347	0.358
	(7.50)	(7.82)	(12.13)	(13.37)	(8.42)	(6.77)	(9.00)	(10.23)
Postgraduate	0.612	0.611	0.569	0.600	0.744	0.608	0.549	0.526
Qualification	(11.96)	(11.73)	(9.61)	(10.28)	(9.27)	(7.60)	(10.42)	(10.86)
Professional/Tech	–0.084	–0.087	—	—	0.282	0.311	—	—
Occupation	(0.71)	(0.75)			(5.79)	(6.47)		
Professional	—	—	–0.153	–0.124	—	—	–0.023	0.024
Occupation			(4.60)	(3.88)			(0.64)	(0.71)
Technical	—	—	–0.178	–0.148	—	—	–0.136	–0.038
Occupation			(6.38)	(5.42)			(3.98)	(1.11)
Clerical	–0.200	–0.197	–0.224	–0.258	0.165	0.181	–0.153	–0.090
Occupation	(1.72)	(1.69)	(6.95)	(8.27)	(5.04)	(5.20)	(5.06)	(2.93)

Table 6.2 — Income Effects of Secondary and Tertiary Education of Part-Maori Males and Females (Incorporating One Digit Occupation and Industry): 1986 and 1996

(Dependent Variable: The Natural Logarithm of Annual Income)
Least Squares Regression Coefficients
(t-ratios)

Explanatory Variables	Part-Maori Males				Part-Maori Females			
	1986		1996		1986		1996	
	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time
(continued)								
Service Occupation	0.029	0.025	–0.220	–0.173	–0.086	0.087	–0.553	–0.358
	(0.24)	(0.22)	(8.14)	(6.67)	(1.89)	(1.94)	(17.34)	(11.13)
Sales Occupation	–0.211	–0.203	—	—	–0.074	–0.039	—	—
	(1.81)	(1.75)			(1.50)	(0.74)		
Agriculture and	–0.216	–0.141	–0.522	–0.521	0.155	–0.871	–0.520	–0.542
Fishery Workers	(1.20)	(0.69)	(8.84)	(9.39)	(0.65)	(1.11)	(5.29)	(2.86)
Trades Workers	—	—	–0.291	–0.284	—	—	–0.356	–0.267
			(11.34)	(11.37)			(2.81)	(2.16)
Plant and Machine	—	—	–0.301	–0.290	—	—	–0.441	–0.306
Operation			(1.33)	(11.32)			(9.06)	(6.27)
Elementary	—	—	–0.481	–0.452	—	—	–0.473	–0.297
Occupation			(16.84)	(15.77)			(11.70)	(6.85)
Product./Transport	–0.249	–0.243	—	—	—	—	—	—
Workers	(2.23)	(2.18)						
Mining	–0.034	0.028	0.565	0.499	—	—	—	—
Industry	(0.11)	(0.09)	(3.44)	(3.16)				
Manufacturing	0.192	0.246	–0.010	–0.063	0.479	–0.813	0.149	0.060
Industry	(1.37)	(1.44)	(0.18)	(1.26)	(2.05)	(1.04)	(1.44)	(0.30)
Electricity	0.126	0.173	—	—	—	—	–0.438	—
Industry	(0.77)	(0.91)					(0.47)	

Table 6.2 — Income Effects of Secondary and Tertiary Education of Part-Maori Males and Females (Incorporating One Digit Occupation and Industry): 1986 and 1996

(Dependent Variable: The Natural Logarithm of Annual Income)
Least Squares Regression Coefficients
(t-ratios)

Explanatory Variables	Part-Maori Males				Part-Maori Females			
	1986		1996		1986		1996	
	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time
(continued)								
Construction	0.068	0.125	–0.039	–0.083	0.340	–0.878	–0.186	–0.260
Industry	(0.48)	(0.73)	(0.71)	(1.61)	(1.20)	(1.09)	(1.14)	(1.06)
Wholesale	0.034	0.086	–0.174	–0.204	0.426	–0.861	–0.117	–0.087
Industry	(0.24)	(0.50)	(3.17)	(3.97)	(1.83)	(1.10)	(1.18)	(0.44)
Transport	0.230	0.272	0.125	0.083	0.641	–0.644	0.125	0.058
Industry	(1.62)	(1.58)	(2.15)	(1.53)	(2.74)	(0.82)	(1.20)	(0.29)
Finance Industry	0.154	0.194	0.140	0.065	0.565	–0.700	0.120	0.094
	(1.03)	(1.09)	(2.39)	(1.17)	(2.43)	(0.89)	(1.19)	(0.48)
Community and	0.041	0.097	–0.051	–0.100	0.413	–0.805	–0.011	–0.017
Social Services	(0.29)	(0.56)	(0.95)	(2.00)	(1.79)	(1.03)	(0.11)	(0.09)
Experience	0.051	0.053	0.053	0.050	0.031	0.040	0.028	0.038
	(25.66)	(25.34)	(26.47)	(24.53)	(11.76)	(14.76)	(12.66)	(17.29)
Experience²	–0.00092	–0.00099	–0.00096	–0.00090	–0.00056	–0.00076	–0.00046	–0.00069
	(19.11)	(18.62)	(20.40)	(18.38)	(7.92)	(10.46)	(8.56)	(13.37)
F	99.14	97.25	120.74	112.70	51.24	63.36	91.80	77.12
$\overline{\mathbf{R}}^2$	0.4919	0.5028	0.3864	0.3983	0.3766	0.5094	0.3349	0.3918
Sample Size	2,230	2,094	4,374	3,881	1,580	1,141	4,148	2,600

Table 6.3 — Income Effects of Secondary and Tertiary Education of European Males and Females (Incorporating One Digit Occupation and Industry): 1986 and 1996

(Dependent Variable: The Natural Logarithm of Annual Income)
Least Squares Regression Coefficients
(t-ratios)

Explanatory Variables	European Males				European Females			
	1986		1996		1986		1996	
	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time
Intercept	9.494	9.491	9.786	9.845	9.505	9.409	9.749	9.759
	(1159.79)	(1157.96)	(980.13)	(1018.40)	(644.40)	(669.39)	(603.50)	(578.12)
School Certificate	0.072	0.073	0.099	0.091	0.132	0.113	0.127	0.093
	(20.85)	(20.86)	(21.31)	(20.28)	(24.08)	(23.51)	(19.42)	(16.94)
UE or SFC	0.136	0.142	0.173	0.164	0.220	0.191	0.210	0.165
	(34.47)	(36.29)	(33.57)	(33.21)	(35.56)	(35.67)	(30.08)	(28.09)
Bursary	0.188	0.206	0.084	0.184	0.243	0.218	–0.040	0.152
	(31.52)	(34.80)	(12.37)	(27.90)	(24.26)	(23.79)	(4.35)	(17.50)
Diploma	0.203	0.204	0.201	0.211	0.207	0.217	0.178	0.164
	(73.38)	(74.13)	(49.58)	(54.08)	(36.78)	(44.05)	(26.57)	(28.28)
Bachelor's Degree	0.428	0.436	0.429	0.455	0.451	0.471	0.354	0.347
	(81.95)	(84.52)	(66.12)	(73.31)	(44.56)	(52.81)	(39.59)	(43.56)
Postgraduate Qualification	0.488	0.498	0.562	0.588	0.486	0.493	0.553	0.503
	(74.85)	(77.61)	(68.75)	(74.44)	(36.69)	(40.62)	(49.75)	(51.20)
Professional/Tech Occupation	–0.164	–0.156	—	—	–0.299	–0.167	—	—
	(37.83)	(36.39)			(32.56)	(18.87)		
Professional Occupation	—	—	–0.135	–0.130	—	—	–0.105	–0.047
			(23.91)	(23.91)			(13.90)	(7.20)
Technical Occupation	—	—	–0.183	–0.170	—	—	–0.195	–0.117
			(34.63)	(33.46)			(27.20)	(18.47)

