Future Labour Market Prospects of Youth Not in Employment, Education or Training (NEET)

Yonatan Dinku*

Abstract

The 2016 Australian census data showed that one in 10 Australians aged 15-24 years was not in education, employment or training (NEET). The assumption that NEET harms wellbeing underpins theoretical and policy discourses on youth disengagement from work and study. However, despite the extensive literature on the profiles of Australian NEET youth, the evidence on the consequences of NEET for future labour force participation and career progression is limited. Using data from the Australian Census Longitudinal Dataset, this study shows that a spell of NEET at ages 15-24 years is significantly associated with reduced full-time employment prospects and increased risks of being out of the labour force at ages 25-34 years. Even if NEETs find a job later in life, they are more likely to end up in low-skilled occupations. Our findings highlight the importance of distinguishing between full-time and part-time employment while measuring long-term impacts of NEET status. We also showed that some NEETs face higher future labour market risks than others.

Keywords: NEET youth, employment, education, labour market, Australia

Introduction

The 2016 Australian census data showed that 10 per cent of Australians aged 15-24 years were NEET, up from six per cent in 2006 (Trewin & Pink, 2006; Australian Bureau of Statistics (ABS), 2018). It is assumed that youth disengagement from employment and education (or training) has negative ramifications on labour market outcomes later in life. Firstly, employment prepares young people for successful adult life through the accumulation of skills obtained from on-the-job training (Gregg, 2021; Gregg & Tominey, 2005; Luijkx & Wolbers, 2009). Having a job also allows to observe and emulate positive behaviours from role models in the workplace, reinforcing respect, collegiality, strong work ethic, and a commitment to personal growth (Lesner et al., 2018; Frerichs et al., 2023). Thus, being unemployed at a young age can undermine one's ability to obtain essential labour market skills and experience (Mroz & Savage, 2006; Nilsen & Reiso, 2011), and to gain entry to the labour market at a later age (Borland, 2020; Morris & Wilson, 2014; Schmillen & Umkehrer, 2017). Secondly, education (or training) is paramount for personal development and acquisition of skills and competencies that are needed for employment (Fleischhauer, 2007; Nafukho et al., 2004). Therefore, young people who are not studying while not in employment miss opportunities that would help them acquire essential skills for securing employment.

* Research Fellow, Centre for Indigenous Policy Research, Research School of Social Sciences, Australian National University.
E-mail: yonatan.dinku@anu.edu.au

Nevertheless, it has also been suggested that NEET does not necessarily engender future labour market vulnerabilities. Instead of moving into insecure employment or undertaking training that has low lifetime returns, young people may take time off work and study for more targeted and efficient career development, which can result in better job matches in the long run (Kahn & Low, 1982), or engage in personal development through voluntary work and self-directed learning (Furlong, 2006). It is also possible that prior economic inactivity may induce catch-up effects on future employment as individuals may increase the time and effort spent studying or working in their adult life to compensate for previously lost opportunities (Mroz & Savage, 2006).

A growing body of international literature shows that being NEET at a young age is significantly and negatively associated with labour market outcomes in later life. For example, Ranzani and Rosati (2013) analyse the subsequent effects of NEET status in Mexico, and found that young people were less likely to be employed a year after their NEET experience. Samoilenko and Carter (2015) show that young people in New Zealand who experienced a spell of NEET for at least five months were less likely to be employed for the following two years than those who experienced a shorter spell of NEET. Using data from the Scottish Longitudinal Study (SLS), Ralston et al., (2016) show that young people who were NEET 10 years earlier were more likely to be employed in low-status occupations, such as cleaning and catering assistance. In another study that used the same dataset, Ralston et al., (2022) show that NEET is associated with reduced employment prospects after 20 years. In Australia, Forrest et al., (2018) show that being persistently NEET (for at least six months) at ages 15-19 years is negatively associated with being employed and completing or studying for a tertiary qualification by age 24 years.

The present study aims to provide further insights into the long-term association between NEET status and future labour market prospects. Unlike the previous studies, which use a binary measure of employment status, this study uses labour force status (which differentiates between full-time and part-time employment) as an outcome variable. We also use a measure of occupational skill level (which includes both educational attainment and employment experience)[1] as an additional outcome variable. A person is considered NEET if they are neither working nor attending educational or training institutions. This is the standard definition used in the wider literature on youth disengagement (Carvalho, 2015; Hillman, 2005; Pacheco & Dye, 2014; Skattebol et al., 2015) and in official statistics (ABS, 2019).

