

Estimating the Cost of Youth Disengagement in New Zealand

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Abstract

Youth exclusion, disengagement, and overall underutilisation in the labour market are associated with serious economic and social costs. In this research we project the loss to productivity, measured in foregone wages, and the expected cost to public finances for New Zealand (NZ) and Auckland youth aged 15-24 not in employment, education, or training (collectively known as NEET). We estimate the expected per capita cost of each NEET youth in NZ is approximately \$21,969 over the next one to three years. The analogous cost for the Auckland cohort is higher, due largely to greater foregone wages. Closer inspection reveals that Auckland NEET youth of Maori and Pacifica descent are associated with relatively high per capita costs compared to their NZ European counterparts. This finding is driven by the greater propensity of Maori and Pacific Peoples to disengage from the education system earlier, withdraw from the paid workforce due to caregiving responsibilities at a younger age, and to experience longer durations of unemployment than their NZ European counterparts.

Keywords: NEET, youth disengagement, economic productivity, labour market, transition to work
JEL Classification: J64, J24

Introduction

There has been growing interest in recent years in the labour market issues that youth face. 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 (e.g. Gregg, 2001; Maloney, 2004; Mroz & Savage, 2006), lower future wages (e.g. Gibson, 2000; Gregg & Tominey, 2004; Cruces, Ham & Viollaz, 2012), increased criminal activity (e.g. Carmichael & Ward, 2000; Fergusson, Horwood & Lynskey, 2006; Wu & Wu, 2012), and even reduced happiness and health (e.g. Fergusson et al., 1997; Clark, Georgellis & Sanfeym, 2001; Blakely, Collings & Atkinson, 2003; Blanchflower, 2010). For example, Maloney (2004) finds evidence that labour market inactivity of New Zealanders at an earlier age is associated with inactivity at a later age, while Fergusson et al. (1997) and Fergusson et al. (2006), respectively, present evidence to suggest that young New Zealanders exposed to unemployment have higher rates of substance use and anxiety disorder, and increased levels of youth offending.

Such research indicates that youth disengagement from the labour market and education system has both short run, as well as serious long-term consequences for the individual and the economy. In 2004, to better understand this segment of the youth population, Statistics NZ began to measure and publicly report the numbers of youth that were neither employed, nor in education or training – this group is collectively known as NEETs. While the concept of NEETs is related to the measurement of youth unemployment, there are some important 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, unemployment figures exclude

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individuals who were available for work but are not actively looking. In contrast, NEET statistics include some of the economically inactive, i.e. individuals that are not looking for work, and may or may not be in caregiving roles. For this reason, NEET rates are a common measure of non-utilised youth labour market potential.

While there is considerable literature studying the consequences of youth disengagement, remarkably little research to-date has attempted to quantify the associated individual, social, and economic costs. We contribute to this gap in the literature by estimating the expected economic cost of NEET youth in NZ. Specifically, we project the short-term (one to three years) loss to productivity, measured in foregone wages, and the expected cost to public finances associated with the youth NEET cohort aged 15-24 years, as at December 2012. We conduct this analysis at both the aggregate country level as well as for the largest urban area of NZ, Auckland. A priori, we expect that the cost of NEET youth in Auckland will be higher than that for NZ, largely due to the higher foregone wages in Auckland. We also further devolve our analysis by ethnicity to compare the cost of NEET youth that are Maori, Pacific Peoples, and NZ European. Such sub-group analysis is important in informing policy, such that intervention in the youth labour market can be better targeted.

The remainder of this paper is as follows: Relevant literature establishing the negative consequences of youth becoming NEET to individual wellbeing, as well as to wider society is reviewed. Then, information on NEET trends in NZ is presented, followed by our methodological approach to computing the economic cost of NEET youth. Finally, a discussion of results is presented.

Literature Review

There are a range of negative consequences associated with young people being NEET. Not only are these consequences borne by the individual, they also generate costs to society in terms of lost productivity and public finances, as well as having other wider social implications. The international and domestic literature suggests that these costs broadly include: scarring, in terms of future employment prospects and wages (i.e. reduced economic productivity); increased crime; and reduced quality of life.

Scarring – Future Employment Prospects and Wages

There is considerable evidence to suggest that inactivity at an early age is associated with higher probabilities of inactivity at a later age, as well as lower wages later in life (e.g. Ellwood, 1982; Arulampalam, 2001; Bynner & Parsons, 2002; Maloney, 2004; Gregg & Tominey, 2004; Mroz & Savage, 2006; Cruces et al., 2012)¹. For example, Gregg (2001) finds that, even after controlling for risk factors likely to raise the probability of an individual experiencing unemployment, British youth who experience unemployment (compared to those who do not) disproportionately go on to experience further periods of being out of work (either unemployment or inactivity) in their prime age adult years (28-33 years of age). This path dependence is found to be significantly more pronounced for men than for women. Likewise, in NZ, Maloney (2004) finds evidence of path dependence, in that indications of inactivity during youth are associated with higher probabilities of inactivity at a later age.