Table 6.3 — Income Effects of Secondary and Tertiary Education of European Males and Females (Incorporating One Digit Occupation and Industry): 1986 and 1996

(Dependent Variable: The Natural Logarithm of Annual Income)
Least Squares Regression Coefficients
(t-ratios)

Explanatory Variables	European Males				European Females			
	1986		1996		1986		1996	
	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time
(continued)								
Clerical	–0.269	–0.265	–0.351	–0.330	–0.444	–0.275	–0.362	–0.242
Occupation	(61.75)	(61.20)	(57.44)	(56.83)	(52.53)	(33.80)	(55.58)	(42.56)
Service Occupation	–0.250	–0.222	–0.320	–0.241	–0.789	–0.485	–0.768	–0.492
	(43.66)	(39.51)	(49.96)	(39.92)	(76.44)	(48.09)	(97.85)	(65.42)
Sales Occupation	–0.249	–0.245	—	—	–0.555	–0.373	—	—
	(51.44)	(51.04)			(55.78)	(39.28)		
Agriculture and	–0.554	–0.543	–0.478	–0.440	–0.766	–0.702	–0.545	–0.434
Fishery Workers	(76.53)	(74.83)	(56.09)	(52.93)	(49.72)	(44.28)	(36.43)	(26.26)
Trades Workers	—	—	–0.382	–0.369	—	—	–0.417	–0.335
			(71.69)	(71.61)			(27.49)	(23.46)
Plant and Machine	—	—	–0.378	–0.355	—	—	–0.562	–0.471
Operation			(65.33)	(63.25)			(50.11)	(46.52)
Elementary	—	—	–0.532	–0.458	—	—	–0.779	–0.404
Occupation			(80.45)	(73.36)			(73.16)	(42.06)
Product./Transport	–0.400	–0.391	—	—	–0.619	–0.488	—	—
Workers	(99.50)	(97.95)			(63.24)	(52.09)		
Mining	0.204	0.202	0.346	0.328	0.298	0.128	–0.056	–0.128
Industry	(16.98)	(16.77)	(16.54)	(16.01)	(6.63)	(3.07)	(0.50)	(1.15)
Manufacturing	0.104	0.109	0.125	0.118	0.206	0.090	0.238	0.188
Industry	(15.88)	(16.49)	(16.18)	(15.85)	(17.75)	(8.18)	(17.04)	(12.27)

Table 6.3 — Income Effects of Secondary and Tertiary Education of European Males and Females (Incorporating One Digit Occupation and Industry): 1986 and 1996

(Dependent Variable: The Natural Logarithm of Annual Income)
Least Squares Regression Coefficients
(t-ratios)

Explanatory Variables	European Males				European Females			
	1986		1996		1986		1996	
	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time
(continued)								
Electricity	0.125	0.124	0.217	0.211	0.364	0.171	0.409	0.313
Industry	(15.45)	(15.22)	(17.04)	(17.01)	(18.35)	(9.35)	(14.25)	(10.60)
Construction	0.074	0.083	0.066	0.066	0.064	0.085	0.074	0.136
Industry	(10.24)	(11.58)	(7.73)	(7.96)	(3.85)	(5.41)	(4.02)	(6.96)
Wholesale	–0.007	0.007	–0.33	–0.007	0.076	0.024	0.001	0.076
Industry	(1.08)	(1.03)	(4.19)	(0.94)	(6.68)	(2.25)	(0.10)	(5.01)
Transport	0.170	0.170	0.197	0.195	0.336	0.182	0.349	0.270
Industry	(24.89)	(24.67)	(23.28)	(23.68)	(27.84)	(16.04)	(23.74)	(17.02)
Finance Industry	0.158	0.163	0.214	0.212	0.184	0.109	0.239	0.252
	(22.18)	(22.76)	(25.87)	(26.61)	(15.83)	(9.98)	(17.33)	(16.63)
Community and	0.049	0.060	0.024	0.042	0.062	0.045	–0.033	0.102
Social Services	(7.47)	(9.18)	(3.03)	(5.60)	(5.54)	(4.21)	(2.51)	(6.88)
Experience	0.047	0.045	0.063	0.054	0.0052	0.026	0.030	0.033
	(149.40)	(146.09)	(138.22)	(124.58)	(10.17)	(56.10)	(50.60)	(58.61)
Experience^2	–0.00083	–0.00079	–0.00114	–0.00096	–0.000061	–0.00046	–0.00054	–0.00060
	(120.05)	(115.01)	(116.75)	(101.31)	(5.07)	(40.92)	(40.06)	(46.98)
F	3874.58	3901.77	2658.80	2478.36	944.70	1005.59	1572.63	1030.30
$\overline{\mathbf{R}}^2$	0.3899	0.4004	0.3673	0.3706	0.1865	0.2549	0.2903	0.2926
Sample Size	133,358	128,525	109,873	100,971	90,573	64,614	92,217	59,719

Table 6.4 — Income Effects of Secondary and Tertiary Education of Other Ethnic Males and Females (Incorporating One Digit Occupation and Industry): 1986 and 1996

(Dependent Variable: The Natural Logarithm of Annual Income)
Least Squares Regression Coefficients
(t-ratios)

Explanatory	Other Ethnic Males				Other Ethnic Females			
	1986		1996		1986		1996	
Variables	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time
Intercept	9.549	9.590	9.670	9.706	8.686	8.516	8.977	8.813
	(137.94)	(101.63)	(124.08)	(123.40)	(30.56)	(30.36)	(32.09)	(24.38)
School Certificate	0.105	0.093	0.142	0.150	0.065	0.056	0.154	0.173
	(6.70)	(6.08)	(7.26)	(7.64)	(3.85)	(3.43)	(6.65)	(7.61)
UE or SFC	0.208	0.204	0.160	0.164	0.130	0.143	0.184	0.223
	(13.05)	(12.80)	(7.02)	(7.36)	(6.40)	(7.09)	(6.68)	(8.29)
Bursary	0.130	0.144	0.051	0.177	0.121	0.158	-0.062	0.195
	(5.53)	(6.03)	(1.76)	(5.99)	(3.47)	(4.36)	(1.85)	(5.88)
Diploma	0.238	0.241	0.219	0.237	0.098	0.116	0.116	0.210
	(18.87)	(18.94)	(11.44)	(12.54)	(5.63)	(6.86)	(4.46)	(8.68)
Bachelor's Degree	0.442	0.476	0.257	0.318	0.404	0.425	0.223	0.327
	(18.00)	(18.83)	(10.85)	(13.30)	(10.08)	(10.62)	(7.37)	(11.47)
Postgraduate	0.521	0.572	0.390	0.455	0.411	0.416	0.292	0.450
Qualification	(15.73)	(17.82)	(12.07)	(13.97)	(8.54)	(9.55)	(7.67)	(12.14)
Professional/Tech	-0.020	-0.029	—	—	0.847	0.914	—	—
Occupation	(0.52)	(0.77)			(4.01)	(4.46)		
Professional	—	—	0.217	0.166	—	—	0.143	0.148
Occupation			(7.56)	(5.80)			(3.81)	(4.09)
Technical	—	—	0.056	0.016	—	—	0.031	0.027
Occupation			(2.04)	(0.58)			(0.82)	(0.73)
Clerical	-0.228	-0.218	-0.135	-0.131	0.755	0.799	-0.087	-0.049
Occupation	(5.78)	(5.52)	(4.80)	(4.61)	(3.59)	(3.91)	(2.54)	(1.44)

