Estimating the Cost of Youth Disengagement in Auckland

Report prepared by Gail Pacheco* and Jessica Dye

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* Gail Pacheco is an Associate Professor in the Department of Economics, AUT University. For further information: Email gail.pacheco@aut.ac.nz

Summary

There has been growing interest in recent years in the labour market issues that youth face. Youth exclusion, disengagement, and overall underutilisation in the labour market has short term costs to the economy, as well as long term impacts on society. The consequences range from reduced economic productivity to increased criminal activity. We document a rise in the number of NZ youth classified as not in employment, education or training (i.e. NEET). This trend signals increasing difficulties for young people making the transition from education into the labour market.

In this report we project the loss to productivity, measured in foregone wages, and the expected cost to public finances for Auckland and NZ NEET as at December 2012. We focus on youth aged 15-24 years, and where data are available report separately for 15-19 and 20-24 year olds. We find the expected per capita cost of each NEET youth aged 15-24 in the Auckland cohort to be approximately $28,981 over the next 1-3 years. The estimated cost is slightly higher than comparable costs for the aggregate group of NZ NEET, due largely to the higher foregone wages of Auckland NEET. Disaggregating our analysis by ethnicity, we find that Auckland NEET youth of Maori and Pacifica descent are associated with a relatively high per capita cost at roughly $33,634 and $26,629 respectively, compared to the analogous figure for their NZ European counterparts of $22,301 (all figures represent the estimated cost over the next 1-3 years). It appears that the difference is a result of the greater propensity of Maori and Pacific Peoples to disengage from the education system earlier, to withdraw from the work force due to caregiving responsibilities at a younger age, and to experience longer durations of unemployment than their NZ European counterparts.

The sizeable estimated costs associated with NEET youth highlight the urgent need for policy intervention directed at improving transitions from NEET status to the workforce or further education / training. It should also be noted that these estimated costs are conservative in nature, and do not include expected costs that are difficult to quantify or attribute proportionally to NEET versus non-NEET status, e.g. impact on criminal activity, depression, substance abuse, psychological distress, etc.

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Introduction

The rising level of youth that are NEET (not employed, in education or training) in NZ is of concern at both the local and national level. A wide range of empirical evidence suggests that young people out of employment or education are likely to have a lifetime of poorer outcomes in terms of future unemployment, lower future wages, and even reduced happiness and health (e.g. Ellwood, 1982; Goldsmith, et al., 1996; Fergusson, et al., 1997; Maani, 1999; Clark, et al., 2001; Fergusson, et al., 2001; Maloney, 2004; Gregg & Tominey, 2005; Mroz & Savage, 2006; Bell & Blanchflower, 2010). For example, employing a longitudinal survey data set of young people in the United States, Goldsmith, et al. (1996) find that youth which experience unemployment or time spent out of the labour force can experience long-term harm to their self-esteem, suffering from depression, a sense of loss of identity (self-alienation), and anxiety, as well as future labour force difficulties. In addition to finding evidence of persistence in unemployment, Mroz and Savage (2006) find that early spells of unemployment for U.S. individuals also lead to a wage penalty in later years, with a six month spell of unemployment experienced at 22 years of age, leading to wages that are 2-3% lower than they otherwise would have been at age 30-31. In terms of NZ, Maloney (2004) also finds clear evidence of path dependence, in that indications of inactivity at an earlier age are associated with higher probabilities of inactivity at a later age, while Fergusson, et al. (1997) presents evidence to suggest that young NZers exposed to unemployment have higher rates of substance use and anxiety disorder. Such research indicates that a rising number of NEET youth has both short run, as well as serious long term consequences for the individual, as well as the economy.

The government has responded to rising youth unemployment (noting that unemployed youth form a sizeable proportion of NEET youth) by introducing a *Starting Out Wage* from May 1st, 2013. This will allow teens aged 16 to 19 to be paid 80 per cent of the adult minimum wage for the first six months of their employment. Eligible youth workers will include 16-17 year olds during their first six months of work with a new employer, and 18-19 year olds who were on a social welfare benefit for six months or more, as well as 16-19 year olds training. The motivation behind this policy, as indicated by Labour Minister Simon Bridges (2013), is to incentivise employers to give youth a chance.

In response to growing interest in the labour market issues that youth face, a recent report "The Cost of Poor Transitions for Youth" by Pacheco (2012) considers the short-term and long-run

costs of NZ youth not in education, employment, or training (collectively known as NEETs). The report states that "*the large numbers of young people who are NEET is a serious social and economic problem, as it signals the increasing number of youth that are struggling to make the transition from education into the labour market. Youth exclusion, disengagement, and overall underutilisation in the labour market may have both short term costs to the economy, and long term impacts on society* (2012, p.2)". In projecting both the loss to productivity and expected cost to public finances for the NZ NEET cohort as at March 2012, Pacheco (2012) finds that the expected per capita cost of each individual in this cohort to be approximately $27,488 over the next 1-3 years. While, explicit long term cost calculations for NZ were not estimated, we can draw on comparable research by Godfrey et al (2002), who compute the associate cost for NEET youth aged 16-18 in the UK for both the medium term of 40 years and long term with respect to pension differentials. Their research signals that a multiplicative factor of nine is required to extrapolate short term into long term costs. For the NZ estimates produced by Pacheco (2012) this implied that the present value of life time cost per capita of NZ NEET youth (for the March 2012 quarter) of just under a quarter of a million dollars (specifically $247,394).

This study extends that of Pacheco (2012) by studying the NEET youth in Auckland. There are 29,000 young people aged 15-24 who are NEET in Auckland as at December 2012[1], which equates to approximately 13% of all young Aucklanders in this age group[2] and ~32% of total NZ NEET in this time period[3]. Of concern is that the total number of NEET youth in this region has grown ~46% since data for this group was first collected by Statistics NZ in March 2004. The gravity of this upward trend is somewhat mitigated by the fact that Auckland has also experienced strong population growth over this time period (>10% over the same time period[4]). Additionally, the NEET rate itself has only increased ~1.6 percentage points over this same time period, from ~11.4% in March 2004 to ~13.0% in December 2012. Nevertheless, the rising numbers of youth NEET pre and post 2008 recession is indicative of wider issues affecting youth in Auckland that are yet to be addressed, and likely to get worse as the age cohort of 15-24 year olds looks set to rise.

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[1] Source: Statistics NZ.
[2] Specifically, ~13% of Aucklanders in this age group who are classified as usually resident, non-institutionalised, and civilian.
[3] There were ~90,000 NEET youth aged 15-24 in New Zealand as at December 2012.
[4] Source: Statistics NZ.

The Auckland NEET youth rate is slightly higher than the 2011 OECD average rate of 12.2%, and slightly lower than the December 2012 rate of 14.2% for NZ as a whole. As highlighted by Birnie, et al. (2012), however, the Auckland NEET average for youth masks significant differences among localities and ethnicities. For example, the NEET rate for youth aged 15-24 in the Manukau district ward (which includes two of Auckland's lowest socio-economic districts, Mangere-Otahuhu and Otara-Papatoetoe) in September 2012 was far above the national average at ~21.3%[5]. Similarly, youth of Maori and Pacifica descent are at greater risk of becoming NEET compared to their NZ European and Asian counterparts. In December 2012, the NEET rates for individuals aged 15-24 were ~21.5% and ~20.9 for Maori and Pacific Peoples respectively, compared to ~10.4% and ~11% for European and Asian individuals. Consequently, the research within this report is aimed at not only understanding regional differences, in terms of trends and cost, of the rising NEET issue (by comparing Auckland to NZ as a whole), but also ethnic differences. The afore-mentioned statistics highlight that there are ethnic sub-groups within Auckland that require urgent attention/policy directed at improving their transitions between NEET status to the workforce / education and / or training.

This report is divided into three parts and attempts to answer following questions:

PART I:

    (i)   Are a growing number of young Aucklanders NEET?

    (ii)   What are the potential negative consequences of Auckland youth being NEET?

PART II:

What is the estimated cost of Auckland young people lost in transition, in terms of:

    (iii)   Youth NEET that are unemployed?

    (iv)   Youth NEET that are inactive (i.e. neither employed nor in education)?

    (v)   Youth NEET that don't reach their educational potential and underachieve?

PART III:

    (vi)   What is the estimated cost of Auckland young people lost in transition, disaggregated by ethnicity?

In all circumstances, the expected outcomes of the NEET group are compared to the comparable expectations of their non-NEET counterparts.

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[5] Source: Household Labour Force Survey, September 2012.

To answer these six questions, this report makes use of data from Statistics NZ. We define NEET youth as 15-24 year olds, as this captures the transition into the labour market at different points in an individual's timeline[6]. Statistics NZ constructs relevant NEET figures for youth aged 15-19 and 20-24 from March 2004 onwards, with the most recent data available at the time of this research being December 2012.

In order to compare our findings for Auckland to those for NZ as a whole, we compute analogous figures as at December 2012 (see Appendix A). We find that the cost per capita for a NZ youth that is NEET is $26,770 over the immediate short-term (1-3 years). We hypothesize that the economic cost of Auckland NEET youth will be higher than that for the NZ NEET youth cohort, due to the higher wages foregone, although this will likely vary by ethnic sub-group.

PART I   Overview

Section 1.1   Auckland 15-24 year old NEETs

NEETs and youth unemployment are related concepts, but there are some clear differences that need to be recognised. A person is defined as being unemployed in NZ if they do not have a paid job, but were available and had been actively looking for work in the previous four weeks. Therefore, the unemployment rate is the percentage of population available to work but who were unable to find work in the last four weeks. It therefore excludes those who are available for work, but not actively looking. Consequently, unemployment figures do not fully capture the hardships experienced by youth as those who have left the education system do not appear in this labour market statistic.

In contrast, the definition of NEET is individuals who are not in employment, education or training, and may include some of the economically inactive. Therefore, NEET rates are a common measure of non-utilised youth labour market potential. The Department of Labour (2009) describes NEET individuals as "*missing the opportunity to develop their potential at an age that heavily influences future outcomes*". The implication here is that these young people face a higher probability of becoming disadvantaged or marginalised later in life.

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[6] This is also similar to analysis done by Sissons and Jones (2012), who focus on the 16-24 year bracket for the UK economy.