Prior literature also documents the existence of a scarring effect on the future wages of youth that experience early disengagement (e.g. Ellwood, 1982; Arulampalam, 2001; Gregg & Tominey, 2004; Mroz & Savage, 2006; Cruces et al., 2012). When these individuals do return to the labour market, they may find work of a lower skill level than their non-NEET counterparts. This results 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. Gregg and Tominey (2004) find evidence in the UK of scarring in the form of persistently reduced wages, stemming from an individual's youth unemployment experience. They find a sizeable wage scar for males and females at age 23, followed by a 10 year recovery period, as long as no further unemployment spells are experienced. They also find evidence of a smaller residual wage scar of approximately eight percent that can persist for up to 20 years, even if there are no further unemployment experiences. Mroz and Savage (2006) find qualitatively similar results for youth in the US, while Cruces et al., (2012) present similar findings within the Argentinian and Brazilian context. Further, while Cruces et al. (2012) find that the wage penalty diminishes over time, their results also point to variations across different skill groups, with low skilled individuals experiencing greater persistence in wage penalties over time.

A factor likely to further accentuate the wage effect for NEET youth is lower educational attainment (Cruces et al., 2012). There is considerable evidence on the returns to education in terms of higher wages. For instance, reviewing the international literature Psacharopoulos and Patrinos (2004) find that the average rate of return for another year of schooling is slightly more than six percent per year in OECD countries, while recent figures indicate the average private rate of return to education for OECD countries is as high as 12.4 percent². Examining annual wage differentials in NZ, Gibson (2000) shows a high return to academic credentials, particularly for ethnic minorities such as Maori and Pacific Peoples³. He posits that this wage effect is attributable to credentials signalling worker productivity to employers⁴. Our empirical analysis takes this factor into consideration as we explicitly account for the likely impact of educational underachievement on wages in the next one to three years for NEET youth in NZ.

Increased Criminal Activity

Higher rates of youth inactivity and unemployment are also often seen as precursors to rising crime rates (e.g. Chiricos, 1987; Carmichael & Ward, 2000; Fergusson et al., 2001; Fergusson et al., 2006; Wu & Wu, 2012). Carmichael and Ward (2000) find a systematic positive relationship between burglary rates and male unemployment rates in England and Wales. While their results are irrespective of age, they find a consistent, positive relationship between youth unemployment and criminal damage and robbery rates. Additionally, making use of a NZ birth cohort sample (up to the age of 18), Fergusson et al. (2006) find an increase in the duration of unemployment is significantly associated with rises in youth offending.

Reduced Quality of Life

Research in both the NZ and international context suggests that unemployment among young people is associated with reductions in quality of life, particularly with regard to a rise in the prevalence of mental health issues, such as depression, lower self-esteem, and anxiety (e.g. Feather, 1982; Goldsmith, Veum & Darity, 1996; Mathers & Schofield, 1998; Clark et al., 2001; Fergusson et al., 2001; Blakely et al., 2003; Gerdtham & Johannesson, 2003; Blanchflower, 2010), and substance abuse (Fergusson et al., 1997; Fergusson et al., 2001; Blanchflower, 2010). Employing a longitudinal survey data set of young people in the US, Goldsmith et al. (1996) finds that youth, who 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. These psychological impacts also place an increasing burden on the immediate family of unemployed youth. For example, in a recent UK survey of young individuals, more than a quarter of those who had been unemployed said unemployment was a cause for arguments with family, and 10 percent said it drove them to drugs or alcohol (Prince's Trust, 2010). With regard to NZ evidence, Fergusson et al. (1997) find that young New Zealanders exposed to unemployment have higher rates of substance use and

anxiety disorder later in life, while Blakely et al. (2003) find that unemployment in NZ is associated with a two-to-three-fold increase in the relative risk of suicide, compared with being employed.

Quantifying the Cost of NEET

The literature reviewed above highlights the wide range of costs associated with youth disengagement. To date, however, there is limited work on actually quantifying these costs. Notable exceptions are Godfrey, Hutton, Coles, Craig & Johnson (2002) and Coles, Godfrey, Keung, Parrott & Bradshaw (2010), which attempt to estimate the lifetime cost of NEET youth in the UK. The latter of these studies (an update of the former) estimates the average per capita cost of UK NEET youth (aged 16 to 18) to be £16,649 in terms of welfare and productivity losses, and public finance costs (during that three year time period).