Table 6.4 — Income Effects of Secondary and Tertiary Education of Other Ethnic Males and Females (Incorporating One Digit Occupation and Industry): 1986 and 1996

(Dependent Variable: The Natural Logarithm of Annual Income)
Least Squares Regression Coefficients
(t-ratios)

Explanatory	Other Ethnic Males				Other Ethnic Females			
	1986		1996		1986		1996	
Variables	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time
(continued)								
Service Occupation	-0.278	-0.249	-0.309	-0.220	0.330	0.447	-0.557	-0.324
	(7.08)	(6.31)	(11.12)	(8.12)	(1.56)	(2.18)	(15.22)	(8.96)
Sales Occupation	-0.216	-0.216	—	—	0.500	0.549	—	—
	(5.21)	(5.21)			(2.36)	(2.66)		
Agriculture and	-0.514	-0.528	-0.257	-0.233	0.439	0.848	0.262	0.479
Fishery Workers	(7.38)	(5.55)	(3.48)	(3.12)	(1.51)	(2.90)	(0.92)	(1.31)
Trades Workers	—	—	-0.163	-0.166	—	—	-0.334	-0.132
			(6.02)	(6.07)			(4.95)	(2.08)
Plant and Machine	—	—	-0.230	-0.217	—	—	-0.432	-0.301
Operation			(8.55)	(7.97)			(10.07)	(7.08)
Elementary	—	—	-0.297	-0.281	—	—	-0.466	-0.252
Occupation			(11.02)	(10.38)			(11.52)	(6.28)
Product./Transport	-0.353	-0.342	—	—	0.402	0.448	—	—
Workers	(10.03)	(9.71)			(1.90)	(2.18)		
Mining	—	—	—	—	—	—	—	—
Industry								
Manufacturing	-0.090	-0.119	0.140	0.152	-0.134	-0.029	0.923	0.921
Industry	(1.55)	(1.37)	(1.94)	(2.08)	(0.70)	(0.15)	(3.34)	(2.56)
Electricity	0.075	0.047	0.214	0.267	—	—	—	—
Industry	(0.81)	(0.42)	(0.64)	(0.81)				

Table 6.4 — Income Effects of Secondary and Tertiary Education of Other Ethnic Males and Females (Incorporating One Digit Occupation and Industry): 1986 and 1996

(Dependent Variable: The Natural Logarithm of Annual Income)
Least Squares Regression Coefficients
(t-ratios)

Explanatory	Other Ethnic Males				Other Ethnic Females			
	1986		1996		1986		1996	
Variables	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time	All Employed	Employed Full-Time
(continued)								
Construction	-0.040	-0.067	0.122	0.095	—	—	0.806	—
Industry	(0.66)	(0.77)	(1.59)	(1.22)			(1.16)	
Wholesale	-0.159	-0.181	0.0001	0.021	-0.094	0.010	0.705	0.847
Industry	(2.69)	(2.08)	(0.001)	(0.28)	(0.49)	(0.05)	(2.54)	(2.35)
Transport	0.026	-0.002	0.144	0.135	-0.104	0.007	0.812	0.928
Industry	(0.43)	(0.03)	(1.89)	(1.76)	(0.54)	(0.04)	(2.91)	(2.57)
Finance Industry	-0.120	-0.154	0.193	0.235	-0.115	-0.021	0.902	1.001
	(1.95)	(1.72)	(2.61)	(3.15)	(0.60)	(0.11)	(3.25)	(2.78)
Community and	-0.075	-0.099	0.086	0.108	-0.112	0.004	0.787	0.926
Social Services	(1.28)	(1.14)	(1.20)	(1.49)	(0.59)	(0.02)	(2.84)	(2.58)
Experience	0.036	0.033	0.040	0.034	0.024	0.028	0.027	0.025
	(24.58)	(22.98)	(19.75)	(17.22)	(14.11)	(16.88)	(11.04)	(10.66)
Experience²	-0.00062	-0.00055	-0.00067	-0.00055	-0.00045	-0.00052	-0.00047	-0.00039
	(17.89)	(16.19)	(14.68)	(12.23)	(10.77)	(12.89)	(8.19)	(6.79)
F	171.49	178.09	127.39	120.50	104.75	119.83	101.56	90.91
$\bar{R}^2$	0.3865	0.4093	0.3404	0.3657	0.3418	0.4245	0.3121	0.3636
Sample Size	5,682	5,366	5,632	4,768	3,796	3,061	4,876	3,305

Labour Force Status and Income of Males and Females by Highest Educational Qualification in 1986 and 1996

Table A.1 — Labour Force Status and Income of Males by Highest Educational Qualification in 1986

Maori Males – 1986

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Age	33.99	29.30	27.14	26.42	33.80	32.86	36.79
	(12.70)	(11.35)	(10.09)	(10.21)	(10.96)	(9.26)	(10.39)
Income (1996 dollars)	$21,887	$22,881	$24,242	$23,787	$28,844	$33,679	$43,586
	($11,906)	($12,163)	($12,938)	($18,899)	($14,126)	($22,800)	($25,198)
Labour Force Status							
Employed	79.88%	87.65%	89.34%	74.86%	90.37%	86.09%	94.64%
Employed Full-Time	73.25%	81.53%	85.90%	71.04%	86.22%	80.00%	87.50%
Unemployed	8.72%	6.49%	5.08%	7.10%	4.33%	5.22%	1.79%
Out of the Labour Force	11.13%	5.62%	5.25%	17.49%	4.98%	8.70%	3.57%
Sample Size	9,606	1,619	610	183	2,773	115	56

Table A.1 — Labour Force Status and Income of Males by Highest Educational Qualification in 1986

Part-Maori Males – 1986

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Age	32.06	27.78	26.77	25.87	33.96	32.43	37.09
	(12.82)	(10.72)	(10.25)	(9.46)	(11.18)	(9.10)	(10.89)
Income (1996 dollars)	$23,816	$25,257	$24,612	$23,994	$32,128	$40,627	$46,424
	($13,053)	($13,997)	($14,125)	($22,370)	($16,061)	($23,673)	($28,024)
Labour Force Status							
Employed	85.96%	90.79%	89.69%	71.53%	92.60%	91.18%	87.18%
Employed Full-Time	80.30%	86.28%	86.25%	63.19%	89.32%	88.24%	83.33%
Unemployed	6.81%	3.57%	5.50%	11.11%	2.25%	3.92%	3.85%
Out of the Labour Force	7.11%	5.64%	4.47%	17.36%	4.31%	4.90%	7.69%
Sample Size	1,660	532	291	144	1,068	102	78

Table A.1 — Labour Force Status and Income of Males by Highest Educational Qualification in 1986

European Males – 1986

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Age	40.75	33.46	32.23	27.28	39.17	35.60	40.66
	(14.20)	(13.66)	(13.99)	(11.84)	(12.68)	(11.18)	(10.88)
Income (1996 dollars)	$27,145	$28,490	$29,600	$22,087	$35,270	$46,282	$53,305
	($16,053)	($17,403)	($18,704)	($20,174)	($17,934)	($26,160)	($26,404)
Labour Force Status							
Employed	83.94%	91.58%	88.94%	61.62%	90.92%	90.63%	93.30%
Employed Full-Time	80.50%	88.98%	86.15%	56.20%	88.14%	87.36%	90.07%
Unemployed	3.08%	2.36%	2.46%	8.79%	1.57%	2.29%	1.45%
Out of the Labour Force	12.63%	5.78%	8.34%	29.34%	7.16%	6.82%	4.94%
Sample Size	50,761	18,329	13,016	6,009	56,044	8,270	5,238

Table A.1 — Labour Force Status and Income of Males by Highest Educational Qualification in 1986