Figure 1: Number of Auckland NEETs, 15-19 year olds.
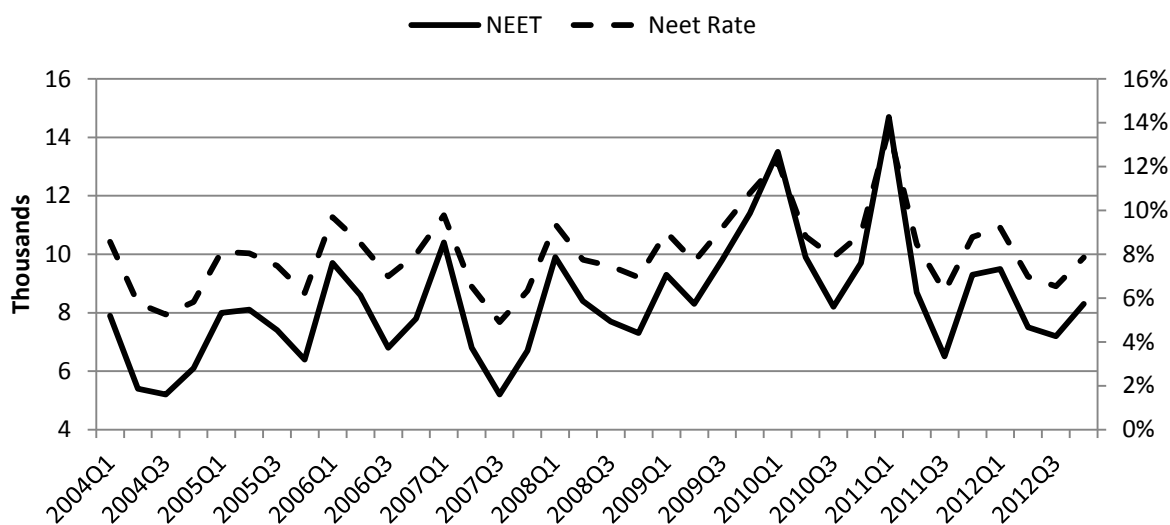
Source: Household Labour Force Survey.

Figure 2: Number of Auckland NEETs, 20-24 year olds.
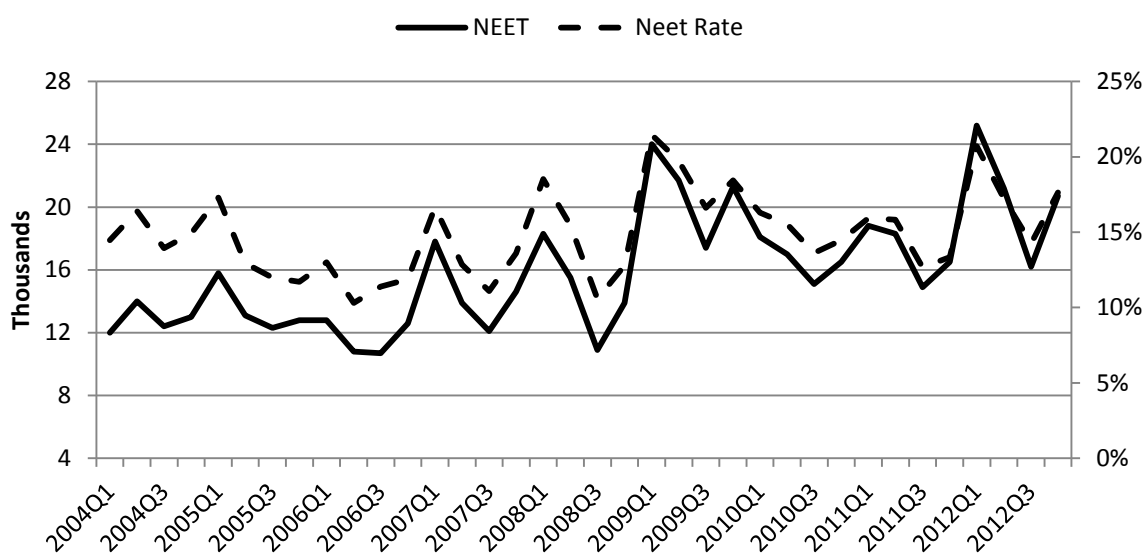
Source: Household Labour Force Survey.

The overall group of 15-24 year olds in Auckland that are NEET has increased by ~46% between March 2004 and December 2012 (from 19,900 to 29,000). The following figures (Figures 1 – 2) disaggregate 15-24 year old youth by age to investigate any distinctive patterns over the sample period of 2004-2012. Both figures point to seasonal fluctuations in Auckland NEET numbers – with drops in the NEET rate in quarter 4 (December) each year, and rises in quarter 1 (March) in many years. This is likely due to the rise in part-time and contract employment during the Christmas and summer season. The NEET rate is also found to be consistently lower for 15-19

year olds, relative to 20-24 year olds. This is expected as this age group will be more likely to have individuals participating in the education sector – especially since the compulsory school leaving age in NZ is 16[7].

Section 1.2 Potential Consequences of Growing Numbers of NEETs

There is a broad range of negative consequences associated with young people being NEET. Not only are there costs borne by the individual, there are also costs to society in terms of lost productivity, as well as other wider social implications. With respect to the young individual that is NEET, the international and domestic (NZ) literature suggests that costs broadly include:

(i)   **Scarring** (in terms of future wage and employment prospects) – There is considerable evidence to suggest that indications of inactivity at an earlier age are associated with higher probabilities of inactivity at a later age, as well as lower wages later in life (e.g. Maloney, 2004; Gregg & Tominey, 2005; Mroz & Savage, 2006; Cruces, et al., 2012).

(ii)   **Increased crime** – Higher rates of youth inactivity and unemployment are often seen as precursors to rising crime rates (e.g. Carmichael & Ward, 2000; Fergusson, et al., 2001; Fergusson, et al., 2006).

(iii)   **Reduced quality of life** – Research also suggests that unemployment among young people is associated with a variety of mental health issues, such as depression, lower self-esteem, and anxiety (e.g. Goldsmith, et al., 1996; Fergusson, et al., 1997; Clark, et al., 2001; Fergusson, et al., 2001; Beland, et al., 2002; Blakely, et al., 2003; Gerdtham & Johannesson, 2003; Blanchflower, 2010; see also Feather, 1982), and substance abuse (Fergusson, et al., 1997; Fergusson, et al., 2001; Blanchflower, 2010).

Unfortunately, many of these costs are difficult to quantify due to the unavailability of necessary data in many instances, as well as the inherent difficulty of estimating indirect costs to the individual, and the economy or society generally. While Godfrey, et al. (2002) provides a loose framework with which to estimate the cost of poorer physical health outcomes and increased

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[7] Unfortunately, Statistics NZ does not collect information on individuals that are NEET for the 16-19 age bracket.

crime of NEET youth in the UK, severe data limitations lead to, by the author's admission, highly speculative estimates which rely heavily on NEET figures taken from a variety of sources (in many instances relating to different time periods) and on existing UK research estimating the costs of specific outcomes. Unfortunately, data pertaining to crime rates and health outcomes in the short run and long run associated specifically with NEET youth are not available in the NZ context. Therefore, this report focusses on the two costs that can be more readily quantified – foregone earnings and public finance cost (as shown in Part II). As a consequence, the costs estimated most likely underrepresent the true cost of increasing NEET levels, but can nevertheless be viewed as lower bound estimates.

PART II   Short-term Costs of Auckland NEET Youth

The aim of this part of the report is to make use of available research and data to compute estimates of the associated costs for young people living in Auckland who are not in education, employment or training. The focus of this section will be on **short term costs over a 1 to 3 year period**. Further, the following analysis will investigate both sides of the equation – lost productivity (proxied via foregone earnings) and the strain on the nation's public finances. Throughout the following analysis, we take a conservative approach to our estimation, and hence view the cost estimates produced forthwith as lower bound estimates for the economic cost of NEET youth in Auckland.

Following Godfrey, et al. (2002), costs are defined as the excess cost of being in the NEET group compared to the hypothetical situation that these Auckland youth would have experienced (on average) as their non-NEET counterparts aged 15-24.

Figure 3 presents a breakdown of Auckland NEETs. As shown in this figure, in the fourth quarter of 2012 there were **8,300** (**20,700**) 15-19 (20-24) year olds classified as NEET. This represents ~7.9% and ~17.6% respectively of all individuals in these age groups. Based on estimates from the Household Labour Force Survey, 56.6% (43.0%) in the 15-19 (20-24) group were unemployed, 27.7% (27.5%) inactive and not engaged in caregiving, and 15.7% (29.0%) inactive and caregiving[8].

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[8] Source: Household Labour Force Survey, December 2012. The percentages for the 20-24 age group do not add to 100%, but rather 99.5% due to rounding by Statistics NZ.

Figure 3: Breakdown of Auckland NEETs, 15-24 year olds

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                          ┌─────────────────┐
                          │   NEET: 15-24    │
                          │   29,000 ppl     │
                          └─────────────────┘
                    ┌──────────────┴──────────────┐
          ┌─────────────────┐            ┌─────────────────┐
          │   15-19 years   │            │   20-24 years   │
          │   8,300 ppl     │            │   20,700 ppl    │
          │   (28.6%)       │            │   (71.4%)       │
          └─────────────────┘            └─────────────────┘
      ┌────────┬────┴────┬────────┐  ┌────────┬────┴────┬────────┐
┌─────────┐┌─────────┐┌─────────┐┌─────────┐┌─────────┐┌─────────┐
│Unemployed││ Inactive ││Inactive -││Unemployed││ Inactive ││Inactive -│
│4,700 ppl ││2,300 ppl ││Caregiving││8,900 ppl ││5,700 ppl ││Caregiving│
│(56.6%)   ││(27.7%)   ││1,300 ppl ││(43.0%)   ││(27.5%)   ││6,000 ppl │
│          ││          ││(15.7%)   ││          ││          ││(29.0%)   │
└─────────┘└─────────┘└─────────┘└─────────┘└─────────┘└─────────┘
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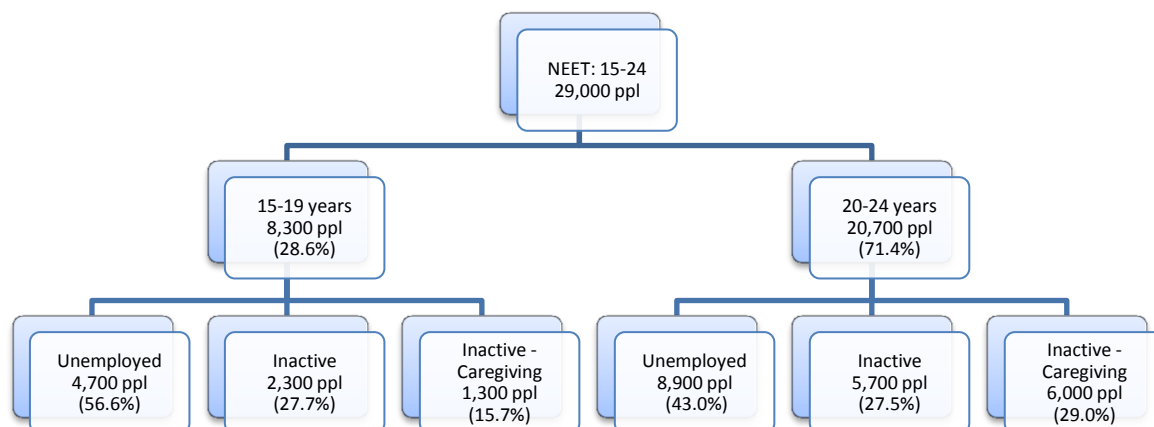
Source: Statistics NZ

Given the breakdown of NEET sub-groups outlined in Figure 3, the remainder of this section therefore considers the costs for each of the following NEET youth sub-groups:

(i)   Unemployed,

(ii)   Inactive/not currently in the workforce, and

(iii)   Educational underachievement.

In each circumstance, we identify a list of potential costs incurred and opportunity costs for foregone productivity. Wherever possible, we have drawn on relevant recent NZ estimates, and where this was not possible, extracted comparable figures from overseas research, and stated these assumptions.