To our knowledge, this research is the first foray in NZ that explicitly constructs cost figures for youth disengaged from education/training and the labour market. In forming our cost estimates, we would ideally like to take into account costs relating to all of the potential consequences: direct and indirect as well as immediate and delayed. Unfortunately, however, some costs are difficult to quantify due to the unavailability of necessary data in many instances, and the inherent difficulty of estimating costs of an indirect nature. There are a couple of instances in past literature where researchers have attempted to provide a loose framework with which to estimate the cost of outcomes such as poorer health, and increased crime (see Godfrey et al., 2002 and Coles et al., 2010 for research in this vein). However, by the authors' own admission, data limitations lead to largely speculative estimates. Additionally, their estimates rely heavily on assumptions derived from individual case studies and prior UK research which attributes specific outcomes to NEET versus non-NEET individuals. The lack of such research in NZ further hinders our estimation of these indirect costs.

Therefore, this research focusses on the two costs that can be more readily quantified – lost productivity (foregone wages), and the burden on the country's public finances. Due to unavailability of appropriate panel data, we also restrict our purview to estimating short-term costs over a one to three year time period. 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.

Background Context: NEET in NZ

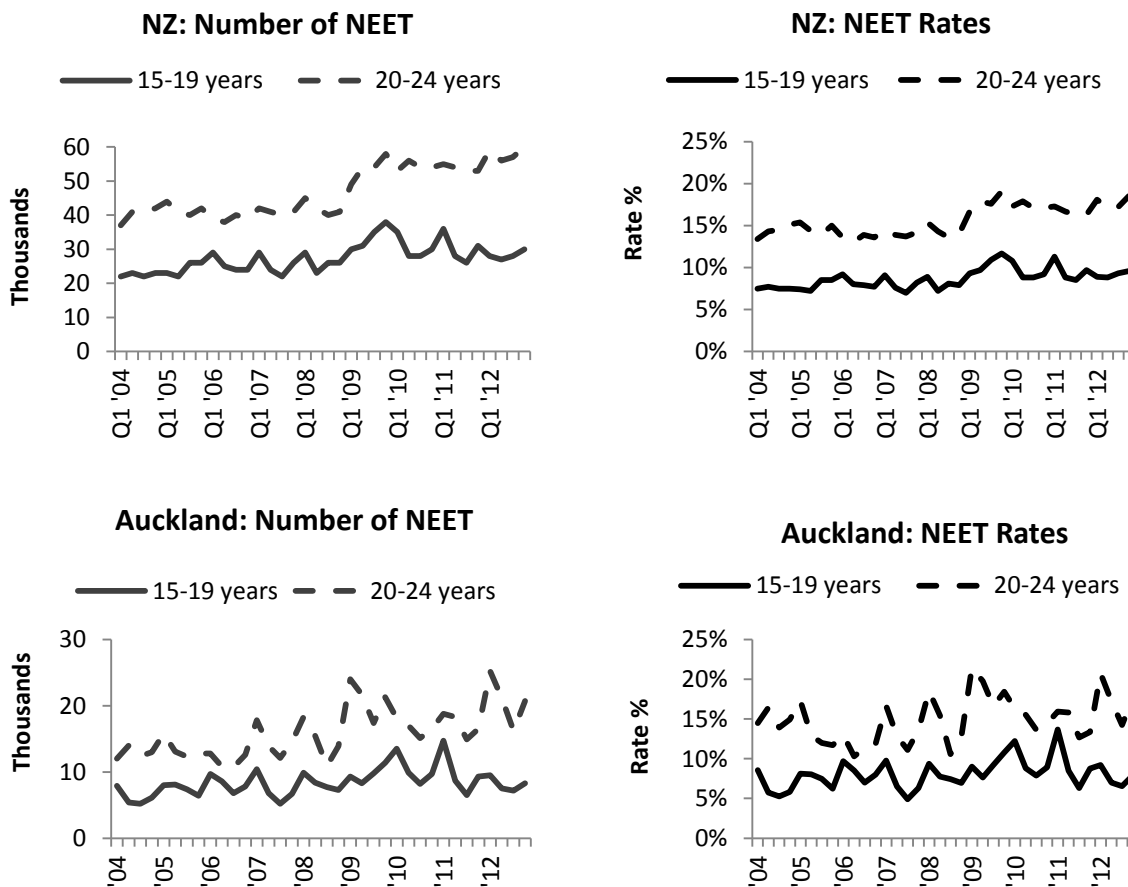
As at December 2012, there were 88,600 NEET youth aged 15-24 in NZ (Statistics NZ, 2012a). Of concern is that, while this figure equates to a NEET rate which is lower than the 2012 OECD average (~14 percent compared to ~16 percent), the number of NEET youth in NZ has increased 34.4 percent since data for this group was first collected by Statistics NZ in March 2004. Also noteworthy is the variation in NEET rates between genders, with females being more prevalent in the NEET statistics. Specifically, the NEET rate for young women aged 15-24 was 17.7 percent as at December 2012, while that for young men was 10.4 percent. Disaggregating by age, this result is driven primarily by the 20-24 years old sub-group, with the NEET rate for females in this age group more than double that for their male counterparts (24.5 percent compared to 12.0 percent) due to significantly higher numbers of young women classified as inactive and engaged in caregiving.