Using data from the Australian Census Longitudinal Dataset (ACLD), we show that a spell of NEET experienced at ages 15-24 years is significantly associated with a reduced prospect of being in full-time employment, an increased prospect of being in part-time employment, and being unemployed and out of the labour force 10 years later, at ages 25-34 years. We also found that former NEETs are more likely to end up in low-skilled occupations even if they find a job. The findings suggest that missed opportunities to participate in employment and education at a young age may limit potential to find a job and to climb the occupational ladder during prime working ages, where individuals' job readiness is generally high (Wiggan, 2015). There is evidence that some NEET subgroups are at a higher risk than others in facing future labour market disadvantages. Overall, the findings in this study justify the ongoing interest in youth disengagement from work and education and provide an evidence base for a well-targeted policy.

[1] This is based on the definition of the Australian and New Zealand Standard Classification of Occupations (ANZSCO), more information is provided in the data section.

The rest of the paper proceeds as follows. The proceeding section provides an overview of our data followed by the method of data analysis and results. A brief discussion of the results is provided before a conclusion.

Data

The study uses data from the ACLD, which links a five per cent sample from the 2006 census to subsequent census records. In particular, the current analysis focuses on the 2006 and 2016 census records. The ACLD provides a unique opportunity to understand the changing nature of youth engagement with the labour market and education system over time and the social, economic and geographic dynamics that drive the changes (ABS, 2019). It contains a wealth of information about individuals, such as age, gender, marital status, disability conditions, highest level of education attained, language, residential mobility, civic participation, attendance at an educational institution and labour force status. It also provides information on household (family) characteristics, such as whether an extra bedroom is needed, presence of young children, education level of household members, disability status of household members, and ethnic composition and employment status of household members. There is also information about the remoteness of a person's usual residence and socioeconomic status of residential areas (see, ABS (2019) for more information).

Using the 2016 census records, we distinguished four labour force states with increasing order of attachment with the labour market: not in the labour force (equals 1), unemployed (equals 2), part-time employed (equals 3) and full-time employed (equals 4). The ACLD assigns a person's occupation (if employed) to five skill levels (where Skill Level 1 is the highest and Skill Level 5 is the lowest)[2]. The assumption is that the greater the range and complexity of the tasks to be done, the greater the set of skills required in the form of a higher level of education, training, or prior work experience (Trewin & Pink, 2006).

Methods

As noted above, the outcome variables are ordinal, measured in increasing order from not being in the labour force (equals 1) through to full-time employment (equals 4) for labour force status and from the lowest skill level (equals 1) through to the highest skill level (equals 5) for occupational skill level whereas ANZOC's classifications are reverse-coded. The ranking is meant to reflect a person's level of involvement in the labour market and the extent of progression on the occupation ladder. Kalb et al., (2014) did a similar ranking of labour force states.

We used ordered logit regressions for analysis, where the probability of observing outcome j for individual i in 2016 is be written as:

$$\Pr(Y_{i2016} = j) = Pr(\kappa_{j-1} < \vartheta NEET_{i2006} + X'_{i2016}\beta + \theta_i + \zeta_{i2016} \leq \kappa_j)$$

[2] The classification is done based on the criteria of the Australian and New Zealand Standard Classification of Occupations (ANZSCO), which defines a person's skill level based on the range and complexity of the set of tasks done in a particular occupation.

Here, Y_{i2016} represents a person's labour force status or occupational skill level in 2016; Where κ is the number of possible outcomes, in our case, four labour force states and five occupational skill levels; $NEET_{i2006}$ is a dummy equals one if a person was NEET in 2006, otherwise equals zero. X_{i2016} represents a vector of observable characteristics in 2016 along with their coefficients β; ϑ is the parameter of interest that measures the statistical relationship between NEET status in 2006 and labour market outcomes in 2016. θ_i represents unobservable fixed effects underlying a person's attachment to the labour market and the education system, and ζ_{i2016} is an error term.

It is worth pointing out that alternative specifications were used to check the robustness of the above model. First, using the full sample, we checked whether the labour force states in our data represent ordered information, and an ordered logit model is preferred to a multinomial logit model. A Likelihood-ratio test showed that a simplification from the multinomial to the ordered logit is nested in the multinomial model [LR Chi2(46) =11.91 & Prob>chi2=0.104]. Akaike's information criterion and Bayesian information criterion also showed that a simplification from a multinomial to an ordered logit is justifiable, AIC=1292.951 and BIC= 1741.19 for the former model compared with AIC= 1238.112; BIC= 1467 for the latter model. Second, we ran ordered logit regressions by excluding the 2016 covariates from the above model. Overall, the results obtained with the restricted model are very similar to those obtained with the unrestricted model, presented in Tables 1-4. In a few cases where there are noticeable differences, the marginal effects obtained with the restricted model are larger in magnitude than those obtained with the unrestricted model, suggesting that excluding the 2016 covariates from the regression analysis may cause an upward bias in the estimated effects of NEET status.