Other Ethnic Males – 1986

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Age	36.17	29.78	27.92	25.15	34.57	32.42	36.34
	(12.45)	(10.41)	(10.36)	(8.52)	(10.89)	(9.40)	(8.89)
Income (1996 dollars)	$21,845	$22,622	$22,997	$15,395	$28,977	$35,826	$45,125
	($12,079)	($12,955)	($15,344)	($18,287)	($16,191)	($25,446)	($28,371)
Labour Force Status							
Employed	84.64%	89.88%	82.88%	48.85%	89.95%	82.02%	86.67%
Employed Full-Time	80.11%	86.01%	79.87%	43.52%	86.46%	78.28%	83.33%
Unemployed	5.43%	4.76%	4.91%	11.72%	3.72%	4.49%	2.67%
Out of the Labour Force	9.59%	4.76%	11.89%	39.08%	5.93%	13.48%	9.67%
Sample Size	3,901	1,008	631	563	1,721	534	300

Table A.2 — Labour Force Status and Income of Females by Highest Educational Qualification in 1986

Maori Females – 1986

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Age	34.64	29.69	26.46	27.82	35.56	28.60	33.53
	(12.51)	(10.62)	(9.40)	(11.70)	(11.67)	(7.52)	(9.07)
Income (1996 dollars)	$12,330	$13,928	$16,290	$11,955	$19,075	$22,735	$29,327
	($8,337)	($9,239)	($10,582)	($9,432)	($12,382)	($13,848)	($21,595)
Labour Force Status							
Employed	48.00%	60.09%	70.08%	55.80%	73.97%	71.93%	83.33%
Employed Full-Time	37.23%	49.57%	60.81%	43.48%	61.05%	64.91%	76.67%
Unemployed	9.60%	10.67%	6.18%	14.49%	6.77%	7.02%	3.33%
Out of the Labour Force	21.19%	29.19%	23.74%	29.71%	19.20%	21.05%	13.33%
Sample Size	9,000	1,874	615	138	1,625	57	30

Table A.2 — Labour Force Status and Income of Females by Highest Educational Qualification in 1986

Part-Maori Females – 1986

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Age	33.80	27.96	25.71	23.70	32.02	30.37	31.68
	(12.78)	(9.86)	(9.11)	(8.67)	(11.32)	(7.65)	(9.73)
Income (1996 dollars)	$12,909	$13,563	$16,399	$12,138	$18,912	$26,103	$26,313
	($9,386)	($9,990)	($11,640)	($9,486)	($13,277)	($15,428)	($17,650)
Labour Force Status							
Employed	56.02%	64.34%	68.92%	56.07%	74.51%	76.40%	70.00%
Employed Full-Time	41.09%	52.28%	59.28%	43.93%	59.39%	64.04%	62.50%
Unemployed	6.89%	7.91%	6.75%	7.48%	5.37%	8.99%	7.50%
Out of the Labour Force	36.92%	27.75%	24.34%	35.51%	19.88%	14.61%	20.00%
Sample Size	1,728	746	415	107	820	89	40

Table A.2 — Labour Force Status and Income of Females by Highest Educational Qualification in 1986

European Females – 1986

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Age	43.39	34.27	30.75	27.42	37.31	33.34	37.97
	(13.38)	(12.89)	(13.23)	(13.34)	(12.61)	(10.39)	(10.94)
Income (1996 dollars)	($13,232)	$15,412	$16,980	$12,479	$19,107	$24,124	$28,563
	($10,691)	($11,823)	($12,139)	($11,606)	($13,989)	($17,764)	($20,242)
Labour Force Status							
Employed	53.99%	68.04%	71.18%	47.38%	72.10%	75.16%	79.98%
Employed Full-Time	35.70%	50.64%	58.66%	34.92%	52.25%	57.98%	62.16%
Unemployed	3.62%	3.67%	3.68%	11.16%	3.33%	4.40%	2.56%
Out of the Labour Force	42.24%	28.18%	24.98%	41.29%	24.35%	20.40%	17.26%
Sample Size	57,163	24,102	13,837	4,553	39,703	4,995	2,857

Table A.2 — Labour Force Status and Income of Females by Highest Educational Qualification in 1986

Other Ethnic Females – 1986

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Age	37.15	30.61	28.30	25.73	33.40	30.05	34.96
	(12.90)	(10.39)	(10.94)	(8.94)	(11.28)	(7.79)	(9.37)
Income (1996 dollars)	$13,006	$14,461	$16,571	$10,209	$17,516	$21,107	$21,290
	($9,925)	($10,671)	($11,820)	($11,550)	($12,375)	($18,965)	($19,986)
Labour Force Status							
Employed	56.90%	65.64%	71.43%	41.89%	72.75%	70.03%	66.46%
Employed Full-Time	47.09%	54.67%	61.22%	33.56%	59.53%	57.70%	52.53%
Unemployed	5.97%	6.34%	4.93%	7.21%	6.24%	5.32%	7.59%
Out of the Labour Force	36.76%	27.93%	23.47%	50.90%	20.87%	24.65%	25.95%
Sample Size	3,784	1,167	588	444	1,490	357	158

Table A.3 — Labour Force Status and Income of Males by Highest Educational Qualification in 1996

Maori Males – 1996

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Age	37.55	32.42	30.64	27.64	36.37	35.50	42.16
	(12.36)	(10.99)	(10.23)	(11.33)	(10.94)	(10.97)	(10.99)
Income (1996 dollars)	$18,229	$22,048	$24,096	$17,383	$26,190	$33,467	$53,572
	($13,928)	($15,819)	($17,750)	($18,021)	($17,859)	($27,743)	($32,955)
Labour Force Status							
Employed	58.58%	74.22%	80.84%	62.61%	78.87%	83.51%	91.78%
Employed Full-Time	51.88%	66.36%	73.01%	48.67%	70.01%	72.16%	89.04%
Unemployed	14.94%	10.76%	8.10%	11.95%	7.68%	6.19%	2.74%
Out of the Labour Force	26.48%	15.01%	11.05%	25.44%	13.45%	10.31%	5.48%
Sample Size	7,724	1,412	778	452	1,524	194	73

Table A.3 — Labour Force Status and Income of Males by Highest Educational Qualification in 1996

Part Maori Males – 1996

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Age	35.99	31.79	29.34	25.14	35.53	33.70	37.38
	(12.46)	(10.80)	(9.42)	(9.29)	(10.88)	(9.80)	(10.69)
Income (1996 dollars)	$21,557	$25,558	$27,120	$18,223	$31,626	$43,810	$51,290
	($17,006)	($19,418)	($21,710)	($19,365)	($21,653)	($34,004)	($35,726)
Labour Force Status							
Employed	68.63%	82.52%	86.03%	71.86%	86.05%	88.22%	89.87%
Employed Full-Time	63.03%	77.00%	78.83%	53.80%	80.92%	81.49%	81.65%
Unemployed	11.28%	8.44%	6.05%	8.64%	5.42%	3.85%	4.43%
Out of the Labour Force	20.10%	9.04%	7.92%	19.50%	8.52%	7.93%	5.70%
Sample Size	3,503	1,339	959	764	2,065	416	158

Table A.3 — Labour Force Status and Income of Males by Highest Educational Qualification in 1996

European Males – 1996

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Age	43.59	37.25	34.12	28.09	40.23	37.75	41.79
	(13.04)	(12.28)	(11.68)	(12.09)	(11.87)	(11.39)	(10.66)
Income (1996 dollars)	$26,379	$31,619	$33,793	$22,581	$36,251	$51,449	$60,286
	($21,138)	($23,767)	($26,228)	($25,603)	($24,086)	($36,838)	($37,995)
Labour Force Status							
Employed	74.99%	87.59%	88.81%	71.99%	89.18%	90.91%	91.23%
Employed Full-Time	68.83%	82.54%	83.24%	53.97%	84.02%	84.25%	85.74%
Unemployed	5.06%	3.93%	3.44%	6.16%	2.64%	2.88%	2.47%
Out of the Labour Force	19.94%	8.48%	7.75%	21.86%	8.18%	6.21%	6.30%
Sample Size	40,624	16,264	13,476	9,677	39,741	12,137	6,473