Of the total NZ NEET youth population (December 2012), 29,000 lived in the country's economic hub – Auckland. This figure equates to 13 percent of all young Aucklanders in this age group⁵, and ~33 percent of total NZ NEET in this time period. As with NZ NEET more broadly, the total number of NEET youth in this region has grown substantially (~46 percent) since March 2004. In both

instances, this upward trend is driven largely by a rise in the number of 20-24 year olds that are NEET over the period 2004 to 2012 (see figures 1-4 below).

The gravity of the upward trend apparent in NEET rates is somewhat mitigated by the strong national and regional population growth experienced over the last decade (NZ > eight percent, Auckland > 10 percent) (Statistics NZ, 2012b). Nevertheless, the rising number of youth NEET pre and post the 2008 recession is indicative of wider issues affecting youth in NZ that are yet to be addressed, and likely to worsen as the age cohort of 15-24 year olds looks set to rise. Additionally, the Auckland NEET average for youth masks significant differences among localities and ethnicities⁶. 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 ~21.3 percent (Statistics NZ, 2012c), well above the national average of 12.6 percent. 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 percent and ~20.9 percent for Maori and Pacific Peoples respectively, compared to ~10.4 percent and ~11 percent for European and Asian individuals. The aforementioned statistics highlight that there are ethnic subgroups within Auckland that require urgent attention/policy directed at improving their transitions between NEET status to the workforce, education, and/or training. Consequently, the research within this report is aimed at investigating both regional (by comparing Auckland with NZ), and ethnic differences in terms of trends and the cost of being NEET.

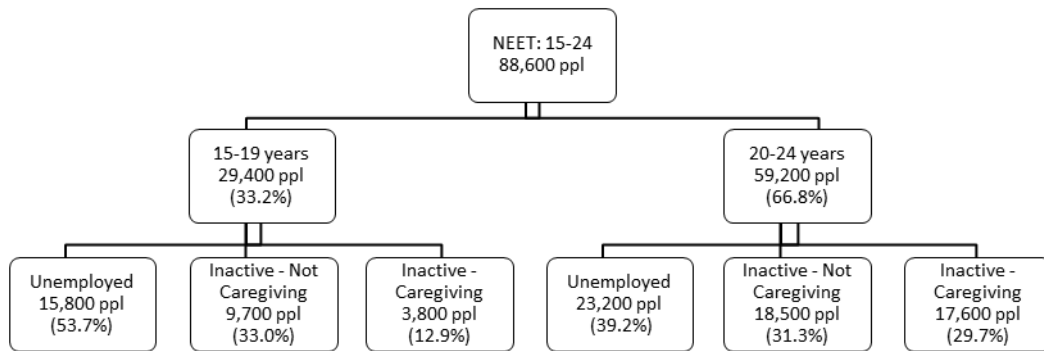
Figures 1-4: Number of NEETs & NEET Rates, NZ & Auckland: 2004-2012



Source: Statistics NZ, Household Labour Force Survey.

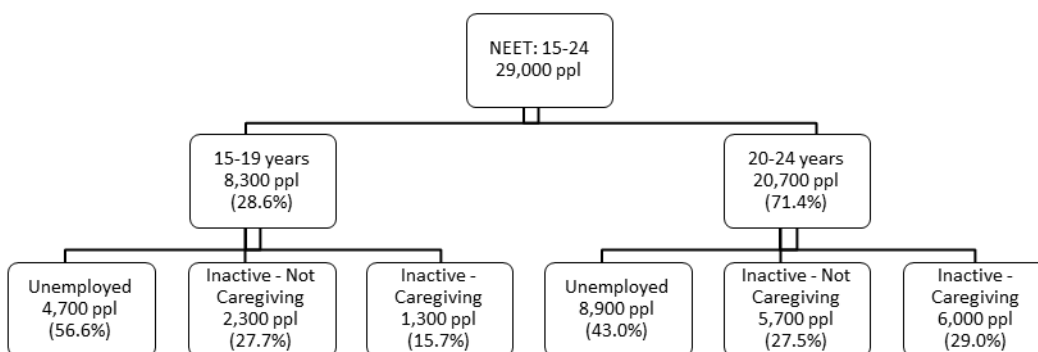
Figures 1 to 4 present NEET youth trends for NZ and Auckland over the period of 2004 to 2012. The first observation is that the NEET rate is consistently lower for 15-19 year olds, relative to 20-24 year olds. This is expected as this age group is more likely to have individuals participating in the education sector, especially since the compulsory school leaving age in NZ is 16⁷. All figures also point to seasonal fluctuations in NEET numbers, particularly evident for 15-19 year old NEETs – with drops in the NEET rate in quarter four (December) each year, followed by rises in quarter one (March). This is likely due to the rise in part-time and contract employment during the Christmas and summer season. Finally, in line with prior evidence that young people are particularly sensitive to labour market downturns (e.g. Kahn, 2010; Bell & Blanchflower, 2011; Fabling & Mare, 2012), there is a rise in the number of NEET youth during the 2008/09 recession instigated by the global financial crisis. With the exception of the Auckland 15-19 year old cohort, NEET numbers have remained at elevated levels since this time, courtesy of a subdued labour market. During recessionary periods, NZ youth are not only competing for fewer jobs with older, more skilled/experienced ppl workers, but the industries their employment is typically concentrated in are most vulnerable to changes in economic performance, such as hospitality, and tourism (Department of Labour, 2010).