Results

The results presented in this section are obtained with a longitudinal model of labour market outcomes observed in 2016, with the results presented in the following tables being the estimated marginal effects and their standard errors.

Main Results

Table 1 provides estimated marginal effects of a spell of NEET in 2006 on labour force states in 2016. We found a significant negative association between prior NEET experience and future labour force status and the relationship holds for different youth groups. For Indigenous persons, earlier experience of NEET reduces the probability of being in full-time employment by 12.5 percentage points and increases the probability of unemployment by 1.6 percentage points and being out of the labour force by 11.6 percentage points. There is no significant association between NEET status in 2006 and future part-time employment in 2016. Among the non-Indigenous population, persons who experienced a spell of NEET in 2006 were 14.4 percentage points less likely to be in full-time employment, 4.9 percentage points more likely to be in part-time employment, 1.8 percentage points more likely to be unemployed and 7.7 percentage points more likely to be out of the labour force in 2016 than their non-NEET counterparts.

Table 1 NEET status and labour force states (benchmark specifications)

NEET Group in 2006	Full-time employed	Part-time employed	Unemployed	Not in the labour force
Indigenous	-0.125 *	-0.007	0.016 *	0.116 *
	(0.030)	(0.005)	(0.004)	(0.031)
Non-Indigenous	-0.144 *	0.049 *	0.018 *	0.077 *
	(0.008)	(0.002)	(0.001)	(0.005)
Female	-0.123 *	0.025 *	0.010 *	0.088 *
	(0.010)	(0.001)	(0.001)	(0.008)
Male	-0.133 *	0.056 *	0.028 *	0.050 *
	(0.011)	(0.004)	(0.003)	(0.005)
15-19-year-old	-0.098 *	0.035 *	0.014 *	0.048 *
	(0.014)	(0.004)	(0.002)	(0.007)
20-24-year-old	-0.163 *	0.049 *	0.018 *	0.097 *
	(0.009)	(0.002)	(0.001)	(0.006)

Note: * Significant at the five per cent level.

The analysis also shows that both male and female NEETs fared poorly compared to their respective non-NEET counterparts. More specifically, NEET females were 12.3 percentage points less likely to be in full-time employment, 2.5 percentage points more likely to be in part-time employment, one percentage point more likely to be unemployed and 8.8 percentage points more likely to be out of the labour force than non-NEET females. Similarly, NEET males were 13.3 percentage points less likely to be in full-time employment, 5.6 percentage points more likely to be in part-time employment, 2.8 percentage points more likely to be unemployed and five percentage points more likely to be out of the labour force than non-NEET females.

In looking at the last two rows of Table 1, prior NEET spells appear to have ramifications on labour market prospects for both younger and older cohorts but manifest in different intensities. For people who experienced NEET at the age of 15-19 years, the probability of being in full-time employment was lower by 9.8 percentage points at ages 25-29 years whereas the probabilities of being in part-time employment, being unemployed and being out of the labour force were higher by 3.5, 1.4 and 4.8 percentage points, respectively. For those who were NEET at the age of 20-24 years, the probability of being in full-time employment was lower by 16.3 percentage points at ages 30-34 years. In contrast, the probabilities of being in part-time employment, being unemployed and being out of the labour force were higher by, 1.8, 4.9 and 7.9 percentage points, respectively.

Table 2 shows estimated marginal effects of NEET status in 2006 on occupational skill levels in 2016. Indigenous NEET youth were less likely to be in high-skilled occupations and more likely to be in low-skilled occupations than their non-NEET Indigenous peers. The negative association between prior NEET experience and occupational progression appears to hold for non-Indigenous youth too. Compared to non-NEETs, NEETs were 5.8 percentage points less likely to be in the highest skill category (Skill Level 1) and 3.3 percentage points more likely to be in the lowest category (Skill Level 5) 10 years later. We also noted that NEET experience can have adverse consequences on occupational progression irrespective of gender and age differences. Both males and females were more likely to be in low-skilled occupations 10 years after their NEET

experience. Similarly, individuals who experienced a spell of NEET early on (at the age of 15-19 years) and those who did later in their life (at the age of 20-24 years) were more likely to be in occupations that commensurate with the lowest skill levels.