Table A.3 — Labour Force Status and Income of Males by Highest Educational Qualification in 1996

Other Ethnic Males – 1996

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Age	38.98	31.86	29.17	23.33	35.52	35.68	38.64
	(12.30)	(9.97)	(9.59)	(7.37)	(10.77)	(9.30)	(8.87)
Income (1996 dollars)	$17,792	$24,391	$23,154	$11,548	$26,338	$29,659	$38,243
	($14,337)	($19,728)	($20,373)	($16,255)	($22,148)	($29,351)	($36,218)
Labour Force Status							
Employed	62.56%	81.91%	77.97%	46.93%	73.83%	68.11%	67.59%
Employed Full-Time	55.95%	74.34%	69.60%	31.16%	65.79%	58.92%	62.06%
Unemployed	10.21%	7.99%	6.46%	8.81%	8.47%	12.11%	12.85%
Out of the Labour Force	27.23%	10.09%	15.57%	44.26%	17.69%	19.78%	19.57%
Sample Size	4,808	951	944	1,351	1,865	1,957	1,012

Table A.4 — Labour Force Status and Income of Females by Highest Educational Qualification in 1996

Maori Females – 1996

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Age	38.12	33.27	29.78	26.05	35.34	33.11	36.68
	(12.19)	(10.97)	(9.40)	(10.73)	(11.39)	(9.32)	(8.85)
Income (1996 dollars)	$12,251	$15,258	$16,741	$12,520	$19,158	$24,943	$42,111
	($9,933)	($11,245)	($12,374)	($12,078)	($13,786)	($19,657)	($27,427)
Labour Force Status							
Employed	36.99%	57.37%	60.80%	56.84%	67.18%	76.76%	93.75%
Employed Full-Time	25.16%	41.85%	46.37%	37.03%	49.16%	61.62%	77.50%
Unemployed	12.92%	11.35%	9.83%	12.50%	9.54%	4.86%	1.25%
Out of the Labour Force	50.09%	31.28%	29.38%	30.66%	23.28%	18.38%	5.00%
Sample Size	7,361	1,656	977	424	1,426	185	80

Table A.4 — Labour Force Status and Income of Females by Highest Educational Qualification in 1996

Part Maori Females – 1996

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Age	37.07	33.01	29.54	23.77	34.11	32.67	37.56
	(12.04)	(10.60)	(8.91)	(8.62)	(11.24)	(9.75)	(10.35)
Income (1996 dollars)	$13,465	$16,290	$18,494	$12,036	$19,804	$26,855	$35,824
	($11,024)	($13,511)	($15,562)	($12,949)	($14,942)	($20,266)	($26,487)
Labour Force Status							
Employed	47.84%	62.83%	70.51%	66.15%	72.48%	81.10%	90.24%
Employed Full-Time	31.48%	43.87%	52.48%	39.25%	53.54%	64.59%	76.42%
Unemployed	9.82%	8.85%	6.11%	9.65%	6.38%	5.26%	0.81%
Out of the Labour Force	42.34%	28.32%	23.38%	24.20%	21.45%	13.64%	8.94%
Sample Size	3,767	1,762	1,309	777	1,991	418	123

Table A.4 — Labour Force Status and Income of Females by Highest Educational Qualification in 1996

European Females– 1996

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Age	45.83	38.70	33.34	26.25	39.35	34.84	38.83
	(12.32)	(11.39)	(10.48)	(11.43)	(11.93)	(10.62)	(10.69)
Income (1996 dollars)	$14,395	$18,643	$19,635	$12,463	$21,940	$27,709	$34,522
	($13,788)	($16,855)	($16,776)	($14,375)	($17,511)	($22,340)	($26,588)
Labour Force Status							
Employed	53.96%	72.62%	75.26%	65.61%	78.20%	82.12%	83.84%
Employed Full-Time	32.85%	47.52%	52.20%	33.78%	52.81%	61.60%	64.30%
Unemployed	3.69%	3.20%	3.23%	7.06%	2.86%	3.41%	2.93%
Out of the Labour Force	42.35%	24.18%	21.51%	27.33%	18.95%	14.47%	13.23%
Sample Size	41,981	22,903	16,522	8,698	35,389	10,218	4,846

Table A.4 — Labour Force Status and Income of Females by Highest Educational Qualification in 1996

Other Ethnic Females– 1996

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Age	39.68	32.16	29.27	22.41	34.49	34.20	36.51
	(11.99)	(9.52)	(8.74)	(6.51)	(10.25)	(8.56)	(8.94)
Income (1996 dollars)	$11,775	$16,939	$17,095	$8,487	$16,770	$18,330	$23,604
	($11,536)	($12,035)	($13,507)	($10,689)	($14,975)	($18,955)	($24,127)
Labour Force Status							
Employed	42.19%	67.03%	67.20%	45.44%	62.03%	56.92%	60.34%
Employed Full-Time	32.21%	51.86%	52.49%	25.13%	46.07%	42.97%	44.98%
Unemployed	7.86%	7.37%	5.77%	9.04%	8.15%	11.22%	13.95%
Out of the Labour Force	49.95%	25.59%	27.04%	45.52%	29.82%	31.86%	25.71%
Sample Size	5,331	1,180	1,006	1,305	2,049	1,764	638

Income and Educational Attainment by Ethnic Background in 1986 and 1996 ' All Employed' and 'Full-time Employed' Males and Females

Table B.1 — Income by Highest Educational Qualification of Males in 1986

All Employed Males – 1986

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Maori							
Age	33.39	28.91	26.54	28.15	33.44	32.53	37.15
	(12.01)	(10.93)	(9.17)	(10.42)	(10.48)	(8.40)	(10.46)
Income (1996 dollars)	$24,531	$24,564	$25,755	$29,083	$30,406	$36,836	$45,519
	($11,361)	($11,672)	($12,604)	($18,318)	($13,566)	($22,085)	($24,440)
Sample Size	7,673	1,419	545	137	2,506	99	53
Part-Maori							
Age	31.56	27.30	26.45	27.64	33.42	33.06	37.76
	(12.29)	(10.19)	(9.73)	(10.10)	(10.56)	(8.83)	(10.14)
Income (1996 dollars)	$25,819	$26,438	$26,140	$30,529	$33,472	$43,773	$50,693
	($12,707)	($13,849)	($13,907)	($23,092)	($15,628)	($22,237)	($26,229)
Sample Size	1,427	483	261	103	989	93	68
European							
Age	39.03	32.25	30.78	30.10	37.92	35.53	40.29
	(13.20)	(12.62)	(12.50)	(11.61)	(11.72)	(10.43)	(10.23)
Income (1996 dollars)	$29,508	$29,664	$31,169	$31,213	$36,922	$49,224	$55,309
	($15,807)	($17,361)	($18,548)	($20,334)	($17,431)	($25,045)	($25,273)
Sample Size	42,610	16,786	11,576	3,703	50,954	7,495	4,887

Table B.1 — Income by Highest Educational Qualification of Males in 1986

All Employed Males – 1986

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
(continued)							
Other Ethnicity							
Age	35.30	29.10	28.20	29.25	34.32	33.43	36.35
	(11.58)	(9.53)	(9.67)	(9.21)	(10.24)	(9.49)	(8.40)
Income (1996 dollars)	$23,931	$23,761	$26,484	$26,587	$30,845	$41,682	$50,029
	($11,279)	($12,387)	($14,260)	($20,201)	($15,427)	($23,705)	($26,443)
Sample Size	3,302	906	523	275	1,548	438	260