Figure 5: Breakdown of NZ NEETs, 15-24 year olds



Source: Statistics NZ, 2012a

Figure 6: Breakdown of Auckland NEETs, 15-24 year olds



Source: *ibid*

Figures 5 and 6 present a breakdown of NEET youth in NZ and Auckland by unemployed and inactivity status. There were 29,400 (59,200) for 15-19 (20-24) year olds classified as NEET in NZ in December 2012. Of these, ~54.7 percent (~39.2 percent) in the 15-19 (20-24) group were unemployed, ~33.0 percent (~31.3 percent) inactive and not engaged in caregiving, and ~12.9 percent (~29.7 percent) inactive and engaged in caregiving. A comparable breakdown for Auckland reveals similar proportions in the three sub-categories of NEET status (Figure 6) (Statistics NZ, 2012a)⁸.

However, analogous breakdowns for Auckland NEET youth disaggregated by ethnicity (not shown here for the sake of brevity, but see Pacheco and Dye, 2013) highlight distinct variation in NEET status across ethnic sub-groups within Auckland. For example, the occurrence of NZ European teenagers that are classified as unemployed is markedly higher than youth of Maori and Pacifica descent, for which the propensity to become inactive is greater. The variation in rates of NEET youth aged 15-19 classified as inactive due to caregiving activity is worthy of particular mention. Specifically, the occurrence of Maori (Pacific Peoples) teenagers who are NEET falling into this category is nearly three (two) 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 descent, compared to NZ European (e.g. Dickson, Sporle, Rimene & Paul, 2000; Families Commission, 2011).

Methodology

To compute estimates of the associated costs for NZ NEET youth, the following analysis focuses on: i) youth NEET that are unemployed; ii) youth NEET that are inactive (i.e. neither employed nor in education); and iii) youth NEET that do not reach their educational potential and, consequently, upon entering the labour force, underachieve.

We focus on NEET aged 15-24 years as this captures the transition into the labour market at different points in a youth's timeline⁹. Data is sourced from Statistics NZ for youth NEET aged 15-19 and 20-24. Following Godfrey et al. (2002) and Coles et al. (2010), costs are defined as the excess cost of being in the NEET group compared to the hypothetical situation that these youth would have experienced (on average) as their non-NEET counterparts. Wherever possible, we draw on recent relevant NZ estimates from Statistics NZ data. Where this is not possible we use comparable figures from overseas research and state these assumptions.

We estimate costs at the country-level (NZ) as well as at the regional level for Auckland. A priori, we expect the economic cost of the latter to be higher than the former due to higher wages foregone. As indicated earlier, Auckland youth of Maori and Pacifica descent are more likely to be NEET compared to other ethnicities. There are also ethnic differences in terms of average wages foregone, durations of unemployment, and educational attainment – we, therefore, make use of these variations when disaggregate costs by ethnic sub-group in Auckland. In particular, we estimate separately the per capita cost of NEET youth in Auckland that are of NZ European, Maori, and Pacifica descent¹⁰

An overview of the methodology employed and assumptions made are provided in the three subsections below.. For a detailed breakdown of calculations see Pacheco and Dye (2013).

Unemployed NEET

In order to estimate the cost of unemployed NEET youth in terms of foregone earnings (productivity) and public finance costs, we need to estimate the excess length of time they are unemployed. The average duration of a single spell of unemployment for NZ (Auckland) youth aged 15-24 is 17.7 (17.9) weeks. Notably, the relevant average durations of unemployment in Auckland vary between a low of 16.4 weeks for NZ Europeans, and a high of 24.7 weeks for Maori¹¹. As unemployed youth are likely to experience more than one stint of unemployment over the short/medium-term (see literature review where path dependency of youth disengaged from the labour market is discussed), we assume these NEET individuals will be unemployed for ~50 percent longer than the average duration over the next one to three years. We further assume that non-NEET 15-19 year olds do not experience unemployment, while 20-24 non-NEETs will experience the average duration of unemployment at

some point over the next one to three years. The latter assumption makes the unemployment costs calculated for the older age group conservative in nature, the alternative being to assume non-NEET 20-24 year olds will not experience unemployment at any point during these years.