Table 2 NEET status and occupational skill levels (benchmark specification)

NEET Group in 2006	Skill Level 1		Skill Level 2		Skill Level 3		Skill Level 4		Skill Level 5	
Indigenous	-0.061	*	-0.021	*	-0.017		0.025	*	0.074	*
	(0.022)		(0.012)		(0.012)		(0.011)		(0.030)	
Non-Indigenous	-0.058	*	-0.004	*	0.002	*	0.027	*	0.033	*
	(0.007)		(0.001)		(0.001)		(0.003)		(0.004)	
Female	-0.065	*	0.001		0.001	*	0.030	*	0.034	*
	(0.011)		(0.001)		(0.000)		(0.005)		(0.006)	
Male	-0.042	*	-0.005	*	0.002	*	0.020	*	0.026	*
	(0.009)		(0.001)		(0.001)		(0.004)		(0.007)	
15-19-year-old	-0.041	*	-0.003	*	0.001	*	0.018	*	0.025	*
	(0.011)		(0.001)		(0.000)		(0.005)		(0.007)	
20-24-year-old	-0.066	*	-0.004	*	0.002	*	0.032	*	0.026	*
	(0.009)		(0.001)		(0.001)		(0.004)		(0.006)	

Note: * Significant at the five per cent level.

Alternative specifications

The NEET variable in the benchmark specification is a composite index measuring non-participation in employment and education or training. A person is considered NEET if they were not attending educational institutions and not working in 2006. However, the extent of labour market and education disengagement could be different for different NEET groups. For instance, while some NEETs may be actively seeking opportunities, such as looking for jobs or waiting for a course admission or apprenticeship placements, to (re)connect with the labour market or the education system, others may not want to or are unable to do so. If those actively looking for opportunities end up with training or jobs that lead to better career prospects in the long run (Kahn & Low, 1982), they may fare better in terms of future labour market outcomes than those who were not actively seeking employment and education opportunities. Therefore, we would ideally use a NEET index that accounts for levels of disengagement both from the labour market and the education system. Regrettably, the ACLD only provides data on whether someone is unemployed (jobless and actively seeking work) or not in the labour force (jobless and not actively seeking work), i.e., ACLD does not provide information on whether NEETs are seeking education opportunities or whether they are waiting for course admissions (apprenticeship placements).

Therefore, we sought to identify two NEET groups based on the reported labour force status in ACLD. The first consists of young people not attending educational institutions but actively seeking employment opportunities called 'active' NEETs. The second includes those who are neither pursuing education/training nor seeking employment – called 'inactive' NEETs. Thus, the NEET variable in the benchmark specification has been redefined as '1' if someone is in education, employment or training, '2' if not attending school and unemployed and '3' if not attending school

and not in the labour force. The ordering is meant to reflect the degree of disconnection from the labour market. Since the results in both specifications do not vary by age and gender, we only presented results by Indigenous status (see Tables 3 and 4).

In Table 3, we noted that both active and inactive NEETs in 2006 were less likely to be in full-time employment and more likely to be in non-employment (either unemployed or out of the labour force) in 2016 than those who were non-NEETs. However, the estimated marginal effects are larger for inactive NEETs. Among Indigenous youth, being active NEET is associated with an 8.5-percentage-point reduction in the probability of full-time employment, whereas being inactive NEET is associated with a decrease in the probability of having a full-time job by 14.1 percentage points. The estimated effect on labour force participation of being inactive NEET is almost double the estimated effect of being active NEET (13.4 percentage points versus 7.5 percentage points). Among the non-Indigenous subgroup, compared with non-NEETs, active NEETs are 11.5 percentage points less likely to be employed full-time, 4.2 percentage points more likely to be employed part-time, 1.5 percentage points more likely to be unemployed and 5.9 percentage points more likely to be not in the labour force, whereas inactive NEETs are 16.5 percentage points less likely to be employed full-time, 4.5 percentage points more likely to be employed part-time, two percentage points more likely to be unemployed and 10 percentage points more likely to be not in the labour force.

Table 3 NEET status and labour force states (active and inactive NEETs)

NEET Group in 2006		Full-time employed		Part-time employed		Unemployed		Not in the labour force	
Indigenous	Active	-0.085	*	-0.002		0.012	*	0.075	*
		(0.044)		(0.004)		(0.006)		(0.042)	
	Inactive	-0.141	*	-0.010		0.017	*	0.134	*
		(0.035)		(0.007)		(0.004)		(0.038)	
Non-Indigenous	Active	-0.115	*	0.042	*	0.014	*	0.059	*
		(0.011)		(0.003)		(0.001)		(0.007)	
	Inactive	-0.165	*	0.045	*	0.020	*	0.100	*
		(0.010)		(0.002)		(0.001)		(0.006)	

Note: * Significant at the five per cent level.