Section 2.1   Unemployment

As at December 2012, unemployment accounted for ~56.6% (~43.0%) of NEET youths aged 15-19 (20-24). While attempting to estimate the economic costs of all of the potential negative consequences of unemployment, such as poor health (e.g. Beland, et al., 2002; Gerdtham & Johannesson, 2003), depression (e.g. Dooley & Catalano, 1988; Dew, et al., 1992; Mathers & Schofield, 1998), and increased incidence of crime (e.g. Chiricos, 1987; Wu & Wu, 2012), is outside the scope of this report, we can estimate the cost of unemployed NEET young people in terms of foregone earnings and public finance costs. In order to do this, we need to estimate the excess length of time they are unemployed.

The average duration of unemployment for Auckland youth aged 15-24 is 17.9 weeks[9]. There is, however, evidence to suggest that NEET young people remain in unemployment longer than others (e.g. Payne, 2000). We assume that unemployed NEET individuals remain unemployed for ~50% longer than the average (as followed by Godfrey, et al., 2002). We also assume that non-NEET 15-19 year olds do not experience unemployment, while 20-24 non-NEETs experience the average duration of unemployment. This gives excess durations (comparing NEET with non-NEET) in unemployment of 26.9 (9.0) weeks for 15-19 (20-24) year olds.

1) **Productivity Cost:** Average weekly earnings for men and women in Auckland aged 15-19 (20-24) is $107 ($425)[10].

> **Foregone Earnings:**
> 15-19 year olds: (26.9weeks @ $107) * 4,700 people = $13,528,010
> 20-24 year olds: (9.0weeks @ $425) * 8,900 people = $34,042,500
>
> **Unemployed: Foregone Earnings Total: $47,570,510**

2) **Public Finance Costs:** As a result of lower earnings there is a loss in tax revenue (both income tax and indirect tax). A marginal income tax rate of 10.5cents (17.5cents)[11] per $1 is assumed for foregone earnings for 15-19 (20-24) year olds. There are also lost ACC contributions[12] from the employee (employer) of 1.70% (1.15%) of every $1 of taxable income not earned[13]. Finally, we assume a loss in indirect taxes of 15% of the foregone disposable income of these NEET individuals[14].

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[9] Source: Statistics NZ. It is the time series average (December 2007 – December 2012) duration of unemployment for the unemployed in Auckland aged 15-24.

[10] Source: Based on data from the Household Labour Force Survey – Income Supplement (June, 2012). Auckland wages assumed to be 11% higher than the national average (refer Supplementary Table 6).

[11] These are the applicable marginal tax rates for the 2012/13 tax year for the income brackets of 'up to $14,000', and 'from $14,000 to $48,000'.

[12] We assume that the ACC payouts (from the government) for workers and non-workers are equal.

[13] ACC levy charges are as at April 2012.

[14] Davidson (2005) illustrates that indirect taxes account for approximately 15% of disposable income, on average, for household income deciles 1-5. We apply this to the earnings after income tax and ACC contribution deductions.

Unemployment benefit payments also need to be taken into account. We expect that the average net unemployment benefit received by individuals aged 18-19 is $153.72[15], while that for 20-24 year olds is $170.80[16].

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Public Finance Cost Calculations:

Income Tax Revenue: $(0.105 \times 13,528,010) + (0.175 \times 34,042,500) = \$7,377,879$

Lost ACC contributions: 2.85% of $47,570,510 = $1,355,760

Indirect Tax Revenue: 15% of $38,836,872 = $5,825,531

Benefit Payments:

<u>15-19 Year Olds</u>: (26.9weeks @ $153.72) * 4,700 people = $19,434,820

<u>20-24 Year Olds</u>: (9.0weeks @ $170.80) * 8,900 people = $13,681,080

Unemployed: Public Finance Cost Total: $47,675,070

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Section 2.2 Inactive/Not in the Workforce

As indicated earlier, the proportion of NEET youth that don't fall into the unemployed category are inactive. This is split into those that are (i) engaged in caregiving, and (ii) those that are not. The percentage of 15-29 (20-24) year old NEET youth that fall into these two categories are ~15.7% (~29.0%) and ~27.7% (~27.5%) respectively. Unfortunately, information regarding the precise nature of caregiving responsibilities for the NEET cohort is unavailable. Given the high rate of teenage birth rates in NZ (Dickson, et al., 2000; Families Commission, 2011), however, we assume that caregiving activity relates to childcare.

1) **Productivity Cost:** As shown in Section 2.1, not being employed is estimated to result in foregone earnings of $107 ($425) for 15-19 (20-24) year olds, when comparing NEET youth, with their non-NEET counterparts. Furthermore, as in Godfrey, et al. (2002), we assume that young parents that are NEET will be out of the workforce and education sector for 1.5 years (regardless of age group). For other inactive youth (excluding NEET parents), we assume that they will be out of the labour market for 1 year.

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[15] This is the average of the 2012 net benefit rates for single 18-19 year olds at home and not at home with no children.

[16] Note that this analysis is only focussing on the unemployment benefit, and cannot include any additional supplementary benefits available to those unemployed due to the lack of information on the number of NEET receiving additional benefits.

> **Foregone Earnings:**
> **Inactive, not engaged in caregiving:**
> 15-19 year olds: (52weeks @ $107) * 2,300 people = $12,797,200
> 20-24 year olds: (52weeks @ $425) * 5,700 people = $125,970,000
> **Inactive, engaged in caregiving:**
> 15-19 year olds: (78weeks @ $107) * 1,300 people = $10,849,800
> 20-24 year olds: (78weeks @ $425) * 6,000 people = $198,900,000
>
> **Inactive: Foregone Earnings Total: $348,517,000**

2) **Public Finance Costs**: As with unemployment, foregone earnings results in lost income and indirect tax revenue, including ACC levies. The same assumptions as outlined in Section 2.1 are employed here, with regard to the relative direct and indirect fiscal incidence rates. We also assume that the net unemployment benefit received by young parents is the 2012 net benefit payable to solo parents of $293.58[17].

> **Public Finance Cost Calculations:**
> Income Tax Revenue: (0.105*23,647,000) + (0.175*324,870,000) = $59,335,185
> Lost ACC contributions: 2.85% of $348,517,000= $9,932,735
> Indirect Tax Revenue: 15% of $279,249,080 = $41,887,362
>
> Benefit Payments:
> <u>15-19 year olds:</u> (78weeks @ $293.58) * 1,300 people = $29,769,012
> <u>20-24 year olds:</u> (78weeks @ $293.58) * 6,000 people = $137,395,440
>
> **Inactive: Public Finance Cost Total: $278,319,734**

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[17] Source: Work and Income NZ (See http://www.workandincome.govt.nz/individuals/forms-and-brochures/unemployment-benefit.html#Payments5)

Section 2.3 Educational Underachievement

Sections 2.1 and 2.2 conducted cost analysis for the two categories of NEET youth (unemployed and inactive). However, it is also necessary to factor in the lost productivity in educational underachievement which is the likely consequence of a period of unemployment and/or inactivity. When these individuals do return to the labour market, they may find work of a lower skill level than their non-NEET counterparts, resulting in a wage differential between youth workers that had a period of being NEET (i.e. those who had a longer transition period into the labour market) versus those that have no NEET history (i.e. those that had a relatively smooth transition into the labour market).

There is considerable evidence, international and domestic (NZ), on the returns to education in terms of higher wages (e.g. Brosnan, 1985; Maani, 1999; 2000; Gibson, 2000; Psacharopoulos & Patrinos, 2004). For example, Gibson (2000) finds a high return to academic credentials in NZ, particularly for ethnic minorities such as Maori and Pacifica, which he hypothesises is attributable to credentials signalling worker productivity to employers.

Figure 4: Breakdown of Auckland NEETs by Highest Qualification, 15-24 year olds
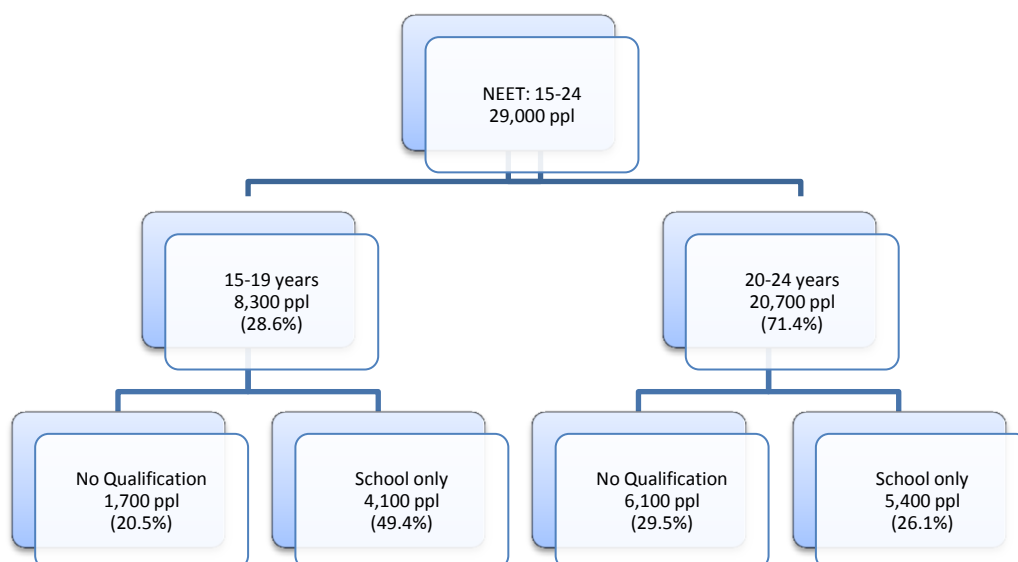
Source: Statistics NZ

1) **Productivity Cost:** As shown in Figure 4, recent information from the Household Labour Force Survey (December 2012) indicates that ~20.5% (~29.5%) of NEET individuals aged 15-19 (20-24) have no qualification, and an additional ~49.4% (~26.1%)

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have school only qualifications[18]. Therefore, we estimate 1,700 (4,100) individuals in the 15-19 NEET group have no (school only) qualification, while analogous figures for those in the 20-24 NEET group are 6,100 (5,400) for no (school only) qualifications respectively.

When comparing NEET across both age categories, we need to make assumptions regarding the average level of qualifications for each age group and the likely qualifications for their non-NEET counterparts. We follow the assumptions made by Pacheco (2012). For example, for those with a school qualification in the 15-19 year old NEET group, we assume this is 5th form, and that their relative counterparts in the non-NEET group have at least sixth-form school certificate[19]. We base wage differential calculations for 20-24 NEET individuals with at least school qualification relative to average national wages[20]. As with the 15-19 year old NEETs, no qualification is compared relative to those with 6th form.

As shown in Section 2.1, unemployment is estimated to result in foregone earnings of $107 ($425) per week for 15-19 (20-24) year olds. Individuals with no qualification earn ~68% of the average wage of individuals with 6th form (i.e. a 32% differential). Those with school qualifications are expected to have an 8% differential for 15-19 year olds, and 24% differential for 20-24 year olds[21].