To compute the productivity cost, we also require assumptions regarding wages foregone based on age/region, and ethnicity of the individual. Based on data from the Household Labour Force Survey (Statistics NZ, 2012d), the average weekly income from wages for men and women in NZ aged 15-19 (20-24) is \$96 (\$383). Data from the same survey indicates that analogous figures for Auckland youth are ~11percent higher. NZ European youth are assumed to earn the average weekly earnings of Aucklanders generally, while Maori (Pacific Peoples) average weekly earnings are 17 percent (28 percent) lower.

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)¹² per \$1 is assumed for foregone earnings for 15-19 (20-24) year olds. There are also lost ACC (Accident Compensation Corporation) contributions from the employee (employer) of 1.70 percent (1.15 percent) of every \$1 of taxable income not earned¹³. In addition, Davidson (2005) illustrates that indirect taxes account for approximately 15 percent of disposable income, on average, for household income deciles one to five. Therefore, we also assume a loss in indirect taxes of 15 percent of the foregone disposable income of these NEET individuals¹⁴.

Finally, unemployment benefit payments also need to be taken into account. We expect the average net unemployment benefit received by individuals aged 18-19 is \$153.72¹⁵, while that for 20-24 year olds is \$170.80¹⁶.

Inactive/Not in the Workforce

As indicated in the literature review, NEET youth that do not fall into the unemployed category are inactive, and split into those that are (i) engaged in caregiving, and (ii) those that are not. Given the high teenage birth rates in NZ (Dickson et al., 2000; Families Commission, 2011), we assume that caregiving activity relates to childcare.

In estimating foregone earnings for inactive youth, we follow Godfrey et al. (2002) in assuming that young parents that are NEET will be out of the workforce and education sector for 1.5 years (regardless of age group)¹⁷. For other inactive youth (excluding NEET parents), we assume that they will be out of the labour market for one year.

As with unemployed NEET, foregone earnings for inactive NEET also results in lost direct and indirect tax revenues; the same assumptions with regard to the relative direct and indirect fiscal incidence rates as outlined in the previous sub-section are employed here. The final assumption we make here is that the net unemployment benefit received by young parents is the 2012 net benefit payable to solo parents of \$293.58 (WINZ, 2012).

Educational Underachievement

A final cost to consider is the productivity loss incurred due to educational underachievement – a consequence of a period of youth unemployment and/or inactivity. As discussed, when NEET 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 versus those that did not.

Recent information indicates that the proportion of NEET youth aged 15-24 in NZ that have no qualification, or school only qualification as their highest level of educational attainment is ~36

percent and ~32.3 percent, respectively (Statistics NZ, 2011). With regard to the Auckland cohort, statistics disaggregated by age group reveal that ~20.5 percent (~29.5 percent) of NEET individuals aged 15-19 (20-24) in Auckland have no qualification, and an additional ~49.4 percent (~26.1 percent) have school only qualifications. We also have similar statistics disaggregated by ethnicity for the Auckland cohort, which corroborate prior research that, in general, Maori and Pacific Peoples lag behind their NZ European (and Asian) counterparts in terms of educational attainment at all levels (e.g. Pool, Baxendine, Cochrane & Lindop, 2005)¹⁸.

To estimate the loss in productivity associated with underachievement, we need to make assumptions regarding the average level of qualifications for each age group and the likely qualifications and, hence, wages for their non-NEET counterparts. For example, for those with a qualification in the 15-19 year old NEET group, we assume this is Year 1 and that their relative counterparts in the non-NEET group have at least Year 12 school certificate. This equates to an eight percent differential in wages between these two groups, as average wages of those with Year 11 is 92 percent of average wages for those with Year 12. With respect to 20-24 NEET individuals who have at least school qualifications, this results in a 24 percent differential relative to average national wages¹⁹. For both age groups, we further assume that the counterfactual for those with no school qualifications is Year 12, and this equates to a 32 percent differential in wages (Statistics NZ, 2012d).

In a similar vein to UK research by Godfrey et al. (2002), we presume 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.

As with unemployment and inactivity, reduced wages result in lost income and indirect tax revenue. Therefore, the same assumptions outlined in the discussion of unemployed NEET are applied here as well.