Table 4 shows that both active and inactive NEETs tend to fare poorly in occupational progression compared to non-NEETs. Among Indigenous youth, being an active NEET is associated with a 9.5 percentage point decrease in the probability of having an occupation at the highest skill category and a 13.4 percentage point increase in the probability of having an occupation at the lowest skill category. The figures for being an active NEET are only 3.3 and 3.6 percentage points, respectively. Among the non-Indigenous youth group, compared with non-NEETs, active NEETs are 5.7 percentage points less likely to be in occupations that are commensurate with the highest skill level and 3.3 percentage points more likely to be in occupations at the lowest skill level, whereas inactive NEETs are 10.9 percentage points less likely to have an occupation at the highest skill level and 6.4 percentage points more likely to have an occupation at the lowest skill level.

Table 4 NEET status and occupational skill levels (active and inactive NEETs)

NEET Group in 2006		Skill level 1		Skill level 2		Skill level 3		Skill level 4		Skill level 5	
Indigenous	Active	-0.033	*	-0.011		-0.008		0.016		0.036	*
		(0.017)		(0.016)		(0.013)		(0.020)		(0.016)	
	Inactive	-0.095	*	-0.035	*	-0.032	*	0.028	*	0.134	*
		(0.036)		(0.015)		(0.017)		(0.009)		(0.068)	
Non-Indigenous	Active	-0.057	*	-0.004	*	0.002	*	0.027	*	0.033	*
		(0.010)		(0.001)		(0.000)		(0.004)		(0.006)	
	Inactive	-0.109	*	-0.014	*	0.017	*	0.042	*	0.064	*
		(0.009)		(0.001)		(0.000)		(0.004)		(0.006)	

Discussion

This study shows that NEET status at a young age predicts poor labour market outcomes later in life. Though data and methodological differences prevent direct comparison, our findings are generally consistent with those in other studies (Forrest et al., 2018; Ralston et al., 2016; 2022; Ranzani & Rosati, 2013; Samoilenko & Carter, 2015). However, the present study provides new insights. NEET status diminishes full-time employment prospects while increasing part-time employment prospects. Since most people aged 25-34 years are likely to have finished their education and sought full-time employment[3], working part-time could mean being underemployed. While part-time jobs may provide greater flexibility than full-time jobs, they are generally poorer in quality, with less security, fewer benefit entitlements and limited access to training and promotion opportunities (Hudson & Kalleberg, 2019; McDonald et al., 2009). Our finding that NEETs are more likely to end up in low-skilled occupations also highlights the scale of employment precariousness that disengaged youth face during adulthood. Evidence shows that workers who are at the bottom of the occupational skill ladder face precarious labour market conditions, such as low wage rates and job insecurity (Venn & Biddle, 2016), but also work-related accidents and injuries (LaMontagne et al., 2008).

Our findings highlight that subsequent labour market penalties for becoming NEET differ between different demographic groups. Though being NEET reduced the prospect of future full-time employment by a similar amount for Indigenous and non-Indigenous persons, it led to a disproportionate decrease in labour force participation among Indigenous persons. More specifically, for Indigenous persons, more than 90 per cent of the reduction in full-time employment was matched with withdrawal from the labour force compared with only 50 per cent for non-Indigenous persons. Furthermore, for Indigenous persons, none of the reduction in full-time employment is compensated with a corresponding rise in part-time employment, compared with 34 per cent for non-Indigenous persons. It is likely that, for Indigenous people, NEET experiences are compounded by ongoing disadvantages that underpin precarious labour market

[3] The 2016 Australian Census shows, for example, that among 25-34-year-olds, 21 per cent were studying and 54 per cent were working full-time whereas among 15-24-year-olds 63 per cent were studying and 22 per cent were in full-time employment.

conditions, such as poverty, poor health, discrimination and geographic remoteness (Dinku & Hunt, 2021; Kalb et al., 2014).