Finally, we assume that those who are NEET and unemployed in the 15-19 (20-24) age group experience the wage differential for 18(12) months, while those that are NEET and inactive experience the differential for 21(15) months[22]. As indicated earlier based on information from the Household Labour Force Survey (December 2012), ~56.6% (~43.0%) of those in the 15-19 (20-24) NEET group are unemployed, and the remainder are inactive (i.e. ~43.4% and ~57.0% respectively[23]).

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[18] Figures obtained from the Household Labour Force Survey, December 2012.

[19] While there are no publicly available official statistics on the age breakdown of 15-19 year old NEETs, it is unlikely that there will be a lot of 15 year olds, given the compulsory school leaving age of 16 in NZ. A Department of Labour (2009) report indicates the approximate NEET rate for 15 year olds is 1%.

[20] Average wage is based on an aggregate of all individuals across the educational qualification spectrum.

[21] The 8% differential for 15-19 year olds is based on the fact that those with 5th form earn 92% of the average wage of those with 6th form; and the 24% wage differential for 20-24 year olds is based on the fact that individuals with a level 3 school qualification as their highest level of education achieved earn on average 76% of the average national wage (Information from the June 2012 Income Survey, Statistics NZ).

[22] Godfrey, et al (2002) employ comparable figures in their analysis of 16-18 year old NEET in the UK.

[23] As noted earlier, the unemployment and inactive figures do not sum to 100% for the 20-24 age group. For the purpose of this calculation, we assume the inactive proportion is the difference between 100% and the proportion classified as Unemployed.

15-19 Wage Differentials:

No Qualification: 32% of $107 = $34.24
Unemployed: 18 months (78weeks) @ $34.24 = $2,671
   Number of NEET unemployed = 1,700*0.566 = 962
   962 people * $2,671 = **$2,569,502**
Inactive: 21 months (91weeks) @ $34.24 = $3,116
  Number of NEET inactive = 1,700*0.434 = 738
  738 people * $3,116 = **$2,299,608**

School Qualification: 8% of $107 = $8.56
Unemployed: 18 months (78weeks) @ $8.56 = $668
   Number of NEET unemployed = 4,100*0.566 = 2,321
   2,321 people * $668 **= $1,550,428**
Inactive: 21 months (91weeks) @ $8.56 = $779
  Number of NEET inactive = 4,100*0.434 = 1,779
  1,779 people * $779 = **$1,385,841**

20-24 Wage Differentials:

No qualification: 32% of $425 = $136
Unemployed: 12 months (52weeks) @ $136 = $7,072
   Number of NEET unemployed = 6,100*0.430 = 2,623
   2,623 people * $7,072 **= $18,549,856**
Inactive: 15 months (65weeks) @ $136 = $8,840
  Number of NEET inactive = 6,100*0.570 = 3,477
  3,477 people * $8,840 **= $30,736,680**

School Qualification: 24% of $425= $102
Unemployed: 12 months (52weeks) @ $102 = $5,304
   Number of NEET unemployed = 5,400*0.430 = 2,322
   2,322 people * $5,304**= $12,315,888**
Inactive: 15 months (65weeks) @ $102 = $6,630
  Number of NEET inactive = 5,400*0.570 = 3,078
  3,078 people * $6,630 **= $20,407,140**

Underachievement: Foregone Earnings Total: $89,814,943

2) **Public Finance Cost:** As with educational underachievement, unemployment results in lost income and indirect tax revenue, including ACC levies. The same assumptions outlined for underachievement are used here.

Public Finance Cost Calculations:
Income Tax Revenue: (0.105*7,805,379) + (0.175*82,009,564) = $15,171,239
Lost ACC contributions: 2.85% of $89,814,943 = $2,559,726
Lost Indirect Tax Revenue: 15% of $72,083,978 = $10,812,597

Underachievement: Public Finance Cost Total: $28,543,562

Section 2.4 Total Cost

Given the figures computed in Sections 2.1 through to 2.3, we project that the loss to productivity (measured via foregone expected earnings) of the Auckland youth NEET group in the short term (over the next 1 to 3 years) is $485,902,453. Further, the expected cost to public finances for this group is $354,538,366 over the same time frame.

The sum of these figures equates to a **per capita cost** of **$28,980.72** (based on the sample of 29,000 NEET youth as at December 2012) over the next 1-3 years. This per capita cost is notably higher than that for NZ NEET youth, of $26,769.51 (see Appendix A). This is primarily due to the higher wages found in Auckland relative to the rest of NZ.

We have not explicitly estimated the medium or long-term costs of Auckland NEET youth. In order to gauge the longer-term impact we draw upon the research of Godfrey, et al. (2002) who compute associated costs (for NEET youth aged 16-18 in the UK) for the medium term of 40 years, and long term costs in terms of pension differentials. The present value of the future costs calculated was approximately nine times that of short term costs. Consequently, we arrive at an approximate present value of life time costs per capita of Auckland NEET youth of just over a quarter of a million ($260,826). An interesting avenue for future research would be to find what the relevant multiplicative factor is in the NZ context.

PART III: Disaggregated Results by Ethnicity

As discussed earlier, Auckland youth of Maori and Pacifica descent are at significantly higher risk of becoming NEET. There are also differences across ethnicities in terms of average wages foregone, durations of unemployment, and educational attainment which means the cost of NEET youth will vary across ethnicities. In this section, we perform the same costing exercise undertaken in Part II but this time disaggregating costs by ethnic sub-group in Auckland. In particular, we estimate separately the per capita cost of NEET youth in Auckland that are of European, Maori, and Pacifica descent. Unless stated otherwise, we use the same methodology and assumptions outlined in Part II.

For the sake of brevity, we do not present a breakdown of computations to arrive at aggregate costs for each of the NEET groups (as done in Part II), but rather present the final figure for each ethnicity examined. Full workings can be found in Appendix B.

Figure 5 shows that as at December 2012 there were 12,000 NEET youth aged 15-24 that are NZ European, 6,300 classified as Maori, and 8,400 Pacific Peoples[24]. As disaggregated figures by age group (i.e. 15-19 and 20-24) are unavailable due to small sample size in some instances, we need to assume that the proportions of Auckland NEET youth that are 15-19 and 20-24 respectively also apply to the ethnic sub-groups (i.e. 28.6% and 71.4% respectively; refer Figure 3).

### Figure 5: Breakdown of Auckland NEETs by Ethnicity, 15-24 year olds
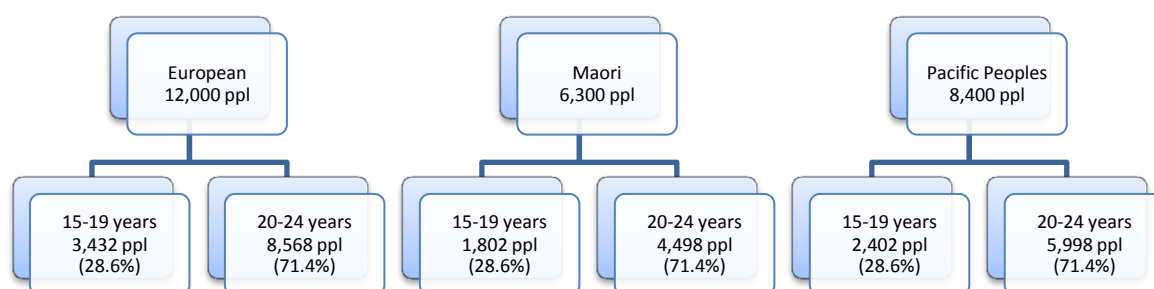
Source: Statistics NZ

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[24] Note where an individual reported more than one ethnicity, they have been counted once in each group.

Section 3.1   Unemployment

As at December 2012, unemployment accounted for ~56.7%, ~39.7%, and ~40.5% of European, Maori, and Pacifica NEET youth aged 15-24 respectively (see Figure 6). We assume these proportions are the same across both age categories, which equates to 1,946 (4,858), 715 (1,786), and 973 (2,429) European, Maori, and Pacific Peoples aged 15-19 (20-24) respectively.

Figure 6: Breakdown of Unemployed Auckland NEETs by Ethnicity, 15-24 year olds.
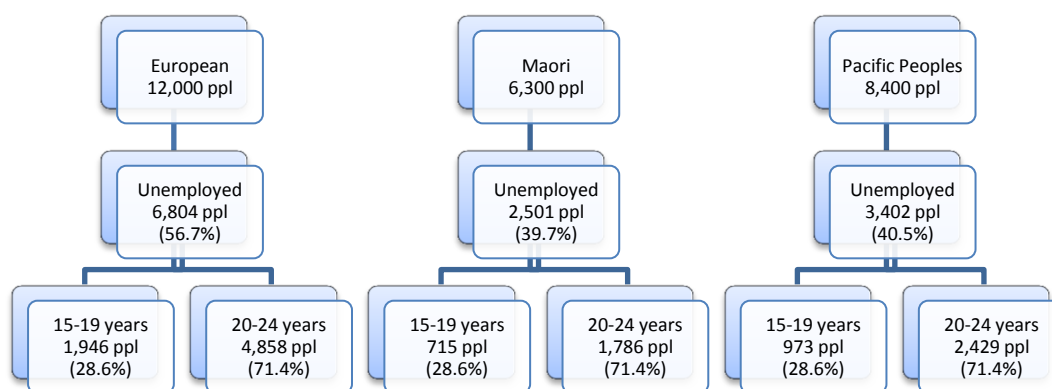
Source: Statistics NZ

In calculating the productivity cost for these NEET groups (i.e. foregone earnings), we take into account differences in both the average durations of unemployment. For instance, the relevant average durations of unemployment for Auckland youth aged 15-24 of European, Maori, and Pacifica descent is 16.4 weeks, 24.7 weeks, and 20.1 weeks respectively[25]. As with the Auckland calculations, we assume that unemployed NEET individuals remain unemployed for ~50% longer than the average and that non-NEET 15-19 year olds do not experience unemployment, while 20-24 non-NEETs experience the average duration of unemployment. This gives excess durations (comparing NEET with non-NEET) in unemployment of 24.6 (8.2) weeks for European 15-19 (20-24) year olds, excess durations of 37.1 (12.4) for Maori aged 15-19 (20-24), and excess durations of 30.2 (10.1) for Pacific Peoples aged 15-19 (20-24). With regard to foregone earnings, we assume that NZ European Auckland NEET youth aged 15-19 (20-24) forego $107 ($425),

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[25] Source: Statistics NZ. It is the time series average (December 2007 – December 2012) duration of unemployment for the unemployed aged 15-24 across NZ.

whereas those of Maori ethnicity forego $89 ($353), and those of Pacifica descent forego $77 ($308)[26]. Public finance costs assumptions remain as per Section 2.1.