Table B.1 — Income by Highest Educational Qualification of Males in 1986

Full-time Employed Males – 1986

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Maori							
Age	33.12	28.76	26.50	28.20	33.33	32.76	37.29
	(11.96)	(10.97)	(9.11)	(10.41)	(10.42)	(8.37)	(10.13)
Income (1996 dollars)	$24,558	$24,675	$25,910	$29,667	$30,582	$37,612	$46,724
	($11,366)	($11,694)	($12,534)	($18,456)	($13,429)	($22,451)	($24,337)
Sample Size	7,036	1320	524	130	2,391	92	49
Part-Maori							
Age	31.32	27.13	26.18	28.23	33.29	33.30	37.95
	(12.19)	(10.00)	(9.43)	(10.35)	(10.56)	(8.87)	(10.30)
Income (1996 dollars)	$25,794	$26,581	$26,301	$32,830	$33,640	$44,714	$52,171
	($12,614)	($13,827)	($14,002)	($23,180)	($15,503)	($21,940)	($25,552)
Sample Size	1,333	459	251	91	954	90	65
European							
Age	38.83	32.06	30.48	30.68	37.74	35.43	40.12
	(13.11)	(12.51)	(12.21)	(11.50)	(11.58)	(10.23)	(10.04)
Income (1996 dollars)	$29,710	$29,798	$31,414	$32,976	$37,229	$49,976	$56,106
	($15,843)	($17,359)	($18,494)	($19,931)	($17,354)	($24,831)	($25,069)
Sample Size	40,862	16,309	11,213	33,77	49,297	7,225	4,718

Table B.1 — Income by Highest Educational Qualification of Males in 1986

Full-time Employed Males – 1986

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
(continued)							
Other Ethnicity							
Age	35.20	29.07	28.31	30.07	34.25	33.62	36.47
	(11.55)	(9.59)	(9.78)	(9.20)	(10.19)	(9.44)	(8.40)
Income (1996 dollars)	$24,103	$24,033	$26,765	$28,486	$31,067	$42,824	$51,132
	($11,270)	($12,415)	($14,206)	($20,309)	($15,421)	($23,463)	($26,241)
Sample Size	3,125	867	504	245	1,488	418	250

Table B.2 — Income by Highest Educational Qualification of Female in 1986

All Employed Females – 1986

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Maori							
Age	33.81	28.89	24.89	30.16	33.36	28.76	33.12
	(11.50)	(10.29)	(7.80)	(12.30)	(11.40)	(7.52)	(8.87)
Income (1996 dollars)	$15,882	$17,404	$19,238	$16,566	$22,552	$27,534	$32,753
	($8,423)	($9,043)	($10,342)	($9,560)	($11,819)	($12,071)	($21,853)
Sample Size	4,320	1,126	431	77	1,202	41	25
Part-Maori							
Age	33.00	26.81	24.53	23.68	31.53	30.53	30.43
	(12.03)	(9.72)	(8.40)	(7.62)	(10.77)	(7.33)	(8.89)
Income (1996 dollars)	$16,227	$17,021	$19,465	$16,803	$22,550	$30,772	$31,862
	($9,463)	($9,574)	($10,602)	($9,214)	($12,729)	($13,248)	($17,216)
Sample Size	968	480	286	60	611	68	28
European							
Age	39.90	31.90	27.84	28.24	35.42	32.72	37.28
	(11.73)	(11.50)	(11.01)	(12.04)	(11.46)	(9.61)	(10.25)
Income (1996 dollars)	$17,063	$18,909	$20,369	$18,770	$22,869	$28,717	$32,894
	($11,049)	($11,276)	($11,346)	($12,163)	($13,267)	($16,409)	($19,393)
Sample Size	30,862	16,400	9,849	2,157	28,625	3,754	2,285

Table B.2 — Income by Highest Educational Qualification of Female in 1986

All Employed Females – 1986

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
(continued)							
Other Ethnicity							
Age	35.38	29.28	26.85	28.96	32.47	29.66	35.55
	(11.47)	(9.41)	(9.59)	(9.30)	(10.34)	(7.52)	(8.96)
Income (1996 dollars)	$17,337	$18,414	$20,687	$18,797	$21,681	$27,694	$28,871
	($9,446)	($9,344)	($10,756)	($12,716)	($11,153)	($17,391)	($19,316)
Sample Size	2,153	766	420	186	1,084	250	105

Table B.2 — Income by Highest Educational Qualification of Female in 1986

Full-Time Employed Females – 1986

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Maori							
Age	32.97	28.25	24.27	29.53	32.85	28.11	33.09
	(11.69)	(10.27)	(7.55)	(12.15)	(11.40)	(7.12)	(8.90)
Income (1996 dollars)	$17,443	$18,755	$20,510	$18,593	$23,918	$28,957	$34,770
	($7,938)	($8,743)	($10,172)	($9,097)	($10,919)	($11,536)	($21,467)
Sample Size	3,351	929	374	60	992	37	23
Part-Maori							
Age	31.48	25.48	23.77	23.81	30.57	30.96	30.20
	(12.26)	(9.35)	(8.19)	(7.64)	(10.83)	(7.59)	(9.26)
Income (1996 dollars)	$18,316	$18,376	$20,890	$19,462	$25,259	$34,084	$34,289
	($9,498)	($9,443)	($10,474)	($8,457)	($12,117)	($11,301)	($16,391)
Sample Size	710	390	246	47	487	57	25
European							
Age	38.64	30.07	26.24	27.61	34.02	31.57	36.68
	(12.36)	(11.52)	(10.39)	(11.21)	(11.72)	(9.35)	(10.31)
Income (1996 dollars)	$20,169	$21,449	$22,173	$21,946	$26,297	$32,723	$37,306
	($10,758)	($10,676)	($10,711)	($11,472)	($12,482)	($15,387)	($18,682)
Sample Size	20,410	12,205	8,117	1,590	20,745	2,896	1,776

Table B.2 — Income by Highest Educational Qualification of Female in 1986

Full-Time Employed Females – 1986

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
(continued)							
Other Ethnicity							
Age	34.79	28.39	26.09	28.81	31.67	28.90	34.59
	(11.55)	(9.16)	(9.12)	(8.60)	(10.39)	(6.93)	(9.06)
Income (1996 dollars)	$18,575	$19,559	$22,286	$21,250	$23,090	$30,089	$32,491
	($9,073)	($8,642)	($10,240)	($12,585)	($10,751)	($17,016)	($19,115)
Sample Size	1,782	638	360	149	887	206	83

Table B.3 — Income by Highest Educational Qualification of Males in 1996

All Employed Males – 1996

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Maori							
Age	36.98	31.84	30.55	28.15	36.28	36.37	41.81
	(11.74)	(10.29)	(9.78)	(10.62)	(10.39)	(11.08)	(11.16)
Income (1996 dollars)	$23,596	$25,525	$27,220	$22,728	$29,691	$37,763	$56,989
	($14,051)	($15,973)	($17,790)	($19,630)	($17,786)	($28,244)	($31,992)
Sample Size	4,525	1,048	629	283	1,202	162	67
Part-Maori							
Age	35.45	31.86	29.45	26.24	35.60	33.80	37.37
	(11.91)	(10.70)	(9.35)	(9.45)	(10.64)	(9.24)	(10.14)
Income (1996 dollars)	$26,199	$28,418	$29,801	$22,563	$34,508	$47,682	$55,485
	($17,185)	($19,710)	($21,995)	($20,542)	($21,471)	($33,462)	($35,123)
Sample Size	2,404	1,105	825	549	1,777	367	142
European							
Age	42.33	36.66	33.60	29.55	39.34	37.79	41.57
	(12.24)	(11.75)	(10.97)	(11.90)	(11.12)	(10.94)	(10.09)
Income (1996 dollars)	$30,888	$33,976	$36,220	$28,474	$38,630	$54,813	$63,897
	($21,599)	($23,877)	($26,265)	($27,188)	($23,732)	($36,292)	($36,976)
Sample Size	30,465	14,246	11,968	6,966	35,440	11,034	5,905