We also noted that while male and female NEETs saw a similar chance of not gaining full-time employment to prior NEET experiences, the extent of their disengagement from the labour market was markedly different between them. For females, 71 per cent of the reduction in full-time employment is matched with increased non-participation in the labour force compared with only 38 per cent for males. Male NEETs also saw a much higher increase in part-time employment than female NEETs. As indicated above, though our results are not directly comparable to the existing evidence, Ralston et al., (2022) show, using Scottish data, that the prospect of being employed (without any distinction between part-time and full-time employment) decreased at a higher rate for male NEETs males than female NEETs.

The long-term impact of NEET experiences on subsequent employment and labour force participation is a matter of concern. NEETs at ages 20-24 also experienced subsequent reductions in full-time employment and labour force participation nearly twice as much as those who were NEET at ages 15-19 years. This trend is further supported by the findings of Samoilenko and Carter (2015) using New Zealand data, which show that NEET-induced employment penalties tend to increase with age brackets at which NEET was experienced. They find that, compared with non-NEETs, individuals were 23 per cent, 20 per cent and 15 per cent less likely to be in employment after two years if they were NEET at ages 20-24 years, 18-19 years and 15-17 years, respectively.

The study also confirms that NEET is a significant marker of future labour market vulnerability, although its appropriateness as a measure of youth disadvantage has been contentious. NEET has been criticised for oversimplifying youth problems as it combines young people with distinct needs and experiences into a single category. These include those who are actively seeking work and education opportunities (Assmann & Broschinski, 2021; Carvalho, 2015; Hillman, 2005; Popham, 2003); those who are unavailable due to caring responsibilities or illness (Anlezark, 2011; Dinku, 2021), and those voluntarily outside education or the workforce to pursue other activities, such as travelling, volunteering or self-directed personal development (Furlong, 2006). NEET has also been criticised for being too narrow as it excludes young people engaged in precarious employment and education/training that do not improve their long-term career prospects (Cuzzocrea, 2014; Furlong, 2011). However, while the reasons for being NEET could be diverse and NEET excludes some economically at-risk youth, we showed that, on average, NEET youth tend to fare poorly compared to non-NEET persons, not just in employment prospects, but also in occupational progression and labour force participation in general.

At the same time, our findings suggest that, when possible, a disaggregated analysis of NEET data provides more insights into the state of labour market disadvantage that distinct NEET subgroups would face later in life. We showed that the adverse consequences of being NEET are larger for young people who are out of the labour force than those in the labour force (or unemployed). The results might seem unsurprising as NEETs who actively sought employment might have ended up securing a job and gaining labour market skills, while those who did not seek employment might have waited for an extended period to enter the workforce. This is particularly true for young people who might have given up looking for jobs (discouraged workers), or those who had caring responsibilities or experienced long-term illness. On the other hand, if NEETs were not seeking employment because they were pursuing other activities, such as working in an unpaid capacity

or studying outside the formal education system, as suggested by Furlong (2006), perhaps they might not have necessarily fared worse than unemployed NEETs.

It is also worth noting that there is a growing tendency in the literature to focus on NEET spells that last for an extended period with the assumption that transient spells are less harmful to future labour market prospects (Anlezark, 2011; Contini et al., 2019; Hillman, 2005; Stanwick et al., 2017). However, our findings suggest that NEET status at a given time (regardless of its duration) can have cumulative adverse effects on future labour market prospects. This is particularly evident given the length of time that the effects have persisted (10 years) and the critical nature of the ages at which the effects are detected. This is perhaps because even if young people manage to return to work or study after becoming NEET, they may continue trailing behind their peers who have maintained continuous engagement in the labour market and the education system. For example, Ralston et al., (2022) show that individuals who were NEET in 1991 but employed in 2001 were much more likely than those who were consistently active (non-NEET in 1991 and employed in 2001) to be unemployed in 2011.

Conclusion

This study uses data from the ACLD and explores whether an earlier spell of NEET is associated with poor labour market outcomes later in life. After controlling for an array of individual, household and local characteristics, we found that being NEET is significantly and negatively associated with employment and occupational skill levels after 10 years. Young people who were NEET in 2006 were much less likely to be in full-time employment and much more likely to be out of the labour force in 2016 than their non-NEET peers. We also found that an earlier experience of a spell of NEET is associated with working in low-skilled occupations. We noted that NEET-induced labour market risks differ by gender, age, indigeneity and labour force status.

Two limitations of this study that we would like to acknowledge are: (i) although we have controlled for an array of individual, household and geographic characteristics, we cannot rule out that the observed relationships between earlier NEET status and subsequent labour market outcomes could be a reflection of unobserved correlations induced by persistent unmeasured differences (heterogeneities) within the youth population; (ii) it is also likely that the relationship between prior NEET status and future labour market outcomes is duration-dependent. For example, a study in New Zealand shows that young people who experienced a spell of NEET for up to five months were much less likely to be employed for the following two years than those who experienced a shorter spell of NEET (Samoilenko & Carter, 2015). In future work, we hope to obtain more robust data that would allow the identification of causal effects and duration dependence.