> 1) **European:**
>   Unemployed: Foregone Earnings Total: $22,052,391
>   Unemployed: Public Finance Costs: $20,980,338
>
> 2) **Maori:**
>   Unemployed: Foregone Earnings Total: $10,178,538
>   Unemployed: Public Finance Costs: $11,007,201
>
> 3) **Pacific Peoples:**
>   Unemployed: Foregone Earnings Total: $9,818,747
>   Unemployed: Public Finance Costs: $11,743,804

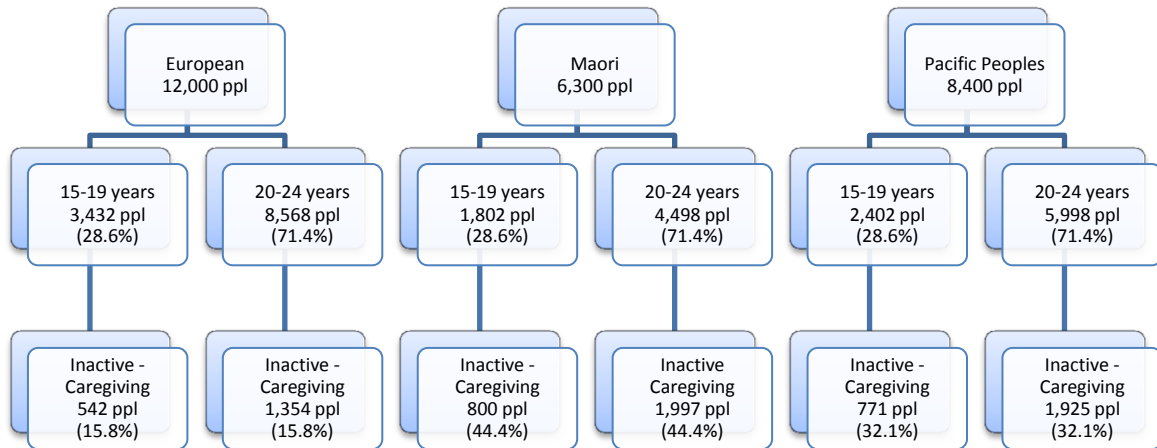## Section 3.2 Inactive/Not in the Workforce

As at December 2012, inactivity and engaged in caregiving (inactivity while not engaged in caregiving) accounted for ~15.8% (~27.5%), ~44.4% (~17.5%), and ~32.1% (~27.4%) of European, Maori, and Pacifica NEET youth aged 15-24. This breakdown reveals clear variation in rates of NEET youth aged 15-19 classified as inactive due to care-giving activity. Specifically, the occurrence of Maori (Pacifica) teenagers that are NEET falling into this category is nearly 3 (2) times higher than their NZ European counterparts. This observation is in-line with prior NZ evidence that teenage birth rates are significantly higher for youth of Maori and Pacifica ethnicity than Pakeha (e.g. Dickson, et al., 2000; Families Commission, 2011). A recent report by the Families Commission (2011) finds that Maori teenage women have higher rates of fertility even after controlling for socio-economic factors known to influence teenage pregnancy rates.

As above, we assume these proportions hold across both age groups. Therefore, we estimate 542 (1,354), 800 (1,997), and 771 (1,925) NZ European, Maori, and Pacific individuals aged 15-19 (20-24) that are inactive and engaged in caregiving (see Figure 7). Similarly, we estimate 944 (2,356), 315 (787), and 658 (1,643) NZ European, Maori, and Pacifica individuals aged 15-19 (20-24) are inactive and not engaged in caregiving (see Figure 8). We retain the assumptions regarding

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[26] Based on the average weekly earnings for men and women in Auckland aged 15-19 and 20-24 presented in Section 2.1. European youth are assumed to earn the average weekly earnings of Aucklanders generally, while Maori (Pacifica) average weekly earnings are assumed to be 17% and 28% lower (refer Household Labour Force Survey (June, 2012) Supplementary Table 5, full-time wages for New Zealanders of all ages by ethnicity).
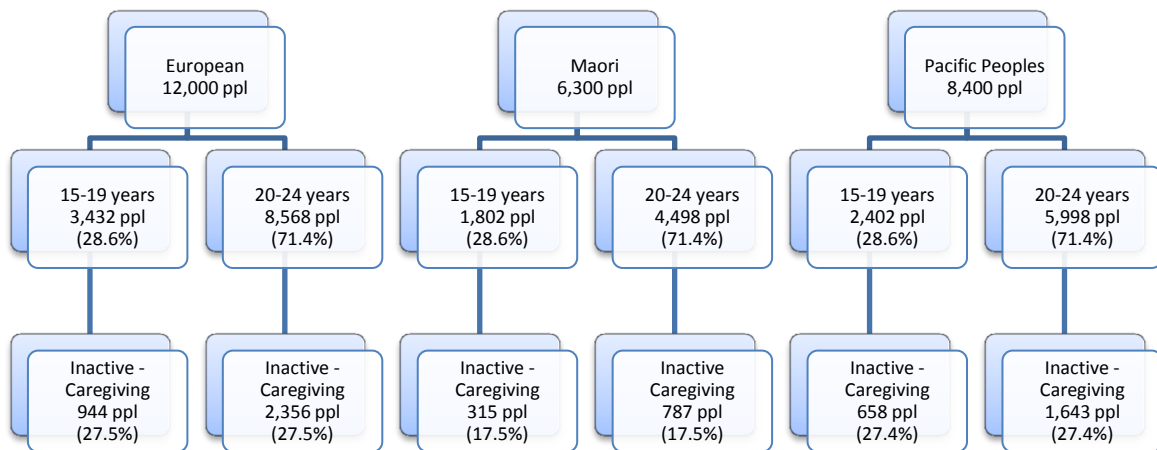
foregone earnings outlined in Section 3.1, as well as the assumptions regarding duration of inactivity and accompanying benefit payments outlined in Section 2.2.

Figure 7: Breakdown of Inactive (Engaged in Caregiving) Auckland NEETs by Ethnicity, 15-24 year olds

European 12,000 ppl		Maori 6,300 ppl		Pacific Peoples 8,400 ppl	
15-19 years 3,432 ppl (28.6%)	20-24 years 8,568 ppl (71.4%)	15-19 years 1,802 ppl (28.6%)	20-24 years 4,498 ppl (71.4%)	15-19 years 2,402 ppl (28.6%)	20-24 years 5,998 ppl (71.4%)
Inactive - Caregiving 542 ppl (15.8%)	Inactive - Caregiving 1,354 ppl (15.8%)	Inactive - Caregiving 800 ppl (44.4%)	Inactive Caregiving 1,997 ppl (44.4%)	Inactive - Caregiving 771 ppl (32.1%)	Inactive - Caregiving 1,925 ppl (32.1%)

Source: Statistics NZ

Figure 8: Breakdown of Inactive (Not Engaged in Caregiving) Auckland NEETs by Ethnicity, 15-24 year olds

European 12,000 ppl		Maori 6,300 ppl		Pacific Peoples 8,400 ppl	
15-19 years 3,432 ppl (28.6%)	20-24 years 8,568 ppl (71.4%)	15-19 years 1,802 ppl (28.6%)	20-24 years 4,498 ppl (71.4%)	15-19 years 2,402 ppl (28.6%)	20-24 years 5,998 ppl (71.4%)
Inactive - Caregiving 944 ppl (27.5%)	Inactive - Caregiving 2,356 ppl (27.5%)	Inactive - Caregiving 315 ppl (17.5%)	Inactive Caregiving 787 ppl (17.5%)	Inactive - Caregiving 658 ppl (27.4%)	Inactive - Caregiving 1,643 ppl (27.4%)

Source: Statistics NZ

1) **European:**
   Inactive: Foregone Earnings Total: $106,728,648
   Inactive: Public Finance Costs: $77,305,975

2) **Maori:**
   Inactive: Foregone Earnings Total: $76,442,990
   Inactive: Public Finance Costs: $88,321,169

3) **Pacific Peoples:**
   Inactive: Foregone Earnings Total: $79,825,746
   Inactive: Public Finance Costs: $87,085,788

Section 3.3 Educational Underachievement

As at December 2012, ~17.6% (~34.5%), ~31.5% (~36.5%), and ~52.4% (~20.1%) of European, Maori, and Pacifica NEET youth aged 15-24 had no (school only) qualification[27]. As with inactivity due to caregiving rates, the variation in educational achievement of this NEET cohort is in-line with expectations. Prior research has shown that Maori and Pacific Peoples lag behind their NZ European (and Asian) counterparts in terms of educational attainment at all levels (e.g. Pool, et al., 2005). Interestingly, recent evidence from the Social Report (2010) reveals that for individuals aged 25-64 this educational gap, while still apparent, has reduced considerably over the past two decades for qualifications at the upper secondary and tertiary levels.

Average weekly earnings used to calculate wage differentials are as per Section 3.2, while all other assumptions, such as the wage differentials themselves and the length of time each NEET cohort experiences the differential, are as per Section 2.3.

1) **European:**
   Underachievement: Foregone Earnings Total: $31,772,713
   Underachievement: Public Finance Costs: $10,108,417

2) **Maori:**
   Underachievement: Foregone Earnings Total: $19,692,012
   Underachievement: Public Finance Costs: $6,253,470

3) **Pacific Peoples:**
   Underachievement: Foregone Earnings Total: $26,743,772
   Underachievement: Public Finance Costs: $8,464,154

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[27] No school qualification includes "not specified" responses. Therefore, although the "not specified" NEET statistics are typically very small, the figures used here are possibly slightly overstated.

Section 3.4 Comparison of Total Costs by Ethnicity

A summary of the short-term costs for the NEET cohort (as at December 2012) is provided in Table 1. It reveals significant variation in the cost associated with being NEET, especially when disaggregating by ethnicity. In particular, the **per capita cost** over the next 1-3 years is lowest for NZ European NEET youth at $22,300.51 and highest for Maori NEET youth at $33,634.19, while that for Pacifica NEET youth sits in between at $26,628.81.

Table 1: Short Term Costs over 1-3 years of NEET by Region & Ethnicity

	NZ*	Auckland*	Auckland NZ European	Auckland Maori	Auckland Pacific Peoples
Number of NEET aged 15-24: December 2012	90,000	29,000	12,000	6,300	8,400
Total productivity loss (per capita cost) $	1.39bn (15,438)	485.9m (16,755)	160.6m (13,379)	106.3m (16,875)	116.4m (13,856)
Total public finance costs (per capita cost) $	1.02bn (11,322)	354.5m (12,225)	107.1m (8,921)	105.6m (16,759)	107.3m (12,773)
Total per capita cost $	26,770	28,981	22,301	33,634	26,629

*Note that the NZ and Auckland costs are estimated in an aggregate context without taking into account the ethnic composition of their respective cohorts.

The first noticeable finding from Table 1 is that devolving analysis down to ethnic sub-groups is crucial in capturing a more accurate reflection of the economic cost of NEET youth. In fact, the Auckland figure may be an overestimate of NEET costs, as when we employ weighted averages of the per capita costs for the three major ethnic sub-groups (NZ European, Maori and Pacific Peoples) we arrive at an average of $26,336.46, which is lower than the Auckland estimate of $28,980.72. It is important to note that the Auckland figure also includes other ethnicities, such as Asian, MELAA, etc. and is based on Auckland averages from Statistics NZ for wages, duration of unemployment, educational attainment, etc. Consequently, both the Auckland and NZ estimates of NEET costs may have been lower if we were able to control for ethnic composition of the NEET cohort in these aggregate samples. Individuals reporting multiple ethnicities (reflective of NZ's culturally diverse population) will complicate any future research that wishes to venture

down the path of controlling for ethnic composition in the aggregate estimates for Auckland and NZ.