Results

Based on the assumptions outlined in the three previous subsections, a summary of the short-term costs estimated for the various NEET cohorts (as at December 2012) is provided in Table 1. We project that the potential foregone earnings for the NZ (Auckland) youth NEET group over the next one to three years is \$1,387,274,374 (\$485,902,453). Over the same timeframe, the expected cost to public finances for this group is \$1,028,992,473 (\$354,538,366).

It is important to view these estimates separately. Foregone earnings is, simply put, a proxy for the lost potential productivity of the NEET cohort and, therefore, foregone earnings include foregone tax and ACC payments. However, in combining foregone earnings with the expected cost to public finances to attain a total expected cost, we deduct foregone tax and ACC contributions from public finance costs to ensure we do not double count these payments.

Based on cohort sizes as at December 2012, the total *per capita cost* of NEET in NZ over the next one to three years is expected to be \$21,969. As expected, the per capita cost for Auckland NEET youth of \$23,661 is notably higher than that for NZ NEET. This is primarily due to the higher wages found in Auckland relative to the rest of NZ. Significant variation in the cost associated with being NEET across different ethnic groups within Auckland is also evident. In particular, the *per capita cost* over the next one to three years is lowest for NZ European NEET youth at \$18,178 and highest for Maori NEET youth at \$28,289, while that for Pacific Peoples NEET youth sits in between at \$22,242.

In terms of the ethnic sub-groups portrayed in Table 1, it is clear that 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 \$16,759). Maori and Pacifica NEET also have higher proportions of youth that are inactive and engaged in caregiving, relative to NZ European. 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 workforce.

Table 1: Short-term costs over 1-3 years of NZ NEET by region & ethnicity

	NZ*	Auckland*	Auckland NZ European	Auckland Maori	Auckland Pacific Peoples
Number of NEET 15-24 year olds: December 2012	88,600	29,000	12,000	6,300	8,400
Total productivity loss (per capita) \$	1.39bn (15,414)	485.9m (16,755)	160.6m (13,379)	106.3m (16,875)	116.4m (13,856)
Unemployment	119.4m	47.6m	22.1m	10.2m	9.8m
Inactivity	971.1m	348.5m	106.7m	76.4m	79.8m
Educational Underachievement	296.7m	89.8m	31.8m	19.7m	26.7m
Total public finance costs (per capita) \$	1.03bn (11,433)	354.5m (12,225)	108.4m (9,033)	105.6m (16,759)	107.3m (12,773)
Unemployment	136.0m	47.7m	21.0m	11.0m	11.7m
Inactivity	799.1m	278.3m	77.3m	88.3m	87.1m
Educational Underachievement	93.8m	28.5m	10.1m	6.3m	8.5m
Total per capita cost \$**	21,969	23,661	18,178	28,289	22,242
15-19 year olds	10,084	11,347	10,853	18,624	14,411
20-24 year olds	27,911	28,599	21,112	32,162	25,378

Source: Author's computations.

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

**Total per capita figures are not an accumulation of productivity and public finance costs. To avoid double counting we remove the value of tax (direct and indirect) income and ACC contributions included in public finance costs as these are essentially transfer payments from the individual to the government.

Clearly, devolving analysis down to ethnic sub-groups is crucial in capturing a more accurate reflection of the economic cost of NEET youth. 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 \$21,842, which is lower than the Auckland estimate of \$23,661. It is important to note that the Auckland figure also includes other ethnicities, such as Asian or Middle Eastern, Latin American or African (MELAA), and is based on Auckland averages from Statistics NZ for, for example, wages, duration of unemployment, educational attainment. Consequently, both the NZ and Auckland estimates of NEET costs presented here may have been lower if we were able to control for the ethnic composition of the NEET cohort in these aggregate samples²⁰. Nevertheless, our estimates can still be viewed as lower bound figures given the conservative nature of the assumptions made in computing costs, and the omission of costs associated with the more subtle and indirect consequences of NEET, such as crime and poor health outcomes.

As a final discussion point, we have not explicitly estimated the medium or long-term costs of NEET youth. Coles et al. (2010) compute associated costs (for NEET youth aged 16-18 in the UK) for the medium term of 40-45 years, and long-term in terms of pension differentials. They find the present value of lifetime future costs to be approximately 9.6 times that of short-term costs. If we employ the same multiplicative factor for the estimates of short-term costs of NZ NEET, we arrive at an approximate present value of lifetime costs per capita of \$210,902 whereas the analogous figure for Auckland NEET would be \$227,146. An interesting avenue for future research would be to investigate what the relevant multiplicative factor is in the NZ context.

Conclusion

A vast literature shows that youth exclusion and disengagement from the labour market has costs both to the individual, and the economy/society at large. Consequences range from reduced economic productivity to increased criminal activity. Therefore, the rising number of youth in NZ that are classified as NEET is of concern as it signals increasing difficulties for young people making the transition from education into the labour market. Of particular concern is that there are sub-groups of youth in Auckland that appear particularly 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 percent.