Notwithstanding the limitations, the findings justify the ongoing interest in youth disengagement from work and study and provide important policy implications. It is critical that governments and businesses support youth NEETs to (re)connect with the labour market and/or the education system and develop relevant skills for a smooth labour market transition during adulthood. However, it is also essential to recognise that not all NEETs are equally at risk of future labour market disadvantages, and scarce resources should be targeted to those most at risk. Further,

since NEET represents youth with diverse needs (Anlezark, 2011; Furlong, 2006), it is also vital that support services are tailored to the specific circumstances of different subgroups.

References

Anlezark, A. (2011). *At Risk Youth: A Transitory State? Longitudinal Surveys of Australian Youth* (Briefing Paper 24). National Centre for Vocational Education Research.

Assmann, M.L., & Broschinski, S. (2021). Mapping young NEETs across Europe: Exploring the institutional configurations promoting youth disengagement from education and employment. *Journal of Applied Youth Studies, 4*(2), 95-117.

Australian Bureau of Statistics (ABS). (2018). *Census of Population and Housing. Understanding the Census and Census Data*. (Cat.no.2900.0).

Australian Bureau of Statistics (ABS). (2019). *Microdata: Australian Census Longitudinal Dataset (ACLD)*. (Cat.no.2080.0).

Borland, J. (2020). Scarring effects: a review of Australian and international literature. *Australian Journal of Labour Economics*, 23(2), 173–188.

Carvalho, P. (2015). *Youth unemployment in Australia* (Research Report 7) Centre for Independent Studies. https://www.cis.org.au/wp-content/uploads/2015/11/rr7.pdf

Contini, D., Filandri, M., & Pacelli, L. (2019). Persistency in the NEET state: a longitudinal analysis. *Journal of Youth studies*, *22*(7), 959-980.

Cuzzocrea, V. (2014). Projecting the Category of NEET into the Future. *Perspectives on Youth,* 1: 69–82.

Dinku, Y. (2021). A longitudinal analysis of economic inactivity among Indigenous youth. *Australian Journal of Labour Economics, 24*(1), 25-45.

Dinku, Y., & Hunt, J. (2021). Factors associated with the labour force participation of prime-age Indigenous Australians. *Journal of Australian Indigenous Issues*, *24*(1-2), 72-98.

Fleischhauer, K.J. (2007). *A review of human capital theory: Microeconomics* (Department of Economics Discussion Paper no. 2007-01). University of St. Gallen.

Forrest, C., Skujins, P., & Stanwick, J. (2018). Predictors and consequences of being persistently not in employment, education or training (NEET): Evidence from the longitudinal surveys of Australian youth. In M. Best, T. Corcoran, & R. Slee (Eds.) *Who's in? Who's out?* (pp. 113-128). Leiden.

Frerichs, L., Smith, C., Hoover, S., Robinson-Ezekwe, N., Khanna, A., Ellerby, B., Joyner, L., Wynn, M., Wrenn, J., Stith, D., Tessler L. S., Corbie, G. (2023). Comparative Evaluation of 2 Work

Experience Approaches for Predominantly Black Youth in a Rural Community: Implications for Public Health Workforce. *Journal of Public Health Management and Practice, 29*(1), 21-32.

Furlong, A. (2006). Not a very NEET solution: representing problematic labour market transitions among early school-leavers. *Work, employment and society*, *20*(3), 553-569.

Gregg, P. (2001). The impact of youth unemployment on adult unemployment in the NCDS. *The Economic Journal, 111*(475), F626-F653.

Gregg, P., & Tominey, E. (2005). The wage scar from male youth unemployment. *Labour Economics, 12*(4), 487-509.

Hillman, K. (2005). *Young people outside the labour force and full-time education: Activities and profiles* (LSAY Research Report 45). Australian Council for Educational Research.

Hudson, K., & Kalleberg, A. L. (2019). How good is half a job? Part-time employment and job quality in the US. In H. Nicolaisen, H. Kavli & R. Steen Jensen (Eds.), *Dualisation of part-time work: The development of labour market insiders and outsiders*. Policy Press. https://doi.org/10.1332/policypress/9781447348603.003.0008

Kahn, L. M., & Low, S. A. (1982). The relative effects of employed and unemployed job search. *The Review of Economics and Statistics, 64*(2), 234-241.