In terms of the ethnic sub-groups portrayed in Table 1, it appears clear that the differences across ethnicities are driven by a number of factors. Given that the average wages for NZ European are higher than that for Maori and Pacific Peoples, this would suggest the productivity loss in per capita terms would be higher for this sub-group. However, the counter balancing factor at play here is that the average duration of unemployment for ethnic minorities is high, and this results in the per capita productivity loss for Maori to be highest (at $16,875). Maori and Pacific NEET also have higher proportions of youth that are inactive and engaged in caregiving, relative to Pakeha. This leads to a greater strain on public finances in terms of higher benefit payments, and these individuals are also expected to remain out of the workforce for longer and, consequently, have lower productivity (higher foregone earnings). NEET youth of Maori and Pacifica descent are further disadvantaged in the labour market, as they typically have lower educational attainment than their NZ European counterparts, meaning they are also more likely to experience wage differentials when they do enter the work force.

PART IV: Conclusion

Between 2004 and 2012, the number of Auckland youth aged 15-24 that are NEET increased by a worrying ~46%, driven largely by the sub-group of 20-24 year olds. While the NEET rate in Auckland remains slightly lower than that for the country as a whole (~13% compared to ~14% as at December 2012), the statistics are concerning given the city's role as the economic hub of NZ. Of particular concern is that there are sub-groups of youth in Auckland that appear most vulnerable to becoming lost in the transition between education and the labour force; namely, youth of Maori and Pacifica descent for which NEET rates currently exceed 20%.

The research carried out in this study estimated the expected cost of this youth disengagement, in terms of both lost productivity and strain on public finances. When considering the current youth NEET cohort in Auckland, we estimated a per capita cost of $28,981 over the next 1-3 years. This figure was higher than that estimated for the average NEET NZ youth, and we attribute this broadly to higher wages foregone if NEET in Auckland relative to the rest of NZ.

The above analysis also suggests substantial differences in per capita costs of NEET youth across individuals of European, Maori, and Pacifica descent. NEET youth of Maori (Pacifica) descent were found to be associated with the highest per capita cost at approximately $33,634 ($26,629), while the analogous figure for their NZ European counterparts was found to be $22,301. This difference arises due to the greater propensity of Maori and Pacific Peoples to disengage from the education system earlier, to withdraw from the work force due to caregiving responsibilities at a younger age, and to experience longer periods of unemployment.

We must note a number of caveats in this conclusion. First, we evaluate only the cost of lost productivity (proxied via foregone earnings) and the strain on the nation's public finances of the NEET cohorts. Additional costs from the impacts of poorer physical and mental health outcomes, increased substance abuse, or increased prevalence of crime associated with disengaged youth are not taken into account. Second, it is outside the scope of this study to estimate the medium and long-term effects of youth disengagement. For example, we do not estimate the on-going labour market difficulties such as: underemployment post the short term window of 1-3 years; future unemployment; or future wage differential arising due to lower average educational attainment. Consequently, the estimates presented are conservative in nature and are best viewed as lower bound estimates for the short time frame of 1-3 years.

Incorporating these additional costs and longer-term effects when data become available are possible directions for future research in this area. A comprehensive panel data set on a NEET cohort would be valuable in achieving this end, as well as useful for designing policy aimed at early intervention and, where necessary, successfully re-engaging youth which become NEET.

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Appendix A: New Zealand NEET

In this appendix, we outline computation of the cost per capita of NEET youth for New Zealand as at December 2012. As with the Auckland figure, we follow the methodology of Pacheco (2012). Unless otherwise stated, all assumptions are the same as for the Auckland calculations presented in Part II.

In the fourth quarter of 2012 there were **30,000** (60,000) 15-19 (20-24) year olds classified as NEET, representing ~9.6% and ~18.5% respectively of all individuals in these age groups. Based on estimates from the Household Labour Force Survey, ~50.0% (~41.7%) in the 15-19 (20-24) group were unemployed, ~33.3% (~31.7%) inactive and not engaged in caregiving, and ~13.3% (~28.3%) inactive and caregiving[28] (see Figure 9).

Figure 9: Breakdown of NZ NEETs, 15-24 year olds
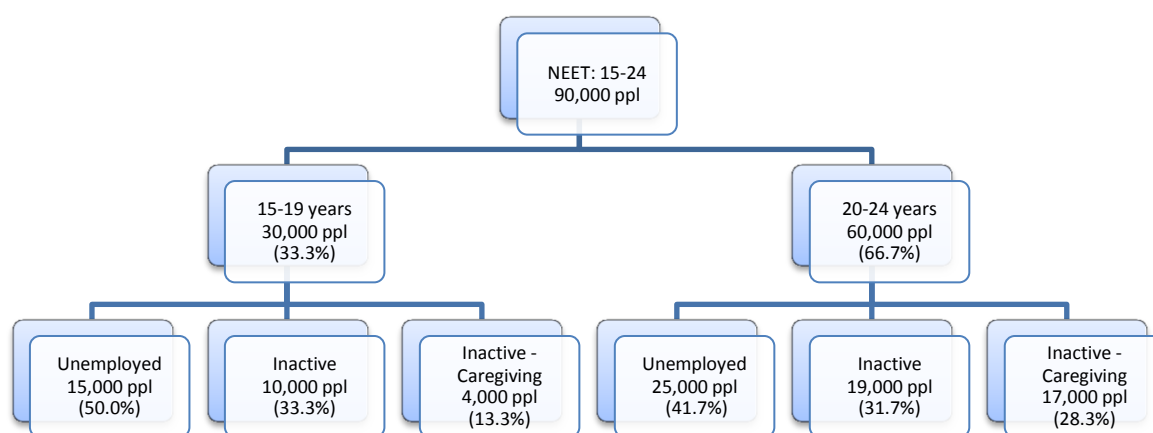
Source: Statistics NZ

Unemployment

The average duration of unemployment for NZ youth aged 15-24 is 17.7 weeks[29]. As with the Auckland calculations, we assume that unemployed NEET individuals remain unemployed for ~50% longer than the average and that non-NEET 15-19 year olds do not experience unemployment, while 20-24 non-NEETs experience the average duration of unemployment. This

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[28] Source: Household Labour Force Survey, December 2012. The percentages for either age group do not add to 100% (specifically, 97% and 102% for 15-19 and 20-24 respectively) due to rounding by Statistics New Zealand.
[29] Source: Statistics NZ. It is the time series average (December 2007 – December 2012) duration of unemployment for the unemployed aged 15-24 across NZ.

gives excess durations (comparing NEET with non-NEET) in unemployment of 26.6 (8.9) weeks for 15-19 (20-24) year olds.

1) **Productivity Cost:** Average weekly earnings for men and women across New Zealand aged 15-19 (20-24) is $96 ($383)[30].

Foregone Earnings:
15-19 year olds: (26.6weeks @ $96) * 15,000 people = $38,304,000
20-24 year olds: (8.9weeks @ $383) * 25,000 people = $85,217,500

Unemployed: Foregone Earnings Total: $123,521,500

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2) **Public Finance Costs:**

Public Finance Cost Calculations:
Income Tax Revenue: (0.105*38,304,000) + (0.175*85,217,500) = $18,934,983
Lost ACC contributions: 2.85% of $123,521,500 = $3,520,363
Indirect Tax Revenue: 15% of $101,066,155 = $15,159,923
Benefit Payments:
15-19 Year Olds: (26.6weeks @ $153.72) * 15,000 people = $61,334,280
20-24 Year Olds: (8.9weeks @ $170.80) * 25,000 people = $38,003,000

Unemployed: Public Finance Cost Total: $136,952,549

Inactive/Not in the Workforce

1) **Productivity Cost:**

Foregone Earnings:
Inactive, not engaged in caregiving:
15-19 year olds: (52weeks @ $96) * 10,000 people = $49,920,000
20-24 year olds: (52weeks @ $383) * 19,000 people = $378,404,000
Inactive, engaged in caregiving:
15-19 year olds: (78weeks @ $96) * 4,000 people = $29,952,000
20-24 year olds: (78weeks @ $383) * 17,000 people = $507,858,000

Inactive: Foregone Earnings Total: $966,134,000

---

[30] Source: Based on data from the Household Labour Force Survey – Income Supplement (June, 2012).

2) **Public Finance Costs**:

> **Public Finance Cost Calculations:**
> Income Tax Revenue: (0.105*79,872,000) + (0.175*886,262,000) = $163,482,410
> Lost ACC contributions: 2.85% of $966,134,000= $27,534,819
> Indirect Tax Revenue: 15% of $775,116,771 = $116,267,516
>
> Benefit Payments:
> <u>15-19 year olds:</u> (78weeks @ $293.58) * 4,000 people = $91,596,960
> <u>20-24 year olds:</u> (78weeks @ $293.58) * 17,000 people = $389,287,080
>
> **Inactive: Public Finance Cost Total: $788,168,785**

Educational Underachievement

1) **Productivity Cost:** Recent information indicates that the proportions of NEET youth aged 15-24 in NZ that have no qualification versus school only qualification as their highest level of educational attainment is ~36.3% and ~32.3% respectively[31]. Therefore, we estimate 10,890 (9,690) individuals in the 15-19 NEET group have no (school only) qualification, while analogous figures for those in the 20-24 NEET group are 21,780 (19,380) for no (school only) qualifications respectively (see Figure 10). As indicated earlier based on information from the Household Labour Force Survey (December 2012), ~50.0% (~41.7%) of those in the 15-19 (20-24) NEET group are unemployed and the remainder are inactive (i.e. ~50.0% and ~58.3% respectively[32]). Further, unemployment for the average New Zealander is estimated to result in foregone earnings of $96 ($383) per week for 15-19 (20-24) year olds.