This research estimated the expected economic cost of youth disengagement in terms of lost productivity and the strain on public finances. When considering the current youth NEET cohort in NZ, we estimated a per capita cost of \$21,969 over the next one to three years. The analogous figure for the Auckland cohort was found to be higher than that estimated for the average NEET NZ youth (\$23,661), which we attribute broadly to higher wages foregone of NEET in Auckland relative to the rest of NZ.

Our 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 \$28,289 (\$22,242), while the analogous figure for their NZ European counterparts was found to be \$18,178. This difference arises due to the greater propensity of Maori and Pacific Peoples to disengage from the education system earlier, to withdraw from the workforce due to caregiving responsibilities at a younger age, and to experience longer periods of unemployment.

We must note a couple of caveats in this conclusion. First, we have not been able to address the costs associated with other expected outcomes for NEET youth that include poorer physical and mental health outcomes, increased substance abuse, and increased prevalence of crime. 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 ongoing labour market difficulties such as: underemployment post

the short-term window of one to three years; future unemployment; or future wage differentials arising due to lower average educational attainment. Consequently, our estimated costs are likely an underrepresentation of the true cost of increasing NEET levels and should be viewed as lower bound estimates.

Incorporating these additional costs and longer-term effects when data become available are possible directions for future research in this area. Another possible future research exercise is to investigate predictors of becoming NEET when aged 15-19 or 20-24. Such analysis would require appropriate panel data from a cohort, and would be useful for designing policy aimed at early intervention, as well as, where necessary, successfully re-engaging youth which become NEET.

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Notes

¹ Explanations for the observed persistence in unemployment/inactivity and wage scarring vary. Some popular explanations are that bouts of inactivity at a young age hinder human capital accumulation (Becker, 1964; Mroz & Savage, 2006), damage self-esteem, generate habituation effects (Clark et al., 2001), and/or signal low productivity to employers (Manning, 2000).

² The equivalent private rate of return is determined to be just 8.9 percent in NZ, however, Zuccollo, Maani, Kaye-Blake & Zeng (2013) argue ~50 percent of this gap can be explained by methodological issues.

³ Additional NZ evidence confirming high returns to education include Brosnan (1985), Maani (1999; 2000); and Scott (2009). Crichton and Dixon (2011) find limited returns to further education for adults aged 25-64 years that undertook certificate or diploma qualifications; however, in ~60 percent of cases, individuals were already qualified at a level at least as high as, if not greater than, the qualification undertaken.

⁴ See Stiglitz (1975) for in-depth discussion of “screening” theory as it relates to the returns on education.

⁵ Specifically, ~13 percent of Aucklanders in this age group who are classified as usually resident, non-institutionalised, and civilian.

⁶ Birnie, Maloney, Canler & Davies (2012) also document these differences

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

⁸ The percentages for either age group of the NZ cohort do not add to 100 percent (specifically, 99.7 percent and 100.2 percent for 15-19 and 20-24, respectively) due to rounding by Statistics NZ. Similarly, percentages for the 20-24 age group in the Auckland cohort do not add to 100 percent, but rather 99.5 percent

⁹ This is similar to analysis by Sissons and Jones (2012) who focus on the 16-24 year bracket for the UK

¹⁰ Due to very small sample size in some instances, we are unable to conduct disaggregated analysis for Auckland NEET of Asian ethnicity.

¹¹ Statistics NZ, Household Labour Force Surveys. It is the time series average for the period December 2007 to December 2012.

¹² These are the applicable marginal tax rates for the 2012/13 tax year for the income brackets of ‘up to \$14,000’, and ‘\$14,000 to \$48,000’.

¹³ ACC levy charges are as at April 2012

¹⁴ Since 2005, the GST rate in NZ has increased from 12.5 percent to 15 percent meaning this figure likely underestimates the actual incidence of indirect tax for low decile households

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 We focus on the unemployment benefit due to limited information on the number of NEET receiving additional benefits.

¹⁷ Note – the focus of the forthcoming calculations are on the counterfactual for youth that are inactive, whether engaged in caregiving or not. It is outside the scope of this study to evaluate the differences in long term benefits for households when youth parents stay at home for caregiving reasons versus enter back into the workforce.

¹⁸ Specifically, as at December 2012, ~17.6 percent (~34.5 percent), ~31.5 percent (~36.5 percent), and ~52.4 percent (~20.1 percent) of European, Maori, and Pacific Peoples NEET youth in Auckland aged 15-24 had no (school only) qualification. Due to a lack of disaggregated data, we assume the proportions hold across both age groups

¹⁹ Average wage is based on an aggregate of all individuals across the educational qualification spectrum

²⁰ 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.