Kalb, G., Le, T., Hunter, B., & Leung, F. (2014). Identifying Important Factors for Closing the Gap in Labour Force Status between Indigenous and Non-Indigenous Australians. *Economic Record*, *90*(291), 536-550.

LaMontagne, A. D., Vallance, D., & Keegel, T. (2008). Occupational skill level and hazardous exposures among working Victorians. *Australian Journal of Labour Economics*, *11*(1), 47-70.

Lesner, R. V., Damm, A. P., Bertelsen, P., & Pedersen, M. U. (2018). *Life Skills Development of Teenagers through Spare-Time Jobs* (Economics Working Papers No.2018-9). Institut for Økonomi, Aarhus Universitet. https://pure.au.dk/ws/portalfiles/portal/136554687/wp18_09.pdf

Luijkx, R., & Wolbers, M. H. (2009). The effects of non-employment in early work-life on subsequent employment chances of individuals in the Netherlands. *European Sociological Review, 25*(6), 647-660.

McDonald, P., Bradley, L., & Brown, K. (2009). 'Full-time is a Given Here': Part-time Versus Full-time Job Quality. *British Journal of Managemen*t, 20(2), 143-157.

Morris, A., & Wilson, S. (2014). Struggling on the Newstart unemployment benefit in Australia: The experience of a neoliberal form of employment assistance. *The Economic and Labour Relations Review, 25*(2), 202-221.

Mroz, T. A., & Savage, T. H. (2006). The long-term effects of youth unemployment. *Journal of Human Resources, 41*(2), 259-293.

Nafukho, F. M., Hairston, N., & Brooks, K. (2004). Human capital theory: Implications for human resource development. *Human Resource Development International, 7*(4), 545-551.

Nilsen, Ø. A., & Reiso, K. H. (2011). *Scarring effects of unemployment* (IZA Discussion Paper no. 6198). Institute for the Study of Labor (IZA).

Pacheco, G., & Dye, J. (2014). Estimating the cost of youth disengagement in New Zealand. *New Zealand Journal of Employment Relations, 38*(2), 47-63.

Popham, I. (2003). *Tackling NEETs: Research on Action and Other Factors that Can Contribute to a Reduction in the Numbers of Young People Not in Education, Employment or Training (NEET)*. Nottingham: DfES Publications.

Ralston, K., Feng, Z., Everington, D., & Dibben, C. (2016). Do young people not in education, employment or training experience long-term occupational scarring? A longitudinal analysis over 20 years of follow-up. *Contemporary Social Science, 11*(2-3), 203-221.

Ralston, K., Everington, D., Feng, Z., & Dibben, C. (2022). Economic inactivity, not in employment, education or training (NEET) and scarring: The importance of NEET as a marker of long-term disadvantage. *Work, Employment and Society*, *36*(1), 59-79.

Ranzani, M., & Rosati, F. C. (2013). *The NEET trap: a dynamic analysis for Mexico*. (Understanding Children's Work Project). UNICEF Rome.

Samoilenko, A., & Carter, K. (2015). *Economic outcomes of youth not in education, employment or training (NEET)* (Working Paper 15/01). New Zealand Treasury.

Schmillen, A., & Umkehrer, M. (2017). The scars of youth: Effects of early-career unemployment on future unemployment experience. *International Labour Review, 156*(3-4), 465-494.

Skattebol, J., Hill, T., Griffiths, A., & Wong, M. (2015). *Unpacking youth unemployment* (SPRC Report 15/2015). Social Policy Research Centre, University of New South Wales.

Stanwick, J., Forrest, C., & Skujins, P. (2017). *Who Are the Persistently NEET Young People? Literature Overview Support Document*. National Centre for Vocational Education Research (NCVER).

Trewin, D., & Pink, B. (2006). *ANZCO - Australian and New Zealand Standard Classification of Occupations (Cat.no.12220.0).* Australian Bureau of Statistics and Statistics New Zealand. https://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/B4B626DEB4A0C558CA2571E600092D5A/$File/12200_2006.pdf

Venn, D., & Biddle, N. (2016). *Employment outcomes* (CAEPR 2016 Census Papers no.5). Centre for Aboriginal Economic Policy Research (CAEPR). Australian National University. Canberra.

Wiggan, J. (2015). Reading active labour market policy politically: An autonomist analysis of Britain's Work Programme and Mandatory Work Activity. *Critical Social Policy*, *35*(3), 369-392.