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[31] Source: Household Labour Force Survey, September 2011.
[32] As noted earlier, the unemployment and inactive figures do not sum to 100% for either age group. For the purpose of this calculation, we assume the inactive proportion is the difference between 100% and the proportion classified as Unemployed.
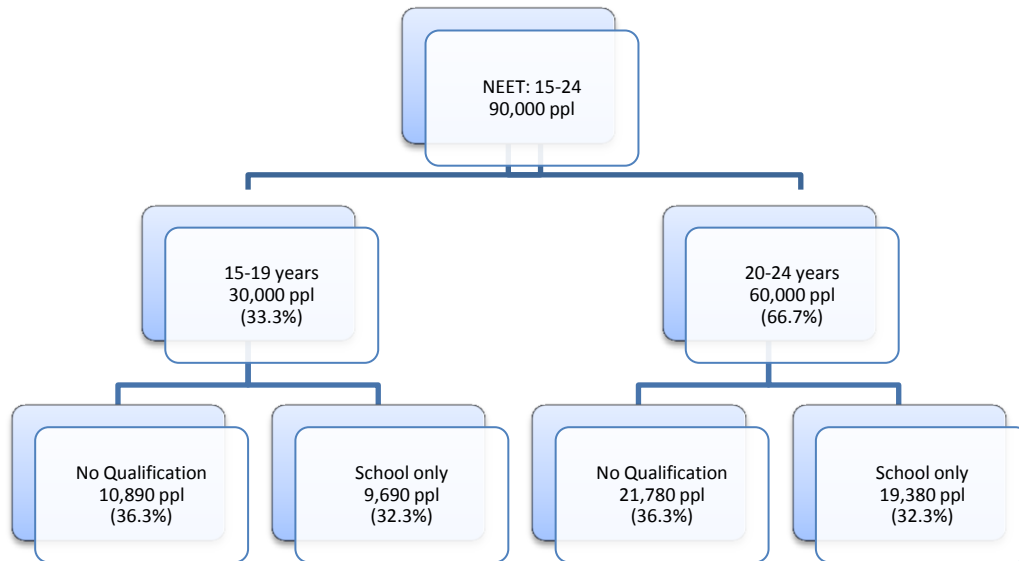
Source: Statistics NZ

15-19 Wage Differentials:

No Qualification: 32% of $96 = $30.72
Unemployed: 18 months (78weeks) @ $30.72 = $2,396
        Number of NEET unemployed = 10,890*0.50 = 5,445
        5,445 people * $2,396 = **$13,046,220**
Inactive: 21 months (91weeks) @ $30.72 = $2,796
        Number of NEET inactive = 10,890*0.50 = 5,445
        5,445 people * $2,796 = **$15,224,220**

School Qualification: 8% of $96 = $7.68
Unemployed: 18 months (78weeks) @ $7.68 = $599
        Number of NEET unemployed = 9,690*0.50 = 4,845
        4,845 people * $599 = **$2,902,155**
Inactive: 21 months (91weeks) @ $7.68 = $699
        Number of NEET inactive = 9,690*0.50 = 4,845
        4,845 people * $699 = **$3,386,655**

20-24 Wage Differentials:

No qualification: 32% of $383 = $122.56
Unemployed: 12 months (52weeks) @ $122.56 = $6,373
        Number of NEET unemployed 21,780*0.417 = 9,082
        9,082 people * $6,373 = **$57,879,586**

Inactive: 15 months (65weeks) @ $122.56 = $7,966
        Number of NEET inactive = 21,780*0.583 = 12,698
        12,698 people * $7,966 = **$101,152,268**

School Qualification: 24% of $383 = $91.92
Unemployed: 12 months (52weeks) @ $91.92 = $4,780
Number of NEET unemployed = 19,380*0.417 = 8,081
8,081 people * $4,780 **= $38,627,180**
Inactive: 15 months (65weeks) @ $91.92 = $5,975
Number of NEET inactive = 19,380*0.583 = 11,299
11,299 people * $5,975 **= $67,511,525**

Underachievement: Foregone Earnings Total: $299,729,809

2) **Public Finance Cost:**

Public Finance Cost Calculations:
Income Tax Revenue: (0.105*34,559,250) + (0.175*265,170,559) = $50,033,569
Lost ACC contributions: 2.85% of $299,729,809 = $8,542,300
Lost Indirect Tax Revenue: 15% of $241,153,940 = $36,173,091

Underachievement: Public Finance Cost Total: $94,748,960

Total Cost

Given these figures, we project that the loss to productivity (measured via foregone expected earnings) of the current New Zealand youth NEET cohort in the short term (over the next 1 to 3 years) is $1,389,385,309. Further, the expected cost to public finances for this NEET group is $1,019,870,293 over the same short term time frame.

The sum of these figures equates to a **per capita cost** of $26,769.51 (based on the current sample of 90,000 NEET youth) over the next 1-3 years. Multiplying the per capita figure by a factor of x9, we obtain an approximate present value of life time costs per capita of NEET youth of just under a quarter of a million ($240,926).

Appendix B: Auckland NEET by Ethnicity Workings

In this appendix, we outline computation of the cost per capita of NEET Auckland youth by ethnicity as at December 2012. As with the Auckland figure, we follow the methodology of Pacheco (2012). Unless otherwise stated in Part III, all assumptions are the same as for the Auckland calculations presented in Part II.

Unemployment

1) European NEET

> **Foregone Earnings:**
> 15-19 year olds: (24.6weeks @ $107) * 1,946 people = $5,122,261
> 20-24 year olds: (8.2weeks @ $425) * 4,858 people = $16,930,130
>
> **Unemployed: Foregone Earnings Total: $22,052,391**

> **Public Finance Costs:**
> Income Tax Revenue: (0.105*5,122,261) + (0.175*16,930,130) = $3,500,610
> Lost ACC contributions: 2.85% of $22,052,391 = $628,493
> Lost Indirect Tax Revenue: 15% of $17,923,288 = $2,688,493
>
> Benefit Payments:
> <u>15-19 Year Olds</u>: (24.6weeks @ $153.72) * 1,946 people = $7,358,822
> <u>20-24 Year Olds</u>: (8.2weeks @ $170.80) * 4,858 people = $6,803,920
>
> **Unemployed: Public Finance Cost Total: $20,980,338**

2) Maori NEET

> **Foregone Earnings:**
> 15-19 year olds: (37.1weeks @ $89) * 715 people = $2,360,859
> 20-24 year olds: (12.4weeks @ $353) * 1,786 people = $7,817,679
>
> **Unemployed: Foregone Earnings Total: $10,178,538**

Public Finance Costs:
Income Tax Revenue: (0.105*2,360,859) + (0.175*7,817,679) = $1,615,984
Lost ACC contributions: 2.85% of $10,178,538 = $290,088
Lost Indirect Tax Revenue: 15% of $8,272,465 = $1,240,870

Benefit Payments:
15-19 Year Olds: (37.1weeks @ $153.72) * 715 people = $4,077,654
20-24 Year Olds: (12.4weeks @ $170.80) * 1,786 people = $3,782,605

Unemployed: Public Finance Cost Total: $11,007,201

3) Pacifica NEET

Foregone Earnings:
15-19 year olds: (30.2weeks @ $77) * 973 people = $2,262,614
20-24 year olds: (10.1weeks @ $308) * 2,429 people = $7,556,133

Unemployed: Foregone Earnings Total: $9,818,747

Public Finance Costs:
Income Tax Revenue: (0.105*2,262,614) + (0.175*7,556,133) = $1,559,898
Lost ACC contributions: 2.85% of $9,818,747 = $279,834
Lost Indirect Tax Revenue: 15% of $7,979,015 = $1,196,852

Benefit Payments:
15-19 Year Olds: (30.2weeks @ $153.72) * 973 people = $4,517,001
20-24 Year Olds: (10.1weeks @ $170.80) * 2,429 people = $4,190,219

Unemployed: Public Finance Cost Total: $11,743,804

Inactive/Not in the Workforce

1) European NEET

> **Foregone Earnings:**
> **Inactive, not engaged in caregiving:**
> 15-19 year olds: (52weeks @ $107) * 944 people = $5,252,416
> 20-24 year olds: (52weeks @ $425) * 2,356 people = $52,067,600
> **Inactive, engaged in caregiving:**
> 15-19 year olds: (78weeks @ $107) * 542 people = $4,523,532
> 20-24 year olds: (78weeks @ $425) * 1,354 people = $44,885,100
>
> **Inactive: Foregone Earnings Total: $106,728,648**

> **Public Finance Costs:**
> Income Tax Revenue: (0.105*9,775,948) + (0.175*96,952,700) = $17,993,197
> Lost ACC contributions: 2.85% of $106,728,648 = $3,041,766
> Indirect Tax Revenue: 15% of $85,693,685 = $12,854,053
>
> Benefit Payments:
> 15-19 year olds: (78weeks @ $293.58) * 542 people = $12,411,388
> 20-24 year olds: (78weeks @ $293.58) * 1,354 people = $31,005,571
>
> **Inactive: Public Finance Cost Total: $77,305,975**

2) Maori NEET

> **Foregone Earnings:**
> **Inactive, not engaged in caregiving:**
> 15-19 year olds: (52weeks @ $89) * 315 people = $1,457,820
> 20-24 year olds: (52weeks @ $353) * 787 people = $14,446,172
> **Inactive, engaged in caregiving:**
> 15-19 year olds: (78weeks @ $89) * 800 people = $5,553,600
> 20-24 year olds: (78weeks @ $353) * 1,997 people = $54,985,398
>
> **Inactive: Foregone Earnings Total: $76,442,990**

Public Finance Costs:
Income Tax Revenue: (0.105*7,011,420) + (0.175*69,431,570) = $12,886,724
Lost ACC contributions: 2.85% of $76,422,990 = $2,178,625
Indirect Tax Revenue: 15% of $61,377,641 = $9,206,646

Benefit Payments:
15-19 year olds: (78weeks @ $293.58) * 800 people = $18,319,392
20-24 year olds: (78weeks @ $293.58) * 1,997 people = $45,729,782

Inactive: Public Finance Cost Total: $88,321,169

3) Pacifica NEET

Pacifica
Foregone Earnings:
Inactive, not engaged in caregiving:
15-19 year olds: (52weeks @ $77) * 658 people = $2,634,632
20-24 year olds: (52weeks @ $308) * 1,643 people = $26,314,288
Inactive, engaged in caregiving:
15-19 year olds: (78weeks @ $77) * 771 people = $4,630,626
20-24 year olds: (78weeks @ $308) * 1,925 people = $46,246,200

Inactive: Foregone Earnings Total: $79,825,746

Public Finance Cost Calculations:
Income Tax Revenue: (0.105*7,265,258) + (0.175*72,560,488) = $13,460,937
Lost ACC contributions: 2.85% of $79,825,746 = $2,275,034
Indirect Tax Revenue: 15% of $64,089,775 = $9,613,466

Benefit Payments:
15-19 year olds: (78weeks @ $293.58) * 771 people = $17,655,314
20-24 year olds: (78weeks @ $293.58) * 1,925 people = $44,081,037

Inactive: Public Finance Cost Total: $87,085,788

Educational Underachievement

As at December 2012, ~17.6% (~34.5%), ~31.5% (~36.5%), and ~52.4% (~20.1%) of NZ European, Maori, and Pacifica NEET youth aged 15-24 had no (school only) qualification[33]. The breakdown of these individuals into the age brackets of 15-19 and 20-24 year olds are summarised in Figures 11 - 13. Further, as indicated earlier based on information from the Household Labour Force Survey (December 2012), unemployment accounted for ~56.7%, ~39.7%, and ~40.5% of European, Maori, and Pacifica NEET youth aged 15-24 respectively, and the remainder are inactive (i.e. ~43.3%, ~60.3%, and ~59.5% respectively).