Table B.3 — Income by Highest Educational Qualification of Males in 1996

All Employed Males – 1996

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
(continued)							
Other Ethnicity							
Age	37.70	32.06	29.75	25.96	35.74	35.74	39.02
	(11.20)	(9.60)	(9.17)	(8.67)	(10.21)	(9.01)	(8.95)
Income (1996 dollars)	$22,744	$27,288	$27,473	$19,808	$31,810	$38,339	$50,220
	($14,680)	($19,836)	($20,628)	($19,383)	($21,555)	($30,235)	($36,430)
Sample Size	3,008	779	736	634	1,377	1,333	684

Table B.3 — Income by Highest Educational Qualification of Males in 1996

Full-time Employed Males – 1996

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Maori							
Age	36.70	31.73	30.40	28.55	36.11	36.61	41.92
	(11.62)	(10.30)	(9.56)	(9.96)	(10.27)	(10.93)	(10.86)
Income (1996 dollars)	$24,693	$26,361	$28,416	$26,179	$30,734	$40,805	$57,704
	($13,862)	($15,918)	($17,255)	($19,996)	($17,433)	($28,721)	($31,883)
Sample Size	4,007	937	568	220	1,067	140	65
Part-Maori							
Age	35.05	31.78	29.25	27.53	35.65	33.99	38.14
	(11.77)	(10.73)	(9.01)	(9.70)	(10.56)	(8.94)	(9.76)
Income (1996 dollars)	$26,992	$28,954	$30,913	$27,481	$35,470	$50,152	$59,894
	($17,092)	($19,707)	($21,784)	($20,979)	($21,352)	($33,342)	($33,785)
Sample Size	2,208	1,031	756	411	1,671	339	129
European							
Age	41.97	36.39	33.46	31.92	39.14	37.75	41.53
	(12.07)	(11.56)	(10.74)	(11.77)	(10.90)	(10.54)	(9.77)
Income (1996 dollars)	$31,849	$34,667	$37,107	$35,167	$39,536	$57,115	$65,846
	($21,543)	($23,820)	($26,165)	($27,640)	($23,491)	($35,902)	($36,491)
Sample Size	27,963	13,425	11,218	5,223	33,392	10,225	5,550

Table B.3 — Income by Highest Educational Qualification of Males in 1996

Full-time Employed Males – 1996

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
(continued)							
Other Ethnicity							
Age	37.37	32.13	30.14	28.25	35.91	35.85	38.97
	(11.09)	(9.62)	(9.34)	(9.06)	(9.95)	(8.78)	(8.91)
Income (1996 dollars)	$23,420	$28,213	$28,371	$26,184	$33,668	$42,049	$53,053
	($14,257)	($19,900)	($19,654)	($20,269)	($21,464)	($30,217)	($36,112)
Sample Size	2,690	707	657	421	1,227	1,153	628

Table B.4 — Income by Highest Educational Qualification of Females in 1996

All Employed Females – 1996

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Maori							
Age	38.77	33.90	29.56	27.04	35.98	33.19	36.51
	(10.74)	(10.44)	(8.92)	(10.80)	(11.02)	(9.06)	(8.70)
Income (1996 dollars)	$16,549	$18,999	$20,751	$15,975	$22,599	$28,940	$42,785
	($11,589)	($12,385)	($13,024)	($11,424)	($13,460)	($20,274)	($27,739)
Sample Size	2,723	950	594	241	958	142	75
Part-Maori							
Age	37.88	33.07	29.51	24.07	34.33	32.58	37.54
	(11.22)	(10.07)	(8.84)	(8.31)	(11.04)	(9.64)	(10.21)
Income (1996 dollars)	$17,622	$20,220	$21,926	$14,965	$23,407	$30,249	$38,548
	($12,594)	($14,357)	($15,587)	($14,099)	($15,147)	($19,304)	($26,209)
Sample Size	1,802	1,107	923	514	1,443	339	111
European							
Age	44.16	38.25	32.59	26.52	38.51	34.45	38.64
	(10.66)	(10.63)	(9.94)	(10.83)	(11.24)	(10.20)	(10.34)
Income (1996 dollars)	$18,901	$22,083	$22,958	$15,679	$25,062	$31,207	$38,556
	($15,412)	($17,182)	($16,788)	($15,424)	($17,433)	($22,210)	($26,147)
Sample Size	22,653	16,633	12,434	5,707	27,673	8,391	4,063

Table B.4 — Income by Highest Educational Qualification of Females in 1996

All Employed Females – 1996

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
(continued)							
Other Ethnicity							
Age	38.31	32.52	29.30	23.25	34.49	34.02	36.61
	(10.43)	(9.12)	(8.47)	(6.41)	(10.11)	(8.49)	(8.95)
Income (1996 dollars)	$16,826	$20,624	$21,379	$13,862	$21,825	$26,282	$33,853
	($11,722)	($11,909)	($12,977)	($12,048)	($14,209)	($19,188)	($24,276)
Sample Size	2,249	791	676	593	1,271	1,004	385

Table B.4 — Income by Highest Educational Qualification of Females in 1996

Full-Time Employed Females – 1996

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
Maori							
Age	38.44	33.68	29.19	27.89	36.11	33.20	36.82
	(10.82)	(10.68)	(8.91)	(10.70)	(11.13)	(9.00)	(9.04)
Income (1996 dollars)	$18,956	$21,576	$22,966	$20,350	$25,777	$31,091	$45,651
	($11,702)	($12,743)	($13,128)	($11,289)	($12,828)	($20,450)	($25,658)
Sample Size	1,852	693	453	157	701	114	62
Part-Maori							
Age	37.50	32.34	28.68	25.43	34.09	32.96	37.46
	(11.53)	(10.18)	(8.88)	(8.96)	(11.07)	(9.55)	(9.92)
Income (1996 dollars)	$20,453	$23,619	$24,453	$19,957	$26,428	$34,285	$43,179
	($12,651)	($14,329)	($14,301)	($15,347)	($14,562)	($18,139)	($25,646)
Sample Size	1,186	773	687	305	1,066	270	94
European							
Age	43.73	37.62	31.46	28.47	37.65	33.85	38.36
	(10.77)	(11.03)	(10.13)	(11.00)	(11.49)	(10.03)	(10.42)
Income (1996 dollars)	$22,957	$26,140	$26,688	$22,954	$29,472	$35,935	$44,101
	($15,526)	($16,467)	($15,898)	($16,549)	($16,944)	($21,829)	($25,564)
Sample Size	13,791	10,883	8,625	2,938	18,689	6,294	3,116

Table B.4 — Income by Highest Educational Qualification of Females in 1996

Full-Time Employed Females – 1996

Personal Characteristics	No Qual.	School Cert.	UE or SFC	Bursary	Diploma	Bachelor's Qual.	Postgrad. Qual.
(continued)							
Other Ethnicity							
Age	38.00	32.23	28.67	25.13	34.16	33.77	35.84
	(10.46)	(8.98)	(8.14)	(6.87)	(10.19)	(8.23)	(8.88)
Income (1996 dollars)	$18,552	$22,534	$23,234	$19,428	$24,883	$30,024	$38,365
	($11,522)	($11,612)	($12,159)	($12,490)	($14,195)	($18,508)	($24,483)
Sample Size	1,717	612	528	328	944	758	287