    1) European NEET

Figure 11: Breakdown of European Auckland NEETs by Highest Qualification, 15-24 year olds
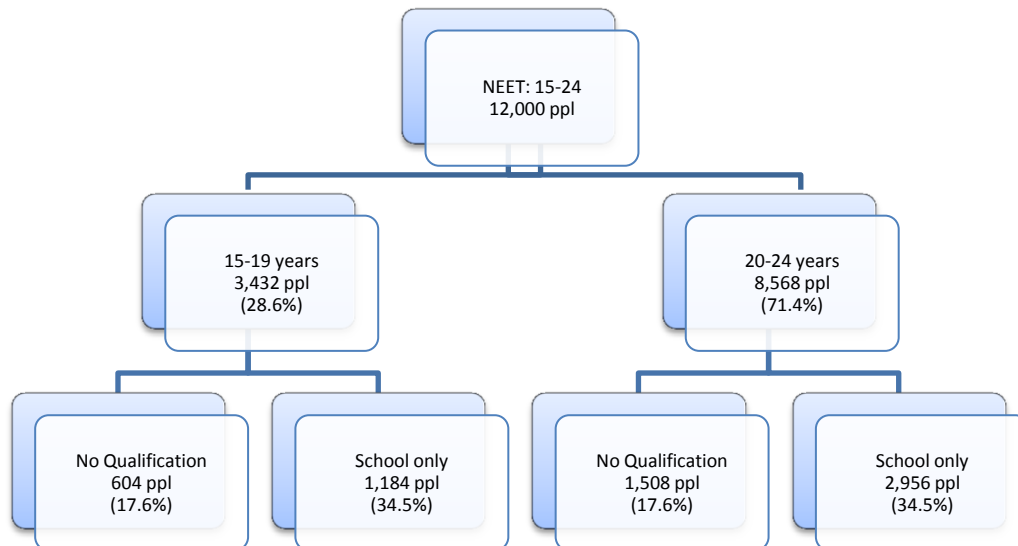
Source: Statistics NZ

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[33] No school qualification includes "not specified" responses. Therefore, although the "not specified" NEET statistics are typically very small, the figures used here are likely slightly overstated.

15-19 Wage Differentials:

No Qualification: 32% of $107 = $34.24
Unemployed: 18 months (78weeks) @ $34.24 = $2,671
    Number of NEET unemployed =604*0.567 = 342
    342 people * $2,671 = **$913,482**
Inactive: 21 months (91weeks) @ $34.24 = $3,116
    Number of NEET inactive = 604*0.433 = 262
    262 people * $3,116 = **$816,392**

School Qualification: 8% of $107 = $8.56
Unemployed: 18 months (78weeks) @ $8.56 = $668
    Number of NEET unemployed = 1,184*0.567 = 671
    671 people * $668 **= $448,228**
Inactive: 21 months (91weeks) @ $8.56 = $779
    Number of NEET inactive = 1,184*0.433 = 513
    513 people * $779 = **$399,627**

20-24 Wage Differentials:

No qualification: 32% of $425 = $136
Unemployed: 12 months (52weeks) @ $136 = $7,072
    Number of NEET unemployed = 1,508*0.567 = 855
    855 people * $7,072 **= $6,046,560**
Inactive: 15 months (65weeks) @ $136 = $8,840
    Number of NEET inactive = 1,508*0.433 = 653
    653 people * $8,840 **= $5,772,520**

School Qualification: 24% of $425= $102
Unemployed: 12 months (52weeks) @ $102 = $5,304
    Number of NEET unemployed = 2,956*0.567 = 1,676
    1,676 people * $5,304**= $8,889,504**
Inactive: 15 months (65weeks) @ $102 = $6,630
    Number of NEET inactive = 2,956*0.433 = 1,280
    1,280 people * $6,630 **= $8,486,400**

Underachievement: Foregone Earnings Total: $31,772,713

Public Finance Cost Calculations:
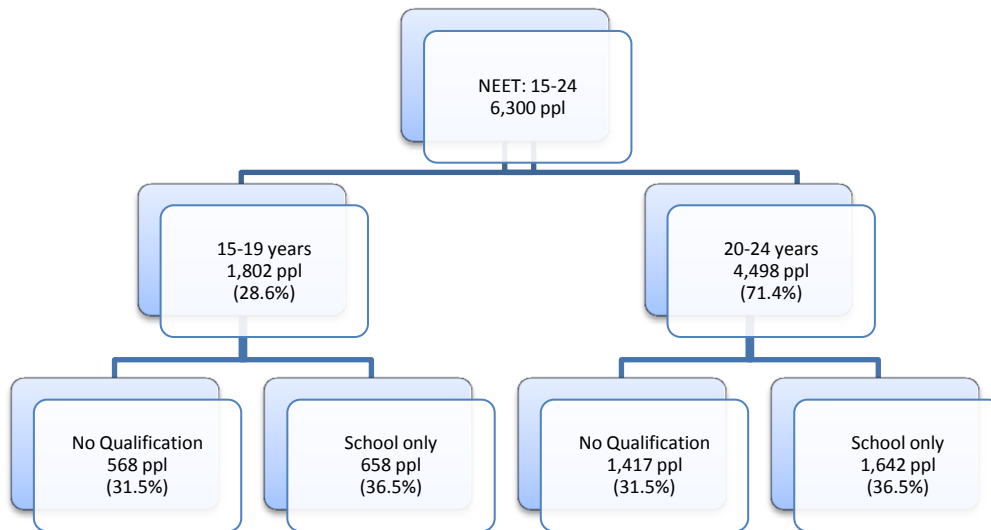Income Tax Revenue: (0.105*2,577,729) + (0.175*29,194,984) = $5,379,784
Lost ACC contributions: 2.85% of $31,772,713 = $905,522
Lost Indirect Tax Revenue: 15% of $25,487,407= $3,823,111

Underachievement: Public Finance Cost Total: $10,108,417

2) Maori NEET

Figure 12: Breakdown of Maori Auckland NEETs by Highest Qualification, 15-24 year olds

Source: Statistics NZ

15-19 Wage Differentials:

No Qualification: 32% of $89 = $28.48
Unemployed: 18 months (78weeks) @ $28.48 = $2,221
       Number of NEET unemployed = 568*0.397 = 225
       225 people * $2,221 = **$499,725**
Inactive: 21 months (91weeks) @ $28.48 = $2,592
      Number of NEET inactive = 568*0.603 = 343
      343 people * $2,592 = **$889,056**

School Qualification: 8% of $89 = $7.12
Unemployed: 18 months (78weeks) @ $7.12 = $555
       Number of NEET unemployed = 658*0.397 = 261
       261 people * $555 **= $144,855**
Inactive: 21 months (91weeks) @ $7.12 = $648
      Number of NEET inactive = 658*0.603 = 397
      397 people * $648 = **$257,256**

20-24 Wage Differentials:

No qualification: 32% of $353 = $112.96
Unemployed: 12 months (52weeks) @ $112.96 = $5,874
       Number of NEET unemployed = 1,417*0.397 = 563
       563 people * $5,874 **= $3,307,062**
Inactive: 15 months (65weeks) @ $112.96 = $7,342
      Number of NEET inactive = 1,417*0.603 = 854
      854 people * $7,342 **= $6,270,068**

School Qualification: 24% of $353= $84.72
Unemployed: 12 months (52weeks) @ $84.72 = $4,405
         Number of NEET unemployed = 1,642*0.397 = 652
         652 people * $4,405**= $2,872,060**
Inactive: 15 months (65weeks) @ $84.72 = $5,507
         Number of NEET inactive = 1,642*0.603 = 990
         990 people * $5,507 **= $5,451,930**

**Underachievement: Foregone Earnings Total: $19,692,012**

Public Finance Cost Calculations:
Income Tax Revenue: (0.105*1,790,892) + (0.175*17,901,120) = $3,320,740
Lost ACC contributions: 2.85% of $19,692,012 = $561,222
Lost Indirect Tax Revenue: 15% of $15,810,050 = $2,371,507

Underachievement: Public Finance Cost Total: $6,253,470

3) Pacifica NEET

Figure 13: Breakdown of Pacific People Auckland NEETs by Highest Qualification, 15-24 year olds
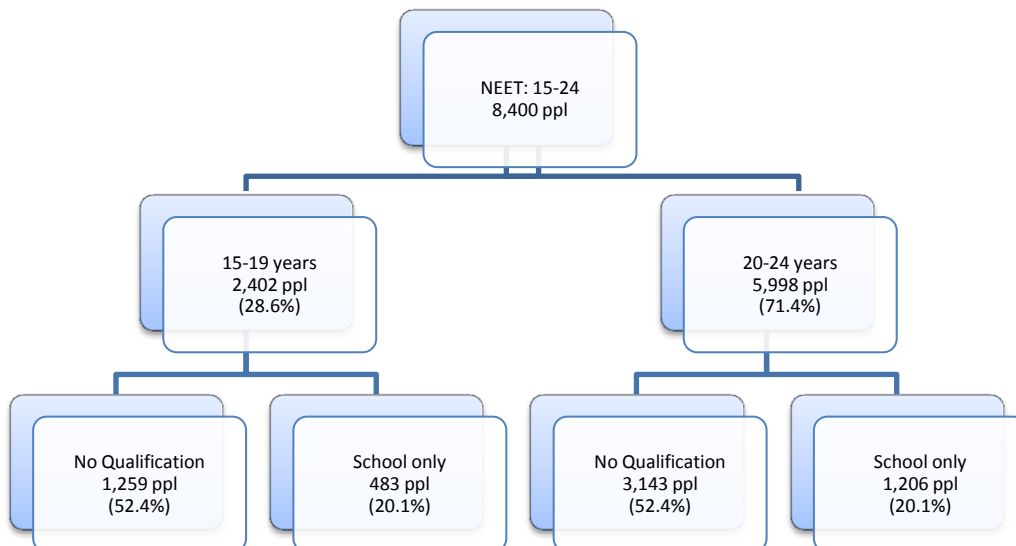
Source: Statistics NZ

15-19 Wage Differentials:

No Qualification: 32% of $77 = $24.64
Unemployed: 18 months (78weeks) @ $24.64 = $1,922
        Number of NEET unemployed = 1,259*0.405 = 510
        510 people * $1,922 = **$980,220**
Inactive: 21 months (91weeks) @ $24.64 = $2,242
        Number of NEET inactive = 1,259*0.595 = 749
        749 people * $2,242 = **$1,679,258**

School Qualification: 8% of $77 = $6.16
Unemployed: 18 months (78weeks) @ $6.16 = $480
        Number of NEET unemployed = 483*0.405 = 196
        196 people * $480 **= $94,080**
Inactive: 21 months (91weeks) @ $6.16 = $561
        Number of NEET inactive = 483*0.595 = 287
        287 people * $561 = **$161,007**

20-24 Wage Differentials:

No qualification: 32% of $308 = $98.56
Unemployed: 12 months (52weeks) @ $98.56 = $5,125
        Number of NEET unemployed = 3,143*0.405 = 1,273
        1,273 people * $5,125 **= $6,524,125**
Inactive: 15 months (65weeks) @ $98.56 = $6,406
        Number of NEET inactive = 3,143*0.595 = 1,870
        1,870 people * $6,406 **= $11,979,220**

School Qualification: 24% of $308= $73.92
Unemployed: 12 months (52weeks) @ $73.92 = $3,844
        Number of NEET unemployed = 1,206*0.405 = 488
        488 people * $3,844 **= $1,875,872**
Inactive: 15 months (65weeks) @ $73.92 = $4,805
        Number of NEET inactive = 1,206*0.595 = 718
        718 people * $4,805 **= $3,449,990**

Underachievement: Foregone Earnings Total: $26,743,772

Public Finance Cost Calculations:
Income Tax Revenue: (0.105*2,914,565) + (0.175*23,829,207) = $4,476,141
Lost ACC contributions: 2.85% of $26,743,772 = $762,198
Lost Indirect Tax Revenue: 15% of $21,505,434 = $3,225,815

Underachievement: Public Finance Cost Total: $8,464,154