Regression Results for Income Effects of Education 1986 –1996 Specified as a Function of Age

(Dependent Variable: The Natural Logarithm of Gross Annual Income)
Least Squares Regression Coefficients
(t-ratios)

Explanatory Variables	All Employed Males		All Employed Females	
	1986	1996	1986	1996
Intercept	7.905	7.318	8.939	7.946
	(657.82)	(395.73)	(489.20)	(331.92)
School Certificate	0.097	0.180	0.155	0.234
	(22.93)	(31.74)	(24.39)	(31.33)
U.E. or Sixth Form Certificate	0.179	0.276	0.293	0.389
	(35.95)	(44.54)	(39.63)	(47.31)
Bursary	0.166	0.010	0.157	–0.094
	(18.73)	(1.26)	(10.65)	(8.82)
Diploma	0.213	0.255	0.312	0.376
	(70.61)	(56.95)	(54.60)	(56.93)
Bachelor's Degree	0.494	0.524	0.568	0.597
	(76.32)	(74.24)	(46.07)	(63.08)
Postgraduate Qualification	0.549	0.665	0.678	0.791
	(73.80)	(77.31)	(45.33)	(65.95)
Maori	–0.108	–0.191	0.003	0.018
	(23.91)	(26.22)	(0.36)	(1.88)
Part-Maori	0.004	–0.047	0.047	0.101
	(0.60)	(6.62)	(3.99)	(11.67)

Explanatory Variables	All Employed Males		All Employed Females	
	1986	1996	1986	1996
(continued)				
Other Ethnicity	–0.159	–0.216	0.091	0.010
	(26.55)	(27.93)	(10.81)	(1.13)
Age	0.088	0.137	0.0012	0.074
	(132.18)	(140.44)	(1.08)	(58.39)
Age²	–0.00098	–0.00015	0.000030	–0.00079
	(113.96)	(124.42)	(2.10)	(48.88)
F	4585.26	4280.54	542.78	1666.79
$\overline{\mathbf{R}}^2$	0.2399	0.2539	0.0523	0.1371
Sample Size	159,691	138,318	108,028	114,969

Footnotes

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1 Miller (1984) and Chia (1990) have further examined changes in returns to higher education in Australia over time, while Ryoo (1988), Wilson (1985), and Psacharopoulos (1985, 1994) provide international evidence on this question.

2 The results for 1996 (Maani 1999) further indicated that compared to 1991 and with increased participation in tertiary education the returns to a Bachelor's degree had reached a plateau for males and showed declining marginal returns for females.

3 Education is compulsory in New Zealand up to and including the Fifth Form (Year 11, and age 16), at the end of which nationally administered School Certificate examinations on up to six subjects are taken. Traditionally, School Certificate has been the highest educational qualification for at least half of the New Zealand population, and many vocational, clerical and trade professions require it. Bursary examinations at the end of the 7th Form (Year 13) were originally designed to determine merit-based bursary payments to students for studies at university. Admission to the universities in New Zealand requires Year 13 Bursary, while a number of polytechnic diplomas and degrees require Sixth Form Certificate (Year 12) or Year 11 School Certificate. Nevertheless, some students choose to complete Years 12 or 13 and then go to polytechnic.

4 For further details of the census data utilised, or education and income characteristics of the overall New Zealand population in 1981, 1986, 1991, and 1996 the reader may refer to Maani (1997, 1999).

5 The census questions on 'What is your ethnic origin?' have remained consistent in the 1986 and 1996 census years. This is fortunate in terms of constructing the Maori, Part-Maori and European ethnicity variables. However, the 1996 included two additional questions later in the questionnaire that asked about 'whether the respondent was a descendant from a NZ Maori', and if the person 'knew the name of the iwi (tribe or tribes)'. In 1986 respondents were asked to 'Tick the box or boxes that apply to you'; in 1996 they were asked to 'Tick as many circles as you need to show which ethnic group(s) you belong to'. It is not possible to ascertain if these additional questions had also prompted greater identification with Part-Maori ethnicity, but an analysis by Statistics New Zealand (1999) confirms the relatively significant increase in the Part-Maori and a decrease in the Maori categories between the 1991 and 1996 Census years noted in the 1986-1996 measures in this paper.

6 This would tend to lead to an overestimation of the closing of the gap between the part-Maori and the European populations over the decade.

7 This is consistent with Chapple and Rea's (1999) results for employment outcome for Maori and part-Maori using data from the Household Labour Force Survey.

8 The improvement of 7.73% in the case of "Other Ethnic' groups is expected to also reflect the effect of New Zealand immigration policy and it's emphasis on qualifications in the 1990s.

9 In regression estimations throughout the study the White adjustment for detected Heteroscedasticity corrects for the differences in variance.

10 Heckman and Polachek (1974) and Dougherty and Jimenez (1991) have provided tests of the functional form for the earnings function, and they support the semi-log specification as the most appropriate of the conventional transformations. Heckman et al. (1996) have provided further evidence that educational degrees have the most effect once they are completed. This, referred to as the 'sheepskin effect', is consistent with the specification adopted here.

11 The income information in the New Zealand census (similar to Australia) is reported in 13 categories, based on an annual gross income. The mid-point of these categories has been used as a measure of income throughout the study. The lowest income category in the census is nil income or loss for which income of zero is designated. The rest of the annual categories were $2,500 or less, $2,501-$5,000, up to $100,000 or more, for which based on Statistics New Zealand estimate a mid-point of $130,960 was assumed.

12 The New Zealand Census does not provide information on the actual years of experience. In the original human capital models, variables for experience and experience squared are included instead of age, where experience is specified as 'age - years of schooling - 5' in New Zealand. Using a specification as above instead of age results in returns to education that are higher, especially at higher levels of education. Using age as an explanatory variable compares two individuals of the same age but varying years of education and potential job experience. Using experience specified as above compares individuals of different age but similar potential years of work experience, and results in coefficients of returns to education that are larger (see e.g. Maani 1999).

13 For more details on the tests, the reader may refer to Ramanathan (1992), pp. 171-172, and 274-276.

14 The adjustment for dichotomous variables requires that the anti-logarithm of the coefficient is taken and the value one is subtracted.

15 For example, in percentage terms (g_j), the b_j coefficient of 0.206 in column eight of Table 4.1 for 'Full-time employed' females in 1996 indicates that a School Certificate degree was associated with incomes that were 22.8% higher than for those with no school qualifications. Although for small coefficients below 0.15 or 0.20 the coefficients and adjusted percentages are very similar, for larger coefficients the adjustments are more significant.

16 Studies by Dixon (1998) using the Household Labour Force Survey data, and Maani (1999) using 1981-1996 census data, have shown that the increase in the returns to education since 1986 are mainly in the 1986-1991 period, with a plateau and a slight decrease in the 1991-1996 period.

17 The Industry categories in both years were: (1) Agriculture, Hunting, Forestry, Fishing, (2) Mining and Quarrying, (3) Manufacturing, (4) Electricity, Gas, and Water, (5) Construction, (6) Wholesale and Retail Trade, Restaurants and Hotels, (7) Transport, Communication, (8) Business and Financial Services, (9) Community, Social and Personal Services.

18 The Occupation categories in 1986 were: (1) Managerial/Administrative, (2) Professional, (3) Clerical, (4) Service, (5) Agricultural, (6) Production/Transport Workers, and (7) Sales. In 1996 the categories were: (1) Managerial/Administrative, (2) Professional, (3) Clerical, (4) Service, (5) Agricultural, (6) Trade Oriented, (7) Plant and Machine Operator, (8) Elementa/Low-Skilled, and (9) Technical.